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**Nota científica**

# NEW WAY OF CAPTURING THE MAYA OCTOPUS (*OCTOPUS MAYA)*: THE USE OF ARTIFICIAL LURES IN YUCATAN PENINSULA, MEXICO

## Nueva forma de captura para el pulpo maya (*Octopus maya*): el uso de señuelos artificiales en la península de Yucatán, México

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## ABSTRACT

The use of artificial lures for Maya octopus fishing in the Celestún area of Yucatán is described for the first time. These lures are constructed from various materials, including wood, various plastics (PET or PVC), epoxy resin, and ethylene vinyl acetate foam. The lures are used by a large portion of commercial fishermen in the area, as they reduce fishing costs and maintain fishing yields. Studies are needed to evaluate the efficiency of each type of artificial lure and the effects of their use on the octopus population and its environment.

*Keywords*: Octopus fishing, drift line, artificial bait, practical use, Celestún, Yucatan.

## RESUMEN

Se describe por primera vez el uso de señuelos artificiales para la pesca de pulpo maya en la zona de Celestún, Yucatán, los cuales están construidos con distintos materiales como lo son: madera, varios plásticos (PET o PVC), resina epóxica y espuma de etileno acetato de vinilo. Estos son utilizados por una gran parte de los pescadores comerciales en esa zona, ya que disminuye los costos de pesca, además de que los rendimientos pesqueros se mantienen. Es necesario realizar estudios para evaluar la eficiencia de cada clase de señuelos artificiales y los efectos de su uso en la población de pulpo y su ambiente.

*Palabras clave*: pesca de pulpo, línea de deriva, carnada artificial, uso práctico, Celestún, Yucatán.

Octopus fishing is the main fishery in the Yucatan Peninsula and the seventh marine fishery resource by value and the ninth by volume in Mexico (CONAPESCA, 2024). Catches average over 15,000 t, making it the largest octopus fishery in the Americas and one of the largest worldwide (Markaida et al., 2019). The species on which the octopus fishery is based is

the *Octopus maya* (Voss & Solis-Ramirez, 1966). For its capture, an artisanal fishing method called gareteo (drift fishing) is used, which consists of fishing lines with a 110 gauge monofilament thread attached to bamboo poles called jimbas at each end of the boats, with crustaceans as bait. The most used species for bait include, Mangrove crab (*Ucides cordatus*), spider crab (*Lubinia dubia*), blue crab (*Callinectes sapidus*), and lobster heads (*Palinurus argus*) (Munguía-Vega et al., 2023). Stone crabs are the most commonly used bait and are brought from Campeche, Tabasco (Sauer et al., 2019), and Veracruz. In recent years, the price of bait has increased, representing up to half of the supply costs (Markaida et al., 2019). Therefore, alternatives have been sought to replace the use of crustaceans for bait with artificial crab-shaped lures made of plastic and PVC (Markaida et al., 2019). This contribution shows the first cases and describes the use of artificial lures for the commercial capture of octopus in surface waters of the Yucatán Peninsula.

Celestún is a town located in the northwest of the Yucatán Peninsula (20°51′38.73′′N, 90°23′46′′W), in the state of Yucatán, where around 1,500 fishermen are engaged in octopus fishing (SEPASY, 2019). The reported catch in this town for 2024 was around 4000 t, which represented 15% of the catch volume in the Yucatán Peninsula, and ranked second in importance in volume (CONAPESCA, 2025). During monitoring of artisanal fishery in Celestún, from September to December of 2024, some fishermen were detected using artificial lures to catch *Octopus maya*. To better understand the use of artificial lures in octopus fishing, we conducted interviews with 35 fishermen in Celestun. According to comments from interviewed fishermen, more than 80% of Celestún fishermen have now started using these lures to catch octopus.

The artificial lures range in size from 6 to 8 cm long and 4 to 6 cm wide, depending on their shape. Their shapes vary widely from rectangular, cylindrical, conical, and shaped like the shell of a crab or other crustacean. They are made of wood or silicone, and filled with flexible or rigid resin, plastics such as pet or PVC, or ethylene vinyl acetate foam. Others use waste materials and hard structures of organisms such as snails (*Strombus pugilis*) or crab shells. Some use the shells of blue and other types of crab to create molds, filling them with resin or cementing substances. Common to all the lures are simulated joints, made with nylon straps or colored plastic strips (polypropylene monofilament) called “Acapulco” thread. The artificial lures are painted with bright colors, and some have glitter added (Figs. 1–3). Based on the interviews, the idea for manufacturing the lures came from a fisherman who began selling them at a high price. The idea caught on, and currently these types of lures are typically designed and crafted by the fishermen themselves to save costs. According to them, making a wooden lure costs around MXN $5.00 (USD 0.25). One peculiarity is the ownership and familiarity each fisherman has with their lures, as their creation is based on their personal experience to determine which ones are most effective, and materials vary according to preference. A review of Celestún’s social media shows that the prices of commercial lures range from MXN $25.00 to $60.00 (USD 1.70 to 2.92), depending on the material and shape (Fig. 2). The cheapest are those made of rectangular wood, and the most expensive are made using crustacean shells as molds, coated with resin and painted in different colors.

