

Borehole use and management in agro-silvo-fishery settlements around Lake Victoria, Kenya: water use rules

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This study is an interim report on the use and management of boreholes, whose importance as a domestic water source becomes greater as one goes far from Lake Victoria, in the sub-area (former Suba District) of Homa Bay County, Nyanza Province, Kenya. As for one of the boreholes outlined in 2013, the water level rose during the rainy season, the daily change in the water level corresponded to control by the water users' association, and not all member households could fetch water within the daily stipulated time table. Water use of this particular borehole was on the "first come, first served" basis, and it alternated between one queue for those who transported water with a donkey and the other queue for those carrying by human power. Individual boreholes scattered in the research area had a variety of "queueing system" rules reflecting different geographical and other conditions. The water use rule of each borehole can be seen as a historical product of people's attempt to level off inequality in water use in each settlement. It is indispensable for a better understanding of sustainable water use and livelihood security to investigate such rules.

Keywords: water resources, rule, Kenya, Tropical Africa

Pig raising frontiers in Tropical Africa: Changing small and medium sized piggeries and their regional system in Kenya

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Although Eastern and Southern African regions have experienced dramatic growth in the pig raising industry since the early 1990s, its enterprise reality has not yet been well researched. This study takes Nyeri County, Central Province and Homa Bay County, Nyanza Province, both in Kenya, as examples of "pig raising frontiers" in Tropical Africa where pigs are introduced as new livestock. It examines changing entrepreneurial activities that small- and medium-sized pig raisers have performed since their beginning, particularly between 2009 and 2012. Zero-grazing is affected by increasing feed prices, and free ranging/scavenging in urban and peri-urban areas causes crop damages and hygienic problems. These are pointed out as the main reasons which stimulate shift among breeding, fattening and integrated production in an enterprise, and which even trigger withdrawal from pig husbandry. The study also illuminates locational conditions and the regional system of rural and urban pig raising, all of which influence the change in the economic sector. Since the frontier experiences constitute a variety of trial and error, and changes, in achieving a success, their cases suggest potential factors that may promote distribution and sustainability of pig husbandry in Tropical Africa as a quick means to supply food and alleviate poverty.

Keywords: pig husbandry, small and medium sized producers, Kenya, Tropical Africa

The value of coral and its change in Kushimoto, southern Kii Peninsula

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In the tropical and subtropical regions, coral is given the status important as one of the symbolic living things of the marine environment. Especially, in the consideration of resource use, coral is generally treated as a physiographic factor which provides a coral reef ecosystem and is often related to local fishing. Meanwhile, the use of coral itself has been seldom brought up for discussion.

Kushimoto is one of the regions in Wakayama Prefecture, and is located in the southernmost end in Kii Peninsula. Owing to the influence of the Kuroshio Current, the subtropical marine biota, typified by coral assemblages, has been produced in the western coastal waters of Kushimoto, and some local residents who lived in the area have collected and used coral as resources. In Kushimoto, coral was usually collected by gathering the casted corpses on the littoral zone, and sometimes by skin diving. Mainly, people has used coral as a material of slaked lime to make mortar, or for processing as a souvenir thing. The scale of these productions was not much extensive, but the use of coral in Kushimoto has been practiced and continued in relation to other local resource uses. For instance, to make mortar, other materials which were collected or produced in the region, such as seaweed and whale oil, were also used with slaked lime made from coral. And when making slaked lime, old timber and thinnings were used as fuel at the sequence of calcination.

Such collection and use of coral in Kushimoto were at least continued until 1970s, and then, these activities have been completely abandoned now. Instead, since the designation of some parts of the coastal area in Kushimoto as a national park in 1970, the coral and coastal environments have become an object of conservation. Therefore, a collection and use of the coral which inhabits the coastal waters of Kushimoto have been forbidden. And also, following such a increasing of the evaluation to the coral as an important factor of the marine environment, it brings an expectation of the value of coral as tourist attractions.

Besides, in recent years, the temperature of the nearshore waters in Kushimoto tends to rise notably, and it brings about the increase of a number of species and cover degree of coral which inhabits the coastal waters of Kushimoto. Given this situation, the increase in coral has a negative effect on regional fishery. On the other hand, large amounts of corallivorous organisms such as *Acanthaster planci* and *Drupella* spp. have been caused a problem for the conservation of coral since 2000s. Thus, the conditions of natural and social environments which surround the coral inhabits the coastal waters of Kushimoto have been constantly changing.

In this presentation, I would like to show the structure of resource use focusing on coral once formed in Kushimoto, and examine how the value of coral has been changed up to the present to consider the relationship between coral and people.

Keywords: coral, natural resource use, marine environmental conservation, Kushimoto