

Restoring the Freshwater Pearl Mussel habitat Lower Saxony: An overview of 40 years of actions



Restoring the freshwater pearl mussel in Lower Saxony: overview of 40 years of actions

International Conference Conservation of FWPM Populations and Habitat in Europe - 26.11.-27.11.2014 Brest - France

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LK Celle

LK Gifhorn

Nds. Umweltministerium

Nds. Landwirtschaftsministerium

Samtgemeinde Es

BR Lüneburg

Samtgemeinde Lac

Fachbehörde für Naturschutz

Samtgemeinde Hank

Nds. Forstverwaltung

Landwirtschaftskamme

NLG Verden (Flächenerwerb)

GLL Verden (Flurbereinigung)

Landvolk

Team of the Lutterp

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European States

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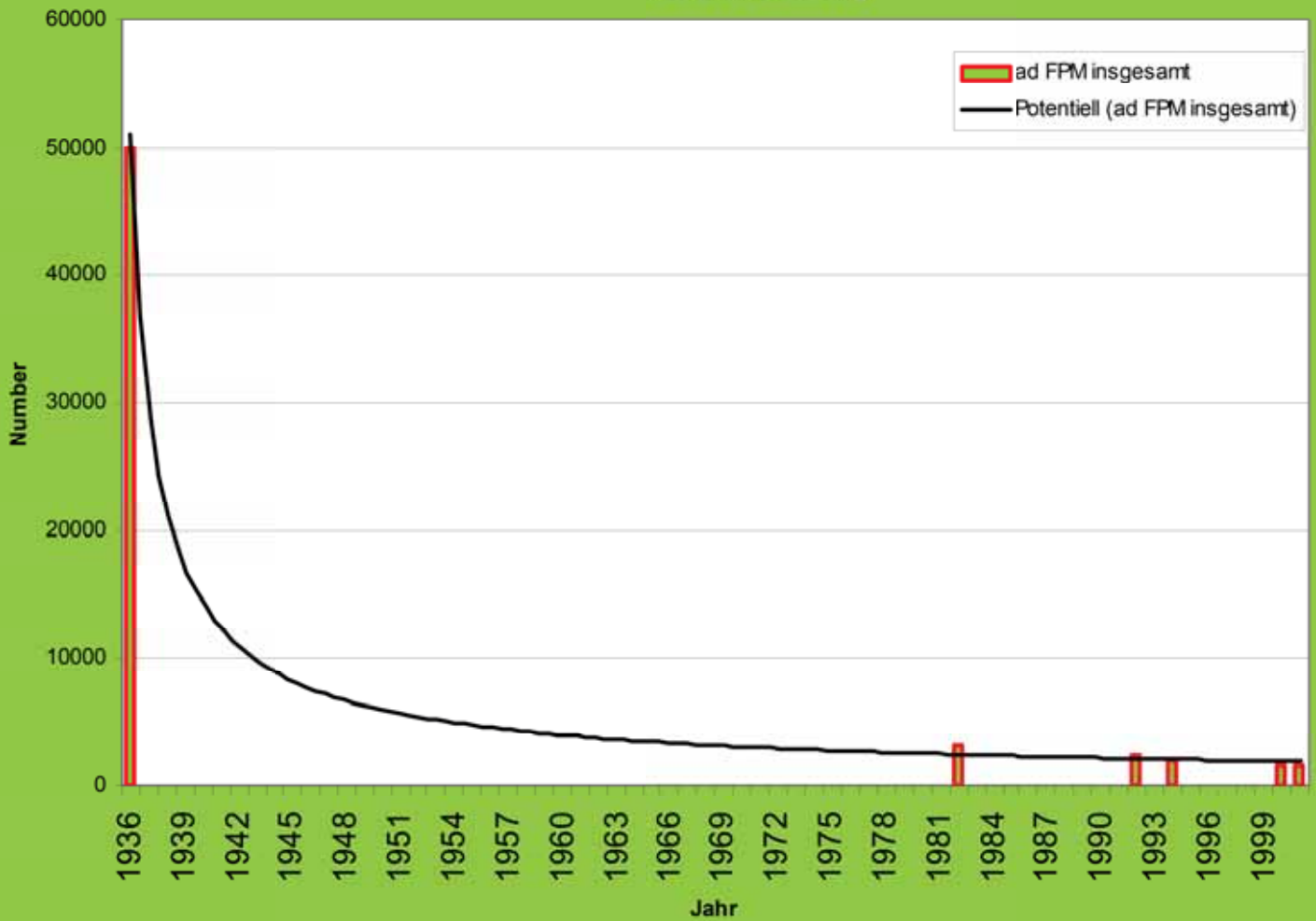
**Species protection
measures in Lower
Saxony**

The
Lower

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Population trend of the FWPM in the rivers Lutter and Lachte Lower Saxony



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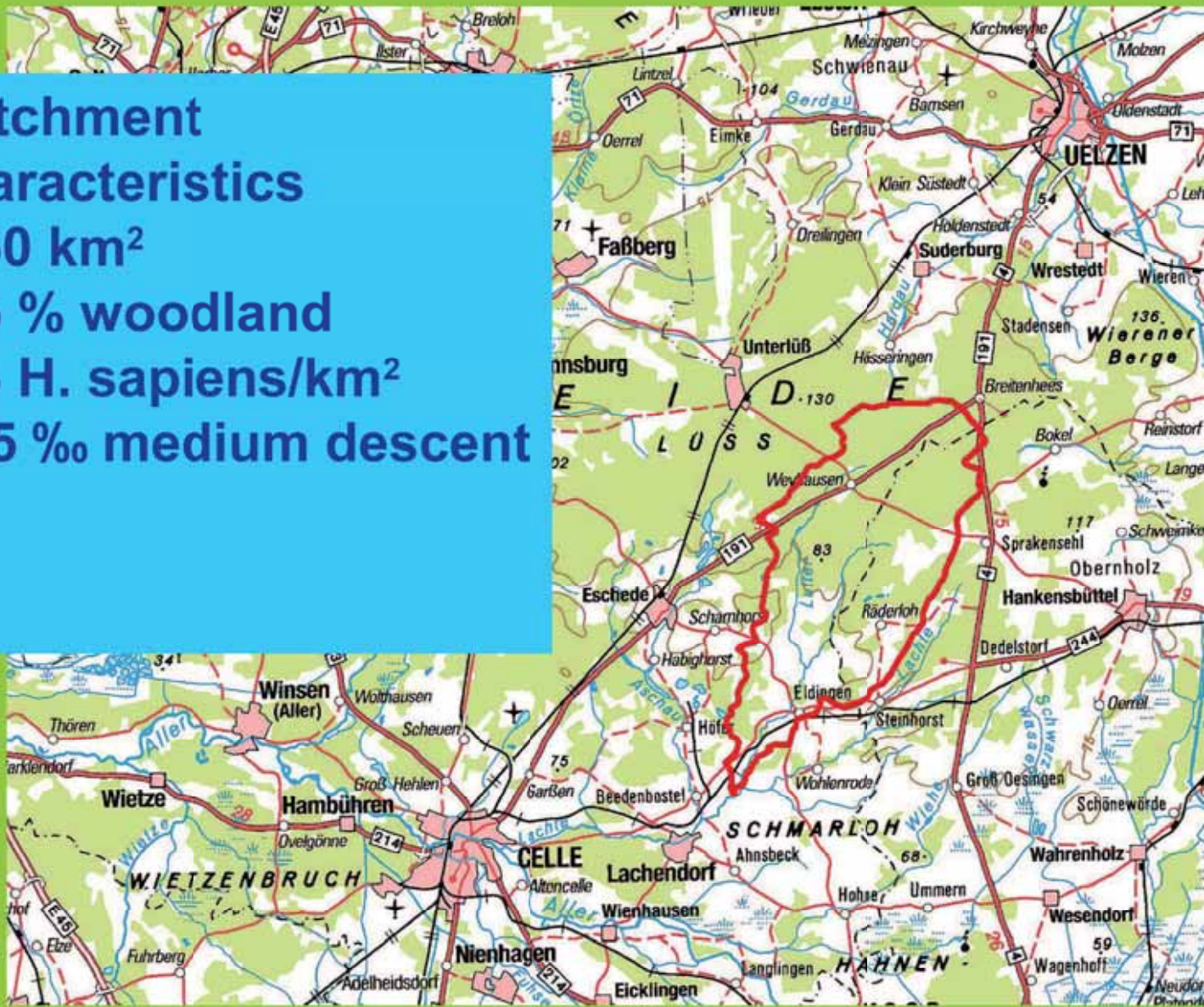
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Catchment characteristics

