EXECUTIVE SUMMARY

The Indo-Pacific hump-backed dolphin (*Sousa chinensis*) is found throughout the western Pacific and Indian oceans, from southern China and northern Australia in the east to South Africa in the west. Throughout most of its range, it has not been well-studied, and in southern China very little is known of its biology. The goal of the present study was to provide scientific information needed for the long-term conservation and management of the population that occurs in Hong Kong waters. From September 1995 to March 1998, 29,578 km of systematic line transect surveys were conducted throughout marine waters of the Hong Kong Special Administrative Region of the People's Republic of China (PRC) and adjacent waters, to provide data on distribution and abundance. Photo-identification of individual dolphins allowed for examination of movement patterns, home ranges, and social organization. Collection of stranded dolphin carcasses and detailed necropsies provided information on causes of death, and samples for life history studies, such as feeding habits, growth and reproduction, ecotoxicology, and stock structure.

The dolphin population appears to be centered around the Pearl River Estuary, and Hong Kong waters represent the eastern portion of the range, which extends far into mainland Chinese waters. Within Hong Kong, dolphins only occur in western waters around Lantau Island. The area north of Lantau Island is heavily used throughout the year, and represents the most important habitat in Hong Kong. Line transect analysis indicates that between 85 (spring) and 163 (autumn) dolphins occur in Hong Kong. A total of 174 individual dolphins were identified, based on 22,700 photographs taken, and mark/recapture analysis indicates that over 556 animals occur in the region. The total size of the Pearl River breeding population is unknown, but is estimated to be at least 1,054, based on line transect analysis. There is some evidence to suggest that the number of dolphins using the North Lantau area was decreasing over the period from 1996-1998, but it is uncertain if this is indicative of an overall population decline. Individual dolphins appear to have smaller home ranges in different sections of the population's overall range. Groups of dolphins in Hong Kong range in size up to 23 animals, with an average group size of 3.8 ± s.d. 3.63 animals. There is no significant seasonal variation in group size, but groups feeding behind pair trawl fishing vessels (mean = 9.6 ± s.d. 5.37) are significantly larger than other groups, and groups in the Pearl River Estuary (mean = 8.3 ± s.d. 7.84) are significantly larger than those in Hong Kong. Groups are very fluid, and change composition frequently, with an average association index of 0.08 ± s.d. 0.049. Behavioral patterns are similar to those of other coastal dolphins, but

Hong Kong hump-backed dolphins only rarely ride bow waves. Following pair trawlers represents an important feeding strategy for some individuals. Construction work on an airport fuel facility in the dolphins' main habitat appears to have caused some disturbance (indicated by increased swimming speeds) and possibly temporary evacuation of the surrounding area.

There is a great deal of developmental variation in the color pattern of southern Chinese hump-backed dolphins, with a general lightening from newborn to adult stages. Length at birth appears to be about 100 cm, and postnatal development is characterized by rapid growth in the first year and a smaller growth spurt just before reaching adulthood. Asymptotic length is reached at around 250 cm. Length and weight are related exponentially, with the maximum weight about 250 kg. Calves are born throughout the year, with slight peaks in spring and summer. Scant evidence suggests that sexual maturity in females is reached at about 10-11 years of age. Dolphins feed mainly on several demersal and pelagic fish species that are often associated with estuaries. There is a lack of evidence for long-distance movements (on the order of hundreds of kilometers), and this presumably results in isolation of groups around major river mouths. It thus appears that there are probably at least 7-8 separate populations of hump-backed dolphins along the coast of southern China. The Pearl River Estuary, including Hong Kong, is probably inhabited by one of these, and preliminary genetic work suggests that dolphins in the Xiamen area are probably from a different population. Human-related causes of mortality include entanglement in fishing nets and vessel collisions. Some environmental contaminants (especially the heavy metal mercury and the pesticide DDT) were found in high levels in some dolphins, and preliminary evidence suggests that these may be affecting the health of the animals.

A series of recommendations for management and for further research have been made to aid in the conservation of these animals. Principles for the conservation of wild living resources should be followed and information from both the natural and social sciences are needed for proper management. Research and long-term monitoring of the population must continue for management strategies to be evaluated and refined. Overall, the population of hump-backed dolphins that occurs in Hong Kong waters appears to be viable, and should be able to survive with appropriate conservation efforts.

Key words: Indo-Pacific hump-backed dolphin, *Sousa chinensis*, Hong Kong, distribution, abundance, trends, social organization, behavior, life history, reproduction, mortality, conservation status.