

Fishing on Spawning Aggregation Sites of Groupers in Martinique (Mutton hamlet – *Alphestes afer*)

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ABSTRACT

Following the last GCFI meeting proposition on groupers spawning aggregations fisheries, a survey has been undertaken in Martinique. This survey reveals that fishing occurs on one species *Alphester afer* and marginally on *Epinephelus fulvus*. This poster presents a first description of the fishing techniques and their evolution. A rough localisation of these fishing areas is presented.

KEY WORDS: *Alphestes afer*, groupers, spawning sites

La Pêche sur Frayère de Méroux en Martinique Vierge Varech (*Alphestes afer*)

Une enquête a été réalisée en Martinique pour faire suite aux propositions faites lors de la dernière réunion du GCFI sur les pêches sur frayères de méroux. Cette enquête révèle l'existence de ce type de pêche sur une espèce : *Alphester afer* et marginalement sur *Epinephelus fulvus*. Une première description des techniques de pêche et de leur évolution est faite. Une localisation grossière des zones où se pratique cette activité est également présentée.

MOTS CLÉS : *Alphestes afer*, méroux, sites de ponte

INTRODUCTION

Groupers are species of high economical value in tropical and subtropical fishing activities. Most of these species are solitary and sedentary. Individuals stay for long periods in coral reef habitats. This site specificity and their relatively slow growth rate make them particularly vulnerable to overfishing. Moreover, some groupers migrate for several kilometers towards localized spawning sites. These sites are often exploited intensively by local fishermen during the brief spawning period of one or two weeks. This intensive exploitation is depleting some of the spawning aggregation sites and leading to overfishing of the concerned species.

There is no publication on spawning sites of groupers available in Martinique. To contribute to the GCFI reflection on management of groupers spawning

aggregations in the Caribbean, a preliminary survey has been launched in Martinique. The main objective was to compile an inventory of the concerned species and to localize the spawning aggregation sites known by fishermen. In addition, it aimed at describing the fisher's activities on groupers spawning aggregations in Martinique.

METHODOLOGY

Investigations were conducted with fishermen from around the island. The informants were not chosen by random sampling. Persons were questioned after spontaneous meeting on landing sites or on fishermen or fisher folk's indications.

The surveys were carried out on an informal mode of conversation, although managed around a specific theme. The main inquiry utilized underwater colour photos extracted from Reef Fish Identification book (Humann 1997). A map with landmarks and shoals of Martinique was used to localize spawning aggregation sites and fishing areas.

After identification of the concerned species, fishing trips on the spawning aggregation were made with professional fishermen. Monitoring of this fishery was undertaken on landing points. Fishing techniques, fishing areas, as well as the qualitative evolution of this fishery were described by investigation on landing sites, or at fishermen's home and by telephone interviews. Thirty-five fishermen were questioned. Only two fishing trips were carried out due to bad weather during the spawning season.

RESULTS

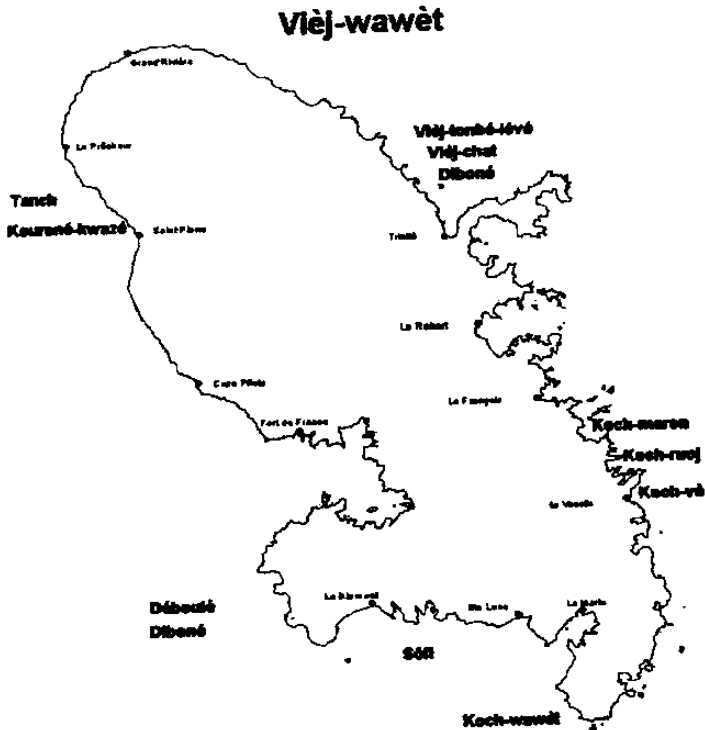
Fishing of Groupers on Spawning Aggregation Sites

Martinican fishermen have identified two grouper species that have spawning aggregation sites: *Alphistes afer* (Mutton hamlet) and *Cephalopholis fulva* (coney seabass). Fishing targeting Mutton hamlet operates every year at spawning season. Coney is also caught in breeding phase with Mutton hamlet but in lower quantities (less than 20 % weight). Martinican fishermen are unaware of spawning sites of other groupers.

