# Conservation Efforts for the Chinese White Dolphin in Hong Kong: A Multi-Stakeholder Analysis

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## Introduction

The Chinese white dolphin (Sousa chinensis) stands as one of Hong Kong's most significant marine species, representing both ecological importance and cultural heritage in the Pearl River Delta region. These cetaceans that are easily distinguished by their pink colouration have also widely been underrepresented by man and pollution in the last few decades. A study by Klein (2017) showed that there has been a decline in the population of this species by by a large percentage in the Hong Kong water in the last 15years; current estimations of the population portray those fewer than fifty dolphins accustomed in the local water. The dramatic decrease has led to the scaling up of conservation measures by different actors such as governments, NGOs and universities across the world. The issues involved with these marine mammals describe the problems of wildlife conservation in the world's most active marine region, where environmental preservation all too often loses to economical advancement. Numerous academic works, including the most extensive study conducted by Halpern et al. (2019), describe peoples' influences on the species which includes loss and degradation of the species' habitats, underwater acoustic pollution, and aqueous chemical pollution. The plight of this species has spurred different stakeholders into action which should be of interest to dissect and assess for efficiency in conservation of the species because it is endangered. This analysis examines the collaborative efforts between the Hong Kong government and various non-governmental actors in protecting the Chinese white dolphin, evaluating the effectiveness of current approaches while identifying existing weaknesses and potential improvements through enhanced stakeholder collaboration.

## Government-Led Conservation Initiatives

The Hong Kong government's response to the declining dolphin population has been multifaceted, encompassing both spatial protection measures and legislative frameworks. The processes by which these goals have been pursued have primarily taken the form of the

creation of MPAs, starting with the Sha Chau and Lung Kwu Chau Marine Park in 1996. The first contiguous marine protected can cover at least 1200 hectare of dolphin foraging and pup-rearing grounds. Guo et al. (2011) revealed that these protected waters remain the only home for the remaining dolphins as development pressures intensify along the coast. In 2020 the government increased this marine park network by creating the Southwest Lantau Marine Park which has added a further 650 hectares of protected waters (Piwetz, Jefferson and Wursig, 2021). For the present, the Agriculture, Fisheries and Conservation Department (AFCD) has been conducting annual censusing and ad-hoc surveys in order to monitor the population density, distribution and use of the habitats as well as to evaluate the efficacy of the existing measures for conservation. These spatial protection measures are backed by legislation by the Wild Animals Protection Ordinance (Cap. 170) and the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586), which contain the legal means of protecting species and governing activities that may be potentially dangerous for dolphins. These ordinances have been periodically updated to strengthen enforcement capabilities and increase penalties for violations, though challenges in implementation remain significant, as detailed in subsequent sections of this analysis.

**NGO Involvement and Community Engagement**

The role of non-governmental organisations in Chinese white dolphin conservation has been instrumental in complementing government efforts through research, advocacy, and public education initiatives. For several years, the only organisation of this type is the Hong Kong Dolphin Conservation Society (HKDCS), founded in 2003, which has been focused on a number of comprehensive programmes covering the gap between research and education. Their detailed educational model has also been described by Li et al. (2015), and school outreach, field trips, and conservation- based activities have been provided to local Hong Kong schools. Such educational programmes have been more successful in creating

long-term awareness for environmental issues among the younger population, as subsequent studies reveal that the student's knowledge and concern about marine conservation issues remain higher after subsequent tests. The society's "Saving the Handover Mascot Campaign" has successfully mobilised public support for expanded marine protected areas and modifications to high-speed ferry routes, demonstrating the potential for grassroots movements to influence policy decisions. Besides these educational programs, the Worldwide Fund for Nature Hong Kong (WWF-HK) has also concentrated on sustainable methods of eco-tourism; especially for Tai O, they have recently been particularly engaged in the production of rules for the peculiarities of dolphin watching provided by local touristic companies and agencies (Liu et al., 2021).

**Environmental Challenges and Development Impacts**

The challenges facing Chinese white dolphins in Hong Kong waters are deeply intertwined with the region's rapid coastal development and intensive maritime activities. There is a recent study done by Lai et al. (2022), where it is shown that habitat loss resulting from coastal reclamation has been most significant, with 7% of Hong Kong's total land area reclaimed by development in the last twenty years. The impacts of huge infrastructural constructions namely the Hong Kong- Zhuhai- Macao Bridge and the third runway at airport in Chek Lap Kok involving Hong Kong International Airport have drastically affected dolphin species. Nelms et al. (2021) analysed long-term acoustic monitoring and behavioral observation data showing that construction activities markedly affected dolphin movements and their space utilisation. The study noted that presence of dolphins was reduced by 60% in the study areas during construction phases and Results of increased population of dolphins after construction phase were also limited. Another major challenge is the deteriorating; water quality for instance, there has been observed rising concentration of heavy metals and organic pollution in the dolphin environment. Comparing stranded dolphins' tissues, Lin et al., (2023)

confirmed high content of POPS exceeding the international safety standards for potential health effects on this population. The cumulative effect of these environmental pressures is particularly concerning given the species' limited range and specific habitat requirements.

