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Defense Date: December 4, 2012

Title: The Cetaceans of Aruba: A Multidisciplinary Study

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ABSTRACT

The Caribbean region is one of the world's biodiversity hotspots and it supports at least 29 species of marine mammals (cetaceans). However, the marine environment of the Caribbean region is highly impacted by human activities. Knowledge of the marine mammals inhabiting the Caribbean Sea is fragmentary and the distribution and movement patterns of most of those species have not yet been described. Aruba is one of the most densely populated islands in the Caribbean, situated in the Southern Caribbean and part of the lesser Antilles. Its cetaceans have never been subject to study.

This dissertation describes the marine mammals of Aruba from a number of angles: their occurrence and distribution, their morphology and identification, their external injuries, and human attitudes towards the marine mammals of Aruba. Data were collected in 2010 and 2011 (i) from 19,721 km of boat based surveys, (ii) from tissue samples of stranded whales, and (iii) during questionnaire surveys (n=402) under resident Arubans and tourists.

My studies document 16 species of whales and dolphins in Aruban waters, of which two species occur year-round (Paper I), whereas only three species had been documented previously for the island. One of the species newly documented for Aruba was the killer whale (*Orcinus orca*), which was very poorly known in the Caribbean. In Paper II, we show that killer whales are found throughout the Caribbean region and in all months of the year. A diversity of prey items was recorded, ranging from fish to sea turtles and marine mammals. A preliminary morphological analysis suggests that some Caribbean killer whales share a combination of characters typical of Type 2 in the North Atlantic, whereas others share those typical of

'offshore' killer whales in the northwest Pacific. In Paper III, we document the first records of Bryde's whale (*Balaenoptera brydei*) for Aruba using molecular identification techniques. In Paper IV, I quantify the external injuries of Atlantic spotted dolphin (*Stenella frontalis*), bottlenose dolphin (*Tursiops truncatus*) and false killer whale (*Pseudorca crassidens*). Multiple types of human-related injuries were observed. This study indicates that fishing gear and propeller hits may pose threats to local populations of these species. Bite wounds of cookiecutter sharks (*Isistius* sp.) were recorded on all three species, and include the first documented record of a cookiecutter shark bite in Atlantic spotted dolphin. Paper V describes the results of the questionnaire survey. This study shows that there was high overall concern among tourists and resident Arubans regarding threats to local marine mammals. Most participants would support more stringent legislation for protecting marine mammals in Aruba. A large proportion of the participants were interested in and willing to pay for viewing marine mammals. Both groups preferred to see marine mammals in the wild rather than in captivity. This may provide input for ongoing debates about the feasibility and desirability of building a dolphinarium on Aruba.