

**Examples of capacity
building program:
Biodiversity Research
Center**

Pavel Kindlmann, coordinator

Department of Theoretical Ecology

Institute of Systems Biology and Ecology

České Budějovice, Czech Republic

Biodiversity Research Center

- **one of the Centers of Excellence**
- **financed by the Czech Ministry of Education**
- **unifying top groups working on biodiversity in the CR**
- **duration: 2006-2010 (2011?)**
- **total budget ~ 70 millions CZK**

Biodiversity Research Center

Academy of Sciences:

- 1. Institute of Systems Biology and Ecology (coordinator)**
- 2. Institute of Entomology**
- 3. Institute of Botany**
- 4. Institute of Vertebrate Biology**
- 5. Institute of Animal Physiology and Genetics**

Universities:

- 1. Charles University, Prague**
- 2. Masaryk University, Brno**
- 3. University of South Bohemia, CB**

Biodiversity Research Center (ISBE group – Dept. Theor. Ecol.)

- **Pavel Kindlmann**
- **Jana Jersáková**
- **Adriana Rico (Bolivia)**

PhD students:

- **Iva Schödelbauerová**
- **Kateřina Kintrová**
- **Olga Ameixa (Portugal)**
- **Bishnu Bhattarai (Nepal)**
- **Prakash Kumar Paudel (Nepal)**
- **Tamara Malinová**

Rollandia microptera Conservation Program



- non-flying species
- freshwater lakes
- endemic to altiplano of Peru & Bolivia
- individuals nest along the coastal areas
- nests in *Schoenoplectus californianus totora*
- many birds, (esp. juveniles), killed in fishermen nets
- numbers of birds decline



Conservation issues:

- Decline really caused by nets?
- Would quotas, complete ban help?



***Rollandia microptera* Conservation Program**



Data available:

- **population stage structure (chicks, juveniles, adults)**
- **4 censuses**
- **24 sites**
- **fishing intensity (# nets, # fishing days)**
- **mesh size used**

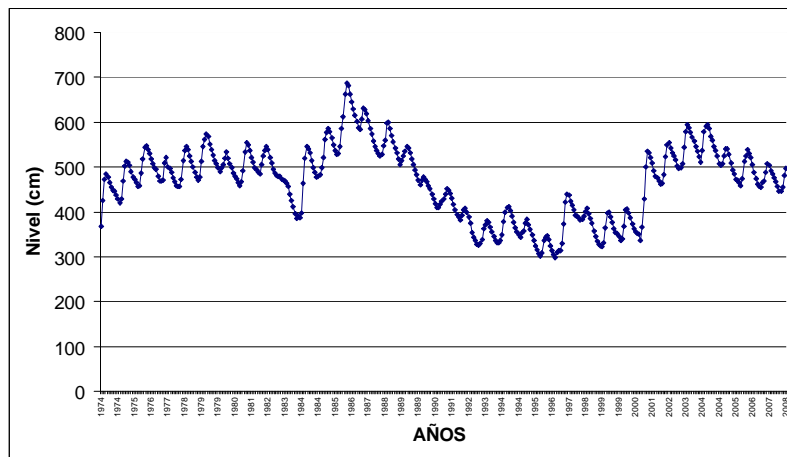
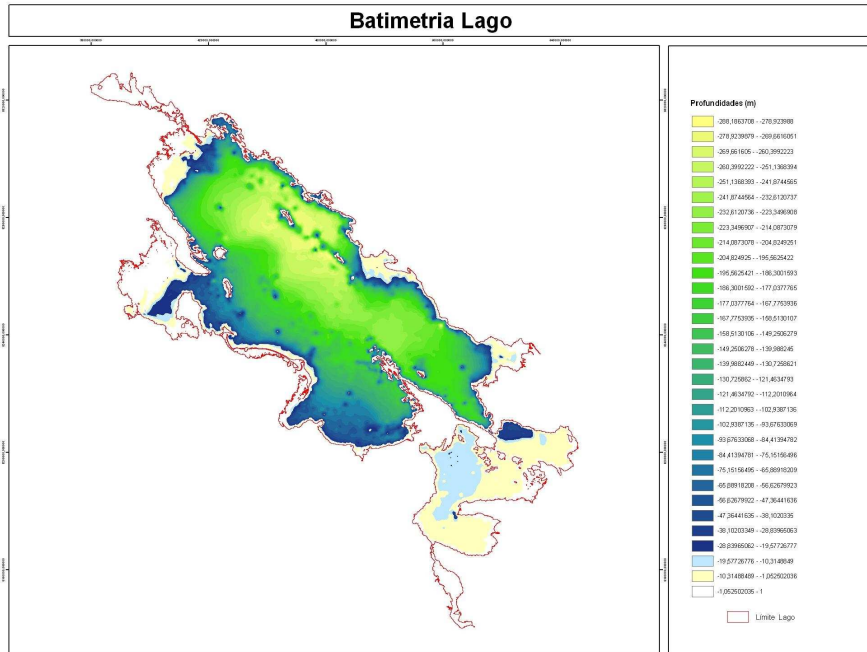


Analyses to be done:

