A Career in Science- Plant Community Ecology to PVC (via adventures of many sorts)

Professor Libby John

PVC/Head of the College of Science and Engineering

University of Lincoln

Factors affecting the distribution and abundance of plants

Most of the world's biomass is plants (if we ignore the microbes!)

Every calorie we eat comes from plants

Most ecosystems are defined by plants

Most ecosystem services depend on plants

So understanding what determines how much there is and which species are where is critical

Biotic and abiotic factors need to be investigated

The CV:
BSc Biology University of Sussex
MSc Environmental Technology, Imperial College, London
PhD Plant Ecology, University of Alberta

Rocky Mountains, Jasper National Park, Canada – Lichen Ecology

http://www.thomklaeui.ch/canada/picture/jasper.html

http://artsandsciences.colorado.edu/magazine/2011/01/brilliant-lichens-reveal-mammal-perches/

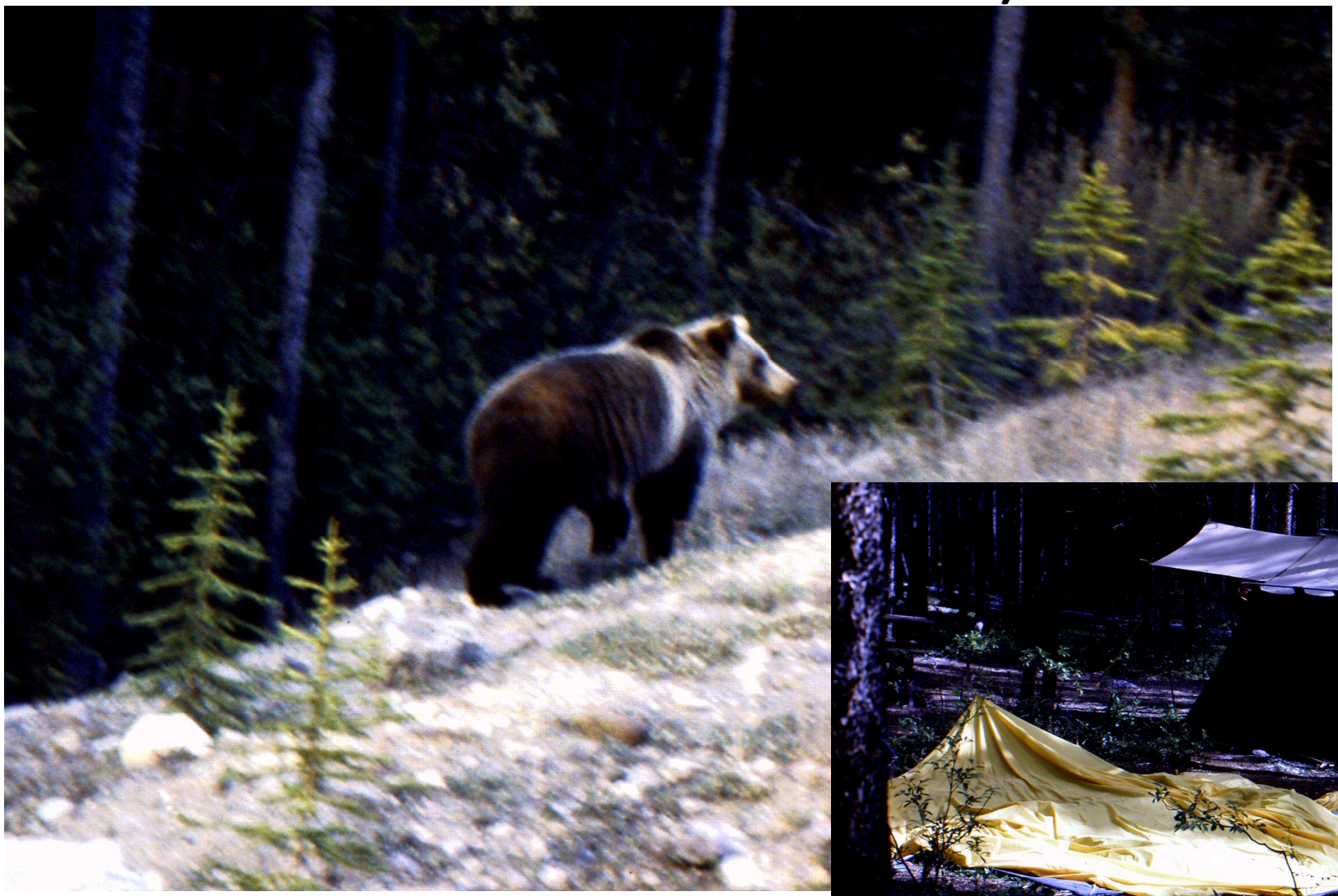
http://www.panoramio.com/photo/70927201

- Lichens = fungus + alga
- Very slow growing – mm to cm per *century*
- Not eaten in alpine environment
- Many dispersed by tiny spores – very widely distributed

Jonas Rockslide

- Quartzite sandstone
- 106 species of lichens – how do they coexist?
- Are they randomly distributed?

