



Asian & Pacific Islander Seafood Consumption Study in King County, WA

Exposure Information Obtained through a Community-
Centered Approach

Study Results and Education Outreach



Asian and Pacific Islander Seafood Consumption Study

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EXECUTIVE SUMMARY

PURPOSE

The primary purpose of this study was to describe Asian and Pacific Islander (API) seafood consumption rates, species, and seafood parts commonly consumed and cooking methods. This information is needed to allow the API community in the Pacific Northwest to determine what risks it may face from seafood and to balance such risks with the significant health and cultural benefits associated with seafood consumption. This study was a first step towards gathering necessary information for such a risk assessment. Study aims also included development of culturally appropriate health messages related to seafood consumption and the field testing of this information within the API community.

METHODS

This work was made possible only because of the willingness of API community leaders and the Refugee Federation Service Center to work in partnership with the University of Washington—National Institute for Environmental Health Sciences (UW-NIEHS) Center for Ecogenetics and Environmental Health, Community Outreach and Education Program.

Description and quantification of seafood consumption habits with the API community was conducted in three phases. Phase I was considered a planning phase, and focused on identifying target ethnic groups and developing an appropriate questionnaire. This work was accomplished prior to the initiation of the study reported here and was published as a U.S. EPA Report (Asian and Pacific Islander Seafood Consumption Study, EPA 910/R-96-007, August 1996).

Phase II, which is detailed in this report, focused on the characterization of seafood consumption patterns of ten API ethnic groups (Cambodian, Chinese, Filipino, Hmong, Japanese, Korean, Laotian, Mien, Samoan, and Vietnamese) within King County, Washington. Participants were first or second generation members of the above ethnic groups, 18 years of age or older, who

lived in King County, Washington, and were seafood consumers. Data were collected using a survey questionnaire that was developed in English and later translated into the respondents' native languages. The surveys were administered by trained bilingual interviewers recruited from the API community. The questionnaire solicited information about the types of seafood consumed, the source of the seafood, the preparation of seafood, the frequency and portion size of consumption by the respondents, demographic information, and educational approaches preferred by the respondents. Two hundred participants were sought, and two selection methods were used. First, volunteers were recruited for a "Dietary Habits Study" and from those volunteers participants were randomly selected. Second, religious and API community organizations donated membership rosters from which potential participants were randomly selected and contacted.

Phase III, also detailed within this report, focused on the development of culturally appropriate health messages related to seafood consumption risks and the dissemination of this information to the API community. The technical expertise of the Advisory and Technical Committees was linked to the cultural expertise of the Community Steering Committee to develop an appropriate health education strategy. These efforts culminated in a multi-lingual brochure that highlighted five key public health messages. The brochure was then tested through an API focus group.

RESULTS

The majority of the 202 respondents (89%) were first generation (i.e., born outside the United States). There were slightly more women (53%) than men (47%), and 35% lived under the 1997 Federal Poverty Line. In general, the API members consumed seafood at a very high rate. The average overall consumption rate for all seafood combined was 1.891 grams/per kilogram body weight/day (g/kg/day), with a median consumption rate of 1.439 g/kg/day. The predominant seafood consumed was shellfish (46% of all seafood). Seafood consumption based on gender, age, income, and "fishermen" status did not differ significantly.

First generation APIs consumed more fish than the second generation APIs in all the fish categories, except pelagic fish -- the consumption rates being statistically different for freshwater fish and shellfish. In general, members of the Vietnamese and Japanese communities had the highest overall consumption rates of all seafood; and the Mien, Hmong, and Samoan communities consumed the least amount of seafood.

The proportion seafood harvested (rather than purchased commercially) by API community members varied from a low of 3% to a high of 21%, depending on the seafood type. Differences were observed among the ethnic groups, with Japanese, Chinese, Filipino, and Korean groups consuming more seafood that was purchased commercially. Members of the Mien, Hmong, and Laotian communities seemed to harvest seafood more often than other ethnic groups. Salmon, tuna, shrimp, crab, and squid were the most frequently consumed seafood. Skin was consumed with fillets 55% of the time, and crabs were eaten with their butter 43% of the time. Seafood cooking fluids were commonly drunk or used in cooking. These customs suggest that risk assessment methods include toxic chemical measurements in these tissues.

The study results also indicated that members of the API community were interested in learning more about health issues surrounding eating fish, the safety of seafood from Puget Sound (the water body surrounding King County), and the safe preparation methods of seafood. The learning methods preferred by the APIs were book/pamphlets (69%), verbal communication (55%), and video presentation (35%). Community newspapers/newsletters were the most preferred information source (75%), followed by television (65%) and word of mouth (60%).

The public health messages developed during Phase III of the study were generally well received by API community focus groups. The brochure was viewed as helpful in decision making, and the presentation was considered clear and precise. Corrections and recommendations resulting from the focus group process have been incorporated into the final version of the brochure.

I. Introduction

Asian and Pacific Islanders (API), people having origins in the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands, represent one of the most diverse and rapidly growing immigrant populations in the United States. In 1997 API's (166,000 people) accounted for 10% of the King County, Washington population, an increase from 8% in 1990. Between 1990 and 1997, the total population of King County increased 9% while the population of API's increased 43% (State of Washington Population Trends, 1998).

API immigrants and refugees consider seafood collection and consumption as healthy activities that reflect a homelike lifestyle and may fish for economic necessity. For these reasons, API immigrants have been hypothesized to consume greater quantities of seafood, differing species, and differing parts of seafood than the general United States (U.S.) population. Such cultural behaviors may increase their risk of toxic chemical exposure, especially among subsistence fishermen who obtain seafood in polluted urban sites. Yet, the API community has little information on the potential contamination in seafood consumed. Cultural and economic factors may put recent API immigrants at greater than expected risk from environmental exposures.

Seafood consumption risk assessments within ethnic groups require specialized survey tools because of cultural and language differences, as well as varying consumption and acquisition habits. Only a few cases in the western United States for which reports are available: e.g., the Columbia River Inter-tribal Fisheries Commission (CRITFC), the Tulalip and Squaxin Island Tribes, and the Laotian Community of West Contra Costa County, California (CRITFC, 1994; Toy et al, 1996; Chiang, 1998, respectively). The CRITFC survey (1994) included selected tribes in Washington and Oregon and estimated per capita consumption at the 50th and 90th percentile of 41.5g/day and 127.2g/day, respectively. Fish consumption surveys were administered and reported jointly for a total of over 200 members of the Tulalip Tribes and Squaxin Island Tribe of the Puget Sound Region (Toy, 1996). The results showed that the median daily per capita consumption rates for men were

53 g/day and 66 g/day for the two tribes, while women consumed a median rate of 34 g/day and 25 g/day, respectively.

Chiang (1998) surveyed the Laotian community (Laotian, Mien, Khmu, Thaidum) residing in the eastside of San Francisco Bay, in West Contra Costa County, California, using a "usual intake" consumption survey and calculated a mean per capita seafood consumption rate of 18 g/day. Chiang also reported that among 229 Laotian survey participants (87% of whom consumed seafood at least one time per month), fish skin was "always" consumed by 76% and "sometimes" by 23%; the head was "always" consumed by 20% and "sometimes" by 47%; and organs were "always" consumed by 6% and "sometimes" consumed by 41%.

Considerable uncertainty regarding seafood consumption rates among APIs exists because studies reporting API seafood consumption and habits are few and use different methodologies. However, these studies are valuable for providing insight into the scope of potential exposures. Javitz used 1973-74 National Purchase Dietary data to calculate a mean per capita seafood (fresh/estuarine/marine) consumption rate for "orientals" (21 g/day). Three surveys conducted among API fishermen fishing in San Francisco Bay, Santa Monica Bay, and Los Angeles reported median seafood consumption rates of 43 g/day, 21 g/day, and 71 g/day, respectively (Wong, 1996; Allen, 1996; Puffer, 1982). These studies documented self-harvested seafood consumption rates only from specific fishing sites over varying periods of time (7 days, 4 weeks and "usual intake" per year, respectively).

The U.S. EPA uses differing consumption rates depending on the regulatory program for which the assessment is being developed. Fish and seafood consumption rates are adopted only as U.S. EPA policy with varying degrees of non-EPA review and input. The consumption rate which may have received the most intense scrutiny due to publication in the Federal Register and a subsequent comment period is the value included in EPA's ambient water quality criteria (AWQC) recommendations developed under section 304(a) of the Clean Water Act. In 1980, a national average consumption rate of 6.5 grams per day (g/day) of fish and shellfish from estuarine and freshwaters was recommended. This is the currently used value. This rate

was based on the mean per capita (both consumer and non-consumers) consumption rate of freshwater and estuarine finfish and shellfish from 3-day diary results that were reported in the 1973-74 National Purchase Diary Survey (Javitz, 1980). Proposed revisions to the AWQC methodology include a tiered approach for choosing an appropriate consumption rate (Federal Register: August 14, 1998). The results from local or regional seafood intake surveys are preferred, while the last preference is use of defaults based on the 1989-91 Continuing Survey of Food Intake by Individuals (CSFII, 1990) data: 17.8g/day for the general adult population and sport fishers, and 86.3/day for subsistence fishers.

The U.S. EPA national Superfund program's policy is to assume an ingestion rate of 54g/day for high consumers of locally caught fish (OSWER). Region 10 of the U.S. EPA, which includes the State of Washington, recommends the use of results from local or regional seafood intake surveys for use in the regional Superfund program (U.S. EPA, 1991).

The U.S. EPA Exposure Factors Handbook which can be used by any federal or state program recommends a mean and 95th percentile for the general U.S. population of 20.1 g/day and 63 g/day, respectively (U.S. EPA, 1997). For Native American subsistence populations the recommended value for mean intake is 70 g/day and the recommended 95th percentile is 170 g/day.

The Washington State Department of Ecology recently recommended a statewide default of 177g/day to protect all Washington residents including the highest consumers, subsistence fishers (Washington Department of Ecology, 1999).

II. Background

Because of an increasing awareness in the risk of consuming certain seafood in the API community, the API community in King County, Washington, initiated a study to characterize seafood consumption patterns within their community. The uniqueness of this evaluation included: 1) the community based approach throughout the study; 2) the large number of ethnic groups

participating; and 3) the partnership and interaction between the community and the researchers.

The Refugee Federation Service Center (RFSC), which is the largest social aid organization for recent immigrants and refugees in King County, Washington, was established in 1982 by refugees for the provision of social services with an initial budget of \$60,000. Today, the agency is a thriving organization and operates three facilities with a budget over \$1 million. The agency is managed and staffed by refugees and remains a community-based organization through its affiliated seven Mutual Assistance Associations: Coalition of Lao Mutual Assistance Association, East European Association, Ethiopian Community Mutual Association, Khmer Community of Seattle-King County, Vietnamese Friendship Association, Indochina Chinese Refugee Association, and Eritrean Community of Seattle and Vicinity. The agency's most unique aspect is that the bilingual/bicultural staff and volunteers provide comfort that comes with speaking the native tongue and true understanding of what it means to be a refugee and an immigrant. The staff are familiar with the difficult transition to life in the U.S., culturally specific coping mechanisms, and specific concerns of their communities. In 1995 the RFSC identified seafood consumption and subsequent contamination as a chief environmental justice issue of the API community.

The study documented in this report involved ten API ethnic groups (Cambodian, Chinese, Filipino, Hmong, Japanese, Korean, Laotian, Mien, Samoan, Vietnamese) within King County, Washington. The community played an important role in the study, from the initiation of the study to the final report. During the study period, the researchers had frequent interactions with the community because the researchers viewed the study as "by the API community," instead of "for the API community." This interaction and cooperation helped the study team in its understanding of community concerns and therefore gained the support of the community, which was vital for the completion of this study involving ten ethnic groups with diverse cultural backgrounds.

The Refugee Federation Service Center and the University of Washington's Environmental Health Department collaborated with three instrumental

committees to develop the study. The planning, design, and development were conducted by a Community Steering Committee comprised of members representing each ethnic group. A Technical and an Advisory Committee also shared responsibility in the design of the study. The Technical Committee was responsible for providing technical assistance, while the Advisory Committee provided recommendations to ensure the final study would be relevant to regulatory agencies, the medical field, industry, and businesses.

Description and quantification of seafood consumption habits among API's in King County, Washington, was accomplished in three phases. The first, Phase I, consisted primarily with identifying the target ethnic groups, modification of the fish consumption and acquisition survey questionnaire used in the Tulalip and Squaxin Island Tribes Fish Consumption study (Toy, 1996) to be culturally appropriate and accurate for the API community, and the translation of the questionnaire into the native languages for the ethnic groups being identified. The first phase of the study has been presented in the technical report to U.S. EPA (EPA, 1996).

Phase II and Phase III of the evaluation, which were conducted jointly by the Refugee Federation Service Center and the University of Washington National Institute for Environmental Health Sciences (UW-NIEHS) Center for Ecogenetics and Environmental Health, were funded by the U.S. EPA Environmental Justice Community/University Partnership Grant No. 66-604, and are described in this report. The specific purposes of Phase II were to: 1) document the seafood consumption pattern and consumption rate of the API community; 2) document the sources of fish consumed by API members; and 3) document educational approaches appropriate for the API community. The goals of Phase III were to: 1) identify culturally acceptable health messages related to seafood, 2) develop a brochure on seafood related health risks jointly with the community, and 3) field test the brochure within the API community for understandability and cultural appropriateness.

III IMPLEMENTATION OF THE STUDY (PHASE II)

A. METHODOLOGY

1. Overview

This study characterizes seafood consumption patterns of ten API ethnic groups (Cambodian, Chinese, Filipino, Hmong, Japanese, Korean, Laotian, Mien, Samoan, Vietnamese) within King County, Washington. Participants were first or second generation members of the above ethnic groups, 18 years of age or older, who lived in King County, Washington. Data were collected using a survey questionnaire that was developed in English and later translated into the respondent's native language. The surveys were administered by trained bilingual interviewers recruited from the API community. The questionnaire solicited information about the types of seafood consumed, the source of the seafood, the preparation of seafood, the frequency of and portion size consumption by the respondents, demographic information, and educational approaches preferred by the respondents.

The study was conducted in three phases. While this report mainly addresses only Phases II and III, a brief discussion of Phase I is included for background and will assist the readers in understanding the approach and results contained in this report. To promote reading clarity, some aspects of this study's methodology appear in appendices.

B. COMMUNITY SUPPORT, STUDY DESIGN, QUESTIONNAIRE DEVELOPMENT (PHASE I)

The purpose of Phase I was: 1) to develop a framework which would interest and involve API leaders in a seafood consumption and acquisition study; and 2) to develop a culturally acceptable survey instrument. To achieve these goals, three committees were formed by the Study Coordinator (SC) at the RFSC. The SC was a resident of the local API community and belonged to one of the ethnic groups included in the study.

1. Committee Guidance

The Community Steering Committee (CSC). This committee's function was twofold: 1) to provide recommendations on specific cultural issues such as how to approach the community, language, and key concerns of the community; and 2) to provide community contacts that would enable the networking and outreach efforts of the study's staff. The fifteen members of the committee each belonged to at least one of the ethnic groups being surveyed and had an affiliation with one or more community organizations (e.g., health care, education, religious or social organizations) within his or her respective community. Certain ethnic groups (e.g., Cambodian, Laotian, Vietnamese, Hmong and Mien) felt a strong vested interest in this study and sent more than one member.

Technical Committee. The Technical Committee was responsible for: 1) advising the design of a scientifically sound questionnaire that took into account the cultural and language characteristics identified by the CSC for the ethnic groups involved; and 2) providing technical assistance to the CSC for the feasibility and planning of the study. Members included representatives from the U.S. EPA, King County Health Department, UW School of Fisheries, UW School of Public Health and Community Medicine, Washington (WA) State Department of Health, WA State Department of Ecology, and two representatives from firms (Steven Gilbert, Ph.D., BioSupport, Inc. and Gregory L. Glass, Environmental Consultant).

Advisory Committee. The Advisory Committee's function was to provide recommendations to ensure that final documentation of the study would be relevant and applicable to different interested agencies and ethnic groups. Members of the Advisory Committee included representatives of industry, health care, and regulatory agencies. Represented agencies included the Boeing Company, U.S. EPA, Puget Sound Keepers Alliance, National Oceanic and Atmospheric Administration, Washington State Department of Ecology, and the Community Coalition for Environmental Justice.

2. Development of Survey Instruments

a. Survey Questionnaire

The Community Steering Committee deemed the use of creel, mail, or telephone surveys as culturally inappropriate and indicated that APIs would be unlikely to participate. Therefore, a face-to-face interview survey questionnaire was developed based on an earlier study by the Tulalip and the Squaxin Island Tribes of Washington (Toy et. al., 1996). The modification of this questionnaire was mostly completed in Phase I. The Community Steering Committee was instrumental in guiding the selection of seafood species most often consumed by API as well as usual preparation methods and seafood tissue parts most frequently consumed. Minor modifications of the questionnaire also occurred early in Phase II, for example, inclusion of 4 educational outreach questions. **Appendix A** contains the final questionnaire used in this study.

The questionnaire was first developed in English and subsequently translated into the languages of the ten ethnic groups. Focus groups tested the questionnaire within six ethnic groups (Cambodian, Laotian, Samoan, Korean, Filipino, Vietnamese) for content, format, wording, language, accuracy of translation, presentation, and use of visual displays during the development stage of the questionnaire. The focus group's feedback was used to enhance the questionnaire before it was finalized.

The final questionnaire covered selected demographic information of the respondents, the frequency and portion size for each seafood consumed by the respondent, the sources of the seafood, the preparation methods, and specific tissue parts consumed (for example, consumption of finfish skin, hepatopancreas of crabs, etc).

b. Visual Aids

To maximize the recall reliability in the survey, visual aids for administering the questionnaire were also developed during Phase I. One aid was plaster models of seafood representing approximate portion sizes (pre-cooked) of the different species. **Appendix B-1** contains a picture of these models, and

Appendix B-2 describes the weight of each model used for calculation of seafood consumption rates. A second aid was the species manual (**Appendix C**), a collection of pictures of the different seafood species. The manual was used to assist respondents in identifying particular species of seafood. Pictures were obtained mainly from the Washington State Department of Fish and Wildlife, *Fishing in Washington*, 1996 pamphlet edition. A copy of this booklet is provided with the purchase of every fishing or shellfish collecting license. Pictures were available for most of the species, except snowfish and moonsnail. For moonsnail, actual moonsnail shells were available and therefore used. The species manual was especially important for the API community because the names of some species (e.g., cockles, butter clams) could not be precisely translated as they are not generally collected or consumed in some respondents' native countries. The manual also included a map of the Puget Sound area. Interviewers used the map to help respondents identify seafood acquisition locations. Seafood "caught from Puget Sound" was defined by interviewers as seafood caught within King County, Washington which borders on Puget Sound; and seafood "caught from outside Puget Sound" as defined as seafood from all other areas, including non-King County Puget Sound locations. The expanse of Puget Sound goes far beyond the confines of King County, therefore to avoid confusion in this report, fishing areas will be referred to as: within King County and outside of King County.

c. Determination of seafood model weights.

Plaster models were cast from fish purchased from markets. Individual models could not be provided for the 21 finfish included in the survey. Therefore, all 21 finfish were represented by four models (Models A through D shown in Appendix B-1). The models represented the appropriate body shape and preferred fish size for a group of finfish. The selection of models and preferred fish size was determined by consensus of the CSC. Essentially, their guidance was that a fish must fit on a serving plate and effective models must be similar in body shape to the finfish in question, but did not have to be exact replicas in order to evoke recognition. Model A was the broad-bodied fish shape which was cast from a tilapia, and represented a serving of snapper, snowfish, rockfish, crappie, perch, bass, or tilapia. Model B was the narrow-

bodied fish shape which was cast from a trout, and represented salmon, catfish, carp, sturgeon, and suckers. Model C, the skinned fillet model, represented a typical serving of tuna, halibut, or cod. Model D symbolized small, narrow-bodied fishes that the CSC advised were eaten whole or with the head attached, and represented smelt, dogfish, and herring. Other seafoods were individually represented by 16 models except that abalone and scallop were represented in one model, and shrimp and lobster were represented in one model.

The weights used in the consumption rate calculations are shown in Appendix B-2. For models A, B, and D the measured weight in ounces of the uncooked fish from which the model was cast was multiplied by an ounces to grams conversion factor (28.35) and the percentage of edible meat in the whole body. The edible meat percentage was determined by methods described in Appendix B-3. The weight for model C was the measured weight of the uncooked fillets of the same approximate size. The weight of the shellfish (models J, K, L, M, N, O and T representing manila, macoma, horse, razor, geoduck and butter calms, and cockles, oysters, mussels and moonsnails, respectively) were the measured weights of the edible tissues after cooking and removal from the shell. The weights for models I, E, F, R, S and H (abalone/scallop, sea urchin, shrimp/lobster, squid, sea cucumber and fresh seaweed/kelp, respectively) were the measured weights of uncooked samples of the same size. The weight for model G (dried seaweed) was the weight stated on the packaging. The weight for model P (crab) was determined from cooked crab meat plus crab "butter". (See Appendix B-3). Crab "butter" consisted of the yellowish liquid and all of the easily removable soft tissue when the carapace is gently removed from the crab body. The carapace is removed by turning the crab body upside down or tipping it sideways. The manner in which the carapace is removed intentionally captures as much of the yellowish liquid as possible, and the carapace, itself, may be used as a bowl to sip the liquid.

C. SURVEY IMPLEMENTATION AND DATA ANALYSIS (PHASE II)

The implementation of the survey and the data analyses were carried out in Phase II. Phase II included the recruitment and training of bilingual interviewers, questionnaire pilot testing and revision, development of sampling strategies, participant recruitment, survey administration, and the data analysis.

1. Interviewer Recruitment, Training, and Quality Assurance

a. Interviewer Recruitment

The RFSC study coordinator recruited ten interviewers. The job openings were announced in local API newspapers and social service organizations around King County. Job announcements were placed in API newspapers, flyers, and posted on local college and university campuses. The Community Steering Committee also recommended applicants. Each interviewer had to have a cultural knowledge of at least one of the ten ethnic communities and be fluent in both English and the respective native language.

b. Training and Quality Assurance

Prior to interview, all interviewers attended training on the skills of survey questioning and probing and use of seafood models. The 9-hour training (3 hours daily for 3 days) was provided by an experienced consultant (Jude Ballard, Fred Hutchinson Cancer Research Center) who has directed many survey studies. Issues addressed included interviewer tasks, familiarity and proficiency with questionnaires, use of interview tools (e.g. models, maps), and data collection consistency. After completing the training, interviewers were required to practice interviewing relatives and friends over a two-week period. Afterwards they conducted a simulated interview with the RFSC study coordinator (SC) using the models and manuals. Once the SC deemed the interviewers proficient in their interview and data recording techniques, interviewers were allowed to begin interviewing survey participants. After each interviewer had administered two questionnaires to survey participants, the consulting statisticians reviewed the completed questionnaires for data consistency and counseled interviewers to improve data collection.

2. Questionnaire Pilot Testing

Ten survey pilot tests were conducted by the trained interviewers to assess the format of the questionnaire and the effectiveness of the seafood models. The test group had an equal number of males and females, at least one member of each ethnic group, at least one person from three identified age groups (18–39, 40–64, 65+ years), at least 3 members who were first generation Americans and 3 who were second generation, and at least 2 people who identified fishing or collecting seafood as a major source of seafood consumed. Based on this pilot testing, translations were modified as needed to improve clarity and cultural appropriateness. Adjustments included translation corrections, re-phrasing of the questions, and the addition of questions related to cultural holidays.

3. Sampling Strategy

An interview goal of 200 respondents was planned. All respondents needed to meet pre-defined criteria to be included in the study. In this section, we will describe the criteria and the selection process of the respondents.

a. Respondent Selection Criteria

Prospective participants of the study needed to meet the following requirements:

- 1) Membership in one of ten API ethnic groups: Cambodian, Chinese, Filipino, Hmong, Japanese, Korean, Laotian, Mien, Samoan, or Vietnamese;
- 2) At least 18 years of age;
- 3) Resident of King County, Washington;
- 4) Seafood consumer (non-consumers were documented during the recruitment process);
- 5) First generation (born outside US) or second generation American (at least one of the parents was born outside US).

b. Ethnic Representation

The original sampling strategy specified that the ten API ethnic groups would be represented in the sample proportionate to their composition as reported in the 1990 US Census data for King County (see Table M-1). The Community

Steering Committee, however, had concerns about this strategy. They felt such an allocation of sample across ethnic groups purely based on the population size would polarize the community because: 1) certain groups appeared to be “preferred”; and 2) too few individuals would be interviewed from the API groups they felt to be most at risk; i.e., Cambodian, Hmong, Vietnamese, Laotian, Samoan, and Mien. The CSC considered Cambodian, Hmong, Vietnamese, Laotian, Samoan and Mien to be less well-established socioeconomically because most (except Samoans) had come to the United States as refugees of war, and therefore, were at a higher risk for subsisting on self-caught seafood. On the other hand, other groups (i.e., Korean, Chinese, Japanese and Filipino) were viewed as relatively well-established in King County, more affluent, and less likely to collect seafood in contaminated waters, and therefore, more likely faced a “lower risk”. Taking account of the CSC’s concern, the allocation of the number of respondents was modified to their satisfaction, and it was decided to weight the results to reflect the API ethnic group apportionment within King County when the final result was presented for the whole API community. (Table M-1).

TABLE M-1. - SAMPLE SIZE BASED ON POPULATION PROPORTIONATE SAMPLING VS. ACTUAL SAMPLE SIZE
BASED ON CSC’S RECOMMENDATION

Ethnic Group	Sample size allocation based on census data	# of actual interviews (CSC recommendation)	Allocation principle
Cambodian	7	20	less well established
Hmong	1	5	less well established
Laotian	6	20	less well established
Mien	*	10	less well established
Samoan	3	10	less well established
Vietnamese	19	26 (25)	less well established
Chinese	52	30	more established
Filipino	47	30	more established
Japanese	44	30 (29)	more established
Korean	22	22	more established
Total	201	202	

*Census data unavailable for this population.

4. Subject Recruitment

Because of the diversity of the ethnic groups covered in this study, no known master list existed for all first and second generation Asian and Pacific Islanders residing in King County. The lack of a complete sample frame called for a special sampling approach in this study. Particularly, two

recruitment methods, "roster" and "volunteer" approach, were employed__ (described below). Both methods were used within each ethnic group, except for the Hmong community, in which all five interviewees were from roster. In the sampling design, the goal was to obtain one-half of the total participants via each method. In an effort to reduce possible selection bias based upon participants' knowledge that the study's focus was seafood consumption, the study was advertised as a Dietary Habits Study for Asian Pacific Islanders. A \$25 check or grocery store gift certificate was offered as an incentive for study participation.

Interviewers contacted respondents from a randomly constructed roster and/or volunteer list by phone to arrange an interview appointment using a prepared telephone script (**Appendix D**) that was also translated into ten languages. Interviewers documented their attempts to reach respondents on a record of contacts; dates, times, and results of calls were recorded (**Appendix E**). Interviewers were instructed to contact respondents up to five times, but not to leave messages on answering machines. If unable to speak with the respondent in person by their fifth attempt, interviewers were to proceed to the next respondent on their list. For a completed interview, the respondent was paid for their participation.

Once the number of respondents for each ethnic group was determined, the number of respondents was allocated equally between "rosters" and "volunteers." To have a fair presentation of both genders, the percentage of each gender in the 1990 census data was used to decide the number of female and male respondents for each ethnic group. Similarly, the percentage of people above and below the median age (1990 census data) of each gender within a specific ethnic group was used to approximately reflect the age composition of people in each ethnic group.

a. Roster Recruitment

Though no complete list of all API members existed in the community, a variety of roster lists did exist within different API ethnic organizations. These roster lists in the API community covered a portion of the API members. It was planned to recruit about half of the respondents from various roster lists in the API community. The SC contacted all known API

religious and community organizations to determine the sizes of their memberships. Based upon these size estimates, organizations with sixty or more members were asked to share their membership rosters with the study. Approximately 50% of these religious and community organizations agreed to share their rosters after one introduction letter and a follow-up call from the SC. To increase participation a second letter was sent out to those who had initial reservations about providing an organizational roster, which included a letter of support from Governor Gary Locke, the first Chinese American to be governor in the United States. (Appendix F.) No additional organizations agreed to participate. Membership rosters from organizations that agreed to participate were used to randomly select potential study participants based on the size of the roster list.

Once selected, a letter of introduction was sent to each potential participant containing two response postcards, one in their native language and the other in English (Appendix G). A bilingual interviewer made a follow-up telephone call approximately a week later to ascertain the potential participant's qualifications (see Section III.C.3.a.), interest, age and gender. If the qualified participant agreed and fit the needed age and gender profile, an interview was arranged.

b. Volunteer Recruitment

Study planners anticipated problems obtaining a sufficient number of participants through the roster method, as well as possible selection bias based on the membership in a religious organization or community group. Therefore, a second pool of participants, volunteers, was sought from which to randomly select the remaining half of the participants needed for the study. This second group of potential participants was referred to as, "volunteers."

Recruitment of volunteers was achieved in a number of ways. Between March and April 1997, press releases were published in API newsletters, local newspapers, and community organizations' and UW newsletters. Shortly afterwards, approximately 1000 posters (Appendix H) in the ten ethnic languages and English were posted within King County in areas believed to be frequented by API members: e.g., groceries, community organizations,

churches, UW campus, and area parking lots. Attached to the posters were bilingual postcards (e.g., if the poster was displayed in a Korean establishment, the postage-paid postcards would be in Korean and English), deliverable to the UW. In addition, word of mouth, solicitation from various community and church leaders, and the RFSC staff encouraged and increased the participation in the study. The volunteer category (from post cards and lists submitted by the RFSC) identified 476 individuals for the dietary habit survey.

As the postcards were received at the UW, the information provided on the postcard (names, addresses, phone numbers, ethnicity, age, and gender) was entered into a database maintained in a secure area at UW. The consulting statisticians then randomly selected volunteers from the database and transmitted the names to interviewers. Letters indicating selection for study participation were mailed to the selected volunteer category participants, and a bilingual interviewer contacted them one week later to set up an interview.

As the study progressed, it was discovered that some minor adjustment was necessary to enable timely completion of the data collection phase.

Particularly, the preset age and gender sampling allocations could not be strictly met within some ethnic groups because of insufficient names on either volunteer or roster lists. Among Japanese and Cambodian participants, five people from the volunteer category were substituted when sufficient roster members of the needed gender and age were not available, respectively. Also, within the Japanese and Filipino groups there was difficulty locating individuals between the ages of 18-37. Therefore, relatives of roster selectees within the same age group were recruited, though only one study participant per family participated in the survey.

5. Questionnaire Administration

Interviews were conducted during the spring and summer of 1997 at convenient locations preferred by the study respondent (e.g., residence, church, restaurants, respondents' work location, RFSC office). In some cases, the interviews were conducted in the respondent's native language. During the interviews, interviewers showed participants seafood models and pictures

of seafood to help respondents identify types of seafood and the portion sizes consumed. Interview duration averaged 59 minutes (range: 25-120 minutes). Respondents who were interviewed received monetary compensation of \$25.00.

a. Re-interviews

During the initial interview, respondents were given the option of signing a "Consent For Future Contact" form (**Appendix I**) for a potential re-interview. From these, twenty survey respondents were randomly selected, 10% proportionately from each ethnic group, e.g. three each from the Chinese, Japanese and Korean groups, one from the Mien group, etc. for re-interview via telephone using the re-interview questionnaire, which was a subset of the questions contained in the main survey questionnaire (**Appendix J**). This re-interview was used to check the reliability of responses on the earlier survey and participants were selected as soon as all 202 surveys were completed. Respondents who were re-interviewed received an additional \$10 compensation.

b. Questionnaire Editing

Completed surveys were subjected to an editing process between the SC and the interviewer. This editing process was used to screen and verify answers that were ambiguous or inconsistent. In the editing process, logic validation of answers (within field checks for values in the possible range and between-field checks for relationships) was also carried out. The editing was completed before the questionnaires were sent for data entry.

c. Double-key Data Entry

To minimize the data entry error, a "double key-entry" procedure was employed. The data entry was done initially for all questionnaires. After the first data entry, the data entry program was set as the "verification" mode and a second round of data entry was done for all data fields and for all questionnaires. This "verification" mode of the data entry prompted the data entry staff with an on-screen error message if any inconsistency occurred for the data field being entered.

6. Data Analyses

When the data entry was completed, the data were transferred to the consulting statisticians for data analysis. For each seafood species, the answers of each respondent were converted into a consumption rate based on the frequency and the portion size as reported in the survey.

a. Statistical Methods

1) Consumption Rate. Seafood species were categorized into seven groups: anadromous, pelagic, freshwater, bottom, shellfish, seaweed/kelp, and miscellaneous seafood (see **Appendix K**) for surveyed species within each group. Anadromous, pelagic, freshwater and bottom fish were further combined into the "finfish" category. Finfish, shellfish, and miscellaneous seafood were used to compute the "all fish" category. "All fish" and "seaweed/kelp" were aggregated into "all seafood."

The reported total amount consumed per year was computed for each of the above seafood groups. The daily consumption amount for each person was then calculated by dividing the annual amount by 365 days. The daily average amount was further adjusted for the body weight of the respondent (based upon self-reported body weight), yielding a common daily consumption rate across all respondents (grams/per kilogram body weight/per day, or g/kg/day).

$$\text{Consumption Rate} = (\# \text{ annual servings} \times \text{portion size in grams}) / \\ (365 \text{ days} \times \text{kg body weight})$$

The adjustment was necessary for comparison across different ethnic groups and across other demographic characteristics. All results will be reported using this common unit of g/kg/day, unless otherwise stated. This unit of "g/kg/day" has been used and reported in other fish consumption studies as well (Toy, 1996). Non-consumers of a specific fish species were assigned a consumption rate of zero and were included in the data analysis and reporting.

2) *Treatment of outliers.* A number of respondents reported unusually large consumption rates in this study. For example, the largest consumption rate reported for shellfish was approximately 11.83g/kg/day (see table of Outliers and Substitution in **Appendix L**). Values such as these represent large but uncertain consumption rates. Generally, these unusually large values are referred as "outliers."

Because outliers may have profound influence on the average and potentially other summary statistics, special treatment for them is warranted. In this study, the outliers were identified as those with an observed value greater than 3 standard deviations above the mean for consumers of the specific seafood group of interest. All outliers were identified within each fish category and substituted by a smaller value that equals to the mean plus 3 standard deviations.

The treatment of outliers involved three steps. Firstly, all observed values in individual seafood category (anadromous, pelagic, freshwater, bottom, shellfish, seaweed/kelp, miscellaneous) that were greater than three standard deviations (SD) above the mean of all consumers were identified as outliers, and these outliers were then substituted by mean+3SD (the rule of "mean plus three standard deviations").

Secondly, after the treatment of outliers for each of the individual seafood categories, the "all seafood" consumption rate was computed as the sum of all individual seafood sub-categories. Using the same principle as applied in individual seafood sub-categories, the outliers in the "all seafood" category was also adjusted downward to a value of mean+3SD.

