

Note

Jellyfish fishery in Pakistan

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Abstract: This study reports on the jellyfish (Cnidaria: Scyphozoa) fishery in Pakistan for the first time. Two jellyfish species: *Catostylus perezii* and *Rhopilema hispidum*, marketed with the trade names: banana and flower-jellyfish, respectively, are commercially exploited in Pakistan with the former being caught and exported in much higher relative quantities. *C. perezii* is fished in Balochistan, while *R. hispidum* is fished in Sindh province. Fishing seasons vary between February/March to July/August and 8–10 companies are regularly processing jellyfish, primarily using the oral arms, their fused-portion and scapulets, while umbrellas are typically not processed. The industry in the region has great potential because *C. perezii* occurs at high abundances in the northern Arabian Sea along the Balochistan coast of Pakistan.

Key words: Jellyfish, Scyphozoa, *Catostylus perezii*, *Rhopilema hispidum*, fishery, processing, Asia

Jellyfish (herein referring to medusae of the Class Scyphozoa, Order Rhizostomeae) are known as a delicacy of Chinese cooking (Hsieh & Rudloe 1994, Li & Hsieh 2004). Consumption of jellyfish is also popular in Asian countries other than China, including Japan, Malaysia, Korea, Taiwan, and other countries where there is strong market demand, generating a multi-million dollar business (Kingsford et al. 2000, Omori & Nakano 2001, Hsieh et al. 2001, Nishikawa et al. 2008, Kitamura & Omori 2010). In response to increasing demand for jellyfish commodities, other Asian countries have begun fishing jellyfish in recent decades, including Russia, Myanmar, Vietnam, India and Sri Lanka (Brotz 2015).

In Pakistan, the jellyfish fishery started in recent years exporting salted jellyfish to southeast Asian countries, mainly to Vietnam; the maximum amount exported in 2014 was approximately 1,400 Metric Tons (Hamid B. Usmani, Marine Fisheries Department, Karachi, personal communication).

The Handbook of Fisheries Statistics of Pakistan, a compilation of data from 2004–2009 (Marine Fisheries Department 2012), provides the first published but brief description of the jellyfish fishery in Pakistan. Only one species of jellyfish, listed as *Catostylus* sp. with an annual catch of 2007–2009, is mentioned in the handbook (Table 1), and it lacks any information about the destination of the processed jellyfish products. So far, there is just one report (Muhammed & Sultana 2008) that documents *Rhizostoma pulmo* (Macri, 1778) as an

edible jellyfish in Pakistan and points out that the previously-reported *Catostylus mosaicus* (Quoy & Gaimard, 1824) (see Tahera & Kazmi 2006) is another commercially important jellyfish in Pakistan. However, recent studies (Gul & Morandini 2013, 2015) have revealed that these records were based upon erroneous identifications. The available knowledge on the subject is, therefore, very poor and no further progress has so far been made in this regard. The present study is thus an attempt to unravel various aspects of the jellyfish fishery in the region for the first time.

We performed detailed field work during April 2015 (fishing season for *Rhopilema hispidum*) at Keti Bandar (24°07'47"N, 67°27'11"E), Sindh province, and May to June 2015 (fishing season for *Catostylus perezii*) at Damb Bandar (25° 26' 54"N, 66° 34' 6"E), Balochistan province, Pakistan (Fig. 1). These are the two main areas where jellyfish harvested in the nearby offshore waters are landed and processed in jellyfish processing plants located along the shores. Various jellyfish processing plants at Keti- and Damb-Bandar were visited, and fishermen plus labourers, supervisors, and managers in the field were interviewed several times to collect

Table 1. Annual catch of Jellyfish (*Catostylus* sp.) in Pakistan.

Year	Total amount of catch in Metric Tons
2007	2,114
2008	1,756
2009	1,118

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