

Resolving oyster conflicts in the Chesapeake**Bay: the concept of Sato-Umi**

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Since the nineteenth century the oyster fishery in the Chesapeake Bay has seen intense periods of conflict. The fishery has evolved in three phases. The first phase witnessed almost unrestricted harvesting of the Bay's rich oyster reefs. The second phase pitted regulators and the oyster police against oyster fishermen unaccustomed to government control. A third phase established a complicated set of laws and restrictions meant to prevent overharvesting of an abused resource. During this phase the two Bay states of Maryland and Virginia took very different paths, the first favoring a common resource approach, the latter favoring the leasing of private oyster grounds. For much of the twentieth century the oyster fishery continued to operate under a range of restrictions, many of which prevented the use of modern harvesting equipment in an effort to control fishing pressure. Aquaculture, though advocated by some, failed to develop to any significant degree. Then as the 1950's ended, oyster disease struck. The oyster parasite *Haplosporidium nelsoni*, known at the time simply as "multi-nucleated sphere unknown," or MSX, devastated the Bay's oyster grounds, especially in Virginia's more saline waters. Much of the Virginia oyster industry soon collapsed.

Annual Baywide harvests continued to hover around 3-4 million bushels (see Figure 1), until the mid 1980's. Then drought conditions drove a salt wedge up the Chesapeake estuary, allowing disease to spread well into Maryland. Since that time the Chesapeake oyster fishery has struggled, with harvests only a small fraction of even mid-twentieth century catches.

The Chesapeake Bay oyster fishery is now poised to enter a fourth phase that relies on aquaculture and careful management, but serious disagreements continue. Some are calling for a complete moratorium on oyster harvests to allow the overfished and disease-ridden native stocks to recover. Others, especially those in the seafood industry, are calling for the introduction of a non-native oyster, *Crassostrea ariakensis*, to supplement the failing native oyster. To date concerns over economically stressed fishing communities have prevented a harvest

moratorium, and worries over unexpected impacts from a nonindigenous introduction have prevented the planting of a new oyster in the Bay. Commissions and studies are now underway to attempt to address these issues.

Underlying conflicts over Bay oysters is a fundamental disagreement over the nature and purpose of oyster reefs. Traditional watermen see the reefs as their livelihood. Environmentalists see the reefs as natural habitat essential for restoring the ecological health of the Chesapeake Bay. The Chesapeake needs a new paradigm that will allow for the coexistence of protected oyster reefs, managed oyster fishing grounds, and intensive aquaculture areas. The concept of Sato-Umi provides such a paradigm. Intensive aquaculture areas would be like forest monocultures planted explicitly for wood production. Protected reefs would be analogous to protected forests in Japan, or Chinju-no-Mori, "where the gods live." Managed oyster grounds would be like managed forests, Sato-Yama, meant for human use but still valued for their ecosystem services (e.g., filtering function). This approach would go beyond "marine zoning," since it would offer a philosophical underpinning, with an emphasis on balanced use. Experiments would track to what degree protected areas or managed (worked) areas provide the greatest biodiversity. Research to date (e.g., Rodney and Paynter, 2006)

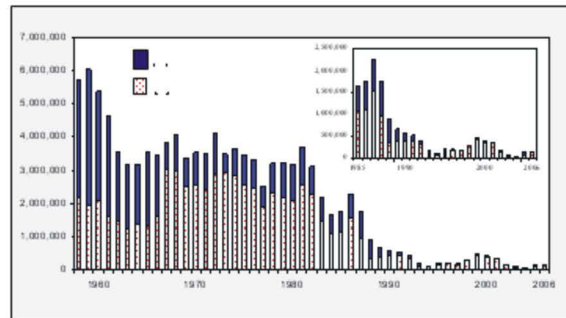


Fig. 1 Oyster Harvests in Virginia (V) and Maryland (M) (in bushels). Source: NOAA Ches. Bay Office

suggests that protected reefs will result in greater biodiversity, since they provide valuable vertical structure in the water column.