The survey showed that more than 90% started using artificial lures in the 2024-25 season. In addition, more than 90% used artificial lures exclusively and did not consider that their catch had decreased. The fishermen also mentioned that the objective of using artificial lures is to

reduce costs, since they are less easily damaged, while a 3-kilo bag of natural crustacean bait, which is generally used, costs between MXN $500.00 and $600.00 (USD 24.34 and 29.50), and lasts approximately 7 days.

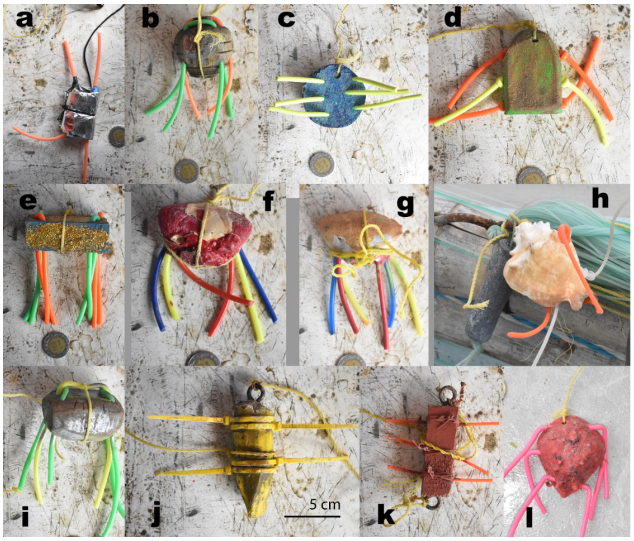


*Figure 1.* Different shapes and construction materials of the artificial lures used in Celestún, Yucatan. **A**, plastic, **B**, wood, **C**, resin, **D**, wood, **E**, wood **F**, plastic with crab shape, **G**, crab shell filled with resin, **H**, fighting conch shell, **I**, resin, **J**, wood, **K**, wood, and **L**, resin. Photos: L.F. Del Moral-Flores.

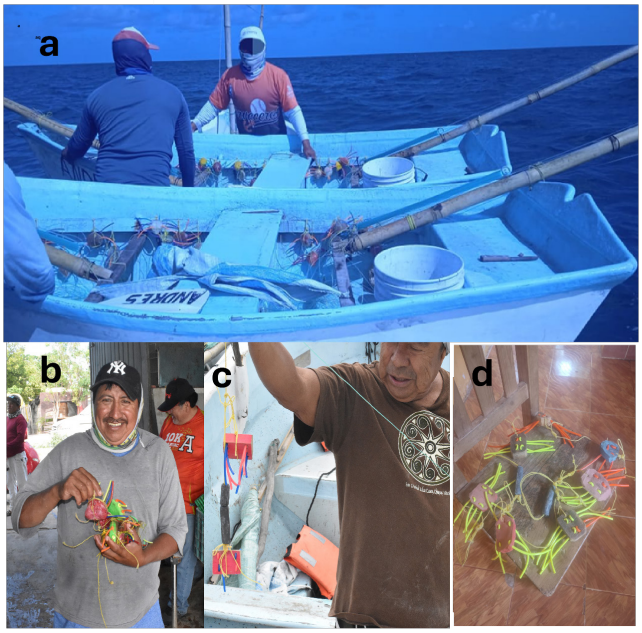


*Figure 2.* **A**, Use of artificial lures by fishermen at sea, **B**, and **C**, fishermen showing their lures and **D**, lures made from sandals (ethylene vinyl acetate). Photos: A: Gomez Chuc, CA. B and C: L.F. Del Moral-Flores, D: R.E. Herrera Contreras.


*Figure 3*. Advertisement for the sale of octopus lures on social media, revised February 2, 2024.

Crustaceans are the most important component of the Maya octopus diet, and the main species found was the majoid crab *Pitho anisodon* (Markaida, 2023); many lures are made to resemble this species. According to Portela et al. (2014), the Maya octopus prefers crabs, confirming its attraction to crab-shaped lures.

The search for alternatives to bait composed of brachyuran crabs is justified by the high cost of natural bait, where the so-called mangrove crab or ocol is the most commonly used. The price for natural bait ranged from MXN $120.00 to $130.00 per kilo (USD 5.90–6.40). Moreover, the durability of these baits is limited due to the way the octopus consumes its prey, which is generally by piercing the shell (Grisley et al., 1999). In Japan, artificial lures of various shapes are also used, but unlike those shown in this study, hooks are added (Sauer et al., 2019). According to some fishermen in this survey, their colleagues have begun adding hooks to artificial lures to prevent the octopus from escaping during capture.

This study is the first report on the use of artificial lures in the octopus fishery in the Yucatan Peninsula. Studies are needed to evaluate the efficiency of each type of artificial lure and the effects of their use on the octopus population and its environment.

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