The Neighbours (what risk assessment?)



Conclusions on lichens

- More species than had been imagined!
- Species more sensitive than previously realised
- Community more spatially structured than previously realised
- Impossible to experiment on

The CV:
Prizes for PhD conference talks
Sessional Lecturing U of A
Summer post-doc University of Michigan
Volunteer Canadian Wildlife Service Tuktoyaktuk Peninsula
Killam Post-doctoral Fellow (personal award)

KLUANE NATIONAL PARK, YUKON, NORTHERN CANADA with Roy Turkington

The Snowshoe Hare Project

Control of predators and food supply

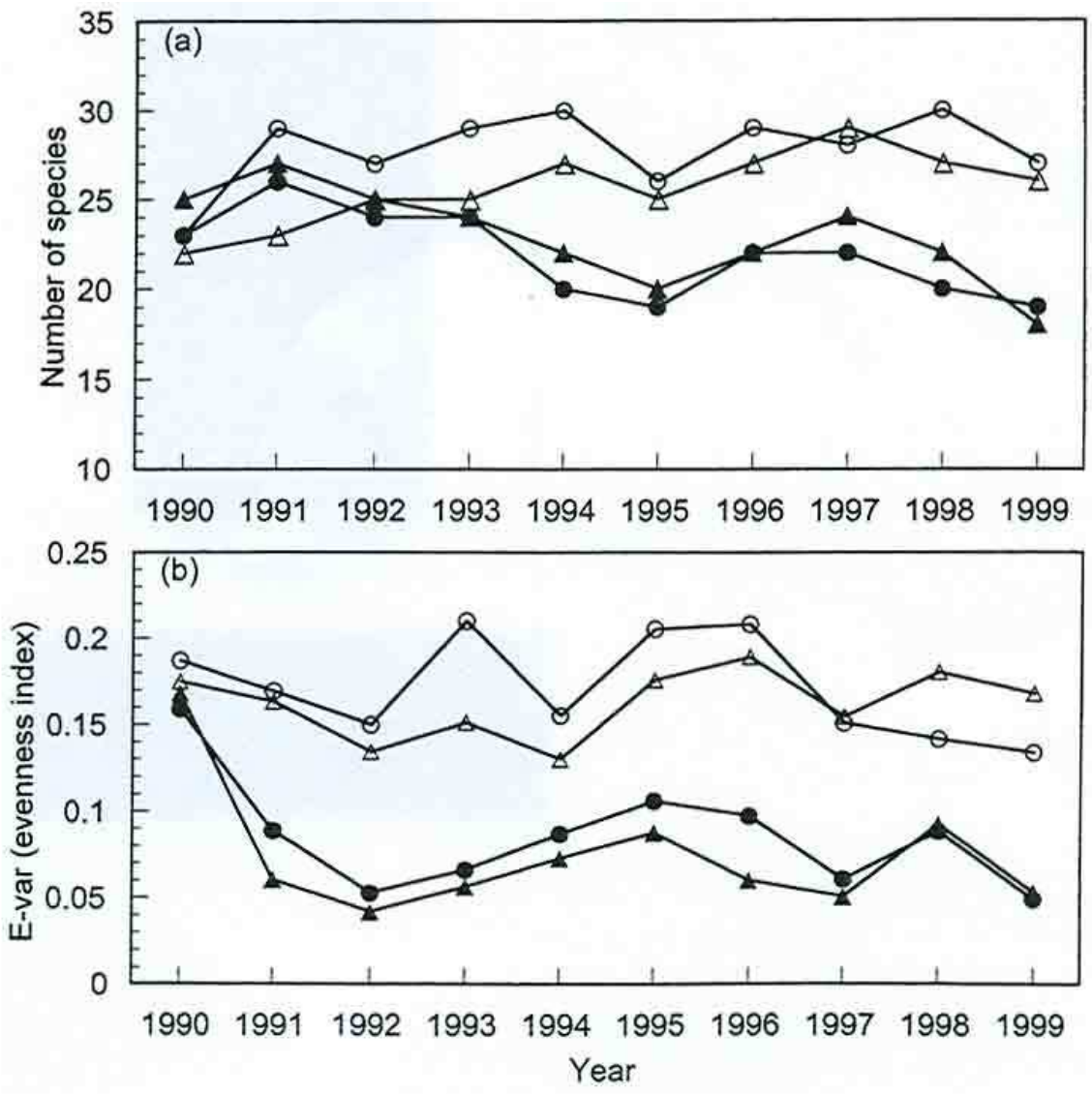
Testing bottom up vs top down control of plant biomass