References

Maryland Oyster Advisory Commission. 2007. Interim Report. Accessed April 1, 2008. <http://www.dnr.state.md.us/fisheries/oysters/>
Rodney, W.S. and K.T. Paynter. 2006. Comparisons of macrofaunal assemblages on restored and non-restored oyster reefs in mesohaline regions of Chesapeake Bay in

Maryland. J. Exp. Mar. Biol Ecol. 335:39-51
Wennersten J.R. 1981. The Oyster Wars of Chesapeake Bay. Centreville, MD: Tidewater Publishers

Sasi Laut: history and its role of marine coastal resource management in Maluku Archipelago

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Indonesia is an archipelagic state within which Maluku province is one of the seven archipelagic provinces and has been recognized for its abundant of marine resources covering fish, mollusks, crustaceans, seaweeds and many others. These great diversities are supported by the fact that Maluku province, situated in the Eastern part of Indonesia has such vast sea area of 527 191 km² (90%) compared to land area which is only 54 185 km² (10%) of the overall size of 581 376 km². Historically, the resources including various kinds reef fishes, small pelagic fishes, mollusks and seaweed have been long exploited for the need of people throughout villages around Maluku. Along with such activities there have been also a local knowledge practiced by the communities in terms of regulating harvesting the resources. In principal, this knowledge has its counterparts with those practicing in numbers of other coastal island communities worldwide and in particular for the people of Maluku it is called Sasi Laut (marine protection). Numbers of studies have been done however the exact time of its implementation remains unclear although 1600 and 1921 has been indicated as the earliest. Terminologically, Sasi does not just mean prohibit to take but also invitation to solve problems of illegal practice. This community based management of the local resources usage has been practice to close particular coastal areas inhabited by the resources as well as close season within the year. Coastal areas that are closed include estuarine, bays, lagoons and platform of coral reefs. Meanwhile the resources include various kinds of reef fishes like Lutjanids, Lethrinids and Seranids, small pelagic species involve Trisina baelama, mollusk like top shell (*Throchus niloticus*), green snail (*Turbo marmoratus*) and seaweed (*Eucheuma spinosum*). Interestingly, yet the practice is merely based upon the local community knowledge, closed season is also implemented correspond with the areas for as long as six to 12 months periods. In

numbers of coastal villages around Maluku archipelago, Sasi remains as part of their traditional way of managing their marine resources. Up to now this tradition has resulted not just social coherent among the villagers but also economic benefit and biologically support the sustainability of the resources. Despite its current practice, further study is critically required to assess the trend and possibility of its integration with modern science based knowledge on fisheries management. The reason is due to the fact that yet Sasi remains in place, biological characteristics of the resources begun to show significant changes. Up until 1980, production of top shell harvest in the island of Dawelor (South West Maluku) after Sasi was 7–8 ton per season. Currently however, the production has been dropped significantly to only 1 to 1.5 ton per season. It is argued that this approach should be adopted given the fact that local communities living closed by the resources. Thus by empowering our local communities, sustainability usage of coastal resources can be expected.

North-western European seas: how to restore damaged coastal marine habitats?

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With the launching of the new Directive on the Marine Strategy, the European Union has completed a whole set of legal tools for attaining a better ecological status of the marine environment. The strategy comes as a complement to existing directives such as the Water Framework Directive, the Habitats Directive or the Bird Directive. The objective of this paper is, firstly, to analyse the benefits brought by the older directives in the management of north-western European seas: the English Channel, the Celtic Sea, the North Sea and the Baltic Sea. All these enclosed or semi-enclosed waters sit on the European coastal shelf and are epi-continental ecosystems. They are subject to various pressures due to human activities and in addition, global warming is affecting coastal habitats. Secondly, the paper will show how these disturbances impinge on goods and services provided by these ecosystems. In particular, it will give examples of how certain estuarine habitats have been damaged by misuse and unwise management.

The main part of the article will be devoted to