The last step in the treatment process of outliers involved a re-adjustment of consumption rates of sub-categories for these respondents who were outliers in the "all seafood" category. To reflect the fact that the overall "all seafood" rate was the sum of the individual seafood categories, all the individual seafood categories (the components used in the computation of "all seafood") were re-adjusted proportionately using the percentage of each sub-category in the "all seafood" multiplied by the re-adjusted "all seafood" rate.

All results in this report are based on values after the substitution of the outliers. **Appendix L** lists specific values that were recoded based on the rules of treatment of outliers. These values, along with the means and standard errors reported in the tables, are sufficient statistics for recalculation should the reader wish to recalculate means, standard errors, and confidence intervals, with outlier values as originally reported.

3) Hypothesis testing and statistical significance. Analyses of consumption rates (g/kg/day) are presented in terms of mean, standard error, median (the 50th percentile), and percentiles. The 95% confidence interval on the mean is also presented for the consumption rates for each ethnicity group. The statistical significance of difference in consumption rates by ethnicity, gender, age, income level, and fishing activity was also calculated. Due to the occurrence of right skewed distribution (because of a few fairly large values) in the observed consumption rates, nonparametric methods, which are based on the ranked data and are more robust against skewness than parametric tests, were used in the assessment of the statistical significance. When comparing consumption rates between or across groups, either the Wilcoxon-Mann-Whitney test or the Kruskal-Wallis test was used, depending on the number of groups being compared (Fisher and Van Belle 1993). In this report, $p < 0.05$ is considered statistically significant. Since there are many hypothesis tests and associated p-values, some results may be significant by chance alone. Readers are encouraged to note that no formal methods of adjusting this "multiple testing problem" were used in this report. Interpretation of statistical significance should take into account the number of tests (p-values) performed in the area of comparison to the reader.

4) Calculation of means, standard errors, confidence interval, and percentiles of consumption rates. The arithmetic mean (average) consumption rate (g/kg/day) was calculated for each ethnic group. All 202 survey respondents were used in the computation. However, if a respondent did not consume a specific seafood species, the consumption rate of zero was assigned for the seafood species. The observed standard error was also calculated. The 95% confidence interval on the mean for each ethnic group was constructed based on the Student t-distribution. The median (50th percentile) and other

percentile were also presented for the ethnic groups with at least ten respondents.

The arithmetic mean, standard error, median, and other percentiles were also calculated for all 202 respondents by gender, by source of respondents (roster list vs. volunteer), by age group, and by income level.

5) Calculation of means, standard errors, confidence interval and percentiles for API community using weighted methods. Ten ethnicity groups of the Asian and Pacific Islander community were included in this survey. When the survey results were aggregated into the average consumption rate for the whole API community, different weights were applied to the mean for each ethnic group. The weighting was necessary to adjust for the composition (proportion) of the ethnic groups in the API community. When the mean consumption rate was computed for the API community, the proportion (P_i) of each ethnicity of the API community was used as the weight for mean of each ethnicity. This weighting scheme by population percentage took into account the underlying population structure of the API community. Specifically, the average consumption rate for the entire API community was calculated as

$$\bar{x} = \sum_{i=1}^{10} P_i \bar{x}_i.$$

where \bar{x}_i is the average for the i^{th} group, and P_i is the population percentage of that ethnic group in the API community. The standard error of the average consumption rate for API was then computed as

$$SE(\bar{x}) = \sqrt{\sum_{i=1}^{10} P_i^2 \text{var}(\bar{x})}$$

where $\text{var}(\bar{x}_i)$ is the observed variance for the i^{th} group.

A different weighting scheme was used when the median and other percentiles were calculated for the entire API community. All observed consumption rates in a specific ethnic group are applied the same weight -- the ratio of the population proportion (P_i) of the corresponding ethnicity and the number of the surveys (P_i / n_i), with P_i the population percentage of that

ethnic group in the API community and n_i the number of survey respondents for the i^{th} group. This weighting scheme for the percentiles took into account both the population proportion and the number of surveys in the sample. The median was then calculated as the sorted rates (from the lowest to the largest) that corresponded to the 50th percentile on the accumulated weights across all respondents (all weights add up to 1). Other percentiles were also obtained in the same manner as the median, using the combination of the sorted consumption rates and the accumulated weights.

The weighting was only applied in the calculation in the consumption rates for all 202 respondents combined. No weighting was used for the computation of rates by ethnicity, gender, age, income, education, participant category (roster versus volunteer), fishing status, generational status or consumption category (high versus low).

IV Survey Results (Phase II)

A. PARTICIPATION RATE

Survey participation rates differed between the volunteer and roster categories. Those in the volunteer category had already indicated their willingness to participate by sending in a postcard. Within this group ($n=462$), interviewers attempted to contact 150 individuals. Of these, 16% could not be contacted. Of those contacted, 13% were disqualified because they did not meet all of the selection criteria outlined in Section III.C.3.a. or did not fit into needed age and gender categories. Excluding the disqualified, the participation rate within the volunteer group was 96%. Within the roster category 365 contacts were attempted. Of these, 54% could not be contacted, and 14% did not meet selection criteria. Excluding the disqualified, the participation rate in the roster group was 67% with 33% refusing participation. See table in **Appendix M-1-a**. Non-consumption of fish was considered a disqualifier for 0% of the volunteer category and 2% of the roster category.

B. DESCRIPTIVE STATISTICS

The majority of the 202 respondents (89%) were first generation who were born outside the United States. The remaining 11% of the respondents were born in the United States, but at least one of their parents was born outside the United States. Forty percent (40%) of the respondents had completed college, and 13% had an education level less than high school.

As described in Table M-1, the 202 respondents in this study came from ten ethnic groups. Of these 202 respondents, there were slightly more women (n=107, or 53%) than men (n=95, or 47%). The average body weight for men and women in the sample was 70kg (SD=12kg) and 57kg (SD=13kg), respectively. However, the sampled Samoans weighed more than other API groups. The average weight was 99kg for Samoan men (n=5, SD=19kg) and 95 kg for Samoan women (n=5, SD=16kg). The body weight for other ethnic groups was more homogeneous. The average body weight ranged from 52kg to 63 kg for women in the other 9 ethnic groups, and from 60kg to 73kg for men in the other ethnic groups. Ninety-six (or 48%) of the respondents were recruited from the community roster lists, and the remaining 106 respondents (or 52%) were from the volunteer category. The majority of the respondents were under age 55 (n=163, or 81%), and people 55 years or over accounted for 19%.

Household income, reported as income intervals, was provided by 187 respondents. The mid-point of the household income intervals was adjusted for the number of people in the household and compared with 1997 Federal Poverty Level (FPL). Overall, 35% of the 202 respondents in the sample lived under the 1997 poverty line. However, the percent of respondents living under the FPL was not uniform among the ethnic groups. A greater percentage of people living under FPL was observed for the Samoan community and those ethnic groups with the majority members being refugees: Mien, Laotian, Cambodian, and Vietnamese. Samoan (90%) had the highest percentage of respondents under FPL, followed by Vietnamese (62%), Mien (60%), Cambodian (50%), Laotian (45%), Korean (32%), Chinese (26%), Filipino (21%), Japanese (6%) and Hmong (0%). In 1990, the percentage of all API in King County living under the FPL was 14.8%. Respondents recruited

from community rosters had a slightly higher percentage of people living under FPL than the volunteer category respondents (39% versus 32%) did.

C. SEAFOOD CONSUMPTION RATES

1. Consumption rate for the API community

The main object of this study was to estimate the seafood consumption for the entire Asian Pacific Islander community in King County, Washington. The consumption rates for API were aggregated for the ten ethnic groups included in this study using the weighting methodology as described in the methods section.

All 202 respondents were fish consumers. Only one person (0.5%) did not eat shellfish. The percentages of consumers of anadromous, pelagic, freshwater, bottom fish, and seaweed/kelp were 96%, 97%, 86%, 81%, and 57%, respectively. The relatively low percentage of the respondents eating seaweed/kelp was due to the fact that seaweed and kelp were primarily consumed by the Chinese, Japanese, and Korean communities. Only a few members of other API ethnic groups ate seaweed and kelp.

In general, the API members consumed seafood at a very high rate (see Table R-1). The average overall consumption rate for all seafood combined was 1.891 g/kg/day (median 1.439 g/kg/day). The predominant seafood consumed by API was shellfish (45.9% of all seafood consumed by APIs). The API community consumed more shellfish (average consumption rate of 0.867 g/kg/day) than all finfish combined (an average rate of 0.819g/kg/day).

Within the category of finfish, pelagic fish were most consumed by the API members, averaging 0.382 g/kg/day (median 0.215 g/kg/day), followed by anadromous fish with an average consumption rate of 0.201 g/kg/day (median 0.093 g/kg/day). The average consumption for freshwater fish was 0.110 g/kg/day (median 0.043 g/kg/day), and bottom fish was 0.125 g/kg/day (median 0.047 g/kg/day).

In addition, to the seafood specifically listed in the questionnaire, survey respondents were asked if they consumed other types of seafood. For this

report, these seafood were classified as “miscellaneous seafood”. A substantial quantity of “miscellaneous seafood” was consumed by the API members, much of which was canned or preserved fish. On the average, respondents reported a consumption rate of 0.121 g/kg/day of miscellaneous seafood (median 0.056 g/kg/day). See **Appendix M-1-b** for the listing of miscellaneous seafood by percentage of study participants who consume them. Fish consumption rates were skewed considerably for all fish groups. The skewed distribution indicates that a few respondents had a larger consumption rate than other respondents. Because outliers had already been adjusted within each fish group (see Methodology section), these large consumption rates reflected the fact that some API members were, indeed, “higher” consumers of seafood.

TABLE R-1. CONSUMPTION RATES OF API COMMUNITY MEMBERS

Category	N	Median g/kg/d	Mean g/kg/d	Percentage of consumption	S.E.	95% LCI g/kg/d	95%UCI g/kg/d	90%tile g/kg/d
Anadromous Fish	202	0.093	0.201	10.6%	0.008	0.187	0.216	0.509
Pelagic Fish	202	0.215	0.382	20.2%	0.013	0.357	0.407	0.829
Freshwater Fish	202	0.043	0.110	5.8%	0.005	0.101	0.119	0.271
Bottom Fish	202	0.047	0.125	6.6%	0.006	0.113	0.137	0.272
Shellfish	202	0.498	0.867	45.9%	0.023	0.821	0.913	1.727
Seaweed/Kelp	202	0.014	0.084	4.4%	0.005	0.075	0.093	0.294
Miscellaneous Seafood	202	0.056	0.121	6.4%	0.004	0.112	0.130	0.296
All Finfish	202	0.515	0.818	43.3%	0.023	0.774	0.863	1.638
All Fish	202	1.363	1.807	95.6%	0.042	1.724	1.889	3.909
All Seafood	202	1.439	1.891	100.0%	0.043	1.805	1.976	3.928

95%LCI = 95% lower confidence interval bound; 95%UCI=95% upper confidence interval. The confidence interval was computed based on the Student's t-distribution. Rates were weighted across ethnic groups.

To better characterize individuals consuming large quantities of seafood, survey participants were classified as “higher” (n=44) or “lower” (n=158) consumers of shellfish or finfish if their consumption rates were $\geq 75^{\text{th}}$ or \leq

75th percentile, respectively. **Appendix M-2** shows demographic and seafood preparation characteristics of each group. For finfish, a greater percentage of women fell into the “higher” finfish consumers (24%) than men (19%). Japanese had a greater percentage of “higher” finfish consumers. More individuals >55 years (36%) were in the “higher” consumer category for all finfish. Cambodian (10%), Mien (10%), Korean (9%), Hmong (0%) and Samoan (0%) participants tended to be “lower” consumers of finfish. Each consumption group had similar preparation and procurement practices for finfish. Frequency of finfish skin or heads/bones/organs consumption did not differ between groups. For shellfish, more women were “higher” shellfish consumers (29%) than men (21%) were. A greater percentage of Vietnamese (50%) were in the “higher” consumer category for shellfish. Mien (10%), Hmong (0%) and Samoan (0%) participants tended to be “lower” consumers of shellfish. Only 7% of “higher” consumers harvested (by self, family members or friends) shellfish.

2. Consumption rate by ethnicity

The study was designed to include the participation of members of ten API ethnic groups. Because of the small number of respondents for some ethnic groups in the study, it is not feasible to estimate the consumption rates for each ethnic group accurately. Nevertheless, differences in the pattern of seafood consumption can be observed from the data.

The detailed Seafood Consumption Rates by Ethnicity Table in **Appendix M-3** suggests that the ten ethnic groups did not consume seafood uniformly. There was a statistically significant difference (Kruskal-Wallis test) in all consumption rates (anadromous, pelagic, freshwater, bottom fish, seaweed/kelp, miscellaneous seafood, shellfish, and the aggregated categories of finfish, all fish, and all seafood) among the ten API ethnic groups.

In general, members of the Vietnamese and Japanese communities had the highest overall consumption rate of all seafood, averaging 2.627 g/kg/day (median 2.384 g/kg/day) and 2.182 g/kg/day (median 1.830 g/kg/day), respectively. On the other end of the spectrum, the Mien, Hmong, and Samoan communities consumed the least amount of seafood. The overall

consumption rate of all seafood for Miens was 0.580 g/kg/day (median 0.288 g/kg/day), less than one-third of that of Vietnamese community. Hmong people consumed 0.587 g/kg/day on the average (median 0.521g/kg/day). The Samoan community ate about 0.850 g/kg/day of all seafood on the average (median 0.879g/kg/day).

For specific seafood categories, the amount consumed differed among the communities. The Japanese community reported the largest consumption of anadromous fish, pelagic fish, and miscellaneous seafood. Members of Vietnamese community had the largest consumption of shellfish and freshwater fish of the ten ethnic groups. The Korean community consumed the most seaweed and kelp, followed by the Japanese and the Chinese groups.

3. Consumption rate by gender

Of the 202 respondents, 107 were women and 95 were men. The survey data showed that in general women ate slightly more seafood after adjusting for body weight. However, there was no statistically significant difference in the consumption rates between men and women for all the fish groups and the combined categories, after adjusting for body weight. The average consumption rate for all seafood for women was 1.807 g/kg/day (median 1.417g/kg/day), and 1.710g/kg/day (median 1.257g/kg/day) for men. Results in Table R-2 indicate that women had a slightly greater average consumption rate for all fish groups, except for anadromous and freshwater fish. **Appendix M-4** shows seafood consumption rates by ethnicity and gender.

TABLE R-2 CONSUMPTION RATES BY GENDER FOR ALL ASIAN AND PACIFIC ISLANDER COMMUNITY

Category	Female				Male			
	n	Mean g/kg/d	SE	Median g/kg/d	n	Mean g/kg/d	SE	Median g/kg/d
Anadromous Fish (p=0.8)	107	0.165	0.022	0.076	95	0.169	0.024	0.080
Pelagic Fish (p=0.4)	107	0.349	0.037	0.215	95	0.334	0.045	0.148
Freshwater (p=1.0)	107	0.131	0.021	0.054	95	0.137	0.023	0.054
Bottom Fish (p=0.6)	107	0.115	0.019	0.040	95	0.087	0.017	0.034
Shellfish (p=0.8)	107	0.864	0.086	0.432	95	0.836	0.104	0.490
Seaweed/Kelp (p=0.5)	107	0.079	0.018	0.005	95	0.044	0.010	0.002
Miscellaneous Seafood (p=0.5)	107	0.105	0.013	0.061	95	0.104	0.015	0.055
All Finfish (p=0.8)	107	0.759	0.071	0.512	95	0.726	0.072	0.458
All Fish (p=0.5)	107	1.728	0.135	1.328	95	1.666	0.149	1.202
All Seafood (p=0.4)	107	1.807	0.139	1.417	95	1.710	0.152	1.257

P-values are based on Mann-Whitney test.

4. Consumption rate by age

Respondents were classified into three age groups: 18-29, 30-54, and 55 and over. Overall, people in the 55 and over age group ate more seafood than people did in the other two age categories. The average consumption rate for the 55 and over age group was 2.065g/kg/day, compared with 1.752 and 1.631 g/kg/day for the age groups of 18-29 and 30-54 age groups, respectively. The same pattern was observed for all other fish groups, except for pelagic and miscellaneous seafood. However, the differences in the consumption rates of fish by age were not statistically significant except for anadromous fish. (See Appendix M-5).

5. Consumption rate by income

Household income along with the number of people depending on the reported income was used to compare with the 1997 Federal Poverty Level (FPL). One hundred eighty-seven (93%) of the 202 respondents provided the income information in the survey. These respondents with known household income and number of people in the household were grouped

into four income levels: under the FPL, 1-2 times FPL, 2-3 times FPL, and more than 3 times FPL.

There was no clear pattern of consumption rates across income levels for the API community. (See **Appendix M-6**). The difference in the average consumption rate of all seafood was about 20% across the 4 income levels, indicating people in all the income levels consumed approximately same amount of seafood. People in the lowest income level (under FPL) ate more in the categories of all seafood, all fish, and shellfish, but none of the difference was statistically significant.

6. Consumption rate by educational level

Seafood consumption was compared by educational level achieved (high school or less versus more than high school). (See **Appendix M-7**). No clear pattern was observed except seaweed/kelp, and miscellaneous seafood consumption were significantly higher in those with greater than a high school education, and more freshwater fish was consumed by those with less than a high school education. The higher consumption of seaweed/kelp among those with more education probably reflects its consumption preference among the "more established" API groups (e.g., Japanese, Chinese and Korean).

7. Consumption rate by roster category and volunteer category

Respondents in this study were recruited from volunteers and community roster lists. Ninety-six of the interviews were from roster lists, and the remaining 106 participants were volunteers from the ten different participating communities. Eighty-eight percent of volunteer participants and 90% of roster participants were first generation.

The consumption rates from the volunteer category were similar to those of the roster list participants (Table R-3). The overall consumption rate of all seafood for volunteer category was slightly higher than that for people from roster lists (average 1.811 vs. 1.707 g/kg/day). Participants from the volunteer category ate more fish than the respondents recruited from roster category in all finfish, all fish, and all seafood. Nevertheless, none of the differences was statistically significant. **Appendix M-8** shows roster and volunteer

consumption rates for all seafood categories, e.g. andromous fish, pelagic fish, etc.

TABLE R-3. CONSUMPTION RATES BY ROSTER AND VOLUNTEER

Category	Resource	n	Mean g/kg/d	SE	Median g/kg/d
Shellfish Fish (p=0.4)	Roster	96	0.873	0.109	0.422
	Volunteer	106	0.831	0.081	0.494
All Finfish (p=0.4)	Roster	96	0.698	0.070	0.452
	Volunteer	106	0.785	0.072	0.494
All Fish (p=0.5)	Roster	96	1.662	0.149	1.129
	Volunteer	106	1.733	0.135	1.409
All Seafood (p=0.5)	Roster	96	1.707	0.152	1.206
	Volunteer	106	1.811	0.139	1.477

P-values are based on Mann-Whitney test

8. Consumption rate by fishermen and non-fishermen

Respondents in this study were also asked if they fish. Overall, 66 (33%) of the 202 respondents indicated that they "fish". For simplicity, we will refer these 66 people as "fishermen" and the remaining 136 respondents as "non-fishermen." The income level (as measured by 1997 FPL) did not show significant difference between the "fishermen" and "non-fishermen" groups. Twenty-four percent of female and 42% of male participants were fishermen.

The overall consumption rate (Table R-4) of all seafood for "fishermen" was slightly greater than that for "non-fishermen" (average 1.971 vs. 1.660 g/kg/day). "Fishermen" consumed more fish than "non-fishermen" in all finfish, all fish, all seafood, and all sub-fish categories, except freshwater fish and seaweed/kelp. However, the difference in the consumption rate between "fishermen" and "non-fishermen" was not statistically significant in the three aggregated fish categories: "all finfish," "all fish," and "all seafood."

TABLE R-4. CONSUMPTION RATES BY "FISHERMEN" AND "NON-FISHERMEN"

Category	Resource	n	Mean g/kg/d	SE	Median g/kg/d
Shellfish Fish (p=0.4)	Fishermen	66	0.889	0.116	0.498
	Non-fishermen	136	0.833	0.082	0.428
All Finfish (p=0.2)	Fishermen	66	0.879	0.101	0.616
	Non-fishermen	136	0.678	0.056	0.437
All Fish (p=0.3)	Fishermen	66	1.879	0.188	1.357
	Non-fishermen	136	1.612	0.117	1.254
All Seafood (p=0.2)	Fishermen	66	1.971	0.192	1.531
	Non-fishermen	136	1.660	0.120	1.254

P-values are based on Kruskal-Wallis test.

9. Consumption rate by generation

First (people born outside U.S.) or second (people born inside U.S. but who have at least one parent born outside U.S.) generation APIs were eligible for this study but only 11% of participants were second generation. Participants from South East Asian countries (Cambodian, Laotian, Mien, Hmong and Vietnamese) were all first generation. Among the remaining ethnic groups 60% of Samoan, 69% of Japanese, 83% of Chinese, 87% of Filipino, and 95% of Korean were first generation. Table R-5 shows a trend toward higher incomes among second generation participants.

TABLE R-5 GENERATION BY INCOME

Income Level	n	Second Generation (born in US)	First Generation (born outside US)
Under FPL	71	9%	91%
1-2 FPL	39	8%	92%
2-3 FPL	38	13%	87%
>3 FPL	39	18%	82%
Total	187	11%	89%

In general, first generation APIs consumed more fish than the second generation API in all the fish categories, except pelagic fish. The consumption rates are statistically different between the first and second generation for the following seafood categories: freshwater fish and shellfish (Table R-6).

TABLE R-6 SEAFOOD CONSUMPTION BY GENERATION

	Second Generation (n=23)		First Generation (n=179)	
	Mean g/kg/d	SE	Mean g/kg/d	SE
Anadromous Fish (p=0.1)	0.132	0.018	0.171	0.018
Pelagic Fish (p=0.08)	0.377	0.058	0.338	0.032
Freshwater Fish (p<0.001)	0.020	0.005	0.148	0.017
Bottom Fish(p=0.1)	0.088	0.018	0.103	0.014
Shellfish (p=0.043)	0.445	0.070	0.903	0.074
Seaweed/kelp (p=0.055)	0.068	0.025	0.062	0.012
Miscellaneous Fish(p=0.9)	0.097	0.025	0.106	0.010
All Finfish (p=0.8)	0.616	0.074	0.760	0.056
All Fish (p=0.2)	1.158	0.126	1.769	0.111
All Seafood (p=0.3)	1.226	0.135	1.830	0.114

P-value is based on Mann-Whitney test.

D. FISH SOURCES

Respondents were asked to report the sources [grocery stores/street vendors; restaurants; harvested (by self, family member or friend) in King County, Washington; harvested outside King County] where they acquired the seafood they consumed. The main source of all forms of fish consumed by API community was purchased from grocery stores, street vendors, or restaurants, ranging from a low of 79% to a high of 97% across types of seafood (see Table R-7). Eighty-five percent of anadromous fish consumed were purchased from grocery/street vendors or restaurants. Ninety-three percent pelagic fish, 79% freshwater fish, 83% bottom fish, 88% shellfish, and 97% seaweed/kelp were purchased as well.

The harvested portion of the consumed seafood by API community members varied from a low 3% to a high of 21%, depending on the seafood type. The main harvest sites tended to be in King County. Questioning about other harvest sites was not pursued because the Community Steering Committee felt that more explicit questioning about harvest sites was culturally intrusive.

Overall, the harvested portion of the fish consumed by the API community was less than a quarter of the total consumption; nevertheless, differences can

be observed among the ethnic groups. Respondents in the Japanese, Chinese, Filipino and Korean groups tended to consume purchased seafood. Members of the Mien, Hmong and Laotian communities seemed to harvest seafood more often than other ethnic groups (See **Appendix M-9**). Laotians, for example, harvested 43% of bottom fish. Miens harvested more than half of anadromous fish, 100% of bottom fish, and 34% of shellfish. However, only ten Mien respondents were selected for this survey, and their overall seafood consumption rate was the lowest among all ethnic groups.

TABLE R-7 FISH SOURCES

Category	n	Purchased			Harvested		
		Total Purchased	Groceries /Street Vendors	Restaurants	Total Harvested	Caught in King County, Washington	Caught outside King County, WA
Anadromous Fish	194	85%	69%	16%	16%	7%	9%
Pelagic Fish	196	93%	77%	16%	7%	4%	3%
Freshwater Fish	173	79%	62%	17%	21%	15%	6%
Bottom Fish	163	83%	61%	22%	17%	8%	9%
Shellfish	201	88%	67%	21%	11%	9%	2%
Seaweed/Kelp	116	97%	81%	16%	3%	3%	0%

E. SEAFOOD SPECIES AND PARTS CONSUMED

1. Seafood species consumed

The percentage of survey participants who consumed each finfish species, shellfish species, and seaweed/kelp are listed in Appendix K. Salmon and tuna were the most frequently consumed finfish. Of the shellfish species, more than 75% of respondents consumed shrimp, crab, and squid. Appendix M-1 lists the percentage of survey participants consuming "miscellaneous seafood." These seafood were identified when participants were asked if there were "other seafoods which you eat that were not mentioned earlier" (in the questionnaire). The most frequently consumed miscellaneous seafood was the octopus (11%). This low percentage suggests that information provided by the Community Steering Committee provided accurate guidance for reducing the number of species questions on the questionnaire.

2. Seafood parts consumed

For all survey participants, when finfish were eaten, the head, bones, eggs, and other organs were consumed twenty percent (20%) of the time.

(Table R-8). Fillet with skin was eaten 55% of the time. Forty-two percent of the respondents reported they eat fillet with skin "sometimes" (more than 0% but less than 100% of the time) and 30% "always" (i.e. 100%) eat fillet with skin. Thirty-six percent reported they "sometimes" eat head, bone, eggs, and/or organs, and 8% said they "always" eat head, bones, eggs, and organs. However, the consumption pattern of fish parts was not uniform among the ten ethnic groups. Vietnamese, Hmong, and Mien reported eating the fillet with skin a greater percentage of the time than other API ethnic groups.

Caution should be exercised when using these data to describe habits by ethnic group because of the small numbers surveyed.

TABLE R-8. PARTS OF FINFISH CONSUMED BY ETHNICITY

	n	Fillet with skin	Fillet without skin	Head, bones, eggs, organs
Cambodian	20	64%	36%	34%
Chinese	30	55%	45%	27%
Filipino	29	59%	41%	26%
Japanese	29	30%	70%	10%
Korean	15	50%	50%	1%
Laotian	18	42%	58%	4%
Mien	9	67%	33%	23%
Hmong	5	100%	0%	90%
Samoan	10	45%	55%	11%
Vietnamese	25	78%	22%	18%
All Ethnicity	190	55%	45%	20%

The consumption pattern of shellfish parts varied depending on the specific shellfish (Tables R-9 and R-10). Most of the time, clams were eaten without removing the stomach. For example, manila/littleneck clams were eaten only 10% of the time with the stomach removed. Sixty-three percent of the time macoma clams were eaten whole. This clam ingests sediment and does not filter feed like littleneck clams. Crabs were eaten whole (includes the meat and hepatopancreas) 43% of the time.

TABLE R-9. SHELLFISH CONSUMPTION (BIVALVES)

Shellfish	Average percentage of eating specific part of shellfish				
	% Consumers (n)	Whole	Whole w/stomach removed	Whole with Siphon removed	Whole with stomach and siphon removed
Manila/littleneck clams	72% (145)	77%	10%	4%	9%
Oysters	71% (142)	88%	5%	4%	3%
Mussels	62% (125)	89%	6%	4%	1%
Scallops	57% (115)	71%	4%	1%	24%
Butter clams	39% (78)	76%	14%	3%	6%
Geoduck clams	34% (68)	24%	40%	2%	35%
Cockles	21% (42)	64%	12%	9%	14%
Razor clams	16% (33)	58%	21%	0%	21%
Abalones	15% (30)	53%	23%	2%	22%
Horse clams	13% (27)	48%	22%	0%	30%
Macoma clams	9% (19)	63%	26%	0%	11%

TABLE R-10 NON-BIVALVE SHELLFISH CONSUMPTION

Species	% Consumers (n)	Whole	Body/meat/ eggs/ muscles only	Tissue parts consumed
Shrimps	98% (196)	21%	78%	body and head versus meat only
Crabs	96% (192)	43%	57%	crab meat and butter* versus meat only
Squids	82% (165)	22%	78%	whole squid versus body and tentacles only
Lobsters	65% (131)	16%	84%	whole body and head versus body only
Sea Cucumbers	15% (31)	26%	74%	whole body versus muscle only
Sea Urchins	14% (29)	24%	76%	whole body versus eggs only
Moon snails	4% (8)	38%	62%	whole body versus muscle only

*The "butter" a crab is defined as yellowish liquid and soft tissue compromised of the cooked gastrointestinal tract which includes the hepatopancreas and stomach.

F. PREPARATION METHODS

The survey covered two categories of preparation methods (Table R-11): "baked, boiled, broiled, roasted, or poached," and "canned, fried, raw, smoked, or dried." The respondents reported that they prepared both finfish and shellfish more often using the method of "baked, boiled, broiled, roasted, or poached," averaging 65% and 78% of the time, respectively. The second method of "canned, fried, raw, smoked, or dried," was also used substantially in the API community, ranging from 35% for finfish and 22% for shellfish.

TABLE R-11 FISH PREPARATION METHODS

	Finfish			Shellfish		
	n	Baked, boiled, broiled, roasted, or poached	Canned, fried, raw, smoked, or dried	n	Baked, boiled, broiled, roasted, or poached	Canned, fried, raw, smoked, or dried
Cambodian	20	54%	46%	20	65%	35%
Chinese	30	79%	21%	30	82%	18%
Filipino	30	58%	42%	30	77%	23%
Japanese	29	78%	22%	29	68%	32%
Korean	15	57%	42%	15	89%	11%
Laotian	19	59%	41%	19	79%	16%
Mien	8	74%	26%	8	88%	13%
Hmong	5	50%	50%	5	60%	40%
Samoa	10	52%	48%	10	50%	50%
Vietnamese	25	67%	33%	25	92%	8%
All Ethnicity	191	65%	35%	200	78%	22%

When finfish were prepared (Table R-12) with boiling, 33% of the time the boiled water was thrown out, and 54% of the time the boiled water was re-used either in cooking (36%) or simply in drinking (18%). Boiled water in preparing shellfish was thrown out at a rate of 57% of the time. The re-use of the boiled water in preparing shellfish was evenly distributed between "drinking" and "cooking," at a rate of 21% of the time. Mien and Hmong survey participants drank the cooking water from both finfish and shellfish a survey higher percentage of the time.

TABLE R-12. SEAFOOD COOKING WATER USAGE (PERCENTAGE OF TIME USED)

	n	Finfish: Water Usage*			Shellfish: Water Usage*		
		Throw Out	Use in Cooking	Drink It	Throw Out	Use in Cooking	Drink It
Cambodian	20	18%	67%	0%	88%	13%	0%
Chinese	30	58%	15%	42%	68%	15%	39%
Filipino	30	47%	20%	34%	46%	24%	30%
Japanese	29	41%	38%	0%	52%	11%	32%
Korean	22	19%	45%	0%	31%	51%	5%
Laotian	20	14%	31%	3%	74%	10%	3%
Mien	10	28%	0%	62%	38%	0%	53%
Hmong	5	0%	0%	100%	0%	0%	80%
Samoa	10	60%	23%	27%	73%	16%	14%
Vietnamese	26	12%	80%	0%	60%	36%	0%
All Ethnicity	202	33%	36%	18%	57%	21%	21%

*Mean percentage.

G. Re-interviews

Since the study is a recall survey of the fish consumption, the reliability and consistency of the answers provided by the respondents was tested by re-interviewing. To assess the reliability of the responses, 20 respondents were selected for a follow-up re-interview via telephone after the completion of their survey interviews. A subset of the questions in the survey questionnaire were selected and used in the re-interview. These questions were: the frequency of consuming salmon, halibut, shrimps, the sources of anadromous fish and shellfish, and the parts of finfish consumed. Since the re-interview was conducted by telephone and no model display was available, no questions regarding portion sizes were asked. Re-interviews occurred within one to four months after the initial interview. The interval variation was due to participant recruitment delays encountered because of specific ethnic group, gender, and age requirements.

The table in **Appendix M-10** indicates that substantial difference exists between the answers provided by the 20 respondents who participated in the re-interview process. This difference in inter-individual paired results suggests that consumption rate for each individual can not be consistently estimated. In this study, our focus is to provide an assessment of the seafood consumption rate for API community. Table R-13 shows the group results of the original survey and the re-interview on the same questions. The Wilcoxon ranked test indicates that the answers provided in the original survey and the re-interview were not significantly different for most of the re-interview questions, except for the percentage of anadromous fish caught outside King County, Washington ($p=0.043$), shellfish caught in King County ($p=0.027$), shellfish consumed at restaurants ($p=0.023$), and consumption of head, bone, eggs, and organs of finfish ($p=0.036$). This result suggests that the difference in the means between the original and re-interview for all 20 respondents as a group indicates that the estimated consumption rates for the whole API community in this study can be viewed as generally reliable.

TABLE R-13 COMPARISON OF ANSWERS BETWEEN ORIGINAL SURVEY AND THE RE-INTERVIEW

	Original mean (SE)	Re-interview mean (SE)	Two-sided p-value (Wilcoxon)
Salmon: # of servings per year	17 (4)	14 (4)	0.3
Halibut: # of servings per year	6 (2)	7 (2)	0.9
Shrimp: # of servings per year	24 (4)	41 (16)	0.7
Anadromous fish: purchased from groceries	80% (6%)	76% (7%)	0.5
Anadromous fish: caught in King County	7% (4%)	6% (2%)	0.7
Anadromous fish: caught outside King County	4% (3%)	9% (4%)	0.043
Anadromous fish: eat at restaurants	8% (3%)	10% (4%)	0.7
Shellfish: purchased from groceries	82% (5%)	77% (6%)	0.4
Shellfish: caught in King County	6% (3%)	0% (0%)	0.027
Shellfish: caught outside King County	1% (1%)	3% (3%)	0.3
Shellfish: eat at restaurants	11% (3%)	21% (5%)	0.023
Finfish: fillet with skin	53% (9%)	44% (8%)	0.4
Finfish: fillet without skin	42% (9%)	56% (8%)	0.2
Finfish: head, bone, eggs, organs	24% (8%)	9% (4%)	0.036

H. Educational Outreach Information

The educational outreach information was evaluated in two ways. First, by educational status (high school or less, $n=69$; and greater than high school, $n=98$); then by fishing status (fishermen, $n=66$; and non-fishermen, $n=136$). Preferred sources of reliable information about the API community, preferred learning methods, and types of information desired about seafood were compared for these groups. The fishermen ($n=66$) were also queried about fishing safety information sources.

Table R-14 shows the most reliable sources of information used by the API community by fishing and educational status. There were no appreciable differences based upon fishing or educational status. Radio in native language appealed to relatively few, though radio broadcasts at the time of the study were available only in the following languages: Cantonese, Vietnamese, Tagalong, Laotian/Mien, Korean, and Samoan and may not have used the preferred dialect of the survey participants. For example, radio in native language was deemed reliable by 40% of Mien and 0% of Laotian respondents. Radio broadcast in native language was deemed a reliable source of news by 17% of Chinese, 13% of Filipino, 36% of Korean, 0% of Samoans and 39% of Vietnamese.