- 150 km²
- 75 % woodland
- 13 H. sapiens/km²
- 1,5 ‰ medium descent



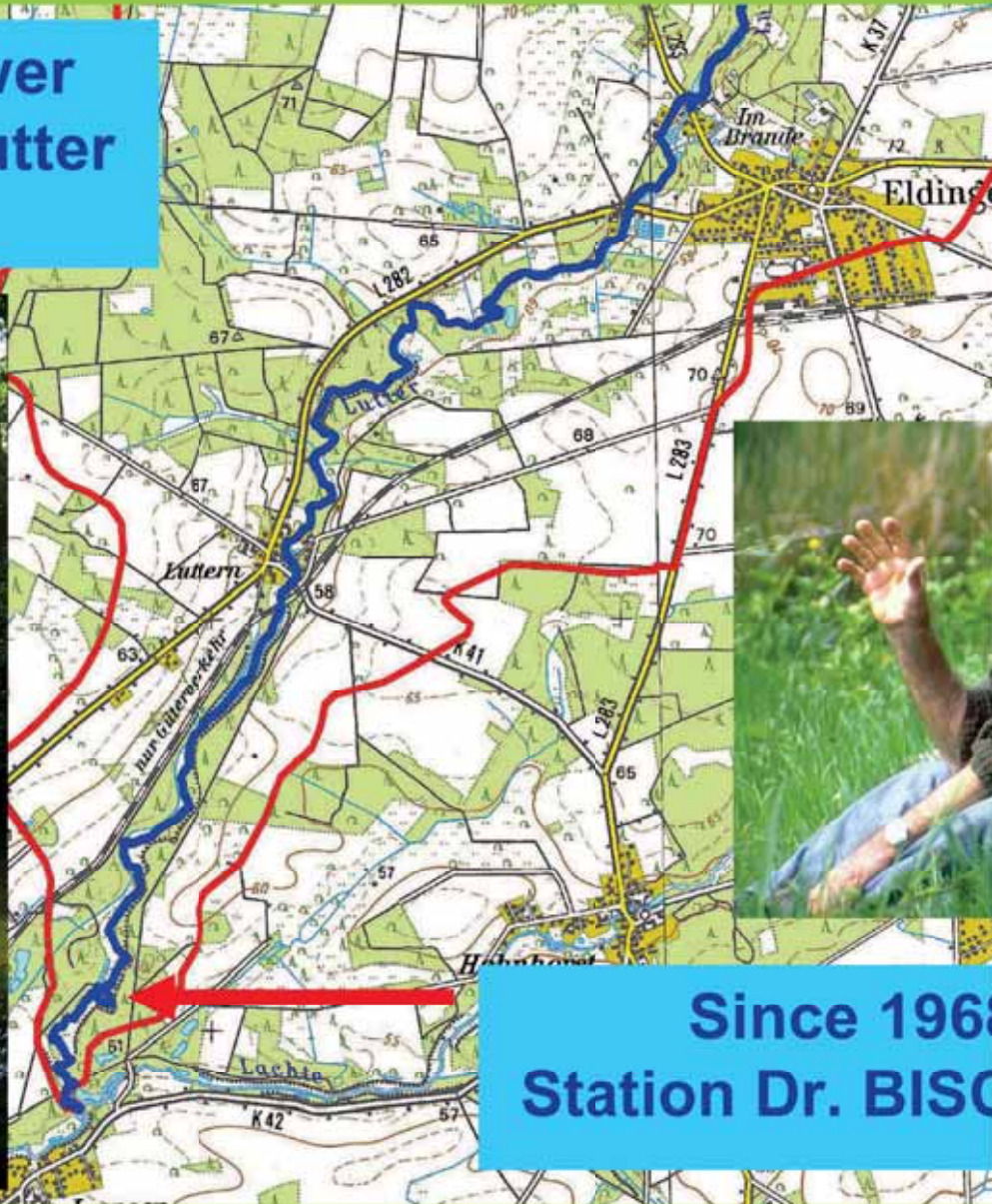
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Seminatural lower reaches of the Lutter (ca. 7 km)



Since 1963
Station Dr. BISO

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Pearl Mussel Restoration Work in Lower Saxony

- ▣ **1972 - 2000** artificially attachment of glochidia onto brown trouts from a fish hatcherie and releasing them just before the end of the parasitic period of the Glochidia in the river
- ▣ **1984 - 2000** Exposition some of these fishes in cages
- ▣ **1990 - 2000** Harvest young FWPM in the Laboratory and releasing them at suitable river sectors
- ▣ **1985 - 2001** Catching wild living brown trouts by electrofishing and artificially attachment of glochidia to their gills

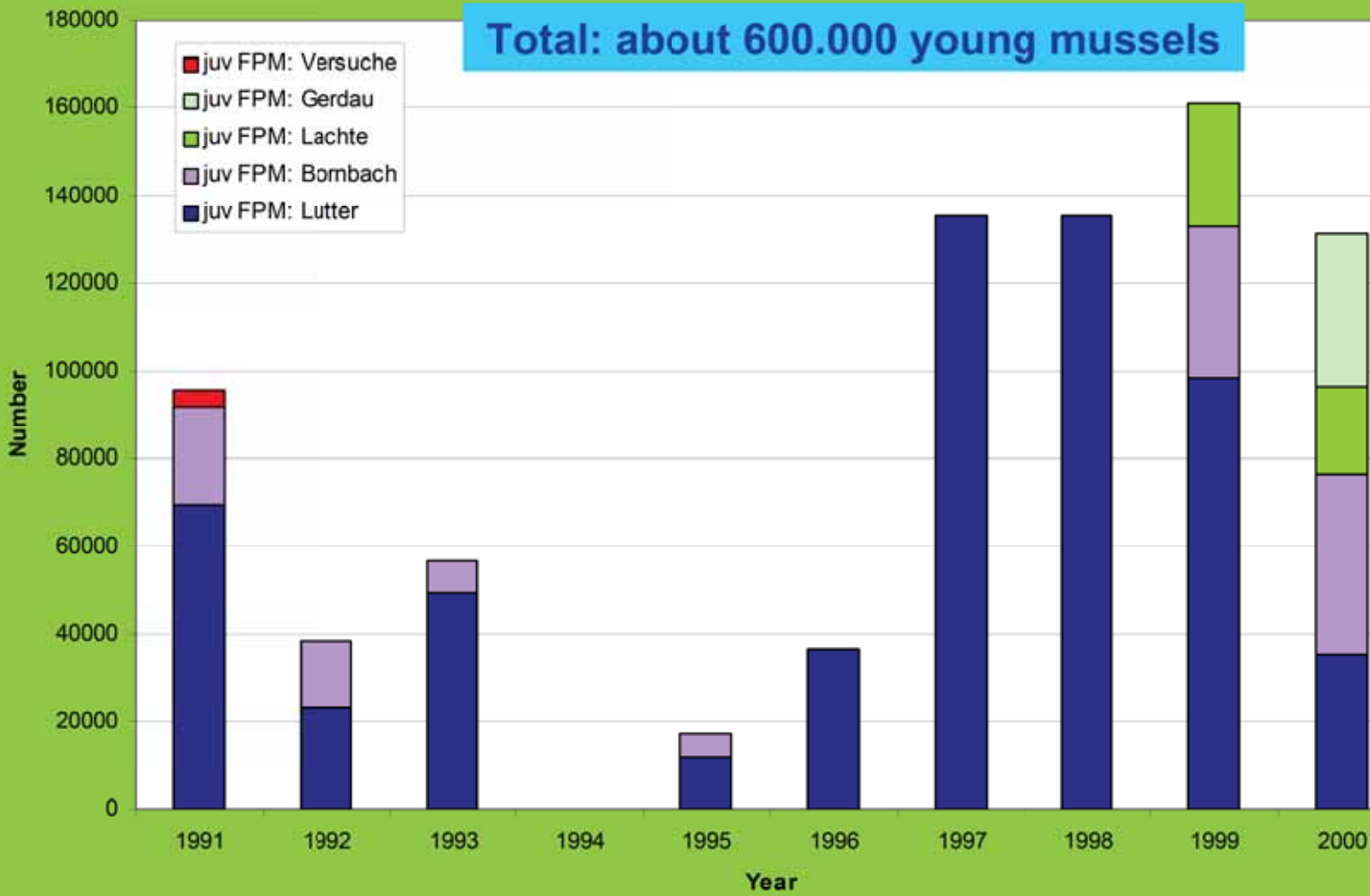
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Young pearl mussel harvested in Laboratory and released into pearl mussel brooks



