



RESEARCH PAPER

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Production and trade of Napoleon wrasse (*Cheilinus undulatus*) in selected Municipalities of Bohol, Philippines

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Abstract

Market survey of Napoleon wrasse is needed to gather and analyze the data of this species in the market. Napoleon wrasse (*Cheilinus undulatus*) locally known as “Mameng” is a small but significant component in fish trading. This study was conducted to determine the prevalence of Napoleon wrasse trading through market surveys in the selected municipalities of Bohol namely the municipality of Calape, Getafe, and Tubigon, as basis for conservation measures. Descriptive survey method was used in the study. A one month survey was done to the three municipalities, where the survey took place only every market days. Results showed that the volume of production of Napoleon wrasse in the three municipalities was very low, where the total volume of production of Napoleon wrasse during the one month survey was 1kg in the municipality of Calape, 3.5kg in the municipality of Getafe, and 7kg in the municipality of Tubigon. Most of the fish vendors in the three selected municipalities of Bohol can rarely sell Napoleon wrasse. The volume of consumption of Napoleon wrasse in the three municipalities during the one month survey was relatively high where all of the Napoleon wrasse the fish vendors were selling was sold and sought by buyers. The volume of production of Napoleon wrasse in the three selected municipalities of Bohol was very low due its rarity resulting to its high demand and consumption rate. Among of the three municipalities, only the municipality of Getafe had been identified to have the prevalence of Napoleon wrasse trading.

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Introduction

The Napoleon wrasse (*Cheilinus undulatus*), locally known as “*Mameng*”, is one of the largest of all reef fishes and the biggest of the wrasse family, the Labridae. It can reach well over two meters in length and 200 kilograms in weight. This species is considered a gourmet food fish and is appreciated for the fine taste and texture of its flesh and it has become a small but significant component of the live reef food fish trade for it is one of the most highly valued species in the trade (Sadovy *et al.*, 2003)

Napoleon wrasse has thick lips and a prominent bulbous hump on the forehead. The juveniles of this species can be identified by their pale greenish color and two black lines running behind the eye. Napoleon wrasse lives on lagoon reefs and steep outer reef slopes at depths of 1 to 60 meters, temperature of 25.71 to 28.98 and salinity of 34.38 to 35.31 ppt. Its primary foods are mollusks, fishes, sea urchins, crustaceans and other invertebrates. Napoleon wrasse is one of the few predators of toxic animals such as sea hares, box fishes and crown-of-thorns Starfish (Randall, Allen and Steen 1990). The longevity of this species is up to at least 32 years and sexual maturity is reached at about eight years of age, meaning they are extremely slow are extremely slow hermaphrodites, which means they can start their life as a female and then change to the male, with sex reversal occurring at about 15 years of age.

Because of its high value as food, it is heavily sought by fishers and traders. There is now a considerable concern that this widespread but uncommon species is being threatened that cause decline of its number because of the growing demand of this species in the live reef food fish trade. International Union for Conservation of Nature (IUCN) stated that the Napoleon wrasse is primarily taken for export as part of the valuable live reef food fish trade which is centered in Southeast Asia especially from Indonesia, Malaysia, and including the Philippines. As part of the live food fish market of these countries, Napoleon wrasse value is likely to increase with rarity, so fishers will continue to fish this species even as its numbers decline. Buyers of this fish also continually have to

source new areas as numbers of this species decline in the particular area where they can buy this Napoleon fish. The rampant trading of Napoleon wrasse was happening elsewhere, so there is a need of conducting a research study regarding on the prevalence of Napoleon wrasse trading in the three municipalities of Calape, Getafe, and Tubigon through market surveys. A market survey is a process of gathering and analyzing data of a certain product in the market.

To gather and analyze data of Napoleon wrasse in the market, a market survey was conducted in order to better understand the status of this species in the market. There are no data on total numbers of this fish globally. However, adults reef area within its distribution and even in preferred habitats; densities are very low for a commercially exploited species (rarely > 10 fish per 10,000 square meter when not fished). It is considered uncommon to rare naturally. Nothing is known about the extent of subpopulations or degree of fragmentation but available suitable habitat is a major determinant of its distribution.

Moreover, Napoleon wrasse trade in Malaysia and found that there is extensive, illegal, unrecorded and unmonitored Napoleon wrasse trading occurring between Malaysia and the Philippines. They found that although the Philippines banned the export of all live fish, “the government of Malaysia is aware and has admitted that most of the Napoleon wrasse stock exported from Sabah in Malaysia is caught in the Philippines. There appears to be no monitoring or records kept of the trade of Napoleon wrasse between the Philippines and Sabah. The Napoleon wrasse’s inclusion in the list of Convention on International Trade in Endangered Species (CITES) Appendix II in the year 2004, with the listing, international trade is only permitted if the export will not be detrimental to the survival of the species in the wild has been unsuccessful in protecting the species from further decline. For example, the wrasse trade in the Malaysia is regulated, in part, by CITES and pursuant to this convention. CITES permits are required before one can export wrasse. Chen and Justin found that prior to 2007 there was only one record of an export of two live wrasse (Chen and Justin, 2009).

