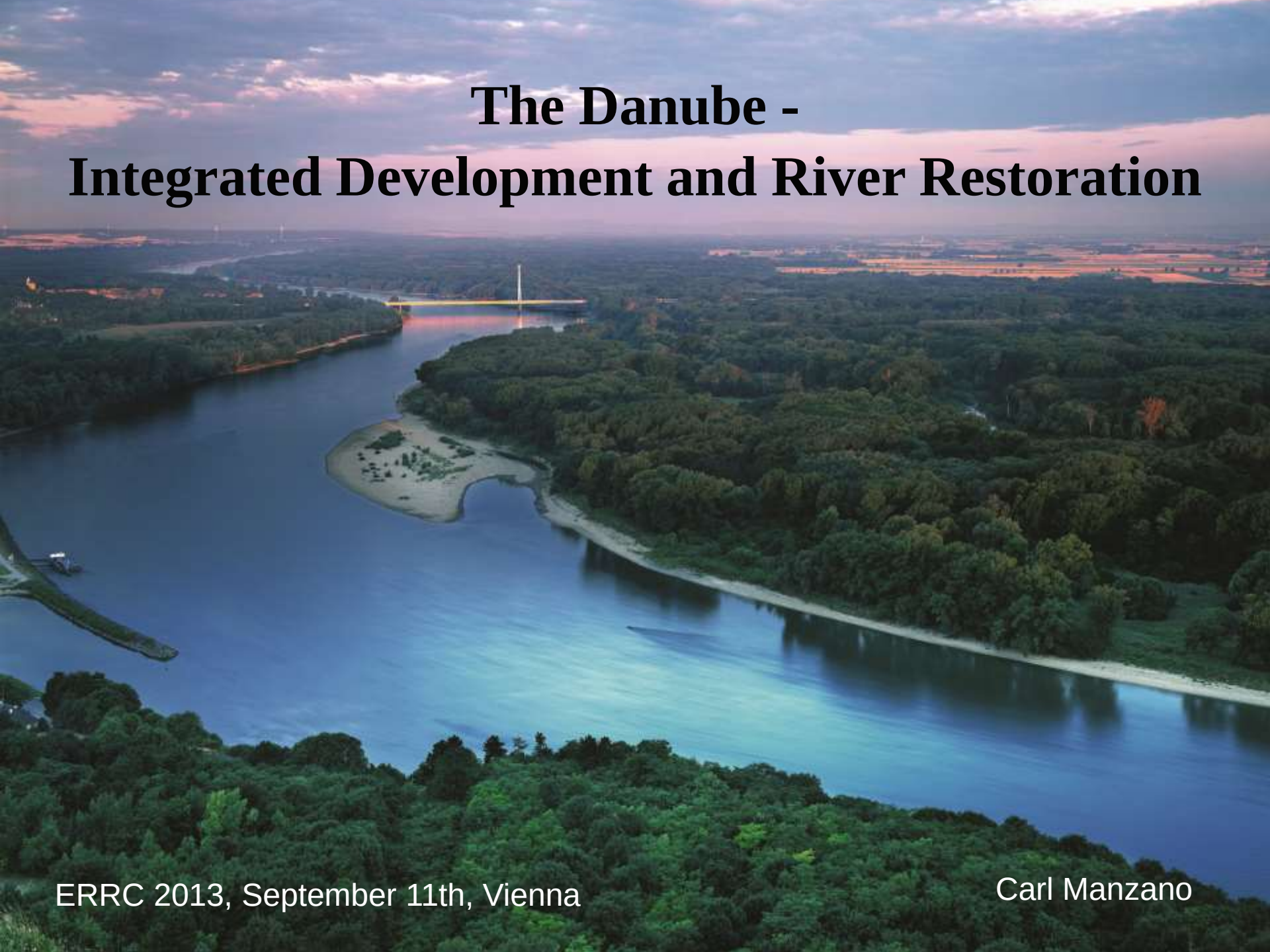
The Danube -
Integrated Development and River Restoration



ERRC 2013, September 11th, Vienna

Carl Manzano

Air View 2004

Die Donau bei Wien 1848

The Danube i

Michlmayr & Mohilla, 1996

main constraints:

- flood protection
- navigation

restoration potential in the National Park:

- river bank restoration
- side arm restoration
- groynes & spur dike modification

?