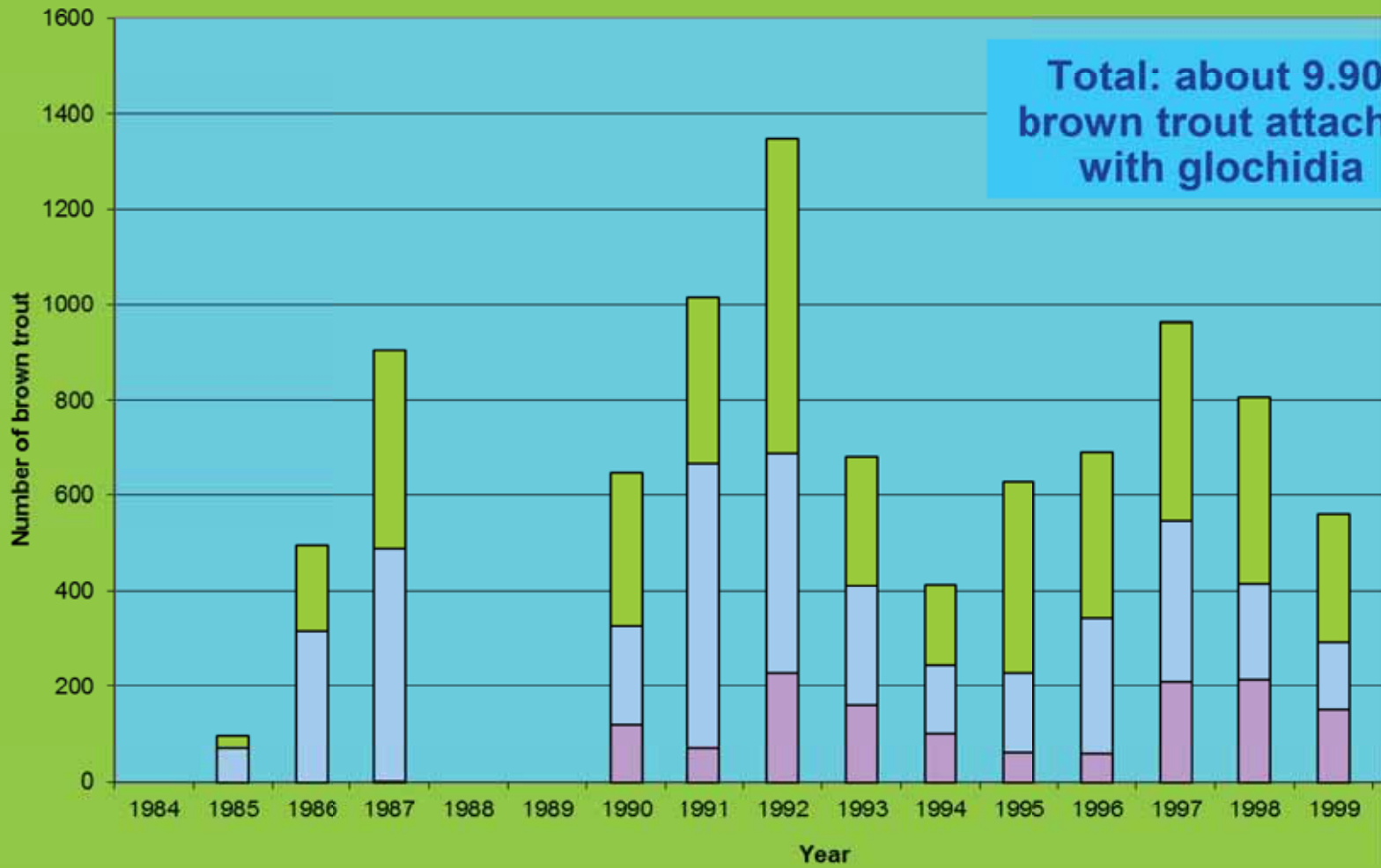
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Wild living brown trout attached with FWPM glochidia in the Lutter Downstream Eldingen



