Modelling surfacing behaviour of southern bluefin tuna in the Great Australian Bight

J. Paige Eveson, Toby A. Patterson, Jason R. Hartog, Karen Evans

www.elsevier.com/locate/dsr2

PII: S0967-0645(17)30352-1
DOI: https://doi.org/10.1016/j.dsr2.2018.03.007
Reference: DSRII4419

To appear in: *Deep-Sea Research Part II*

Cite this article as: J. Paige Eveson, Toby A. Patterson, Jason R. Hartog and Karen Evans, Modelling surfacing behaviour of southern bluefin tuna in the Great Australian Bight, *Deep-Sea Research Part II,* https://doi.org/10.1016/j.dsr2.2018.03.007

Modelling surfacing behaviour of southern bluefin tuna in the Great Australian Bight

J. Paige Eveson[a,b], Toby A. Patterson[a], Jason R. Hartog[a], Karen Evans[a]

[a] CSIRO Oceans and Atmosphere, GPO Box 1538, Hobart, Tasmania, Australia.

[b] Corresponding author. Email: paige.eveson@csiro.au

March 2018

Abstract

Large numbers of juvenile southern bluefin tuna (SBT; *Thunnus maccoyii*) migrate into the warm shelf waters of the Great Australian Bight (GAB) each austral summer. Whilst in the GAB, they aggregate in schools that spend substantial periods in the surface layer of the water column. In this study we investigate biological, temporal and environmental factors influencing this surfacing phenomena using an extensive archival tagging dataset collected between 1998 and 2011. High frequency data on the vertical movement of SBT collected by these tags were used to calculate the proportion of time fish spent in the shallowest 20m during each day and night period. Estimates of fish location derived from light sensor data on the tags allowed us to investigate the influence that local environmental conditions had