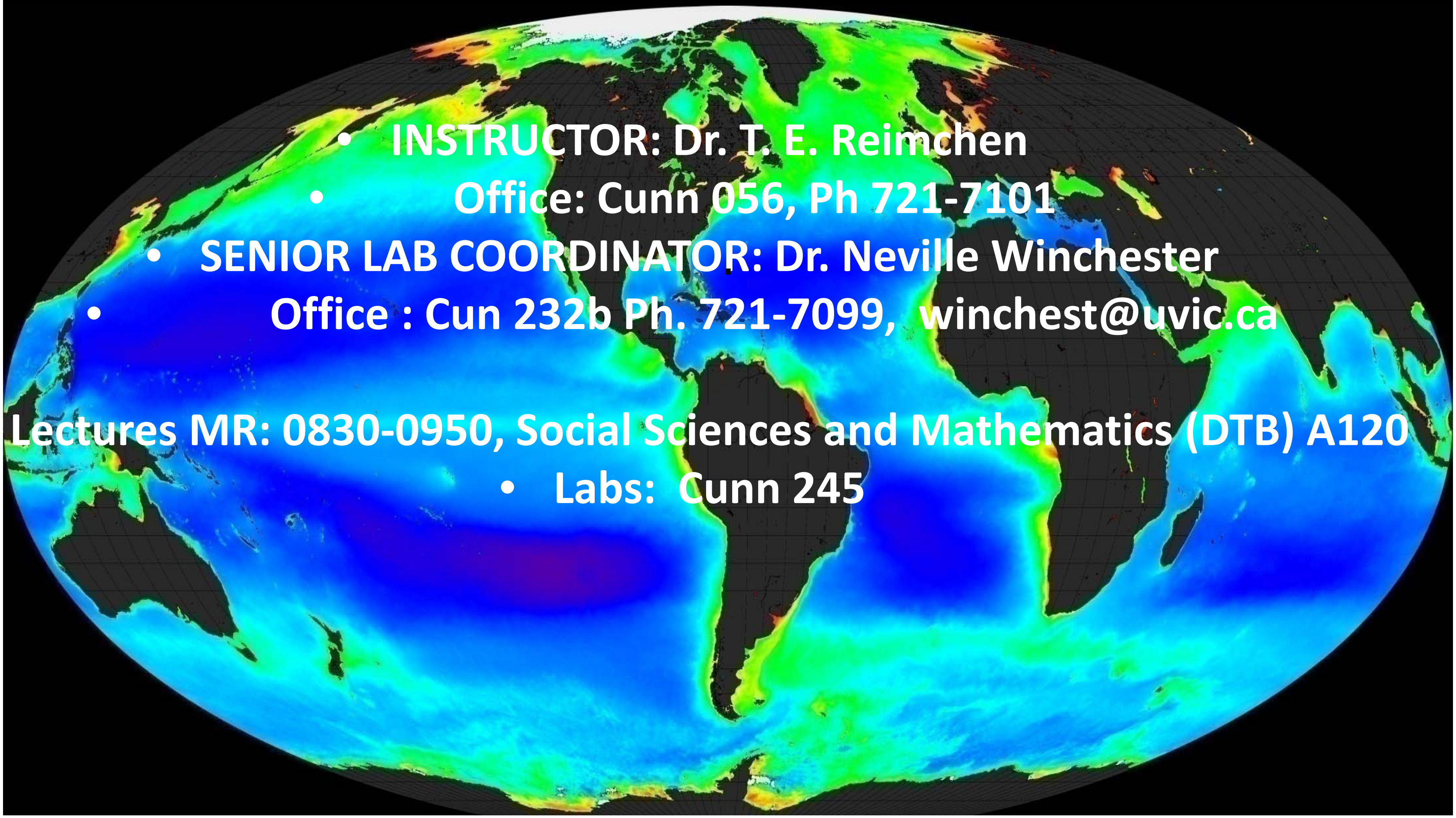
- BIOLOGY 215 PRINCIPLES OF ECOLOGY (10262)
- Sept 2015