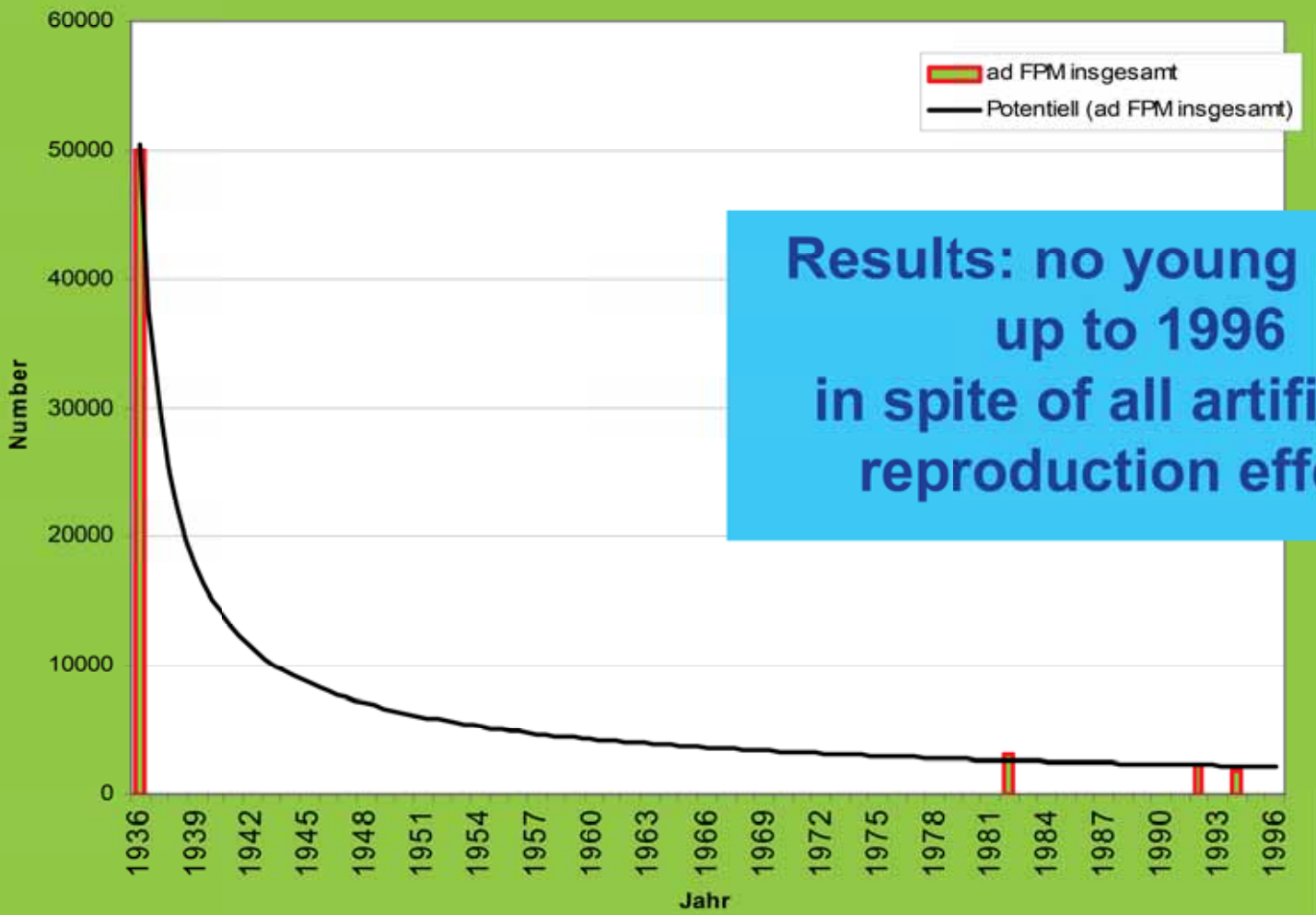
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Population development of the FWPM in the brooks Lutter and Lachte



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main problem: man made sanddrift in the brook



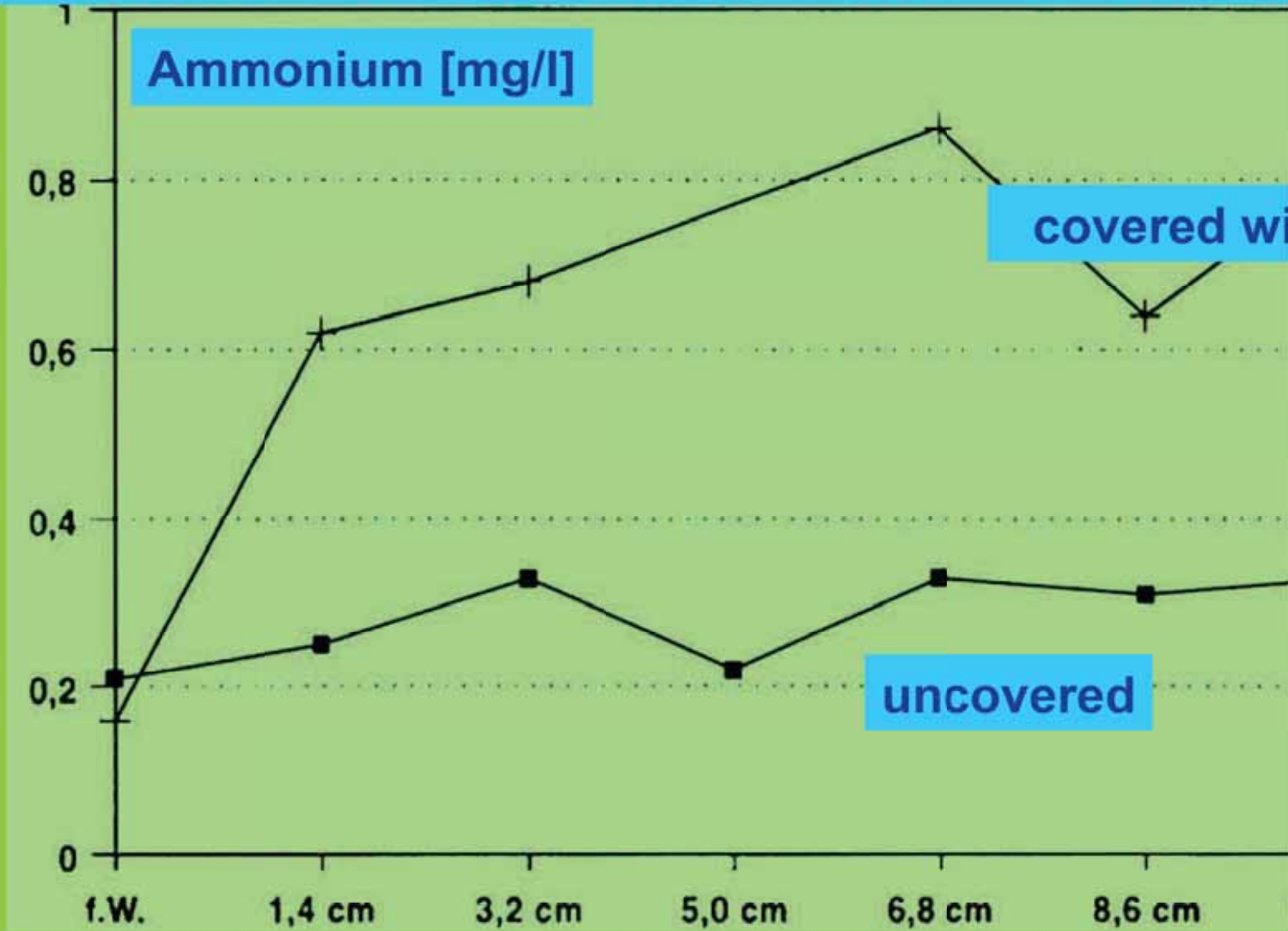
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Water quality in the interstitium (V. BUDDENSIEK, 1)



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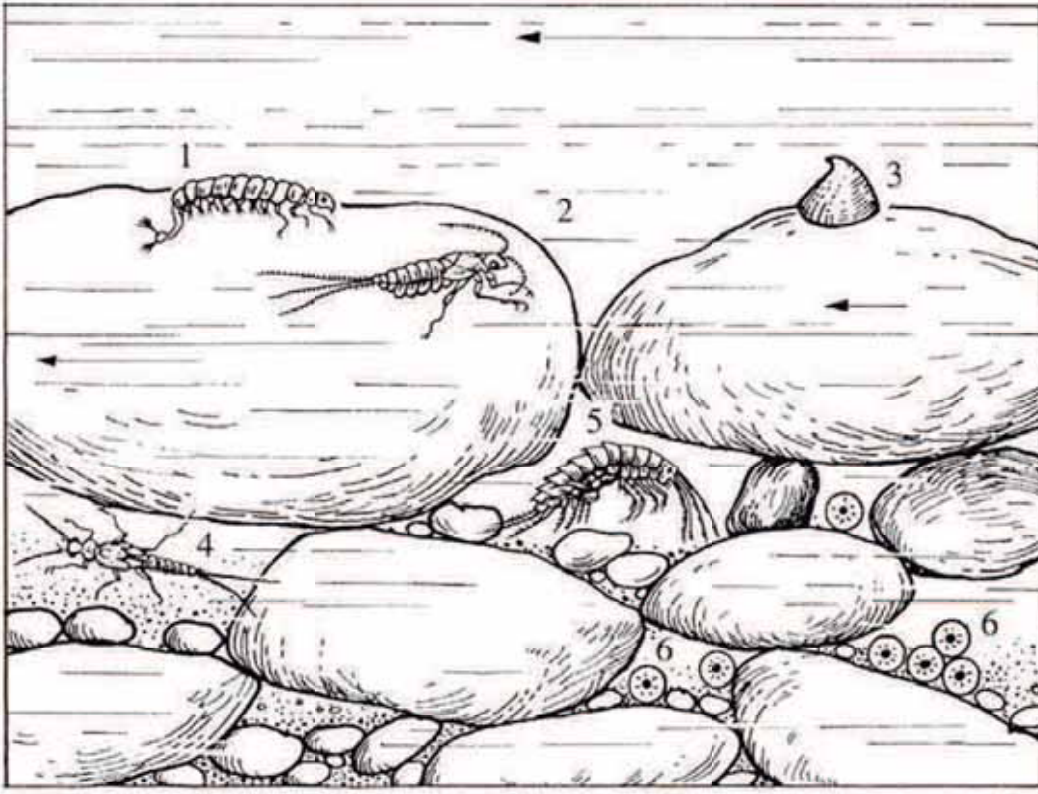
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Zeichnung aus PATT,
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**Fundamental principle of running waters: discharge of dissolved
result: very clean water**



