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Environmental fixes and historical trajectories of marine resource use in Southeast Asia

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ABSTRACT

This paper emphasises the long-term historical trajectories of marine resource use in the Philippines through an examination of successive environmental fixes. Based on fieldwork from coastal Mindoro province, the paper shows how the technological intensification and geographical expansion of fisheries, the development of aquaculture and the promotion of tourism represent three forms of environmental fixes that aim to address the problems caused by marine resource declines and subsequent lack of availability of means of production. All three fixes have struggled to reduce environmental pressure or provide a long-term basis for livelihoods. The paper argues that viewing how successive types of environmental fixes unfold over long periods of time highlights how marine resource declines are part of much wider economic and historical processes, with consequent implications for livelihoods and governance.

1. Introduction

A central challenge facing coastal communities globally is how to address widespread declines in marine resources (Pauly and Zeller, 2016). Such resource declines have significant impacts on livelihoods and food security (Golden et al., 2016), and are experienced particularly strongly in developing countries such as the Philippines, where viable alternative livelihoods may be limited, and poverty rates are often high (Eder, 2009; Jentoft and Eide, 2011). Governments and non-government organisations (NGOs) have aimed to address marine resource declines through governance interventions ranging from spatially-based tools such as marine protected areas (MPAs), to national legislative reform, to regional fisheries agreements (Campbell et al., 2016; Pomeroy, 2015). Yet such governance interventions, and the academic frameworks that underpin them, rarely directly address the capitalist processes that drive marine resource use (Newell, 2011). Instead, capitalism is usually taken as a broader structural norm that goes unquestioned.

In this paper I argue that patterns of marine resource use in developing countries have proceeded by a series of environmental 'fixes' (Castree, 2008; Bakker, 2009) that are central to the nature of capitalism. Building on the work of Harvey (1982), the notion of environmental fixes shows how capital seeks to temporarily overcome environmental crises through a range of short-term solutions that allow it to continue to accumulate. As critical scholars on capitalism argue, the dynamic of accumulation and 'ceaseless growth' is central to capitalism (Marx, 1976; Harvey, 2010), and depletes the natural resources that such accumulation is ultimately based on (O'Connor, 1988; Moore, 2015). Varied forms of environmental fixes have emerged as an effort to solve the problem of depleting natural resources: from geographical expansion of production to other locations, to technological development, to market-based conservation (Castree, 2008; Büscher and Fletcher, 2014; Ekers and Prudham, 2015).

I focus on three different types of marine resource use through the lens of environmental fixes, exploring how capitalism is central to their development over time: fishing, aquaculture and tourism. These three shifts reflect broader historical patterns of human engagement with the natural environment: seeing nature progressively as a source of extraction (fishing), as a site for cultivation and farming (aquaculture), to an object for contemplation (tourism).[1] While marine resources in capture fisheries and aquaculture are consumed as food, in tourism they are marketed as aesthetic objects. Over the course of the twentieth century, small-scale and commercial fisheries alike rapidly intensified in order to overcome the limits to increased production, expanding geographically and with new technology. And while capture fisheries remain highly significant, in some locations their capacity to generate new value is declining because of overfishing. Aquaculture and tourism are two more recent forms of marine resource use that have flourished as fixes to the problems of marine resource decline, allowing capital to continue to accumulate. Versions of these three fixes represent

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[1] There are many related approaches to describing such historical shifts, from Moore's (2015) notion of commodity widening followed by deepening, to ideas of first to third nature (e.g. Dressler 2011) that stretch back to the Roman philospher Cicero (2008).

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dominant trends for coastal livelihoods in much of Southeast Asia (Butcher, 2004; Fougères, 2008; Marschke and Betcherman, 2016).

The next section discusses how the notion of environmental fixes relates to dominant framings of resource decline. After outlining the background to the fieldsite and introducing the research methods, I then present how these environmental fixes have historically manifested in the Philippines at the national and community scales. I argue that current problems of resource decline can be viewed as the outcome of a long-term historical trajectory of marine resource use involving multiple environmental fixes. I conclude by discussing the consequences of these environmental fixes for livelihoods and governance.

2. Marine resource governance and environmental fixes

Policymakers in Southeast Asia and beyond have responded to the problem of declining marine resources through a wide range of initiatives, especially since the 1980s and 1990s (Ratner et al., 2014; Pomeroy, 2015). Co-management, ecosystem-based fisheries management, marine spatial planning and resilience, for example, are influential governance frameworks that have led to significant legislative reform (Pomeroy et al., 2010; Evans et al., 2011; Ratner et al., 2014). These related governance frameworks have also led to significant outcomes – for example, the Philippines has now established more than 1700 MPAs across the country (MPA Support Network 2014). However, these interventions for environmental sustainability conventionally focus on the site of fisheries production and the resource users that are being managed, and until recently have rarely directly addressed the intimate relationship between fisheries and capitalism (Davis and Ruddle, 2012).