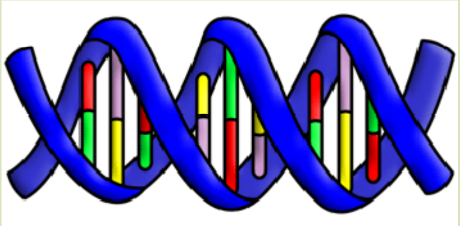


- INSTRUCTOR: Dr. T. E. Reimchen
- Office: Cunn 056, Ph 721-7101
- SENIOR LAB COORDINATOR: Dr. Neville Winchester
- Office : Cun 232b Ph. 721-7099, winchest@uvic.ca

Lectures MR: 0830-0950, Social Sciences and Mathematics (DTB) A120

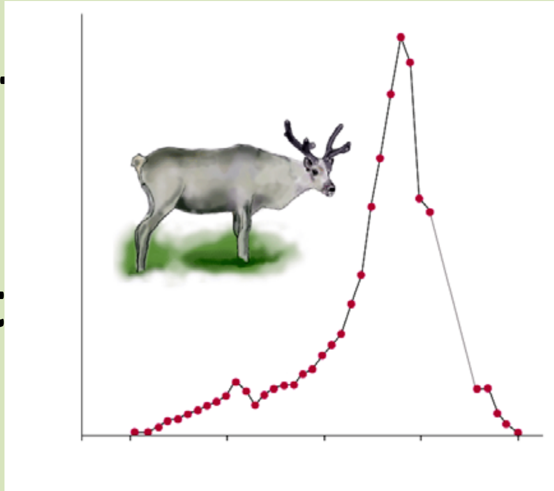
- Labs: Cunn 245

- <u>**Course Outline**</u>
- **Introduction**
- **Ecological genetics –genetic variability, natural selection, evolution**



- **Behavioral ecology- optimal foraging, territoriality, sex & mating systems, group living, life histories**

- **Population ecology- dispersion, movement estimating population size, life tables, mortality and survivorship curves, population growth and population regulat**



Interactions- competition, niche concepts, predation, defenses against carnivores and herbivores

Community ecology- succession, trophic levels, nutrient cycling, keystone species

Major communities- estuaries, intertidal, kelp forests, pelagic, deep sea, coral reefs, lakes, tundra, taiga, temperate rainforests, temperate deciduous forests, grasslands, deserts, tropical forests

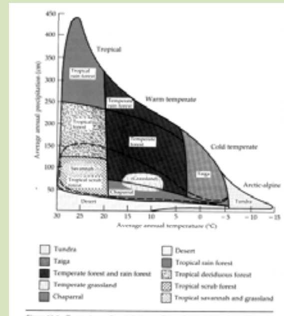
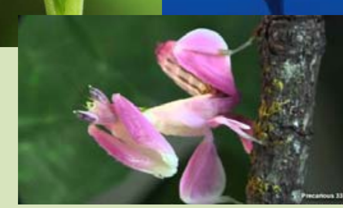
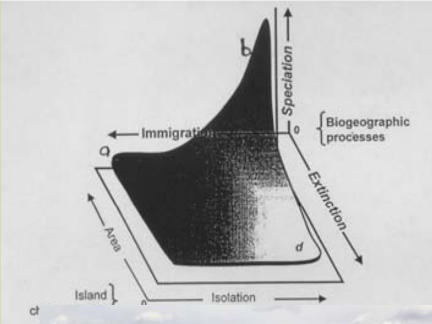


Figure 16.1 *Temperature and precipitation conditions that give rise to the world's major biomes.* Dashed line represents the area where soil type and fire frequency determine whether woodlands or grasslands occur in the area. (Modified from Whittaker 1975.)