Projects 1996 - 2009

Project 2012 - 2014

- cooperation NP - WSD/via donau
- financial support by EU-funds

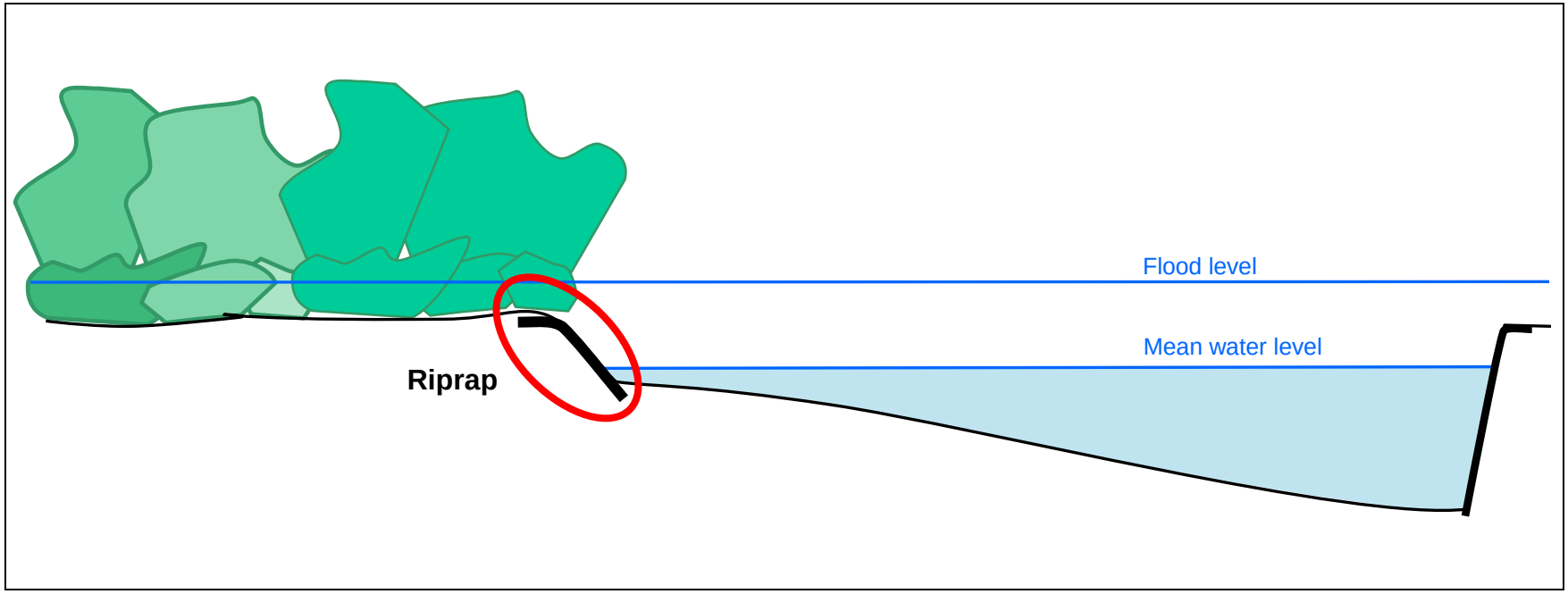
important frame conditions:

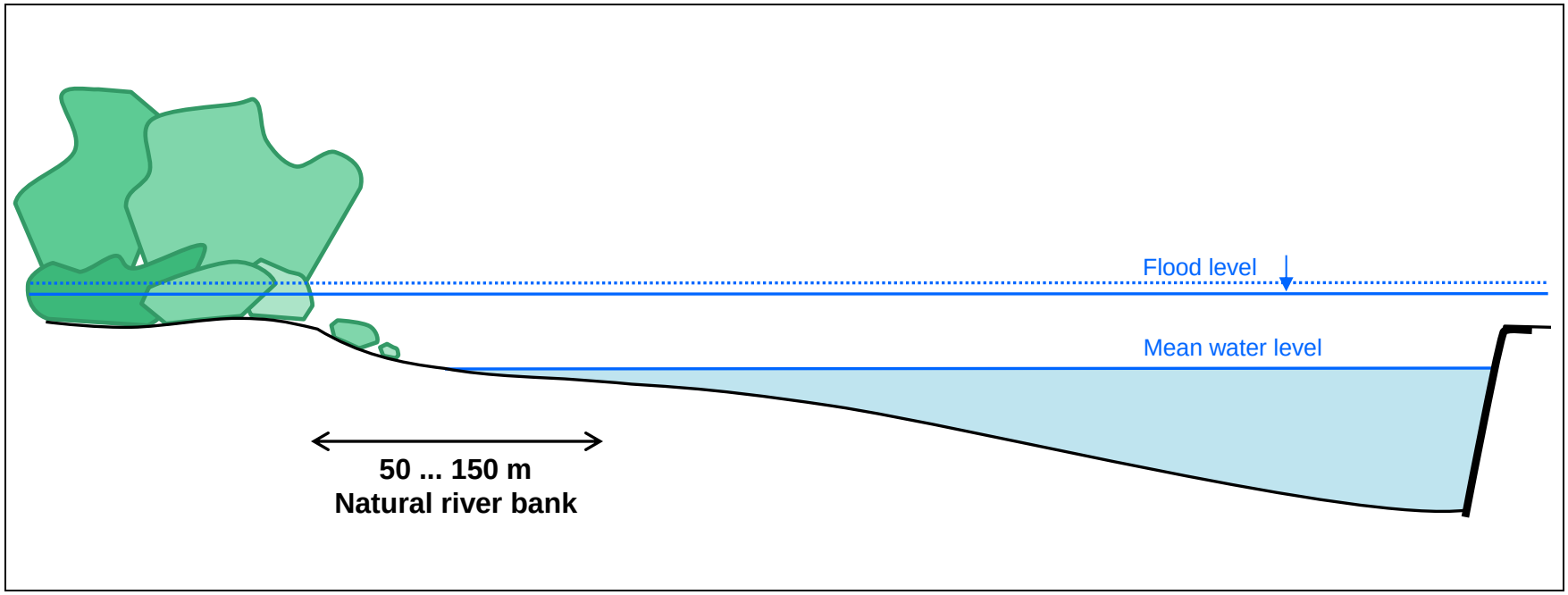
- high level of legal protection (**National Park**, Natura 2000)
- no conflict on land use (forestry, hunting, farming, built-up areas,…)