TABLE R-14. BEST/MOST RELIABLE SOURCES OF INFORMATION USED BY THE API COMMUNITY.

Source of Best/Most Reliable Information	Fisherman (n=66)	Non-fisherman (n=136)	All Survey Respondents (n=202)	HS or Less (n=69)	More than HS (n=98)
Community Newspapers/Newsletters	85%	70%	75%	70%	82%
Television	64%	66%	65%	64%	64%
Word of mouth	65%	60%	62%	54%	68%
Temple/mosque/church	36%	37%	37%	39%	36%
Community Center	30%	28%	29%	38%	26%
Radio in English	29%	28%	28%	25%	32%
Radio in own language	24%	13%	16%	28%	11%
Bulletin Boards	11%	19%	16%	22%	15%

Survey participants were asked to indicate which two of the learning methods listed in Table R-15 they preferred. Sixty-one percent of the fishermen and 74% of non-fishermen preferred learning with the use of books/pamphlets, and 55% of all survey respondents preferred listening to someone. Less than 10% preferred to learn through the use of tape recordings, slide shows, and comic book presentations. Findings were similar using the educational status categories.

TABLE R-15. PREFERRED LEARNING METHODS

Preferred Learning Methods	Fisherman (n=66)	Non-fisherman (n=136)	All Survey Respondents (n=202)	HS or Less (n=69)	More than HS (n=98)
Book/pamphlets	61%	74%	69%	58%	74%
Listen to someone	55%	55%	55%	51%	55%
See video	41%	32%	35%	44%	32%
Learn on Computer	18%	15%	16%	13%	15%
Tape recording	9%	7%	8%	16%	2%
See slide show	6%	3%	4%	6%	4%
Read comic book	3%	5%	5%	9%	3%

Survey participants were asked to indicate what information about seafood would be of interest to them (Table R-16). Most participants wanted health information about eating fish (82%) as well as the safety of Puget Sound seafood (69%). Somewhat fewer fishermen wanted information about safe

preparation methods compared to non-fishermen (58% versus 72%, respectively), and more fishermen than non-fishermen wanted information about safety of specific fishing location in Puget Sound.

TABLE R-16. PREFERRED SEAFOOD INFORMATION

Information Desired About Seafood	Fishermen (n=66)	Non- fishermen (n=136)	All Survey Respondents (n=202)	HS or Less (n=69)	More than HS (n=98)
Health info about eating fish	83%	81%	82%	78%	86%
Safety of Puget Sound Seafood	73%	67%	69%	71%	69%
Safe preparation information	58%	72%	67%	64%	69%
Safety of specific fishing locations in PS	53%	29%	37%	33%	38%
Type/amounts of Seafood eaten by API's	33%	27%	29%	29%	32%

Fishermen were asked to cite useful information sources to find out about the safety of fishing in a particular site (Table R-17). Word of mouth (65%) was the most frequently cited useful information source followed by posted warning signs (59%). Less than one-half found State and County sources useful. More fishermen with >HS education indicated that posted warning signs, Washington State Shellfish Information, and the red tide hotline are useful information sources than those with \leq high school.

TABLE R-17. FISHING SAFETY INFORMATION SOURCES FOR ALL FISHERMEN BY EDUCATION

Fishing Safety Information Sources	All Fishermen (n=66)	HS or Less (n=23)	More than HS (n=36)
Word of mouth	65%	65%	61%
Posted warning signs	59%	48%	67%
WA state shellfish information	41%	26%	47%
County health dept	39%	39%	36%
Pamphlets	30%	35%	31%
Red tide hotline	29%	22%	33%
Not concerned about the safety of fish	6%	4%	8%
Never try to find out	3%	9%	0%

Educational status was not indicated for seven fishermen.

V. EDUCATION AND COMMUNICATION OF STUDY FINDINGS (PHASE III)

A. METHODS

1. Introduction

Phase III of the Seafood Consumption Study was intended to serve as a vehicle to develop and field test culturally appropriate educational materials to convey information about seafood. While Phase II described and quantitated seafood acquisition, consumption, and preparation habits, such technical information obtained in Phase II is more useful to the regulatory agencies and risk assessors than the API community. Community leaders indicated that the quantitative information was of little interest to them, and among survey respondents, only 29% of indicated that they would like to know the amount of the fish that was consumed by API community. However, 82% of survey respondents desired health information about eating fish, 68% information about safety of Puget Sound seafood, and 67% information about safe seafood preparation methods. Therefore, a strategy was developed to link the technical expertise of the Advisory and Technical Committees with the cultural perspectives of the Community Steering Committee to develop health messages for the API community about seafood related health issues, safe acquisition information, and safe preparation methods.

These efforts resulted in a draft brochure that was translated into ten languages and focus group tested. Based upon comments from community focus group reviewers, and the Advisory and Technical Committee members, modification of the English version of the educational materials was accomplished. Funding for the pilot translation was available, but not to finalize the translation or distribute the brochure.

2. Selection of an Education/Communication Tool

The original study design called for the development of a slide show; however, this idea, with concurrence from the U.S. EPA grant manager, was

discarded for several reasons. First, data collected from the Phase II study survey (see table R-12) showed that only 4% of survey participants considered slide shows a preferred learning method while 69% preferred books or pamphlets. Secondly, members of the Community Steering Committee indicated to the RFSC Study Coordinator that they preferred brochures because they are easier to distribute than slide shows and can be referred to as reference material over a longer period of time. They also felt that translators are more willing to translate a pamphlet than a slide show and that slide shows are considered "old technology" with videos being preferred, however the cost of video production was not covered by the grant funding.

3. Development of Education/Communication Tool

The UW asked members of the Technical and Advisory Committees to brainstorm and name five most important public health risks associated with seafood consumption and acquisition. Eight of the fourteen committee members (both committees combined) responded by identifying fifteen general concerns. These were ranked by citation frequency. From this list, CSC members (n=16) were then asked to select five concerns they felt to be most important for the API community (**Appendix N-1**). The goal was to incorporate the top five health messages into the brochure; however, seven were ultimately included because three health messages received the same rating from the CSC for the fifth position. The CSC was concerned about the issue of "seafood from foreign markets and restaurants", but this was not included because of the topic's complexity and scope.

Using these topics, the UW developed the text (health and preventive behavior messages) of the brochure, which then was edited by the RFSC Study Coordinator. The CSC reviewed these messages to ensure cultural appropriateness and understandability. The UW and the RFSC also developed a list of resources for obtaining further information (e.g., Red Tide Hotline, etc.) to include in the brochure. The resources included were based in part on recommendations made by members of the Technical and Advisory committees, and the SC.

Other sources of community input included discussion with the director of the Seafood Consumption Information Project with Save San Francisco Bay Association, to advise in the planning and development of the educational brochure. The San Francisco project had also developed an educational brochure to raise awareness of safe cooking preparations, sensitive populations, etc. The SC also met with the director of the Wilderness-Inner City Leadership Development Youth Programs of the International District Housing Alliance in Seattle, Washington, to exchange strategy and development ideas since that organization was also in the midst of developing an educational brochure on seafood consumption.

From the acquired information, the RFSC Study Coordinator developed a basic layout for the brochure that was transformed into a brochure format by a graphic artist with the U.S. EPA Region X (**Appendix N-2**).

4. Translation and Focus Group Testing

RFSC Study Coordinator recruited ten translators from the community to translate the brochure. Translators were required to be bilingual in English and one of ten languages: Cambodian, Chinese, Filipino, Japanese, Laotian, Korean, Hmong, Mien, Samoan, and Vietnamese.

RFSC study coordinator recruited eight focus group members from the API community to review the brochure (both English and translated version) for format, content, translation, and presentation; each was compensated with \$25. Focus group members were recruited from health clinics, educational institutions, libraries, and community organizations. Due to unexpected and unavoidable time conflicts experienced by the RFSC study coordinator, focus group members from the Hmong and Samoan communities were not recruited. For the same reason, the focus group did not meet as a whole group; rather, members completed a self-administered questionnaire (**Appendix N-3**) which evaluated the content, accuracy of translation, effectiveness, and format of the brochure.

RFSC Study Coordinator also mailed the English brochure translation to the

Technical, Advisory, and Community Steering Committees for their general comments and recommendations.

Comments and recommendations from the Focus Group, Technical, Advisory, and Community Steering Committees, as well as other interested parties were incorporated into the English translation of the educational brochure. Translation of the final edited version was outside the scope of the grant study plan.

VI Results (Phase III)

Overall, with the exception of the Mien review, the health risk messages, graphics, and effectiveness of the brochure were rated, generally, good to excellent by the focus group reviewers (see **Appendix N-4**). The brochure was felt to be useful for decision making. Except for Laotian and Mien translations, the translations were above average, and the presentation clear and precise. Reviewers made corrections to translation on the brochures themselves (see **Appendix N-5**), which will be useful when the final version of the brochure is published (funding to be obtained).

Comments from the focus group reviews, the CSC, the Technical and Advisory Committees, as well as other interested parties, were incorporated into the brochure where appropriate. An English version of the brochure, which incorporated all of the editorial comments, is contained in (**Appendix N-6**).

DISCUSSION

PARTICIPATION RATES

As expected, participation rates among volunteers were high (96%), and somewhat lower in the roster group (67%). Within the roster group, 67% elected to participate. Reasons for refusal are unclear. Though community leaders were involved through membership on the Community Steering Committee and urged community organizations to participate, they were not involved in person to person recruitment. Chiang (1998) achieved a 79.8%

participation rate in her study of the Laotian community, which was made up of the following ethnic groups: Khmu (13%), Laotian (32%), Mein (45%), and Thadum (10%). Her success may reflect community leader involvement; e.g. they made first contact with all study participants. In addition, Chiang's study focused on only one ethnic community which happened to be closely knit, unlike the King County study which targeted ten groups which were dispersed throughout the area. The roster method of recruitment also had the drawback that churches and community groups may not have resources to update their membership rosters. Interviewers were unable to contact 54% of the individuals selected for interview. Despite the differing participation rates between the volunteer and roster groups, the seafood consumption rates between the two groups did not differ significantly.

POTENTIAL BIASES

This study covers ten ethnic groups in the Asian and Pacific Islander community who reside in a large metropolitan area. A complete numeration and a random sampling of the targeted population was not feasible. To reduce potential coverage bias in the recruitment of respondents, a two-tier approach was employed by the study team – "roster" and "volunteer" selection. This two-tier approach may not be theoretically optimal for the coverage and selection of an unbiased sample of the targeted population; it was designed to minimize possible bias in the selection of respondents.

While the study team made every effort in soliciting as many rosters as possible from organizations in the API community, nevertheless, some organizations in the API community refused to share their membership rosters with the study team. Reasons generally involved confidentiality concerns. It is difficult to assess what bias, if any, exists by using the roster lists provided by the community organizations.

The survey was advertised as a "dietary habits study" to reduce the possibility that potential lower seafood consuming participants would de-select themselves. It is difficult to determine this strategy's success because an undetermined number of the community members were aware that a seafood consumption study had been funded for Phase I (completed in 1996).

This bias would be expected to be most evident within the volunteer group which represented individuals who actively volunteered for the study versus the roster group which was randomly selected from preexisting lists. This effect, if present, is probably small because comparison of roster and volunteer consumption rates showed no significant difference between these two groups.

Thirty-eight percent of survey participants who responded to questions about their income (n=187) lived below the Federal Poverty Limit (FPL). These rates are also considerably higher than the 14.8% observed among all API's residing in King County in 1990 (1990 U.S. Census). This difference may be due to the recent immigration status of the study group when compared to the multigenerational composition of API's in King County, or economic patterns shifting since the 1990 census. The relatively high percentage of individuals living below the FPL also may have been influenced by calculation procedures. Because income was considered a culturally sensitive question, survey respondents were asked to check income range categories instead of providing exact income information. Calculation of FPL used the midpoint of the range, e.g. \$5000 for survey participants who marked the \$0 - \$10,000 income level. This method may have underestimated incomes.

A slightly greater percentage of the roster than volunteer respondents interviewed in this study were living under the federal poverty level (39% versus 32%, respectively), but roster participants were not more likely than volunteers to be first generation. People in the lowest income level (under FPL) ate more in the categories of all seafood, all fish, and shellfish, but none of the differences were statistically significant. First generation consumed significantly more freshwater fish and shellfish than second generation participants.

The impact of the relatively more low-income respondents in the study may not warrant major concern. The results of this study have indicated that there was no significant difference among the income levels in terms of overall fish consumption rates among the API community, and income was not related to "fishermen" status. Respondents in the "more-established" ethnic groups (for example, Japanese, Chinese, Filipino, Korean) seemed to consume

more fish by purchasing from groceries/street vendors and restaurants, the other groups reported more self-harvested fish for consumption.

The reliability of participant responses was assessed using a subset of 14 questions from the survey. Of these, 3 queried seafood consumption frequency, 3 tissue parts consumed, and 8 source of seafood. The retest of ten questions showed no significant response differences and that responses were generally reliable. Two of the four questions for which answers differed significantly were related to fishing locations. During face-to-face interviews a map visually clarified the definition of "inside Puget Sound" versus "outside Puget Sound" to be "inside" versus "outside" of King County. Such visual clarification could not be accomplished via telephone interview, and without the map, misinterpretation was likely because Puget Sound, while within King County, is much more extensive than just King County, Washington. The other two questions were source of shellfish (restaurants) and finfish tissue parts consumed (head, bone, eggs, organs). Reasons for these differences are unclear.

PER CAPITA CONSUMPTION ESTIMATION

This study was designed to quantitate usual intake among API seafood consumers. Because participants had to be seafood consumers, the study was not designed to determine per capita rates; so the percentage of non-consumers were estimated from interviewer screening logs. The study recruitment protocol required that prospective participants answer a series of qualifying questions; e.g., their county of residence, ethnic group, age, generation in the U.S., and seafood consumption status. Of all prospective participants willing to participate in the study, only 1.5% were disqualified because they did not eat seafood, 0% in the volunteer group, and 2% in the roster group. These data suggest that seafood consumption is almost universal within the API community and that per capita rates are probably similar to those calculated here. Chiang (1998) also did not quantitate the number of non-consumers, but found that 87% of the Laotian community surveyed in West Contra Costa County, California, ate seafood at least one time per month. A survey of 500 Native Americans from the Umatilla, Nez

Perce, Yakima, and Warm Springs tribes found that ~9% did not consume fish (CRITFC, 1994).

CONSUMPTION RATES

This study was intended to evaluate the fish consumption rates of the API community members in King County, Washington. The 202 respondents were from ten different ethnic groups. While the observed consumption rates have been reported for each ethnic group in this study, it is important to note that the estimate of consumption rate for any specific ethnic group should not be considered accurate because of the small sample size for the individual ethnic groups.

The median seafood consumption rate was 89g/day for the average weight (62kg) of all survey participants. A consistent difference was noted between mean and median seafood consumption rates. As discussed above, this difference persisted even when consumption rates for the highest consumers (outliers) were corrected to 3 standard deviations above the mean. These data suggest that there are APIs who have very high rates of seafood consumption. For example, consumption at the 90th percentile rate would be 242g/day or 7.8 ounces seafood per day. Even at the 10th percentile, consumption was 32g/day which is above the 21g/day per capita rate estimated by Javitz (1980). The API ethnic groups with the highest seafood consumption rates were Vietnamese (median: 148g/day) and Japanese (median: 113g/day).

These high rates may be explained by the more recent immigration status of 89% of participants and possibly the lower income status of many participants, though the higher fish consumption rates observed in the lowest income group were not statistically significant. There are no published studies available which estimate seafood consumption rates in API countries of origin, e.g. Japan, China, etc.

Survey methods may also overestimate consumption rates. Our survey specifically queried "in" and "out of season" consumption rates for a total of 40 finfish and shellfish species, and participants could add additional species if consumed. Several models were used for species types as outlined in the

methods. Multiple estimations of consumption by a single respondent may overestimate consumption rates. The timing of survey administration (Spring and Fall) may have influenced consumption reporting for certain species, however, the survey was structured to query seafood consumption both "in" and "out" of season.

In contrast, Chiang found markedly lower consumption rates (median 9.2g/day) in the Laotian immigrant population in California. This may reflect several factors. First, there is a high-profile Superfund site which has contaminated the Bay near this community, and the lower consumption rates may reflect the effectiveness of the public awareness program regarding contaminated fish in local waters. Second, survey instrument differences may account for some of the disparity. In Chiang's survey, a single model was used to estimate usual seafood portion size for both finfish and shellfish species together, and then grouped usual consumption frequencies into imprecise categories (e.g. more than once/day, 3-4 times/week, a few times a month, etc), which may have resulted in consumption rate underestimation. Finally, our study used models portraying uncooked weights except for crab and bivalve shellfish, whereas Chiang referred to cooked weight. Jacobs (1998) indicates that an uncooked fish portion is ~22% heavier than cooked fish.

Studies, using similarly structured questionnaires to that in our study, of Pacific Northwest Native Americans who fish for subsistence have also documented high rates of fish consumption. Men in the Tulalip and Squaxin Island Tribes (Toy, 1995) consumed a median of 53 g/day and 66 g/day for the two tribes respectively, while women consumed a median rate of 34 g/day and 25 g/day. Among the Umatilla, Nez Perce, Yakama and Warm Springs Tribes of the Columbia River Basin, median seafood consumption was 40 gram/d among tribal members who eat fish (mean=63g/d), and 32 g/d (mean=58.7g/d) among all tribal members (n=500). Easy access to marine waters as well as fresh water may account for the higher consumption rates among the Tulalip and Squaxin Island Tribes.

SEAFOOD SOURCES

Our study showed that the majority of seafood is obtained at grocery stores, street vendors, or from restaurants, with harvesting by self, family or friend being used less often. While these numbers appear to suggest that the majority of seafood consumed is from "commercial" sources, locally caught fish, possibility from contaminated sources, may be sold by vendors trying to cut costs. Chiang's study suggests that smaller markets and street vendors may be the source of a large percentage of seafood. She reported that 50% of the Laotian community used large markets (e.g., Lucky, Costco, Safeway), 57% small markets, 55% a fisher person/fish truck/farmer's market, and 54% harvested (self/family/friend).

In our study, harvested seafood comprised less than one quarter of the total consumption; nevertheless, differences were observed among the ethnic groups. Members of the Mien community seem to harvest seafood more often than other ethnic groups. The percentage of time Miens consumed harvested fish were: 100% for bottom fish, 84% for freshwater fish, 54% for anadromous fish, 35% for pelagic fish, and 34% for shellfish. However their total seafood consumption was the lowest of all surveyed ethnic groups. Cultural traditions may play a role because Miens immigrated from the rural highland areas of Laos (Gilman, 1992) where harvested fish may have not been readily available and therefore consumption might not be as customary. In addition, 60% of Mien participants lived below the FPL. Even though the Mien community does not consume as much seafood as other APIs, they may have greater risks for seafood contaminant exposure because they harvest more for subsistence. Chiang's study determined the number of fishermen (n=95) and their main reason for fishing, of whom 53% fished "for food" compared with 37% for "recreation", 1% for "traditional" reasons, and 10% "no answer". Despite the small sample size, these pilot data warrant follow-up study.

SEAFOOD SPECIES AND TISSUE PARTS CONSUMED

APIs consume a wide variety of seafood species, the most frequently consumed being shellfish. These seafood, depending on their feeding and habitat characteristics, and the tissue parts consumed pose varying chemical

contaminant risks to APIs. For example, certain fat soluble chemicals, e.g. PCB's are concentrated in the fat layer between the meat and skin, potentially exposing such consumers to higher contaminant levels than those who simply eat the fillet. Eating the fillet with skin is clearly a common practice in the API community. Chiang (1998) determined that of Laotian community members who had ever fished in San Francisco Bay (n=88), 76% "always" ate the fillet with skin, 23% "sometimes" ate the skin, and 1% "never" ate the skin. Among all our study participants 30% "always" ate the fillet with skin, 42% "sometimes", and 28% "never". Overall, skin was consumed with the fillet 55% of the time. Consumption of fillet with skin appeared to vary with ethnicity, but interpretation is difficult because of the small numbers. Among the Hmong (n=5), Vietnamese (n=25), and Mien (n=9), and Laotian (n=20) the fillet with skin was consumed 100%, 78%, 67%, and 42% of the time, respectively.

In addition to concern about consuming fillets with skin, information about contaminant levels in other fish tissues may be insufficient for culturally appropriate risk assessment (e.g., head, bone, eggs, and/or organs) because risk assessors have not felt that they are commonly eaten. In this study, these parts were eaten 20% of the time, (8% said they "always", and 36% reported they "sometimes" eat head, bone, eggs, and/or organs). Unfortunately our data cannot determine which of these body parts are eaten more frequently. Salmon eggs were consumed by 27% of participants, and other types of fish eggs by 10%. This is similar to Chiang's findings that 'organs' were "always" consumed by 6% and "sometimes" consumed by 41%. Wong (1997) found that 98% of 228 mixed race fishermen residing near San Francisco Bay (36% Asian, 24% Caucasian, 14% Latino, 12% African American, 7% mixed race, 2% Pacific Islander) consumed 'non-fillet parts' (e.g., skin, eggs, heads, guts) when perch was eaten. Similar rates were found for striped bass (84%) and white croaker (77%).

API community members appear to eat shellfish parts that are thought to contain higher concentrations of chemical contamination, e.g. clam stomachs or the hepatopancreas of crabs (Faigenblum, 1988; Matter, 1994). Bivalve shellfish were consumed whole by 24% (geoduck) to 89% (mussels) of the respondents depending on the species. The "butter" as well as the meat of

crabs were consumed 43% of the time, and though moon snails are not eaten by most respondents, 38% of the time the entire moon snail is eaten. Finally, cooking water, both for finfish and shellfish are commonly used in cooking or directly consumed.

Cost considerations frequently preclude chemical contaminant analyses for these tissues. Certainly for the API's, seafood related risk assessment should include chemical analyses of all consumed tissue parts for the most frequently consumed species. For instance, crabs were commonly consumed (96% of API's), and 43% of the time the "butter" of the crab, including the hepatopancreas was consumed. Selection of seafood species and tissue part contaminant testing should reflect the cultural consumption habits of specific "at risk" populations.

FISHERMEN

Fishermen have been reported (Allen 1996, Puffer 1982, Wong 1997) to consume greater quantities of fish than non-fishermen. These data are generally derived from creel studies and may have surveyed biased groups, e.g. the "10% of fishermen who catch 90% of the fish". Our study was not advertised as a fish consumption study and was expected to have captured a cross-section of fishermen. So, while this study showed that fishermen consumed greater quantities of seafood than non-fishermen in all seafood categories, these differences were not significant. In addition, the "higher" consumers (individuals who had seafood consumption rates >75th percentile for finfish or shellfish) were no more likely to be fishermen than those with lower consumption rates. Decreased opportunity for fishing is an unlikely reason because King County, Washington's geographic proximity to Puget Sound and multiple lakes and rivers, which provide easy access to fresh and salt water fishing and shellfish collection both in urban (assessable by public transportation) and rural settings. This observation may be explained by cultural traditions which incorporate seafood into daily diets of most first and second generation API's.

EDUCATIONAL OUTREACH INFORMATION

Many recent API immigrants are refugees from war torn countries and understandably distrust government officials or those in authority. Some local efforts to establish communication with APIs have emphasized active support and involvement of local API community service organization, as well as information conveyance through API community members and organizations (Clifford, 1998; Tebaldi, 1999).

Our survey examined the educational preferences and fishing information sources of APIs. Respondents expressed a preference for written material as a way of learning. The preferred media were API community newspapers/newsletters, while bulletin boards were deemed reliable by only 16% of respondents. Audio-visual communication; e.g. television and word of mouth were also preferred, but videos (35%) and slide shows (4%) were less favored. Radio broadcasts in API languages were used by a relatively small percentage (16%), but multiple dialects may be a factor, and for specific groups may be effective. Wong (1997) successfully used both a seafood cooking demonstration and pamphlet to educate children and adults about minimizing exposures to chemically contaminated San Francisco Bay fish.

The API respondents were very concerned about health. They wanted health information about eating fish, as well as safety information about Puget Sound seafood. Very few fishermen said they were not concerned about the safety of fish (6%) or that they never try to find out about fishing safety (3%). Among fishermen, fishing safety information is mainly obtained by word of mouth (65%) and posted warning signs (59%). Education beyond high school appeared to play a positive role in utilization of posted warning signs, pamphlets, and telephone information services, e.g. Washington State shellfish information and Red Tide Hotline. Information from API community centers and API radio broadcast were more frequently deemed reliable by those with \leq high school, and may be effective for disseminating information to specific groups.

CONCLUSIONS

API community members consume greater amounts of seafood, as well as differing species and tissue parts than the majority of U.S. citizens and residents. These consumption patterns, while having significant general health benefits, may pose a health risk if consumed seafood is contaminated with toxic chemicals. Evaluation of existing seafood toxicity data is warranted to determine if sufficient data exist for the tissue parts described in this report.

API-specific risk assessments that take into account these higher consumption rates, species consumed, tissue parts consumed, and the sources of seafood acquisition need to be completed. API-specific risk assessments will help the API community determine if a risk exists, what activities increase risk, and which community members have the highest risk. Such an analysis should also focus on the benefits of consuming seafood and on culturally acceptable ways of reducing what risks may exist. Health messages should be designed and delivered by API community members (including those of the first generation who may have the highest risks) through partnership relationships with public health agencies.

The ethnic group specific data generated in this study is useful to identify information needs, but it is based upon relatively small group numbers. It should be used with caution for regulatory or risk assessment purposes without additional verification. Further study of API community seafood acquisition habits, specific tissue parts consumed, and preparation methods are important, particularly for members of the Hmong, Laotian, Mien and Vietnamese communities because our pilot data suggest that they may have higher health risks if seafood is contaminated with toxic chemicals.

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Bilingual Interviewers and Translators

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Appendix A

Questionnaire Number | | | |

ASIAN PACIFIC AMERICAN SEAFOOD CONSUMPTION STUDY

DATE CALLED		
1) mo day yr	2) mo day yr	3) mo day yr
INTERVIEW APPT. TIME		
1) __:__:__ <input type="checkbox"/> 1 am <input type="checkbox"/> 2 pm	2) __:__:__ <input type="checkbox"/> 1 am <input type="checkbox"/> 2 pm	3) __:__:__ <input type="checkbox"/> 1 am <input type="checkbox"/> 2 pm
RESULT CODES		
1) completed interview <input type="checkbox"/> _1	2) missed appointment; reschedule <input type="checkbox"/> _2	3) other <input type="checkbox"/> _3

INTERVIEW LOCATION ☐_1 Respondent's house
☐_4 Other

☐_2 RFSC☐_3 Eatery

RESPONDENT'S INITIAL _____

INTERVIEWER'S CODE | | | |

INTRODUCTION

Hello. My name is _____ and I am (ethnicity). We are conducting a study to understand the seafood eating patterns of (ethnicity) in the King County area. The information given in response to this questionnaire will help the Asian Pacific American community to understand the rates of seafood consumption, ways in which meals are cooked and prepared, and the types of seafood regularly consumed. All information provided in this interview is voluntary and confidential. Your answers will be combined with those of others so that no person's answers can be identified.

DATE OF INTERVIEW TIME INTERVIEW BEGINS : : ☐ 1am ☐ 2 pm

I am going to ask you some questions which will determine whether you are in the group we wish to study.

a) Do you live in King County? Yes ☐₁ No ☐₂ (IF NO, TERMINATE INTERVIEW)

b) Do you eat seafood at all? Yes ☐₁ No ☐₂ (IF NO, TERMINATE INTERVIEW)

c) Which of the following ethnic groups best describe you. Check one only.

Filipino ☐₁ Japanese ☐₂ Korean ☐₃ Chinese ☐₄ Vietnamese ☐₅

Lao ☐₆ Mien ☐₇ Hmong ☐₈ Samoan ☐₉ Cambodian ☐₁₀

d) Were you born in the United States? Yes ☐₁ No ☐₂
(If no, how many years have you been in the United States?) 0-5 ☐₁ 6-10 ☐₂ 11-20 ☐₃ 21+ ☐₄

e) Is at least one of your parents born in the United States? Yes ☐₁ No ☐₂

f) Were both of your parents born in the United States? Yes ☐₁ No ☐₂
(TERMINATE INTERVIEW IF BOTH "D", "F" ARE YES)

g) Are you at least eighteen years old?

Yes ☐₁No ☐₂ (IF NO, TERMINATE INTERVIEW)

1. I am going to ask you what types of seafood you eat, the amount you eat, and how often you eat each one.

The amount of seafood you eat and how often you eat it may depend on the time of year. For example, if there are seasonal differences in how often you eat seafood. Please answer 2 different ways: when it is fresh and readily available and when it has been frozen, dried, canned, stored, etc. Please answer these questions in a way that's most familiar to you. Remember to include breakfast, lunch, dinner, and snacks. Do not include seafood you eat at special celebrations (holiday celebrations, Chinese New Year, Japanese New Year, weddings, community or cultural events, etc.) They will be asked later.

---FILL OUT CONSUMPTION FORM---SHOW PORTION MODEL, PICTURE CARD---

GROUP A

A1. How often do you eat the following...

TYPE OF FISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model #	Weight Unit
SALMON							
in season							
rest of the year							
SALMON EGGS							
in season							
rest of the year							
TROUT							
in season							
rest of the year							
SMELT							
in season							
rest of the year							

A2. For the following categories, please tell me approximately what percentage of the fish in Group A you get from: ---READ ALL CATEGORIES--- Answers must total 100%.

- | | |
|---|-----------|
| 1) Grocery stores/street vendors | ___ ___ % |
| 2) Fish caught from Puget Sound by yourself, family members or friends | ___ ___ % |
| 3) Fish caught from outside of Puget Sound by yourself, family members or friends | ___ ___ % |
| 4) Restaurants | ___ ___ % |

---SHOW PORTION MODEL, PICTURE CARD---

GROUP B

B1. How often do you eat the following...

TYPE OF FISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model #	Weight Unit
COD							
in season							
rest of the year							
DOGFISH							
in season							
rest of the year							
SNAPPER							
in season							
rest of the year							
SNOWFISH							
in season							
rest of the year							
MACKERAL							
in season							
rest of the year							

(continuation B1)

TYPE OF FISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model #	Weight Unit
TUNA							
in season							
rest of the year							
ROCKFISH							
in season							
rest of the year							
HERRING							
in season							
rest of the year							

B2. For the following categories, please tell me approximately what percentage of the fish in Group B you get from: ---READ ALL CATEGORIES---Answers must total 100%.

- 1) Grocery stores/street vendors
- 2) Fish caught from Puget Sound by yourself, family members or friends:
- 3) Fish caught from outside of Puget Sound by yourself, family members or friends
- 4) Restaurants
- _____%
- _____%
- _____%
- _____%

---SHOW PORTION MODEL, PICTURE CARD---

GROUP C

C1. How often do you eat the following...

TYPE OF FISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model	Weight Unit
CATFISH							
in season							
rest of the year							
CRAPPIE							
in season							
rest of the year							
CARP							
in season							
rest of the year							
PERCH							
in season							
rest of the year							
TILAPIA							
in season							
rest of the year							
BASS							
in season							
rest of the year							

C2. For the following categories, please tell me approximately what percentage of the fish in Group C do you get from: ---READ ALL CATEGORIES---Answers must total 100%.

1) Grocery stores/street vendors

_____%

2) Fish caught from Puget Sound by yourself, family members or friends

_____%

3) Fish caught from outside of Puget Sound by yourself, family members or friends

___ ___ %

4) Restaurants

___ ___ %

---SHOW PORTION MODEL, PICTURE CARD---

Group D

D1. How often do you eat the following...

TYPE OF FISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model	Weight Unit
HALIBUT							
in season							
rest of the year							
SOLE/FLOUNDER							
in season							
rest of the year							
STURGEON							
in season							
rest of the year							
SUCKERS							
in season							
rest of the year							

D2. For the following categories, please tell me approximately what percentage of the fish in Group D you get from: ---READ ALL CATEGORIES ---Answers must total 100%.

1) Grocery stores/street vendors

___ ___ %

2) Fish caught from Puget Sound by yourself, family members or friends

___ ___ %

3) Fish caught from outside of Puget Sound by yourself, family members or friends

___ ___ %

4) Restaurants

___ ___ %

D3. I'm going to ask you about what parts of the fish in Group A-D you eat. Please tell me what percentage of the time you eat the following categories when you eat fish in Group A-D. ---READ ALL CATEGORIES FIRST---Please answer 0-100%. Answers 1 & 2 must total 100%.

- 1) Fillet with skin: _____ %
 2) Fillet without skin: _____ % (1 & 2 total 100%)
 3) Head, bones, eggs, organs: _____ % (0-100%)

D4. I'm going to ask you how the fish you eat in Group A-D is prepared. For the following 2 categories please tell me what percentage of the time you eat fish in Group A-D prepared this way. ---READ ALL METHODS FOR EACH CATEGORY FIRST---Answers must total 100%.

- 1) Baked, boiled, broiled, roasted, poached, or steamed: _____ %
 2) Canned, fried, raw, smoked, or dried: _____ % (1 & 2 must total 100%)

D5. If you boil, steam, poach any of the fish in Group A-D, what do you do with the water it is prepared in?

- 1) Throw it out _____ % 2) Use it in cooking _____ % 3) Drink it _____ %

---SHOW PORTION MODEL, PICTURE CARD---

GROUP E

E1. How often do you eat the following...

TYPE OF SHELLFISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model #	Weight Unit
CLAMS (manila/littleneck)							
in season							
rest of the year							

(continuation of E1)

TYPE OF FISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model #	Weight Unit
HORSE CLAMS							
in season							
rest of the year							
RAZOR CLAMS							
in season							
rest of the year							
BUTTER CLAMS							
in season							
rest of the year							
GEODUCK CLAMS							
in season							
rest of the year							
MACOMA CLAMS							
in season							
rest of the year							
COCKLES							
in season							
rest of the year							
OYSTERS							
in season							
rest of the year							
MUSSELS							
in season							
rest of the year							

(continuation of E1)

TYPE OF SHELLFISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTH	Model #	Weight Unit
ABALONE							
in season							
rest of the year							
SCALLOPS							
in season							
rest of the year							

---SHOW PORTION MODEL, PICTURE CARD---

E2. How often do you eat the following...

TYPE OF SHELLFISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model #	Weight Unit
SHRIMP							
in season							
rest of the year							
CRAB							
in season							
rest of the year							
SQUID							
in season							
rest of the year							
SEA URCHIN							
in season							
rest of the year							

(continuation of E2)

TYPE OF SHELLFISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model #	Weight Unit
SEA CUCUMBER							
in season							
rest of the year							
MOONSNAIL							
in season							
rest of the year							
LOBSTER							
in season							
rest of the year							

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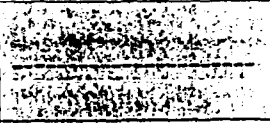
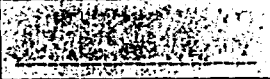

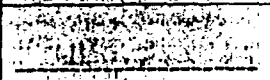
---SHOW PORTION MODEL and PICTURE CARD---

E4. I'm going to ask you about which parts of the following you eat. Percentages for each species must total 100%.

