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*Ecuador*

# INSTITUTE FOR AQUACULTURE AND FISHERIES RESEARCH (IPIAP)

## ECUADOR ANNUAL REPORT: GIANT FLYING SQUID IN ECUADORIAN WATERS, 2023

### 1. INTRODUCTION

The giant squid *Dosidicus gigas* (d'Orbigny, 1835) fishery in Ecuadorian waters is under development and represents a fishing alternative for the Ecuadorian fishing sector. The seasonal distribution in Ecuadorian waters is influenced by the Humboldt current, in whose area of influence the giant squid makes vertical nocturnal movements for feeding, where it is caught by the artisanal fishing fleet in directed fishing and incidental fishing, mainly during the new (dark) moon.

This report presents the results achieved from the giant squid biological fishing monitoring, recorded by the IPIAP on the Ecuadorian continental coast during 2023.

### 2. FISHING ASPECTS

A total landing of 625.8 t was estimated from directed fishing and incidental fishing, which meant a decrease of 70.1% compared to 2022, affected by the presence of warm waters in the areas of fishing (El Niño Event) distributed in front of the Gulf of Guayaquil, where fishing operations were carried out in areas with SST between 24.0 to 28.0 °C.

#### a. FISHING ZONES

The giant squid fishing areas were distributed in the EEZ from south to north in front of the Gulf of Guayaquil, according to the seasonal variation of sea surface temperature (SST). In February the schools of giant squid were distributed far from the coast and were widely dispersed off the Punta of Santa Elena, probably due to the increase in SST, however, in March the availability of the resource in front of Punta of Santa Elena increased. In April and May the schools of giant squid have decreased. In June, schools of squid were found scattered near the coast off Punta of Santa Elena and in July there was greater availability in the Gulf of Guayaquil between 81° and 82° W due to the presence of waters with lower temperatures (Figure 1).

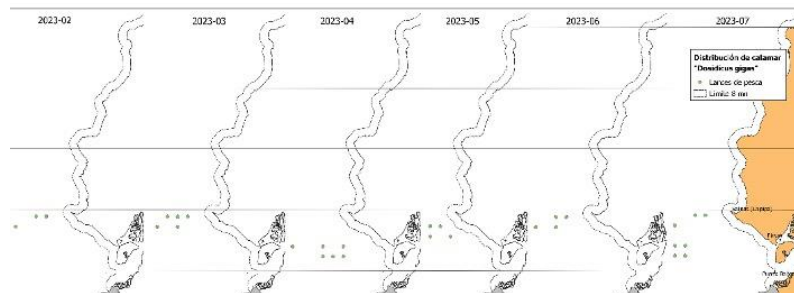


Figure 1. Spatial distribution of monthly catches of *Dosidicus gigas*, during 2023

### 3. BIOLOGICAL ASPECTS

#### a. MANTLE LENGTH (ML) STRUCTURE

The size structure (ML) ranged from 16 to 60 cm ML. In February the length was less than 38 cm ML, captured near the coast with hand lines and jigs, in March individuals were caught with a surface gillnet in fishing areas a little away from the coast, with sizes greater than 30 cm ML. The organisms caught in April and May were distributed far from the coast towards waters bordering Peru, and were captured with surface gillnets in sizes from 34 to 50 cm ML. In June the availability of the resource increased and the schools of squid were distributed relatively close to the coast in front of the Punta Santa Elena, where organisms with sizes of 16 to 50 cm LM were captured in directed fishing with jigs, while in July recorded greater availability of the resource, making catches in directed fishing and bycatch in a wide range of sizes between 16 to 60 cm ML. (Figure 2).

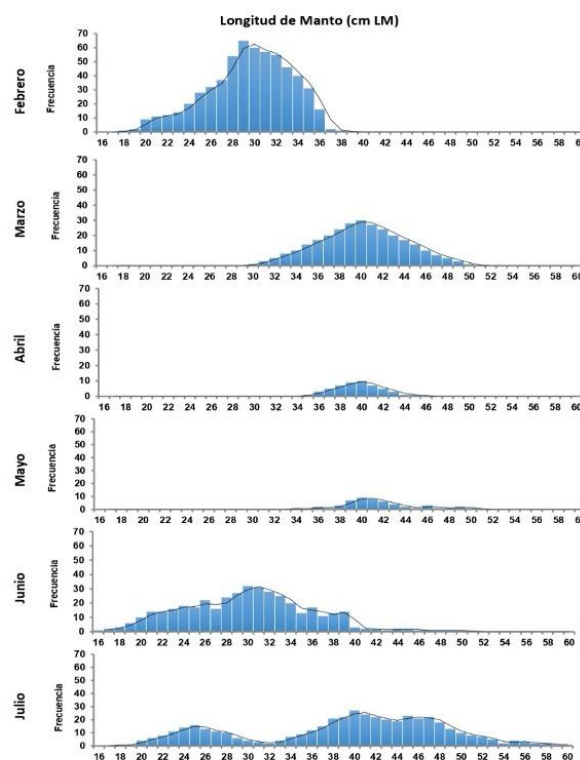


Figure 2. Monthly frequency of Mantle length of giant flying squid, during 2023.

#### b. SEXUAL MATURITY STAGES

A total of 1670 female organisms were analyzed, 11% were found in stage I (immature) and 89% stage II (maturing) (Figure 3). Females were more frequent and more numerous (87.6%) than males (12.4%).

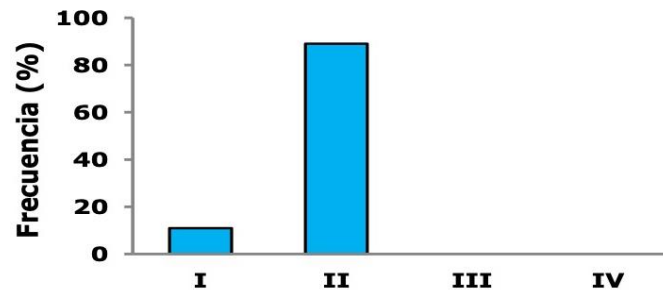


Figure 3. Stages of Sexual maturity of *Dosidicus gigas*, during 2023

Figure 4 shows the female organism categorized by size class according to the stage of sexual maturity, in which individuals in stage III (maturing) and stage IV (spawning) were not recorded (Figure 4).

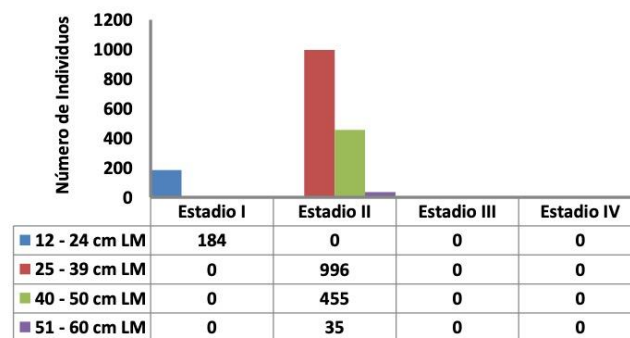


Figure 4. Stages of sexual maturity of *Dosidicus gigas* females, according to size classes. Period February to July 2023.