

Soutenance de thèse

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Estuaries as nursery habitats for the horse-eye jack (*Caranx latus*) in North-Eastern Brazil

Mercredi 29 septembre 2021 à 10h00
heure locale (15h00 heure française)
Université Fédérale Rurale du Pernambuco,
Recife, Brésil



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Abstract

Evaluating the importance of inshore coastal habitats for the maintenance of exploited coastal fish populations is key to delineate sustainable strategies for both fishery and ecosystem management. Jacks are highly prized tropical marine fishes. Most of them complete their whole life cycle at sea, but some use estuaries at the juvenile stage before moving back to coastal waters and joining offshore adult exploited stocks. This is the case of the horse-eye jack (*Caranx latus*), an exploited yet poorly studied species frequently found in estuaries in North-Eastern Brazil, at least at the juvenile stage. However, little was known on the species' ecology in these inshore habitats, nor on their importance for the maintenance of its local exploited stock. To start filling this knowledge gap, this thesis combined three complementary research axes. The first one investigated the local size-at-age and growth of *C. latus* using size data and otolith readings from 282 specimens captured both at Sea and in varied inshore habitats. This allowed to specify fish ages in all the environments colonised by the species in the area and to infer the growth parameters for its local exploited stock. The second axis investigated local variations in the diet and food resources of *C. latus* juveniles in estuaries and their causes, by a combined analysis of the stomach contents and stable isotopes ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) signatures of 439 juveniles of both *C. latus* and another sympatric jack species (*C. hippos*), in three neighboring estuaries with contrasted morphological and biological features. It highlighted a plasticity in local resources use by juvenile jacks according to the estuarine environmental settings, allowing them to limit the trophic competition among them, with potential consequences on their respective sizes and abundances. Finally, the third research axis aimed to quantify the importance of local estuaries for sustaining the adult stock of *C. latus* exploited offshore, by analysing different chemical elements incorporated in the juvenile part of 183 otoliths of juveniles and adults captured in varied estuarine and marine habitats in this area. This revealed that 75% of the sub-adults and adults exploited by the fisheries off the coast of the Pernambuco state have spent their first year of life growing in local estuaries, particularly those under strong marine influence. These findings significantly advance previous knowledge on *C. latus* ecology and demonstrate that estuaries play a key role in the maintenance of the *C. latus* population in North-Eastern Brazil. Yet, local differences in the abiotic and biotic environmental conditions experienced by juvenile jacks during their estuarine stay strongly modulate the respective value of these inshore habitats for the renewal of the stock fished at Sea, with strong implications in terms of local fishery and ecosystem management.

Key words

Coastal fisheries, Marine fish, Connectivity, Growth, Trophic ecology, Juvenile habitat



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