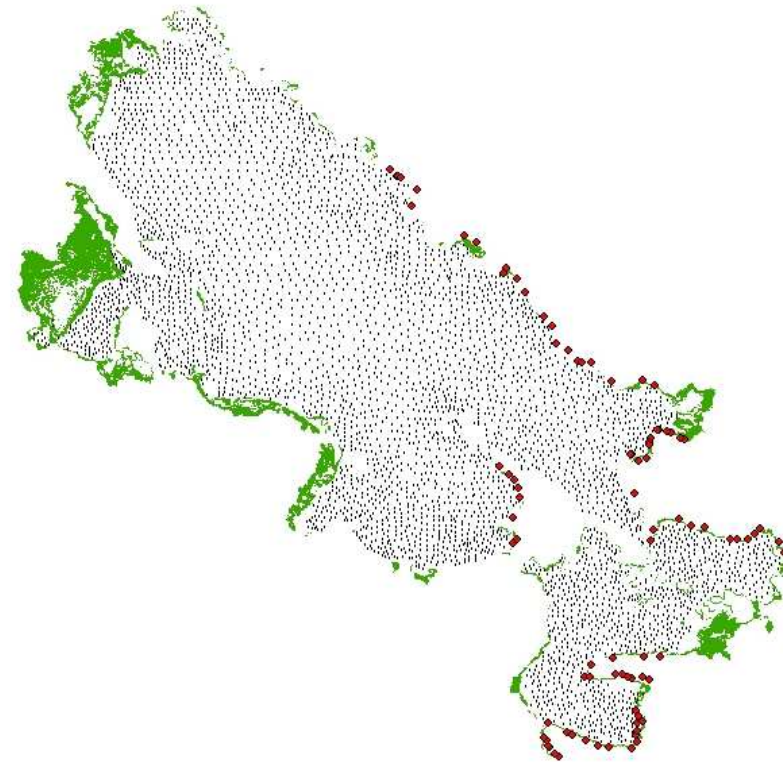
- **Leslie matrix model: growth rate, elasticity analyses**
- **growth rate x fishing intensity, mesh size**

Rollandia microptera Conservation Program

Lake depth



Area & density of totorales



=> Prediction of core totorales areas

***Anairetes alpinus* Conservation Program**



- confined to the remnants of the *Polylepis* forests
- highest altitudes of the Cordilleras
- occurs locally in the high Andes of Peru and Bolivia
- habitat severely fragmented
- undergoing a continuing decline
(extent, area, and quality)



Threats:

- heavy grazing
- uncontrolled use of fire
- cutting for timber, firewood



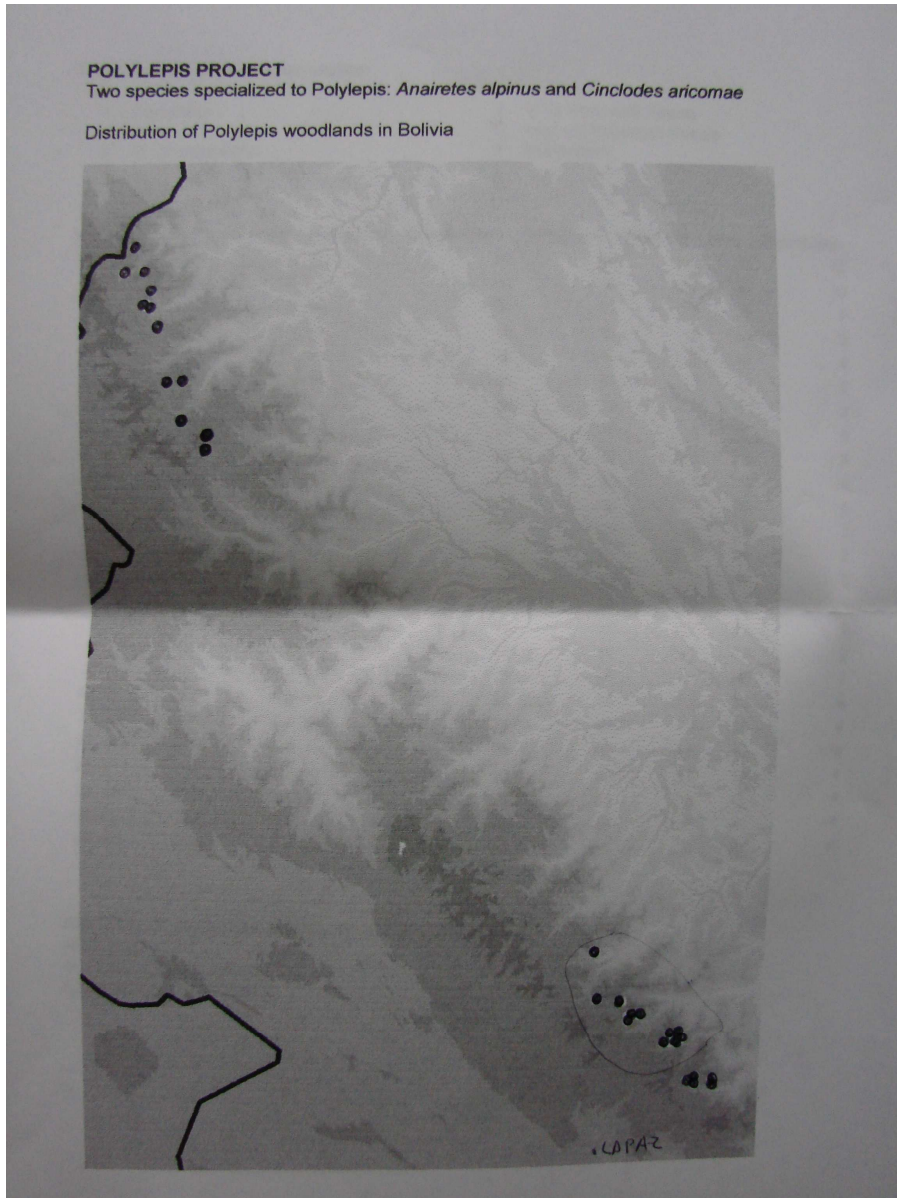
Anairetes alpinus Conservation Program

Data available:

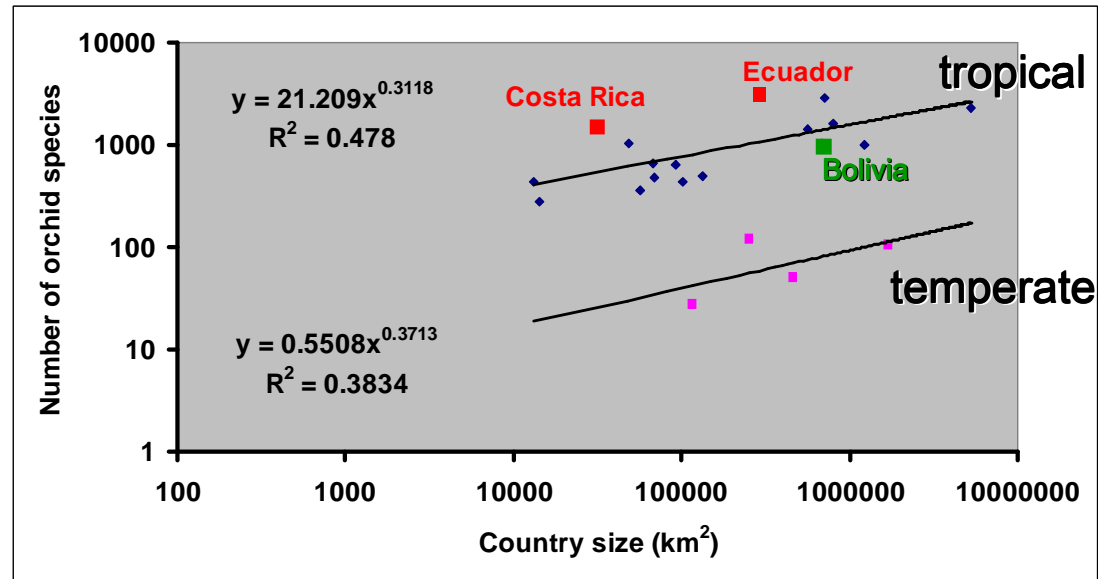
- **GPS coordinates of the sites**
- **numbers of individuals**
- **site areas**
- **% *Polylepis* in the forests**
- **altitude**
- **metapopulation structure**

Analyses to be done:

- **numbers dependent on - ?**
 - **patch connectivity**
 - **forest size**
 - ***Polylepis* numbers**
 - **water closeness**



Orchid Biodiversity Conservation Program



- reproductive success in *Masdevallia*
- species-area relationships
- is the distribution uniform within the forest?



Orchid Biodiversity Conservation Program - global

Field data:

- 100 transects
- 100 randomly selected trees per transect
- presence-absence

Outputs:

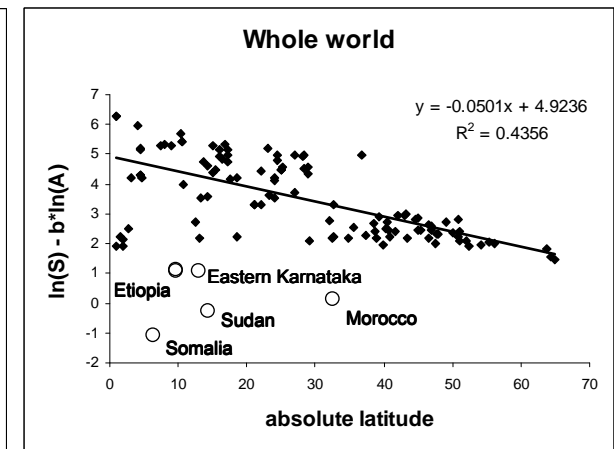
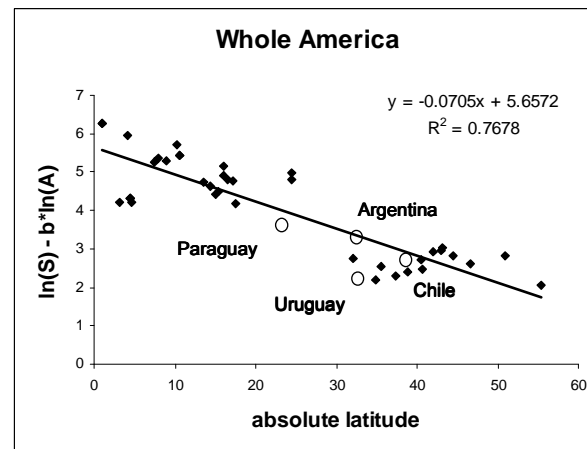
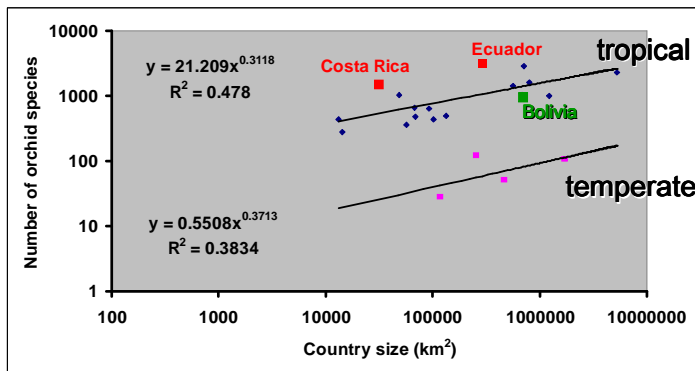
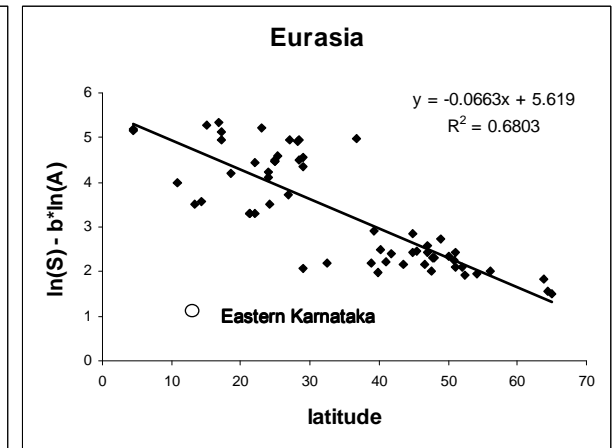
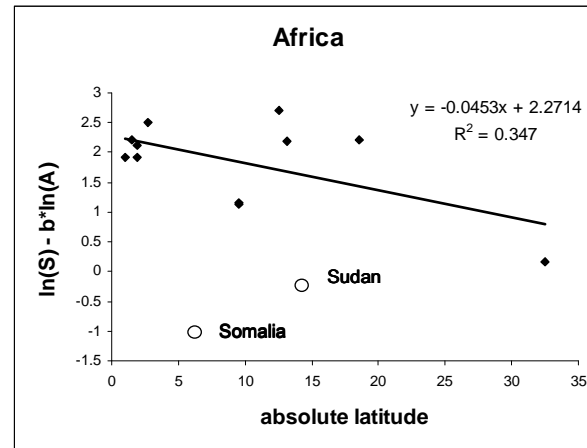
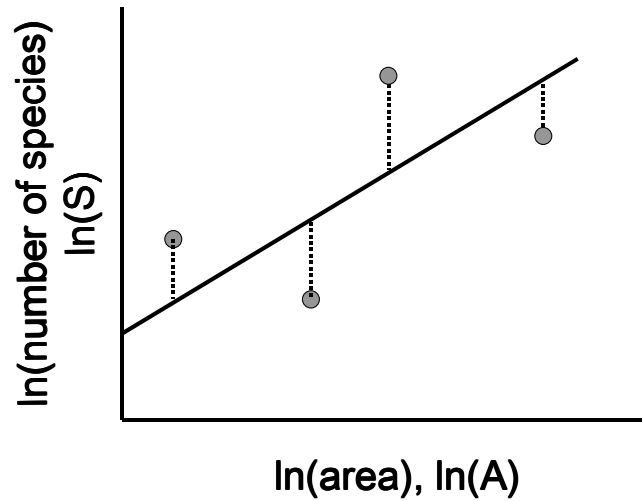
- Species-abundance
- Species-area
- Comparison of species diversities

Regions:

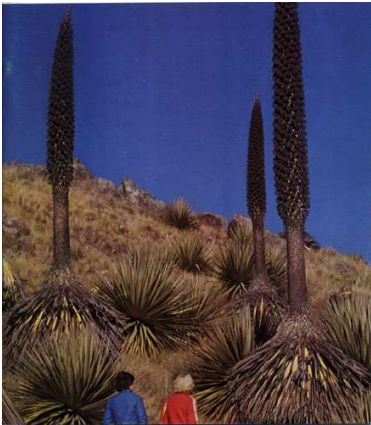
- Chitwan, Nepal
- Annapurna region, Nepal
- Yungas, Bolivia
- others ...

Orchid Biodiversity Conservation Program

Residuals:



***Puya raimondii* Conservation Program**



- **largest bromeliad**
- **3 m tall in vegetative growth**
- **flower spike 9-10 m tall**
- **endemic species of the zone altoandina**
- **Peru and Bolivia**
- **altitude of 3200 - 4800 m**
- **blooms once after 80-150 years of growing then it dies**

- **only 28 years to flower from seed (California-Berkeley Bot. Garden)**

***Puya raimondii* Conservation Program**



Data available:

Biometric measurements

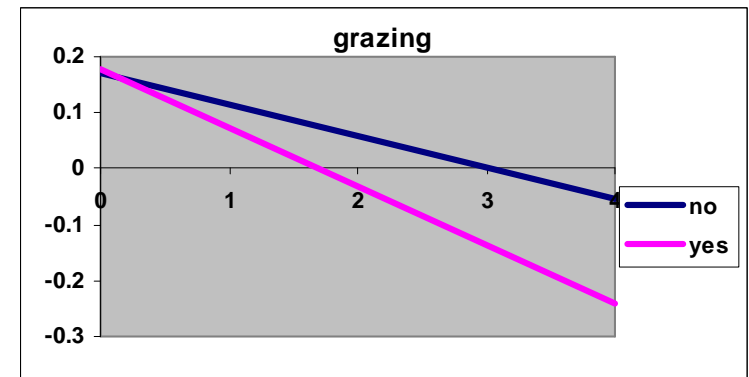
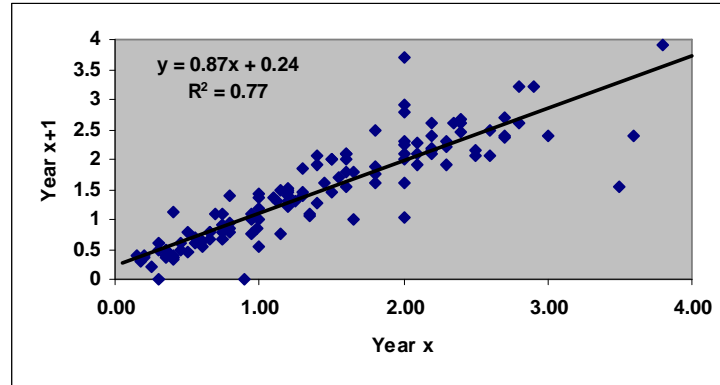
(2 censuses):

- **width**
- **height**
- **grazing**
- **fire**
- **neighboring plants**

Puya raimondii Conservation Program



Analyses to be done:

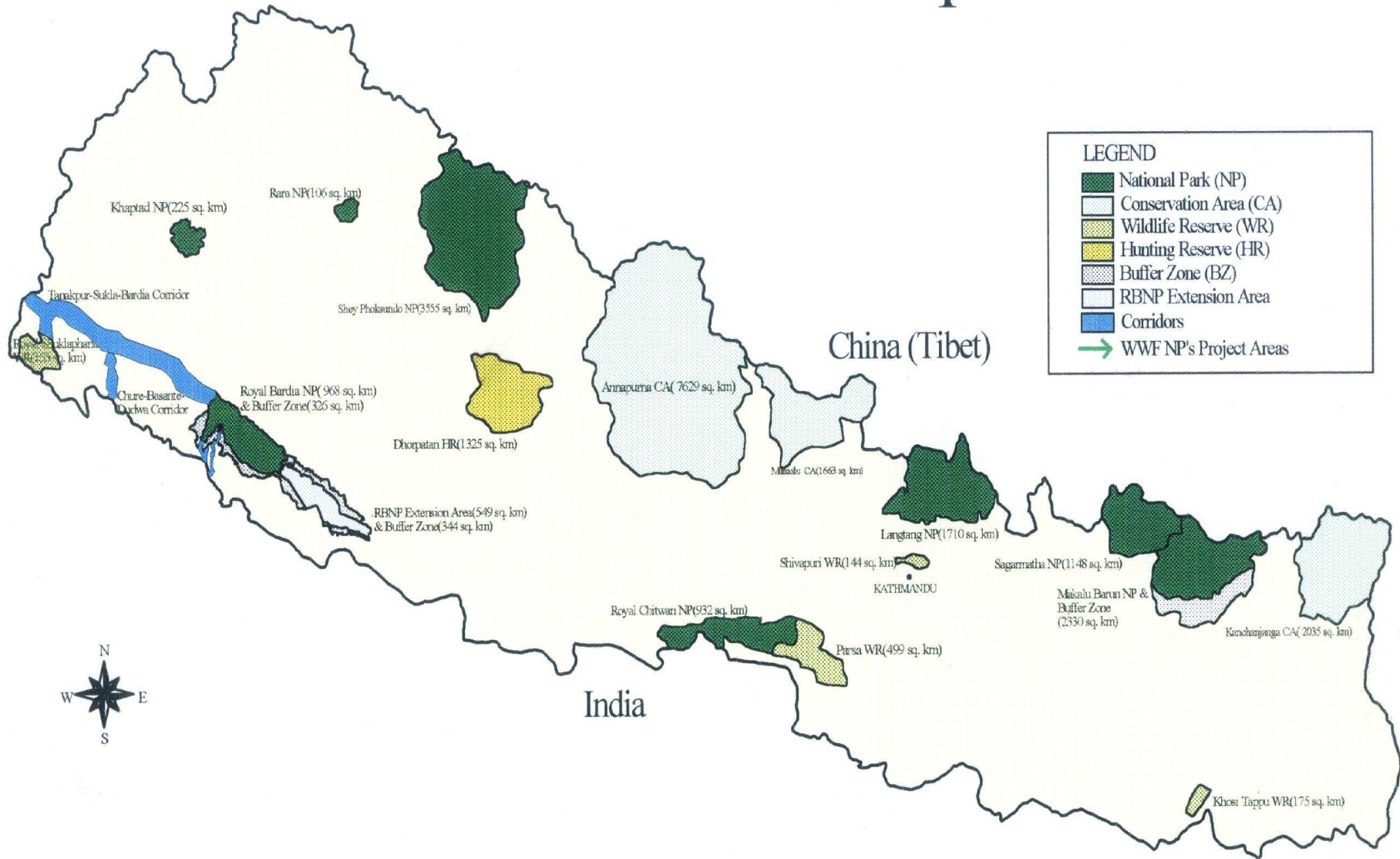


Effects of:

- grazing
- fire
- neighboring plants

Minimum flowering size = ?