Fishing of Mutton Hamlet on Spawning Aggregation Sites

Mutton hamlet has various vernacular names according to landing sites around Martinique (Map 1). The Mutton hamlet and Coney represent the principal varieties fished in Martinique. Annual catches were respectively 37.3 and 38.7 metric tons, in 1987. *Alphistes afer* represent 27.6 % of the landings of groupers and 22.6 % of the trap captures. Mutton hamlet is mainly fished by wire netting traps (57.4 %) and by small baited traps built from wood ("Tombé lève": 25.2 %). In both cases, recruitment starts at 12 cm up to 17 - 20 cm. The more important Catch Per Unit Effort (C.P.U.E.) is obtained between 10 and 30 m depth for this inshore species (Gobert 1991). They settle among seagrass and seaweed or in crevices where they

hide.

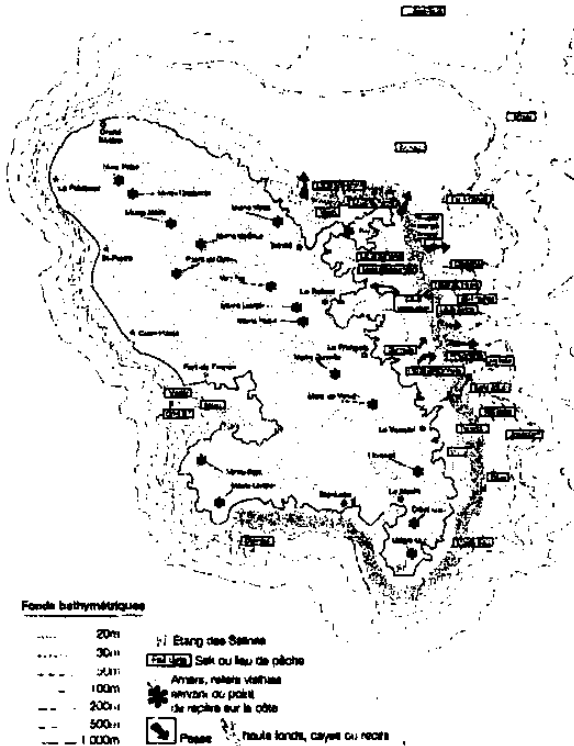


Map 1. Vernacular names of *Alphestes afer* in Martinique

The spawning aggregation sites of Mutton hamlet exploited by fishermen are located between 10 - 15 m and 25 - 30 m depth between Le Diamant and Trinité (Map 2). Mutton hamlets spawn on the outer part of shelf edge reef in February and March.

The spawning aggregation sites of Mutton hamlet are exploited mainly by fishermen living between Anses d'Arlet and Trinité. Various fishing techniques are used to catch Mutton hamlet during the spawning season. Bottom nets are used instead of "Tombé lève" which are only used by a few fishermen. A dozen fishermen of Vauclin and some divers along the coast (Tartane, ...) use harpoon fishing to target this specie. Wire netting traps may be used to catch large quantities during

spawning season but this cannot be considered as a target fishing technique. Anglers also catch *Alphestes afer* outside spawning sites.



Map 2. *Alphestes afer* spawning sites in Martinique

The nets used are mono or multi-mono filament nets of mesh size between 25-40 mm. Heights range from 2,5 - 4 m and lengths from 100 - 1500 m. Most frequently 3 to 4 nets of 300 - 400 m are set for three to seven hours in the afternoon. This technique is carried on during one month between February and March. The efficiency lasts a quarter moon. A few fishermen figures that falling moon gives better results and with rising moon fishing stops. For others, the most important catches are made three days before and three days after full moon. Net fishing landings recorded range from 25-50 kg per trip. Fish measurements of one landing at the beginning of the season (probably the first one) showed total length of Mutton hamlet to be ranging between 18-25 cm (Figure 1). All the fishes (120) examined were fluent except two of size respectively 19 and 20 cm. It was therefore possible to establish sex ratio without opening them. Twenty four percent of the individuals caught were females. This sex ratio is not reliable for landings of this fishery. According to fishermen, females caught are much more numerous than males, whichever fishing gears are used.