SPECIES	WHOLE	WHOLE W/STOMACH REMOVED	WHOLE W/SIPHON TIP REMOVED	WHOLE W/SIPHON TIP AND STOMACH REMOVED	TOTAL 100%
CLAM (manila/littleneck)					TOTAL 100%
HORSE CLAMS					TOTAL 100%
BUTTER CLAMS					TOTAL 100%
RAZOR CLAMS					TOTAL 100%

(continuation of E4)

SPECIES	WHOLE	WHOLE W/STOMACH REMOVED	WHOLE W/SIPHON TIP REMOVED	WHOLE W/SIPHON TIP AND STOMACH REMOVED	TOTAL 100%
GEODUCK CLAMS					TOTAL 100%
MACOMA CLAMS					TOTAL 100%
COCKLES					TOTAL 100%
OYSTERS					TOTAL 100%
MUSSELS					TOTAL 100%
ABALONE					TOTAL 100%
SCALLOPS					TOTAL 100%

SHRIMP	WHOLE BODY (body and head) _____ %	BODY ONLY _____ %	HEAD ONLY _____ %	TOTAL 100%
CRAB	WHOLE BODY (crab meat and butter) _____ %	MEAT ONLY _____ %	CRAB BUTTER ONLY _____ %	TOTAL 100%
SQUID	WHOLE SQUID _____ %	MEAT ONLY (body and tentacles) _____ %		TOTAL 100%
SEA URCHIN	WHOLE BODY _____ %	EGGS ONLY _____ %		TOTAL 100%
SEA CUCUMBER	WHOLE BODY _____ %	MUSCLE ONLY		TOTAL 100%
MOONSNAIL	WHOLE BODY _____ %	MUSCLE ONLY _____ %		TOTAL 100%
LOBSTER	WHOLE BODY (body and head) _____ %	BODY ONLY _____ %	HEAD ONLY _____ %	TOTAL 100%

E5. I'm going to ask you how the shellfish you eat in Group E is prepared. For the following 2 categories please tell me what percentage of the time you eat shellfish in Group E prepared this way. ---READ ALL METHODS FOR EACH CATEGORY FIRST ---Answers must total 100%.

- 1) Baked, boiled, roasted, poached or steamed ___ ___ %
 2) Canned, fried, raw, smoked, or dried ___ ___ %

E6. If you boil or steam any of the shellfish in Group E, what do you do with the water it is prepared in?

- 1) Throw it out ___ ___ % 2) Use it in cooking ___ ___ % 3) Drink it ___ ___ %

E7. For the following categories, please tell me approximately what percentage of the shellfish in Group E do you get from: ---READ ALL CATEGORIES--- Answers must total 100%.

- 1) Grocery stores/street vendors ___ ___ %
 2) Shellfish caught from Puget Sound by yourself, family members, or friends ___ ___ %
 3) Shellfish caught from outside of Puget Sound by yourself, family members, or friends ___ ___ %
 4) Restaurants ___ ___ %

---SHOW PORTION MODEL and PICTURE CARD---

GROUP F

F1. How often do you eat the following:

TYPE OF SEAFOOD	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION SIZE CODE	
	WEEK	MONTH	YEAR	WEEKS	MONTHS	Model #	Weight Unit
SEAWEED							
in season							
rest of the year							
KELP							
in season							
rest of the year							

F2. For the following categories, please tell me approximately what percentage of the seafood in Group F you get from: ---READ ALL CATEGORIES---Answer must total 100%.

- | | |
|---|-----------|
| 1) Grocery stores/street vendors | ___ ___ % |
| 2) Seafood caught from Puget Sound by yourself, family members, or friends | ___ ___ % |
| 3) Seafood caught from outside of Puget Sound by yourself, family members, or friends | ___ ___ % |
| 4) Restaurant | ___ ___ % |

Are there other seafoods which you eat that were not mentioned earlier? ☐₁ Yes ☐₂ No (If no, go to H1)

G1. How often do you eat...

TYPE OF SEAFOOD	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR		PORTION MODEL CODE
	WEEK	MONTH	YEAR	WEEKS	MONTHS	

---SOCIAL EVENTS---

H1. The following questions will ask about your eating patterns at social events. In the last 12 months, how often did you attend special celebrations (holiday celebrations, Chinese New Year, Japanese New Year, cultural or community events, weddings, etc.): ___ ___ times in last 12 months (If 0, go to no. 11)

H2. At what percentage of these events do you eat seafood? Please answer from 0-100%. ___ ___ %, (If answer is 0, go to 11)

---SHOW PORTION MODEL and PICTURE CARD---

H3. At these events, how much seafood do you usually eat each time? _____ oz.

H4. How often do you eat the following seafoods at these events? You may answer from 0-100%.

SHELLFISH (crab, clam, shrimp...) _____% SEAWEED/KELP _____% FISH _____%

I1. Please indicate your age _____. If you choose not to, please select your age category.

18-29 ☐1 30-54 ☐2 55+ ☐3

I2. Indicate your weight: _____ pounds OR _____ kilogram.

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I3. Indicate your height: _____ feet _____ inches

I4. What is your household income per year?

☐1 0-10,000 ☐2 10,001-15,000 ☐3 15,001-20,000 ☐4 20,001-25,000
☐5 25,001-35,000 ☐6 35,001-45,000 ☐7 45,001+

I5. How many people are supported by this total income? _____

I6. Indicate the level of formal education. ☐1 completed high school ☐2 did not complete high school
☐3 completed college ☐4 did not complete college ☐5 other _____

17. We want to thank you for your answers to these questions because they will give us valuable scientific information about seafood consumption in the Asian Pacific American communities. We also want to make this information available in a useful form to Asian Pacific American community members and families through educational materials.

To understand community needs and concerns we would like to ask your opinion on several topics.

What are the sources that give you the best/most reliable information about what is going on in the Asian Pacific American community? ---CHECK ALL THAT APPLY---

community newspaper/newsletters _____
 community centers _____
 bulletin boards _____
 radio broadcasts in English _____
 radio broadcasts in your own language _____
 television _____
 temple/mosque/church _____
 word of mouth _____
 other, please specify _____

The following are ways people learn about things. Please select the two that you prefer. If there are others that you prefer which are not on the list, please tell us what they are.

Read in books or pamphlets _____
 listen to someone in person _____
 listen to a tape recording _____
 learn it on computer _____
 see it on video _____
 see it in a slide show _____
 read in comic book _____
 other _____

What kinds of information would you like to have about fish and other seafood? If there are other items that are not on the list, please tell us what they are. ---CHECK ALL THAT APPLY---

Health information about eating fish _____
 information on safe preparation of fish _____
 safety of eating fish and other seafood from Puget Sound _____
 types and amount of fish eaten by members of the Asian Pacific American community _____
 safety of fishing from specific locations in Puget Sound _____
 others _____

The following are sources for people who fish to find out about the safety of fishing in a particular site. If you fish, which of the following are most useful to you? ---CHECK ALL THAT APPLY. INDICATE "NOT APPLICABLE" FOR THOSE WHO DO NOT FISH---

not applicable _____
 word of mouth (friends, acquaintances) _____
 posted warning signs on docks and other fishing places _____
 pamphlets _____
 Washington State Dept. Shellfish Information _____
 Red tide hot line _____
 County Health Department _____
 not concerned about the safety of fish _____
 never try to find out _____
 other, please specify _____

CONCLUSION

Thank you for your cooperation in participating in this study. Your participation will contribute important information needed to help protect your natural resources and provide guidance for public health programs for your community.

NOTE TIME INTERVIEW ENDS: _____:_____☐₁ AM ☐₂ PM

---INTERVIEWER REMARKS---

J1. Respondent's cooperation was: ☐₁ Very good ☐₂ Good ☐₃ Fair ☐₄ Poor

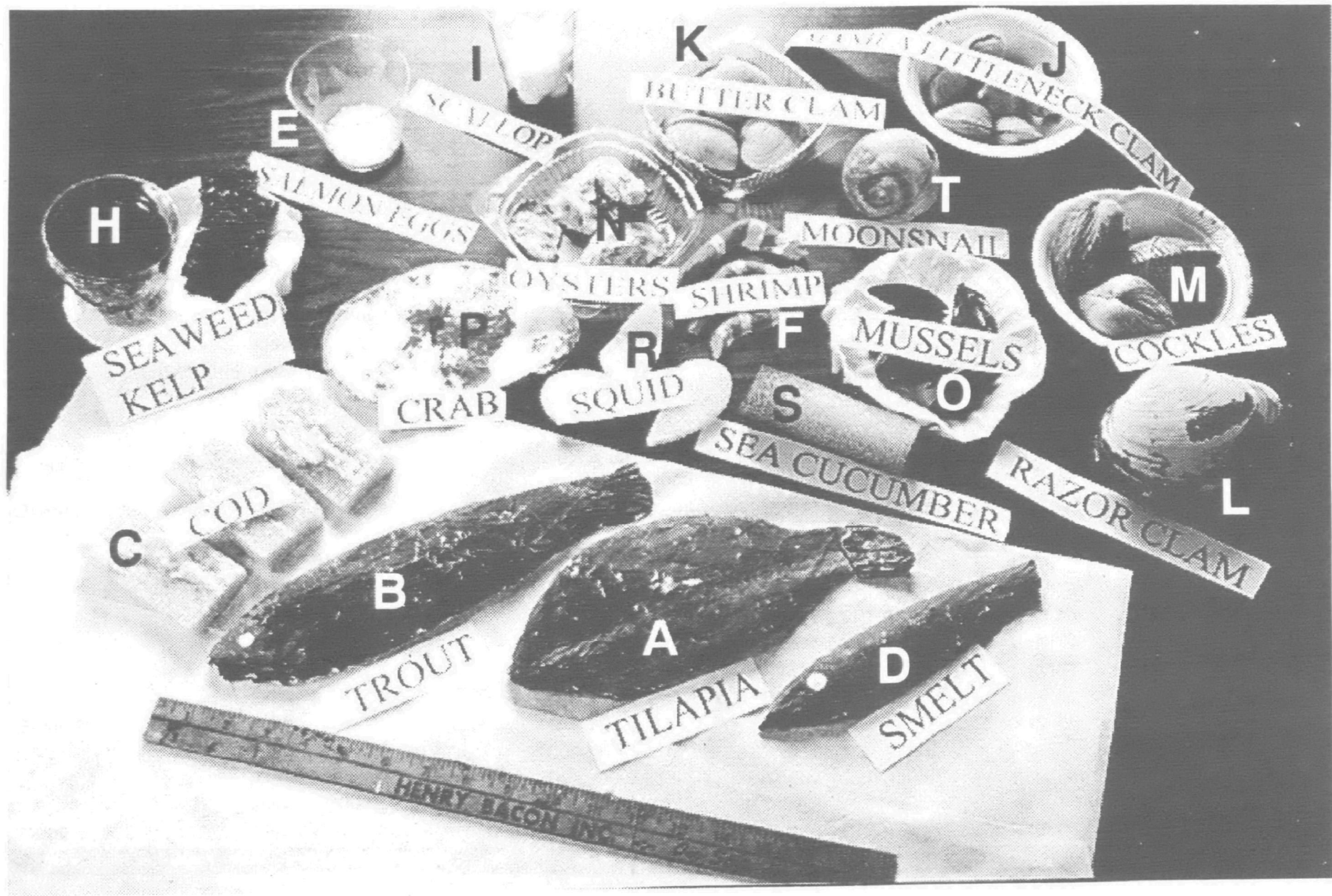
J2. The quality of respondent's answers were: ☐₁ High quality ☐₂ Generally reliable
☐₃ Questionable ☐₄ Unreliable

J3. What was the main reason for the questionable or unreliable quality of the interview? _____

J4. Respondent's Gender Female ☐₁ Male ☐₂

J5. Further
 comments: _____

Appendix B



Models and Model Weight used in the Computation of the API Survey

Species Category	Seafood Species	Model Code	Weight used	One Portion =	Note
Group A	Salmon	B	$14.5\text{oz} \times 28.35 \times 0.562 = 231.02 \text{ g}$	1 fish	
	Salmon Eggs	E	$0.5\text{oz} \times 28.35 = 14.18 \text{ g}$	1 container	
	Trout	B	$14.5\text{oz} \times 28.35 \times 0.562 = 231.02 \text{ g}$	1 fish	
	Smelts	D	$2.5\text{oz} \times 28.35 \times .876 = 62.09 \text{ g}$	1 fish	
Group B	Cod	C	255.15 g	3 fillets	
	Dogfish	D	$2.5\text{oz} \times 28.35 \times .876 = 62.09 \text{ g}$	1 fish	
	Snapper	A	$16.5\text{oz} \times 28.35 \times .49 = 229.21 \text{ g}$	1 fish	
	Snowfish	A	$16.5\text{oz} \times 28.35 \times .49 = 229.21 \text{ g}$	1 fish	
	Mackeral	B	$14.5\text{oz} \times 28.35 \times 0.562 = 231.02 \text{ g}$	1 fish	
	Tuna	C	255.15 g	3 fillets	
	Rockfish	A	$16.5\text{oz} \times 28.35 \times .49 = 229.21 \text{ g}$	1 fish	
	Herring	D	$2.5\text{oz} \times 28.35 \times .876 = 62.09 \text{ g}$	1 fish	
	Catfish	B	$14.5\text{oz} \times 28.35 \times 0.562 = 231.02 \text{ g}$	1 fish	
	Crappie	A	$16.5\text{oz} \times 28.35 \times .49 = 229.21 \text{ g}$	1 fish	
Group C	Carp	B	$14.5\text{oz} \times 28.35 \times 0.562 = 231.02 \text{ g}$	1 fish	
	Perch	A	$16.5\text{oz} \times 28.35 \times .49 = 229.21 \text{ g}$	1 fish	
	Tilapia	A	$16.5\text{oz} \times 28.35 \times .49 = 229.21 \text{ g}$	1 fish	
	Bass	A	$16.5\text{oz} \times 28.35 \times .49 = 229.21 \text{ g}$	1 fish	
Group D	Halibut	C	255.15 g	3 fillets	
	Sole/Flounder	C	255.15 g	3 fillets	
	Sturgeon	B	$14.5\text{oz} \times 28.35 \times 0.562 = 231.02 \text{ g}$	1 fish	
	Suckers	B	$14.5\text{oz} \times 28.35 \times 0.562 = 231.02 \text{ g}$	1 fish	
Group E1	Clams (manila/macoma)	J	28.35 g	6 clams	
	Clams (horse/razor/geo)	L	92 g	1 clam	
	Clams (butter)	K	56.70 g	6 clams	
	Cockles	M	55 g	3 clams	
	Oysters	N	37 g	3 oysters	
	Mussels	O	56.70 g	4 mussels	
	Abalone/Scallop	I	25.52 g	1 container	
Group E2	Shrimp/Lobster	F	127.58 g	3 shrimps	
	Crab	P	334.07 g	one crab (analyzed) Butter+Meat only	
	Squid	R	226.8 g	3 pieces	
	Sea Urchin	E	14.18 g	1 container	
	Sea Cucumber	S	99.23 g	1 cucumber	
	Moonsnail	T	40 g	1 shell	
Group F	Seaweed (dried)	G	8.51 g	1 package	
	Seaweed/kelp (fresh)	H	56.7 g	1 container	

Calculation of edible meat percentage for Models A, B, D, and P.

To determine accurate weight of serving sizes for Models A, B, D and P (crab), the models were used to purchase nine or ten additional fishes or five crab of approximately the same size for each of the four model species and the crab model. Two purchases of fish or crab each were made two weeks apart to increase the likelihood that the fish or crab were not from the same catch. The intention was to characterize potential variability in size of fish or crab. The uncooked fishes were cleaned by five volunteers from the API community using typical methods. Both the volunteers and the CSC said that sometimes, but not always the head, gut, brain and eyeballs were eaten. Therefore, weights for these tissues as dissected by the volunteers were also obtained. A variety of volunteers were used with the intention to characterize potential variation in cleaning methods. The crabs were cooked and edible portions removed from the shells by two API volunteers. Crab meat and crab "butter" were separated from individual crab by the volunteers in the manner in which they would be eaten. Cleaned fish, fish parts, crab meat and crab butter were weighed by a trained person using an electronic balance. Tables B-3-a-d show the data from which the percentage of edible meat were determined for each model.

B-3-a. (Model A)

Model A (Tilapia)						
Fish	Whole	Body	Meat	Head	Gut	Eyes& Brain
	(entire)	(without gut, fins, tail, head)	(skin+flesh)	(without gills)		
#1	447.48	329.51	251.39	59.93	15.43	5.96
#2	584.20	420.14	274.66	83.52	45.42	4.28
#3	459.14	315.94	239.89	83.80	42.72	6.64
#4	431.16	308.57	236.98	56.40	22.81	5.71
#5	516.92	368.92	208.99	94.20	39.65	6.45
#6	674.20	498.01	323.85	77.59	48.36	6.58
#7	694.30	497.84	317.29	58.87	72.75	5.40
#8	659.90	433.21	322.81	94.57	72.25	5.84
#9	437.33	271.34	203.19	92.39	32.95	5.34
#10	657.90	414.48	267.38	133.78	36.99	7.54
Mean	555.95	385.80	266.58	83.47	42.93	5.97
SD	109.38	79.44	45.62	23.08	18.53	0.89
95% CI	67.79	49.23	28.28	14.31	11.49	0.55

B-3-b. (Model B)

Model B (Trout)

Fish	Whole (entire)	Body (without gut, fins, tail, head)	Meat (skin+flesh)	Head (without gills)	Gut	Eyes & Brain
#1	572.26		328.03	83.70	65.89	6.60
#2	515.32		276.03	105.22	49.70	4.38
#3			311.90	105.21	54.33	6.11
#4	595.20	378.79	297.95	98.34	44.44	6.55
#5	553.65	412.07	337.61	118.20	63.87	8.91
#6	694.60	467.76	357.13	69.09	110.01	9.12
#7	510.64	332.62	280.17	67.19	63.71	6.79
#8	537.45	345.65	297.94	71.48	69.63	7.69
#9	598.13	404.37	343.71	76.47	77.73	6.79
Mean	572.16	388.54	314.50	88.66	66.59	6.99
SD	59.47	42.14	27.08	17.66	18.14	1.36
95% CI	43.21	33.72	17.69	11.54	11.85	0.89

B-3-c. (Model D)

Model D (Herring)

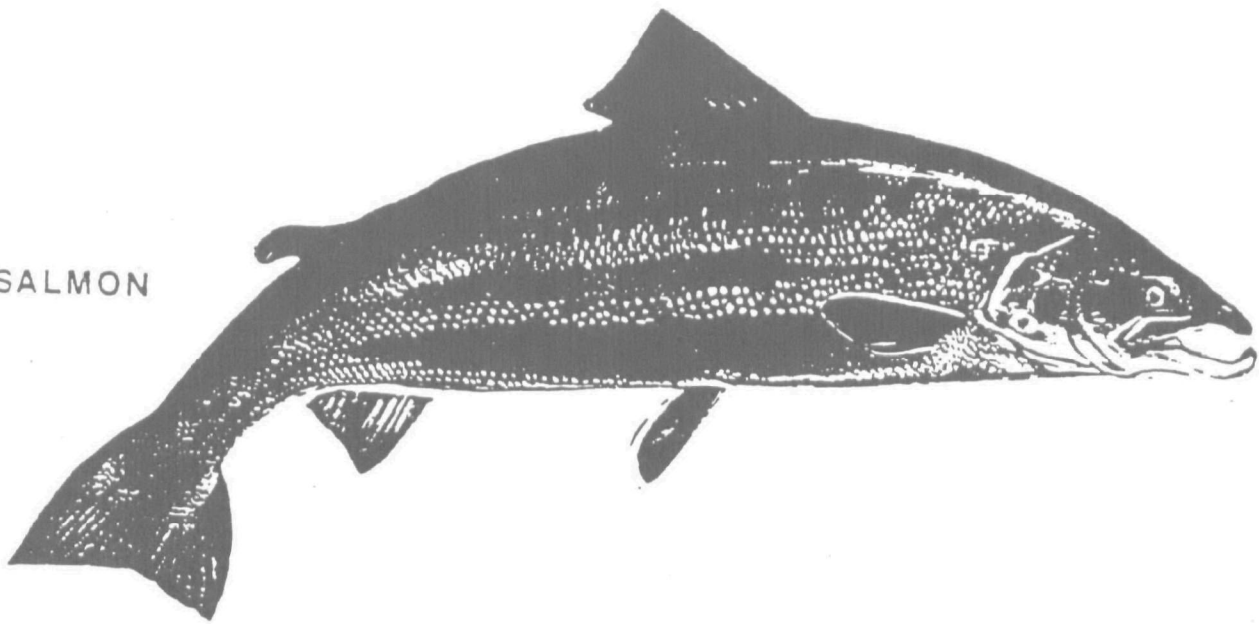
Fish	Whole (entire)	Gutted (with head; without gut & gills)
#1	231.15	205.02
#2	246.55	219.10
#3	227.60	201.69
#4	149.67	129.37
#5	229.12	203.80
#6	252.33	214.51
#7	211.18	183.97
#8	230.32	200.88
#9	243.52	213.04
#10	256.46	225.73
Mean	227.79	199.71
SD	29.20	25.88
95% CI	17.99	16.04

B-3-d. (Model P)

Model P (Crab) Whole Body		Cooked Weights		
	Pre-cooked	Cooked	Butter	Meat
	(grams)	(grams)	(grams)	(grams)
crab				
#1	758.30	649.00	118.42	254.54
#2	643.50	586.82	111.56	208.27
#3	626.20	594.84	97.56	193.91
#4	823.90	738.80	122.52	227.28
#5	699.60	605.70	124.64	211.54
Average	710.30	635.03	114.96	219.11
SD	81.94	62.78	10.88	23.09
95% CI	71.82	55.02	9.54	20.24
Upper 95% CI	782.12	690.06	124.50	239.34
Lower 95% CI	638.48	580.01	105.42	198.87

Appendix C

SALMON



SALMON EGGS

TROUT

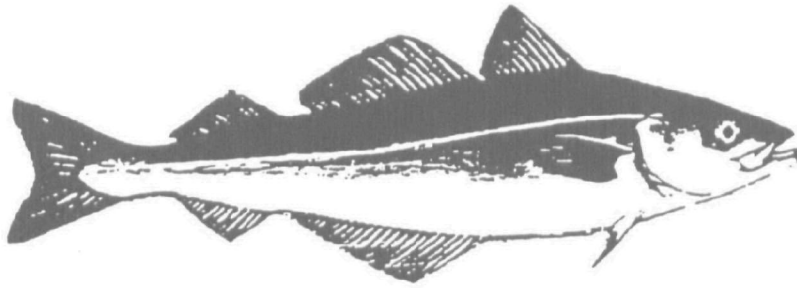


SMELT



GROUP B

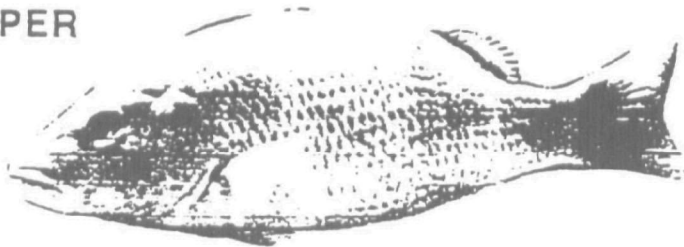
COD



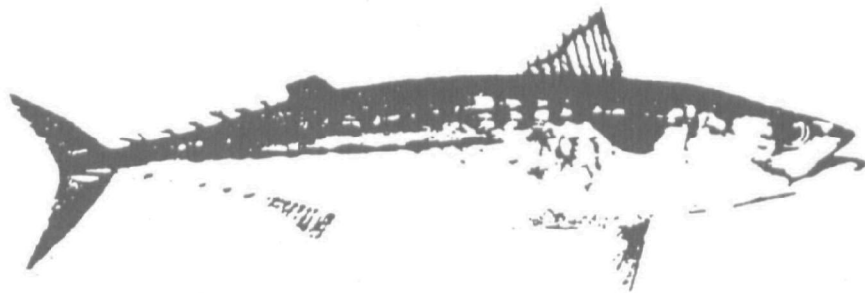
DOGFISH



SNAPPER

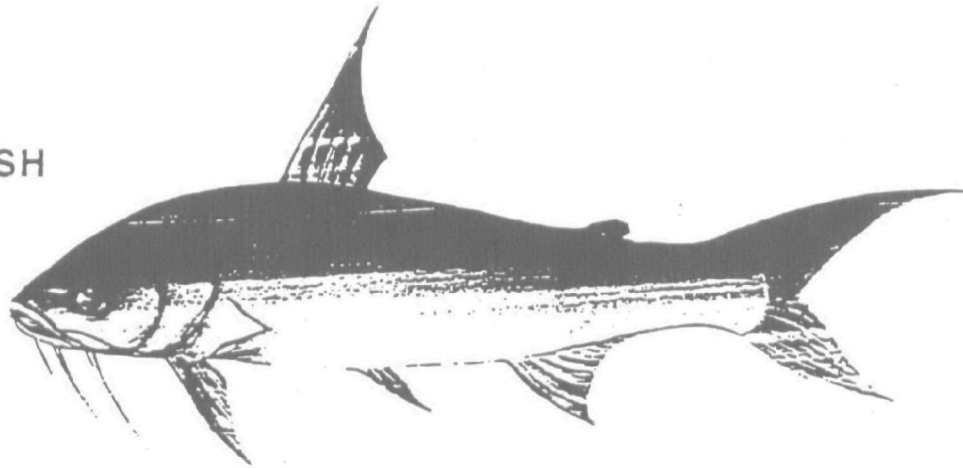


MACKERAL

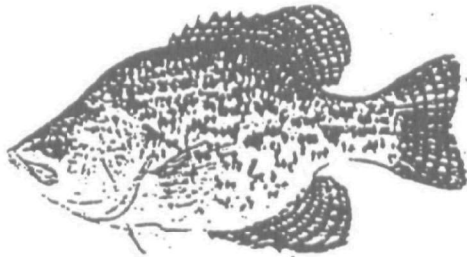


GROUP C

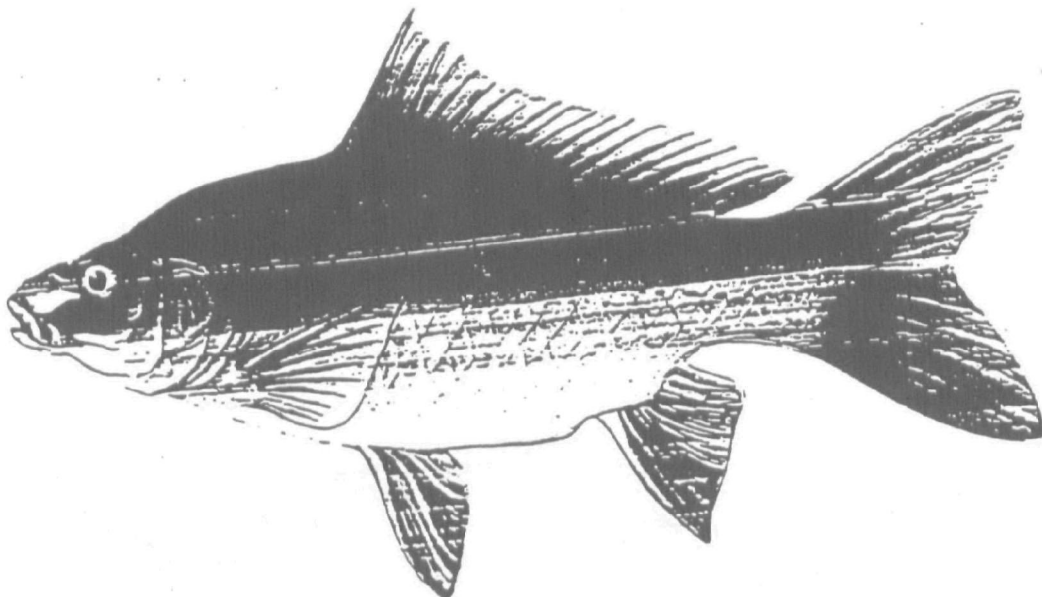
CATFISH



CRAPPIE

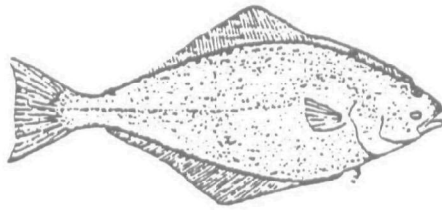


CARP

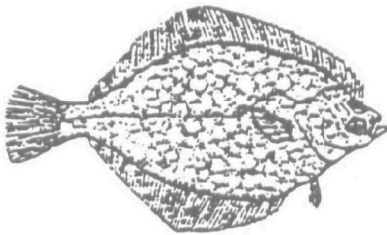


GROUP D

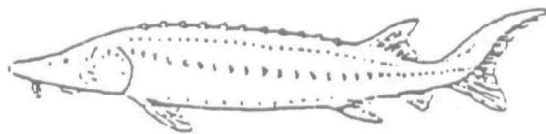
HALIBUT



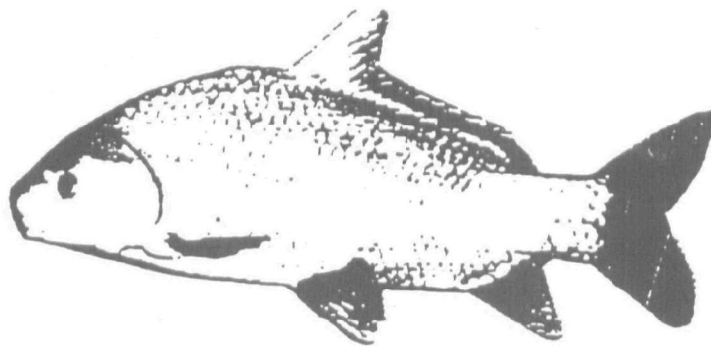
SOLE



STURGEON



SUCKERS

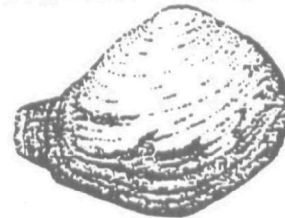


GROUP E

MANILA LITTLENECK CLAM



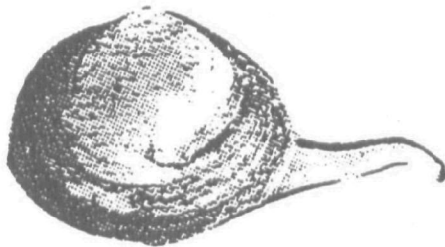
HORSE CLAM



RAZOR CLAM



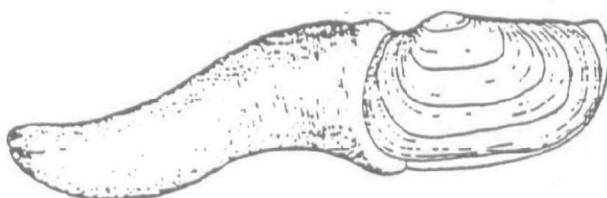
MACOMA CLAM



BUTTER CLAM

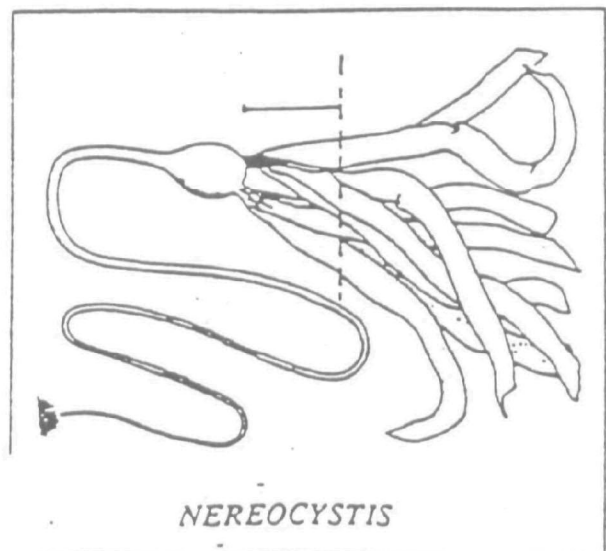
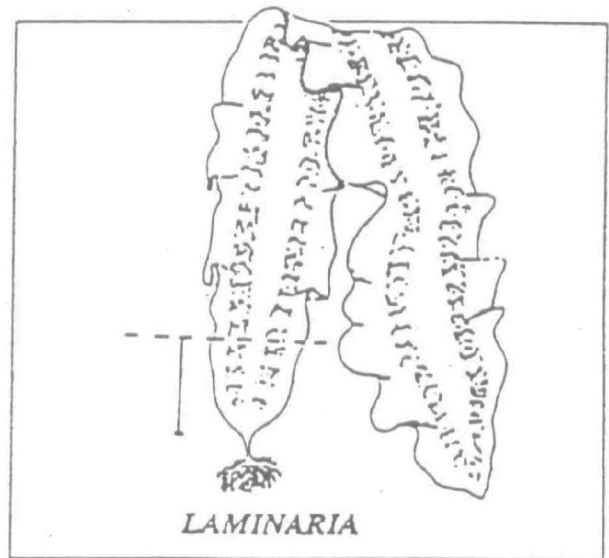


GEODUCK CLAM



SEAWEED N/A

KELP N/A



Appendix D

Interviewer's Telephone Script

Hello, my name is _____. How are you this morning OR afternoon OR evening?

I'm with the _____ community, and I am working with the Asian Pacific American Dietary Habit Study. Do you remember sending a post card saying you are interested in learning more about the study?

As you know, this study will help make health recommendations that are specifically for Asian Pacific American communities, especially for families and children. All information provided in this interview is voluntary and confidential. Your answers will be combined with those of others so that no person's answers can be identified.

One of the challenges we have in this study is that we cannot interview everyone in the community, so we have to rely on a smaller group to represent the larger group. To ensure that we represent the larger group we need to ask you the following five short questions.

1. Do you live in King County? If yes: go to #2.
If no: I'm sorry, our study is targeting residents living within King County only. Thank you for your interest.
2. Do you eat seafood? If yes: go to #3.
If no: I'm sorry, a very important part of our survey addresses seafood consumption and we are targeting people who consume at least a little seafood. Thank you for your interest.
3. What is your age? If yes: go to #4.
If no: a. I'm sorry, this study is only interviewing those older than 18 years and older
b. I'm sorry, we have enough respondents for that age group.
4. What generation are you? If yes: go to #5.
If no: I'm sorry, this study is targeting only 1st and 2nd generation Asian Pacific American groups. Thank you for your interest.
5. Could you verify your ethnicity? If yes: see page 2
If no: I'm sorry, this study is targeting the following groups: Cambodian, Chinese, Korean, Filipino, Japanese, Samoan, Vietnamese, or Lao (Mien, Hmong).

If accepted:

Thank you for your patience and cooperation. You are eligible to participate in the Asian Pacific American Dietary Study. The next step is a 45 minute face to face interview with me at a location convenient to both of us (your home, your office, etc.) where I will read you a number of questions and record your answers. You will be reimbursed with \$25.00 check or grocery certificate equivalent to \$25.00 for a full interview. Again, all information provided in this interview will be kept confidential and voluntary. Your answers will be combined with those of others so that no person's answers can be identified.

When would you like to arrange an interview appointment? And where would you like to be interviewed?

