

Thursday 1st May 2014 7:15 for 7:45 (PLEASE NOTE CHANGE OF DATE)

Amgen Ltd,
Cambridge Science Park,
Milton Road, Cambridge CB4 0WG

Counting The Emperor

Peter Fretwell, British Antarctic Survey

Abstract: In 2012 we published the first census of a species from space. Our aim was to estimate the population of emperor penguins. We examined the whole continental coastline of Antarctica with medium resolution and Very High Resolution (VHR) satellite imagery to identify emperor penguin colony locations. Where colonies were identified, VHR imagery was obtained in the 2009 breeding season. The remotely-sensed images were then analysed using a supervised classification method to separate penguins from snow, shadow and guano. Actual counts of penguins from eleven ground truthing sites were used to convert these classified areas into numbers of penguins using a robust regression algorithm. We found 4 new colonies and confirmed the location of 3 previously suspected sites giving a total of 46 breeding colonies. We estimated ~238,000 breeding pairs (the last previously published count was of 135,000–175,000 pairs). Based on published values this translates to a total population of ~595,000 adult birds. A growing consensus suggests emperor penguin populations will be affected by changing climate. However, a complete understanding is severely limited by the lack of detailed knowledge about much of their ecology, and importantly a poor understanding of their total breeding population. To address the second of these issues, our work now provides a comprehensive, consistent and robust estimate of the total breeding population. Since this survey we have continued to monitor each colony and hope that over the next few years we can publish a total population trend for the species. Most previous studies on emperor penguins have used a single accessible site, our studies have led us to question the suitability of single site studies for this and possibly other species.

Speaker: Geographic information Scientist at British Antarctic Survey (BAS). Originally a Quaternary Scientist specializing in analyzing Holocene sea-level change. I was first employed at BAS in 2002 as a cartographer. Since that time I have specialized in GIS and remote sensing with recent highlights such as leading the Bedmap2 project http://www.antarctica.ac.uk/bas_research/our_research/az/bedmap2/ and using remote sensing techniques to identify and count penguins and other seabirds. This technology has recently been transferred to count southern right whales, a breakthrough that may have large implications for how we estimate cetacean numbers <http://www.bbc.co.uk/news/science-environment-26075274>

Directions: Head north on Milton Road. Two traffic lights before the A14 turn left into the Science Park (clearly signposted). Turn left at the roundabout. The meeting takes place at Amgen in the restaurant in building 214 (the ground floor of the middle building on the attached map which is also at <http://imaging.mrc-cbu.cam.ac.uk/statswiki/csdg/amgen>). Parking is available on site. There will be no admittance after 7-45pm. Arrivals after 7-45pm can gain admittance by contacting the secretary on 07761769436. **If anyone would like complementary transport to the talk venue from Central Cambridge please inform the secretary in advance of the meeting.**

Provisional Next Meetings:

14th October – Adrian Mander (MRC Biostatistics). 17th November – Trevor Lewis (TLwise Consulting Limited).

2nd February 2015 – Anthony Edwards (Gonville and Caius). 5th March – Tom Bramley (Cambridge Assessment).

Supper: Some members eat regularly in the University Centre before each meeting at **5-45pm**. Feel free to join them.

Subscriptions: of 1 pound are now due for attending the 2013-2014 session.

Secretary: Peter Watson, MRC Cognition and Brain Sciences Unit, 15 Chaucer Road, Cambridge CB2 7EF; telephone 01223 355294 Extension 801; E-mail peter.watson@mrc-cbu.cam.ac.uk

Slides and .mp3 files of old talks: <http://www.mrc-cbu.cam.ac.uk/people/peter.watson/csdg.html>