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MISLABELING IN ONLINE MARKET IN CHINA: SUBSTITUTION OF SABLEFISH (*ANOPLPOMA FIMBRIA*) WITH PATAGONIAN AND ANTARCTIC TOOTHFISH (*DISSOSTICHUS ELEGINOIDES* AND *D. MAWSONI*) REVEALED BY DNA BARCODING

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China's rapid economic development has determined profound changes in seafood consumption patterns, and nowadays besides the traditional luxury seafood, also high-quality marine fish (such as salmon, cod and tuna) are consumed. Among these is *Anoplopoma fimbria* (Sablefish), a commercially important ground fish distributed in the North Pacific reaching very high prices on the Chinese market. A recent molecular survey on products sold online in China found that all the analyzed products sold as Yin Xue, one of the terms used to indicate *A. fimbria*, were in fact *Dissostichus* spp., a genus of Antarctic ground fish extremely vulnerable to overfishing (Xiong et al. 2016, Food Control, 60, 519-532). Considering this and due to the lack of a standardized naming system for seafood species in China, an initial search was conducted to identify all the possible Chinese names used to indicate *A. fimbria*. Then, the DNA barcoding of a ~655bp region of the mitochondrial cytochrome c-oxidase I (COI) gene was employed to verify the identity of 42 products sold on e-commerce platforms under these names. In addition, the information reported on the webpage and on the label was analyzed in the light of the Chinese regulation in force. The aim of the present study was to assess the challenges of the online market with regards to frauds for fish species substitution. In particular, on the basis of an accurate analysis of all the collected data, we speculated the causes of mislabeling and we discussed the need for the enforcement of a traceability system in China, able to increase the trade transparency and close the markets to products deriving from Illegal Unreported and Unregulated (IUU) fishing, often affected by overexploitation. All the PCR products gave readable sequences. By using the IDs analysis on BOLD and the BLAST analysis on GenBank all the samples were unambiguously identified at the species level. Of the 42 products sold as Sablefish, only 6 (14.3%) were molecularly identified as this species, while 32 (76.2%) were identified as *Dissostichus eleginoides* (Patagonian Toothfish) and 4 (9.5%) as *D. mawsoni* (Antarctic Toothfish), highlighting an alarming overall misrepresentation rate of 85.7% and implications for the management of these species' fisheries. In fact, the identification of mislabeled Patagonian and Antarctic Toothfish raises for the first time the hypothesis of China being the final market for these species through substitution of Sablefish, reaching higher prices in this market. The combined analysis of all the information collected from the webpages and the labels (denominations, producers, origin) allowed us to hypothesize both unintentional and intentional mislabeling. In particular, our findings suggest the possible existence of a trade pattern enabling IUU fishing operators to launder illegal catches of Patagonian and Antarctic toothfish through mislabeling, while maintaining sale prices and therefore, maximizing profits.

Keywords: sablefish, toothfish, DNA barcoding, Chinese E-commerce, seafood frauds