Molecular identification of ray species traded along the Brazilian Amazon coast


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ABSTRACT

Overfishing can lead to stock collapses of both target and bycatch species. In some cases, unregulated fishing activities can even drive species towards extinction. Batoïdes comprise a significant portion of the bycatch of fisheries targeting teleost fishes. In Brazil, the Amazon coast is the second largest landing area in the country for these organisms. The present study aimed to identify batoid species captured and traded along the Brazilian Amazon coast, as well as to analyze the batoids species most commercialized in the region by using the cytochrome c oxidase subunit 1 (COI) mitochondrial gene. In total, 118 samples were collected and nine species identified. Dasypodium was the most abundant family (two genera, three species, and 52 individuals), followed by Aetobatus (one genus and one species), Rhinobatidae (one genus, two species), and Narcizziidae (one genus, one species), each with 14 individuals. Finally, Gymnuridae and Pristidae were represented by one genus, one species and 12 individuals each. Threatened species, such as pristis pristis and Rhinobatidae brasiliensis, were found to be commonly traded in the fish markets. Results also pointed the presence of a third and undescribed Narcize species. Finally, genetic differences between populations of the same species were found for H. guatus, Aetobatus narinari, and Rhinobatidae bonus, indicating possible geographic and/or reproductive separations. Therefore, we reinforce the need for forensics research to incorporate DNA-based evidence. This information could support improvements in management and law enforcement of batoid fisheries and trade in Brazil.

1. Introduction

Elasmobranch fishing and its by-products trade have always been common activities for human populations (Nunes et al., 2005; Séret, 2006; Almeida et al., 2011; Cerutti-Pereyra et al., 2012). However, these resources are often exploited at rates not compatible with...