Biodiversity- global patterns in species abundance, causes for global trends- evapotranspiration, spatial heterogeneity, geological history, complexity, stability

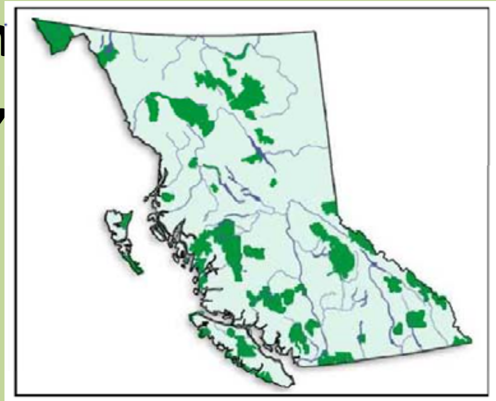


Island biogeography – island size, distance to source, species turnover, equilibrium & tripartite theory



Human impact on ecosystems – population growth, habitat loss, fragmentation, atmospheric contaminants, global temperature changes, freshwater and marine pollution, ocean acidification, overhunting and overfishing, introduced species, extinctions

Conservation ecology- history, ecological footprint, IUCN categories, benefits and limitations of protected areas, SLOSS, minimum viable population (MVP), minimum viable area(MVA), critical habitats, hotspots, endemic species, park design, restoration



Ecological options for the future

- **<u>LECTURE OUTLINE</u>**
- **Introduction**
- **Ecological genetics**
- **Behavioral ecology**
- **Population ecology**
- **Interactions**
- **Community ecology**
- **Major communities**
- **Biodiversity**
- **Island biogeography**
- **Human impact on ecosystems**
- **Conservation ecology**
- **Ecological options for the future**

<u>BIOLOGY 215--LAB SCHEDULE--FALL--2015</u>

DATE (WEEK OF)	LAB #	LAB CONTENT
September 14	1	Ecological sampling: quadrat sampling, transect sampling, herbivory and Garry Oak Ecosystems
September 21 barcharts,	2	Morphological variation: Ecological adaptations of *Nucella lamellose*, confidence limits, histograms, summary statistics
September 28	3	Mark and Recapture *Hemigrapsus* sp.
October 5	4	*Canis lupus*: Dietary Analysis **Quiz 1**
October 12		**Thanksgiving – No Labs**
October 19	5	***Lab midterm exam***
October 26	6	Island Biogeography – Beetles and forest patches
November 2	7	Exploring principles of community diversity: Soil litter/edge part 1 **Quiz 2**
November 9		**Reading Break – No Labs**
November 16	8	Soil litter/edge, diversity indices, part 2
November 23	9	***Lab final exam***
November 30		**NO LABS**

Labs begin the week of September 14. Purchase the first lab. This is a field lab so dress appropriately ….. Rain or shine, we are in the field!!

- **Lecture Text: -recommended but not required**
- **- any recent (>2000) secondhand text in Ecology**
- **Example: Molles and Cahill 2008- Ecology (Canadian Edition) –**
- **-limited quantity in bookstore**

- **Ecology Texts In Reserve Reading Room, McPherson Library**
- **Stiles; Freedman; Molles; Ricklefs ; Wilson**

- -pdfs of most lecture slides on CourseSpaces website within 6 hours following the lecture
- -lecture pdfs limited to personal use and not for redistribution
- -Access to 215 website restricted to registered students with a UVic email account.
- **Electronic Lab Manual/Modules-** required (approx. $12.50@bookstore)
- -bring memory stick to each lab

Interesting DVD's – David Attenborough, BBC (i.e. Planet Earth, Blue Planet, etc)

Additional readings to supplement lecture topics (E-journals: examples: New Scientist, Conservation Biology, Ecology, Trends in Ecology and Evolution, Scientific American

Grading*

Lecture- 60% of course mark

Midterm exam: 25% Oct22

Final: 35% (not cumulative) Date: TBA

***Marks will be posted using last 5 digits of ID#**

No deferral unless for medical condition

Supplementary final exam is not permitted for those who receive <50% for lecture section

Laboratory -40% of course mark

Laboratory Quiz 1	Week of October 5	Mark	5.0%
Laboratory Quiz 2	Week of November 2	Mark	5.0%
Laboratory midterm exam:	Week of October 19	Mark	15.0%
Laboratory final lab exam**	:Week of November 23	Mark	15.0%
Total laboratory mark:		**Total**	**40.0%**

****The laboratory quizzes will be based on your computer modules and are not cumulative.**

The laboratory final exam is cumulative.