Protected Areas of Nepal



Tiger Conservation Program (Chitwan NP)



tiger x ungulates

predator-prey system: driven by what?

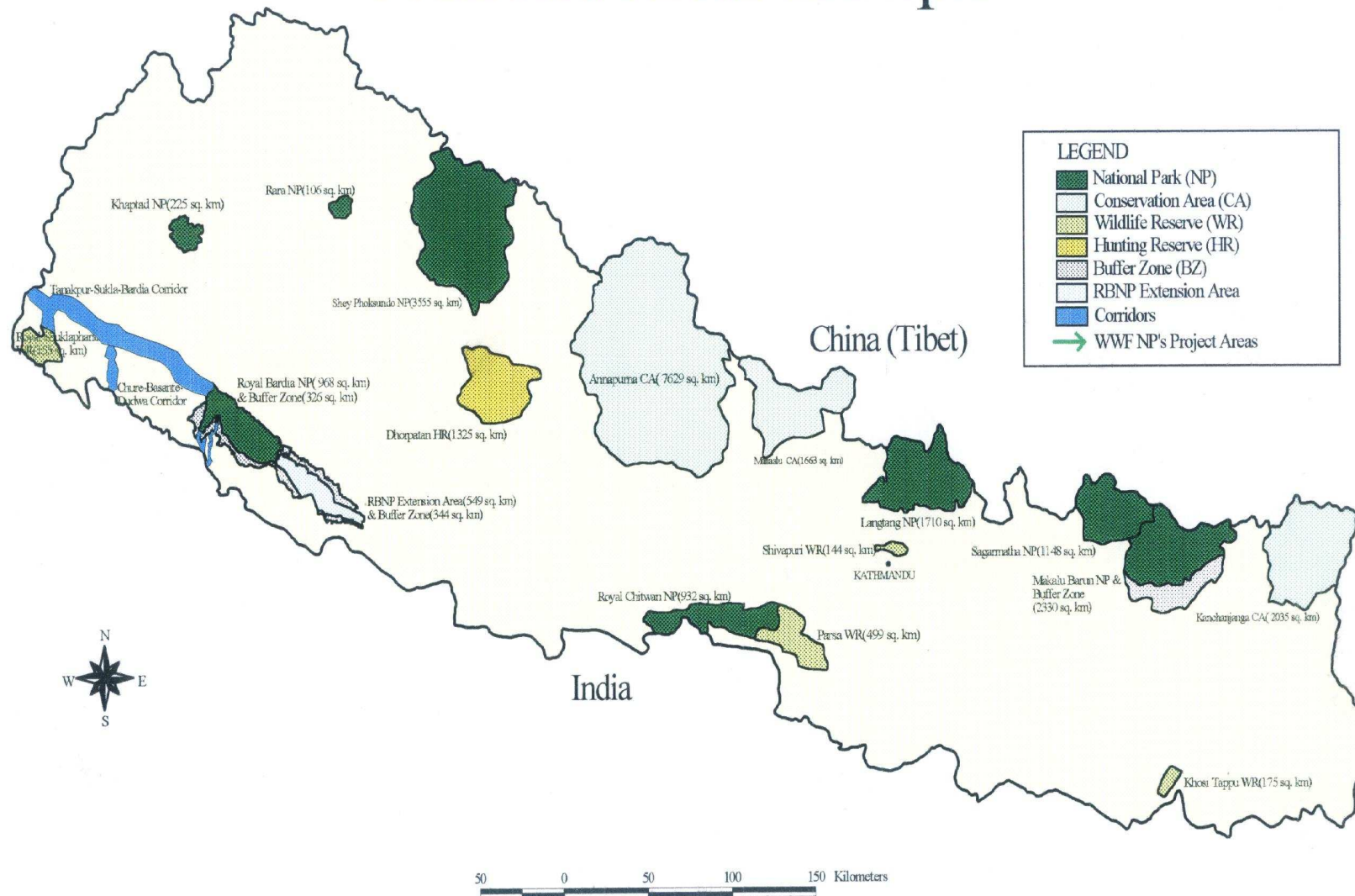
- trophic relations?
- territoriality?

Hypotheses:

1. *Change in ungulate community has a direct impact on tiger population dynamics.*
2. *The predator's diet reflects the relative abundances of individual prey species.*
3. *Tiger numbers have a direct impact on their prey community.*
4. *Tiger resorts to livestock (or even human) killing, if its usual prey is too scarce.*

Tiger Conservation Program (Chitwan NP)

Protected Areas of Nepal



Experience from the cooperation with local researchers:

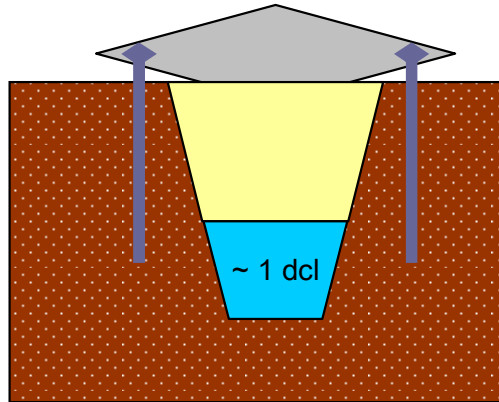
- **Taxonomic knowledge usually good**
- **Problems with interpretation, data analysis, sensible data collection**

AGRIPOPES

AGRIcultural POLicy-Induced landscaPe changes:
effects on biodiversity and Ecosystem Services

- Home
- Summary
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- The partners
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Groups:

- Czechia, Poland, Lithuania
- Germany 1, France, Sweden

Determined by the Czech group:

- The Netherlands, Ireland, Spain, Germany 2



Taxonomists lacking in the West!

Relative importance of predators and parasitoids for cereal aphid control

Martin H. Schmidt^{1*}, Andreas Lauer¹, Tobias Purtauf², Carsten Thies¹, Matthias Schaefer³ and Teja Tscharnkte¹

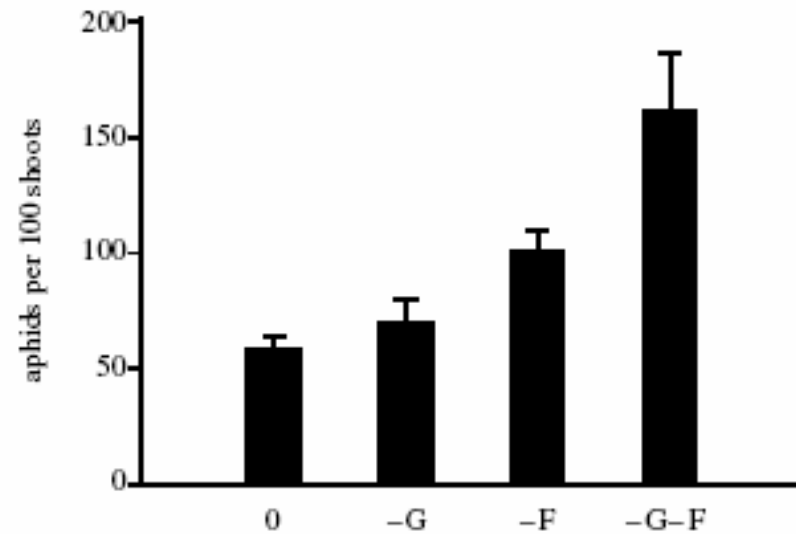


Figure 1. Aphid densities at the end of the experiment (milk ripening). 0, open control; -G, ground-dwelling predator removal; -F, flying predator and parasitoid removal; -G-F, removal of all predators and parasitoids.

