

Oceanographic conditions influencing little auks (*Alle alle*) in the Greenland Sea

Nina J. Karnovsky
Pomona College
Dept. of Biology
175 W. 6th St.
Claremont, CA 91711

Phone: 909-607-9794
Fax: 909-621 8878
Email address: nina.karnovsky@pomona.edu

Co-PI:
Ann Harding
Alaska Pacific University
a.m.a.harding@gmail.com

---FUNDING SOURCE AND GRANT NUMBER:
National Science Foundation
Grant number: 0612504

DATA SET OVERVIEW:

This dataset includes Time Depth Recorder (TDR) data from deployments on chick-rearing little auks (*Alle alle*) in Kap Höegh, Eastern Greenland (70°43' N, 21°38' W) in July 2007. We attached TDRs ventrally to adult little auks when their chicks were between 1-18 days old. TDRs were attached ventrally using LocTite ® glue, and recovered after 3-6 days

INSTRUMENT DESCRIPTION:

TDRs (Cefas G5 Data Storage Tags, 8 MB of memory) were cylindrical in shape with a rounded tip to minimize water resistance (Cefas Technology Limited, Suffolk, UK; http://www.cefastechnology.co.uk/products_tags_g5.htm). The TDRs weighed 2.7 g in air, or 1.6% of the average initial mass of experimental birds. The TDRs had a cross-sectional area of 0.58 cm², or approximately 2% of the cross-sectional area of adult little auks.

DATA COLLECTION and PROCESSING:

TDRs were programmed to record temperature and pressure every five seconds for up to five days. When the birds dove below 1.5 meters, temperature and pressure readings were made every 0.2 seconds for the duration of the dive. Using a script written in PERL, we extracted parameters for individual dives from all 0.2-second data. Only dives reaching >1.5 m maximum depth were considered (to eliminate artifacts from wave action, etc.). For each dive, extracted parameters included maximum dive depth, dive duration, average dive temperature, and others.

DATA FORMAT:

This is a .xls file. Each individual dive occupies a row. Columns include individual bird, consecutive dive number, date and time of dive, as well as derived dive parameters. "Time" is the time of day in Hornsund Fjord local time. "Absolute time" counts the number of seconds since midnight (starting over each day of deployment) when the dive BEGAN, while "End time" is the number of seconds since midnight when the dive TERMINATED. Note that dive duration = end time – absolute time.

List of parameters:

Parameter (column)	Units	Description
DiveDuration	s	Length of time bird was underwater.
MinTemp, MaxTemp, AveTemp	DegC	Minimum, maximum, and average temperature recorded over the duration of the dive.
MaxDepth	m	Maximum depth of dive
BottomTime	s	Duration of dive spent on bottom phase (>80% of maximum depth)
BottomFreq	Unitless	Fraction of dive spent on bottom phase
AscentTime	s	Duration of dive spent on ascent phase (succeeding bottom phase)
DescentTime	s	Duration of dive spent on descent phase (preceding bottom phase)
postdiveInterval	s	Post-Dive Interval (surface pause after dive, before succeeding dive)

AscentRate	m/s	Vertical Ascent Rate [Ascent time/80% of maximum depth]
DescentRate	m/s	Vertical Descent Rate [Descent time/80% of maximum depth]
DiveEfficiency	Unitless	[Bottom Time/(Dive Duration + Post-Dive Interval)]

DATA REMARKS:

Note that loggers generally began recording only after reaching 1.5 m depth. Therefore, Bottom Time, Ascent Time, and Descent time (and parameters calculated from these) may be skewed for very shallow dives (<5 m maximum depth).