

# Project 4: Gap analysis of biol parameters for CKMR simulation study

<b>Objectives</b>	Compile all biological data relevant to CKMR simulation modelling for spotted and spinner dolphins in the EPO. Where sufficient, these may be used directly in developing CKMR models. Where absent, they may be filled in with additional biological studies or through meta-analysis of comparable species.
<b>Background</b>	CKMR studies require basic biological data to formulate population models and ultimately kinship probabilities. This includes information on age-specific survival, movement, and reproductive output.
<b>Relevance for management</b>	CKMR can provide estimates of adult population sizes and adult survival but the estimates are dependent on the accuracy of input parameters. Ensuring that the best available data is used for simulation is necessary to reducing the amount of error around the CKMR derived abundance estimates.
<b>Pros</b>	Allow for greater accuracy in simulation modeling and CKMR outputs.
<b>Cons</b>	If biological and movement studies are necessary, substantial time and resources will be required.
<b>Duration</b>	6 months (literature review) to multi-year (if studies are necessary)
<b>Workplan</b>	<ol style="list-style-type: none"><li>1. Conduct a gap analysis of the biological parameters necessary to CKMR simulation for study design.</li><li>2. Collection of biological samples (age &amp; growth, reproduction)</li><li>3. Meta-analysis for parameter determination (borrowing from other regions and or species)</li><li>4. Conduct biological and movement studies (if necessary)</li></ol>

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<b>Biological parameters</b>	<b>Spotted (EPO)</b>	<b>Spinner (EPO)</b>
Survival (natural mortality) by age (sex specific if possible)	UNK (ATL)	UNK (HI)
Fecundity at age (females & males)	UNK (ATL)	UNK
Age/size at maturity (females & males)	Y	Y
Population sizes (best estimate)	Data (2006)	Data (2006)
Age & Growth	Y	Y
Interbirth interval	Y	Y
Calves per female	Y	Y
Gestation period	Y	Y
Sex ratio (life stages)	Some data	Some data
Color phasing – by age group	UNK	Y
Size classes (observer)	Y	Y
Distribution	Some data	Some data
Movement ecology	Some data (Big Gap)	Some data (Big Gap)