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Fundamental principle of running waters: discharge of particulate substances, remaining of non-transportable particle sizes
result: lack of transportable particles, richness on larger structure particles



Mountain stream

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Mountain stream



Highland brook

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result: lack of transportable particles, richness on larger structure particles



Mountain stream



Highland brook



**Erosion on a
„brook ge**

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„brook genesis“: development
of a riverbed via erosion



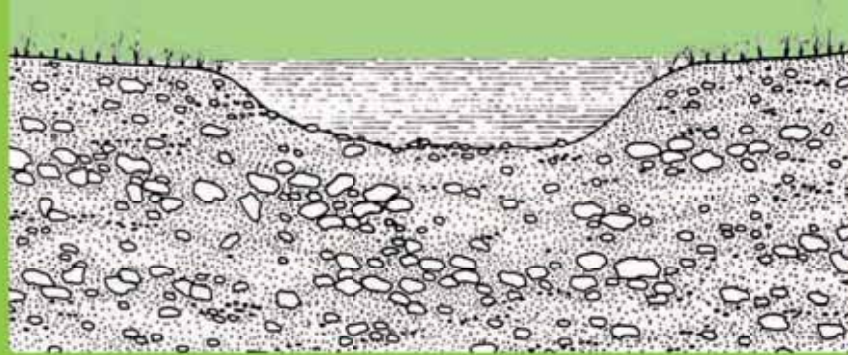
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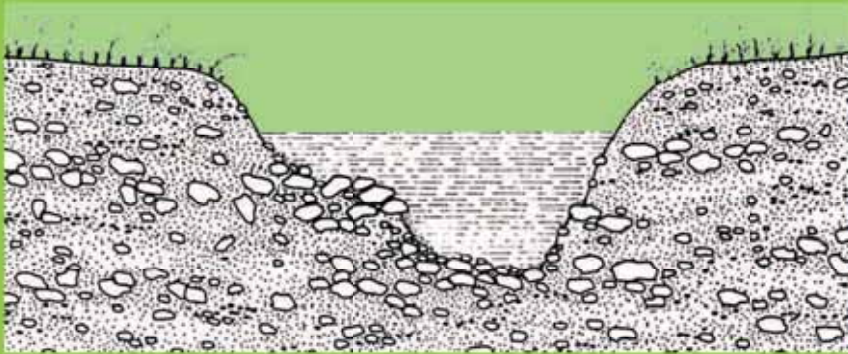
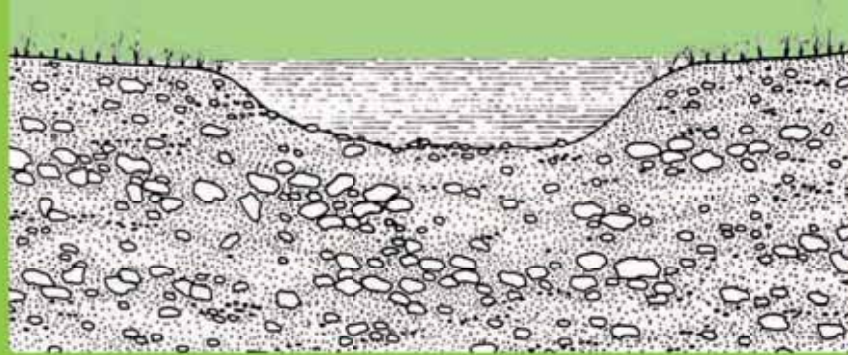
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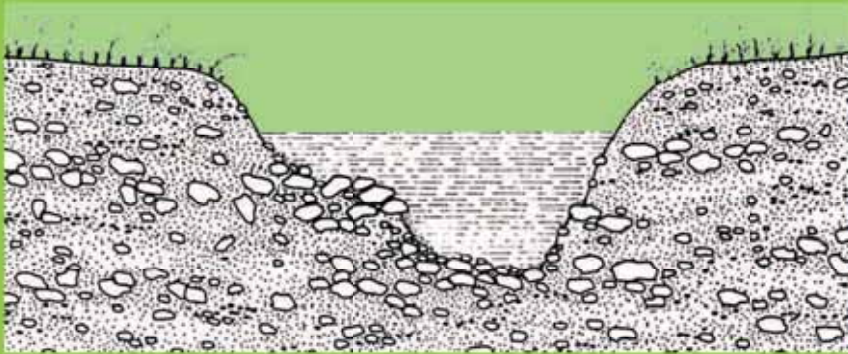
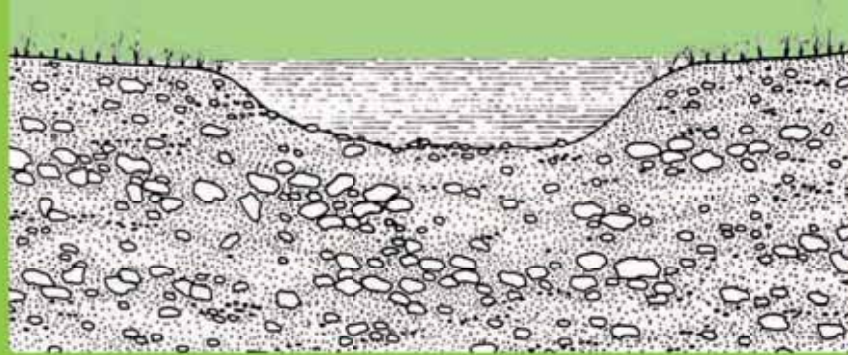
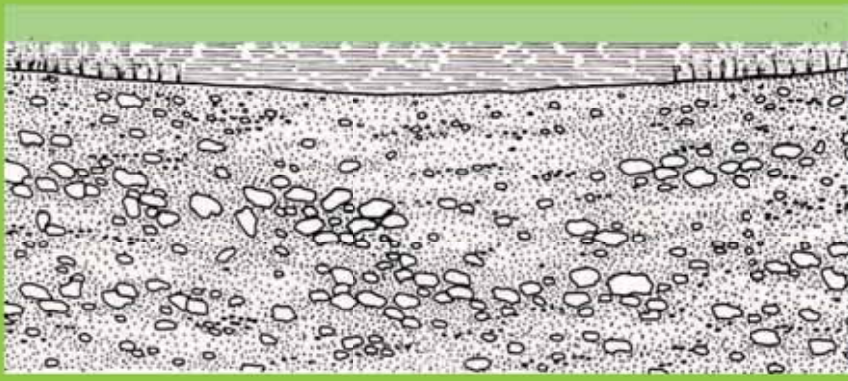
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problem
amounts of
in the ri

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problem
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Origin of
sand pro