**Weaknesses in Current Conservation Approaches**

The current framework for Chinese white dolphin conservation in Hong Kong exhibits several significant weaknesses that have hampered its effectiveness, despite well-intentioned efforts from multiple stakeholders. Xu et al. (2015) provided the detailed evidence that the management measures remain ineffective to implement existing regulations in marine protected areas, specifically pointing out how the insufficient isolation from urban areas and number of patrols and monitoring systems contribute to the dilemma. In their sample they recorded Cape d' Aguilar in Hong Kong. This enforcement gap is especially more worrying so because the identified area is one of the important ones to the dolphins for foraging and social purposes. It gets worse in seas contiguous with those of mainland China, where management and prosecution of Marine Turtles differs because of different political jurisdictions that possess variant policies and laws for the protection of endangered species. The study by Nelms et al. (2021) also explained how these jurisdictional issues contribute to the discrepancies of conservation measures across various regions around the globe due to the absorbance of some amenable vessels to successfully evade the environmental laws. Another weakness of the present strategy is the ability of economic considerations to dominate development initiatives over conservation requirements. Organ et al., (2023) economic assessment revealed that EIAs of large-scale projects do not accurately reflect the relative value of marine ecosystems and still poorly estimate the cumulative impact on dolphins.

**Cross-Boundary Collaboration and Future Directions**

The mobile nature of dolphin populations and the interconnected nature of marine ecosystems necessitate stronger cross-boundary collaboration for effective conservation. As Wilson et al. (2008) have shown using telemetry and photographic identification bring various benefits including better tracking of dolphin populations and structures, identifying them, and increased cross-boundary protection, all of which can foster not only the well-being of dolphins but the symbiosis between humans and dolphins wherein humans can play crucial role in facilitating or undermining the marine system. Such is evident in the recording done regarding dolphin's movement in Pearl River Estuary. Another approach with the potentials in other locales has been revealed by the IUCN case-based analyses in the Mediterranean Sea (Crosti et al. 2020). Any partnership in this regard would have to consider current and future conservation interests; the latter include climate change effects and shifts in pattern of ship traffic.

**Corporate Responsibility and Stakeholder Engagement**

The role of corporate stakeholders in dolphin conservation requires significant strengthening through both mandatory requirements and voluntary initiatives. Several reports and studies have found that companies from varying sectors operating in Hong Kong waters had environmental policies but lack effective policies protective of marine mammals (Willmott, 2000; WWF, 2022; Sadovy de Mitcheson, 2018). For one thing, companies have prioritised commercial development over ethics towards marine environment protection, and Hong Kong has also been an avid consumer of shark fins despite relevant regulations. The corresponding efforts are mobilised by government agencies such as Hong Kong Environment Protection Department. Nonetheless, according to Liu and Hills (1997), voluntary actions are not very productive when there is no proper legislation and implementation of the polices. The scope of the corporate participation is not limited to only

impacting minimisation but also encompasses financial support for research activities and monitoring programmes, habitat restoration and awareness creating campaigns.

**Conclusion and Recommendations**

The conservation status of the Chinese white dolphin in Hong Kong waters represents a complex interplay between environmental protection, economic development, and multi-stakeholder governance. Summarizing the data obtained in Chan and Karczmarski (2024), it is possible to conclude that after two decades of conservation activity, numerous threats still hinder the population's development, and collective and urgent action is needed. Their 25-year long study of population trends demonstrates that while some of these conservation efforts have only moderate success in certain regions, the overall trend is negative, with population growth rates averaging a decrease of 2.3% per year. Clearly, any future conservation strategy will have to be worked out with respect to multiple threats at the same time and the emphasis will have to be put on enhancing cooperation between diverse actors. According to Kriegl et al (2021), it is expected that larger marine protected areas and stronger enforcement measures besides boosting the cross-boundary cooperation will be tasked conducive to saving the species. Conservation strategies along with continued public awareness and corporate social responsibility will play a significant role in the future survival of this important species within Hong Kong waters.

As we look to the future, several best practices readily suggest themselves based on the review of the literature and the voices of stakeholders. First, supported by Nelms et al., (2021), there is, therefore, a need to develop an integrated, cross-boundary monitoring system that could monitor dolphin populations and environmental factors on a real-time basis across the Greater Bay Area. In their review of current monitoring programs, they identify major shortcomings in the levels of spatial and temporal overlap that must be resolved to support effective management for conservation. Second, Aguzzi et al. (2024) put the argument on the

imperative to include new technologies in survey in order to get more detailed information about the population and their using of habitats, indicated by passive acoustic monitoring and environmental DNA sampling. Third, the quantitative analysis of the economic return on investment in terms of ecosystem services arising from healthy dolphin masses which have been estimated by Lin et al. (2023) shows that local people's welfare can be improved by spending the money on the protection of the dolphin population. To support this call for improved protection measures, their economic assessment shows that dolphins' well-being generates around HKD250m per year in value related to eco-tourism and related industries.

In conclusion, the fate of Chinese white dolphin for the waters of Hong Kong will hugely depend on the ability of the stakeholders to go for pro-active, creative and systemic solutions. The species' survival requires not only the preservation of existing habitats but also the restoration of degraded areas and the creation of new protected zones that can accommodate both wildlife conservation and sustainable human activities. As documented by Organ et al. (2023), successful conservation models from other regions suggest that adaptive management approaches, incorporating regular assessment and adjustment of conservation measures based on monitoring results, offer the best hope for long-term species survival. The preservation of this iconic species represents not only an ecological imperative but also a test of Hong Kong's commitment to sustainable development and environmental stewardship in an increasingly urbanised world.

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