INDIRECT EVIDENCE OF BOAT AVOIDANCE BEHAVIOR OF YANGTZE FINLESS PORPOISES

SONGHAI LI[1], TOMONARI AKAMATSU[2], DING WANG[3], KEXIONG WANG[1], SHOUYUE DONG[1], XIUJIANG ZHAO[1], ZHUO WEI[1], XIANFENG ZHANG[1], BARBARA TAYLOR[4], LEIGH A. BARRETT[5], SAMUEL T. TURVEY[6], RANDALL R. REEVES[7], BRENT S. STEWART[8], MICHAEL RICHLEN[9], AND JOHN R. BRANDON[10]

[1,3]*Institute of Hydrobiology, Chinese Academy of Sciences, Wuhan 430072, China.*
[3]*wangd@ihb.ac.cn*
[2]*NRIFE, Fisheries Research Agency, Hasaki, Kamisu, Ibaraki 314-0408, Japan.*
[4]*NOAA Fisheries, Southwest Fisheries Science Center, La Jolla, CA 92037, USA.*
[5]*Baiji.org Foundation, Klosbachstrasse 106, 8032 Zurich, Switzerland.*
[6]*Institute of Zoology, Zoological Society of London, Regent's Park, London NW1 4RY, UK.*
[7]*Okapi Wildlife Associates, Hudson, Quebec J0P 1HO, Canada.*
[8]*Hubbs-SeaWorld Research Institute, 2595 Ingraham Street, San Diego, CA 92109, USA.*
[9]*Department of Zoology, University of Hawai'i, Edmondson 152, Honolulu, HI 96822, USA.*
[10]*University of Washington, School of Aquatic and Fisheries Sciences, Box 355020, Seattle, WA 98195, USA.*

INTRODUCTION

The finless porpoise *Neophocaena phocaenoides* is widely distributed in shallow coastal waters of the northern Indian Ocean, South China Sea, East China Sea, Yellow Sea, Bohai Sea, Sea of Japan, and north western Pacific Ocean (Reeves et al. 1997). The subspecies *N. p. asiaeorientalis* occurs in the middle and lower reaches of the Yangtze River and adjoining lakes and tributaries. Because there is substantial commercial traffic throughout the Yangtze River system, understanding the influences of vessel traffic on porpoise behaviour is important to conservation of the Yangtze finless porpoise population.

METHODS

We surveyed the Yangtze River between Yichang and Shanghai in November and December 2006 to document the distribution and estimate the abundance of the highly endangered Yangtze River dolphin baiji; *Lipotes vexillifer* and Yangtze finless porpoise using visual and acoustic methods. We monitored continuously for high-frequency (>70 kHz) vocalizations of finless porpoises using two stereo acoustic event recorders (A-tags) towed behind one of our survey vessels. One of the A-tags trailed the boat by 63 m and the other by 80 m. This allowed us to geometrically determine the number and two-dimensional

location of vocalizing porpoises based on their bearing from each A-tag and the known distance between the two A-tags (17 m).

RESULTS AND DISCUSSION

We determined the distance between the survey vessel and the animal for 61 porpoises from acoustic data and 459 porpoises from visual observations. Both the acoustic and visual data indicated that the highest animal density was between 50 and 100 m of the vessel's track line (i.e., perpendicular distance), with much lower density between 0 and 50 m away. One interpretation is that porpoises were reacting to and avoiding the boat. More than 95% of the porpoises that were identified acoustically were detected astern of the vessel (Figure 1); only 3 porpoises were detected elsewhere and those were over 180 m from the track line, suggesting that they might have been moving away from the vessel.

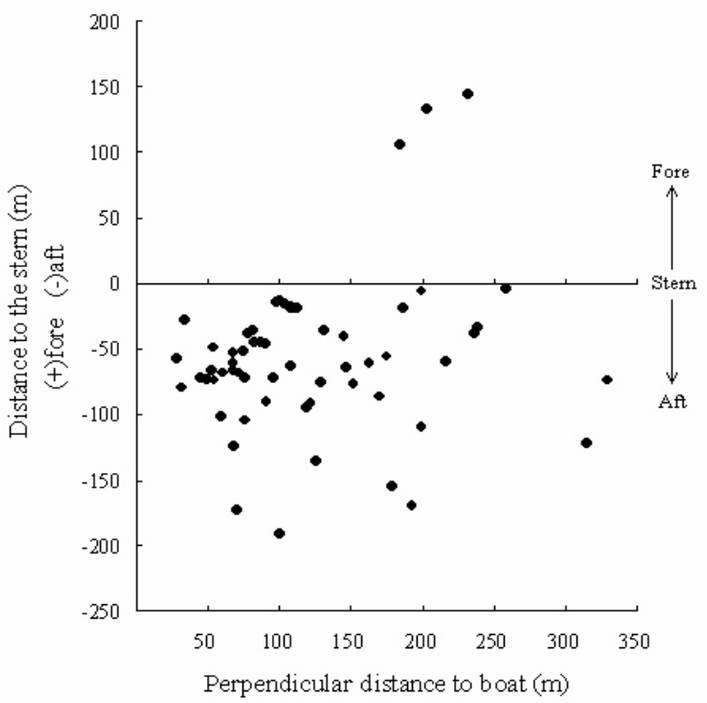

Figure 1. Two-dimensional localization of vocalizing porpoises by the acoustic event recorders.

ACKNOWLEDGMENTS

This research was supported by Baiji.org Foundation, SeaWorld-Busch Gardens Conservation Fund, Budweiser Wuhan, Anhueser-Busch Inc., SGS, DEZA, BAFU, Manfred Hermsen Stiftung Foundation, U.S. NOAA Fisheries, Hubbs-SeaWorld Research Institute, Wuhan Baiji Conservation Foundation, and Promotion of Basic Research Activities for Innovative Biosciences, Japan.

REFERENCES

Reeves, R. R., Wang, J. Y., & Leatherwood, S. (1997). The finless porpoise, *Neophocaena phocaenoides* (G. Cuvier, 1829): a summary of current knowledge and recommendations for conservation action. *Asian Mar. Biol.* **14**, 111-143.