

COMMUNITY STRUCTURES AND BEHAVIOURAL  
ECOLOGY OF INDO – PACIFIC HUMPBACK  
DOLPHINS (*SOUSA CHINENSIS*) IN COWIE BAY,  
SABAH, MALAYSIA.

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Thesis Submitted of the Requirement for the  
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## DEDICATION

*To my beloved:*

*Mama (Puan Fatimah Arshad),  
Papa (En. Muhamad b. Jaafar),  
Abang Ayoie, Kak Ina, Afifi, Afiati,  
Makjang Usiah and family,  
Family in Kg Mentadak Baru and Wallace Bay,*

*All of YOU are dear to my heart*

*Thank you for everything*

*I love you all so much.*

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in fulfillment of the requirement for the degree of Master of Science

**COMMUNITY STRUCTURE AND BEHAVIOURAL ECOLOGY OF INDO-  
PACIFIC HUMPBACK DOLPHINS (SOUSA CHINENSIS) IN COWIE  
BAY, SABAH, MALAYSIA**

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**April 2014**

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Little is known about the Indo-Pacific humpback dolphins that inhabit Cowie Bay, Sabah. Therefore, this project is expected to provide scientific information on Indo-Pacific humpback dolphin's group size, social structure and residence patterns in Cowie Bay, Sabah. Boat based surveys were conducted from April 2008 to March 2009 to evaluate the status of humpback dolphins using two methods; Peterson capture-recapture method (using photo identification) and direct count method. Data were analysed using statistical software and Microsoft Photo Manager. Results showed that the humpback dolphin's community was small. Only three individuals were identified and catalogued living in the bay within 1.8 – 25 meters depth of water. The sighting rate was higher during neap tides than during spring tides. However, the group size (Mean = 2.49) was not affected by the different types of tides ( $U = 250.5, p > 0.05, r = -0.12$ ). The community was recorded to be socially active in the afternoon compared to morning and

evening. The analysis showed that the percentage for the individuals to be seen together was 48.8%, and the range of 9 – 12% observed to be solitary sightings. The association indices between individuals suggested that the community is highly associated with each other ( $AI = 0.6373 / 0.5756 / 0.6728$ ). However, each individual did show distinct preferences (81.2% sightings) to be at Kalabakan river mouth for activities such as feeding, socializing within group, and mixing with groups of Irrawaddy dolphins.

**(Keywords:** Indo-Pacific humpback dolphins, community size, social structure and residence patterns)

Abstrak tesis yang dikemukakan kepada Senat Universiti Malaysia Terengganu sebagai memenuhi keperluan untuk ijazah Master Sains.

**STRUKTUR KOMUNITI DAN EKOLOGI PERILAKU BAGI LUMBA-LUMBA PUTIH (*SOUSA CHINENSIS*) DI TELUK COWIE, SABAH, MALAYSIA.**

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Sedikit yang diketahui tentang lumba-lumba putih yang mendiami Teluk Cowie, Sabah. Projek ini dijangka dapat menyediakan maklumat saintifik berhubung saiz kumpulan lumba-lumba putih, struktur sosial dan pola kediaman diTeluk Cowie, Sabah. Tinjauan menggunakan bot telah dijalankan dari April 2008 hingga Mac 2009 untuk menilai status lumba-lumba putih melalui dua kaedah; kaedah tangkap dan tangkap semula (melalui identifikasi gambar) dan kaedah kiraan langsung. Data dianalisis dengan menggunakan perisian statistik dan *Microsoft Photo Manager*. Keputusan menunjukkan bahawa komuniti lumba-lumba putih adalah kecil. Hanya tiga individu telah dikenalpasti dan dikatalogkan tinggal di teluk yang mempunyai kedalaman air di antara 1.8 – 25 meter. Kadar keterjumpaan adalah lebih tinggi semasa air pasang surut perbani daripada semasa air pasang surut anak. Walau bagaimanapun, saiz kumpulan (Min = 2.49) tidak mempunyai hubungan langsung dengan jenis-jenis air pasang surut ( $U = 250.5$ ,  $p > 0.05$ ,  $r = - 0.12$ ). Komuniti ini direkodkan lebih aktif pada sesi tengahari

berbanding sesi pagi dan sesi petang. Analisis menunjukkan bahawa peratusan untuk individu-individu yang dilihat bersama-sama adalah 48.8%, dan julat 9-12 % diperhatikan bersendirian. Indeks gabungan antara individu mencadangkan bahawa komuniti ini sangat berhubungan antara satu sama lain (AI = 0.6373 / 0.5756 / 0.6728). Walau bagaimanapun, setiap individu menunjukkan kecenderungan yang ketara (81.2% haiwan) untuk berada di muara sungai Kalabakan untuk aktiviti-aktiviti seperti makan, bersosial sesama lumba-lumba putih, dan bergaul dengan kumpulan lumba-lumba empesut.

**(Kata kunci:** Lumba-lumba putih, saiz komuniti, struktur sosial dan pola kediaman)