Library topic searches???

global deforestation

Web · Images · News · Videos · Maps · More · Search tools

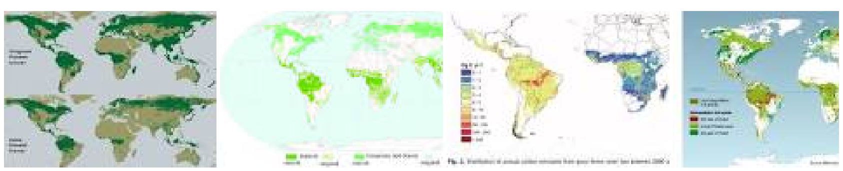
About 7,590,000 results (0.25 seconds)

Scholarly articles for global deforestation

Global deforestation: contribution to atmospheric ... - Woodwell - Cited by 274
Indication of global deforestation at the Cretaceous- ... - Vajda - Cited by 145
... ages and dark areas: global deforestation in the deep ... - Williams - Cited by

Deforestation - Environment - National Geographic
environment.nationalgeographic.com/.../global.../deforestation-overview...
Deforestation is clearing Earth's forests on a massive scale, often resulting in dam
to the quality of the land. Forests still cover about 30 percent of the world's ...

Images for global deforestation — Report in



More images for global deforestation

Deforestation | Threats | WWF
www.worldwildlife.org/threats/deforestation
But forests around the world are under threat from deforestation, jeopardizing the
benefits. Deforestation comes in many forms, including fires, clear-cutting for ...

Deforestation - Wikipedia, the free encyclopedia

Google — global deforestation

Scholar — About 10,500 results (0.31 sec)

National REDD+ reference levels deduced from the global deforestation curve
M Köthke, B Schröppel, P Elsasser - Forest Policy and Economics, 2014 - Elsevier
Abstract This article proposes an approach to one of the most prominent problems for the establishment of a REDD+ regime—namely reference level determination. We have developed a standardised approach for the consideration of national circumstances in ...
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Cattle ranching intensification in Brazil can reduce global greenhouse gas emissions sparing land from deforestation
AS Cohn, A Mosnier, P Havlík, H Valin... - Proceedings of the ..., 2014 - National Acad Sciences
Abstract This study examines whether policies to encourage cattle ranching intensification in Brazil can abate global greenhouse gas (GHG) emissions by sparing land from deforestation. We use an economic model of global land use to investigate, from 2010 to ...
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The Radiative Effects of Deforestation
CE Scott - The Biogeochemical Impacts of Forests and the ..., 2014 - Springer
... [1]. Simulation. CO 2 concentration in 2100 (ppm). Control. 732. Global deforestation. 1,113. Boreal deforestation. 737. Temperate deforestation. 842. ... Control. 480. –. 140. –. 35.6. –. Global deforestation. 60. −87 %. 8. −94%. 3.1. −91 %. Boreal deforestation. 475. −1 %. 133. −5% ...
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Modeling impact of development trajectories and a global agreement on reducing emissions from deforestation on Congo basin forests by 2030
A Mosnier, P Havlík, M Obersteiner, K Aoki... - Environmental and ..., 2014 - Springer
Abstract The Congo Basin encompasses the second largest rainforest area after the Amazon but the Congo Basin rainforest has been more preserved during the last decades with a much lower deforestation rate. At the same time, the region remains one of the least ...
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Deforestation: Carving up the Amazon
B Fraser - Nature, 2014 - citeulike.org
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[BOOK] **Tropical deforestation: a socio-economic approach**

