

based on at least a 20-year data set. Assuming that none of the stocks were severely depleted when data collection relative to the demographic benchmarks began (in the late 1970s and 1980s), 20 years of continued growth at the benchmark rates would in all likelihood result in stocks that are within or near the range of OSP. As such, we believed it was reasonable to assume that achievement of the demographic benchmarks would result in a population that is within or near the range of OSP, and that the negligible impact threshold would be that level of incidental take that does not significantly increase the time needed to achieve the demographic benchmarks (67 FR 69087).

Applying these standards to the best information available at the time of the proposed rule, we concluded that the Northwest and Upper St. Johns River stocks were currently meeting the demographic benchmarks and were progressing toward OSP at a biologically acceptable rate (*i.e.*, current incidental take was having a negligible impact). Regarding the Atlantic stock, we determined that it was close to the demographic benchmarks, and would meet the negligible impact standard provided additional mitigation measures were implemented to reduce take. The Southwest stock was not close to meeting the demographic benchmarks, so we proposed a negative finding with respect to that stock. We stated that it might be possible to refine this analysis for the final rule using a stochastic manatee population model (67 FR 69091), which will be referred to hereafter as the "Incidental Take Model." The Incidental Take Model structure was described in the proposed rule and DEIS, but was not completed at the time the proposed rule was published. It was included in Appendix I of the FEIS.

## Discussion and Findings

### *Standards and Assumptions*

Some of the standards and assumptions that supported our proposed rule have been questioned. This includes criteria for quantifying negligible impact and assumptions about OSP and the status of each stock (including population growth rate).

We quantified the negligible impact standard as that which would not exceed a five percent probability of delaying a stock's time to reach its OSP by no more than 10 percent. The specific probability and delay values were selected based on standards used by other agencies for other types of regulations under the MMPA, and

because the 95 percent probability is frequently used in statistical decision-making. We are currently considering whether this is an appropriate standard for incidental take caused by watercraft.

We also assumed that, if historical population levels were sufficiently high relative to carrying capacity, continued growth at the benchmark rates would result in population levels that are within or near OSP. This assumption played a role in our conclusions that current levels of watercraft-related take are either not currently delaying the time to reach OSP or are mitigable, depending on the stock.

Information developed during the rulemaking process, but not available until after the DEIS and proposed rule were published and made available, calls into question some of the assumptions upon which our analysis was based. One of the uncertainties raised by the new information is that all four stocks may be further from OSP, and growing at a slower rate than we originally thought. In short, new information challenges the verity of the assumptions that we built into our negligible impact criteria.

We are also reconsidering the use of the recruitment benchmark because we have no data that allow us to generate confidence intervals for the percent of females with first and second year calves, which undermines our current ability to evaluate the status of the stocks against this benchmark.

In summary, some of the assumptions relied upon in our negligible impact criteria and standards have been called into question. Key among these are:

- The assumption that achievement of demographic benchmarks developed through an ESA recovery plan will result in a population that is within or near the range of OSP;
- The recruitment benchmark, which is complicated by gaps in our understanding of the percent of females with first and second year calves;
- The biological implications of our assumptions about the linkage between (1) stock status, and (2) population benchmarks;
- The significance of various probabilities of delay in the time to reaching OSP; and
- The time it takes to reach OSP.

### *New Information*

We gained significant information about manatee populations and trends after the proposed rule and DEIS were made available to the public. Some fundamental questions about our understanding occurred as a result of collecting the information necessary to refine the Incidental Take Model. The

most important new information included new estimates of watercraft-related mortality, age-related survivorship, trends in carrying capacity, and demographic trends in the Atlantic Stock.

New information about carcass recovery suggests that rates vary significantly by stock, which challenges our estimates of watercraft-related mortality in all four stocks. Manatee carcass recovery rate is our leading indicator of the fraction of mortality due to watercraft. The carcass recovery rate (the fraction of dead manatees recovered by the carcass salvage program) plays a role in the calculation of negligible impact, because it serves as the link between the numbers of observed and actual watercraft-related mortalities. The fraction of mortality due to watercraft also can be used to calculate the survival rate in the absence of take, hence the degree to which take-reduction could improve the population growth rate. Both of these quantities have only recently been estimated from Florida Marine Research Institute data, and a peer review of the analysis has not been conducted. Further, only a point estimate for recovery rate in each region is available, which means that we do not yet have an expression for the uncertainty in that rate.

New information about carrying capacity suggests that it may decline over the next 3 to 60 years, which would affect density-dependent life history and management functions of the Florida manatee. The limiting factor for the carrying capacity of each stock is warm water refugia. Each stock of Florida manatees is variably dependent on natural and artificial warm water refugia, such as springs, sewerage outfalls, and power plant discharges. Preliminary information presented in the Incidental Take Model, but not yet peer reviewed, suggests that a reduction in total warm water carrying capacity is possible, if not likely, in the near future. This would suggest that OSP will change over time. Our implicit assumption of a stable OSP is challenged by this information. This, in turn, has implications for our interpretation of total population estimates, and our assumption that none of the stocks were severely depleted based on the demographic benchmarks.

We also are considering how information gaps may affect our ability to make a negligible impact determination for Florida manatee. The most important information gap is our limited understanding of density-dependent effects on manatees.