- Control the top down factor (herbivores)
- Control the bottom up factor (fertilizer, water, etc.)
- Control both together
- Four possible treatments

Journal of Ecology 2002
90, 325–337

The effects of fertilization and herbivory on the herbaceous vegetation of the boreal forest in north-western Canada: a 10-year study

ROY TURKINGTON†, ELIZABETH JOHN‡, SALLY WATSON§ and PIPPA SECCOMBE-HETT†



Open - unfertilised

Solid – fertilised

Triangles - fenced

Circles - unfenced

Conclusions

Number of species significantly affected by nutrient addition

But no significant long-term community responses to snowshoe hare exclusion – no top- down effect

Big bottom-up effect from fertiliser treatment

The CV: University of Sussex Lectureship 1992
followed by Senior Lectureship 1999
Roles including Admissions Tutor, Programme Leader
Children 1994 and 1996
Head of Department from 2002-2009
Council of the British Ecological Society
European Ecological Federation Executive Board
External examining roles around the UK
NERC Peer Review College

http://upload.wikimedia.org/wikipedia/commons/thumb/4/4b/Soay_ewe.jpg/270px-

Herbivore friend or foe?

- Lullington Heath – variable soil type
- Sheep and rabbits
- Exclosures to keep one or both out

Journal of Ecology 2010, **98**, 498–508 doi: 10.1111/j.1365-2745.2009.01633.x

Both bottom-up and top-down processes contribute to plant diversity maintenance in an edaphically heterogeneous ecosystem