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11. **Reducing emissions from land use in Indonesia: motivation, policy instruments and expected funding streams**
By: van Noordwijk, Meine; Agus, Fahmuddin; Dewi, Sonya; et al.
MITIGATION AND ADAPTATION STRATEGIES FOR GLOBAL CHANGE Volume: 19 Issue: 6 Pages: 677-692 Published: AUG 2014
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12. **Will funding to Reduce Emissions from Deforestation and (forest) Degradation (REDD+) stop conversion of peat swamps to oil palm in orangutan habitat in Tripa in Aceh, Indonesia?**
By: Tata, Hesti Lestari; van Noordwijk, Meine; Ruysschaert, Denis; et al.
MITIGATION AND ADAPTATION STRATEGIES FOR GLOBAL CHANGE Volume: 19 Issue: 6 Pages: 693-713 Published: AUG 2014
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13. **Implementing REDD plus (Reducing Emissions from Deforestation and Degradation): evidence on governance, evaluation and impacts from the REDD-ALERT project**
By: Matthews, Robin B.; van Noordwijk, Meine; Lambin, Eric; et al.
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By: Reddy, C. Sudhakar; Khuroo, Anzar A.; Krishna, P. Hari; et al.
ECOLOGICAL ENGINEERING Volume: 69 Pages: 287-303 Published: AUG 2014
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By: Mitchard, Edward T. A.; Feldpausch, Ted R.; Brienen, Roel J. W.; et al.
GLOBAL ECOLOGY AND BIOGEOGRAPHY Volume: 23 Issue: 8 Pages: 935-946 Published: AUG 2014
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16. **The legitimacy of incentive-based conservation and a critical account of social safeguards**
By: Krause, Torsten; Nielsen, Tobias Dan
ENVIRONMENTAL SCIENCE & POLICY Volume: 41 Pages: 44-51 Published: AUG 2014

Markedly divergent estimates of Amazon forest carbon density from ground plots and satellites

By: Mitchard, ETA (Mitchard, Edward T. A.)[1]; Feldpausch, TR (Feldpausch, Ted R.)[2,3]; Brienen, RJW (Brienen, Roel J. W.)[2]; Lopez-Gonzalez, G (Lopez-Gonzalez, Gabriela)[2]; Monteagudo, A (Monteagudo, Abel)[4]; Baker, TR (Baker, Timothy R.)[2]; Lewis, SL (Lewis, Simon L.)[2,5]; Lloyd, J (Lloyd, Jon)[6]; Quesada, CA (Quesada, Carlos A.)[7]; Gloor, M (Gloor, Manuel)[2] ...More

GLOBAL ECOLOGY AND BIOGEOGRAPHY
Volume: 23 **Issue:** 8 **Pages:** 935-946
DOI: 10.1111/geb.12168
Published: AUG 2014
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Abstract

Aim The accurate mapping of forest carbon stocks is essential for understanding the global carbon cycle, for assessing emissions from deforestation, and for rational land-use planning. Remote sensing (RS) is currently the key tool for this purpose, but RS does not estimate vegetation biomass directly, and thus may miss significant spatial variations in forest structure. We test the stated accuracy of pantropical carbon maps using a large independent field dataset.

Location Tropical forests of the Amazon basin. The permanent archive of the field plot data can be accessed at: http://dx.doi.org.ezproxy.library.uvic.ca/10.5521/FORESTPLOTS.NET/2014_1

Methods Two recent pantropical RS maps of vegetation carbon are compared to a unique ground-plot dataset, involving tree measurements in 413 large inventory plots located in nine countries. The RS maps were compared directly to field plots, and kriging of the field data was used to allow area-based comparisons.

Results The two RS carbon maps fail to capture the main gradient in Amazon forest carbon detected using 413 ground plots, from the densely wooded tall forests of the north-east, to the light-wooded, shorter forests of the south-west. The differences between plots and RS maps far exceed the uncertainties given in these studies, with whole regions over-or under-estimated by > 25%, whereas regional uncertainties for the maps were reported to be < 5%.

Main conclusions Pantropical biomass maps are widely used by governments and by projects aiming to reduce deforestation using carbon offsets, but may have significant regional biases. Carbon-mapping techniques must be revised to account for the known ecological variation in tree wood density and allometry to create maps suitable for carbon accounting. The use of single relationships between tree canopy height and above-ground biomass inevitably yields large, spatially correlated errors. This presents a significant challenge to both the forest conservation and remote sensing communities, because neither wood density nor species assemblages can be reliably mapped from space.

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