This lack of a focus on capitalism in both governance practice and the fisheries governance literature has been changing in recent times, in particular with the development of 'market-based solutions' to the problems of overfishing. An emerging governance trend is to promote market-based tools such as certification, sustainable seafood campaigns and Fishery Improvement Projects in order to create more sustainable markets (Barclay and Miller, 2018). In the environmental science literature, markets are now increasingly recognised as central drivers of the state of fish biomass, and as key to understand if fisheries management is to improve (Cinner et al., 2013). There is also a growing literature on fishery value chains and seafood trade in developing countries (e.g. Wamukota et al., 2014; Crona et al., 2015; Kittinger et al., 2015; Béné et al., 2016).

Yet despite this recognition of the importance of markets in the more policy-oriented governance literature, there is little critical interrogation of the more fundamental capitalist processes at play (Campling et al., 2012; Davis and Ruddle, 2012). Instead, the wider capitalist system is taken as an unquestioned reality, and the goal is largely restricted to working with markets to soften their edges. In part this is related to language: 'markets' tend to represent a more neutral description of the economy, while the term 'capitalism' implies opposition to it (Newell, 2011: 5). Similarly, although there is increasing interest in the field of marine historical ecology (Kittinger et al., 2014; Schwerdtner Mánêz et al., 2014), the emphasis in these studies is rarely focused on economic histories of marine resource use, and more often on understanding ecological baselines or traditional management institutions. Correspondingly, studies that do deal with economic histories of marine resource use (e.g. Roberts, 2000; Butcher, 2004) rarely directly address the capitalist processes underlying these patterns.

In contrast, critical scholarship on historical forms of capitalism and natural resource use has drawn closely on the work of Marx, viewing capitalism as an historically specific mode of production. A key emphasis of this historical materialist perspective is on the ways in which capitalism must dynamically shift in order to overcome limits to the flow and growth of capital. As Harvey notes, there are a range of potential bottlenecks to the flow of capital that can precipitate a crisis (2010). There is a large theoretical literature concerned with the crisis of over-accumulation that occurs when capital produces more than what can profitably be re-invested, but this is not the focus of this paper. Instead, I focus on the more straightforward crisis of lack of availability of the means of production – in other words, declining marine resources. As a range of authors in the Marxian tradition have articulated from standpoints with different emphases, capitalism relies on a natural resource base, but in its need for ceaseless growth, inevitably degrades and depletes the very resource base it requires (O'Connor, 1988; Moore, 2015).

Capital responds to bottlenecks and crises such as those induced by degradation of the means of production via various 'fixes' that temporarily resolve the problem, but do not address the 'systemic risks' (Harvey, 2010). Harvey's notion of the 'spatial fix' to describe 'capitalism's insatiable drive to resolve its inner crisis tendencies by geographical expansion and geographical restructuring' (2001: 24; see also 1982) was the first and most fundamental development of this notion, but researchers now use the term 'fix' to describe various ways in which capitalism seeks to temporarily overcome environmental crises (Ekers and Prudham, 2015). Castree (2008) highlights four types of 'environmental fixes' that neoliberal approaches to the governance of natural resources generate: market-based conservation and management; creating new markets from the natural environment; the intensification of existing resource-use patterns for short-term profits; and minimising the role of the state in the governance of natural resources. Thus, environmental fixes may simply intensify short-term extraction, or are able to reduce pressure on natural resources for at least some period of time. Frequently, such fixes are centred around the development of new technologies (Clark and York, 2012). Environmental fixes, from this perspective, are not a 'conscious' effort to improve the environment, and are not necessarily driven only by the state. There are many other ways to describe the three environmental fixes I focus on in this paper: fisheries growth as national or community development, or as a response to perceived under-exploitation, for example, or aquaculture as a response to food security needs. The value of the lens of environmental fixes is that it shows how they are all connected through underlying processes of capital accumulation.

Existing scholarship on the political economy of fisheries and the environment, while not always using the language of environmental fixes, has illuminated some of the underlying processes taking place. The first type of fix to the problem of marine resource decline involves the intensification of fishing effort via geographical expansion and technological development. For example, Clausen and Clark (2005) highlight how overfishing is 'the product of competitive markets propelling technological advance, as capital sought to surmount social and natural barriers to accumulation' (440; see also Longo et al., 2015). Similarly, Mansfield argues that the crisis of overfishing of capture fisheries is a problem caused by the industrialisation of fisheries for economic development, not by the apolitical 'tragedy of the commons' model (Mansfield, 2011a). Such intensification of marine resource extraction has been progressively taking place over many decades, globally (Roberts, 2000). Recent research suggests that from 1950 global catches increased steadily, peaked in 1996, and have been declining strongly since (Pauly and Zeller, 2016).

The decline of wild capture fisheries has helped stimulate a second type of fix, centred around aquaculture. Aquaculture is a 'technological fix' that seeks to overcome the capitalist crisis of overfishing of wild capture fisheries by developing new ways of producing fish (Clausen and Clark, 2005; Mansfield, 2011b; Saguin, 2015). Growing particularly fast since the early 1990s, aquaculture now provides roughly half of the world's food fish, and has contributed virtually all the growth in global availability of fish since around 2000 (Troell et al., 2014). The logic is that by systematically farming fish, not simply extracting them directly from nature, societies will be able to keep producing fish into the future. While aquaculture currently still relies heavily on wild capture fisheries as feed, the goal is to progressively develop new feed technology that will allow such farming to become more sustainable in