$$\int \frac{dN}{dt} = Nr$$

# Population ecology of animals

"Populační ekologie živočichů"

Stano Pekár

Content

- Population ecology (Resources, Conditions, Models)

- Population growth (Population censuses)

- Population structure (Stage/Age life-tables, k-factor analysis)

- Temperature (Degree-days)

- Intraspecific competition (Harvesting, Allee effect)

- Spatial ecology (Distribution, Dispersal, Metapopulations)

- Interspecific competition (Mutualism)

- Predation (Functional and numerical responses)

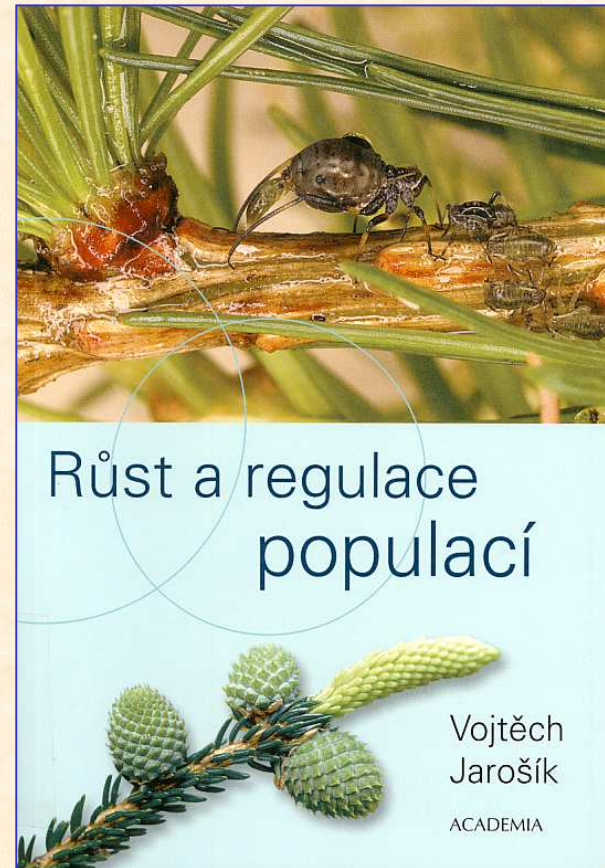- Predation models (Host-pathogen/parasite, Predator-prey, Host-parasitoid)

Literature
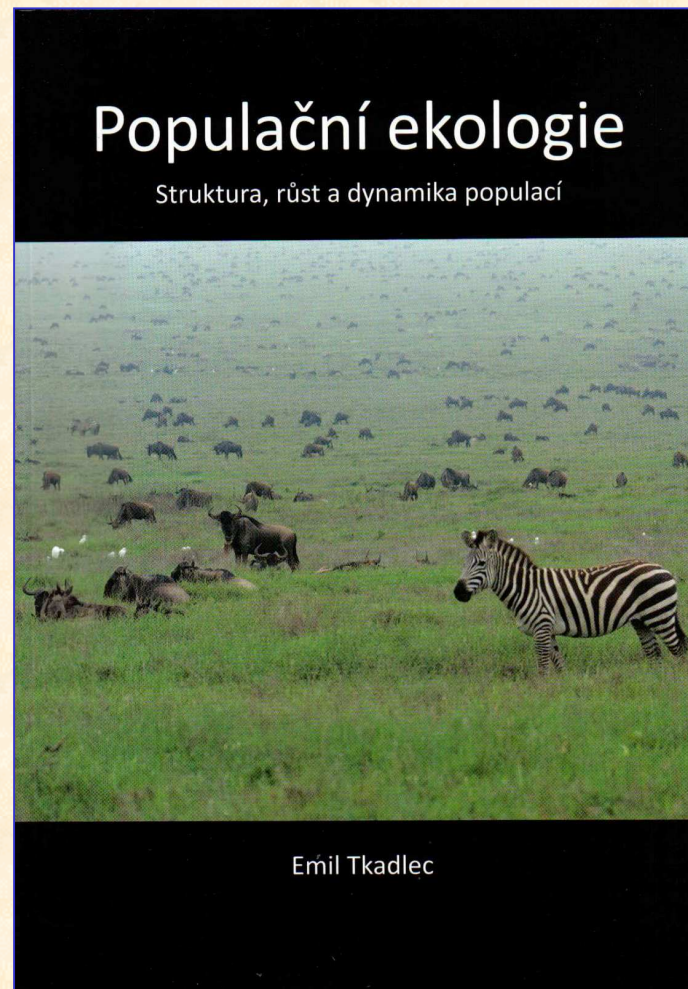
Tkadlec E. 2009. **Populační ekologie. Struktura, růst a dynamika populací**. Univerzita Palackého.

