Press Release **For Immediate Release**

A new paper jointly published by environmentalists reveals the gap between clam-diggers' environmental attitudes and actual behaviour, calling for better future coastal resources management

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While it is common to associate high environmental attitudes with better actual behaviour, this does not always reflect the reality. A new scientific paper published by WWF-Hong Kong (WWF-HK), The University of Hong Kong (HKU) and The Education University of Hong Kong (EdUHK) on *Journal of Cleaner Production* analyses the behaviour of tourists when harvesting clams and reveals that, although most of the clam-diggers have high levels of environmental attitudes and self-reported behaviour, it may not reflect their actual behaviour. It is the first in-depth paper investigating the differences between perceived and actual behaviour in clam digging in Hong Kong.

Located in the south of Lantau, Shui Hau's sandflats cover an area of 30 hectares and include a diverse set of ecological habitats that nurture high biodiversity. However, this unprotected area currently faces severe human disturbance from unregulated clam digging activities. The disturbance may lead to overharvesting, causing disturbance to both habitat and animals and other related ecological consequences. Particularly for targeted clams, if small clams that have yet to reach maturity are being harvested in large numbers, the potential for the clam community to grow and reproduce will be hindered and may lead to changes of sandflat community structure along the food chain.

This study assessed the clam harvesting pressure using a photographic survey of clam harvests, along with a self-reported questionnaire to further explore the behaviour of the clam-diggers. Based on the assessment, clam-diggers in general believe that their clam-digging activities are environmentally friendly as most of them have a high environmental attitude and consider themselves to be environmentally responsible. However, as most people have different concepts or definitions for mature clams, although they prefer to keep the larger clams, many are still smaller than the recommended harvestable size, reflecting misunderstandings of the maturity size of the clams.

"Our study addressed the issue of the different perceptions on harvestable size. A lack of standards can lead to overexploitation of marine resources. So, it is important to introduce a referenceable size guide as a critical intervention to maintain the clam's population," said Kelvin SO, Project Manager, Oceans Conservation at WWF-Hong Kong. "WWF developed a set of clam gauges to recommend minimum harvestable size for five clam species, based on research of biological maturity sizes and ecological surveys at Shui Hau, encouraging clam-diggers to release immature clams. This proved to be a feasible approach, which we're recommending the government adopt for future sustainable management of Shui Hau."

The research has also shown that the total number of clams harvested varied enormously with the amount of time clam-diggers spent. On average, 155 clams are harvested per family or couple, but the clam-harvesting pressure has been even higher during the COVID pandemic. “We recorded over 600 people during one weekend in 2020, which suggests approximately 20,000 – 50,000 clams were collected in a single day,” added Kelvin.

Dr Janet CHAN, Lecturer of School of Biological Sciences and Programme Coordinator of Master of Science in Environmental Management at HKU said: “This paper showcases the gap between perceived behaviour and actual behaviour, which reveals the importance of introducing a standard guideline in the current management plan to regulate the recreational clam-digging activities. To preserve the ecological value of Shui Hau, a permit system should also be implemented by the government, limiting the time of clam-harvesting to ease the current harvesting pressure.”

The fact that the reported perceived clam-digging behaviour does not necessarily mean it is environmentally friendly also indicates the insufficiency of using questionnaires alone to study environmental behaviour. It should, instead, be complemented with an independent assessment of actual behaviour. “Research-based approaches to study actual behaviour in environmental education and education for sustainability are relatively scarce. This time, clam-harvesting research rendered a showcase study, providing empirical evidence to support the case that behavioural intention and actual behaviour do not often align.” explained Dr CHEANG Chi Chiu, Associate Professor, Department of Science and Environmental Studies at EdUHK.

This study shed light on the future strategy for visitor management and their corresponding effectiveness monitoring. It also suggested that a comprehensive management plan should be adopted by the government, for example setting up core zones at the most ecological sensitive areas while allowing regulated recreational activities at less sensitive areas. The study also reiterated the importance of designating a “Marine Protected Area” at Shui Hau to preserve its ecological value, a message also advocated by the renowned Prof. Brian Morton in his posthumous paper[1].

The paper can be accessed from here: doi:10.1016/j.jclepro.2021.128259

[1] Morton, B., Leung, SF, & Leung, KF (2021). The biology and functional morphology of Meretrix cf. meretrix (Bivalvia: Veneridae: Meretricinae) at Tong Fuk Miu Wan, Shui Hau, Lantau Island, Hong Kong. Regional Studies in Marine Science, 45, 101842. doi:10.1016/j.rsma.2021.101842

From the eft: Mr Kelvin So (WWF-HK), Dr Tommy Hui (HKU), Dr Janet Chan (HKU), Dr Cheang Chi Chiu (EdUHK); Photo courtesy: WWF-HK

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About the School of Biological Sciences, The University of Hong Kong

The School of Biological Sciences, Faculty of Science of The University of Hong Kong, was formed in 2007 following the merger of the Departments of Botany, Ecology & Biodiversity and Zoology. The School's research focuses on Molecular & Cell Biology and Ecology & Biodiversity. The School's high-impact research has attracted worldwide attention, and the staff and research students have won many awards within the University. The School enjoys excellent teaching and research facilities in the Kadoorie Biological Sciences Building, which was custom built and generously funded by the Kadoorie family. The School is also closely associated with the Swire Institute of Marine Science, a first-class marine research facility funded by the Swire group.

About the Department of Science and Environmental Studies, The Education University of Hong Kong

A team of energetic scientists and science educators dedicated to teaching, research, and knowledge transfer of scientific and educational research in the Department of Science and Environmental Studies at The Education University of Hong Kong. With faculty members of diverse research expertise

such as in physics, chemistry, biology, environmental sciences, science and environmental education, the Department provides quality science education, teacher education, education for sustainability, as well as scientific research on the environmental sustainability. The Department strives to transform the research findings into practice through developing innovative pedagogical approach and teaching materials which enrich the curriculum of university, secondary and primary schools.

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