



atlas

UNDERSTANDING DEEP ATLANTIC ECOSYSTEMS



Fine-scale Population Genetics of Cidaroid Urchins in the NE Atlantic

4th ATLAS General Assembly, 2nd April 2019

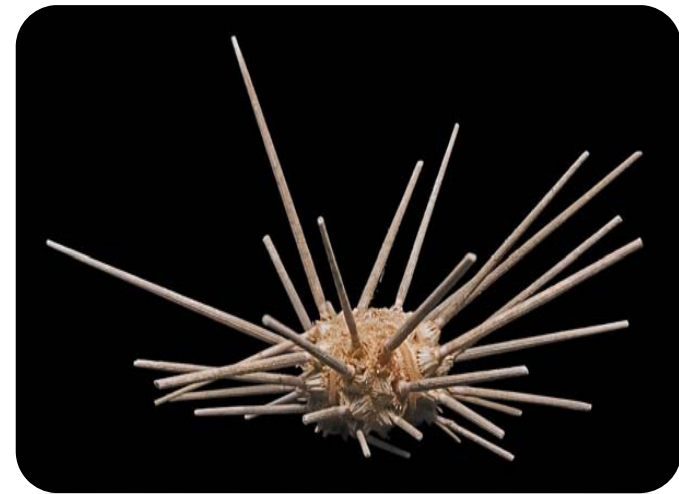
Dr. C. Nicolai Roterman, University of Oxford

DEEP  LINKS



Plan

- Fine-scale population genetics with depth
 - Seamounts N & W of UK (NERC DeepLinks)
- Sea urchin *Cidaris cidaris*
- Need multilocus data
 - RADseq
 - High res, 1000s of SNPs
 - 1st study on deep-sea urchins
- Integrate with dispersal models



Cidaris urchins

- Order of “Pencil urchins”
 - Cidaroidea
- Basal to all other urchins
 - Origins in Permian
 - Changed little i.e. “Living fossils”
- Omnivorous grazers
 - Found to eat *Lophelia*, *Madrepora*
 - Unappreciated form of bioerosion
- Continuous, Planktotrophic
 - 120 days PLD based on *C. blakei*



Specimen collection 2016-17



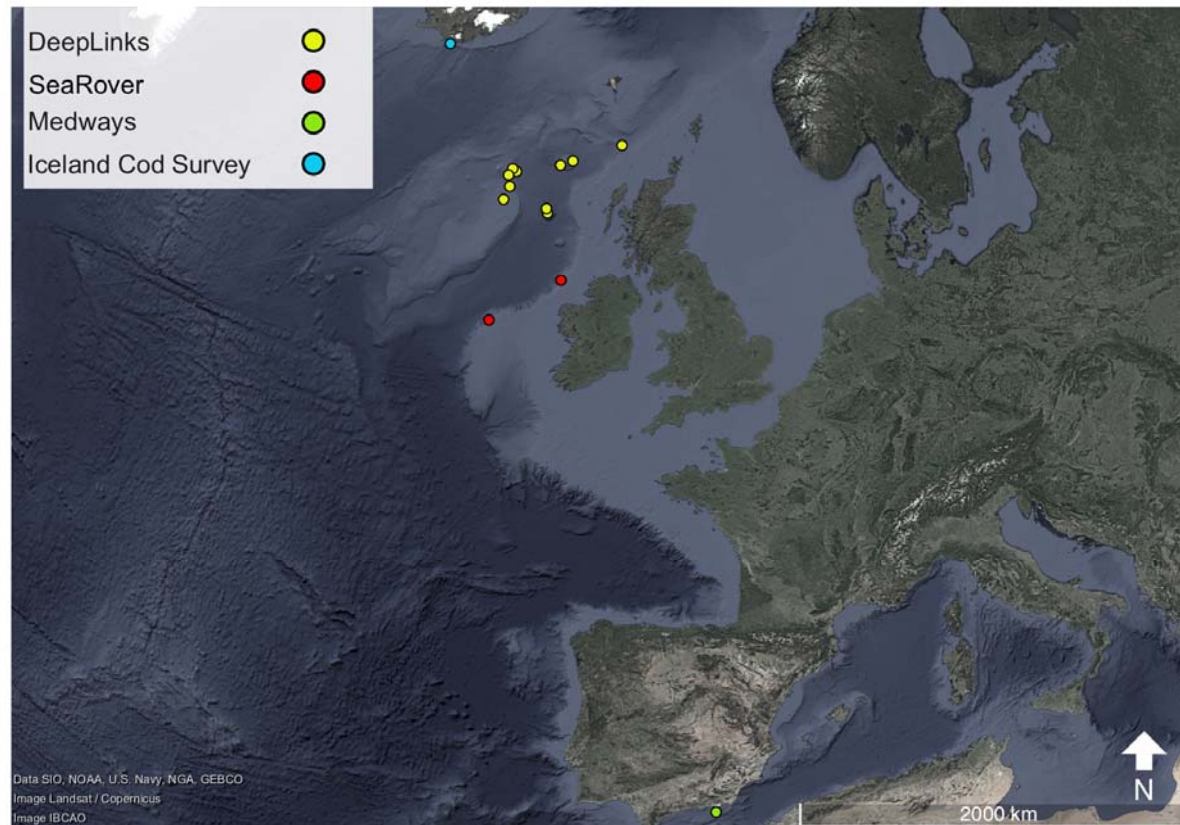
- DeepLinks 2016, RRS James Cook, N & W of UK:
 - 378 cidarids
 - 23 stations, 191-1260 m
 - Uneven sampling
- Medways 2016, Mediterranean
 - 3 stations, 11 cidarids
- SeaRover 2017, W of Ireland:
 - 3 stations, 35 cidarids,