Appendix E

RECORD OF CONTACTS

SUBJECT ID #: 1-1-1-1-1-1

[illegible]

RESULT CODES

01 - Interview complete
02 - Refusal
03 - Deceased

04 - Unavailable
05 - Language Problem
06 - Too Ill

07 - Respondent Moved
08 - Other
09 - Appointment Made

10 - Call back, no appointment made
11 - No answer, no one home
12 - Line busy (telephone)

*FINAL OUTCOME CODE (Entered by Supervisor): 1__1__1

Outcome Contexts:

01 - Complete
02 - Refusal

03 - Document
01 - Unavailable

05 - Language Problem

06 - Too Ill
07 - Moved from Area

09 - Excluded
96 - Other

Appendix F

Name of Religious Organization

Address

City, State Zip Code

Dear _____.

Several weeks ago, we contacted your organization to help us identify individuals within your community. We would like to take this opportunity to re-contact you to explain how the Asian Pacific American Dietary Habit Study may meet your organization and community's needs. We feel that we may have misrepresented the study's mission and goals.

The Asian Pacific American Dietary Habit Study is a community owned study. Currently, there is no existing study of this nature: this is the first. The Asian Pacific American community has been a strong stakeholder and voice in the planning, development, and design phases of the study. We wish to continue this approach. By assisting us in the study, you will be a strong voice for the your community in providing positive change in the government regulations as well as developing culturally appropriate educational curriculum.

Since our last discussion, we have gained tremendous cooperation from the religious organizations within your community. Roughly 30 Asian Pacific American organizations have either shared their membership directory with us or distributed letters on our behalf using the directory. We are approaching your organization again to reconsider sharing your directory or distributing the letters among your members. We do not want your community to be underrepresented so we urge you to participate and be included in the study.

We are willing to make visitations and/or attend board meetings to discuss how we may be able to work together.

Regardless of your decline, we plan to share the data results with you for the benefit of your family, children, and community's health.

We would truly appreciate it if your organization would reconsider your decision.

Sincerely,

Connie Nakano
Study Coordinator
Refugee Federation Service Center

Ruth Sechena, MPH, MD
Director, Environmental Risk Information Service
University of Washington



STATE OF WASHINGTON
OFFICE OF THE GOVERNOR

P.O. Box 40002 • Olympia, Washington 98504-0002 • (360) 753-6780 • TTY/TDD (360) 753-6466

June 13, 1997

Dear Asian Pacific Americans of King County,


I am writing to encourage your participation in the Asian Pacific American Dietary Study, a study being conducted by the University of Washington and the Refugee Federation Service Center, and funded by the U.S. Environment Protection Agency.

Health guidelines in this country are based on dietary studies. Most of the dietary studies, however, are based on the general population and may not reflect certain regional and cultural factors. This study will provide scientific documentation through person-to-person interviews of the eating preferences of 10 Asian and Pacific American ethnic groups (Cambodian, Chinese, Filipino, Hmong, Japanese, Korean, Lao, Mien, Samoan, Vietnamese) in King County.

The information gathered in this study will help individuals in these ethnic groups better evaluate their health risks. It will also be used to develop culturally appropriate educational materials regarding dietary practices, and to establish a model for future studies throughout the United States.

Your participation in this study will help assure that you, your family and your community are properly represented in this pioneer study.

Sincerely,


Gary Locke
Governor



Refugee Federation Service Center

7101 Martin Luther King Jr. Way S., Seattle, WA 98118 / 206-725-9181 Fax 206-725-9175

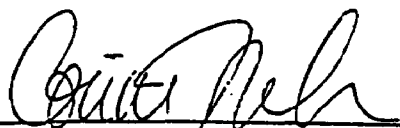
1215 S. Central Ave., Suite 210, Kent, WA 98032 / 206-852-5150 Fax 206-852-1336

10025 16th Ave. SW, Seattle, WA 98146 / 206-762-4894 Fax 206-762-4034

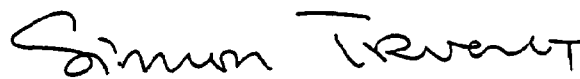
APPENDIX F

Agreement of Consent

We, the Refugee Federation Service Center, affirm that we will use the agency's mailing and roster lists solely for the research purposes of the Asian Pacific American Dietary Habit Study. These purposes include identifying and selecting individuals to invite to participate in this voluntary study. We will protect the names and addresses on the lists from unauthorized usage. We will destroy the lists after the study is conducted.



Connie Nakano, Study Coordinator



Simon Truong, Social Service Director

4/10/97

Date

4/10/97

Date

Appendix G

UNIVERSITY OF WASHINGTON

We need your help! The University of Washington is studying the Asian Pacific American Dietary Habit Study. You have been chosen to take part in the study. 200 Asian Pacific American community members will be interviewed to obtain valuable information about what you eat.

Please sign up for an interview by calling one of the following interviewers (see below) any time of the day or night. Interviews will be held at your most convenient time and location.

• Cambodian	_____	@	_____
• Chinese	_____	@	_____
• Hmong	_____	@	_____
• Filipino	_____	@	_____
• Korean	_____	@	_____
• Japanese	_____	@	_____
• Lao	_____	@	_____
• Mien	_____	@	_____
• Samoan	_____	@	_____
• Vietnamese	_____	@	_____

Your answers and identity will be kept confidential. In addition, you will receive \$25 after the questionnaire is completed. An interviewer will be contacting you within 5-7 days to confirm your participation in the study.

Your answers are extremely important to your family's health and your community! Your help is greatly appreciated.

Sincerely,

Connie Nakano
Study Coordinator
Refugee Federation Service Center

Ruth Sechena
Director, Environmental Risk Information Service
University of Washington

JAPANESE

コミュニティーを助けて25ドルを募り入金!

このフォームを記入の上、返送して下さい。
又は、ビジネスカードをテープで貼付けて下さっても結構です。便宜上、郵便料金は支払済になっています。

名前: _____

住所: _____

市・州・郵便番号: _____

電話番号: _____

人種分類: _____

年齢: _____ どちらに就いて下さい: 男 女

APPENDIX G

Just fill out and mail back! Or tape a business card.
Postage has been pre-paid for your convenience.

Name _____

Address _____

City, State, Zip Code _____

Phone No. _____

Ethnicity _____

Age _____ Please Circle: Male Female

You will be contacted within 3-6 weeks

FILIPINO

TULUNGAN ANG INYONG COMUNIDAD AT
KUMITA NG DALAWAMPUT LIMANG DOLYAR
SA MADALING PARAAN.

Lagdaan at ipadala o idikit ang inyong business card. Ang selyo ay bayad na para sa inyong konbinyente.

Pangalan _____

Tirahan _____

Siudad, Probinsya, Zip Code _____

Telepono _____

Lahi _____

Gulang _____ Bilugan: Lalake Babae

You will be contacted within 3-6 weeks

Pab ib zejtsom nruab zog thiab ua tau \$25 los yam yooj yim.

I suav yog muab teb rau thiab xa rov qab xwb! Lossis muab ib daim itawv uas muaj koj npe, chaw nyob lo nrog. Nqi xa twb them uantej awm, kom yoojyim rau koj.

Npe _____

Chaw Nyob _____

Nroog, Xeev, Zip code _____

Xovtooj _____

I laiv Neej _____

I hub nyooj _____ Thov khij voojvoog: Txivneej Pojniam

MIEN

TENGX meih nyel LAANGZ- ZAANGC mienh aengx
caux HUNG-HEC BIETV \$25.00 nyaanh

Fluh zlangx mngih, a' fai zorqv meih nyel business card naetv
Jlenv iluz Julx daux ngaang nzuon oc!

Julx flenx daux ngaan gnyel (stamp) Jaa-znh naetv zlangx mblenc
bun meih miaz.

Name _____

Address _____

City, State, Zip Code _____

Phone No. _____

I lai fngx mienh _____

I nyangh Jev _____ Toy kuing jiemv Nam Nyionz

FESOASOANI i ou TAGATA ma MAUA ai ma le FILEMU se \$

Na ona faalumu lava ma toe meli vave mail Po'o le faapipi'i iai ma lou pepa faailoga i lau galuega. Ua mae'a ona tologi atu le toe meli mai.

Suafo _____

Tuatusi _____

Nuu, Setete, Numera Oganuu _____

Numera Telefoni _____

Tane _____ Fafine _____

VIETNAMESE

Giúp đỡ Cộng Đồng bạn và được trả thù lao \$25.

Xin điền vào những chi tiết dưới đây và gửi trả lại! Hoặc

kèm theo danh thiếp của bạn. Không cần trả bưu phí.

Tên: _____

Địa chỉ: _____

Thành Phố, tiểu bang, zip code: _____

Số điện thoại: _____

Dân tộc _____

Tuổi _____ Xin vòng tròn: Nam Nữ

LAO

ຊ່ວຍຊຸມຊົນຂອງ ທ່ານ ແລະ ໄດ້ຮັບເງິນ \$25.00 ຢ່າງ ສະບາຍ

ທ່ານນີ້ແມ່ນ ນີ້, ທີ່ ນີ້, ໂທລະສັບ, ເຊັ່ນນີ້, ອາດ, ຫນ້າ ເບິ່ງ ເພາະຂອງທ່ານ
 ແລະ ອື່ນໆ ໃນນີ້ ນີ້ ນີ້ ເພາະບໍ່ມີທາງເພາະຂອງທ່ານນີ້ ໄປກໍ່ດ້ວຍ. ເພື່ອຄວາມຄວບຄູ່ທ່ານ,
 ຫາກທ່ານມີບາດເຈັບ ໄດ້ ເດີມ ບໍ່ ເພາະບໍ່ມີທ່ານນີ້.

ນິເວດນັກກຸມ _____
 ທີ່ _____

 ໂທລະສັບ _____
 ເຊັ່ນນີ້ _____
 ອາດ _____ ນັກກຸມທ່ານນີ້ _____ ເພາະຂອງ _____ ເພາະຢ່າງ _____

KHMER

ບູລິມະສິດ ເພາະນັກ ເພາະນັກ ເພາະນັກ 25.00 ຊ່ວຍ
 ບໍ່ມີທາງເພາະບໍ່ມີທາງເພາະນັກ ເພາະນັກ ເພາະນັກ ເພາະນັກ
 ບໍ່ມີທາງເພາະບໍ່ມີທາງເພາະນັກ ເພາະນັກ ເພາະນັກ ເພາະນັກ
 ບໍ່ມີທາງເພາະບໍ່ມີທາງເພາະນັກ ເພາະນັກ ເພາະນັກ ເພາະນັກ
 ບໍ່ມີທາງເພາະບໍ່ມີທາງເພາະນັກ ເພາະນັກ ເພາະນັກ ເພາະນັກ

ເພາະ: _____
 ການສື່ສານ _____
 ຕີບຸນ ເພາະ ເພາະນັກ _____
 ສະຫຼາດ _____
 ເພາະນັກ _____
 ການ _____ ສູບເພາະນັກ ເພາະ _____ ເພາະ _____ ເພາະ
 ເພາະນັກ ເພາະນັກ ເພາະນັກ ເພາະນັກ ເພາະນັກ ເພາະນັກ ເພາະນັກ

110

CHINESE

帮助社区, 并赚取 \$25
 或每界回, 或每界回, 或每界回
 姓名 _____
 地址 _____
 电话 _____
 邮编 _____
 性别 _____ 年龄: _____ 岁

KOREAN

교민 사회도 돕고, 쉽게 25불도 마세요.

민칸에 가입하시거나 병합만 붙이신 뒤, 그냥 도로
 부치시면 됩니다. 우편 요금은 미리 지불되었습니다.

이름 _____
 주소 _____
 시, 주, 우편번호 _____
 전화번호 _____
 인종 _____

Appendix H

WE NEED YOUR HELP!

PARTICIPATE IN A University of Washington DIETARY HABIT STUDY!

Each chosen volunteer will be paid for a full interview with a \$25 check or a grocery gift certificate.

VOLUNTEERS MUST BE:

- Korean, Chinese, Japanese, Filipino, Samoan, Vietnamese, Lao (Mien and Hmong), or Cambodian ethnicity
- 1st generation* Asian Pacific American or
- 2nd generation** Asian Pacific American
- 18 years or older
- Living in King County

To participate, please call one of the bilingual interviewers:

Cambodian.....
 Chinese.....
 Filipino.....
 Japanese.....
 Korean.....
 Lao.....
 Hmong.....
 Mien.....
 Samoan.....
 Vietnamese.....

The information you provide is extremely important to your community!

Volunteer for an interview now! Bilingual services are available!

*1st generation: those who were born abroad and immigrated to US from their country

**2nd generation: children of 1st generation immigrants and born in US

លើកកម្ពស់ការសិក្សា របស់ លោក ឫក

សូមជូនដំណឹងដល់ការសិក្សា ដ៏សំខាន់ ទាំងអស់ ទទួលបាន
ប្រសិទ្ធភាព របស់ សកលវិទ្យាល័យ វ៉ាស៊ីនតោន

ក្នុង វិស័យ ស្ថិតិវិទ្យា គ្រប់គ្រងធនធាន សម្រាប់ការស្រាវជ្រាវ និងស្រាវជ្រាវ
គ្រប់គ្រងទទួលបាន ២៥.០០ ដុល្លារប្រចាំឆ្នាំ ឬ ក៏បាន បង្កើន
ប្រសិទ្ធភាព ។

ក្នុង វិស័យទទួលបាន គ្រប់គ្រងធនធាន ដូចជា៖

- ក្រុម, ជំនាញ, ដំណើរ ការងារ សម្រាប់ ការសិក្សា លា
- (សម្រាប់ ជំនាញ) ឬ ក៏បាន

សម្រាប់

- ដំណើរការងារសម្រាប់ការសិក្សា លា ក្នុង វិស័យ ក្រុម
- ដំណើរការងារ សម្រាប់ ការសិក្សា លា ដំណើរ ៥១*
- អាយុ ១៩ ឆ្នាំ ឬ ក៏បាន គ្រប់គ្រង
- បាន ៥ លំដាប់ ការងារ យ៉ាង រហ័ស

នឹង ជូន ដំណឹង ដល់ ការសិក្សា លា សម្រាប់ ការសិក្សា លា ក្នុង វិស័យ

- ការសិក្សា លា ក្នុង វិស័យ ៤៨៧ ១១៧២

តាម ការសិក្សា លា ក្នុង វិស័យ ៤៨៧ ១១៧២ មាន ការសិក្សា លា ក្នុង វិស័យ សម្រាប់ ការសិក្សា លា ក្នុង វិស័យ

សម្រាប់ ការសិក្សា លា ក្នុង វិស័យ ៤៨៧ ១១៧២ មាន ការសិក្សា លា ក្នុង វិស័យ សម្រាប់ ការសិក្សា លា ក្នុង វិស័យ

* ដំណើរ ៥១ : ក្រុម ១៩ ឆ្នាំ ឬ ក៏បាន គ្រប់គ្រង ធនធាន ក្នុង វិស័យ សម្រាប់ ការសិក្សា លា ក្នុង វិស័យ

* ដំណើរ ៥២ : ក្រុម ១៩ ឆ្នាំ ឬ ក៏បាន គ្រប់គ្រង ធនធាន ក្នុង វិស័យ សម្រាប់ ការសិក្សា លា ក្នុង វិស័យ

ພວກຂ້າພະເຈົ້າຕ້ອງການຄວາມຊ່ວຍເຫຼືອຈາກທ່ານ! ກະຣຸນາເຂົ້າຮ່ວມໃນການຄົ້ນຄວ້າກ່ຽວກັບອາຫານທີ່ທ່ານ ກິນ!

ຜູ້ສະໝັກທີ່ກຳລັງເລືອກທຸກຄົນຈະໄດ້ຮັບເຊັກ \$25.00 ຫຼືໃບຢັ້ງຢືນຊື້ອາຫານເທົ່າທຽມ ກັບເງິນທີ່ກ່າວ
ນາຂ້າງເທິງນັ້ນເພື່ອເປັນການຕອບແທນການໄດ້ສໍາພາດຈົບແລ້ວ.

ຜູ້ສະໝັກຕ້ອງມີເງື່ອນໄຂດັ່ງຕໍ່ໄປນີ້:

- ທ່ານຕ້ອງເປັນຄົນ ເກົາຫຼີ, ຈີນ, ອິນດູ, ຟີລິບປິນ, ສາມອນ, ວຽດນາມ, ລາວ(ມ້ຽນ, ມົ້ງ), ແລະ
ຂເນນ
- ທ່ານຕ້ອງເປັນຄົນລັ້ນທໍາອິດ: ທ່ານຕ້ອງເປັນ ຄົນເອເຊັຽ ຫຼື ຊາວເກາະປາຊີຟິກທີ່ເກີດມາແຕ່
ປະເທດອື່ນແລ້ວນາຕັ້ງກິນຖານທີ່ປະເທດອາເມຣິກາ
- ທ່ານຕ້ອງເປັນຄົນລັ້ນທີສອງ: ທ່ານຕ້ອງເປັນ ຄົນເອເຊັຽ ຫຼື ຊາວເກາະປາຊີຟິກທີ່ເກີດຢູ່ປະ
ເທດອາເມຣິກາ ນໍາ ຄົນລັ້ນທໍາອິດ
- ທ່ານຕ້ອງມີອາຍຸ 18 ປີ ຫຼືໃຫຍ່ກວ່າ
- ທ່ານຕ້ອງຕັ້ງກິນຖານຢູ່ King County

ກະຣຸນາຕິດຕໍ່ໄປທີ່ _____ 725-9181 ຫຼື

ຂໍ້ມູນທີ່ທ່ານໃຫ້ພວກຂ້າພະເຈົ້າເປັນສິ່ງສໍາຄັນທີ່ສຸດໃຫ້ແກ່ ຊຸມຊົນຂອງທ່ານ!

ກະຣຸນາສະໝັກຈົດຊື່ເຂົ້າສໍາພາດດ່ວນ! ຫາກພວກຂ້າພະເຈົ້າມີ ນາຍພາສາໄວ້ເພື່ອຊ່ວຍເຫຼືອທ່ານ!

**UA MATOU MANAOMIA LAU FESOASOANI!
O SE SU'ESU'EGA TAU MEA TAUMAFAMAASANI!**

APPENDIX H

*O se o le a filifilia ina ia tuufesiliina o le a ia maua se siaki e
\$25.00 lona aofa'i po'o se faatauga mea taumafa foi.*

O e manaomia ona tuufofo mai:

- Kolea, Saina, Sapani, Filipino, Samoa, Vietinamu, Lao (Mien ma Hmong), ma Kemupotia.
- Auga tupulaga muamua (1)* Amerika Asia Pasefika po'o
- Auga tupulaga lona lua (2)** Amerika Asia Pasefika
- 18 tausaga po'o le matua atu
- O lo'o alaala nei i King County

Faamolemole faafeso'ota'i _____ po'o

**O faamatalaga o le a e aumaia e matua taua tele mo
le faapotopotoga!**

**Ofo mai loa ina ia tuufesiligia oe! E maua fesoasoani i lau lava
gagana!**

*Auga tupulaga muamua (1): O e sa fananau i fafo atu o Amerika a ua malaga mai ma nonofo i Amerika

**Auga tupulaga lona lua (2): O fanau a le auga tupulaga muamua (1) ua fananau i Amerika

我們需要你的幫忙！
參加節食習慣研究

每一被選自願接受訪問者，
可獲支票\$25 或雜貨禮券

自願者必須：

- 韓裔、華裔、日本、菲律賓、薩摩亞、越南、寮國、
或柬埔寨人。
- 第一代* 亞太美人，或
- 第二代** 亞太美人。
- 十八歲以上。
- 住在景郡。

請與 _____ 電話
_____ 聯絡。

或

你提供的資料對社區極為重要。

請接受訪問。提供雙語服務。

* 第一代，在外國出生，後已來美。

** 第二代，第一代移民的子女，在美出生。

CHÚNG TÔI CẦN QUÍ BẠN GIÚP ĐỖ THAM GIA VÀO CUỘC PHÒNG VẤN NGHIÊN CỨU TẬP TỤC ĂN UỐNG.

Mỗi bạn được chọn tham gia cuộc phỏng vấn, sau khi hoàn tất bạn sẽ được trả thù lao \$25 đồng bằng chi phiếu hoặc phiếu thực phẩm.

Những người tự nguyện tham gia phải là :

- Người Đại Hàn, Trung Hoa, Nhật, Phi Luật Tân, Samoan, Việt Nam, Lào (Miên & Hmong), hoặc Cam Bốt.
- Thế hệ thứ nhất : @ người Mỹ gốc Á Châu (người Á Châu sinh ở các nước ngoài đến sống ở Mỹ)
- Thế hệ thứ hai: @ Người Á Châu sinh đẻ ở Mỹ (con cháu của những người thế hệ thứ nhất sinh đẻ ở Mỹ)
- Đủ 18 tuổi hoặc hơn
- Hiện cư trú trong quân King
- Xin vui lòng gọi cho JEFF DANG tại số _____ hoặc 314-3556 or 277-2599
- Tin tức bạn cung cấp cho chúng tôi vô cùng quan trọng đối với Cộng Đồng bạn.

**MỖI BẠN THAM GIA CUỘC PHÒNG VẤN NÀY!
CHÚNG TÔI SẼ CÓ NGƯỜI THÔNG DỊCH CHO
QUÝ VỊ.**

YIE MBUO QIEMX ZUQC OIX LONGC MEIH TENGX!
BIEQC DAAIH CAUX JIENV NAAIV NORM KAUV ZAAH NYANC HO^{IV}
NYEI JAUV OC!

*Haix dauh zuqc ginv daaih zoux siev jev nyei mienh naaiv se duqv \$25.00 nyaanh
check fai duqv maaiz lai nyei zing-nyeic nyaanh.*

Bieqc daaih zoux siev jev nyei mienh, se oix zuqc zeiz:

. Jan-Korea, Jan-Kaev, Jan-I Benv, Jan-filipin, Jan-Samoan, Jan-Jau-Zei, Jan-La-zaa
(Mien caux Baeqc-Miuh) caux Jan-K'Menx.

. Da'yietv seix* mbuo Asia caux Jan-Pacific America a'fai

. Da'nyeic seix** mbuo Asia caux Jan-Pacific America

. 18 hnyangx gu'guaaic maengx nyei mienh

. Yiem naaiv King County deic nyei mienh

Tov meih heuc daaih lorz _____ Dienx waac hoc _____ a'fai

Meih gorngv daaih nyei waac naaiv se gengh jienv haic nyei bun meih nyei laagz
zaangc mienh camv!

Tov meih sie jev bieqc daaih bun yie mbuo zaah naaic meih oc! Yie mbuo yaac
aengx maaiah mienh tengx faan waac nyei!

*Da'yietv seix: Cuotv seix yiem meih nyei deic bung, liuz bidaux daaih yiem naaiv
Meiv Guoqv nyei mienh.

**Da'nyeic seix: Da'yietv seix bidaux daaih yiem naaiv Meiv Guoqv aengx caux cuotv
seix yiem naaiv Meiv Guoqv nyei fu'jueiv.

PEB XAV TAU KOJ KEV PAB!
KOOMTES RAU KEV KAWM TXOG TEJ KHOOM UAS IB TXWM NOJ!

Txhua tus uas raug xaiv thiab txaus siab los teb tej lus nug kom tiav yuav tau txais ib daim tshev
 \$25 lossis ib daim tshev muas noj \$25.

Cov txaus siab yuavtsum yog neeg:

- Kauslim, Suav, Yijpooj, Fislispisnaus, Xaismoos, Nyablaj, Nplog (Co thiab Hmoob),
 lossis Khasnpausdias
- Txheej 1* Neeg Tawvdaj nyob tebchaws Asmesliskas tuaj Esxias tuaj lossis
- Txheej 2** Neeg Tawvdaj nyob tebchaws Asmesliskas
- Dhau 18 xyoo rov saud
- Nyob koom tib lub nroog (King County)

Thov tivtoj rau _____ lossis

Tej uas koj qhia txog mas tseem ceeb kawg nkaus li rau ib zejtsoom nruab zog!

Tus uas txaus siab, cia li tso npe rau ib qho maimnav! Neeg txhais koj yam lus, peb muaj!

*Txheej 1: Cov uas yug nyob yus tebchaws thiab tau tsiv teb tsaws chaw tuaj rau US (tebchaws Amesliskas)

*Txheej 2: Cov menyuam ntawm txheej 1 uas tau yug nyob rau US (tebchaws Amesliskas)

UNIVERSITY OF WASHINGTON

귀하의 도움이 필요합니다 식사 습관 연구에 참여합니다

참여자로 뽑히시면 인터뷰의 대가로 25불의
수표와 그로서리 선물권을 받으시게 됩니다

참여자는 반드시

- ◆ 한국인, 중국인, 일본인, 필리핀인, 사모아인, 베트남인,
라오스인(미얀마 혹은 몽). 혹은 캄보디아인으로서는,
- ◆ 아시아 태평양계 미국 교민 1세이거나,
- ◆ 아시아 태평양계 미국 교민 2세이고,
- ◆ 18세 이상의,
- ◆ 킹 카운티 거주자라야 합니다.

이나 _____로
_____에게 연락하십시오.

귀하가 제공하는 정보는 귀하의 교민사회에 굉장히 중요합니다.
인터뷰에 지금 바로 지원하십시오. 이중언어 서비스도 해드립니다.

- 1세대: 외국에서 출생하여 미국으로 이민한 사람
- 2세대: 이민 1세의 자녀이거나, 미국에서 출생한 사람

KAILANGAN NAMIN ANG INYONG TULONG SUMALI SA University of Washington DIETARY HABIT STUDY!

Ang mapiling boluntaryo ay mabayaran ng dalawampung limang dolyar tseke o grocery gift certificate.

Mga boluntaryo ay:

- Korean, Intsik, Hapon, Pilipino, Samoan, Vietnamese, Lao (Mien and Hmong), o Cambodian ;
- Unang generasyon* Asian Pacific American o;
- Ikalawang generrasyon** Asian Pacific American;
- Labing walong taon o mas matanda;
- Nakatira sa King County.

Tawagan lang ninyo ang numerong ito:

Filipino.....o;

Ang mga impormasyon na ibigay ninyo ay malaking bagay para sa inyong komunidad!

Magboluntaryo na kayo para sa pagtatanong! May tutulong sa inyo sa pagsasagot.

*1st generation: those who were born abroad and immigrated to US from their country

**2nd generation: children of 1st generation immigrants and born in US

ヘルプ急募！

食生活習慣の調査に参加して下さい！

選ばれたボランティアの方には、各々、インタビュー完了につき、25ドルのチェック、又は食料品商品券をプレゼント致します。

〈ボランティアの対象規定〉

- 韓国人、中国人、日本人、フィリピン人、サモン人、ベトナム人、ラオス人（ミーン人、モング人）、あるいは、カンボジア人であること。
- アジア系パシフィックアメリカン 1世 か、
- アジア系パシフィックアメリカン 2世 であること。
- 少なくとも18歳以上であること。
- キング郡在住者であること。

〈電話連絡先〉

_____ a t ☎ _____ (日本語でどうぞ)

貴方から提供される情報は、貴方のコミュニティーにとって貴重なものです！

今すぐインタビューのボランティア参加を！ バイリンガル・サービス付きです！

* 1世 : 海外で生まれ、それぞれの国からアメリカへ移民された方

** 2世 : 上記に記した1世移民の子供達でアメリカで生まれた方

Appendix I

CONSENT FOR FUTURE CONTACT

Respondent Code: _____

I agree to be recontacted so that I can consider whether or not to participate in a future study.

Signature_____
Date

Please list below two contacts (relatives or friends) who will be able to help us find you if you move. We will only contact them in the event that we are unable to reach you after several attempts.

1. Name of friend/relative: _____

Address: _____

Telephone: _____

2. Name of friend/relative: _____

Address: _____

Telephone: _____

Appendix J

Questionnaire Number | | | |

ASIAN PACIFIC AMERICAN SEAFOOD CONSUMPTION STUDY
Re-interview data

DATE CALLED		
1) mo day yr	2) mo day yr	3) mo day yr
RE-INTERVIEW TIME		
1) : <input type="checkbox"/> 1 am <input type="checkbox"/> 2 pm	2) : <input type="checkbox"/> 1 am <input type="checkbox"/> 2 pm	3) : <input type="checkbox"/> 1 am <input type="checkbox"/> 2 pm
RESULT CODES		
1) completed interview <input type="checkbox"/> ₁	2) other <input type="checkbox"/> ₂	

INTERVIEWER'S CODE | | | |

A1. How often do you eat the following...

TYPE OF FISH	NUMBER OF PORTIONS EATEN PER			NUMBER OF...PER YEAR	
	WEEK	MONTH	YEAR	WEEKS	MONTHS
SALMON					
in season					
rest of the year					
HALIBUT					
in season					
rest of the year					
SHRIMP					
in season					
rest of the year					

A2. For the following categories, please tell me approximately what percentage of the fish you get from: -- -READ ALL CATEGORIES -- -Answers must total 100%.

- 1) Grocery stores/street vendors _____%
- 2) Fish caught from Puget Sound by yourself, family members or friends _____%
- 3) Fish caught from outside of Puget Sound by yourself, family members
or friends _____%
- 4) Restaurants _____%

A3. For the following categories, please tell me approximately what percentage of the shell fish you get from: -- -READ ALL CATEGORIES -- -Answers must total 100%.

- 1) Grocery stores/street vendors _____%
- 2) Fish caught from Puget Sound by yourself, family members or friends _____%
- 3) Fish caught from outside of Puget Sound by yourself, family members
or friends _____%
- 4) Restaurants _____%

A4. I'm going to ask you about what parts of the fish you eat. Please tell me what percentage of the time you eat the following categories when you eat fish.

---READ ALL CATEGORIES FIRST---Please answer 0-100%. Answers 1 & 2 must total 100%.

- 1) Fillet with skin: _____ %
 2) Fillet without skin: _____ % (1 & 2 total 100%)
 3) Head, bones, eggs, organs: _____ % (0-100%)

A5. The following questions will ask about your eating patterns at social events. In the last 12 months, how often did you attend special celebrations (holiday celebrations, Chinese New Year, cultural or community events, weddings, etc.):

_____ times

A6. Please indicate your age _____. If you choose not to, please select your age category.

18-29 ☐ 1

30-54 ☐ 2

55+ ☐ 3

Appendix K

Types of Seafood Consumed/Respondents Who Consume (%)

<u>Anadromous Fish</u>	<u>(%)</u>	<u>Freshwater Fish</u>	<u>(%)</u>	<u>Shellfish</u>	<u>(%)</u>		
salmon	93	catfish	58	shrimp	98	razor clams	16
trout	61	tilapia	45	crab	96	sea cucumber	15
smelt	45	perch	39	squid	82	sea urchin	14
salmon eggs	27	bass	28	oysters	71	horse clams	13
		carp	22	manila/little-		macoma clams	9
		crappie	17	neck clams	72	moonsnail	4
				lobster	65		
<u>Pelagic Fish</u>	<u>(%)</u>	<u>Bottom Fish</u>	<u>(%)</u>	mussel	62	<u>Seaweed/Kelp</u>	<u>(%)</u>
tuna	86	halibut	65	scallops	57	seaweed	57
cod	66	sole/flounder	42	butter clams	39	kelp	29
mackerel	62	sturgeon	13	geoduck	34		
snapper	50	suckers	4	cockles	21		
rockfish	34			abalone	15		
herring	21						
dogfish	7						
snowfish	6						

Appendix L

Table. Outliers and Substitution

APPENDIX L

QX#	Ethnicity	Gender	Weight	Income	Education	Quality	Rate Reported	Rate used
Anadromous								
BR18*	Chinese	F	57 kg	< 10 k	college	reliable	0.8951 g	0.5924 g
BR21*	Chinese	F	59 kg	missing	college	high	2.0177 g	1.1758 g
FR15*	Lao	M	73 kg	25-35 k	less than coll.	high	3.1179 g	1.1758 g
JR11*	Vietnamese	M	66	< 10 k	high school	high	0.3779 g	0.3054 g
JV02*	Vietnamese	F	45	< 10 k	less than HS	high	0.0221 g	0.0217 g
JV43*	Vietnamese	M	49	< 10 k	high school	high	0.2995 g	0.2222 g
Pelagic								
BR18**	Chinese	F	57 kg	< 10 k	college	reliable	3.2440 g	1.6957 g
FR15*	Lao	M	79 kg	15-20 k	college	high	8.1955 g	2.5620 g
JR11*	Vietnamese	M	66	< 10 k	high school	high	1.0706 g	0.8652 g
JV02*	Vietnamese	F	45	< 10 k	less than HS	high	0.7747 g	0.7624 g
JV43**	Vietnamese	M	49 kg	< 10 k	high school	high	3.2173 g	1.9007 g
Freshwater								
CV05*	Filipino	F	54 kg	< 10 k	college	reliable	1.6280 g	1.0460 g
FR15*	Lao	M	75 kg	25-35 k	less than coll.	high	1.7564 g	1.0460 g
JR11*	Vietnamese	M	66	< 10 k	high school	high	0.5284 g	0.4271 g
JR26*	Vietnamese	M	65 kg	< 10 k	college	high	1.7621 g	1.0460 g
JR42*	Vietnamese	M	54 kg	< 10 k	high school	high	1.1634 g	1.0460 g
JV02*	Vietnamese	F	45	< 10 k	less than HS	high	0.8190 g	0.8060 g
JV43*	Vietnamese	M	49	< 10 k	high school	high	0.8300 g	0.6158 g
Bottom								
BR18**	Chinese	F	57 kg	< 10 k	college	reliable	1.5368 g	0.7212 g
CV05*	Filipino	F	54 kg	< 10 k	college	reliable	1.8477 g	1.0896 g
CV25*	Filipino	M	68 kg	> 45 k	college	high	2.7715 g	1.0896 g
JV02*	Vietnamese	F	45	< 10 k	less than HS	high	0.8306 g	0.8175 g
JR11*	Vietnamese	M	66	< 10 k	high school	high	1.0624 g	0.8586 g
JV43*	Vietnamese	M	49	< 10 k	high school	high	0.1214 g	0.0900 g
Shellfish								
BR18**	Chinese	F	57 kg	< 10 k	college	reliable	11.8294 g	3.3362 g
ER04*	Korean	M	73 kg	20-25 k	college	high	7.1397 g	5.0407 g
JR11*	Vietnamese	M	66	< 10 k	high school	high	5.0109 g	4.0498 g
JV02*	Vietnamese	F	45	< 10 k	less than HS	high	4.0849 g	4.0202 g
JV43**	Vietnamese	M	49 kg	< 10 k	high school	high	8.6327 g	3.7395 g
Seaweed/kelp								
BR18*	Chinese	F	57 kg	< 10 k	college	reliable	0.3647 g	0.2414 g
DR22*	Japanese	F	54 kg	10-15 k	other	high	0.7917 g	0.7882 g
DV08*	Japanese	F	43 kg	35-45 k	college	reliable	0.8693 g	0.7882 g
EV05*	Korean	F	59 kg	< 10 k	less than HS	reliable	1.2957 g	0.7882 g
EV06*	Korean	F	50 kg	35-45 k	college	high	1.1945 g	0.7882 g
JV02*	Vietnamese	F	45	< 10 k	less than HS	high	0.1027 g	0.1011 g
Miscellaneous								
BR18*	Chinese	F	57 kg	< 10 k	college	reliable	0.0394 g	0.0261 g
CV03*	Filipino	F	49 kg	10-15 k	high school	reliable	0.8871 g	0.6216 g
DR22*	Japanese	F	54 kg	10-15 k	other	high	0.7560 g	0.6216 g
DV08*	Japanese	F	43 kg	35-45 k	college	reliable	0.9922 g	0.6216 g
ER13*	Korean	M	61 kg	< 10 k	high school	high	1.0833 g	0.6216 g
JR11*	Vietnamese	M	66	< 10 k	high school	high	0.1321 g	0.1068 g
JV02*	Vietnamese	F	45	< 10 k	less than HS	high	0.0855 g	0.0842 g
JV43*	Vietnamese	M	49	< 10 k	high school	high	0.0603 g	0.0447 g
All Seafood								
BR18*	Chinese	F	57 kg	< 10 k	college	reliable	9.9915 g	6.6310 g
JR11*	Vietnamese	M	66	< 10 k	high school	high	8.1824 g	6.6310 g
JV02*	Vietnamese	F	45	< 10 k	less than HS	high	6.7195 g	6.6310 g
JV43*	Vietnamese	M	49	< 10 k	high school	high	8.9139 g	6.6310 g

- Outlier in the specific category
- * Outlier in the category of "All seafood"
- ** Outliers in both "All seafood" and the specific category

Appendix M

Participation rates by participant category

Participant Category	Attempted Contacts	Unable to Contact	Reached	Disqualified	Refused	Participated
	n	n (%)	n (%)	n (%)	n (%)	n (%)
Volunteer	150	24 (16)	126 (84)	16 (13)	4 (4)	106 (96)
Roster	365	198 (54)	167 (46)	24 (14)	47 (33)	96 (67)

Miscellaneous seafood consumers

Species	# of Consumers	% of all respondents
Octopus	23	11%
Eel (freshwater/saltwater)	21	10%
Fish egg (all kind)	21	10%
Yellow fish	19	9%
Bonito Flakes	12	6%
Milk fish	9	4%
Jelly fish	8	4%
Beltfish	6	3%
Fly fish	6	3%
Sardine	4	2%
Galung Gong	2	1%
Monk fish	1	0%
Dried small fish	1	0%
Shad	1	0%
Shark	1	0%
Barracuda	1	0%
Sword fish	1	0%

Demographic and seafood preparation characteristics of “higher” and “lower” seafood consumers.

	n	All Finfish		Shellfish	
		(Higher Consumer: > 75%tile = 1.144 g/day/kg)		(Higher Consumer: > 75%tile = 1.072 g/day/kg)	
		Lower Consumers	Higher Consumers	Lower Consumers	Higher Consumers
Female	107	76%	24%	71%	29%
Male	95	81%	19%	79%	21%
18-29	78	85%	15%	73%	27%
30-54	85	79%	21%	78%	22%
55+	39	64%	36%	72%	28%
Cambodian	20	90%	10%	70%	30%
Chinese	30	83%	17%	70%	30%
Filipino	30	80%	20%	87%	13%
Japanese	29	48%	52%	79%	21%
Korean	22	91%	9%	68%	32%
Laotian	20	75%	25%	75%	25%
Mien	10	90%	10%	90%	10%
Hmong	5	100%	0%	100%	0%
Samoan	10	100%	0%	100%	0%
Vietnamese	26	69%	31%	50%	50%
< FPL	71	79%	21%	68%	32%
1-2 FPL	39	92%	8%	77%	23%
2-3 FPL	38	76%	24%	82%	18%
>3 FPL	39	74%	26%	80%	20%
HS or Less	69	74%	26%	70%	30%
Above HS	98	81%	19%	76%	24%
Non-fishermen	136	82%	18%	76%	24%
Fishermen	66	71%	29%	73%	27%

Demographic and seafood preparation characteristics of "higher" and "lower" seafood consumers.

	All Finfish		Shellfish	
	(Higher Consumer: > 75%tile = 1.144 g/day/kg)		(Higher Consumer: > 75%tile = 1.072 g/day/kg)	
	Lower Consumers (n=158)	Higher Consumers (n=44)	Lower Consumers (n=151)	Higher Consumers (n=51)
Read in Books	65%	84%	72%	61%
Listen to someone	54%	59%	55%	55%
See Video	39%	23%	36%	33%
Learn on Computer	15%	18%	15%	18%
Tape Recording	8%	7%	7%	10%
See Slide Show	3%	7%	3%	8%
Read Comic book	5%	2%	3%	10%
Fillet with Skin	52% (3%)	51% (6%)		
Fillet w/o Skin	41% (3%)	44% (7%)		
Head/Bone/Organ	20% (3%)	19% (4%)		
Bake, Boil, etc.	58% (2%)	72% (4%)	76% (2%)	79% (3%)
Canned, Fried, etc.	36% (2%)	24% (3%)	22% (2%)	21% (3%)
Purchased	75%	82%	86%	93%
Caught	25%	18%	14%	7%

Seafood consumption rates by ethnicity*

Category	Ethnicity	Sample size (n)	Mean	S.E.	10%tile	Median	1st Quartile	3rd Quartile	90%tile	% with non-zero consumption	Consumers (%)	95% LCI	95%UCI
Anadromous Fish (p<0.001)	Cambodian	20	0.118	0.050	0.000	0.030	0.012	0.102	0.453	18	90.0%	0.014	0.223
	Chinese	30	0.193	0.052	0.012	0.066	0.031	0.244	0.587	30	100.0%	0.086	0.300
	Filipino	30	0.152	0.027	0.025	0.100	0.071	0.180	0.384	29	96.7%	0.098	0.206
	Japanese	29	0.374	0.056	0.086	0.251	0.137	0.519	0.921	29	100.0%	0.261	0.488
	Korean	22	0.091	0.026	0.007	0.048	0.020	0.111	0.248	22	100.0%	0.037	0.146
	Laotian	20	0.187	0.064	0.002	0.069	0.032	0.223	0.603	18	90.0%	0.054	0.321
	Mien	10	0.018	0.008	0.000	0.011	0.000	0.023	0.080	7	70.0%	0.000	0.036
	Hmong	5	0.059	0.013	n/a	0.071	n/a	n/a	n/a	5	100.0%	0.026	0.091
	Samoan	10	0.067	0.017	0.012	0.054	0.031	0.087	0.185	10	100.0%	0.030	0.104
	Vietnamese	26	0.124	0.026	0.017	0.072	0.031	0.169	0.349	26	100.0%	0.071	0.176
	All Ethnicity (1)	202	0.201	0.008	0.016	0.093	0.036	0.248	0.509	194	96.0%	0.187	0.216
Pelagic Fish (p<0.001)	Cambodian	20	0.088	0.021	0.000	0.061	0.012	0.122	0.293	17	85.0%	0.044	0.131
	Chinese	30	0.325	0.068	0.022	0.171	0.063	0.475	0.824	30	100.0%	0.187	0.463
	Filipino	30	0.317	0.081	0.051	0.132	0.093	0.358	0.729	30	100.0%	0.151	0.482
	Japanese	29	0.576	0.079	0.132	0.429	0.286	0.777	1.072	29	100.0%	0.415	0.737
	Korean	22	0.313	0.056	0.073	0.186	0.112	0.438	0.843	22	100.0%	0.196	0.429
	Laotian	20	0.412	0.138	0.005	0.115	0.027	0.673	1.061	20	100.0%	0.124	0.700
	Mien	10	0.107	0.076	0.000	0.009	0.000	0.098	0.716	7	70.0%	-0.064	0.277
	Hmong	5	0.093	0.028	n/a	0.090	n/a	n/a	n/a	5	100.0%	0.021	0.164
	Samoan	10	0.499	0.060	0.128	0.535	0.434	0.579	0.792	10	100.0%	0.365	0.633
	Vietnamese	26	0.377	0.086	0.059	0.208	0.093	0.533	0.956	26	100.0%	0.201	0.553
	All Ethnicity (1)	202	0.382	0.013	0.046	0.215	0.097	0.491	0.829	196	97.0%	0.357	0.407
Freshwater Fish (p<0.001)	Cambodian	20	0.139	0.045	0.000	0.045	0.009	0.207	0.565	18	90.0%	0.045	0.232
	Chinese	30	0.084	0.023	0.000	0.015	0.004	0.116	0.327	24	80.0%	0.037	0.131
	Filipino	30	0.132	0.034	0.018	0.086	0.054	0.155	0.273	30	100.0%	0.062	0.202
	Japanese	29	0.021	0.006	0.000	0.007	0.000	0.039	0.071	20	69.0%	0.010	0.032
	Korean	22	0.032	0.015	0.000	0.008	0.000	0.023	0.160	13	59.1%	0.002	0.062
	Laotian	20	0.282	0.077	0.002	0.099	0.042	0.492	1.006	18	90.0%	0.122	0.442
	Mien	10	0.097	0.039	0.007	0.070	0.047	0.085	0.407	10	100.0%	0.010	0.184
	Hmong	5	0.133	0.051	n/a	0.081	n/a	n/a	n/a	5	100.0%	0.002	0.263
	Samoan	10	0.026	0.007	0.000	0.025	0.007	0.046	0.061	9	90.0%	0.011	0.041
	Vietnamese	26	0.341	0.064	0.068	0.191	0.087	0.484	1.036	26	100.0%	0.209	0.472
	All Ethnicity (1)	202	0.110	0.005	0.000	0.043	0.006	0.103	0.271	173	85.6%	0.101	0.119
Bottom Fish (p<0.001)	Cambodian	20	0.045	0.025	0.000	0.003	0.000	0.032	0.114	10	50.0%	-0.006	0.097
	Chinese	30	0.082	0.026	0.004	0.033	0.007	0.096	0.212	28	93.3%	0.028	0.135
	Filipino	30	0.165	0.043	0.001	0.103	0.030	0.162	0.560	27	90.0%	0.078	0.253
	Japanese	29	0.173	0.044	0.023	0.098	0.034	0.168	0.554	28	96.6%	0.083	0.263
	Korean	22	0.119	0.026	0.000	0.062	0.020	0.187	0.270	19	86.4%	0.064	0.173
	Laotian	20	0.066	0.031	0.000	0.006	0.000	0.088	0.173	13	65.0%	0.000	0.131
	Mien	10	0.006	0.003	0.000	0.000	0.000	0.015	0.026	4	40.0%	-0.001	0.013
	Hmong	5	0.036	0.021	n/a	0.024	n/a	n/a	n/a	3	60.0%	-0.017	0.088
	Samoan	10	0.029	0.005	0.008	0.026	0.016	0.038	0.058	10	100.0%	0.018	0.040
	Vietnamese	26	0.102	0.044	0.000	0.030	0.005	0.087	0.388	21	80.8%	0.013	0.192
	All Ethnicity (1)	202	0.125	0.006	0.000	0.047	0.014	0.141	0.272	163	80.7%	0.113	0.137
Shellfish Fish (p<0.001)	Cambodian	20	0.919	0.216	0.085	0.695	0.300	1.228	2.003	20	100.0%	0.467	1.370
	Chinese	30	0.985	0.168	0.176	0.569	0.316	1.352	2.804	30	100.0%	0.643	1.327
	Filipino	30	0.613	0.067	0.188	0.505	0.386	0.853	1.206	30	100.0%	0.477	0.750
	Japanese	29	0.602	0.089	0.116	0.401	0.248	0.954	1.428	29	100.0%	0.419	0.784
	Korean	22	1.045	0.251	0.251	0.466	0.292	1.508	2.808	22	100.0%	0.524	1.566
	Laotian	20	0.898	0.259	0.041	0.424	0.270	1.044	2.990	19	95.0%	0.357	1.439
	Mien	10	0.338	0.113	0.015	0.201	0.068	0.591	1.058	10	100.0%	0.086	0.590
	Hmong	5	0.248	0.014	n/a	0.252	n/a	n/a	n/a	5	100.0%	0.212	0.283
	Samoan	10	0.154	0.024	0.086	0.138	0.105	0.169	0.336	10	100.0%	0.100	0.208
	Vietnamese	26	1.577	0.260	0.247	1.196	0.331	2.283	4.029	26	100.0%	1.044	2.110
	All Ethnicity (1)	202	0.867	0.023	0.168	0.498	0.298	1.072	1.727	201	99.5%	0.821	0.913

*All consumption rates in g/kg bodyweight/d.

Weighted by population percentage.

Note: P-value is based on Kruskal Wallis Test.

See end of table for consumption rate calculation explanation.

Seafood consumption rates by ethnicity (continued)

Category	Ethnicity	Sample size (n)	Mean	S.E.	10%tile	Median	1st Quartile	3rd Quartile	90%tile	% with non-zero consumption	Consumers (%)	95% LCI	95%UCI
Seaweed/Kelp (p<0.001)	Cambodian	20	0.002	0.001	0.000	0.000	0.000	0.002	0.008	7	35.0%	0.000	0.004
	Chinese	30	0.062	0.022	0.001	0.017	0.004	0.038	0.314	29	96.7%	0.016	0.107
	Filipino	30	0.009	0.004	0.000	0.000	0.000	0.009	0.025	15	50.0%	0.002	0.016
	Japanese	29	0.190	0.043	0.019	0.082	0.029	0.255	0.752	29	100.0%	0.101	0.279
	Korean	22	0.200	0.050	0.011	0.087	0.030	0.340	0.686	21	95.5%	0.096	0.304
	Laotian	20	0.004	0.003	0.000	0.000	0.000	0.002	0.013	6	30.0%	-0.001	0.009
	Mien	10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.0%	0.000	0.000
	Hmong	5	0.002	0.001	n/a	0.001	n/a	n/a	n/a	3	60.0%	0.000	0.004
	Samoaan	10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0.0%	0.000	0.000
	Vietnamese	26	0.017	0.012	0.000	0.000	0.000	0.000	0.050	6	23.1%	-0.008	0.043
	All Ethnicity (1)	202	0.084	0.005	0.000	0.014	0.000	0.053	0.294	116	57.4%	0.075	0.093
Miscellaneous	Cambodian	20	0.113	0.026	0.000	0.087	0.021	0.137	0.345	18	90.0%	0.058	0.168
Fish (p<0.001)	Chinese	30	0.081	0.021	0.003	0.030	0.017	0.126	0.201	30	100.0%	0.038	0.123
	Filipino	30	0.083	0.025	0.016	0.043	0.023	0.071	0.182	30	100.0%	0.032	0.134
	Japanese	29	0.246	0.036	0.032	0.206	0.100	0.342	0.620	29	100.0%	0.173	0.319
	Korean	22	0.092	0.031	0.004	0.047	0.012	0.109	0.307	21	95.5%	0.028	0.156
	Laotian	20	0.074	0.021	0.000	0.025	0.001	0.134	0.225	15	75.0%	0.029	0.118
	Mien	10	0.015	0.008	0.000	0.002	0.000	0.027	0.063	7	70.0%	-0.003	0.033
	Hmong	5	0.019	0.014	n/a	0.008	n/a	n/a	n/a	4	80.0%	-0.018	0.055
	Samoaan	10	0.076	0.028	0.003	0.045	0.017	0.125	0.276	10	100.0%	0.014	0.138
	Vietnamese	26	0.089	0.013	0.013	0.087	0.031	0.137	0.184	25	96.2%	0.062	0.115
	All Ethnicity (1)	202	0.121	0.004	0.005	0.056	0.021	0.144	0.296	189	93.6%	0.112	0.130
	All Finfish (p<0.001)	202	0.390	0.098	0.061	0.223	0.081	0.421	1.379	20	100.0%	0.185	0.594
All Finfish (p<0.001)	Chinese	30	0.683	0.133	0.114	0.338	0.189	0.961	2.024	30	100.0%	0.412	0.954
	Filipino	30	0.766	0.148	0.268	0.452	0.364	0.965	1.348	30	100.0%	0.464	1.067
	Japanese	29	1.144	0.124	0.194	1.151	0.591	1.410	2.170	29	100.0%	0.890	1.398
	Korean	22	0.555	0.079	0.180	0.392	0.286	0.750	1.204	22	100.0%	0.391	0.719
	Laotian	20	0.947	0.204	0.117	0.722	0.261	1.203	2.646	20	100.0%	0.523	1.372
	Mien	10	0.228	0.117	0.034	0.097	0.076	0.215	1.160	10	100.0%	-0.032	0.488
	Hmong	5	0.319	0.073	n/a	0.268	n/a	n/a	n/a	5	100.0%	0.131	0.507
	Samoaan	10	0.621	0.059	0.225	0.682	0.535	0.718	0.842	10	100.0%	0.490	0.751
	Vietnamese	26	0.944	0.171	0.188	0.543	0.331	1.479	2.568	26	100.0%	0.593	1.296
	All Ethnicity (1)	202	0.818	0.023	0.166	0.515	0.290	1.144	1.638	202	100.0%	0.774	0.863
	All Fish (p<0.001)	202	1.421	0.274	0.245	1.043	0.619	1.983	3.759	20	100.0%	0.851	1.995
All Fish (p<0.001)	Chinese	30	1.749	0.283	0.441	1.337	0.627	2.152	4.206	30	100.0%	1.172	2.326
	Filipino	30	1.462	0.206	0.660	1.135	0.817	1.519	2.423	30	100.0%	1.041	1.883
	Japanese	29	1.992	0.214	0.524	1.723	1.267	2.616	3.704	29	100.0%	1.555	2.429
	Korean	22	1.692	0.275	0.561	1.122	0.783	2.423	3.672	22	100.0%	1.122	2.262
	Laotian	20	1.919	0.356	0.358	1.467	0.614	3.578	4.147	20	100.0%	1.176	2.663
	Mien	10	0.580	0.194	0.114	0.288	0.217	0.884	1.967	10	100.0%	0.149	1.012
	Hmong	5	0.585	0.069	n/a	0.521	n/a	n/a	n/a	5	100.0%	0.407	0.764
	Samoaan	10	0.850	0.078	0.363	0.879	0.698	1.018	1.188	10	100.0%	0.676	1.025
	Vietnamese	26	2.610	0.377	0.653	2.230	0.915	3.541	6.542	26	100.0%	1.835	3.385
	All Ethnicity (1)	202	1.807	0.042	0.480	1.363	0.751	2.160	3.909	202	100.0%	1.724	1.889
	All Seafood (p<0.001)	202	1.423	0.274	0.245	1.043	0.619	1.983	3.759	20	100.0%	0.851	1.995
All Seafood (p<0.001)	Chinese	30	1.811	0.294	0.452	1.354	0.630	2.301	4.249	30	100.0%	1.210	2.411
	Filipino	30	1.471	0.206	0.660	1.135	0.817	1.522	2.425	30	100.0%	1.050	1.892
	Japanese	29	2.182	0.229	0.552	1.830	1.350	2.998	3.843	29	100.0%	1.714	2.650
	Korean	22	1.892	0.294	0.608	1.380	0.855	2.576	4.038	22	100.0%	1.281	2.503
	Laotian	20	1.923	0.356	0.400	1.467	0.614	3.581	4.147	20	100.0%	1.181	2.665
	Mien	10	0.580	0.194	0.114	0.288	0.217	0.884	1.967	10	100.0%	0.149	1.012
	Hmong	5	0.587	0.069	n/a	0.521	n/a	n/a	n/a	5	100.0%	0.410	0.765
	Samoaan	10	0.850	0.078	0.363	0.879	0.698	1.018	1.188	10	100.0%	0.676	1.025
	Vietnamese	26	2.627	0.378	0.670	2.384	0.915	3.541	6.613	26	100.0%	1.851	3.404
	All Ethnicity (1)	202	1.891	0.043	0.521	1.439	0.764	2.433	3.928	202	100.0%	1.805	1.976

Consumption Rate. Seafood species were categorized into seven groups: anadromous, pelagic, freshwater, bottom, shellfish, seaweed/kelp, and miscellaneous seafood (see Appendix K) for surveyed species within each group. Anadromous, pelagic, freshwater and bottom fish were further combined into the "finfish" category. Finfish, shellfish, and miscellaneous seafood were used to compute the "all fish" category. "All fish" and "seaweed/kelp" were aggregated into "all seafood."

Seafood consumption rates by ethnicity and gender*

Category	Ethnicity	n	Female			n	Male		
			Mean	SE	Median		Mean	SE	Median
Anadromous Fish	Cambodian	11	0.040	0.023	0.015	9	0.214	0.102	0.088
	Chinese	15	0.292	0.094	0.086	15	0.093	0.035	0.031
	Filipino	15	0.173	0.047	0.103	15	0.132	0.026	0.097
	Japanese	17	0.362	0.060	0.250	12	0.392	0.107	0.309
	Korean	12	0.079	0.024	0.054	10	0.107	0.052	0.043
	Laotian	10	0.122	0.060	0.042	10	0.253	0.113	0.108
	Mien	5	0.011	0.005	0.009	5	0.025	0.016	0.014
	Hmong	3	0.078	0.006	0.074	2	0.029	0.002	0.029
	Samoan	5	0.066	0.016	0.066	5	0.068	0.032	0.050
	Vietnamese	14	0.091	0.035	0.051	12	0.162	0.036	0.141
	All Ethnicity	107	0.165	0.022	0.076	95	0.169	0.024	0.080
Pelagic Fish	Cambodian	11	0.118	0.033	0.074	9	0.051	0.016	0.045
	Chinese	15	0.421	0.117	0.214	15	0.229	0.063	0.122
	Filipino	15	0.428	0.151	0.247	15	0.206	0.053	0.117
	Japanese	17	0.515	0.070	0.398	12	0.663	0.164	0.566
	Korean	12	0.265	0.072	0.178	10	0.371	0.089	0.391
	Laotian	10	0.311	0.120	0.111	10	0.513	0.253	0.115
	Mien	5	0.159	0.154	0.005	5	0.055	0.033	0.023
	Hmong	3	0.083	0.049	0.043	2	0.107	0.017	0.107
	Samoan	5	0.545	0.021	0.559	5	0.453	0.122	0.518
	Vietnamese	14	0.325	0.096	0.188	12	0.439	0.151	0.222
	All Ethnicity	107	0.349	0.037	0.215	95	0.334	0.045	0.148
Freshwater fish	Cambodian	11	0.125	0.056	0.048	9	0.156	0.077	0.042
	Chinese	15	0.068	0.024	0.033	15	0.101	0.040	0.008
	Filipino	15	0.157	0.065	0.091	15	0.107	0.025	0.070
	Japanese	17	0.026	0.007	0.012	12	0.014	0.009	0.000
	Korean	12	0.012	0.007	0.000	10	0.057	0.030	0.015
	Laotian	10	0.344	0.117	0.168	10	0.221	0.102	0.077
	Mien	5	0.145	0.075	0.072	5	0.050	0.014	0.050
	Hmong	3	0.169	0.084	0.091	2	0.078	0.003	0.078
	Samoan	5	0.026	0.010	0.033	5	0.026	0.010	0.025
	Vietnamese	14	0.276	0.081	0.128	12	0.417	0.101	0.324
	All Ethnicity	107	0.131	0.021	0.054	95	0.137	0.023	0.054
Bottom Fish	Cambodian	11	0.056	0.044	0.000	9	0.032	0.016	0.006
	Chinese	15	0.132	0.047	0.054	15	0.031	0.014	0.014
	Filipino	15	0.243	0.080	0.119	15	0.087	0.015	0.091
	Japanese	17	0.161	0.040	0.099	12	0.191	0.093	0.051
	Korean	12	0.077	0.024	0.048	10	0.169	0.047	0.156
	Laotian	10	0.086	0.061	0.003	10	0.046	0.018	0.010
	Mien	5	0.004	0.003	0.000	5	0.008	0.006	0.000
	Hmong	3	0.045	0.034	0.024	2	0.021	0.021	0.021
	Samoan	5	0.030	0.008	0.025	5	0.028	0.007	0.026
	Vietnamese	14	0.089	0.057	0.014	12	0.118	0.069	0.033
	All Ethnicity	107	0.115	0.019	0.040	95	0.087	0.017	0.034

Seafood consumption rates by ethnicity and gender (continued)

Category	Ethnicity	n	Female			n	Male		
			Mean	SE	Median		Mean	SE	Median
Shellfish Fish	Cambodian	11	0.715	0.184	0.404	9	1.168	0.426	0.843
	Chinese	15	1.115	0.259	0.768	15	0.855	0.216	0.497
	Filipino	15	0.689	0.118	0.789	15	0.538	0.060	0.498
	Japanese	17	0.524	0.101	0.372	12	0.712	0.162	0.468
	Korean	12	0.858	0.216	0.430	10	1.270	0.496	0.555
	Laotian	10	1.088	0.326	0.692	10	0.709	0.412	0.373
	Mien	5	0.311	0.129	0.214	5	0.365	0.201	0.127
	Hmong	3	0.266	0.007	0.271	2	0.221	0.024	0.221
	Samoan	5	0.191	0.043	0.168	5	0.116	0.010	0.113
	Vietnamese	14	1.725	0.365	1.772	12	1.405	0.379	0.946
	All Ethnicity	107	0.864	0.086	0.432	95	0.836	0.104	0.490
Seaweed/Kelp	Cambodian	11	0.002	0.001	0.000	9	0.002	0.002	0.000
	Chinese	15	0.076	0.034	0.018	15	0.047	0.030	0.017
	Filipino	15	0.005	0.003	0.000	15	0.013	0.007	0.004
	Japanese	17	0.241	0.068	0.101	12	0.118	0.036	0.066
	Korean	12	0.242	0.083	0.087	10	0.149	0.048	0.114
	Laotian	10	0.006	0.005	0.000	10	0.002	0.001	0.000
	Mien	5	0.000	0.000	0.000	5	0.000	0.000	0.000
	Hmong	3	0.003	0.001	0.004	2	0.001	0.001	0.001
	Samoan	5	0.000	0.000	0.000	5	0.000	0.000	0.000
	Vietnamese	14	0.010	0.007	0.000	12	0.026	0.026	0.000
	All Ethnicity	107	0.079	0.018	0.005	95	0.044	0.010	0.002
Miscellaneous Fish	Cambodian	11	0.108	0.034	0.071	9	0.119	0.044	0.088
	Chinese	15	0.080	0.029	0.029	15	0.082	0.030	0.036
	Filipino	15	0.094	0.040	0.037	15	0.072	0.030	0.046
	Japanese	17	0.253	0.046	0.258	12	0.237	0.058	0.177
	Korean	12	0.062	0.015	0.047	10	0.128	0.065	0.041
	Laotian	10	0.084	0.027	0.054	10	0.064	0.035	0.021
	Mien	5	0.002	0.001	0.001	5	0.028	0.014	0.016
	Hmong	3	0.003	0.002	0.001	2	0.042	0.033	0.042
	Samoan	5	0.069	0.025	0.050	5	0.082	0.054	0.023
	Vietnamese	14	0.084	0.014	0.087	12	0.094	0.023	0.076
	All Ethnicity	107	0.105	0.013	0.061	95	0.104	0.015	0.055
All Finfish	Cambodian	11	0.338	0.129	0.188	9	0.453	0.156	0.321
	Chinese	15	0.912	0.225	0.371	15	0.454	0.121	0.241
	Filipino	15	1.001	0.275	0.462	15	0.531	0.083	0.437
	Japanese	17	1.063	0.126	1.070	12	1.259	0.245	1.217
	Korean	12	0.432	0.104	0.339	10	0.703	0.108	0.618
	Laotian	10	0.862	0.228	0.722	10	1.032	0.349	0.740
	Mien	5	0.318	0.236	0.092	5	0.137	0.041	0.099
	Hmong	3	0.375	0.116	0.288	2	0.235	0.033	0.235
	Samoan	5	0.666	0.025	0.692	5	0.575	0.117	0.620
	Vietnamese	14	0.781	0.227	0.384	12	1.135	0.258	0.721
	All Ethnicity	107	0.759	0.071	0.512	95	0.726	0.072	0.458

Seafood consumption rates by ethnicity and gender (continued)

Category	Ethnicity	Female				Male			
		n	Mean	SE	Median	n	Mean	SE	Median
All Fish	Cambodian	11	1.161	0.318	0.799	9	1.739	0.468	1.353
	Chinese	15	2.108	0.458	1.542	15	1.390	0.320	0.753
	Filipino	15	1.784	0.386	1.370	15	1.140	0.109	0.994
	Japanese	17	1.840	0.214	1.723	12	2.208	0.424	1.794
	Korean	12	1.351	0.283	0.819	10	2.101	0.486	1.670
	Laotian	10	2.034	0.472	1.675	10	1.805	0.557	1.205
	Mien	5	0.631	0.360	0.296	5	0.530	0.195	0.272
	Hmong	3	0.644	0.108	0.560	2	0.497	0.024	0.497
	Samoan	5	0.927	0.039	0.896	5	0.774	0.152	0.732
	Vietnamese	14	2.589	0.485	2.494	12	2.634	0.613	1.911
	All Ethnicity	107	1.728	0.135	1.328	95	1.666	0.149	1.202
All Seafood	Cambodian	11	1.163	0.318	0.799	9	1.742	0.468	1.353
	Chinese	15	2.184	0.479	1.663	15	1.437	0.329	0.757
	Filipino	15	1.789	0.386	1.417	15	1.153	0.113	0.994
	Japanese	17	2.081	0.249	1.830	12	2.325	0.437	1.860
	Korean	12	1.593	0.330	0.893	10	2.251	0.509	1.686
	Laotian	10	2.040	0.470	1.675	10	1.807	0.557	1.205
	Mien	5	0.631	0.360	0.296	5	0.530	0.195	0.272
	Hmong	3	0.647	0.106	0.564	2	0.498	0.024	0.498
	Samoan	5	0.927	0.039	0.896	5	0.774	0.152	0.732
	Vietnamese	14	2.599	0.488	2.494	12	2.660	0.611	2.065
	All Ethnicity	107	1.807	0.139	1.417	95	1.710	0.152	1.257

No weight applied.

*All consumption rates in g/kg bodyweight/d.

Seafood consumption rates by age*

Category	Age Group	n	Mean	SE	Median	75%tile	90%tile
Anadromous Fish (p=0.001)	18-29	78	0.134	0.024	0.065	0.130	0.399
	30-54	85	0.164	0.027	0.073	0.201	0.428
	55+	39	0.237	0.037	0.151	0.305	0.537
Pelagic Fish (p=0.3)	18-29	78	0.387	0.053	0.265	0.504	0.814
	30-54	85	0.287	0.035	0.140	0.443	0.742
	55+	39	0.372	0.071	0.172	0.689	1.063
Freshwater Fish (p=0.3)	18-29	78	0.098	0.016	0.045	0.111	0.277
	30-54	85	0.134	0.023	0.056	0.117	0.368
	55+	39	0.206	0.053	0.072	0.156	1.032
Bottom Fish (p=0.9)	18-29	78	0.102	0.022	0.036	0.123	0.191
	30-54	85	0.099	0.016	0.031	0.124	0.261
	55+	39	0.105	0.034	0.043	0.103	0.202
Shellfish Fish (p=0.6)	18-29	78	0.862	0.105	0.505	1.087	1.645
	30-54	85	0.795	0.088	0.490	1.058	1.996
	55+	39	0.950	0.198	0.367	1.482	3.247
Seaweed/Kelp (p=0.9)	18-29	78	0.050	0.014	0.002	0.037	0.205
	30-54	85	0.056	0.014	0.004	0.028	0.219
	55+	39	0.102	0.035	0.001	0.073	0.387
Miscellaneous seafood (p=0.4)	18-29	78	0.119	0.018	0.061	0.146	0.340
	30-54	85	0.096	0.013	0.055	0.124	0.277
	55+	39	0.094	0.021	0.037	0.117	0.278
All Finfish (p=0.4)	18-29	78	0.721	0.075	0.577	0.966	1.312
	30-54	85	0.684	0.072	0.443	0.966	1.424
	55+	39	0.919	0.145	0.476	1.434	2.456
All Fish (p=0.6)	18-29	78	1.702	0.152	1.319	2.055	3.914
	30-54	85	1.575	0.138	1.206	2.223	3.162
	55+	39	1.964	0.293	1.352	2.993	5.241
All Seafood (p=0.6)	18-29	78	1.752	0.155	1.370	2.147	3.916
	30-54	85	1.631	0.144	1.217	2.299	3.841
	55+	39	2.065	0.296	1.427	3.217	5.241

*All consumption rates in g/kg bodyweight/d.

Note: P-value is based on Kruskal Wallis Test. No weight applied

Seafood consumption rates by income*

Category	Income Group	n	Mean	SE	Median	75%tile	90%tile
Anadromous Fish (p=.036)	Under FPL**	71	0.121	0.021	0.049	0.107	0.468
	1.0 - 2.0 FPL	39	0.094	0.013	0.074	0.108	0.249
	2.0 - 3.0 FPL	38	0.196	0.043	0.086	0.251	0.618
	>3.0 FPL	39	0.211	0.044	0.119	0.264	0.551
Pelagic Fish (p=0.5)	Under FPL	71	0.352	0.048	0.182	0.553	0.865
	1.0 - 2.0 FPL	39	0.265	0.063	0.104	0.340	0.676
	2.0 - 3.0 FPL	38	0.381	0.087	0.172	0.441	0.825
	>3.0 FPL	39	0.310	0.049	0.194	0.513	0.775
Freshwater Fish (p=0.6)	Under FPL	71	0.196	0.035	0.069	0.259	0.749
	1.0 - 2.0 FPL	39	0.090	0.018	0.056	0.093	0.336
	2.0 - 3.0 FPL	38	0.128	0.029	0.066	0.154	0.449
	>3.0 FPL	39	0.105	0.030	0.052	0.097	0.334
Bottom Fish (p=0.007)	Under FPL	71	0.094	0.025	0.017	0.071	0.180
	1.0 - 2.0 FPL	39	0.086	0.022	0.037	0.111	0.222
	2.0 - 3.0 FPL	38	0.070	0.019	0.030	0.088	0.191
	>3.0 FPL	39	0.141	0.033	0.095	0.154	0.324
Shellfish Fish (p=0.7)	Under FPL	71	0.984	0.140	0.386	1.455	3.187
	1.0 - 2.0 FPL	39	0.832	0.154	0.424	0.973	2.029
	2.0 - 3.0 FPL	38	0.750	0.095	0.535	0.987	1.441
	>3.0 FPL	39	0.766	0.133	0.516	1.056	1.482
Seaweed/Kelp (p=0.001)	Under FPL	71	0.031	0.013	0.000	0.005	0.048
	1.0 - 2.0 FPL	39	0.049	0.016	0.008	0.030	0.219
	2.0 - 3.0 FPL	38	0.081	0.030	0.005	0.036	0.261
	>3.0 FPL	39	0.053	0.017	0.005	0.034	0.207
Miscellaneous seafood (p=0.062)	Under FPL	71	0.072	0.012	0.032	0.091	0.178
	1.0 - 2.0 FPL	39	0.087	0.020	0.060	0.112	0.202
	2.0 - 3.0 FPL	38	0.125	0.023	0.068	0.171	0.295
	>3.0 FPL	39	0.088	0.017	0.044	0.126	0.206
All Finfish (p=0.3)	Under FPL	71	0.763	0.097	0.441	0.925	2.072
	1.0 - 2.0 FPL	39	0.535	0.086	0.364	0.805	1.099
	2.0 - 3.0 FPL	38	0.774	0.118	0.489	1.126	1.798
	>3.0 FPL	39	0.768	0.108	0.458	1.210	1.467
All Fish (p=0.6)	Under FPL	71	1.819	0.208	1.029	2.529	4.494
	1.0 - 2.0 FPL	39	1.453	0.202	0.894	1.838	3.162
	2.0 - 3.0 FPL	38	1.649	0.178	1.364	2.450	3.159
	>3.0 FPL	39	1.622	0.193	1.328	2.003	3.909
All Seafood (p=0.6)	Under FPL	71	1.850	0.209	1.029	2.565	4.496
	1.0 - 2.0 FPL	39	1.502	0.208	0.906	1.859	3.162
	2.0 - 3.0 FPL	38	1.731	0.189	1.427	2.450	3.522
	>3.0 FPL	39	1.674	0.196	1.425	2.055	3.909

*All consumption rates in g/kg bodyweight/d.

