

DISTRIBUTION OF SMALL CETACEANS IN THE NEARSHORE WATERS OF SARAWAK, EAST MALAYSIA

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ABSTRACT. – Between June 2008 and September 2009, 56 days of small boat surveys were conducted off the coast of Sarawak, Malaysia with the aim of recording cetacean distribution. These surveys, which focused on the Miri, Bintulu-Similajau and Kuching regions, comprised 173 hours of survey effort and covered 2851 km of pre-determined systematic tracks. Surveys were clustered into three sets of seasonal snapshots: June-July, September-October and March-April. A total of 115 cetacean sightings were made, of which 65 were on-effort and used in analyses of cetacean encounter rates in relation to habitat characteristics. Species observed included (in order of frequency) Irrawaddy dolphins (*Orcaella brevirostris*), finless porpoises (*Neophocaena phocaenoides*), Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) and Indo-Pacific humpback dolphins (*Sousa chinensis*).

One hundred and ten of 115 sightings were made in less than 10 m water depth, highlighting the importance of nearshore coastal habitats for these species. Despite an apparent overlap in habitat, Irrawaddy dolphins showed a statistically significant affiliation with areas of shallower depth and closer proximity to shore and river mouths than finless porpoises or bottlenose dolphins. This preference for nearshore areas renders the species vulnerable to threats such as fisheries by-catch and habitat degradation from coastal development. Irrawaddy dolphins were more frequently encountered in Kuching, while the highest encounter rate for finless porpoises was in the Bintulu-Similajau region. Depictions of encounter rates in these regions in relation to survey effort in 2 km × 2 km grid-cells give an indication of the preferred habitats of Irrawaddy dolphins, and show that the highest encounter rates in both Kuching and Similajau occurred in areas that are destined for major coastal developments. The information presented here should help researchers and managers design effective future research and conservation strategies.

KEYWORDS. – Malaysia, Sarawak, South China Sea, distribution, Irrawaddy dolphin, finless porpoise.

INTRODUCTION

Prior to 2008, formal research on the marine mammals of Sarawak was limited. Various incidental and historical records were reported by naturalists in the region (e.g. Lydekker, 1901; Gibson-Hill, 1949). Beasley and Jefferson (1997) also conducted some preliminary surveys, while aerial and boat surveys conducted jointly by the Sarawak Forestry Corporation (SFC), the University Malaysia Sabah (UMS) and the Sabah Wildlife Department provided further reports and overviews of the species present and their distribution (e.g. Jaaman, 2006; Bali et al., 2008). These collective sources of information on cetacean populations in Sarawak indicated that the species most commonly encountered in nearshore waters were the Irrawaddy dolphin (*Orcaella brevirostris*, Owen in Gray, 1866), finless porpoise (*Neophocaena phocaenoides*, Cuvier, 1829), bottlenose dolphin (*Tursiops*

aduncus, Ehrenberg, 1833) and Indo-Pacific humpback dolphin (*Sousa chinensis*, Osbeck, 1765). However, these sources do not provide detailed information on the species' fine-scale distribution or habitat preferences.

Throughout their range, the documented preference of all four of these species for nearshore habitats exposes them to a number of threats, including by-catch in fisheries (Dolar et al., 2002; Read et al., 2006), habitat loss and degradation (e.g. Jefferson et al., 2009), decreased fitness from pollution/contaminants (e.g. Reeves et al., 2003; Adams et al., 2008), high levels of vessel traffic, underwater noise and dolphin watch tourism (Lusseau, 2003; Constantine et al., 2004; Beijder et al., 2006; Lusseau et al., 2007). The IUCN Red List of Endangered Species (IUCN, 2008) classifies both Irrawaddy dolphins and finless porpoises as "Vulnerable", while humpback dolphins are considered "Near-Threatened".