

EXECUTIVE SUMMARY

Irrawaddy dolphins, *Orcaellabrevirostris*, inhabit the Mekong River from Kratie in Cambodia to Khone Falls in southern Lao PDR. Previously dolphins were also found downstream in Vietnam and in the Great Lake in Cambodia. The Mekong's dolphins are now absent from much of their former range and are thought to be many times rarer now than historically, however uncertainty exists about the number of dolphins currently surviving in the Mekong River and whether the population continues to decline.

Since 2007, the Cambodian Mekong Dolphin Conservation Project (a collaboration between the Cambodian Fisheries Administration and WWF Cambodia) has conducted photo-identification surveys to estimate the population of dolphins in the Mekong River. Estimating abundance, and related demographic parameters (e.g., survival, recruitment), is difficult because dolphins can be hard to detect, and because we must rely on natural marks (e.g., dorsal fin shapes, scars), even though some animals lack individually identifiable marks. Recent analytical advances allow better use of all the data collected during dolphin surveys for both marked and unmarked individuals. We used these modern analytical methods to estimate the abundance and survival of dolphins for 11 surveys conducted over 3 years (2007-2010), to assess population change, and to evaluate the efficacy of our survey methods to detect population change. Our analyses apply mark-resight, reverse-time and simulation models in the mark-recapture estimation software Program MARK.

We estimate the adult population size (both marked and unmarked individuals) to be 85 dolphins over the survey period from 2007-2010. We note that this is higher, but within the 95% confidence interval, of a previous analysis of data from the first 2 surveys in 2007, which estimated 71 (95% CI 66-86) animals. We believe that our estimate is higher because we have analyzed a larger dataset and used methodological advances that were previously unavailable. We note that although we estimate a larger population than previously thought, this does not represent an increase in the population over the survey period. On the contrary, our derived estimate of population growth (0.978) indicates a slow decline of marked animals and our estimate of 85 in 2007–2010 is fewer than the >115 dolphins

estimated in 2004-2005, by a previous researcher. We also find that recruitment of young animals into the marked adult population is very low. We believe that this shows the slow disappearance of a long-lived adult population with insufficient recruitment to replace them. Statistical power analyses suggest that our current survey effort is adequate to detect future declines of 3% per year, within 3 years.

We conclude that unless additional conservation measures are taken, there is a serious threat that Irrawaddy dolphins will disappear from the Mekong River. The small, isolated population in the transboundary pool between Cambodia and Lao PDR is especially threatened because there may be as few as 7 or 8 animals there. Although recent management actions (e.g., legislative protection, outlawing of explosive fishing, and some restriction on the use of gill nets) have likely been beneficial, we believe identifying population goals to work towards, and taking significant actions to improve recruitment are needed to prevent the extirpation of Irrawaddy dolphins in the Mekong River.