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Java's forgotten pearls: the history and disappearance of pearl fishing in the Segara Anakan lagoon, South Java, Indonesia

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Abstract

Pearls have been a valued resource in most cultures that had access to them. A number of historically important pearling grounds were situated in the waters around today's Indonesia. One of these areas, now largely forgotten, was the Segara Anakan lagoon in South Java. In the seventeenth century, Dutch colonists exploited the lagoon's pearls. Afterwards, the lagoon's oysters were locally exploited as a food item until the late 1970s. While the pearl fishery attracted considerable attention in the colonial literature, its disappearance, by contrast, went largely undocumented. Nowadays, the oysters no longer are found in the lagoon as a result of extensive sedimentation processes. Their former existence is only preserved in the memory of local people. This article examines the history and fate of the pearls of Segara Anakan, providing an example of a formerly valued species whose existence simply became forgotten outside the area.

Keywords: Pearl oysters; Oyster fishing; Indonesia; Segara Anakan lagoon; Environmental history; Dutch colonialists

In recent decades, there has been an increasing interest in understanding and explaining ecosystem changes such as modifications of species compositions from a historical perspective. Using data from a variety of sources including archaeological or anecdotal evidence, a number of authors have shown that in some areas such changes took place much earlier than what was previously thought.[1] This implies that ecosystems perceived to be pristine or largely untouched might actually have been subject to long-term alterations. For instance, Rick and Erlandson show that anthropogenic impacts on marine ecosystems date back millennia.[2]

Environmental changes are the result of a combination of anthropogenic and natural influences. The consideration of social, political and economic factors which drive these changes therefore plays a major role in their understanding. Both in the fields of environmental history and political ecology substantive research has been undertaken in explaining the causes behind human–environmental interactions. The writings of Piers Blaikie and colleagues in the 1980s marked a major step towards understanding environmental changes in a broader social and political context.[3] Blaikie, Forsyth, Batterbury and others have also emphasised the importance of knowledge(s) differences between societal groups for our perception of the environment.[4] Their work had a tremendous influence on the analysis of past and present human–nature interactions.

Nevertheless, integrating a historical perspective into the impacts of social systems on biodiversity remains a challenge. This can be partly explained by the interdisciplinary nature of the subject, which requires the use of a range of methods including document analysis, interviews, or field work. Such analysis may also be hampered by an absence of information. Historical sources do not necessarily include detailed records on all forms of land use or species exploitation, and even less on non-exploited species.

This is different for species where consumption or trade played a major role in their exploitation by humans, as it is the case with pearl oysters. Among the marine resources exploited, pearls have been a valued commodity in most cultures that had access to

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them.[5] Their local use was of minor importance; pearls were mainly an item of trade. For this reason, a significant body of documents provide information on pearl fishing and trade in different parts of the world.

Pearls are a natural product from a variety of saltwater and – to a lesser extent – freshwater species. Among the most important are some saltwater species from the family Pteriidae. Pearl oysters have also been exploited for their shells, the so-called mother-of-pearl. In historical literature and non-scientific literature, the species are usually referred to as pearl oysters or simple oysters. One of the world's traditional sources of pearls has been the Indo-Pacific region. Historically important pearling grounds were situated in the waters around India, Sri Lanka and today's Indonesia, where fisheries were often subject to powerful political interests. Most pearl banks were fished intensively for a number of years until depleted, at least temporarily.[6] In some areas, competition from other species contributed to local extinctions,[7] as did more recent anthropogenic influences such as sedimentation.[8] Today, the majority of marketed pearls are cultivated in farms. While many previously important pearling grounds are still well-known, such as the waters of the Sulu Archipelago, Tanimbar or the Aru islands, the former existence of others has disappeared from the collective memory.

An example for such a forgotten pearling ground is the Segara Anakan lagoon in South Central Java, Indonesia. Despite the fact that the area has been subject to extensive research, its history of pearl fishing is largely unknown. With the exception of Boomgaard, there is no recent source which mentions pearl oysters or pearl fishing in the lagoon.[9] This article seeks to address this knowledge gap by (1) reviewing the history of pearl exploitation in Segara Anakan, (2) examining the historical political and economic circumstances related to this activity, (3) clarifying which species was exploited, (4) shedding some light on the question when and why the oysters disappeared, and (5) discussing how knowledge differences and discontinuities over time resulted in the neglect of pearling in Segara Anakan.

A mixture of methods was used in order to answer these questions, including the analysis of historical documents, semi-structured interviews with local fishermen, and on-site investigations in search for shell middens. If necessary, they will be explained in more detail in the respective sections of the paper.

The geographical context

Segara Anakan is a brackish estuarine ecosystem situated on the coast of South Central Java; close to the city of Cilacap. Translated as 'child sea' or 'small sea', the lagoon is separated from the Indian Ocean by the limestone island of Nusa Kambangan. Its connection to the open sea is provided by two outlets in its western and its eastern part. A number of rivers provide freshwater inflow, mainly the Citanduy, the Cibeureum and the Cikonde (see Fig. 1). The seasonally varying river runoff, especially from the Citanduy, and the tidal exchange with the Indian Ocean govern the lagoon's hydrology and are responsible for the seasonally different salinity and turbidity.[10] The climate is influenced by the monsoons, with highest rainfalls in October and lowest in August.[11] Segara Anakan contains the largest remaining mangrove forest on Java and is therefore considered to be an important nursery area for fish and shrimps.

The current size of the lagoon is around 2200 ha. An analysis of historical maps, aerial photographs and satellite images has shown that approximately 6300 ha, or more than two-thirds of the former area of water has been turned into new land since 1850.[12] This has resulted from extensive sediment inflow mainly brought in by the Citanduy, and to a lesser extent by the other rivers. Sedimentation is the result of erosion processes in the hinterland, and driven by a complex set of anthropogenic influences, including changing patterns of land use. The investigation of these drivers is subject to ongoing research and has so far only provided preliminary results. However, it seems that contrary to the common assumptions, volcanic eruptions may also have played a significant role, at least during or shortly after times of volcanic activities, such as the Galunggung eruptions in 1822, 1983 and 1984.[13] The loss of lagoon area reached its maximum during the 1980s, and then started to slow down. Currently, most areas are so shallow that boats have to stay in a few navigable channels, especially during low tide and in the dry season.

The environmental effects of the sedimentation process in Segara Anakan were significant. Physical effects such as decreasing size and depth were reported as early as 1894, when Schulze depicted the continuing amount of alluvium carried into the lagoon by its tributaries.[14] In 1927, Schaafsma described how the income of local fisherfolk had decreased, because bigger fish species no longer occurred in the increasingly shallow water.[15] As many families owned fishing grounds in the lagoon where they set fixed nets, the disappearance of these areas forced them to adopt other livelihood strategies. Since the 1980s in particular, people increasingly gave up fishing and started with agricultural activities on the new land.[16] Operating fishermen report the absence of several fish, mollusc and mammal species which formerly occurred in Segara Anakan. This includes a pearl-producing mollusc, which was described in a number of historical documents, but did not turn up in any recent survey or publication about the area.

Documents and their analysis

In order to look for possible changes in species composition in the lagoon over time, a bibliographic search was undertaken. It included the use of digitized material (e.g. Google books, Southeast Asia Visions, Atlas Of Mutual Heritage, Gallica) and a number of

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