Inflow area Haslau

Inflow area Haslau, culvert

Reconnected side arm nearby Orth





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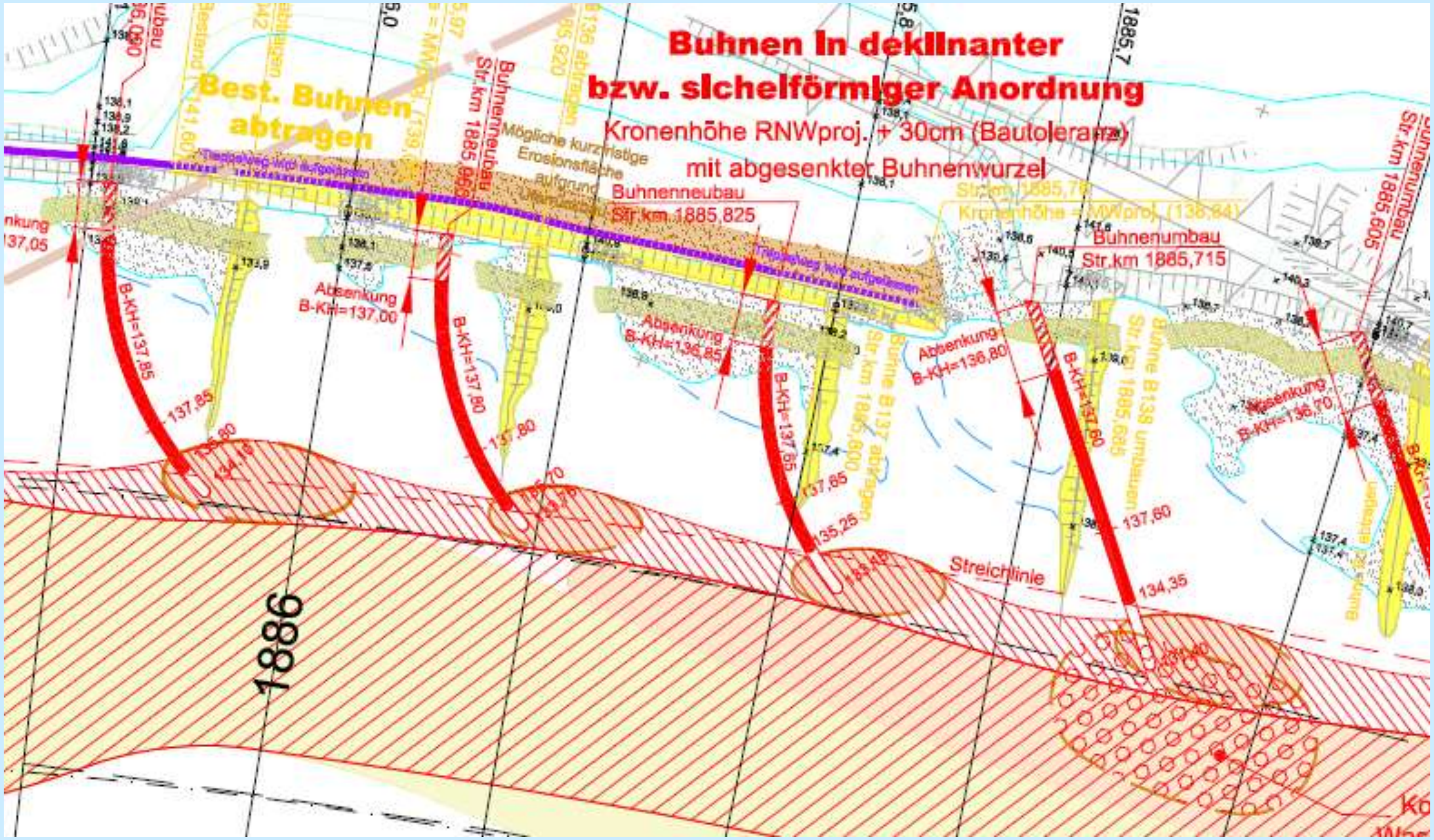
20.3.2010

30.10.2009



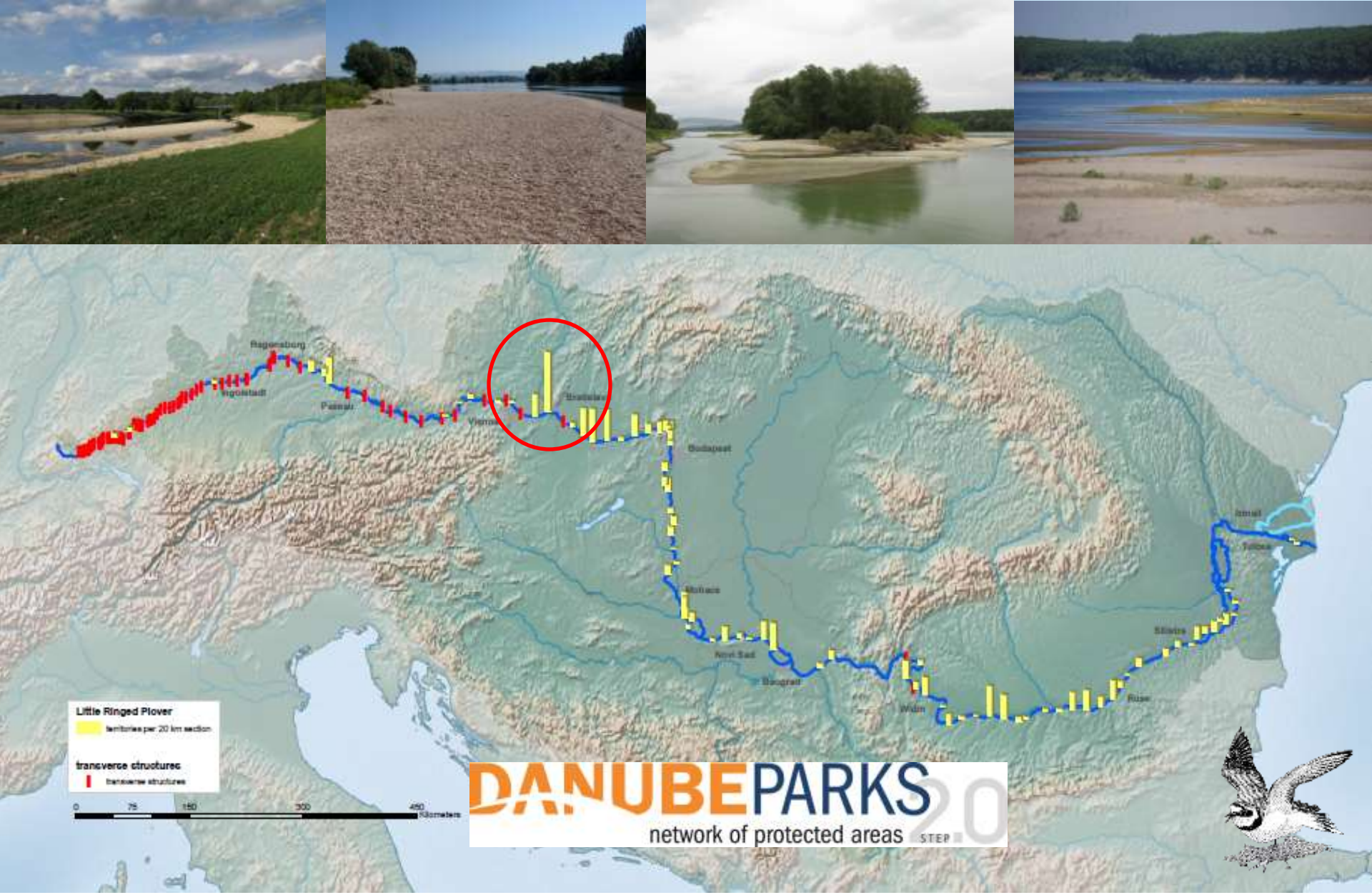
Buhnen in deklinanter
bzw. sichelförmiger Anordnung
Kronenhöhe RNWproj. + 30cm (Bautoleranz)
mit abgesenkter Buhnenwurzel
Best. Buhnen abtragen
Buhnenneubau
Str.km 1885,825
Buhnenumbau
Str.km 1885,715
Buhnenumbau
Str.km 1885,605
Absenkung
B-KH=137,00
B-KH=137,85
B-KH=137,80
Absenkung
B-KH=136,85
B-KH=137,65
Absenkung
B-KH=136,80
B-KH=137,60
Absenkung
B-KH=136,70
Streichlinie
1886
1885,7
134,35
137,60

Witzelsdorf, 5.10.2009

• **intense dynamic landscape processes on local level**

• **successfull habitat rejuvenation** (e.g. gravel bars, steep river banks, large woody debris, ...)

• **quick biotic response** (Kingfisher, Bee-Eater, *Arctosa cinerea*, wild bees, fish density)



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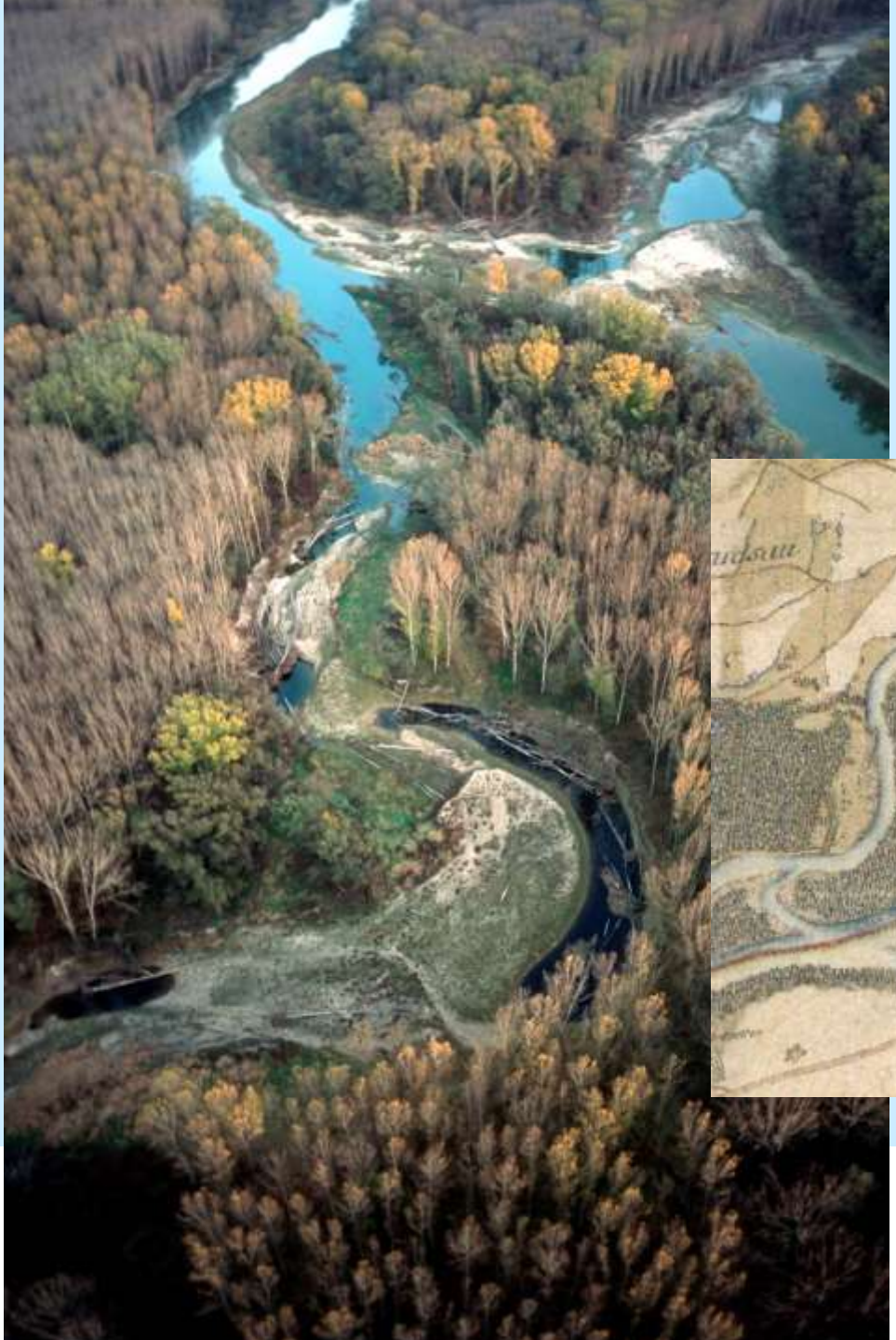

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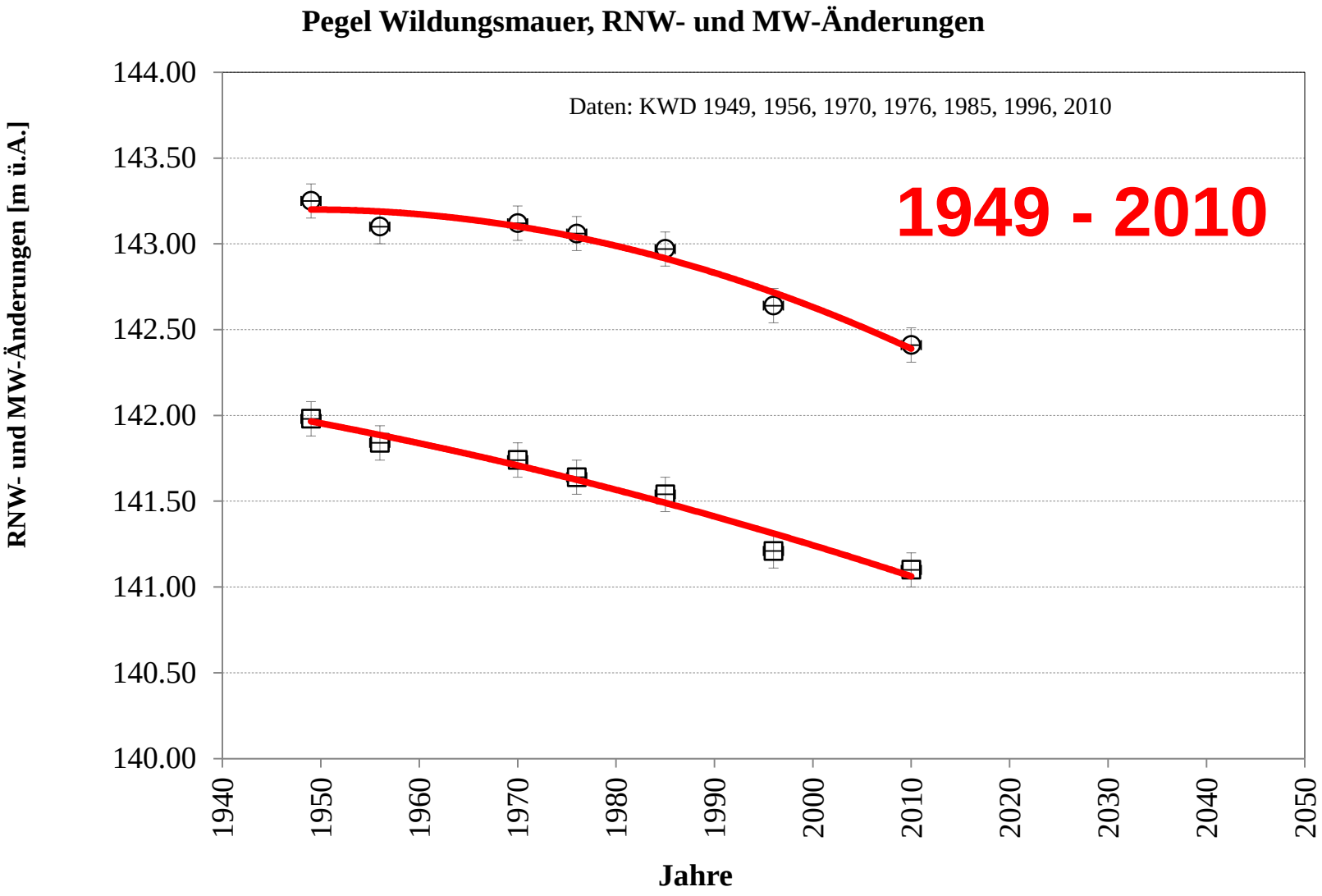
1941

1997

2004


limited benefit for
aquatic rheophilic communities


Pegel Wildungsmauer, RNW- und MW-Änderungen
Daten: KWD 1949, 1956, 1970, 1976, 1985, 1996, 2010
1949 - 2010
RNW- und MW-Änderungen [m ü.A.]
144.00
143.50
143.00
142.50
142.00
141.50
141.00
140.50
140.00
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
Jahre

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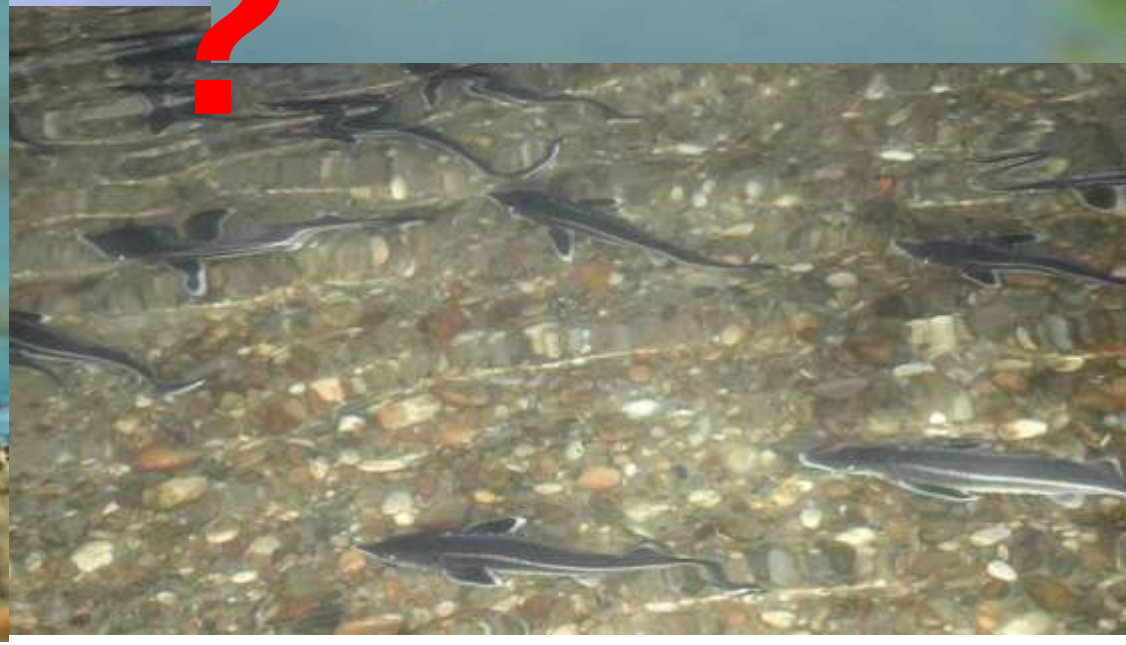
?



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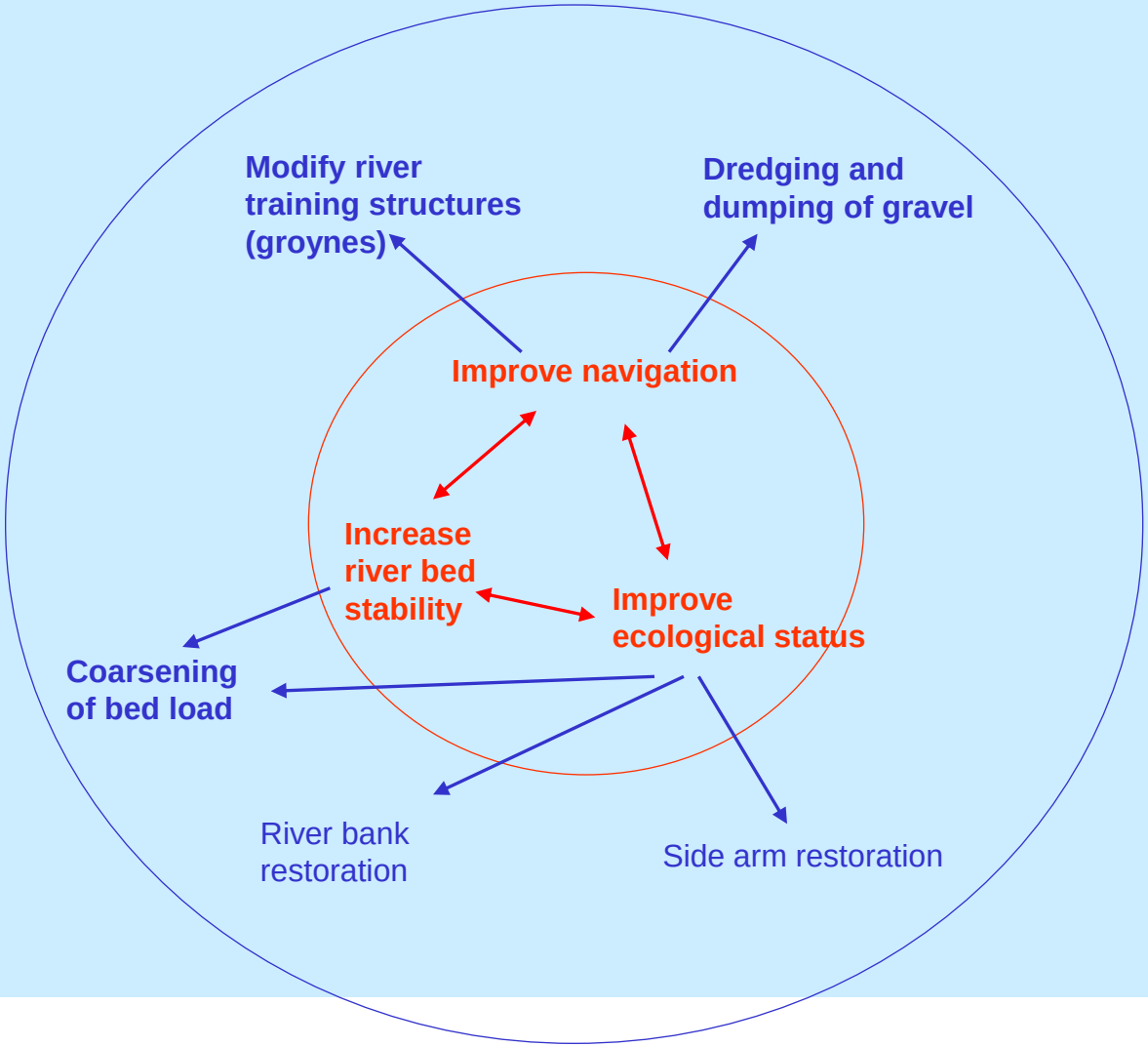
Integrated River Engineering Project (via donau)



- integrative
- innovative
- comprehensive

G. Klasz 2008, modified

WIN – WIN

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Integrated River Engineering Project 2006

