Variation in reproductive characteristics of Red Snapper (*Lutjanus campechanus*) in the north-central Gulf of Mexico.

Variación en las características reproductivas del Red Snapper (*Lutjanus campechanus*) en la región norte central del Golfo de México.

Variation des caractéristiques de reproduction du vivaneau rouge (*Lutjanus campechanus*) dans le centre-nord du golfe du Mexique.

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EXTENDED ABSTRACT

The Red snapper *Lutjanus campechanus* inhabit rocky and muddy environments with an essential role in reef areas. Due to intense fishing pressure, the species is considered vulnerable to overfishing. Hence, it is a species permanently assessed in the Gulf of Mexico and the South Atlantic. The snapper population is a metapopulation divided into two subgroups without genetic differentiation in the Gulf of Mexico [1,2]. A routine recommendation from stock assessments is the need for updated reproductive parameters. Given the increased focus on regional, state-focused management, greater spatial resolution in these parameters will be needed. To provide this information for the northcentral Gulf of Mexico, we have begun a multi-year study to update the reproductive status (sexual maturity size, spawning season, and reproductive status by age cohorts) of red snapper in the Gulf of Mexico using histological information.

Specimens have been collected from fisheries-dependent sources (fishing tournaments) and fisheries-independent surveys. For each fish, we record morphometric measures like fork length and weight; we store the gonads in NBF at 10% and use a histological approach (hematoxylin and eosin) to identify each sample's stage. We use the Brown- Peterson [3] classification that divides the gonads into five reproductive phases: immature, developing, spawning capable, regressing, and regenerating, for batch fecundity analyses. Finally, we are the fish using sagittal otolith cuts for aging the fish. As a study in progress, now, we have 600 samples with fork lengths between 225 mm to 924 mm. Our preliminary results showed the spawning peak during July (Figure 1), which is related to the GSI. All the samples from reproductively mature fish are bigger than 270 mm, suggesting that the sexual maturity size is less than this measure.

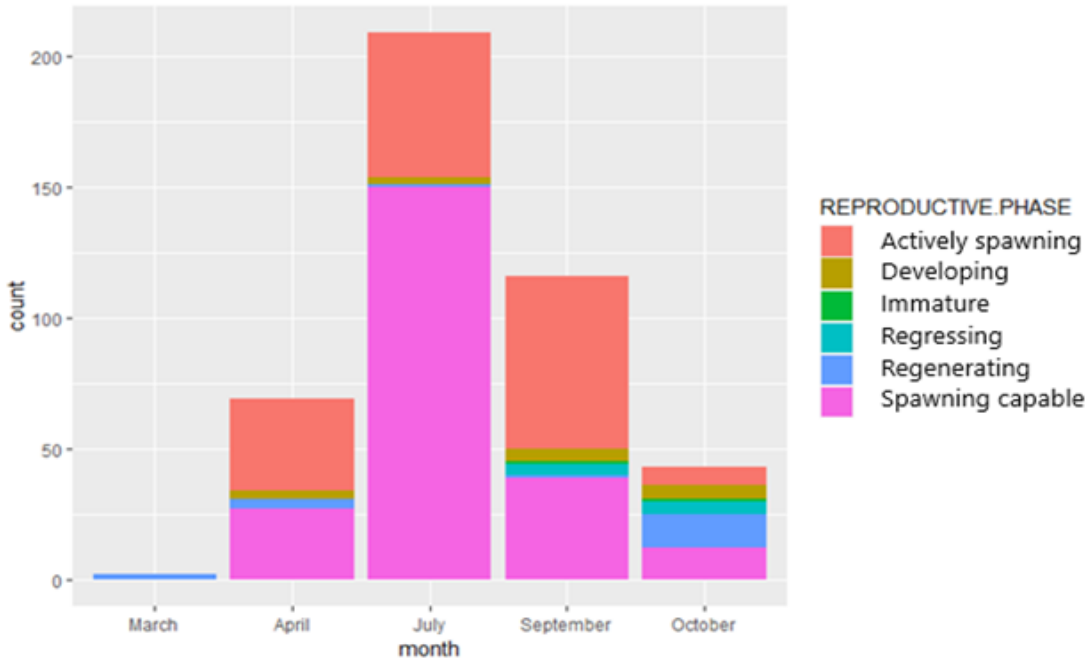

Figure 1. Reproductive phases are found in red snapper females throughout the year

We are working on some GLM models for establishing relationships between the reproductive stage and the GSI. Red Snapper occupying artificial reefs and natural hard bottoms will be compared among depth strata. The information collected will assist scientists in investigating how reproductive parameters vary as a function of age and habitat. Comparisons with previous studies will allow us to evaluate the temporal and spatial patterns of variability in these critical metrics.

KEYWORDS: Red snapper, histology, fecundity, reef, Gulf of Mexico

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