**FPL—Federal Poverty Level

Note: 15 respondents with unknown income are excluded in this table. P-value is based on Kruskal Wallis Test. No weight applied.

Seafood consumption rates by education*

Category	Education Level	n	Mean	SE	Median	75%tile	90%tile
Anadromous Fish	≤HS**	69	0.1657	0.027	0.0720	0.2261	0.4978
(p=0.7)	>HS	98	0.1605	0.023	0.0797	0.1642	0.4306
Pelagic Fish	≤HS	69	0.3913	0.051	0.2659	0.6306	0.8652
(p=0.3)	>HS	98	0.3183	0.040	0.1567	0.4337	0.8440
Freshwater Fish	≤HS	69	0.2072	0.031	0.0890	0.2700	0.5898
(p=0.000)	>HS	98	0.1031	0.021	0.0332	0.0952	0.2137
Bottom Fish	≤HS	69	0.0892	0.019	0.0295	0.1173	0.1911
(p=0.1)	>HS	98	0.1340	0.022	0.0603	0.1383	0.3550
Shellfish Fish	≤HS	69	0.9039	0.114	0.4473	1.4988	2.2534
(p=0.6)	>HS	98	0.8904	0.101	0.4983	1.0706	2.5680
Seaweed/Kelp	≤HS	69	0.0409	0.017	0.0000	0.0082	0.0988
(p=0.001)	>HS	98	0.0763	0.016	0.0053	0.0490	0.3218
Miscellaneous seafood	≤HS	69	0.0881	0.016	0.0320	0.1070	0.2346
(p=0.045)	>HS	98	0.1057	0.013	0.0644	0.1360	0.2775
All Finfish	≤HS	69	0.8535	0.087	0.6141	1.2440	1.9357
(p=0.068)	>HS	98	0.7160	0.075	0.4213	0.9644	1.5971
All Fish	≤HS	69	1.8455	0.182	1.4628	2.5540	4.1507
(p=0.6)	>HS	98	1.7120	0.145	1.2535	2.2109	3.9282
All Seafood	≤HS	69	1.8864	0.183	1.4812	2.5960	4.1507
(p=0.8)	>HS	98	1.7883	0.151	1.2676	2.4464	4.0798

*All consumption rates in g/kg bodyweight/d.

**HS—High School

Note: P-value is based on Mann-Whitney Test. No weight applied.

Seafood consumption rates by roster and volunteer*

Category	Resource	n	Mean	SE	Median	75%tile	90%tile
Anadromous Fish (p=0.4)	Roster	96	0.148	0.022	0.074	0.170	0.337
	Volunteer	106	0.184	0.024	0.082	0.228	0.503
Pelagic Fish (p=0.6)	Roster	96	0.324	0.041	0.175	0.457	0.829
	Volunteer	106	0.359	0.041	0.205	0.493	0.826
Freshwater Fish (p=0.6)	Roster	96	0.142	0.025	0.057	0.131	0.430
	Volunteer	106	0.126	0.020	0.049	0.142	0.366
Bottom Fish (p=0.3)	Roster	96	0.085	0.016	0.029	0.098	0.195
	Volunteer	106	0.116	0.019	0.043	0.137	0.289
Shellfish Fish (p=0.4)	Roster	96	0.873	0.109	0.422	1.020	2.289
	Volunteer	106	0.831	0.081	0.494	1.152	1.811
Seaweed/Kelp (p=0.2)	Roster	96	0.045	0.012	0.002	0.027	0.134
	Volunteer	106	0.079	0.017	0.005	0.065	0.312
Miscellaneous seafood (p=0.07)	Roster	96	0.091	0.013	0.034	0.130	0.260
	Volunteer	106	0.117	0.014	0.068	0.137	0.315
All Finfish (p=0.4)	Roster	96	0.698	0.070	0.452	0.936	1.512
	Volunteer	106	0.785	0.072	0.494	1.112	1.738
All Fish (p=0.5)	Roster	96	1.662	0.149	1.129	2.085	4.004
	Volunteer	106	1.733	0.135	1.409	2.404	3.899
All Seafood (p=0.5)	Roster	96	1.707	0.152	1.206	2.284	4.020
	Volunteer	106	1.811	0.139	1.477	2.586	3.986

*All consumption rates in g/kg bodyweight/d.

Note: P-value is based on Mann-Whitney Test. No weight applied.

Seafood source by ethnicity

Fish Source										
		Grocery/Vendor (%)			Caught in King County (%)		Caught outside King County (%)		Restaurants (%)	
Category	Ethnicity	n	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Anadromous Fish	Cambodian	18	71%	9%	7%	4%	16%	8%	6%	4%
	Chinese	30	68%	5%	3%	1%	4%	2%	25%	4%
	Filipino	29	77%	5%	4%	1%	11%	4%	8%	2%
	Japanese	29	65%	5%	6%	3%	6%	3%	24%	5%
	Korean	22	70%	9%	2%	1%	18%	8%	10%	5%
	Laotian	18	63%	8%	13%	5%	12%	8%	12%	4%
	Mien	7	44%	15%	30%	14%	24%	14%	1%	1%
	Hmong	5	65%	19%	35%	19%	0%	0%	0%	0%
	Samoan	10	43%	9%	3%	3%	8%	5%	47%	9%
	Vietnamese	26	84%	5%	3%	2%	0%	0%	13%	5%
	All Ethnicity	194	69%	2%	7%	1%	9%	2%	16%	2%
Pelagic Fish	Cambodian	17	83%	7%	7%	4%	3%	2%	8%	5%
	Chinese	30	61%	6%	0%	0%	1%	0%	38%	6%
	Filipino	30	78%	5%	1%	1%	10%	5%	11%	3%
	Japanese	29	61%	7%	2%	1%	0%	0%	37%	7%
	Korean	22	95%	3%	2%	2%	0%	0%	2%	2%
	Laotian	20	93%	4%	6%	4%	0%	0%	2%	1%
	Mien	7	65%	18%	28%	18%	7%	7%	0%	0%
	Hmong	5	85%	10%	15%	10%	0%	0%	0%	0%
	Samoan	10	65%	7%	2%	2%	20%	7%	14%	4%
	Vietnamese	26	88%	4%	3%	1%	1%	1%	9%	4%
	All Ethnicity	196	77%	2%	4%	1%	3%	1%	16%	2%
Freshwater Fish	Cambodian	18	67%	8%	14%	7%	10%	6%	9%	5%
	Chinese	24	73%	7%	0%	0%	0%	0%	27%	7%
	Filipino	30	82%	6%	4%	2%	5%	4%	9%	4%
	Japanese	20	40%	9%	11%	7%	0%	0%	49%	9%
	Korean	13	49%	14%	45%	13%	4%	4%	2%	2%
	Laotian	18	66%	9%	18%	7%	9%	6%	8%	6%
	Mien	10	13%	10%	68%	13%	18%	11%	1%	1%
	Hmong	5	70%	20%	30%	20%	0%	0%	0%	0%
	Samoan	9	20%	8%	17%	12%	40%	12%	23%	11%
	Vietnamese	26	79%	6%	3%	2%	0%	0%	17%	5%
	All Ethnicity	173	62%	3%	15%	2%	6%	2%	17%	2%
Bottom Fish	Cambodian	10	73%	13%	13%	9%	0%	0%	10%	15%
	Chinese	28	60%	8%	4%	2%	5%	4%	31%	8%
	Filipino	27	64%	7%	1%	1%	10%	5%	26%	6%
	Japanese	28	59%	7%	6%	3%	9%	5%	27%	6%
	Korean	18	97%	3%	3%	3%	0%	0%	0%	0%
	Laotian	14	38%	13%	10%	7%	33%	12%	20%	9%
	Mien	4	0%	0%	25%	25%	75%	25%	0%	0%
	Hmong	3	83%	17%	17%	17%	0%	0%	0%	0%
	Samoan	10	18%	7%	0%	0%	13%	9%	70%	13%
	Vietnamese	21	66%	10%	23%	9%	0%	0%	10%	7%
	All Ethnicity	163	61%	3%	8%	2%	9%	2%	22%	3%
Shellfish Fish	Cambodian	20	78%	6%	9%	5%	0%	0%	12%	5%
	Chinese	30	50%	5%	7%	2%	1%	1%	41%	5%
	Filipino	30	76%	5%	7%	3%	3%	3%	15%	3%
	Japanese	29	54%	6%	12%	4%	0%	0%	34%	5%
	Korean	22	80%	6%	16%	6%	2%	1%	3%	1%
	Laotian	19	76%	6%	7%	4%	0%	0%	17%	5%
	Mien	10	64%	14%	29%	12%	5%	5%	3%	3%
	Hmong	5	89%	7%	7%	5%	0%	0%	4%	4%
	Samoan	10	43%	4%	2%	2%	29%	6%	27%	3%
	Vietnamese	26	72%	7%	5%	2%	0%	0%	23%	6%
	All Ethnicity	201	67%	2%	9%	1%	2%	1%	21%	2%

Seafood source by ethnicity (continued)

Fish Source										
			Grocery/vendor (%)		Caught in King County (%)		Caught outside King County (%)		Restaurants (%)	
Seaweed/Kelp	Cambodian	7	64%	18%	0%	0%	0%	0%	36%	18%
	Chinese	29	71%	7%	1%	1%	0%	0%	28%	7%
	Filipino	15	86%	8%	12%	8%	1%	1%	2%	1%
	Japanese	29	82%	4%	0%	0%	0%	0%	18%	4%
	Korean	21	90%	5%	7%	5%	0%	0%	2%	2%
	Laotian	7	89%	11%	0%	0%	0%	0%	11%	11%
	Mien	0	0%	0%	0%	0%	0%	0%	0%	0%
	Hmong	3	100%	0%	0%	0%	0%	0%	0%	0%
	Samoan	0	0%	0%	0%	0%	0%	0%	0%	0%
	Vietnamese	5	84%	10%	0%	0%	0%	0%	16%	10%
All Ethnicity		116	81%	3%	3%	1%	0%	0%	16%	3%

Comparison between original survey and re-interview responses on selected questions

Salmon		Halibut		Shrimp		Finfish Parts Consumed						Anadromous Fish								Shellfish							
# of servings /year		# of servings /year		# of servings /year		Fillet with Skin		Fillet without Skin		Head, bone, egg, organ		Purchase from Groceries		Caught in King County		Caught outside King County		Consumed at Restaurants		Purchased from Groceries		Caught in King County		Caught outside King County		Consumed at Restaurants	
I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II
0	3	0	5	315	24	100	100	0	0	100	50	30	80	0	0	70	20	0	0	100	100	0	0	0	0	0	0
9	20	6	6	12	24	80	100	20	0	20	30	100	100	0	0	0	0	0	0	100	50	0	0	0	0	0	50
21	40	8	8	8	22	50	80	50	20	5	0	100	85	0	0	0	0	0	15	80	80	0	0	0	0	20	20
6	3	1	0	15	8	100	25	0	75	0	0	85	50	0	0	0	0	15	50	50	25	20	0	0	0	30	75
8	14	2	3	8	52	0	80	100	20	20	10	25	50	25	0	25	0	25	50	34	50	33	0	0	0	33	50
6	3	1	0	56	52	100	80	0	20	95	50	90	80	10	20	0	0	0	0	90	100	0	0	0	0	10	0
8	18	12	12	15	24	75	0	25	100	0	0	75	90	10	0	0	0	15	10	90	95	5	0	0	0	5	5
6	12	2	12	104	52	75	100	25	0	75	10	100	100	0	0	0	0	0	0	90	90	0	0	0	0	10	10
6	24	3	3	12	12	25	60	75	40	50	10	75	70	25	10	0	0	0	20	50	70	50	0	0	0	0	30
48	44	6	18	6	18	5	100	95	0	0	0	85	70	0	0	5	0	10	30	80	75	10	0	0	0	10	25
48	60	12	24	12	48	0	0	100	100	0	0	100	80	0	0	0	0	0	20	95	70	0	0	0	0	5	30
60	52	36	5	60	60	0	98	100	2	0	0	80	100	0	0	0	0	20	0	70	85	10	0	0	0	20	15
6	6	12	18	18	12	20	50	80	50	0	0	50	50	25	50	0	0	25	0	100	100	0	0	0	0	0	0
6	8	0	8	48	17	0	50	0	50	0	0	100	100	0	0	0	0	0	0	100	100	0	0	0	0	0	0
12	2	0	0	12	10	0	80	100	20	10	0	90	100	10	0	0	0	0	0	90	100	0	0	0	0	0	0
1	7	0	0	2	2	10	0	90	100	0	7	100	100	0	0	0	0	0	0	100	100	0	0	0	0	0	0
4	4	0	0	10	24	100	20	0	80	0	0	50	100	20	0	30	0	0	0	100	100	0	0	0	0	0	0
3	2	3	2	5	2	0	0	100	100	0	0	0	0	0	50	50	50	50	0	50	0	0	0	25	50	25	50
15	8	14	0	30	4	80	50	20	50	100	10	99	100	0	0	0	0	1	0	95	100	0	0	0	0	5	0
13	1	24	1	76	8	25	50	75	50	5	10	90	100	3	0	2	0	5	0	70	50	0	0	0	0	30	50

Note: I = survey response; II = re-interview response.

Appendix N

Appendix N-1

LIST OF FIFTEEN SEAFOOD RELATED HEALTH CONCERNS HELD BY ADVISORY AND TECHNICAL COMMITTEE MEMBERS WHICH WERE LATER RANKED BY CSC MEMBER'S PERCEIVED IMPORTANCE OF THE ISSUE TO THE APA COMMUNITY.

Seafood Health Concerns Cited by Advisory and Technical Committee Members	Example	Percentage of CSC Members+	Percentage of Technical and Advisory Committee members
Safe fishing practices	Safe fishing locations, do not fish near sewers, posted warning signs	69*	63
Risks from eating seafood	Red tide, PSP (Paralytic Shellfish Poisoning)	63*	50
Ways to reduce health risk associated with seafood	Safe cooking preparations, removing unsafe parts of fish (liver, guts,...)	50*	75
Seafood from foreign markets	What risks are there buying from markets?	50*	13
Sensitive populations	Pregnant women, children	38*	25
Chemical contaminants	Mercury, pesticides, other poisons	38*	38
How to determine safe seafood and fish	Visible signs, odor of seafood	38*	25
Safe seafood	Which seafoods are safe to eat	31	50
Preservation of fish and seafood	Proper refrigeration, bacteria contamination in raw seafood or water	25	25
Health effects of chemical contaminants	How much fish can be eaten without getting sick	25	38
Environmental quality	How to improve healthy seafood growth	19	13
Fishing resources	Limitations on how many fish or clams to collect	19	13
Biological contaminants	E. Coli, bacteria	19	50
Emphasize the health benefits of eating seafood		19	13
Reduce fear in the community of "uninformed" officials	Seafood monitoring police or Fish and Wildlife officials	0	13

*Top six health concerns cited by the CSC Committees.

+Each CSC member (n=16) selected the five they felt to be most important for the APA from the list of 15 concerns listed by the Advisory and Technical committees

Appendix N-2 shows the draft brochure which was evaluated using the Focus Group Questionnaire (Appendix N-3).

**For More
Information
About Seafood:**

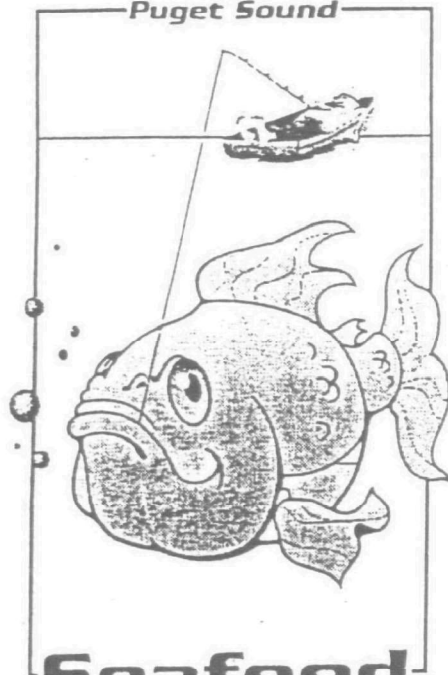
**Community
Contacts**

- Refugee Federation Service Center (RFSC).
Bilingual services available.
206-725-9181
- Wilderness-Inner City Leadership Development (WILD) Project at International District Housing Alliance (IDHA).
206-623-5132
- People for Puget Sound
206-382-7007

**Public Health
Contacts**

- County Health Departments
 - King County 206-296-4784
 - Snohomish County 425-839-5250
- Washington State Dept. of Health
Consumer Assistance Hotline
1-888-586-9427
- Red Tide Information Line
1-800-562-5632
- J.S. Environmental Protection Agency
1-800-424-4372
- Environmental Risk Information Service, University of Washington
206-616-7557

**A Friendly Health Message
About Eating Seafood
From the
Puget Sound**



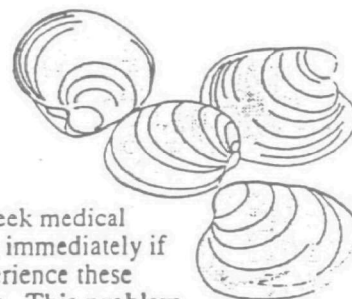
**Seafood
Is Good
for You!**

***But did you know that it
can also harm you?***

In an effort to understand the unique risks faced by the Asian Pacific American community, a study was conducted by the refugee Federation Service Center and the University of Washington's Department of Environmental Health. For more information about the study, contact the Refugee Federation Service Center or the University of Washington (see *For More Information* page).

**Risks From
Eating Bad Seafood**

Biological contaminants cause many illnesses: hepatitis, diarrhea and PSP. PSP (*Paralytic Shellfish Poison*) or "Red Tide" is a poison. You may have tingling or numbness on your lips, tongue, neck, fingers or toes if you have PSP poisoning. In worse cases, you may have breathing problems and trouble moving your body.



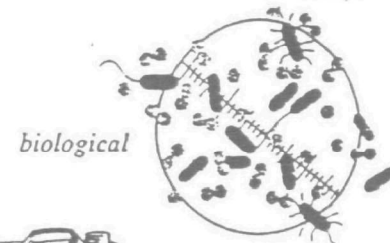
Call to seek medical attention immediately if you experience these problems. This problem can be life threatening.

Eating too much seafood contaminated with chemicals can lead to the build-up of chemicals in your body. This may increase your risk for:

- Cancer
- Kidney Damage
- Brain Damage, and the
- Ability to have healthy children.

Contaminants

There are 2 kinds of contaminants:



biological



*and chemical
contaminants.*

Biological contaminants are bacteria, parasites, viruses, and fish poisons. Fish poisons are caused by the food the seafood eat.

Industries, farms, and sewers all contribute to the pollution that affects your seafood. Fish that live close to these sources of pollution are often the most affected.

Examples of chemical contaminants include mercury, lead, and PCBs.

Who is affected by
eating contaminated
seafood?

Everybody!!!!

But...

- Pregnant women and their unborn children



- Children of any age

- Elderly
- People with medical problems, especially liver disease, diabetes, and problems with the immune system



are more sensitive and should be more careful about eating contaminated seafood.

Here's How to Protect Yourself

1 Know what types of seafood are more likely to cause problems:

- Older and larger fish have more chance to store up toxins than younger, smaller fish
- Fish that live at the bottom of the water and shellfish tend to have more contaminants
- Some parts of the seafood may have higher amounts of contaminants, for instance, the "butter" of crabs is higher in toxins than the meat
- Some species have special risks. For example, poison from germs on spoiling tuna may cause allergic reactions.

2 Know where your seafood came from.

- Use safe fishing practices. Washington State will provide safety information to you.
- Pay attention to warning signs at the beaches and piers.
- Check with the Washington State Department of Health for safe and open fishing locations.

3 Use safe preparation practices

- Check to see if your fish is spoiling before you eat it. A strong fishy smell, softening of the meat, and hazy eyes on fish can be signs of bad fish.
- Keep raw fish away from other foods being prepared
- Proper refrigeration after catching, and cooking all fish and shellfish before eating can kill most of the germs that can make you sick, but not all of them.
- Cooking does not get rid of "red tide" or Paralytic Shellfish Poison (PSP). You can not tell from the color of the water or the seafood if it has PSP.



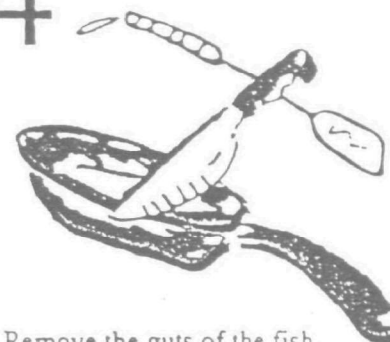
For an updated recorded message of beaches closed due to PSP or "red tide," call the PSP Hotline at:

1-800-562-5632

For a list of beaches closed for health reasons, call the King County Health Department at:

206-296-4722.

4 Safe Cooking Ideas

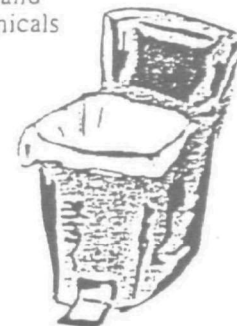


- Remove the guts of the fish. Chemicals build-up in them



- Remove the skin of the fish or poke holes in the skin. This lets the fat drain out and reduces the chemicals in the fish

- After cooking, throw out the remaining fat and juice from the fish (the fats and juices may have chemical contamination).



71 927

**Asian and Pacific Islander Seafood Consumption Study
Focus Group Testing
Evaluation Questionnaire**

Date _____
Name _____

Please circle your ethnicity

Cambodian	Chinese	Filipino	Hmong	Japanese	Korean
Lao	Mien	Samoan	Vietnamese		

Please evaluate the following categories based on your judgement of the Asian and Pacific Islander Consumption Study Questionnaire. Please take your time. If you have any questions, please ask the E.P.A. Project Coordinator.

CONTENT

1. Do you feel the questions are intrusive or insensitive? YES NO

If yes, please state your reason(s) why and which questions seem intrusive or insensitive.

Please rate the length of the questionnaire.

LONG AVERAGE SHORT

FORMAT

Do the questions flow logically and smoothly section to section?

ALWAYS SOMETIMES NEVER

a. If "SOMETIMES" or "NEVER," please state your reason(s) why and which question(s) should be rearranged? _____

WORDING/LANGUAGE/TRANSLATION

1. Is the use of language clear and concise? Do the questions read easily?

ALWAYS

SOMETIMES

NEVER

2. Is the translation thorough and accurate enough? YES NO

PRESENTATION AND USE OF THE VISUAL DISPLAYS

1. Are the usage of the visual displays (seafoods) effective and helpful in answering the questions?

YES NO

a. If no, please state your reason(s) why. _____

2. Are the visual displays of seafood easily identifiable?

YES NO

a. If no, please state your reason(s) why. _____

3. Are the use of the maps effective?

YES NO

a. If no, please state your reason(s) why. _____

MISCELLANEOUS

1. Are there any other recommendations which should be made to improve the questionnaire?

2. Overall, how would you rate the questionnaire?

EXCELLENT

GOOD

AVERAGE

POOR

Thank you very much for your cooperation and participation in the Asian and Pacific Islander Seafood Consumption Study.

Focus Group

APPENDIX N4

TABLE R-15 DESCRIBES THE ANALYSIS COMPLETED BY THE EIGHT FOCUS GROUP MEMBERS VIA QUESTIONNAIRE. THE QUESTION ABOUT FORMAT FLOW WAS MISUNDERSTOOD.

Ethnicity	Cambodian	Chinese	Filipino	Mien	Japanese	Korean	Lao	Vietnamese
Format								
Flow	0	Yes	Yes	0	0	0	0	0
Wording/Language Translation								
1. Clear, concise	Yes	Yes	Yes	No	Yes	Yes*	Yes	Yes
2. Translation	Exc.	Good	Good	Ave.	Good	DNA	Poor	Good
Content								
1. Health risk messages	Exc.	Good	Exc.	Ave.	Good	Exc.	Good	Good
2. Graphics	Good	Ave.	Good	Ave.	Exc.	Good	Good	Good
3. Effectiveness	Exc.	Good	Exc.	Ave.	Exc.	**	Good	Good
4. Decision-making	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

DNA=did not answer

*Very good, but I suggested minor changes. Pls. see enclosed.

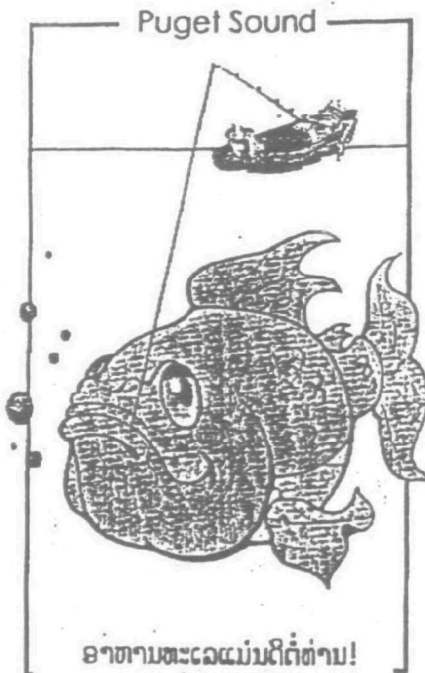
** Very good, again pls. see comments for minor changes.

Additional Comments by Focus Group Members

1. I didn't care for the images of the child on a bike and the elderly man. They seem disjointed with the pregnant figure.
2. It is very informative.
3. The translation is easy and simple to read. The words are concise and meant directly to the content.
4. Please see attached. (Refers to editing on brochure.)
5. (No comment)
6. Please refer to the enclosed brochure in English and Tagalog. Thank you.
7. They are OK graphics and translation, except too many incorrect spellings.
8. People will read & understand easier after corrected.

- **King County** 206-296-4784
- **Snohomish County** 425-839-5250
- **Washington State Dept. of Health**
Consumer Assistance Hotline
1-888-563-9427
- **Red Tide Information Line**
1-888-562-5632
- **U.S. Environmental Protection Agency**
1-888-424-4372
- **Environmental Risk Information Service,**
University of Washington
206-616-7557

ຂ່າວດ້ວຍຄວາມຫວັງດີກ່ຽວກັບ
ການກຳນົດອາຫານພະ ເລາກ



ອາຫານສະເລ່ຍນິຕິທຳ!
ແຕ່! ທ່ານ ຮູ້ບໍ່ວ່າມັນອາດເປັນອັນຕະ
ຣາຍແກ່ທ່ານ?

ສາງ ສູນກາງອົບພະຍົບ (The refugee Federation Service Center) ແລະໂຮງຮຽນ ແສກດີສະບາ (ໄວ ຊິງຕັນ ແລະແມ່ ກຽວຕັນ) ທີ່ສູນກາງແລະອົງແກວດພ້ອມ (The University of Washington's Department of Environmental Health) ໄດ້ຮຽນກ່ຽວກັບສູນກາງແລະອົງແກວດພ້ອມ ທີ່ເມືອງວິງແລ ຊາວຄະນະປາຊີຟິກໄດ້ ປະຕິບັດ ຖ້າພົບໄປຢາກຮູ້ເີ່ມກ່ຽວກັບການພິມຂໍ້ລາ. ກະຮຸນາດີຕໍ່ໄປທີ່ ສູນກາງອົບພະຍົບ ແລະໂຮງຮຽນ ແສກດີສະບາ ໄຊວ້ຊິງຕັນ. (ເບິ່ງລາຍລະອຽດໃນໜ້າຕໍ່ໄປ).

ອັດຕະໂນອາກາດພາຍໃນອາ
ຫານຕະເວນດີ

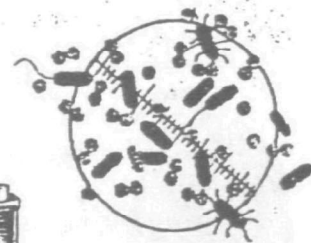
[illegible]

ກິນອາຫານສະເລ່ຍປະມານ ໑ ກິໂລກຣາມ. ສານເຄມີ ອາດສາມາດຢູ່
ໃນຮ່າງກາຍຂອງຕ່າມ ໄດ້. ມັນອາດສາມາດຮັກສາຢູ່ເປັນ
ຕ່າມດົນກັບ:

- ເຂຣັງ
- ສາມໃສ່ຫຼັງ
- ສາມອງ, ແລະ ຄວາມອາດສາມາດ ໃນດ້ານເຮືອງ

ສິ່ງທີ່ຮັກໃຫ້ ກິນປີດຊື່ອ ເພື່ອ ພາຍະເປັນປົກ
ສິ່ງທີ່ຮັກໃຫ້ຕົກປີດຊື່ອ ເພື່ອ ພາຍະເປັນປົກປີດ 2 ຊະນິດ:

7/56
7/56
ដើម្បីឱ្យពិភពនេះកាន់តែប្រសើរឡើង



အေးဒီ၊ ပြည်
ဝိ. ဂါထာပတ်ဝေ



ខ្ញុំបាទក៏ស្រឡាត់ដោយការបោះឆ្នោតនេះ ឆាប់,
លឿន, ហើយស្រឡាត់ដោយការបោះឆ្នោតនេះឡើយ.

ອຸສາຫະກຳ, ນາ, ສວນ, ບ່ອນຊຶງຂ້າ, ແລະສະຖານທີ່ອື່ນໆ
ໃນໂຄງລ່າງແຕ່ ເຮົາຕ້ອງສາມາດແລກວ່ອງຄຳນຳເປົ່າ, ປ່າຊີວ
ໂຊນ ໃຫ້ສະຖານທີ່ ສືບຕໍ່ປົກແກ່ນໄດ້ຮັບຕົວເປົ່າ.

ດ້ວຍບ່າງຂອງສາມເຄື່ອງໃຫ້ເປັນເປົ້າໝາຍ
ບາດອາ, ສີ່ກົວ, ແລະ ປຸງ (FC85).

ແມ່ນໄດ້ຮັບຜົນສະທ້ອນຍ້ອນການ
ທະເລເປື້ອນ?

ທຸກໆຄົນ!!!!
ແຕ່ຜູ້...

• ແມ່ນາບແລະເດັກໃນທ້ອງ



- ເດັກນ້ອງຂອງ
- ເດັກນ້ອງຂອງ
 - ຜູ້ມີອາຍຸແກ່
 - ຄົນ

ຄືນກັບສາດໂດຍ
ສະພາບຮັບຮຽກຮ້ອງ
ມະຍາດຮ່ວມການ
ແລະຮ່ວມກັນ ບໍ່ສົມບູນ
ແມ່ນ ໄດ້ຮັບຜົນສະທ້ອນ
ແລະອອກມາມີຜົນໃນການສຶກສາສະໄໝສະອາດ.



ຮ່ວມກັນ.

1 ຄວນຮູ້ຈັກຊື່ຂອງອາຫານທະເລໃນລັດວາຊິງຕັນ:

- ປາທີ່ມີອາຍຸຍາວແລະໃຫຍ່ແມ່ນມີໂຊນສາມເສັ້ນສົມທຽມກວ່າ
ປາທີ່ມີອາຍຸສັ້ນ ແລະນ້ອຍ
- ປາແລະຫອຍທີ່ຢູ່ໃນທາງໃນ ໃນຕົວແມ່ນມີໂຊນ
- ບາງເບົາກ່ອນຂອງອາຫານທະເລແມ່ນມີໂຊນສາມເສັ້ນສົມທຽມ, ຕົວ
ຢ່າງວ່າ, ນ້ຳໜັງມີໂຊນສາມເສັ້ນສົມທຽມ
ກ່ວາໃນຊີ້ນ.
- ປາບາງຊະນິດແມ່ນມີໂຊນຮ້າຍແຮງ, ຕົວຢ່າງວ່າ, ມີຄື
ມາຈາກມະຍາດຂອງປາສຸ ເຊິ່ງອາດຈະມາໃຫ້ຄຳເຕືອນ
ຢ່າກິນໄດ້.

2 ຄວນຮູ້ຈັກສະຖານທີ່ຂອງອາຫານທະເລ

- ໃຊ້ວິທີທີ່ກ່າວມາຂອງການຫາປາໃຫ້ຖືກ
ຕ້ອງ. ຫາກຈິງຈັງກໍ່ມີກະບຸລີຂອງທ່ານກ່ຽວກັບການຫາປາ
ໃຫ້ຖືກຕ້ອງ ໄວ້ໃຫ້ທ່ານ.
- ກະຊວງປ່າໄມ້ແລະສິດທິພືດຂອງລັດວາຊິງຕັນມີໂຊນທີ່ກ່າວມາ.
- ຖ້າທ່ານສົນໃຈປາຮຸ້ນຊະນິດໃດໃນລັດວາຊິງຕັນ, ກະ
ຊວງປ່າໄມ້ແລະສິດທິພືດຂອງລັດວາຊິງຕັນ.

3 ປະຈຸບັນ ຫຼັກ ຄວນາໄມໃນການຄົ້ນຄວ້າທະເລກັງ ຕໍ່ໄປນີ້:

- ກ່ອນຈະກິນປາໃຫ້ກວດເບິ່ງວ່າປາມັນເປັນພິດ. ຖ້າຫາກປາ
ມັນເປັນພິດ, ມັນຈະ ມີກິ່ນ ແດງ, ຊືນອ່ອນ, ແລະກາສື່ງຂຽວ.
- ເຈົ້າປາດິມອອກຈາກສະຖານທີ່ທີ່ *ເຈົ້າປາດິມອອກຈາກສະຖານທີ່*
ກ່າວມາຂ້າງເທິງ.
- ຫຼັງຈາກທີ່ທ່ານໄດ້ປາ, ປ່ຽນ, ໃຫ້ທ່ານເຈົ້າເຈົ້າໃຊ້
ເຢັນໄວ້ເລັກເລັກອາກາດໃຫ້ສະຫງ່າລົງກິນ. ການເຈົ້າອາ
ຫານເຈົ້າເຈົ້າເຢັນ ແລະຄົວອາຫານທີ່ສະຫງ່າລົງກິນຍາວນີ້
ອາດສາມາດສ້າງແມ່ເຫຼັກໄຟໃຫ້ເຈົ້າເຈົ້າໄດ້, ແຕ່ບໍ່
ສາມາດສ້າງແມ່ເຫຼັກໄຟໄດ້.
- ຄົວອາຫານທີ່ ສາມາດສ້າງແມ່ເຫຼັກໄຟ ມີຊື່ວ່າ *ໂຊນສາມເສັ້ນສົມທຽມ*
ມະຍາດ "red tide" or Paralytic Shellfish
Poison (PSP).