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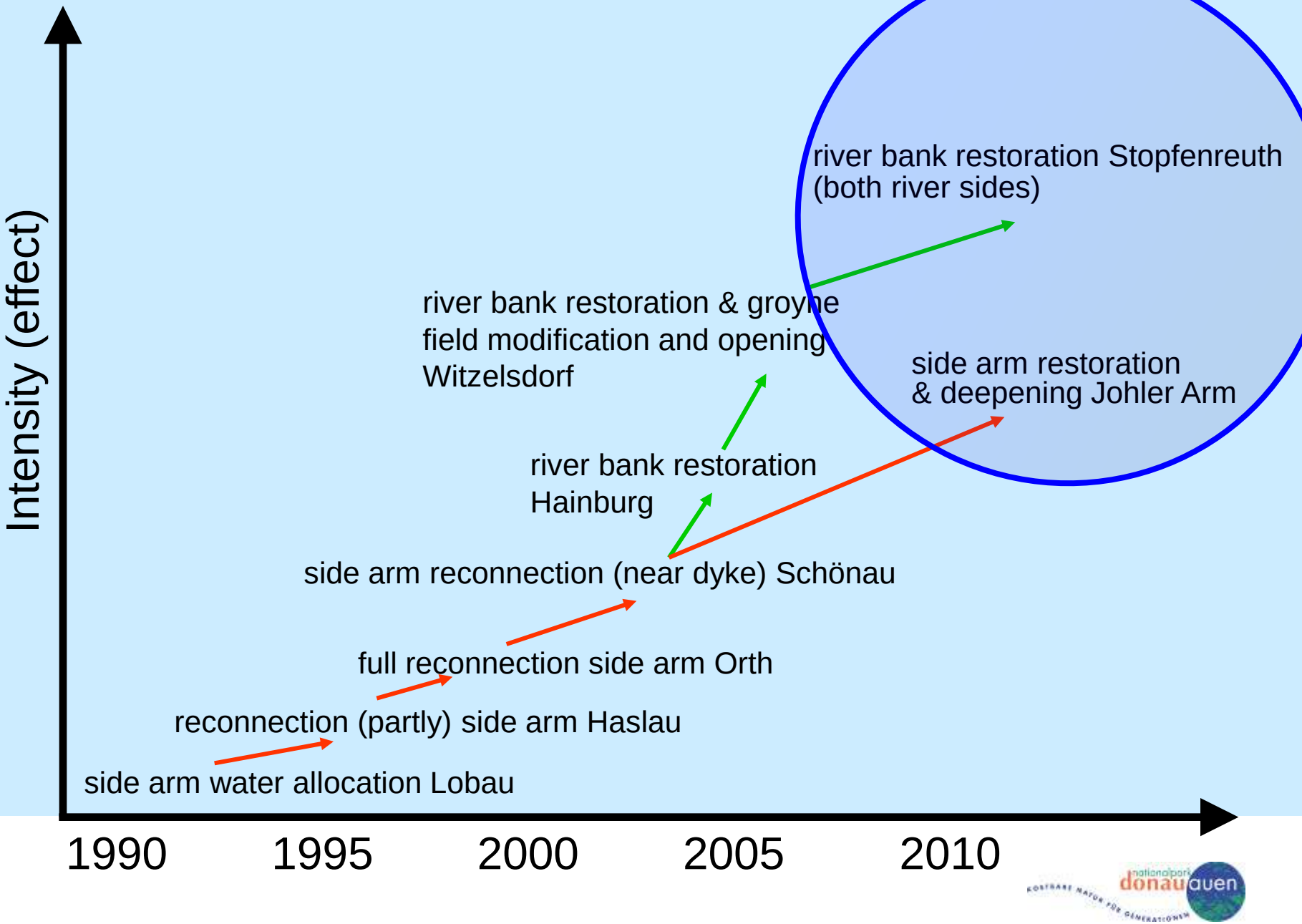
Naturversuch Bad Deutsch-Altenburg, Grobgeschiebe-Zugabe


Intensity (effect)
1990
1995
2000
2005
2010
side arm water allocation Lobau
reconnection (partly) side arm Haslau
full reconnection side arm Orth
side arm reconnection (near dyke) Schönau
river bank restoration
Hainburg
river bank restoration & groyne
field modification and opening
Witzelsdorf
side arm restoration
& deepening Johler Arm
river bank restoration Stopfenreuth
(both river sides)

Conclusions:

- Step-by-step approach was more successful as a comprehensive integrated approach
- The fact and example of an implemented innovative project boosts river restoration stronger than any new concepts and creates new freedom of action
- The actual “realistic” potential of river restoration – even on an international inland waterway - is much wider than it was (or still is?) understood some years ago

Main Constraints:

- basic regulation structure has to be kept
- flood protection ?
- land use along the river ?
- disturbed sediment balance, bed erosion, accumulation of (fine) sediments
- altered hydrology
- migration barriers for riverine species, invasive neobiota
- ship wave-wash

no solution on “local” level
large scale approach needed

Thank you for your attention

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