



**Faculty  
of Forestry  
and Wood  
Technology**

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# **Dynamics of climbing sectors in protected areas**

**Mendel  
University  
in Brno**



## Impacts of climbing on nature

- Climbing areas are often objects of nature conservation.
- Erosion, used holds + footholds, slippery, drilling, gluing
- Nesting birds, shouting
- Lower abundance and density of vegetation, migration vertical and horizontal, genetic variations, new species, different age structure, damaging



„Slippery“ footholds - Rudice, Moravian Karst



Glued holds - Rudice, Moravian Karst



Erosion and trampled vegetation - Rudice, Moravian Karst



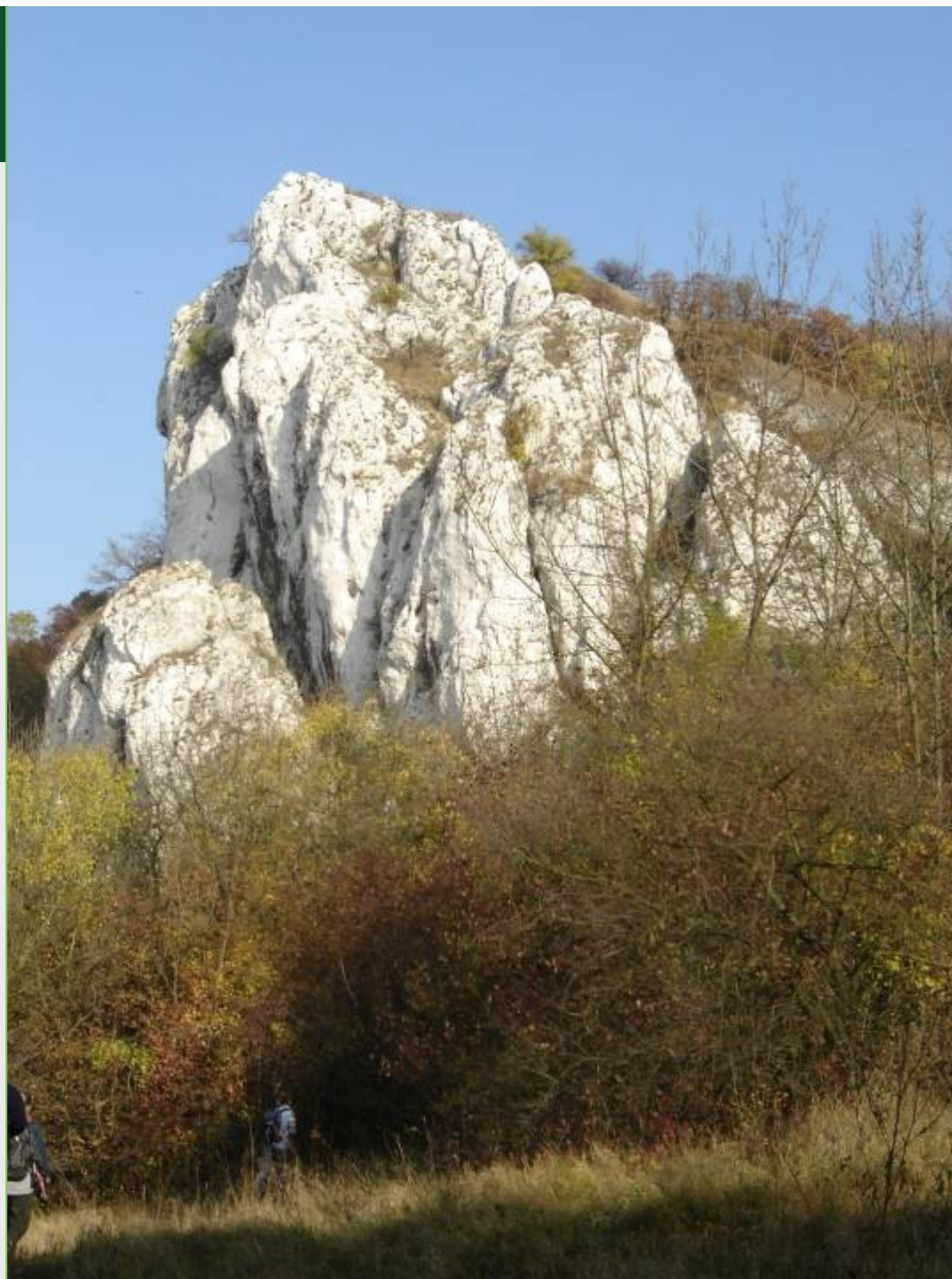
Bird's nest in climbing route - Peilstein, Austria

## Studied areas

- Indie (NR, PLA) – Moravian Karst, limestone
- Obří kámen (UNESCO, NNR, PLA) – Pálava, limestone
- Kozel (NM) – Chřiby, sandstone
- Králky (NM) – Hostýn hills, sandstone









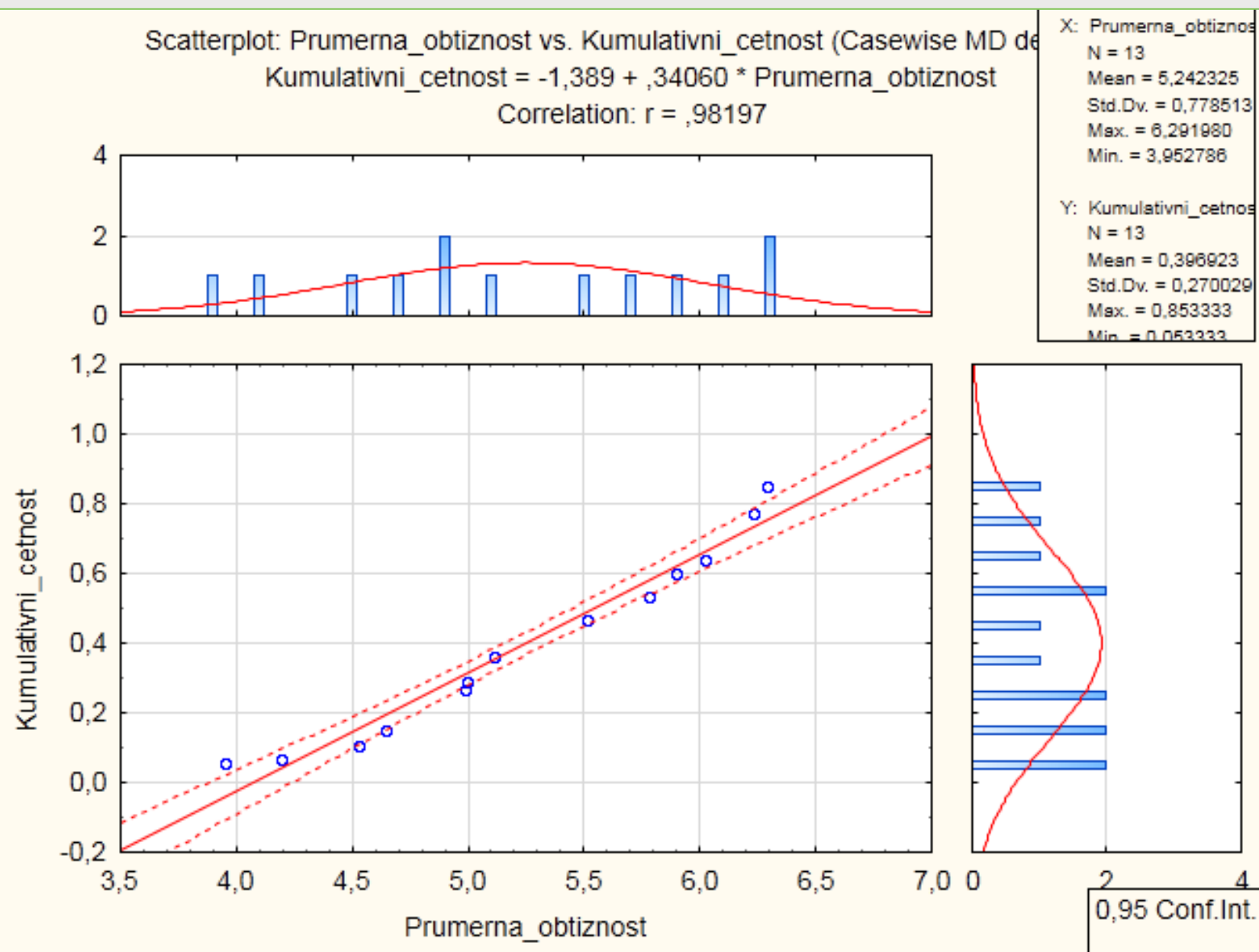


## Methodology

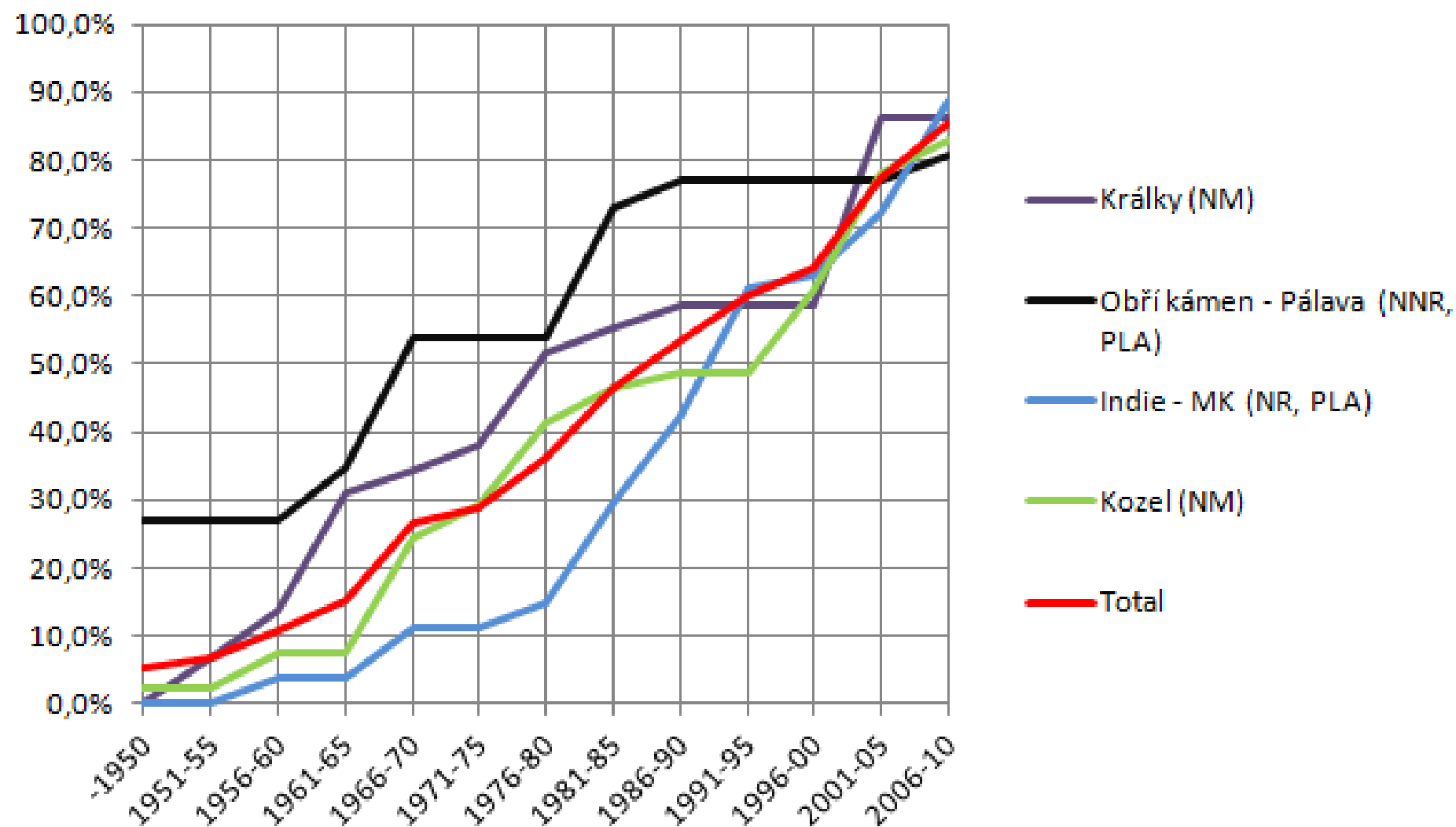
- 1950 – 2010 (the latest book guide)
- Grade → point value
- Quantity of routes
- Average grade
- Correlation
- Regression

## Results

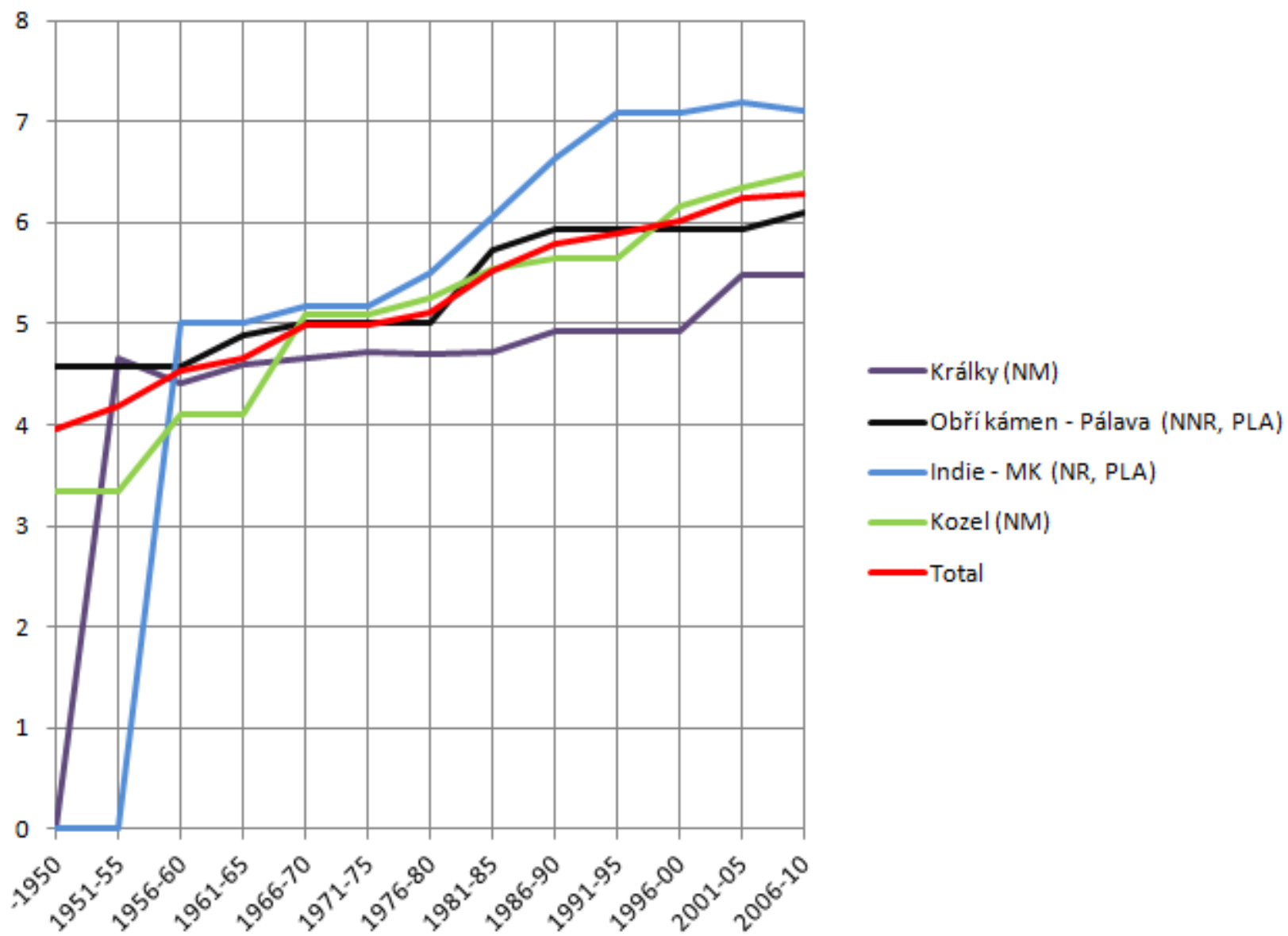
- New route will be probably harder (higher grade) than average grade in the area ( $Corr = 0,98$ )
- The dependency of the cumulative frequency and the average grade was shown as significant ( $R^2=0.96, p<0.00001$ )
- → Earlier occupation of easy lines by pioneers, and later occupation of hard lines by their successors with higher performance.



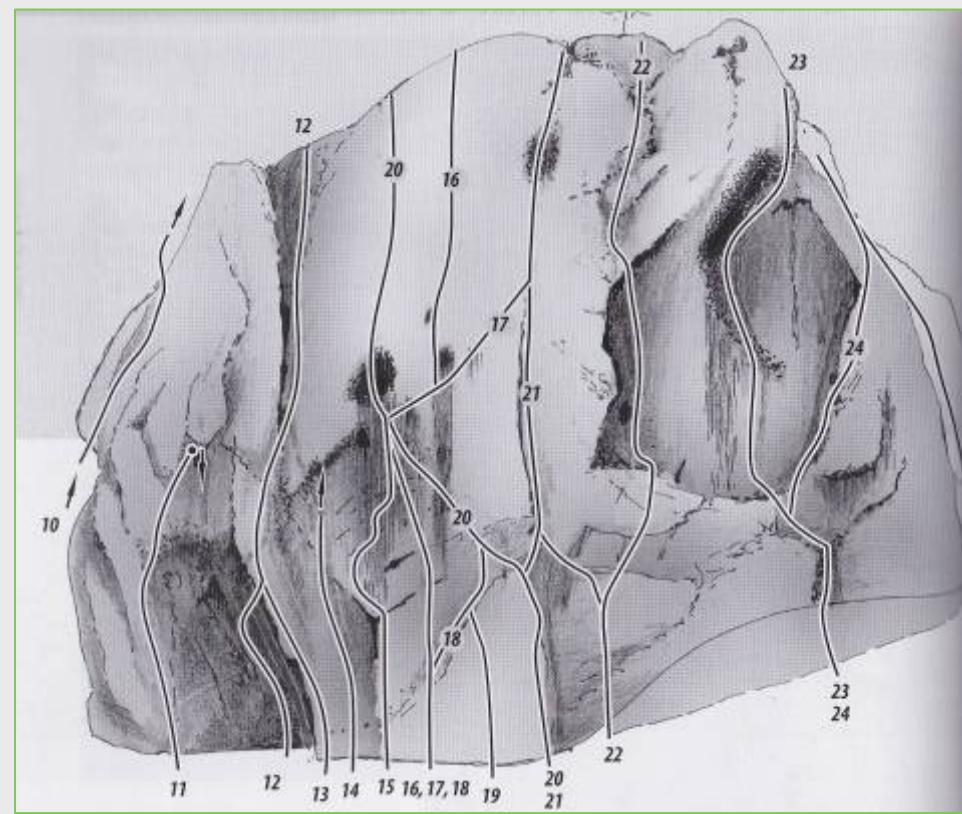
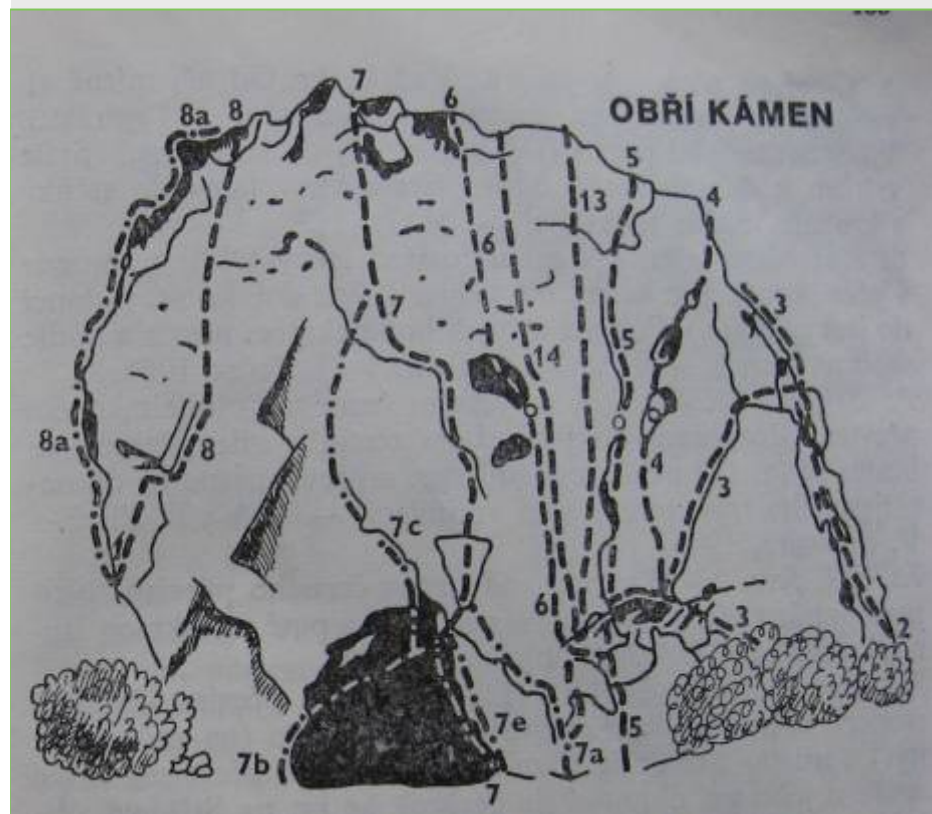
## Cumulative frequency



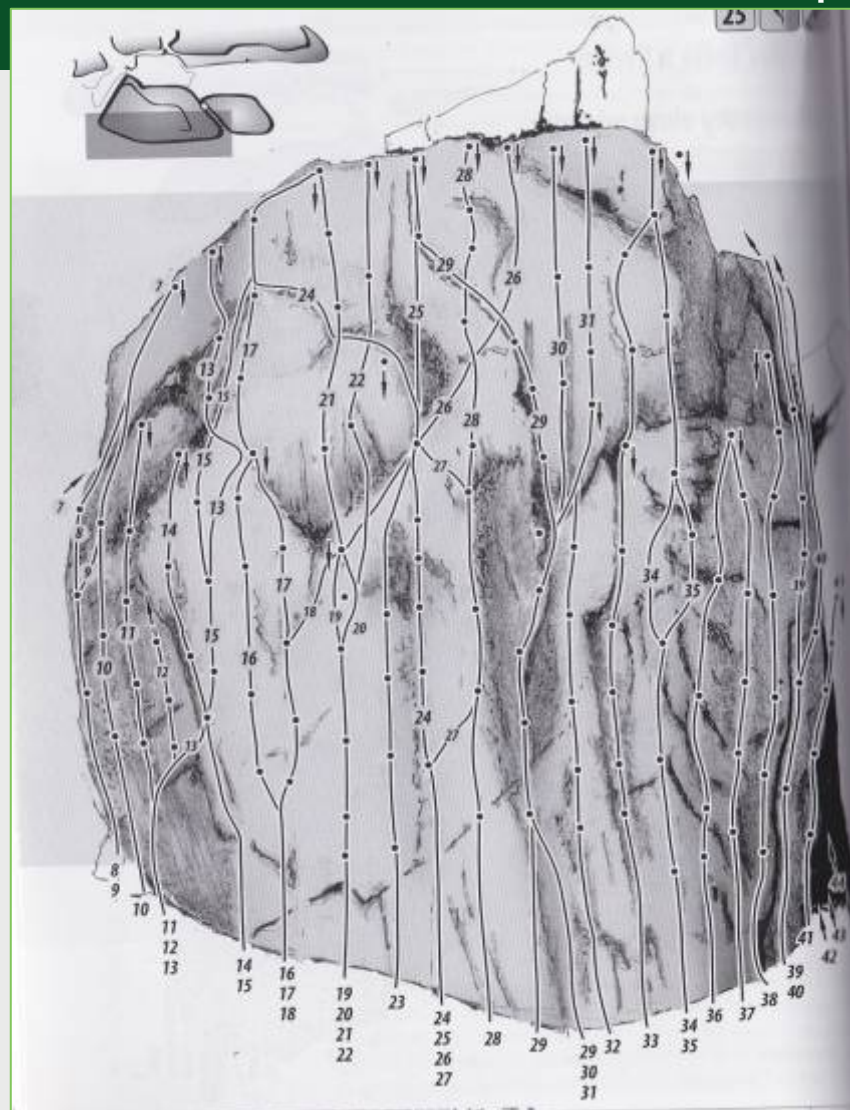
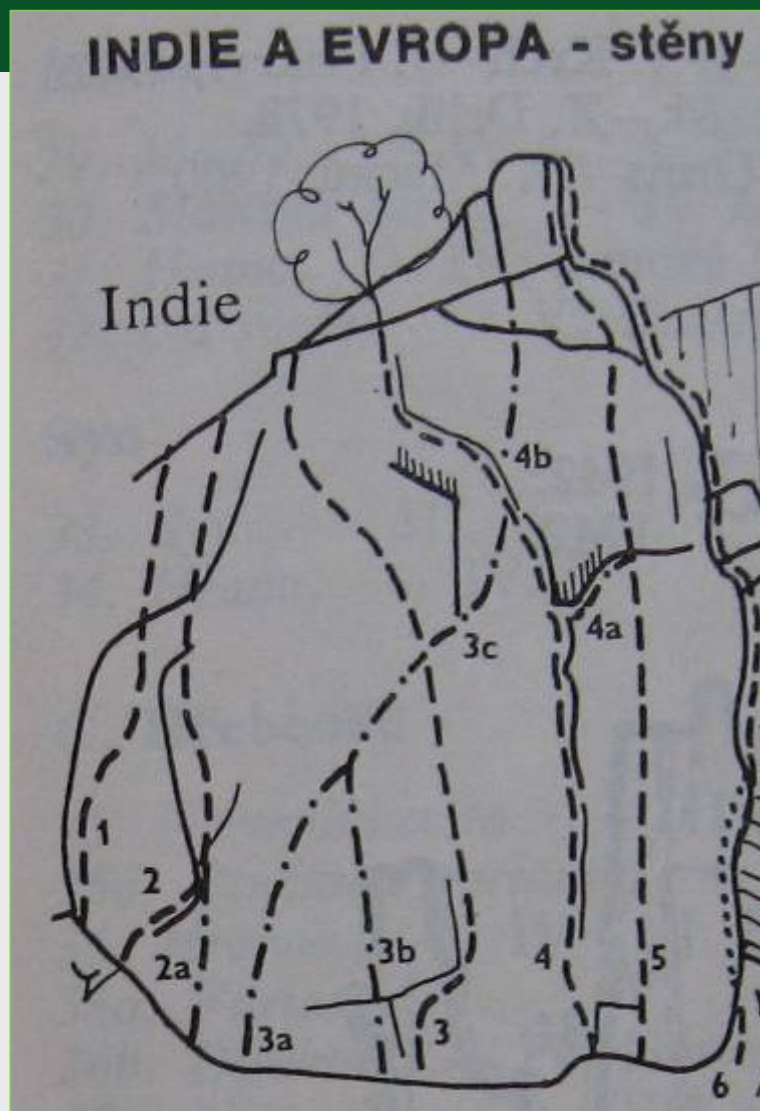
## Average grade







Obří kámen in 1988 and 2010 (Doležal, Morch 1988; Skýpala, Wolf 2010)



Indie in 1988? and 2010 (Doležal, Morch 1988; Skýpala, Wolf 2010)



Perlorodka 11+

Holštejn, MK

The hardest route in CR.

„Bright beautiful line,  
which I thought for years,  
that never could be done.“

(A. Ondra 2011)



Devizový příslib 9-

Kozel

Probably the first 9- in  
Moravian sandstones.



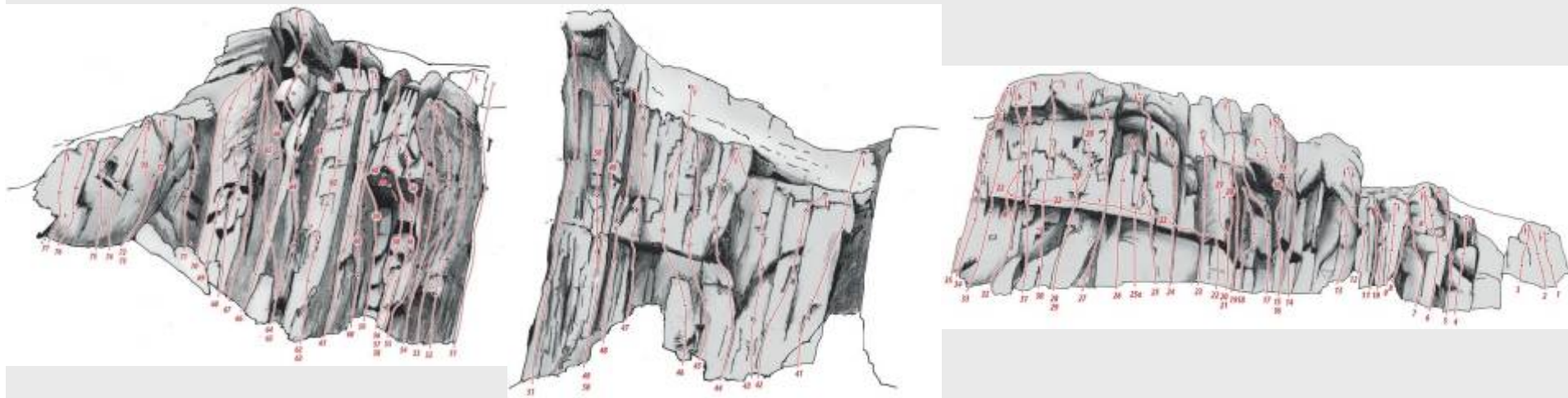
- Králky
- Mostly object of tourists.

## Discussion

- Spatial capacities → the number of new routes  
useless indicator of attendance (former stone quarries)
- The variants of variants, routes with banned holds
- Permission by administrator of the rock area
  
- Routes with high grade x easy routes → the same wear?
- Attendance in Karst areas x Moravian sandstones → higher attendance around the whole Moravia?
- Dynamics in protected areas x unprotected areas?



- Former stone quarry Gabrielka (Lipník n. Bečvou) 2009



- Former stone quarry Gabrielka (Lipník n. Bečvou) 2012



### Rock faces in NNR Dívín-Kotel-Soutěska





- Děvín
- Today climbing isn't permitted despite its potential

## Conclusion

- Next development is unknown.
- Attendance is probably getting higher - instruments of management.
- The average grade + the number of routes - significant determinants of attendance
- Absolute numbers of attendance not available → climbing attendance to the future

Q/A

# Thank You for Your attention!

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