The money side of livelihoods: Economics of an unregulated small-scale Indonesian sea cucumber fishery in the Timor Sea

James Prescott, James Riwu, Andhika P. Prasetyo, Natasha Stacey

A B S T R A C T

Fishers from several ethnic groups on islands in eastern Indonesia seasonally fish for sea cucumbers at Scott Reef in Australia’s Exclusive Economic Zone in the Timor Sea. Despite evidence suggesting that sea cucumbers are severely over-exploited fishers continue to voyage to the reef. How the traditional fishery operates under this condition and more broadly what economic drivers cause fishers to make the long and arduous voyage is vital to understanding this small-scale fishery and developing appropriate strategies for management. This study is the first to investigate these dynamic livelihood aspects using semi-structured interviews and fishers’ voluntarily recorded data on their catches, costs of fishing and the sales of those catches and income received over a six year period. The study demonstrated that costs, borrowings, and revenues differed between crews, leading to widely varying profits. Nevertheless, every crew that recorded the sale of their catches made a profit. Rapidly appreciating prices for their sea cucumber harvest, predominantly comprising low value species, was critical to maintaining the fishery’s profitability. The income earned by some crews and boat owners were far greater than those potentially available to them through other livelihood strategies such as agriculture, coastal fisheries or trade opportunities. This study also suggests the depletion of high value sea cucumber species is ongoing. This Indonesian sea cucumber fishery at Scott Reef illustrates the linkages between stock sustainability, fishers’ livelihood outcomes, and the burgeoning Asian demand for sea cucumbers and the findings can inform the current management discourse on this small-scale transboundary fishery.

1. Introduction

Sea cucumbers are currently among the highest value marine products consumed in China partly due to the health benefits they are believed to provide [1] and partly because they are considered a luxury food item important for maintaining social networks [2]. Indonesian fishers have been “trepanging” (trepang is the Indonesian word for sea cucumber) in northern Australian waters [3] for centuries to supply the Chinese market. Although Indonesian voyages to the northern Australian coast were curtailed in 1906 by the Australian authorities [3] they continued to exploit offshore reefs along the Western Australian Kimberley region coastline including Scott, Serin-gapatam and Ashmore reefs, as well as several smaller reefs, and shallow water shoals in the Timor Sea. Over the past decades through subsequent maritime boundary jurisdiction changes these places became part of the Australian maritime domain. It is unknown how regularly these reefs were fished or the volume of production because of the area’s remoteness, infrequent patrols by Australian authorities, and lack of record-keeping in Indonesia. Nevertheless, the Australian government negotiated a Memorandum of Understanding (MOU) with Indonesia in 1974 because of its concerns about Indonesian fishing activity at these reefs and closer to the Australian coastline because live animals carried on some Indonesian boats were thought to pose a quarantine risk to Australia. The MOU limited access to “traditional fishermen” using methods that had been the “tradition for decades of time”. Fifteen years later the Practical Guidelines for Implementing the MOU (Guidelines) were agreed and established that the use of motorised vessels and equipment would not be allowed. The Guidelines also established what is colloquially known as the “MOU Box” which enclosed the six reefs originally specified in the MOU (Fig. 1) within an area of approximately 50,000 km² of the Australian Fishing Zone.

The Guidelines’ exclusion of motorised vessels created a niche...
Fishery exploited by boat owners and captains with sailing boats (perahu lambo or perahu leti leti). This unique situation meant that these Indonesian fishers could participate in a fishery without being competitively disadvantaged by their simple, low cost sailing boats and fishing gear.