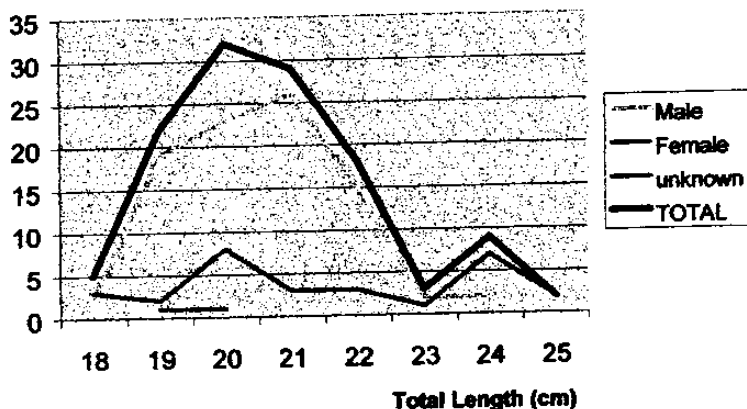


Figure 1. *Alphestes afer* length frequency (Vauclin 05/02/02)

Along with Mutton hamlet, fishermen caught large quantities of parrotfish in their reproductive season. These catches being more abundant and more regular for a longer period (several months), the fishermen prefer this fishery. For the same net length, we have recorded landings around 80 kg of parrotfish per trip.

“Tombé-lévé” are small wooden traps of the following size: length 65 cm, width 50 cm and height 20 – 25 cm. Mesh size is approximately 25 mm. Baits used for those traps are small pelagic fish frozen or caught by beach seines, or roasted octopus is used. With this technique fishermen usually use seven to eight traps. They are all set individually. The first one is raised as soon as the last one is set, meaning 20 or 25 minutes later. This “Tombé lévé” fishing starts in the morning between 6 a.m. to 12. Catches used to be around 20 – 25 kg up to 50 kg per trip. According to one fisherman it is actually round 15 kg per trip since the development of net fishing. Some fishermen think that this is due to the fact that frozen baits are actually used instead of traditional fresh baits coming from seine fishing.

Underwater fishing is practiced in the morning, from Vauclin and lasts for about three to four hours per trip. The teams are made up of three to four scuba divers per boat. Two to three individuals can be caught during one diving session and landing amounts to 25 kg per diver per trip. The divers describe the fish as passive and with no reaction towards the divers. They noted abundance of parrotfish on Mutton hamlet spawning sites. The parrotfish in breeding phase being very alert, they are more difficult to harpoon than Mutton hamlet. According to one scuba diver, typical aggregation site of Mutton hamlet lies in 10 - 25 m depth on the outer side on the coral reef covered with seaweed thus allowing hiding places.

FISHING TRENDS AND THREAT FOR MUTTON HAMLET STOCK

Assessment of Mutton hamlet fishing trends on or outside spawning sites cannot be undertaken from this preliminary survey. Gobert (1991) could not establish a diagnosis of the Mutton hamlet stock. Annual catch of Mutton hamlet recorded in 1987 with fishing gear used on spawning sites ("Tombé lève", scuba diving, bottom nets) totalled up to 13,6 % of landings of this specie with all type of gears (Gobert 1991). This means that fishing on the spawning aggregation sites represent only a small percentage of total catches for this species. Mutton hamlet is most probably protected due to its small size allowing it to slip through the nets. Fishermen are unanimous in thinking that Mutton hamlet remains abundant. In addition, the rough sea protects the spawning areas during the breeding season. Sale price of Mutton hamlet is approximately the same as that of other benthic and demersal fish, which is less than US\$10 and slightly less (US\$8) when landings are important. This does not incite the fisherman to increase fishing activity on this species.

Only one "Tombé lève" fisherman at Vauclin mentioned a decline in yields resulting from net development. Formerly about twenty fishermen used "tombé lève" traps in Vauclin. Actually, only one fisherman practices this activity with traps approximately thirty fishermen use bottom nets and 10 scuba divers target Mutton hamlet in February – March. The increasing trend towards use of fishing nets instead of traps which are less efficient must be practiced with prudence, namely because other species like the parrotfish will contribute to increase fishing effort on the Mutton hamlet spawning aggregation sites.

Description of the spawning area (geographical limits, period of activity) and inventory of the species reproducing there should be undertaken. It is important to monitor fishing in this sensitive area that is favourable to spawning aggregation of various species of high economical value.

ACKNOWLEDGEMENT

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