Literature
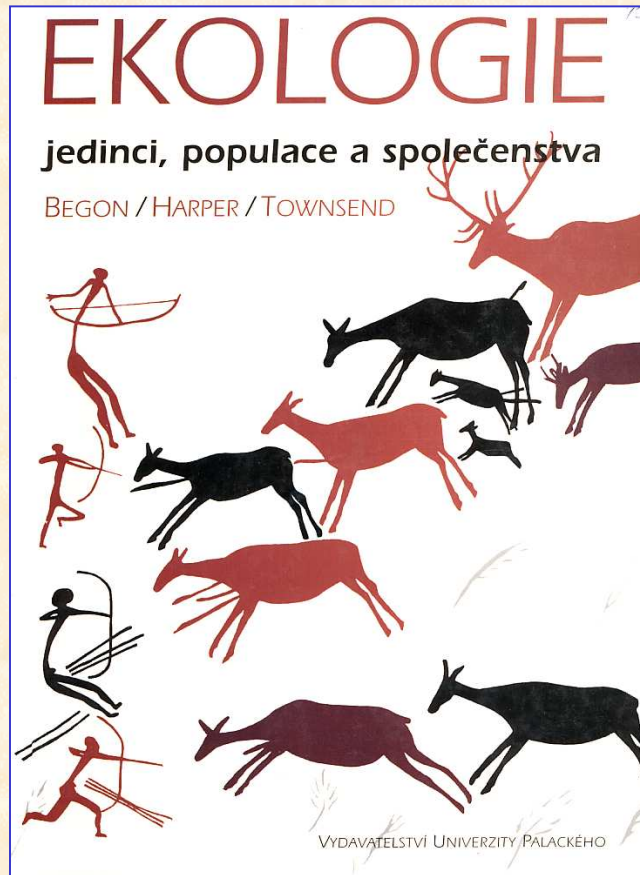
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Literature

Akcakaya H.R., Burgman M.A. & Ginzburg L.R. 1999. **Applied Population Ecology. Principles and Computer Exercises using RAMAS EcoLab**. Sinauer.

Alstad D. 2001. **Basic POPULUS Models of Ecology**. Prentice Hall.

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Hastings A. 1997. **Population Biology. Concepts and models**. Springer.

Neal D. 2006. **Introduction to Population Biology**. Cambridge University Press.

Ranta E., Lundberg P. & Kaitala V. 2006. **Ecology of Populations**. Cambridge.

Shultz S.M., Dunham A.E., Root K.V., Soucy S.L., Carroll S.D. & Ginzburg L.R. 1999. **Conservation Biology with RAMAS EcoLab**. Sinauer.

Stevens M.H.H. 2009. **A Primer of Ecology with R**. Springer.

Vandermeer J.H. & Goldberg D.E. 2003. **Population Ecology: First principles**. Princeton.

Talks

1	Adaptation, fitness and phenotypic plasticity	6.10.
2	Abundance and cycles	20.10.
3	r- and K- selection	20.10.
4	Geographic variability, temperature and climatic changes	27.10.
5	Management of endangered and invasive species	27.10.
6	Movement in space and migration	3.11.
7	Intraspecific competition	3.11.
8	Cooperation and Allee efect	10.11.
9	Interspecific competition and the competitive exclusion principle	10.11.
10	Niche and coexistence	24.11.
11	Amensalism, comensalism and mutualism	24.11.
12	Character displacement and competitive release	1.12.
13	Defence against predators	1.12.
14	Herbivores/parasites and defence of plants/hosts	8.12.
15	Regulation of pests and harvesting	8.12.

Projects

1. Life-table analysis

2. Intraspecific competition

3. Exponential population growth

4. Interspecific competition

5. Functional response

6. Trophic niche

7. Temperature

8. Spatial distribution

9. Mark capture-recapture

Homework

1. Install R (http://www.r-project.org/)
2. Download packages: deSolve, rootSolve
3. Install Populus 5.4 (http://www.cbs.umn.edu/populus)
4. Read chapter 2 of MABD 1 (Library)