Joanne L. Denyer, Susan E. Hartley and Elizabeth A. John*

Biomass reduced by grazing but…

- Different kinds of plants respond differently
- Soil type has a huge impact

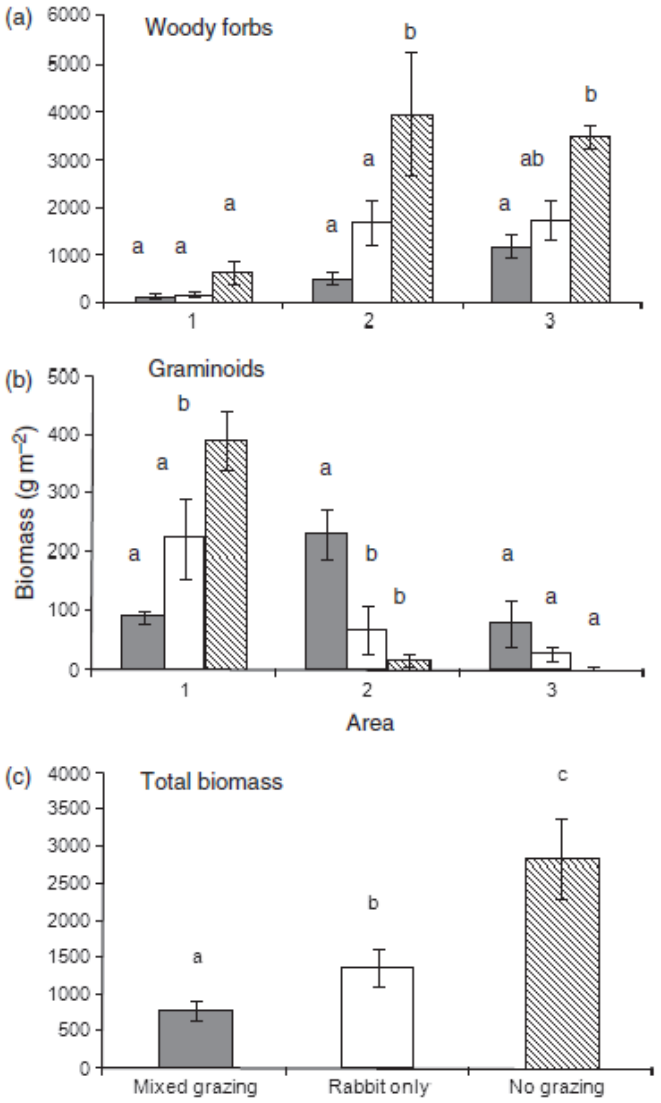
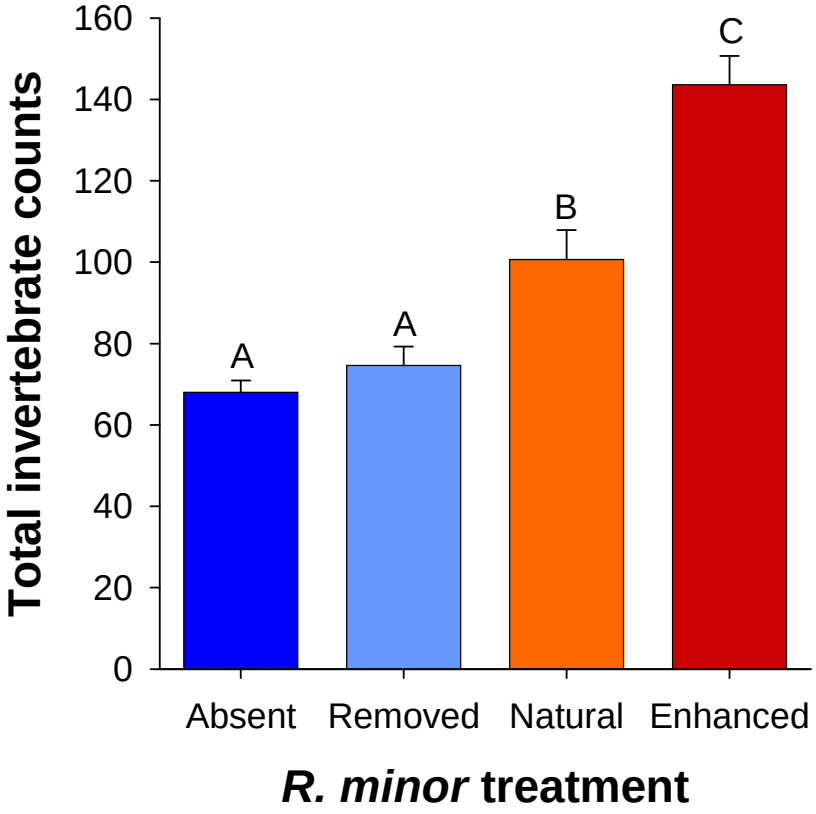
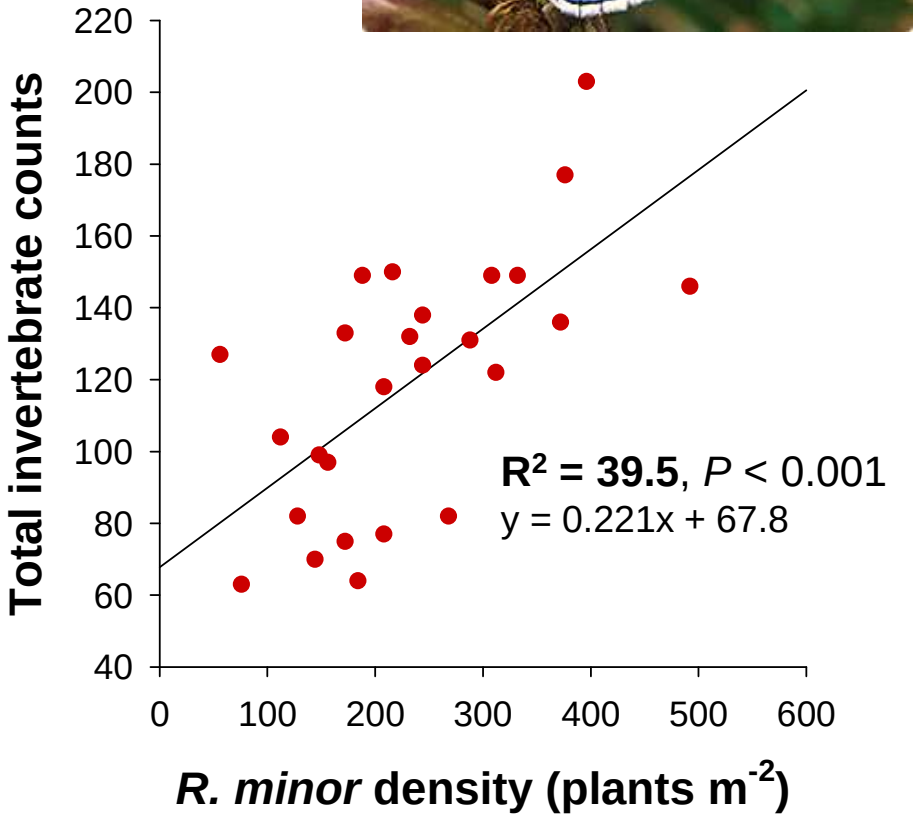


Fig. 2. Comparison of the effects of grazing treatment on above-ground biomass of functional groups in each area: (a) woody species, (b) graminoids and (c) total biomass across all areas. Solid bars, mixed grazing; open bars, rabbit grazing only; hatched bars, no grazing. Error bars show ±SE. Bars not sharing common letters differ significantly (within-area comparisons only for (a) and (b)).

