

# Population ecology of animals

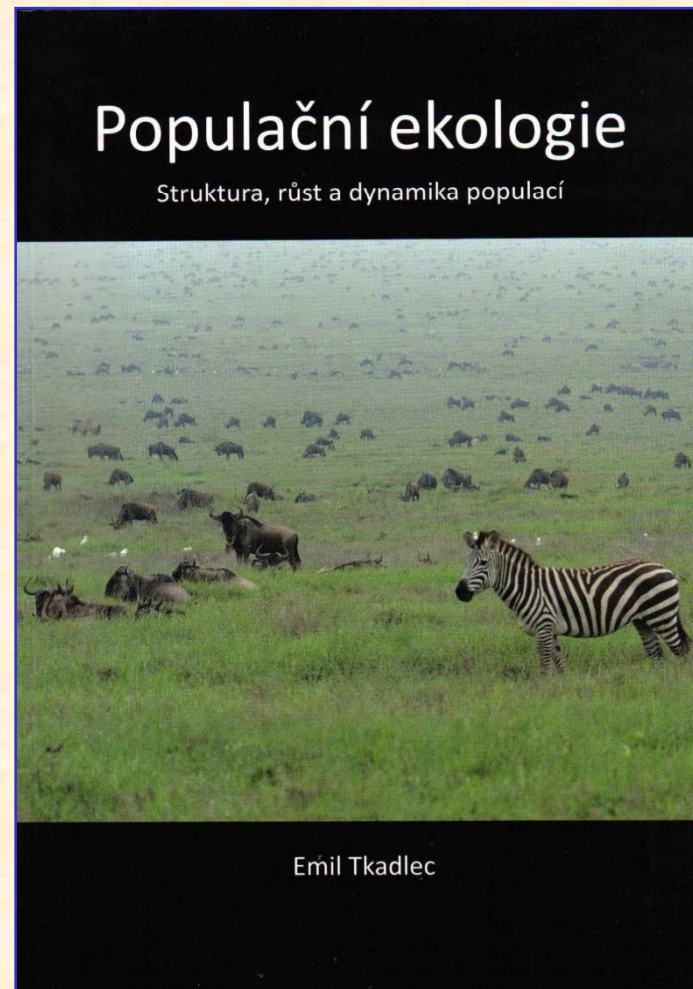
*“Populační ekologie živočichů”*

Stano Pekár

# Content

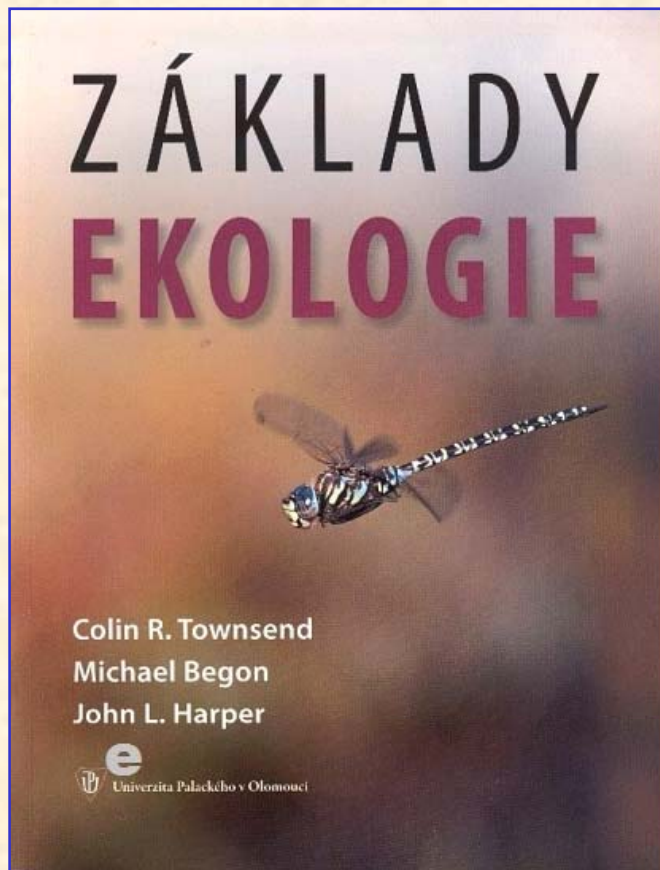
- Population ecology (Resources, Conditions, Models)
- Population growth (Population censuses)
- Population structure (Stage/Age life-tables, k-factor analysis)
- Temperature models (Degree-days)
- Intraspecific competition (Harvesting, Allee effect)
- Spatial ecology (Distribution, Dispersal, Metapopulations)
- Interspecific competition (Mutualism)
- Predation (Functional and numerical responses)
- Predation models (Host-pathogen/parasite, Prey-predator, Host-parasitoid, Plant-herbivore)

# Literature



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

# Literature



Townsend R.T., Begon M., Harper J.L. 2010. **Základy ekologie.** Univerzita Palackého.



Jarošík V. 2005. **Růst a regulace populací.** Academia.

# 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.

Begon M., Mortimer M. & Thompson D.J. 1996. **Population Ecology: A unified study of animals and plants.** Blackwell.

Bernstein R. 2003. **Population Ecology. An Introduction o Computer Simulations.** Wiley.

Gotelli N.J. 2001. **A Primer of Ecology.** Sinauer.

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.

# Presentations

No.	Topics	Date
1.	Adaptation, fitness and phenotypic plasticity	26.9.
2.	Abundance and cycles	3.10.
3.	Evolution of sex, sex determination	3.10.
4.	Sex ratio	
5.	r- and K- selection	10.10.
6.	Geographic variability (temperature, physiological time)	10.10.
7.	Intraspecific competition	17.10.
8.	Management of endangered species	17.10.
9.	Regulation of pests, Sustainable harvesting	31.10.
10.	Cooperation, Allee effect	31.10.
11.	Dispersal and movement	7.11.
12.	Dormancy, navigation, and migration	7.11.
13.	Interspecific competition, competitive exclusion principle, apparent competition	14.11.
14.	Niche and coexistence (storage effect, heteromyopy, resource partitioning)	14.11.
15.	Amensalism, comensalism, mutualism	28.11.
16.	Defence against predators (crypsis, mimicry)	28.11.
17.	True predators, parasitoids, and host manipulation	
18.	Herbivores, Parasites and pathogens	

# Projects

1. Temperature dependent model – laboratory, *Drosophila*
2. Numerical response – laboratory, cockroaches
3. Population dynamic – laboratory, *Sinella* springtails
4. Interspecific competition – laboratory, *Tribolium* & *Oryzaephilus* beetles
5. Functional response – laboratory and field, *Pardosa* spiders

# Homework

Study chapters 1-2 and  
description of a selected project



Pekár S. & Kintrová K. 2013. **Populační ekologie živočichů v příkladech.** MU Brno.