Despite fishers having to sail to the MOU Box, the Australian government came to the view that excessive fishing was undermining Australia’s commitments to manage endangered wildlife and migratory seabirds which led to the declaration of the Ashmore Reef National Nature Reserve in 1983 and subsequent banning of fishing in the reserve in 1988 [4] followed by Cartier Islet and its surrounding reef in 2002. In 1998, the Australian government commissioned the Commonwealth Scientific Industrial Research Organisation (CSIRO) to conduct a survey of swimming and sedentary resources in the MOU Box. Skewes et al. [5] reported that sea cucumber species were either depleted or severely depleted at Scott Reef, Seringapatam Reef and Cartier Islet. Despite apparent resource depletion, Indonesian fishers have continued fishing in the area and research indicated that harvests by fishers [6] were greater than some estimates of the species’ abundance [5]. This led to the question “how does this fishery continue to operate from an economic perspective?”

Despite the 40 year existence of the fishery and that seasonal migration to Australian waters is part of a diversified livelihood strategy for various groups of Indonesian fishers, previous studies have generally focussed on policy, management and characterisation of patterns of fishing amongst the different groups and have not considered the economic contribution of fishing over time [7–10]. This paper investigates the economics and sustainability of sea cucumber catches primarily by Indonesian fishers from Alor and Rote districts and, where data allowed, includes fishers from the Madura area, who operated at the focal point of the fishery, Scott Reef, between 2008 and 2015. Data are presented on fishing costs; catch and effort, revenue from first point of sale of the catch; and the distribution of revenue among the crews and boat owners to establish the fishery’s livelihood (economic) contribution and viability compared broadly with other local livelihood strategies and how this affects and supports fishers participating in it. How patterns of fishing and participation rates have changed during the course of the study are also discussed. These results highlight the dynamic nature of fishing as a livelihood activity. Finally, how the challenges of improving the fishery’s sustainability, including establishing an effective system of management and governance should be met, are considered. Data collected highlight the challenges in managing a transboundary resource used by different groups of small-scale fishers who have different histories of participation in the fishery, harvest strategies and livelihood dependencies.

2. Materials and methods

Fieldwork was undertaken in 2008 (pilot study; 30 interviews), 2009, 2011, 2012 and 2015 at Scott Reef (Fig. 1) by combined teams of Australian and Indonesian researchers (Table 1) except in 2015 when circumstances precluded Indonesian participation. In total, the captains and crews of 132 boats at Scott Reef were interviewed. The number of interviews varied between years, which broadly reflected the number of crews visiting the reef from 2009 onwards when the crews on nearly every boat present during the fieldwork were interviewed.

Interviews were conducted in Bahasa Indonesian usually led by an Indonesian research team member. Captains were generally the focus of the interview however they often deferred to their crew to provide or confirm information and in a few cases a crew member was the lead respondent. A structured interview protocol that included both structured and open-ended questions was followed. Details about fishing operations, personal information, previous fishing experience in the MOU Box, route taken to Scott Reef, fishing gear used, target species, and financial costs to undertake the fishing trip were collected. Interviews generally took place during high tide, when most crews were at rest between low tide fishing episodes. Borrowings and specific catch and costs were noted, kept for later recall and recorded on forms at the end of the day.

Table 1

<table>
<thead>
<tr>
<th>Season</th>
<th>Data collection dates</th>
<th>Boat crews interviewed</th>
<th>Catches recorded</th>
<th>Catch sales forms returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>7–23 Sep. (pilot survey)</td>
<td>29</td>
<td>1315</td>
<td>N/A</td>
</tr>
<tr>
<td>2009</td>
<td>11 Aug – 13 Sep</td>
<td>55</td>
<td>12312</td>
<td>15</td>
</tr>
<tr>
<td>2011</td>
<td>14–30 Aug &amp; 5–16 Sep</td>
<td>14</td>
<td>3049</td>
<td>8</td>
</tr>
<tr>
<td>2012</td>
<td>29 Jul – 9 Aug</td>
<td>22</td>
<td>5077</td>
<td>18</td>
</tr>
<tr>
<td>2015</td>
<td>5–11 Sep</td>
<td>12</td>
<td>2100</td>
<td>7</td>
</tr>
</tbody>
</table>
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات