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Growth, habitat characteristics and aerial survey of forest stands

Danube Monitoring Scientific Conference Publication, Slovak Section, chapter:

**V.2.10. Ecological significance and vulnerability of the Danube
floodplain forest ecosystems**

Ferdinand Kubíček, Július Oszlányi

**V.2.11. Evaluation of growth and some habitat characteristics
of production forest stands in permanent monitoring plots**

Vladimír Bajcar

V.2.12. Evaluation of defoliation in forest stands based on aerial survey

Rastislav Raši

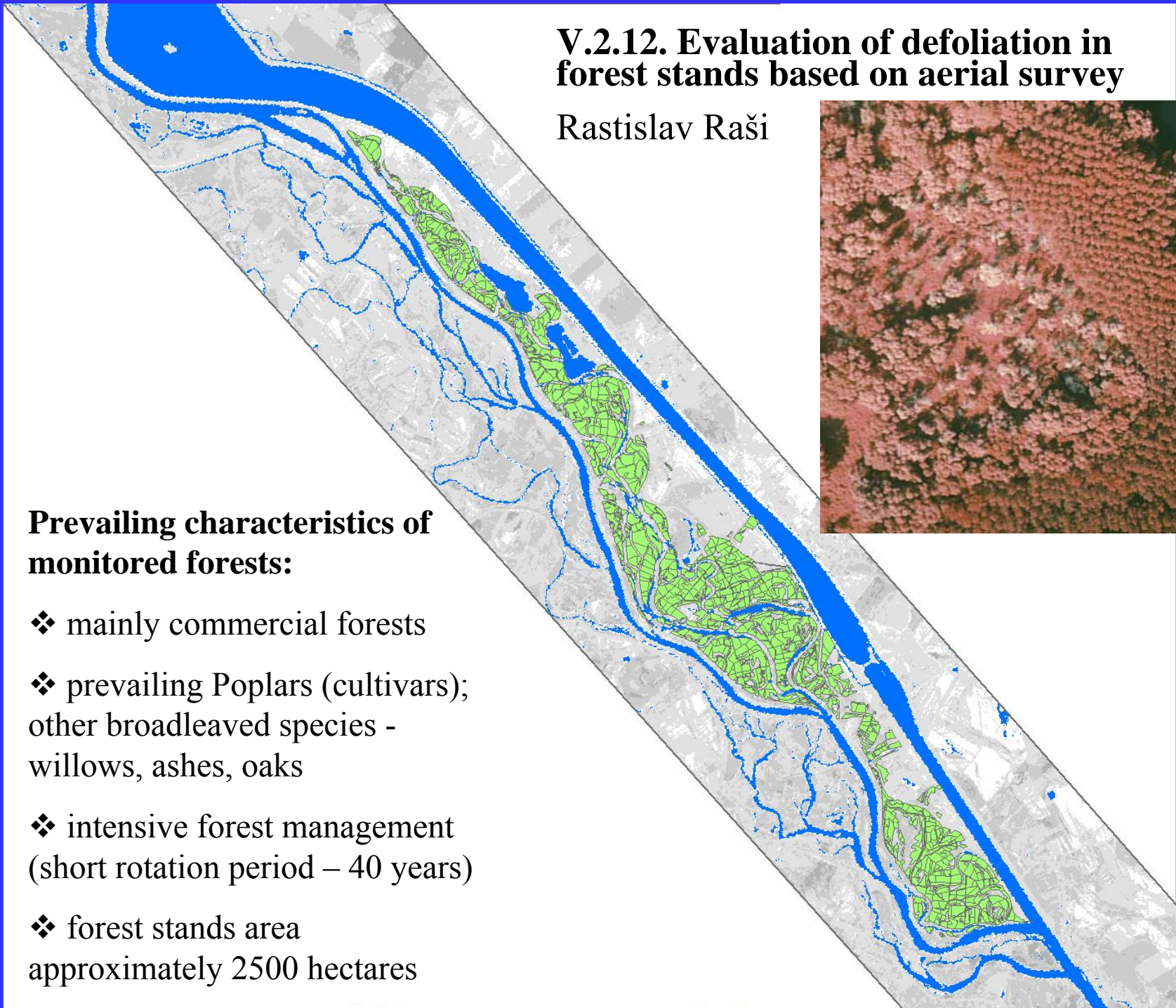
V.2.12. Evaluation of defoliation in forest stands based on aerial survey

Rastislav Raši



Prevailing characteristics of monitored forests:

- ❖ mainly commercial forests
- ❖ prevailing Poplars (cultivars); other broadleaved species - willows, ashes, oaks
- ❖ intensive forest management (short rotation period – 40 years)
- ❖ forest stands area approximately 2500 hectares

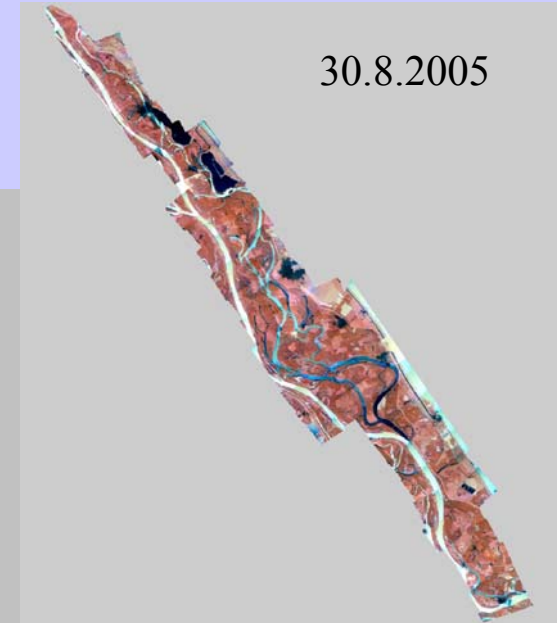
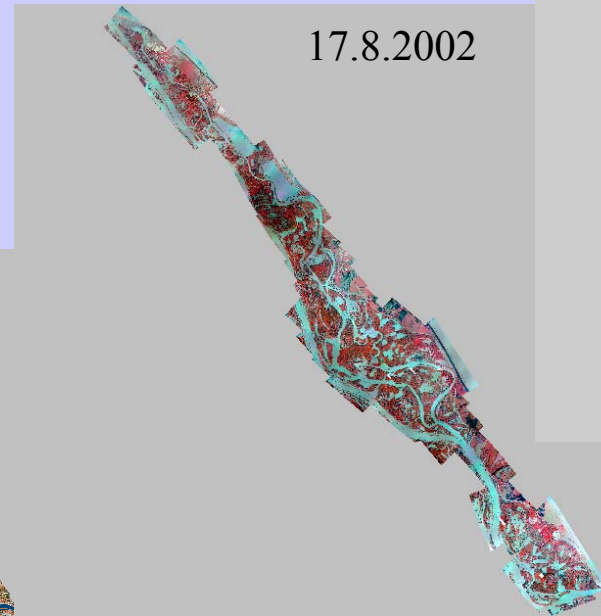
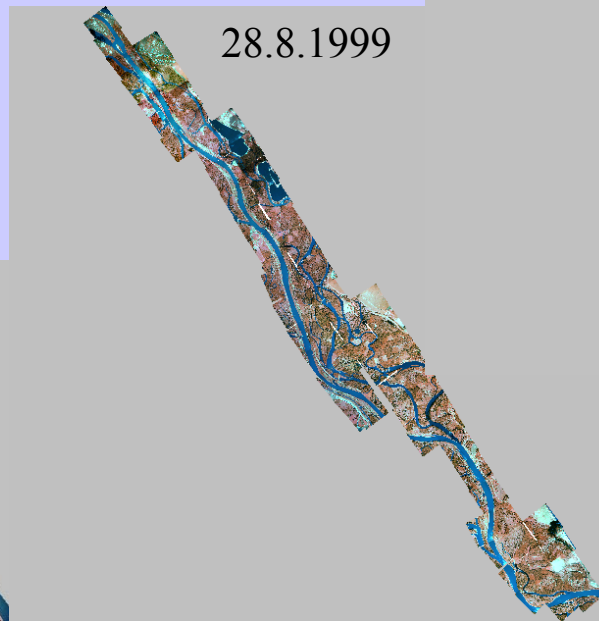
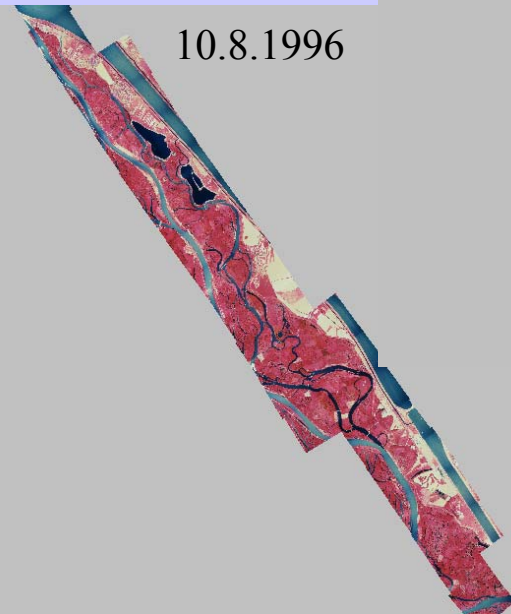


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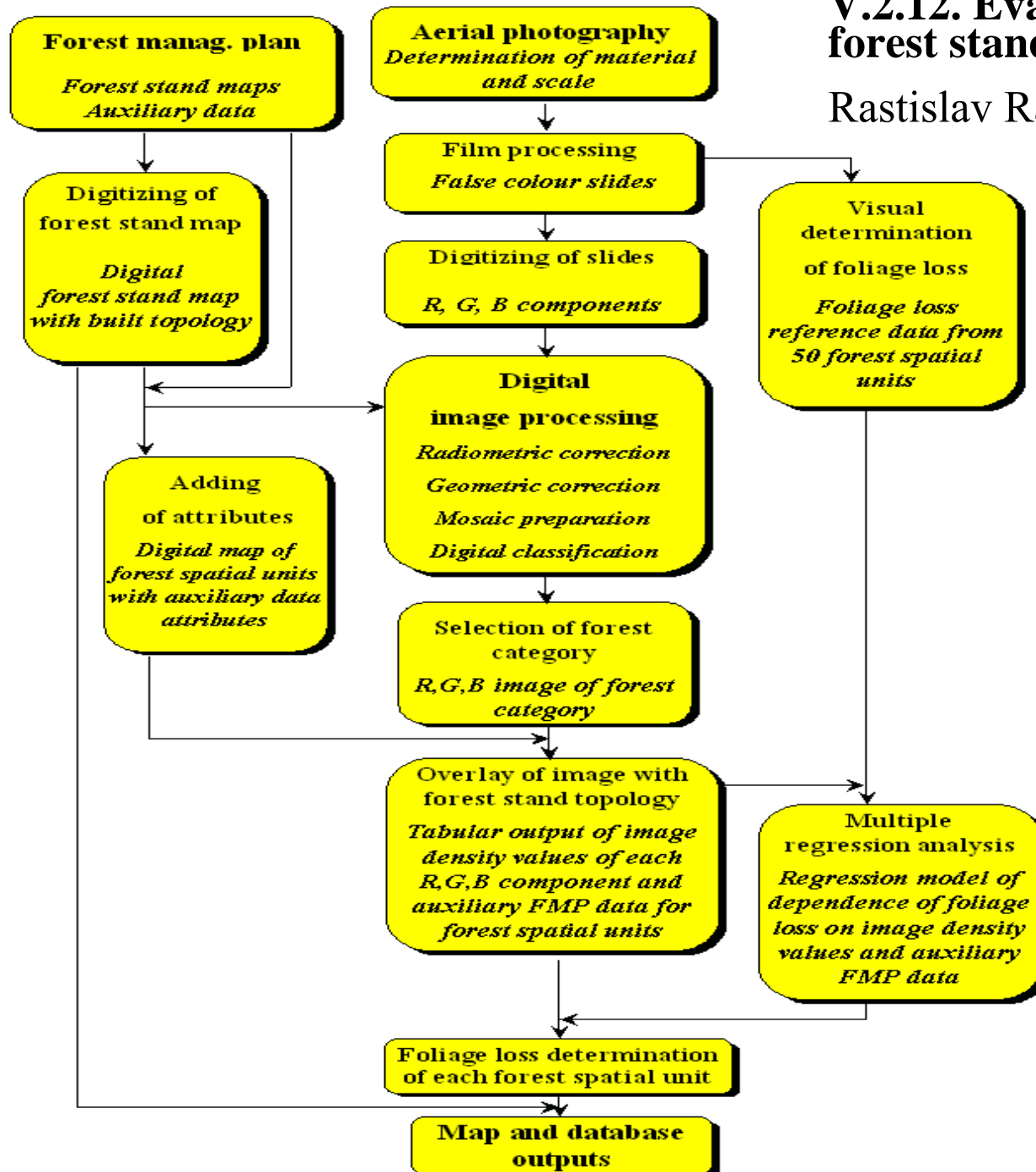
- aerial survey has been realized with **3 years interval**, in 2/2 of August

-false **color infrared film** Kodak 2443 has been used



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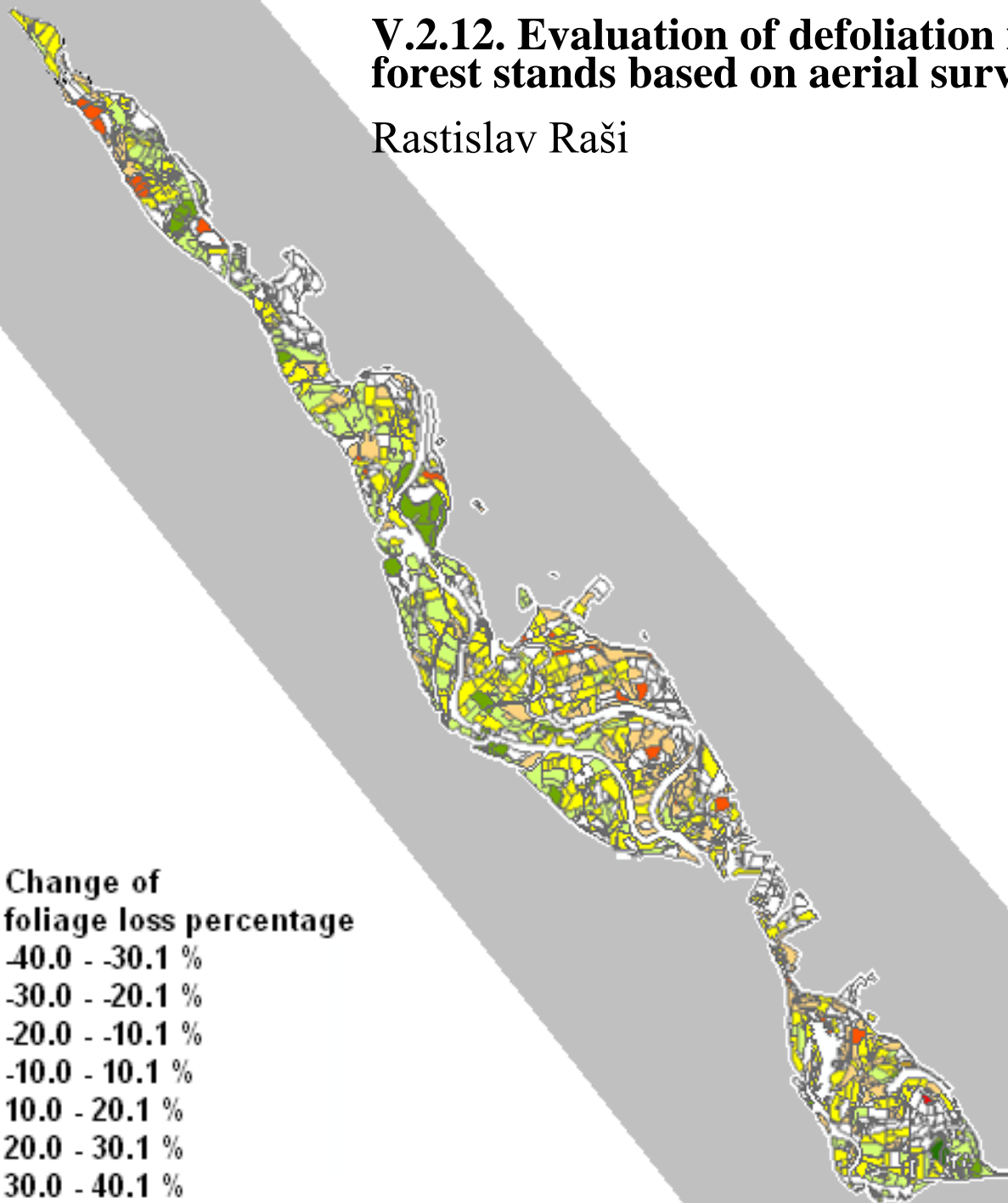
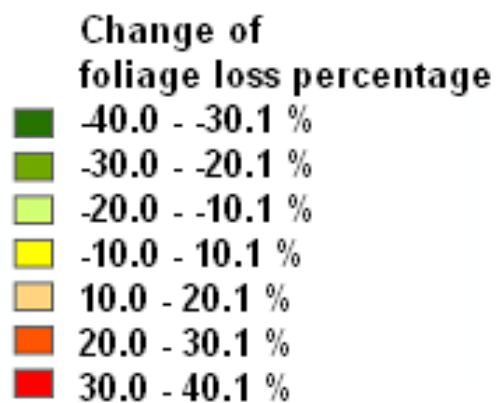
Methodology:

- two phase sampling with regression
- first phase data derived from color infrared images and forest management plan
- second phase is represented by visual evaluation of foliage loss in selected forest stands (field investigation, visual interpretation of photos)
- regression model for foliage loss assessment combines both phases

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Difference of foliage loss between years 2002 and 1999



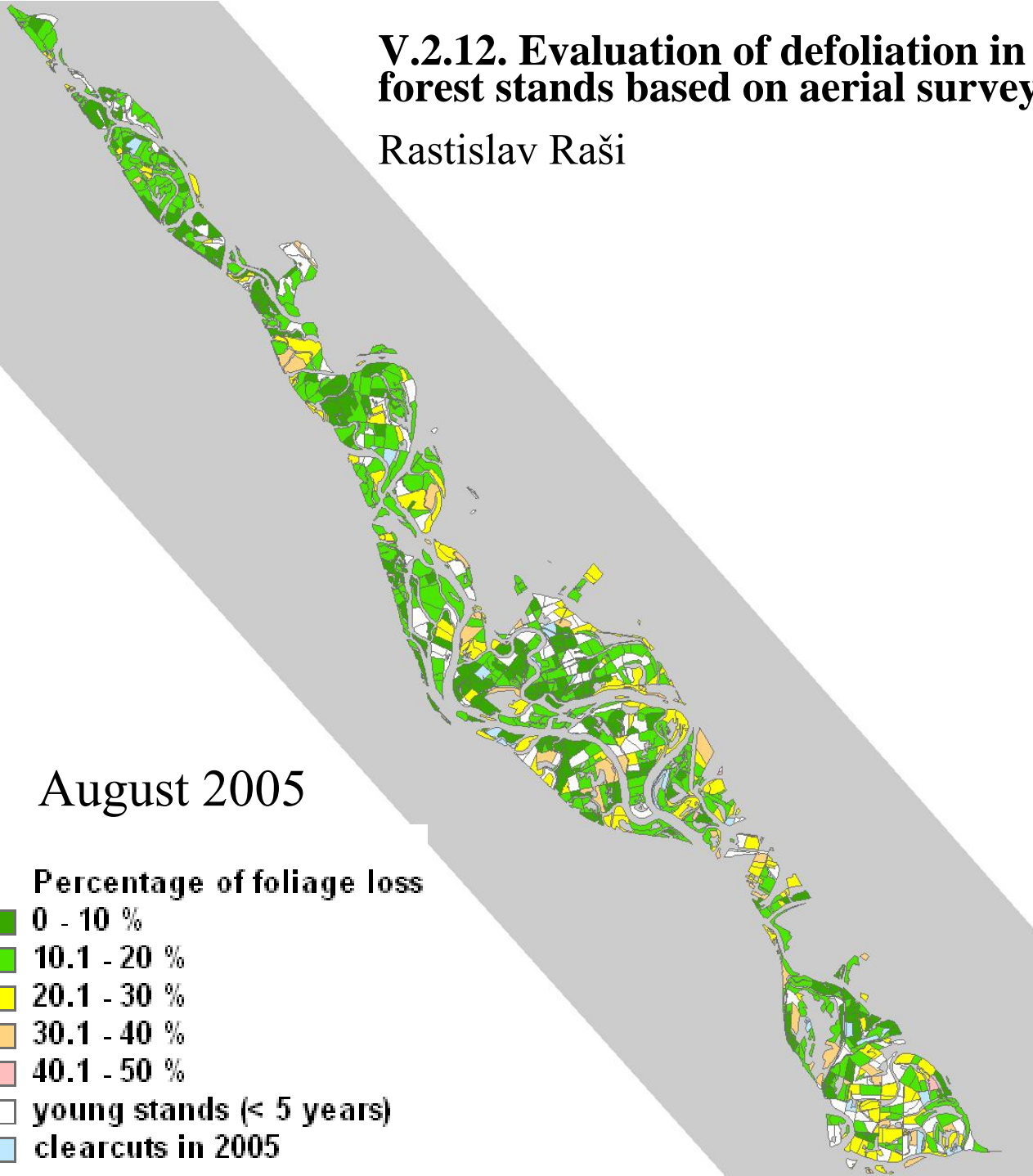
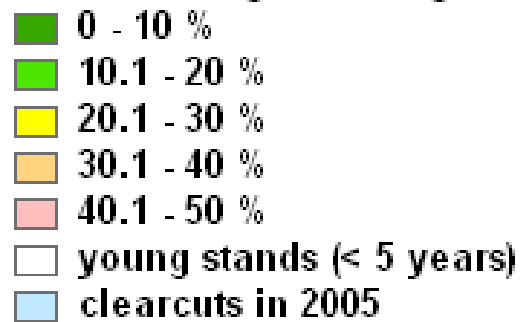
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Foliage loss in 2005

August 2005

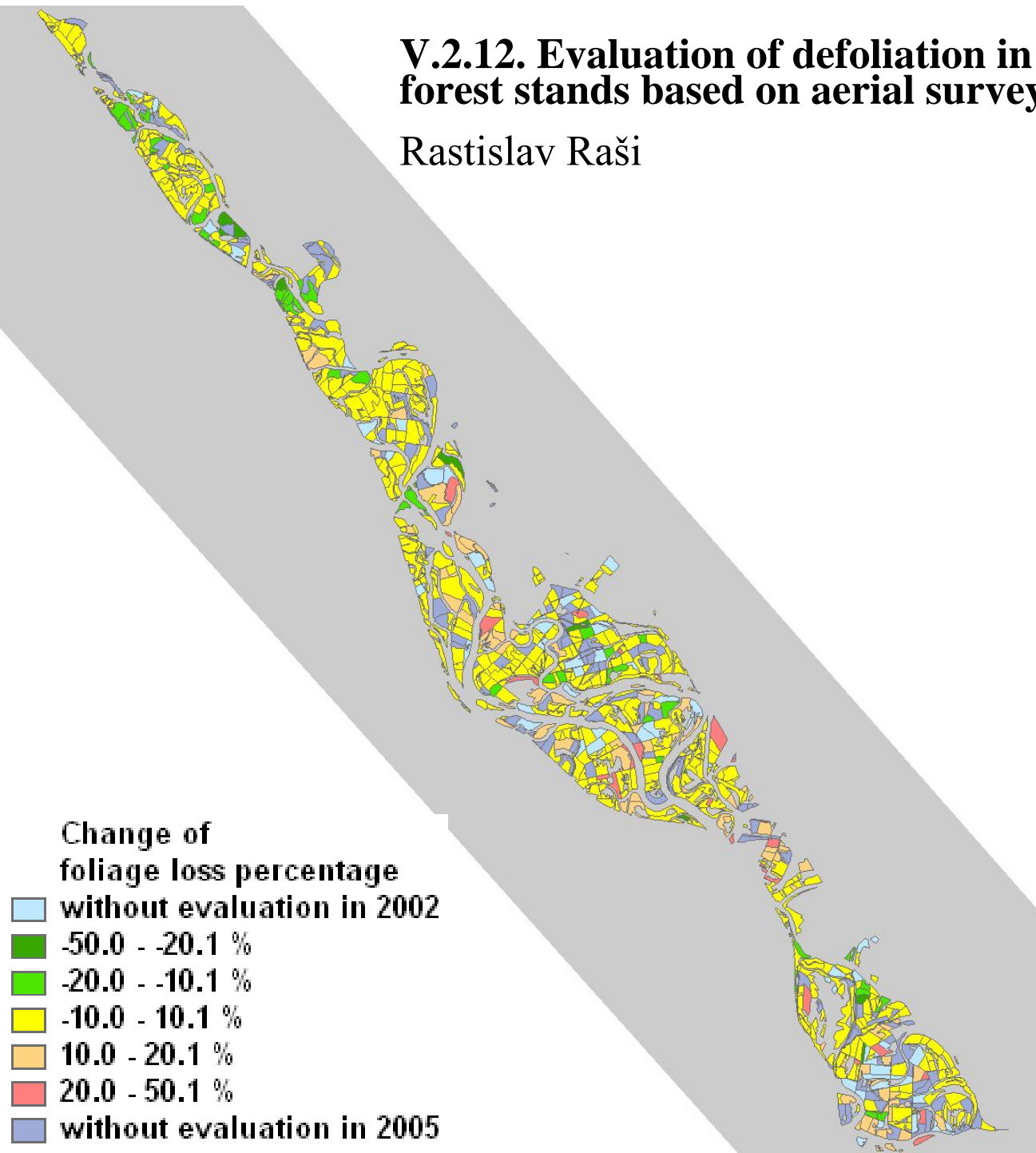
Percentage of foliage loss



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Difference of foliage loss between years 2005 and 2002



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Results:

The summary evaluation of foliage loss of forest spatial units in the year 2005

Average defoliation of forest spatial unit %	Foliage loss level description	Number of forest spatial units n_i	Frequency %
0 - 10	none	242	27.3
10.1 - 20	slight	414	46.6
20.1 - 30	slight	175	19.7
30.1 - 40	moderate	53	6.0
40.1 - 50	moderate	4	0.4
50.1 +	severe	0	0.0
		888	100.0
	Units excluded from evaluation	187	-

- forest health status in evaluated area was assessed as very good;
- the average foliage loss was 15.4% in 2005;
- foliage loss up to 20% was assessed in 73.9% of forest spatial units and defoliation up to 30% was assessed in 93.6 % of forest spatial units