Erosion

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Origin of the
sand problem

Endeholz Ditch

Trenching by machine



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monitoring „Sanddrift in
the Endeholz Ditch“
since 1991



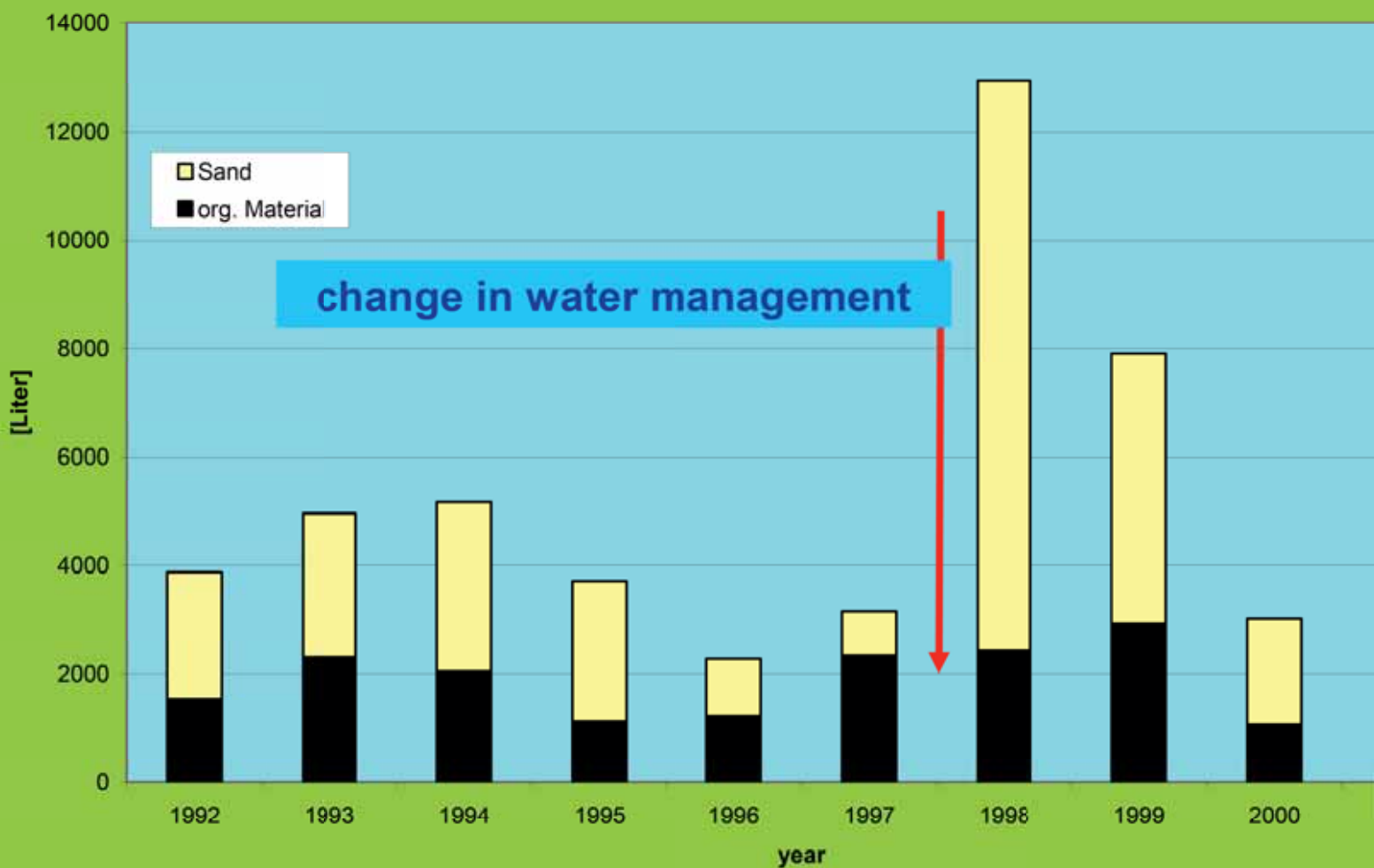
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sediment drift in the *Endeholz Ditch*



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April 1994

Endeholz
mouth to th



April 1998
after trenching by
machine

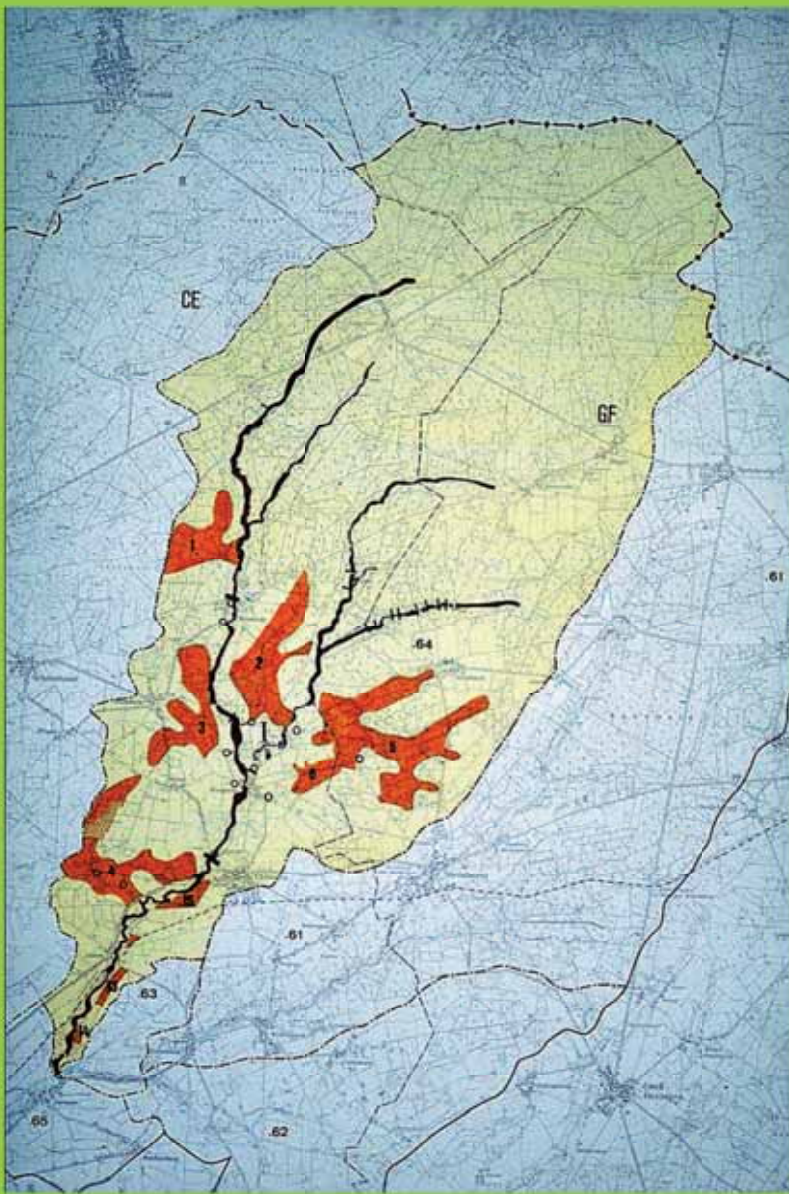


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Solution:

The Lutter Project

granted by:

- ▢ the Government of Germany (75 %)
- ▢ the Government of Lower Saxony (10 %)
- ▢ the parliaments of the counties of Celle and Göttingen (10 %)

