

# Agat Bay Seafood Advisory Seafood Consumption Survey



August 2002

## Introduction



The Guam Department of Public Health and Social Services (Guam DPHSS) issued an advisory in the fall of 2001 to warn people not to eat seafood caught in Agat Bay between Orote Point and Nimitz Beach. The Agat Bay Seafood Advisory was based on results from fish samples taken by the Navy near the Orote Landfill in June 2001. The fish contained polychlorinated biphenyls (PCBs) and other chemicals at levels that might not be safe to eat. Additional information on the Orote Seafood Advisory is presented in a separate August 2002 Orote Seafood Advisory fact sheet.

Seafood advisories are usually established because there is an unsafe risk to human health. The risk varies depending on how much seafood people eat from the Advisory Area. Typically, the more you eat from the area, the higher your health risk. The Navy, Guam EPA, and other regulatory agencies agreed that a seafood consumption survey was needed during Phase I of the Navy's study to provide information about the amount and types of seafood that local Guam residents are eating. This information is needed to better estimate the risk from eating fish caught in Agat Bay and to determine if it is safe for people to eat seafood from the Advisory Area.

## How the Survey Was Accomplished

In January 2002, the Navy commissioned QMARK Research and Polling-Guam (QMARK) to design and conduct a seafood consumption survey of residents living in Piti, Agat and Santa Rita, Guam. These three villages were chosen because they surrounded the original Seafood Advisory Area in Agat Bay and are most likely to have residents who eat seafood that was caught in the Advisory Area. A total of 130 head of households in Piti, Agat and Santa Rita were surveyed. The 8 page survey included 33 questions concerning relevant personal information, fishing practices, fish preparation methods, fish species commonly caught, popular fishing locations, and awareness of the fishing advisory. QMARK's professional English, Chamorro and Tagalog speaking interviewers conducted the surveys. Each interview averaged 18 to 20 minutes if the resident did not harvest fish and 23 to 25 minutes if they were fishermen.

Question	Average Answer
How long have you eaten fish?	More than 40 years.
How many times do you eat fish each month?	8.4 times per month.
How much fish do you eat at each meal?	8.9 ounces at each meal.

## Results from the survey

**1. How much fish do people generally eat?** Almost all of the people surveyed (95%) said they eat fish. The table above shows average results for the people surveyed who eat fish. The answers to these questions were then considered together to calculate the amount of fish that the average person in Guam eats on a daily basis. The result was 2.5 ounces of fish per day (70.5 grams/day).

**2. What types of fish are commonly caught and eaten?** The people surveyed identified more than 50 types of fish and other seafood that they commonly eat. The following are examples of the fish eaten most often by the Native Guam population: the Big-eye Scad (Atulai), Grouper (Gadao), Orangespine unicornfish (Hangon), Rabbitfish (Sesyon) and Small parrotfish (Palakse').

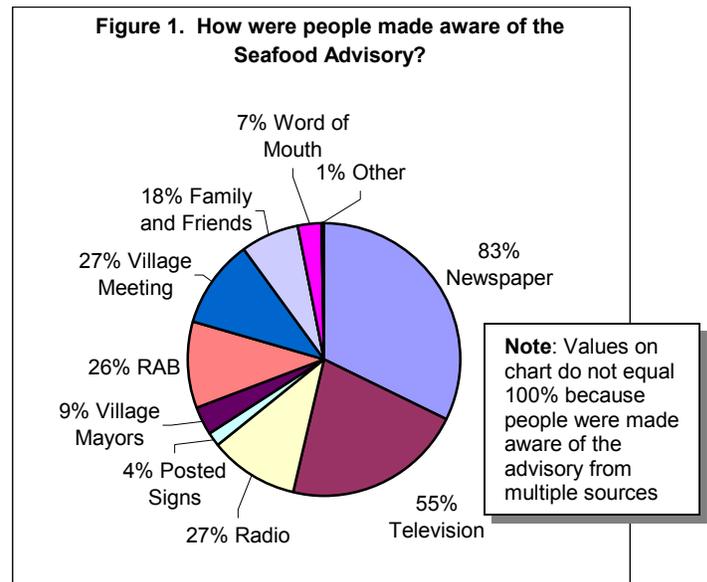


Far Left: Big-eye Scad (Atulai)  
Left: Hexagon Grouper (Gado)

**3. Where do people get their seafood?** The survey showed that on average approximately 11% of all the seafood eaten by residents in the month prior to the survey came from the Advisory Area. The results also indicate that people get fish from a variety of places including the supermarket, friends, fisherman’s co-ops and roadside vendors.

**4. How effective was the Navy’s Public Outreach Program?**

The Navy and Guam EPA have worked to provide the public with updates and information regarding the Orote Landfill site and the Seafood Advisory. Results from the survey suggest that this effort was on the whole extremely productive. Eighty-six percent of those surveyed were aware that a seafood advisory had been posted from Orote Point to Nimitz Beach before participating in the interview. In addition, almost half of all people surveyed no longer ate fish from the Seafood Advisory Area because of the warnings. However, the remainder (slightly greater than half) are still fishing in the Advisory Area and eating the seafood they catch. The majority of people were made aware of the advisory by a story in the newspaper, the radio, Navy public meetings, a television broadcast, or a combination of the above (Fig 1).



**5. How do Guam residents prepare their fish?**

The amount of PCBs (and other chemicals) in fish and seafood depends on many factors. The kind of fish, its size, age, fat content, diet and location all can influence how much it contains. The portions of the fish that people eat and the way they clean and cook the fish can have a significant impact on the amount of PCBs and other chemicals they actually eat. Information on how fish is typically prepared in Guam will give the Navy and the regulators a better understanding of how much PCBs local residents may actually be eating from the fish in Agat Bay. Results of the fish consumption survey indicate that people in Guam clean and cook their fish in several different ways. When asked which part of the fish they usually consume, responses varied significantly. They ranged from filet only to whole fish depending on the type of fish. The results indicate that the conservative approach taken by the Navy to test the whole fish for PCBs and other chemicals was appropriate because the surveyed population does, in some cases, consume whole fish.

Residents were also given a list of fish and asked how they usually cook each type. Options included raw, pan-fried, deep fried, boiled/stewed, grilled, baked, and other cooking method. Results showed the cooking methods varied depending on the type of fish.

**Conclusions**

The following results of the seafood consumption survey provide Guam-specific data on the types and amounts of seafood eaten, how often people eat seafood and where people normally get their seafood.

- The data suggests that people living in the Agat Bay area eat a variety of seafood and prepare and cook their seafood by many different methods.
- The amount of fish eaten in one sitting is typically higher than other previously studied fish eating populations, but Guam residents eat fish meals less frequently.
- Guam people do not get fish from a single source. Fish are obtained from several sources including the supermarket, fisherman’s co-ops, family and friends and from roadside vendors.
- The survey indicates that the Navy outreach program has been successful in making people aware of the seafood advisory.

A concern to the Navy, Guam EPA, and the Guam Health Department is that one half of the people that said they were aware of the advisory still eat fish caught in the Advisory Area. This fact suggests that more emphasis should be placed on providing information to people on ways to clean and cook fish that will help them reduce the amount of PCBs and other chemicals that they may be eating.

**For More Information:** Please contact the COMNAVMAR Public Affairs Officer at 339-5207 or GEPA at 475-1623. For information on health effects of PCBs, please call ATSDR at 888-422-8737 (Atlanta) or 800-231-3075 (San Francisco)