Specimen collection UK & Ireland

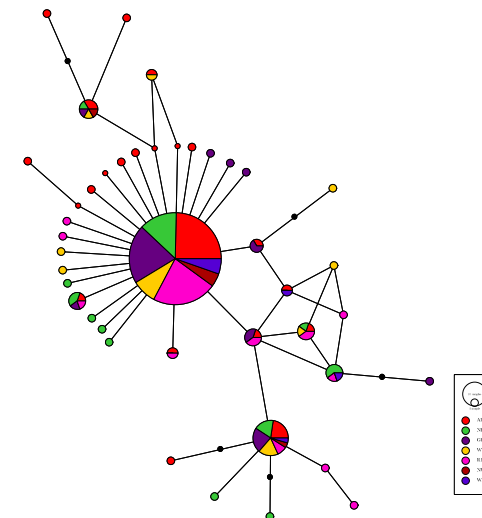
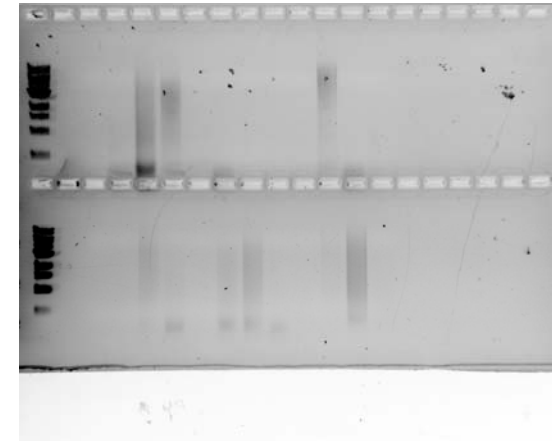


- Also:
 - Iceland (MFRI)
 - Univ. Malta
 - Smithsonian
 - Senckenberg



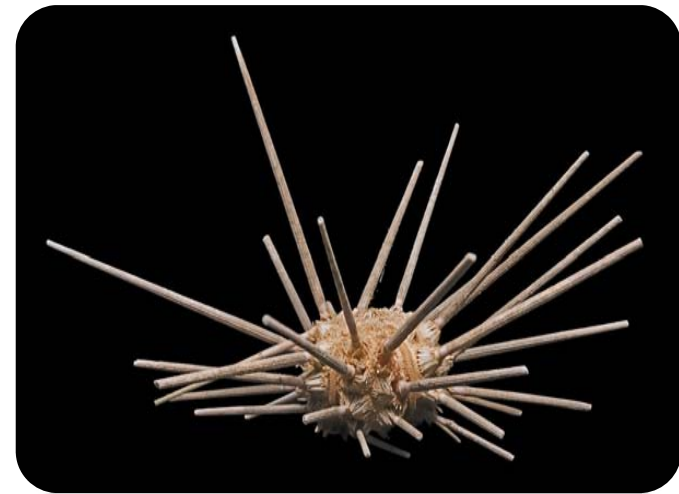
Extractions, COI Barcoding

- 747 Extractions
 - Challenge getting acceptable quality
- Many specimens failed:
 - Smithsonian, Senckenberg, Malta
- 444 COI sequences generated
- 2nd species (> 1000 m)
 - *Sterocidaris* sp. (*ingolfiana*?)
 - Few Cidaris below 1000m



RAD-seq

- 2 plates (190 individuals)
 - Sent to Floragenex, USA in Dec 2018
- High density scan
 - PSTL, 4 Lanes Illumina HiSeq
- QC, Library prep complete
 - Feb 2019
- Expect raw data now!



To be continued...

