

Investigating local population dynamics of bottlenose dolphins in the northern Bahamas and the impact of hurricanes on survival

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Highlights:

- We present the first birth rate and age-class-specific apparent survival rate estimates for the local South Abaco bottlenose dolphin (*Tursiops truncatus*) population on Little Bahama Bank, which were used to parameterise a population viability analysis.
- Declines in calf, juvenile and adult survival were indicated for the period 1997-2013. Population viability simulations predicted that such declines would drive an assumed isolated South Abaco population to extinction within decades, even under the most optimistic scenario. Evidence that survival was influenced by repeated hurricane activity leading to increased mortality and/or emigration was stronger for calves and juveniles than adults.
- Our study provides information on how hurricane events may impact cetacean populations. Future work should focus on establishing if the South Abaco population is part of natural metapopulation dynamics on Little Bahama Bank, as this will be important for assessing their conservation status.



This article is part of a thematic collection of articles (Special Issue) of *Mammalian Biology* and covers the following topics and taxa (marked with ☒) addressed in the Special Issue:

Article Type				
☒ Original Research	☐ Techniques	☐ Review	☐ Short Communication	☐ Concept Note
Taxon		Topic		
Terrestrial				
☐ Bats <i>(Order Chiroptera)</i>	☐ Primates : Great Apes <i>(Family Hominidae)</i>	☐ Acoustic ID	☐ Identification techniques	
☐ Carnivores : Bears <i>(Family Ursidae)</i>	☐ Primates : Old World monkeys <i>(Family Cercopithecidae)</i>	☐ Aerial surveys	☒ Life-history	
☐ Carnivores : Canids <i>(Family Canidae)</i>	☐ Ungulates : Bovids <i>(Family Bovidae)</i>	☐ Analytical innovations	☐ Machine learning	
☐ Carnivores : Felids <i>(Family Felidae)</i>	☐ Ungulates : Deers <i>(Family Cervidae)</i>	☐ Automated pattern recognition	☒ Mark-recapture analysis	
☐ Carnivores : Hyenas <i>(Family Hyaenidae)</i>	☐ Ungulates : Giraffes <i>(Family Giraffidae)</i>	☐ Behavioural ecology	☐ Morphometrics	
☐ Carnivores : Mustelids <i>(Family Mustelidae)</i>	☐ Ungulates : Horses <i>(Family Equidae)</i>	☐ Camera-trapping	☐ Network analysis	
☐ Elephants <i>(Family Elephantidae)</i>	☐ Multiple taxa <i>(3 or more Families/Orders)</i>	☐ Conservation management	☐ Photogrammetry	
Marine				
☐ Baleen whales : Right whales <i>(Family Balaenidae)</i>	☐ Large toothed whales <i>(Families Delphinidae & Hyperoodontidae)</i>	☐ Data management	☒ Population ecology	
☐ Baleen whales : Rorquals <i>(Family Balaenopteridae)</i>	☐ Pinnipeds : True seals <i>(Family Phocidae)</i>	☒ Demographic parameters	☐ Site fidelity & Movement	
☐ Carnivores : Bears <i>(Family Ursidae)</i>	☐ Porpoises <i>(Family Phocoenidae)</i>	☐ Field methodology	☐ Social ecology	
☐ Carnivores : Mustelids <i>(Family Mustelidae)</i>	☐ Sirenians : Manatees <i>(Family Trichechidae)</i>	☐ Genetic ID	☐ Software/Package development	
☒ Dolphins <i>(Family Delphinidae)</i>	☐ Multiple taxa <i>(3 or more Families/Orders)</i>	☐ Health conditions	☐ Thermal imagery	
		☒ Other: Extreme weather events		

References

- Karczmarski L, Chan SCY, Rubenstein DI, Chui SYS, Cameron EZ (2022a). Individual identification and photographic techniques in mammalian ecological and behavioural research – Part 1: Methods and concepts. *Mammalian Biology* (Special Issue), 102 (3) <https://link.springer.com/journal/42991/volumes-and-issues/102-3>
- Karczmarski L, Chan SCY, Chui SYS, Cameron EZ (2022b). Individual identification and photographic techniques in mammalian ecological and behavioural research – Part 2: Field studies and applications. *Mammalian Biology* (Special Issue), 102 (4) <https://link.springer.com/journal/42991/volumes-and-issues/102-4>