Impacts of hemiparasites on invertebrate community in the field





Abundance: block $F_{12,36} = 2.31$, $P = 0.026$;
Trmt $F_{3,36} = 41.94$, $P < 0.001$

Excludes mites and collembola

The CV: 2010 University of Lincoln Faculty Director of T and L
2012 Founding Head of School of Life Sciences
2013 BES Award (Chair BES ETCC)
2014 Founding Chair Royal Society Biology Curriculum Committee
2017 PVC and Head of College of Science
2017 Professor of Plant Ecology and Bioscience Education

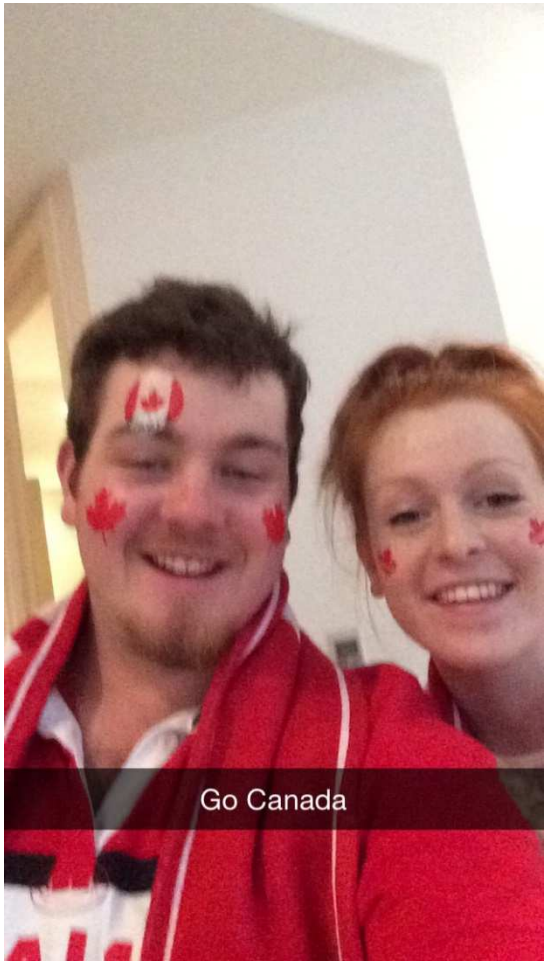
- Opportunity to work on new questions with new collaborations

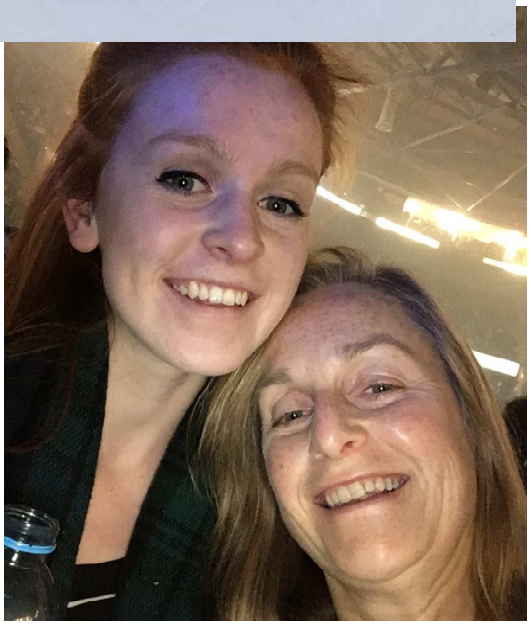
http://www.tortoisetrust.org/articles/feeding_redfoots.html

Francesca has the answers……

http://wikis.wheatonma.edu/rainforest/images/thumb/b/bb/Ficus_1.jpg/300px-Ficus_1.jpg

Meanwhile – family and life!





- Learned societies
- Contacts – network
- Saying yes (being interested)
- Seeing alternative routes
- Coming second
- Putting yourself forward
- Don’t rule yourself out

http://www.eoearth.org/files/148601_148700/148609/grassymtnlakesinzimgp0276.jpg