In Philippines, exports of the Napoleon wrasse are prohibited throughout the country. Until recently, the Napoleon wrasse could not be exported from Palawan with an exemption for the taking of small fish for mariculture (Philippines Fisheries Code, 1998).

Fishing through explosives noxious or poisonous substance, and / or electricity its shall be unlawful for any person to catch, take or gather or cause to be caught, taken or gathered, fish or any fishery species in Philippines waters with the use of electricity, explosives, noxious or poisonous substance such as sodium cyanide in the Philippines fishery areas which will kill, stupefy, disable or render unconscious fish or fishery species. Provided, that the Department, subject to such safeguards and conditions deemed necessary and endorsement from the concerned LGU's may allow, for research, educational or scientific purposes only, take or gather fish or fishery species. Provide, further, that the use of poisonous or noxious substance to eradicate predators in fishponds in accordance with accepted scientific practices and grounds shall not be construed as illegal fishing (Philippine Fisheries Code, Section 88).

Market survey on Napoleon wrasse is described as the systematic and objective identification, collection analysis, and dissemination of information for the purpose of assisting management in decision making related to the identification and solution of the problems pertaining to this species. That is, to provide management with relevant, accurate, reliable, valid, and current information.

Materials and methods

Research Design

Descriptive survey method was used in the study. Data was collected through market surveys and interviews with the vendor. Self-structured survey-questionnaires was made and administered. Surveys were conducted every market days to assess the volume of fishes sold in the market. Followed-up interviews and documentation were made to validate the data gathered. Books of different kinds of fishes indicating the common name, English name and scientific name with pictures were used to facilitate

the naming of the fish species and this would also serve as the keys of naming the species.

Research Locale

Selected municipalities were identified through purposive sampling. The presence of wide coastal area and the presence of high intertidal zone was one of the bases in selecting the municipalities. The following municipalities of the study are the municipalities of Calape, Getafe and Tubigon. Aside from the presence of wide coastal areas, the presence of the fish landing sites is also one of the components for selection. Majority of the fish vendors and traders constituted to these areas because of observed high production and consumption rates.

One of the municipalities identified is Calape where it is facing the Cebu strait on the western side of Bohol Island, about 41 kilometers (25 mi) from Tagbilaran City. The jurisdiction of Calape includes the islands of Pangangan and Mantatao, as well as two uninhabited islets, Poom Island and Basihan Island. Getafe is a port town on the northern coast, 92km. from the Tagbilaran City. The shallow waters around the neighboring little Islands of this municipality are rich fishing grounds. Tubigon is a coastal town having a coastline 14km. long this town is located at the northern part of Bohol.

Research Instrument

Self- structured survey-questionnaires was constructed. These was divided into four sections: demographic profile (name, age, address, and civil status of the respondents), volume of production (weight and size of Napoleon wrasse), and volume of consumption (price and number of kilograms of Napoleon wrasse that were sold), and other common species of fish (name of common species, weight, and price). The self- structured survey- questionnaires include of how many kilograms of Napoleon wrasse the fish vendors were selling; how much is the price of the Napoleon wrasse per kilogram; how many kilograms of Napoleon wrasse that are sold; what are the other species of fish that the fish vendors were selling, and how much are the price of these species of fish.

Data Gathering Procedure

The study was conducted every market days of the three selected municipalities of Bohol namely; Calape, Getafe and Tubigon for one-month. The study took place every Thursday in the municipality of Calape, every Wednesday in the municipality of Getafe, and every Friday in the municipality of Tubigon. The fish vendors of each area were considered as the respondents of the study. The total number of each area was assessed and identified. Data gathered through giving self- structured survey questionnaires and followed up by personal interviews to the respondents were tabulated that includes demographic profile of the respondents; the volume of production and consumption of Napoleon wrasse; weight, size, and price of Napoleon wrasse; other species of fish sold; volume of production and prevailing price of other common species.



Fig. 1. Interviews conducted from the different markets.

Statistical Treatment

To determine the demographic profile of the respondents; the volume of production and consumption of Napoleon wrasse; weight, size, and price of Napoleon wrasse; other species of fish sold; volume of production and prevailing price of other common species were analyzed and tabulated using mean, percentage and simple frequency was used for the prevalence of the species.