Amount: 16.5 Mio Euro

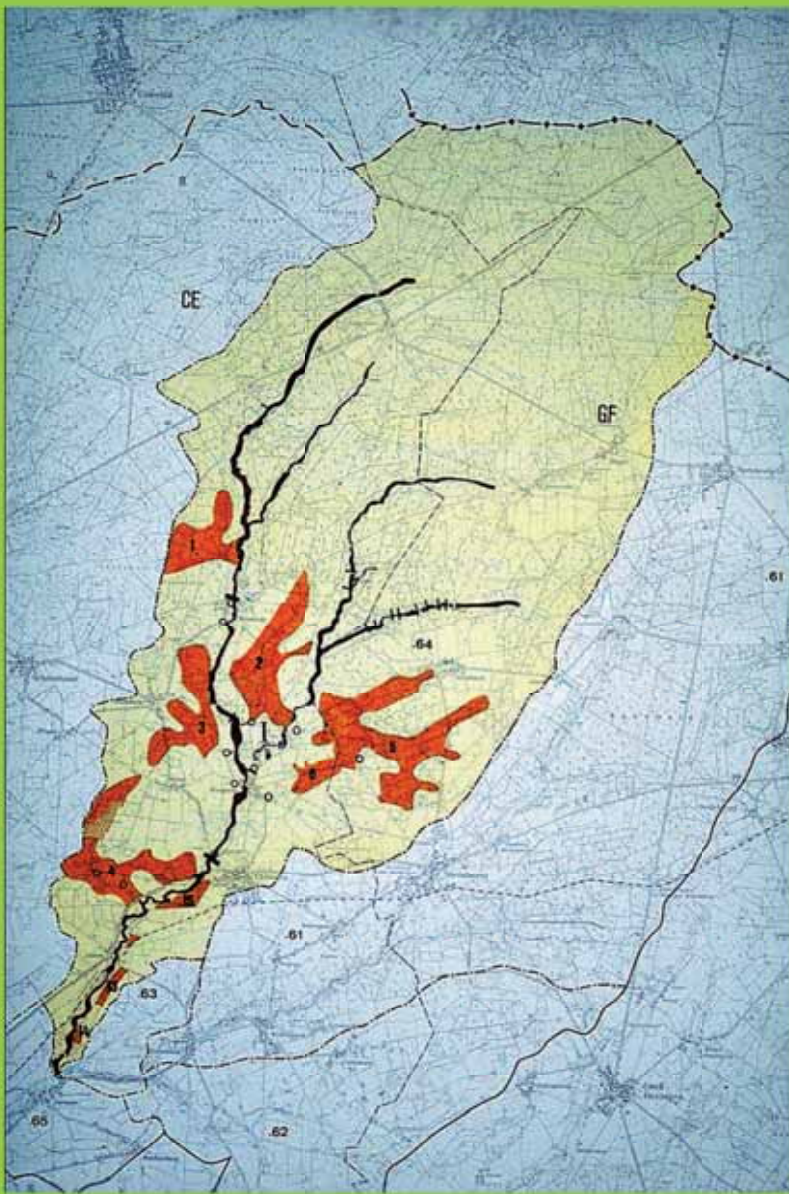
1989 - 2006

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Objectives:

Minimizing material input

- purchase the small river valleys to prevent dredging
- purchase moor region wetlands to prevent drainage
- building sand catcher ditches
- purchase watermills to drain off the water and mobilizing sand and mud accumulated

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Example of a sand



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Function document in winter 2004 / 2005



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1992: key to success

The Miller in the village of Eldingen sells his authority to pile up the Lutter to run a mill.

The mill is situated just above the seminatural lower reaches of the Lutter with the FWPM population



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Just after the s
water level was
for about 30 cm

**Objectives:
prevention drain off
the water with
mobilizing sand
and mud
accumulated**

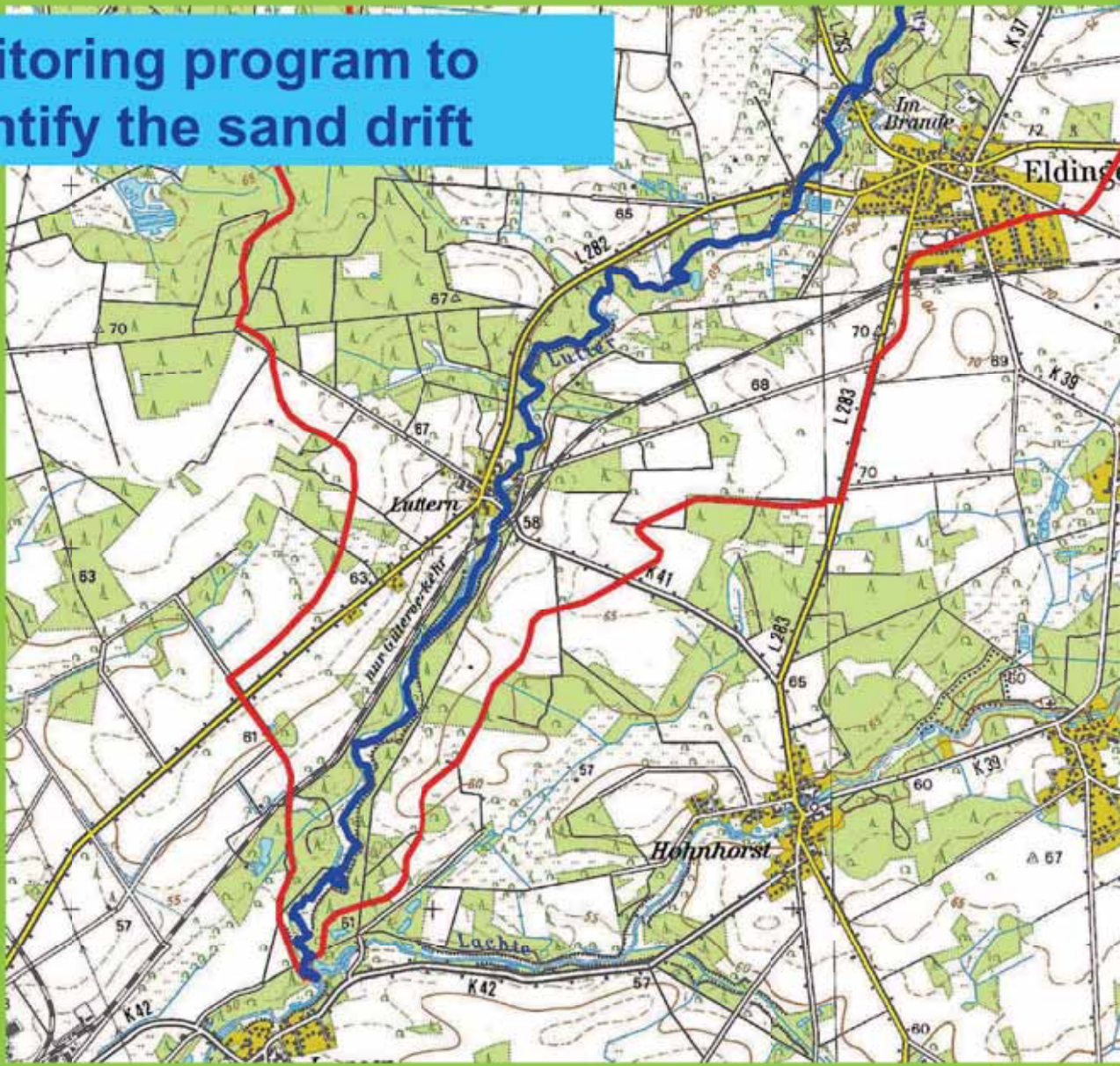


9,000 m³ pumped out

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Monitoring program to quantify the sand drift