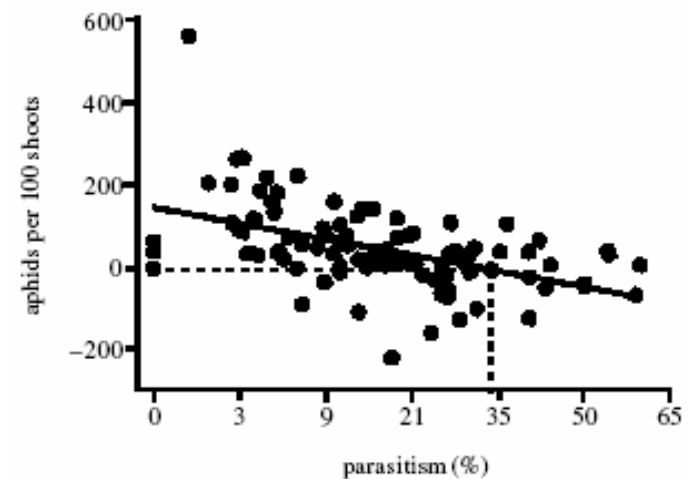
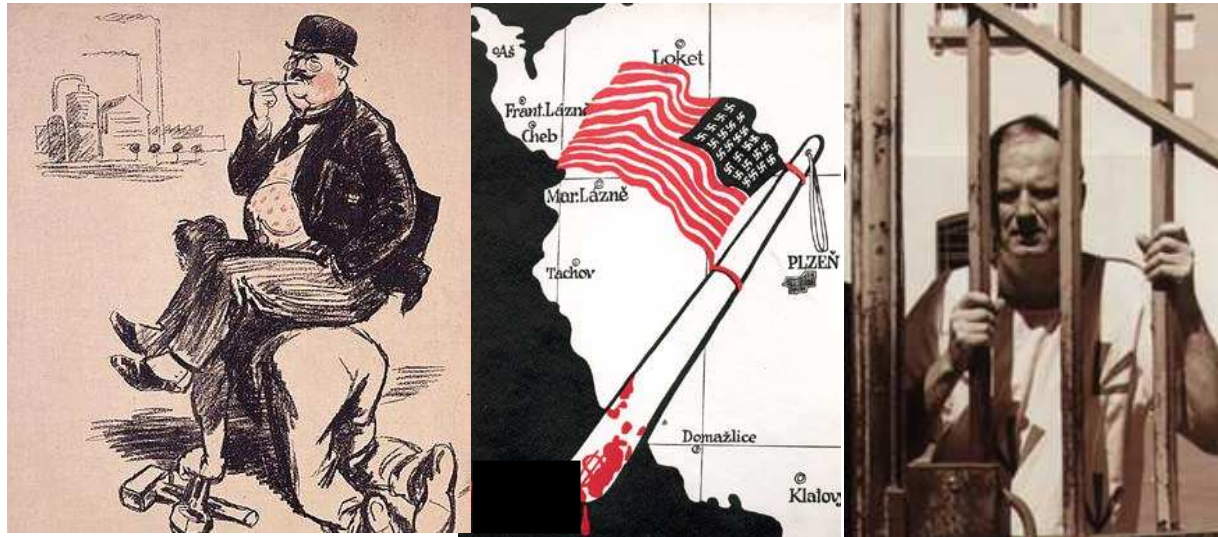
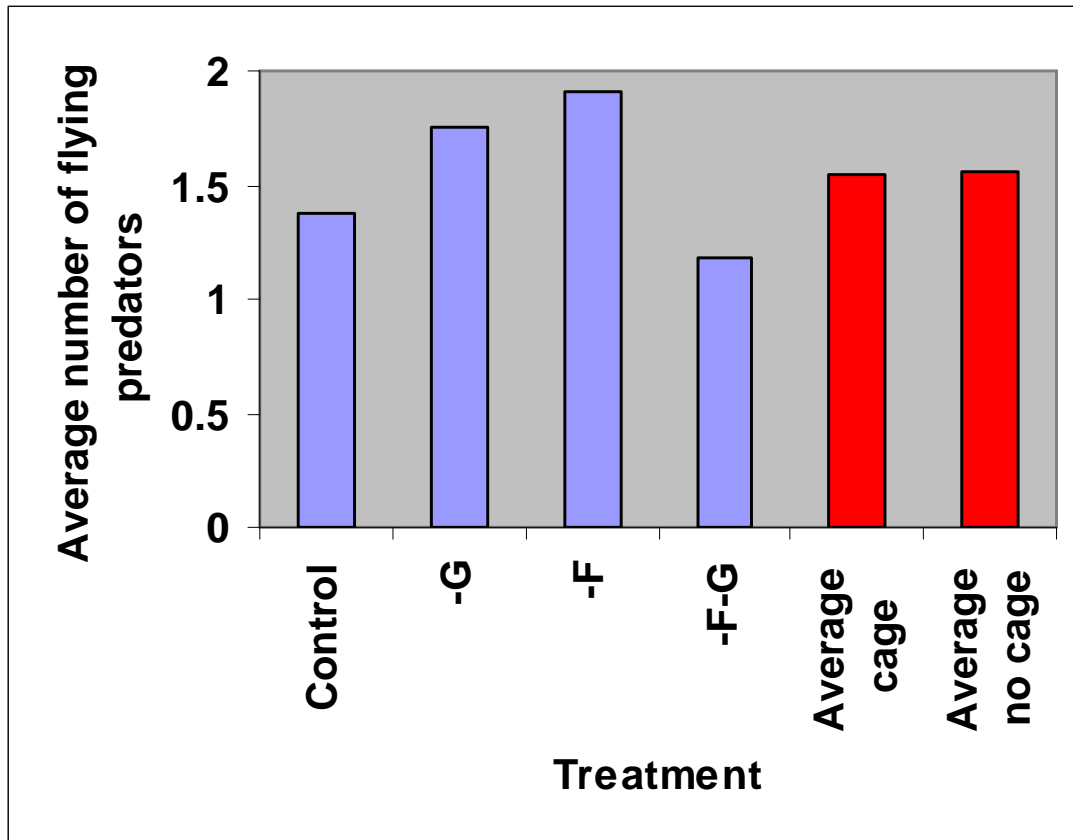


Figure 2. Correlation between aphid population growth (the difference in aphid density between wheat flowering and milk ripening) and (arcsine-transformed) parasitism. $r = -0.49$, $n = 96$ plots, $p < 0.001$. $y = 149 - 3.8x$.

Effect of communist Czechoslovakia



Cages do not exclude the predators at all!



- Sample size large: (32 caged +32 uncaged plots) * 6 countries
- Explanation – mesh size (8 mm) too large!
- Why not tested?
 - Pest control by natural enemies - seductive idea
 - Too much time spent in front of the screen at the expense of field work

Return from computers back to nature!

- **Need to educate young taxonomists**
- **Need to bring them closer to nature**

- **Western Europe – processes**
- **Central & Eastern Europe – taxonomy**

- **Some training center for young taxonomists?**
- **Regular conferences, meetings, field courses, PhD students supervision?**

**Castle in Nove Hradky – a possible venue for something like
International Centre for Theoretical and Conservation Biology?**



Lecture rooms...



Offices...

Accommodation...



Nature around...

Upcoming events:

- **2010 – Conservation ecology course (R. Primack et al.)**
- **2011 – International Congress on Orchid Conservation**

Other possible events:

- **Taxonomic summer school every 2 years**
- **Conservation ecology courses – field courses combined with theory**
- **Population ecology courses**

Big question – money...

- **Premises available (Nove Hradý and others)**
- **Running costs – long term support – needed**

Possible sources:

- **RTN?**
- **Marie Curie?**
- **European commission?**
- **Anything else??**

Thank you!