- ຖ້າຢາກຮູ້ຂໍ້ມູນເພີ່ມເຕີມກ່ຽວກັບ PSP ຫຼື "red
tide," ກະຊວງໂຕໂປດສະທາງ PSP:
1-800-562-5632
- ຖ້າຢາກຮູ້ຂໍ້ມູນເພີ່ມເຕີມກ່ຽວກັບສາດໂດຍ, ກະຊວງ
ໂຕໂປດສະທາງ King County
Health Department at:
206-296-4722

4 ການເຮັດອາຫານທີ່ຖືກຕ້ອງ



- ເຈົ້າໃຊ້ຊີ້ນປາຂອງກະບຸລີ
ສາມາດໃຫ້ອອກໂຊນໃນປາ.



- ເຈົ້າຂັງປາອອກສົ້ມໂຕປາ, ເຮັດວິທີນີ້
ເພື່ອເຮັດໃຫ້ ສາມາດມີປາທີ່ສະຫງ່າລົງ.

- ຫຼັງຈາກທີ່ປາແລ້ວ,

ໃຫ້ທ່ານເຈົ້າເຈົ້າ
ແລະ ນ້ຳອອກຈາກປາໃນ
ໄມ້ນັ້ນ ແລະ
ນ້ຳອອກຈາກປາລາມີໂຊນ
ຂອງສາມເສັ້ນສົມທຽມ.



Naav se hnangv haix nor zoux cingx mbungv duqv meih ganv

Appendix N

Nyanc koiv-lai nyei ga-naaih laenge
naaic haib hoic
zuqc haix dazuh? dhauh

Ginx dauh !!!

Mv baac gauh
hoic ...

• Maaih jeev gu/
gaa nyi-mh-
sicqv mienh caux
mv gaeng cuotv
seix nyi gu'gaa.

• Fiagx huq juerv
mv guv mbuoqc
ziex hayang.



• Mienh gox
mienh.

• Caux mienh
maah mv buoqv
baenge nyi mienh,
hlan nyi baenge,
nizamv gam
baenge, caux yungz
sin zaangc nyi
nizamv wuom
baenge.



Naav deix mienh gauh beic hoic zuqc.
Caux oix zuqc faix fiem dough meih nyanc
baib laenge mienh nyi koiv-lai.

1 Hoqc haiv tauv dough haix nyungc koiv nyi
ga-naav nyanc liuz jienh kangv haib laenge
mienh.

• Domh mbiauz caux mbiauh gor gauh zaangh
duqv ga-naaih laenge camv jixx baib haix fai
mbiauz-dom.

• Kungx niem wuom adoqv nyi mbiauz caux
maah kuqv nyi mbiauz gauh maah ga-naaih
laenge camv jixx.

• Koiv nyi mbiauz nyi sin zaangc maah
dougx naac gauh maah ga-naaih laenge, beiv
tau, njimh nqaz nyi hmei mbiongx wuov
uom dougx naac maah ga-naaih laenge niem
camv jixx mienh nyi orv.

• Maah nyungc baav mbiauz maah laenge jeiv
nyi baenge, hnangv naav, ga-naaih laenge niem
tuna mbiauz huv daah naac haib zoux bun
zorqc guaix (allergic reaction).

2 Hoqc haiv tauv meih nyi koiv-lai naac haib
benx baenge niem haix dazuh.

• Mbac mbiauz nyi juav, hoqc faix fim mbac
longx. Washington naengv nyi hung-jas se
maah sou njiauz meih nyi.

• Jienh tauv mangc caux doqc nzaangc-pienx
(signs) niem koiv hlen caux naengv-booc nyi
dougx.

• Zaah naac dangv tauv Washington State
Department of Health mangc gaax haix norm
dougx koi bun mienh mbac mbiauz nyi fai
mv bun.

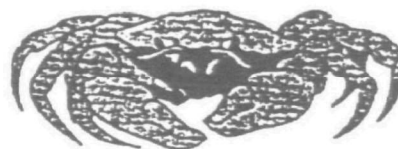
3 Hoqc faix fim mangc longx dough zoux
nyi ziangh boc.

• Meih oix nyanc neyi ziangh boc, naac,
oix zuqc dimv mangc gaax meih nyi mbiauz
huv nyi fai. Mbiauz huv naac zueix nyi, orv
jaac mau njaz nyi, caux mbiauz nyi naac-
zing jaac moulv-mouc nyi.

• Maiv dungx doch mbiauh nyiemv mv faiv
da'nyeh nyungc lai dough zoux jienv nyi
ziangh boc.

• Mbiauz naac zorqv tauvz daah hnangv oix
zuqc zorqv dapv jienv duqv qv. Mv
gongv haix nyungc mbiauz fai mbungv-mbah
oix nyanc naac oix zuqc zoux zuqc azengc.
Hnangv naav nor cingx dazuh daix duqv
zoux bun meih burv baenge wuov deix gaeng daic
camv jixx, mv baac mv haib daix duqv nyungc -
dyungc azengc.

• Zoux nyi jauv naac, maiv haib zoux maiv
daic fai, maiv haib zoux duqv cuotv naav
nyungc mbungv-mbah, qax caux njimv-quaz
nyi ga-naaih laenge (Red tide fai Paralytic
shellfish poison). Wyleic zuqc meih maiv haib
mangc haiv huv, mangc maiv buotc, gongv
ninh nyi, tongv haib yenc setv fai ninh maah
ga-naaih laenge (Paralytic shellfish poison) fai
maiv maah.



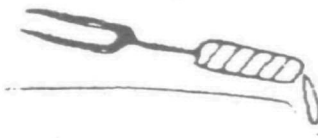
• Se'gongv oix haiv ih zanc haix norm koiv-
hlen guon naac wyleic maah naav deix ga-
naaih laenge (PSP fai red tide) nyi jauv nor,
mborqv naav norm dough faix waac 1-800-
562-5632 liuz maangx ninh mbuo atv dazuh
nyeti waac gongv mbuoq meih.

• Oix longc sou-daan mangc gaax haix norm
koiv-hlen guon mingh wyleic zuqc haib maah
benx baenge nyi jauv nor, heuc loz Kang
County Health Department (Kang County
Hung-Jas Zaah Dimv Baenge Nyi Dougx)
(206) 296-4722

4 Longc naav diuc za-eix zoux.



• Paax guongc ga-dyuoq maengx mbiauz nyi
zaangh ga-naaih laenge nyi ga-maiv.



• Hliqv nqoi mbiauz nyi mdopv caux
jixx fai baqv tongv ninh nyi adopv
mingh. Hnangv naav
nor se bungx mbiauz
nyi hamei cuotv
zoux mbiauz nyi
odie-laenge (chemical)
zoqc njec.

• Zoux liuz mbiauz
nor, dox guangc ninh
nyi hmei caux tongv
mingh. Wyleic naav
deix hamei caux
tongv se baib maah
odie-laenge niem naac camv haic.



English #001
 Fish = mbinuz
 Head = m'ngingv
 Thing : ga'naniv
 above : go'ngaic
 child = faix jueiv, guv-ngaar
 Because^{for} = ideic

Office = go'ngahoc

See = bua/c

Scale = gi'ex

Listen = mungx

Boat = ngangv

Finger = buaz dogv

another contraction word spelling is:

mi'agv = mingh agv

da'agv = daaih agv

fa'jueiv = faix jueiv

Oix hiuv Taux Koiv-Lai nyei
Jauv nor.

Mingh lorz naiv deix domgx

1. Refugee Federation Service Center (RFSC)
Yaac maah tengx fan waac nyei oc.
(206) 725-9181

2. Wildwreness-Inter City Leadership
Development (WILD) Project at International
District Housing Alliance (IDHA).
(206) 623-5132

3. People for Puget Sound
(206) 382-7007

Heuc Lorz Domh Zuongx
Hungx Jaa nyei Zaah dimv
baengc zingh Domgx.

•County Health Departments

•King County (206) 296-4784
•Snohomish County (425) 839-5250

•Washington State Dept. of Health Consumer
Assistance Hotline 1-888-5856-94 27

•Red Tide Information Line
1-800-562-9427

•U.S. Environmental Protection Age
1-800-424-4372

•Environmental Risk Information Service,
University of Washington
206-616-7557

Yietc zai... koiv-lai laengc baengc mienh, University of Washington's Department of Health
koiv-lai (mbaah, mbung-mbaah caux qua) yietc
naiv Puget Sound koiv



Naiv deix koiv Lai
longx bun meih nyei!

Mv baac ninh yaac haaih baic meih nyei,
meih hiuv nyei fai?

koiv-lai laengc baengc mienh, University of Washington's Department of Health
Health caux Refugee Federation Service Center duqv zaah dimv liux aqv. Se gongv meih oix
hiuv duqv yietc nytic ninh mbao zaah daaih nyei jauv nor, heuc mingh lorz ninh mbao f norm
domgx oc. (Mange da'yietv pin wuov deix foun nam mber wuov)

Appendix A

Nyanc Koiv-Lai haaih
laengc nyei jauv

Ziangh maengc nyei ga-naaih laengc naiv se
haaih zoux benx ziex nyungc baengc

Yangh baengc (Benx hbn nqaah), Ga-sie fiex
caux (maah ga-naaih laengc yiem fingx maah
kuqv nyei koiv-lai ga-naaih). "Red Tide" naiv
jauv waac se gongv, ga-naaih laengc. Se
gongv meih zuq naiv deix baengc yiem
maah kuqv nyei biaz-laengc nor maah
haangv naiv. meih haah nyungc nyope nyei fai
mbiex yiem meih nyei nzuib baengc, pang
buoz-ndov fai zaux-ndov. Benx hniev jier dauh
nyeic mienh nor, zaiv qier mv haah cuotv caux
mv haah dongz buoch sin.



se gongv meih haiz benx haangv mv buoqv
baengc nor, heuc mingh lorz adie-sai siepe
siepv. Naiv se benx haah guongc maengc
nyeic sic.

Se gongv meih nyanc ga-naaih laengc nyei
koiv-lai camv nor haah ziangh zaangh jienv
meih nyei sin zaangc camv jienv fiex. Naiv se
haah zoux bun meih benx naiv deix baengc.
• kaen ser (cancer)
• Nyutic ziv waac
• Mh-geogah fuvv waac
• Gu-gaz yiem ga-sie nor cuotv seix
daah haah waac.

Ndie-laengc/ga-naah-laengc

Mazih i nyungc

Ziangh maengc ga-naiv
(biological)



Caux ndie-
laengc ga-naiv
(chemical
contamination)

Ziangh maengc nyei ga-naaih laengc se benx
gaeng faix nyei (mbuo mangc mv buoch), naiv
se benx naang-nzung, hieh baengc caux mbiauz-
laengc. Mbiauz nyei ga-naaih laengc naac se
benx cuotv yiem ninh mbuo nyanc nyei ga-
naiv daah.

Naiv deix haangv-gean, Liangx ndieic, caux
wuom laih hloqv se yietv zungv zoux bun meih
nyeic koiv-lai benx ga-naaih laengc. Mbiauz yiem
fuvv wuom laengc wuom laih hloqv nyei domgx
gauh benx maah ga-naaih laengc benx hniev
pex.

Nyungc ziv nyei ndieic laengc se maah heuc
mercury, zoux sic nyei adie, maah kuqv nyei
koiv ndieic ga-naiv mbung mbazih. Njinh
nqaah) maah ga-naaih laengc yiem ninh mbuo
nyeic sin.

Para sa Karagdagang Impormasyon tungkol sa mga Pagkaing-Dagat ang mga sumusunod ay maaari ninyong kontakin sa inyong lugar:

• Refugee Federation Service Center (RFSC)
maaari kayong magtanong sa inyong sariling wika.
206-725-9181

• Wilderness-Inner City Leadership Development (WILD) Project of International District Housing Alliance (IDHA).
206-623-5132

• People for Puget Sound
206-382-7007

Para sa Pampublicong kalusuran maaari kayong malipag-ugrad sa mga sumusunod:

• County Health Departments
• King County 206-296-4784
• Snohomish County 425-639-5250

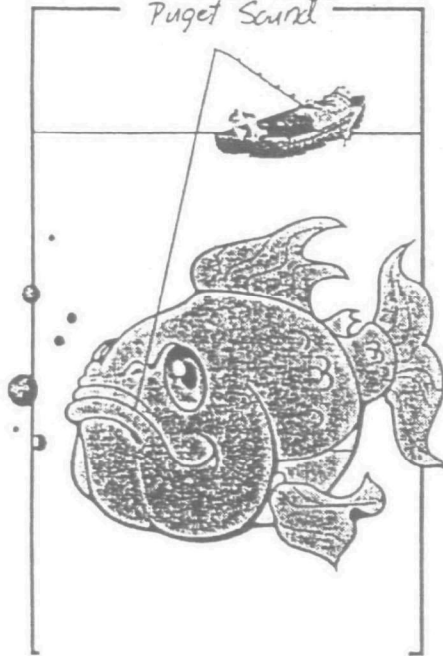
• Washington State Dept. of Health Consumer Assistance Hotline
1-888-566-9427

• Red Tide Information Line
1-800-562-5732

• U.S. Environmental Protection Agency
1-800-424-4372

• Environmental Risk Information Service, University of Washington
206-616-7557

Isang Pangkalusugang Mensahetungkol sa mga Pagkaing-Dagat na nakukuha sa Puget Sound



Ang mga Pagkaing-Dagat ay mabuti para sa ^{inyo} ~~sa~~ ngunit alam ~~ba~~ ba ninyo na ito ay maaari ding makasama sa ^{inyo} ~~ito~~.

Note: Please see suggestions in this copy. *skino*

Ang Refugee Federation Service Center at ang University of Washington Department of Environmental Health ay nagsagawa ng isang pagsusuri upang malaman ang mga panganib na hinaharap ng Asian-Pacific American Community. Para sa karagdagang impormasyon tungkol sa pagsusuri, malipag ugmad lamang sa RFSC at UW. (Tanong ang tanong patina para sa kontak)

Maririto ang mga Panganib na nakukuha sa Pagkain ng mga Sirang Pagkaing Dagat.

Ang mga sumusunod ay maaaring dulot ng biyolohikal na "contaminants": hepatitis, pagtatay at PSP (Paralytic Shellfish Poison), ang PSP o "Red Tide" ay isang lason. Maaari ninyong maramasan ang paratansid o pangginginig ng inyong bibig, dila, leeg, mga diliri at mga paa kung kayo ay na "Red Tide" maaari hin kayong magkaroon ng problema sa paghinga o sa inyong paglitos.



Tumawag kaagad sa mga kinatawuran kagag maramasan ninyo ang ganitong mga problema sa pagkat ito ay maaari ninyong ikawitay.

Ang sabrang pagkain ng mga pagkaing dagat na nahahulaan ng mga kemikals ay nakakasama sa inyo sapagkat ang mga kemikals na ito ay maaaring tumigil sa loob ng inyong katawan.

Ang mga sumusunod ay mga panganib na dulot nito:
• Kanser
• Pagkasira ng kidney
• Pagkasira ng utak
• Panganib sa pagkakaroon ng

"Contaminants"

Ito ay may dalawang klase:



at kemikal.

Ang mga biyolohikal na "contaminants" ay ang mga mikroba, parasites, viruses, at ang lason sa isda. Ang lason sa isda ay nangagaling sa mga pagkain na kinakain ng mga pagkaing dagat.

Ang industriya, mga bukirin, mankita ay nagdudulot ng mga polusyon na nakakapalo sa mga pagkaing-dagat kung mga isda na tumutira malapit sa mga pinanggagalingang ito. Ang silyang kalikatang nagpapakita.

Ang mga halimbawa ng kemikal contaminants ay ang mercury, lead at DDT.

Sino ang Manganganiib sa
Pagkain ng mga Sirang
lamang - dagat?

Lahat Tayo!!!!
lalong-lalo na ang...

- mga nagdadalang tao
at ang rasa kanilang
sirap-purpanan.



ang mga bata.

- ang matatanda.
- ang mga may
karamdaman, lalong-
lalo na ang mga may
sakit sa utak, may
diabetes at ang mga
may problema sa
kanilang immune
system. Ang mga
ito ay sensitibo
at kinakailangang
mag-ingat sa pagkain ng mga
lamang dagat na maaaring
nakatagan ng kemikal.

Narito Ang Mga Paraan Upang Mapangalagaan Ang Inyong Sarili

1 Alamin kung anong klaseng mga
lamang dagat ang madalas na
nagiging sanhi ng problema.

- ang matatanda at malalaking isda
ay mas may tsansang magpreserta
ng ~~hindi~~ kumpara sa mga bata at matatanda
isda lalong.
- ang mga isda na nakahira sa tabaw
ng tubig ay mas may tsansang magi-
karoon ng "contaminants".
- ang ibang parte ng lamang dagat ay
may maraming "contaminants" tulad ay sa
sa ibang parte nito. Halimbawa
ang alig, na alimango ay mas maraming
sa lalong. Kaya sa laman nito.
- ang ibang mga isda ay may maraming
ngatib, kesa iba. Halimbawa ang isda
na nagmamula sa mikrobyo ng sirap
ay nagbibigay ng ulirig.

2 Dapat ninyong malaman kung
saan maggagaling ang mga
binibili ninyong pagkaing-dagat.

- Dapat ninyong bigyan ng
atensiyon ang mga babalang
nakalagay sa mga priyer at mga
lugar na pangisdaan.
- maari kayong magtanong sa
Washington State Department
of Health kung saan ligtas at
hindi bawal ang pangigisda.

3 Gumamit ng ligtas at tamang pag-
papakain ng mga isda.

Bago kumain ng isda alamin
kung ito ay hindi pa sirap. Kapag ang
lamang nito ay malambot, ang mga
mata ay hindi malinaw at kung
may mababang amoy, ito ay maa-
aring sirap na.

Ilagay ang hilaw na isda sa
lugar na malabo sa ibang pagkain.

Ang tamang pag-iimbak ng
mga pagkaing dagat at ang pag-
luluto nito ay nakakapagpapaligay
ng mga mikrobyo na nagbibigay sa
inyo ng sakit, ngunit maaaring
hindi labat ay inapatak nito.

Ang pagluluto ng mga pagkaing
dagat ay hindi nakakapagpapaligay
"red tide" o ng Paralytic Shellfish Poison
(PSP). At ang PSP ay hindi nalamaman
sa pamamagitan ng kulay ng tubig o ng
mga pagkaing dagat.



maari ninyong tawagan ang PSP
Hotline kung nais mabalan kung
alin ang mga saradong lugar
pangisdaan dahil sa "red tide"
o PSP.

1-800-562-5632

Tawagan ang King County Health
Department para sa listahan ng
mga saradong lugar na pangisdaan
na hindi ligtas sa publiko.

206-296-4722

4 Narito ang ligtas na pag-
luluto ng mga Pagkaing-Dagat



Alisin ang basang na
isda. Ang mga kemikal
ay naiipon dito.



Alisin ang balat ng
isda o hilutin ito, sa
pamamagitan nito ang taba
ay nakakatulo at ang mga
kemikal ay maaalis.

Pagkaluto ng isda
itapon ang natitirang
sabaw at taba
nito.

(ang sabaw at
taba nito ay
maaaring may
halong kemikal).



ĐÂY, LÃM THẾ NÀO ĐỂ BẢO VỆ SỨC KHỎE CỦA BẠN

BỊ NHIỄM BỆNH DO ĂN HẢI SẢN BỊ NHIỄM ĐỘC

TÔI CẢ MỌI NGƯỜI!!!! NHƯNG...
phụ nữ mang thai và đứa
con trong bụng mẹ
trẻ em



người già
Người bệnh
Người bệnh nhất
người có bệnh
vị, bệnh tiểu
đường, người bệnh
đang có khả năng
ẩn dịch là những
người dễ mắc bệnh nhất.
cần phải cẩn thận khi ăn phải
hải sản bị nhiễm độc.

1. Bạn cần phải biết loại hải sản nào gây bệnh:

- Loại cá sống ở nước ngọt, già có khả năng dự trữ chất độc tố nhiều hơn các cá khác.
- Loại cá sống ở tầng nước và các loại tôm cua, sò, hến cũng thường bị nhiễm độc.
- Có những bộ phận trong thân thể con cá mang số lượng độc tố nhiều hơn là ở bộ phận khác ví dụ: con cua, chất gạch của trong vỏ cua chứa độc tố cao hơn ở phần thịt của trong vỏ cua.
- Vài loại cá mang độc tố truyền nhiễm cũng biết cho mỗi loại.

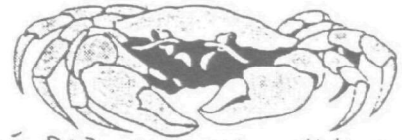
2. Ví dụ: cá ngừ độc tố trong con cá ngừ lớn thôi có thể gây dị ứng đối với bệnh.

CẦN DIỆT HẢI SẢN BẠN DÙNG TỬ ĐÀU.

- Cần sử dụng phương pháp nấu cá an toàn để tiêu diệt vi khuẩn. Bộ Y tế bang Washington sẽ thông báo về các biện pháp và hướng dẫn cho bạn.
- Bạn chú ý đến các bằng huân cảnh cáo ở bãi biển, các biển báo.
- Bạn hãy tiếp xúc với Bộ Y tế bang Washington để biết nơi nào cho phép bắt và đánh cá.

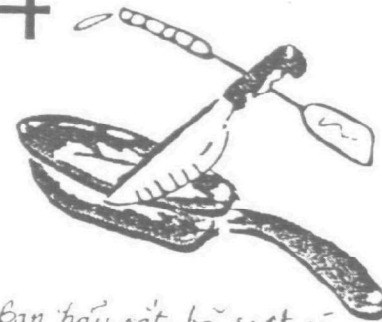
3. HÃY CHUẨN BỊ PHƯƠNG PHÁP THỰC HIỆN.

- Xem thử cá có bị vớt thối trước khi bạn ăn cá không. Nếu cá có mùi tanh nồng, chất thịt mềm nhũn, mắt cá lơ lửng, đó đúng là cá hư phải bỏ đi.
- Giữ cá sống chưa dùng cách xa với các đồ ăn đang nấu.
- Cá bắt được phải để phòng lạnh, và nấu chín tất cả cá, tôm, cua khi trước khi ăn. Khi nấu chín thì bạn khử đi các mầm độc gây nhiễm bệnh, nhưng không nhất thiết tất cả đều được khử đi.
- Nấu chín, ta cũng đừng nghĩ rằng đã loại bỏ tất cả độc tố "sốt ruột".

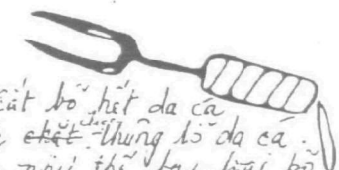


- hoặc PSP. Bạn không thì nên nên biết các độc tố PSP là do mẫu của nước hoặc từ hải sản mà có.
- Muốn biết tin tức và sách báo về bị biến cảm cá do PSP hay "sốt ruột" Xin gọi đường dây PSP số: 1-800-582-5632.
- Muốn biết bãi cá bị cấm do y tế bạn hãy gọi Y tế Quận King: 206-296-4722.

4. NHỮNG Ý KIẾN VỀ NẤU ĂN AN TOÀN.



- Bạn hãy cắt bỏ ruột cá, chất hóa học chất chưa tiêu hóa.



- Cắt bỏ hết da cá hoặc cắt bỏ phần da cá. Lamin như thể bạn loại bỏ hết chất béo của cá và làm giảm từ chất hóa học trong con cá.



- Sau khi nấu, hãy bỏ chất béo và chất dịch còn lại của cá. Hai chất này cũng có thể gây nhiễm chất độc hóa học.

NHỮNG HUÔNG DẪN VỀ HẢI SẢN CẦN
LIÊN LẠC VỚI CÁC CƠ QUAN ĐƠN

NHỮNG ĐIỀU BẠN CẦN BIẾT KHI
DÙNG HẢI SẢN VÙNG PUGET SOUND

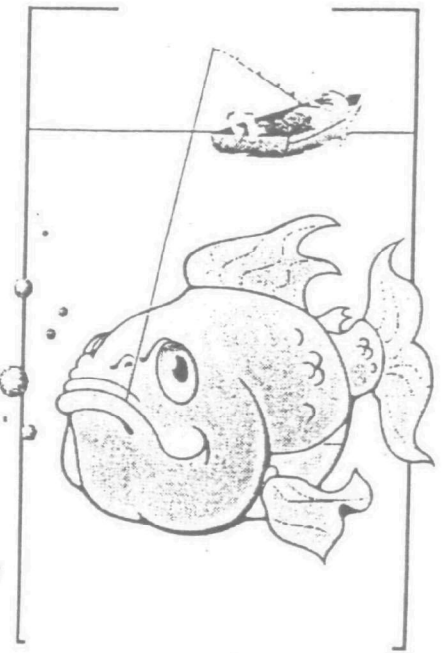
RUNG TÂM PHỤC VỤ NGƯỜI TIỀN NAN
(R.F.S.C.)
30 thông dịch viên song ngữ
Điện thoại 408: 206.725.9181

HUÔNG TRINH WILD PHÁT TRIỂN
ÔNG H3P (NỘI ĐỊA THANH PHỐ)
Wilderness-Inner City Leadership
Development Project) tại cở quan
DHA (International District Housing
Incece).
Điện thoại: (206) 623-5132
Báo People For Puget Sound.
Điện thoại số: (206) 382-7007.

LIÊN LẠC VỚI CÁC CƠ QUAN Y TẾ
CƠ QUAN CỘNG

KING COUNTY - 206.
QUẬN PIERCE
QUẬN SNOHOMISH

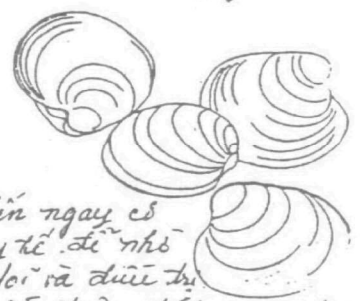
TỔNG NHÀ Y TẾ TIỂU BANG WASHINGTON
Phòng Hộ trợ và giới thiệu
Điện thoại số: 1-888-586-9427
Đường dây thông tin Red-Line
số điện thoại: 1-800-562-5632
H.S. Cơ quan Bảo Vệ Môi Trường
1-800-424-4372
Cơ quan thông tin về tìm hiểu
môi trường thuộc Đại học WA.
Điện thoại số: 206-616-7557



ĂN HẢI SẢN RẤT TỐT CHO BẠN!
NHỮNG BẠN BIẾT KHÔNG?
HẢI SẢN CŨNG CÓ THỂ GÂY
HẠI CHO BẠN.

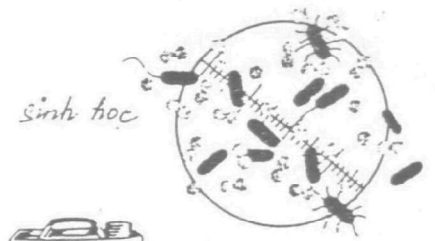
TRUNG TÂM PHỤC VỤ TIỀN NAN tại Seattle và NHÀ Y TẾ MÔI TRƯỜNG Thuộc
Trường Đại học Washington đã xúc tiến việc nghiên cứu sâu
sông trong một nỗ lực nhằm tìm hiểu các sự tác hại
rủi ro mà các công đồng Mỹ Á. Thái Bình Dương thường gặp.
Cần thêm hướng dẫn xin liên hệ với R.F.S.C và Đại học Washington

HẢI SẢN DO AN HẢI SẢN HỦ THỜI.
Chất ô nhiễm sinh học có thể gây
bệnh viêm gan và PSP (paralytic
shellfish poison) hoặc (Red Tide)
ô nhiễm nước là chất độc. Mặc dầu
bệnh này, bạn cảm thấy ngứa ran
hoặc tê cứng ở môi, lưỡi, cổ, ngón
tay, ngón chân. Trong trường hợp
xấu hơn bạn có thể khó thở
và thân thể cử động khó khăn.



Hãy đến ngay cơ
quan y tế để nhờ
thử độc và điều trị.
Mặc chúng trên, tính mạng bạn
có thể bị đe dọa.
Ảnh hưởng của hải sản nhiễm độc
hóa học cũng các chất độc sẽ
tồn tại trong người bạn làm
sinh ra những bệnh như:
• Ung thư
• Suy thận
• Suy não bộ, và

NHỮNG CHẤT NHIỄM BỆNH
Chất nhiễm bệnh gồm 2 loại:



Các chất truyền nhiễm sinh học
là vi trùng, ký sinh trùng,
vi khuẩn, độc tố trong cá.
Độc tố ở trong cá là do loại
thực phẩm mà con cá
ăn phải.
- Nếu thợ lặn công nghệ, nông trại
và công nhân, tất cả làm ảnh hưởng
đến ô nhiễm môi trường hải sản
khi cá sống gần các vùng ô nhiễm
thường bị nhiễm nhiều nhất.
- Các chất truyền nhiễm hóa học gồm

**For More
Information
About Seafood:**

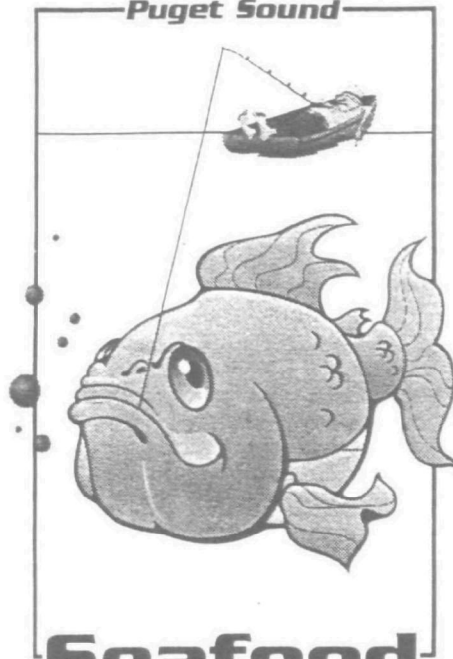
**Community
Contacts**

- Refugee Federation Service Center
Bilingual services available.
206-725-9181
- Wilderness-Inner City Leadership
Development (WILD) Project at
International District Housing
Alliance (IDHA).
206-623-5132
- People for Puget Sound
206-382-7007
- Community Coalition for
Environmental Justice
206-720-0885

**Public Health
Contacts**

- County Health Departments
 - Seattle/King Co. **206-296-4784**
 - Snohomish Co. **425-839-5250**
- Washington State Dept. of Health
Consumer Assistance Hotline
1-888-586-9427
- Red Tide Information Line
1-800-562-5632
- U.S. Environmental Protection
Agency
1-800-424-4372
- Environmental Risk Information
Service, University of Washington
206-616-7557

**A Friendly Health Message
About Eating Seafood
From the
Puget Sound**



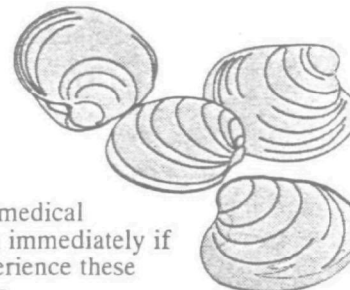
**Seafood
Is Good
for You!**

***But did you know that it
can sometimes harm you?***

In an effort to understand the unique risks faced by the Asian Pacific American community, a study was conducted by the Refugee Federation Service Center and the University of Washington's Department of Environmental Health. For more information about the study, contact the Refugee Federation Service Center or the University of Washington (see *For More Information*).

**Risks From
Eating Bad Seafood**

Biological contaminants can cause many illnesses: hepatitis, diarrhea and PSP. PSP (*Paralytic Shellfish Poison*) or "Red Tide" is a poison. You may have tingling or numbness in your lips, tongue, neck, fingers or toes if you have PSP poisoning. In worse cases, you may have breathing problems and trouble moving your body.



Call for medical attention immediately if you experience these problems.

This problem can be life threatening.

Eating too much seafood contaminated with chemicals can lead to the build-up of chemicals in your body. This may increase your risk of:

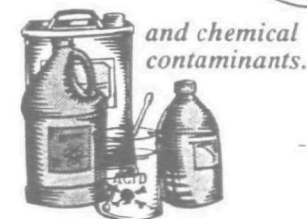
- Cancer
- Kidney Damage
- Brain Damage, and the
- Ability to have healthy children.

Contaminants

Contaminants are things which can get into food and make you sick. There are 2 kinds of contaminants:



biological



*and chemical
contaminants.*

Biological contaminants are bacteria, parasites, viruses, and fish poisons. Fish poisons are caused by the food the seafood eat.

Industries, farms, and sewers all contribute to the pollution that affects your seafood. Seafood that live close to these sources of pollution are often the most affected.

Examples of chemical contaminants include mercury, lead, and PCBs.

**Who is affected by
eating contaminated
seafood?**

Everybody!!!!

**But some people are
more sensitive and
should be more careful
about eating potentially
contaminated
seafood, such
as...**

- Pregnant women and their unborn children



- Children of any age

- The elderly and



- People with medical problems, especially liver disease, diabetes, and problems with the immune system

Here's How to Protect Yourself

1 Know what types of seafood are more likely to cause problems:

- Older and larger fish have more chance to store up toxins than younger, smaller fish.
- Fish and shellfish that live at the bottom of the water tend to have more contaminants.
- Some parts of the seafood may have higher amounts of contaminants, for instance, the "butter" of crabs is higher in toxins than the meat
- Some species have special risks. For example, poison from germs on spoiling tuna may cause allergic reactions.

2 Know where your seafood came from:

- Use safe fishing practices. Contact the Washington State Department of Health for safety information:
1-888-586-9427
- Pay attention to warning signs at the beaches and piers.
- Check with the Washington State Department of Health for safe and open shellfish harvesting locations.

3 Use safe preparation practices:

- Check to see if your fish is spoiling before you eat it. A strong fishy smell, softening of the meat, and hazy eyes on fish can be signs of bad fish.
- Keep raw fish away from other foods being prepared.
- Proper refrigeration after catching, and cooking all fish and shellfish before eating will kill most of the germs that can make you sick, but not all of them.
- Cooking does not get rid of "red tide" [Paralytic Shellfish Poison (PSP)]. You cannot tell if the seafood has PSP from the color of the water.



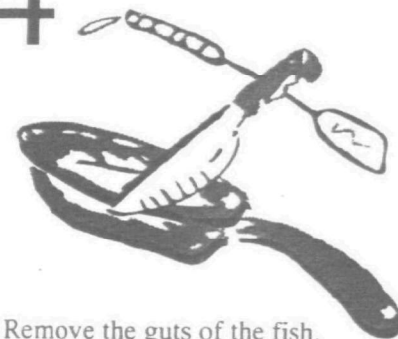
For an updated recorded message of beaches closed due to PSP or "red tide," call the PSP Hotline at:

1-800-562-5632

For a list of beaches closed for health reasons, call the King County Health Department at:

206-296-4722

4 Safe Cooking Ideas:



- Remove the guts of the fish. Chemicals build-up in them.



- Remove the skin of the fish or poke holes in the skin. This lets the fat drain out and reduces the chemicals in the fish.

- After cooking, throw out the remaining fat and juice from the fish (the fats and juices may have chemical contamination).