Results and discussion

Volume of Production

In Calape market, there was no production of Napoleon wrasse during the first, second, third and fourth week. The volume of production of Napoleon wrasse during the third week was only 1 kilogram. In Getafe market, the volume of production of Napoleon wrasse in the first week was 0.5 kilograms, no production in the second week, 2 kilograms in the third week, and 1 kilogram in the fourth week. In Tubigon market, the volume of production of Napoleon wrasse in the first week was 1 kilogram, 3 kilograms in the second week, 1 kilogram in the third week, and 2 kilograms in the fourth week.

The total volume of production of Napoleon wrasse during the one-month survey was 1 kilogram in the municipality of Calape, 3.5 kilograms in the municipality of Getafe, and 7 kilograms in the municipality of Tubigon. Among of the three municipalities, the municipality of Tubigon has the highest production rate and the municipality of Calape has lowest production rate. During the one-month survey, only one fish vendor had sold Napoleon wrasse in Calape, three fish vendors in Getafe, and six fish vendors in Tubigon. Most of the fish vendors of the three municipalities stated that they can sell Napoleon wrasse very rarely and there is no particular or specific month that the volume of production of Napoleon wrasse is high.

Based on the study that was conducted by the National Oceanic and Atmospheric Administration (NOAA) US-Department of Commerce entitled "Status Review Report: Humphead wrasse (*Cheilinus undulatus*) drafted last September, 2014 that there was no

historical estimates of global or local abundance or biomass of Napoleon wrasse. When surveys first began on this species in the early 1970s the species was already characterized as being uncommon to rare in many places and the abundance of Napoleon wrasse was estimated to be 1-2 fish per 10,000 m².

Colin (2006) studied the abundance of Napoleon wrasse at three general areas in Indonesia in 2005. In 125 linearm of surveying, the density ranged from 0.04 fish to 0.86 fish per 10,000 m² in Bali- Kangean and Raja Ampat, respectively (0.40 fish per square meters for entire survey).



Fig. 2. Napoleon wrasse sold in the market.

Volume of Consumption

The volume of consumption of Napoleon wrasse in the three municipalities was relatively high that all of the Napoleon wrasse the fish vendors were selling during the period of the study was sold. The average price of Napoleon wrasse was Php 160.00 at Calape, Php 150.00 at Getafe and Php 150,000 at Tubigon. All of the buyers of Napoleon wrasse in Calape and Tubigon market are local consumers. In Getafe market, most of the buyers are traders.

Napoleon wrasse has been a small but significant component of the commercial live reef food fish trade as one of the highest- valued luxury food items (Sadovy *et al.*, 2007). The heavy demand and prices for the species of Napoleon wrasse was fuelled by their freshness and flavor.

World Wildlife Fund (WWF) stated that Napoleon wrasse is one of the most valuable fish in the live reef fish trade, and the rarity of this species leads to higher demand and prices of up to US \$ 250-300/kg in China. Although centered in Hongkong, this trade has spread to Southern China and other consumer regions, including Singapore. Of particular concern is that the rapid economic growth in mainland China in the near future may further intensify the demand for hump head wrasse throughout the country.

Common Species of Fish

There are eight common species of fish that were sold in the fish market in the municipalities of Calape, Getafe, and Tubigon during the one-month survey. These common species of fish are Big-eyed scad (*Selar crumenophthalmus*) locally known as "Tamarong", Garfish (*Belone belone*) locally known as "Bawo", Milkfish (*Chanos chanos*) locally known as "Bangus", Parrotfish (*Scarus cereleus*) locally known as "Molmol", Indian oil sardine locally known as "Tamban", Pinspotted spinefoot (*Siganus fuscescens*) locally known as "Danggit", Frigate tuna (*Auxis thazard*) locally known as "Tulingan" and Round scad (*Decapterus punctatus*) locally known as Burot-burot. Previous study conducted by Navarete *et al.* (2012) majority of the common fish sold in Calape and Tubigon public market are big-eyed scad, garfish, milkfish, parrotfish, round scad, herring, siganids and frigate tuna.

Conclusion

The volume of production of Napoleon wrasse in the fish markets in the municipalities of Calape, Getafe and Tubigon was low due to its rarity. The volume of consumption of Napoleon wrasse in the fish markets in the municipalities of Calape, Getafe and Tubigon was high for it was a gourmet food fish and the consumers like its taste. There are eight common species of fish that were sold in the fish market in the municipalities

of Calape, Getafe and Tubigon during the one-month survey. These common species of fish are big-eyed scad, garfish, milkfish, parrot fish, big-bodied round scad, Indian oil sardine, siganids, and frigate tuna.

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