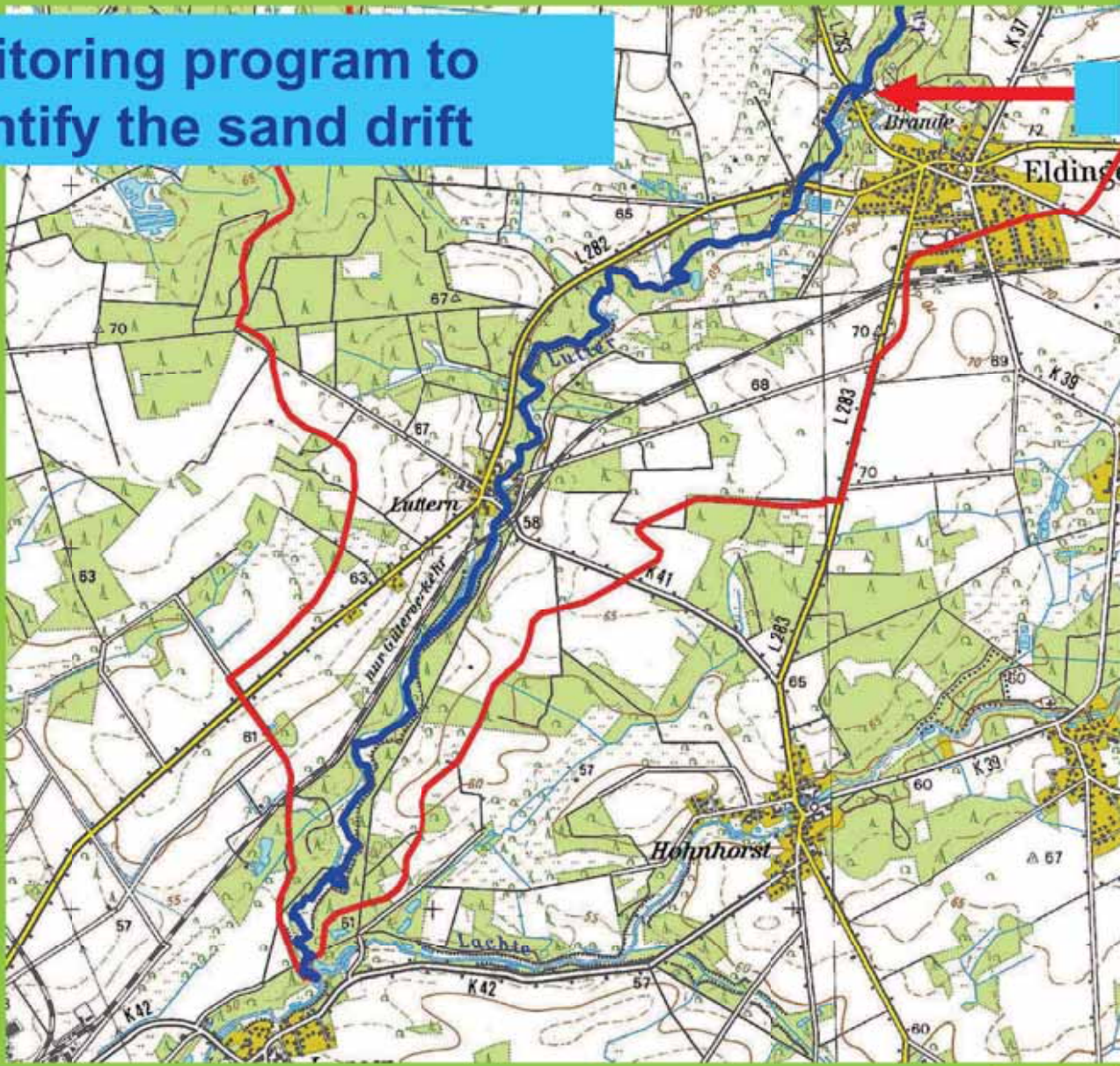
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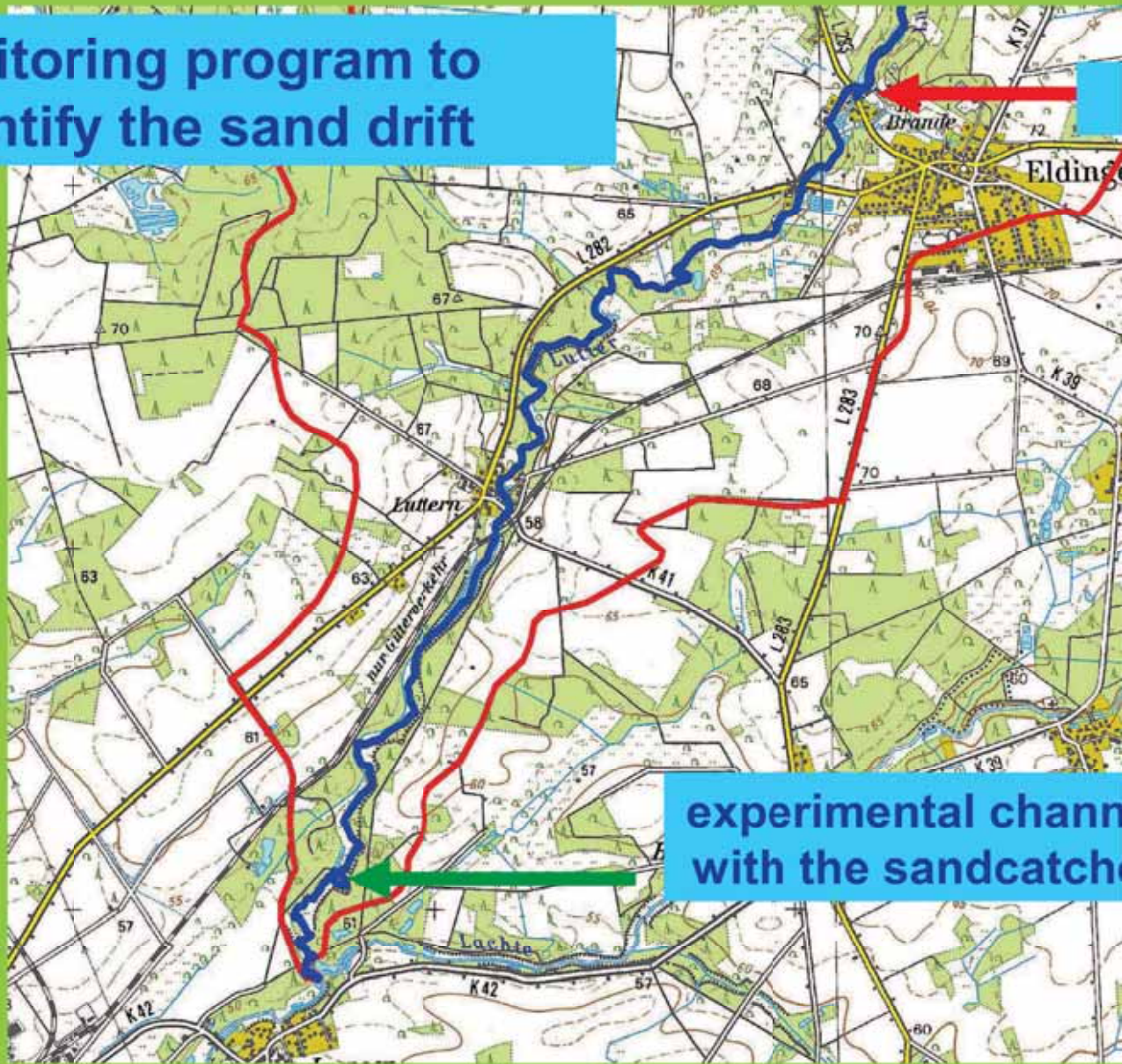
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Monitoring program to quantify the sand drift



experimental channel
with the sandcatcher

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Monitoring program to quantify the sand drift

sandcatcher

experimental channel
with the sandcatcher



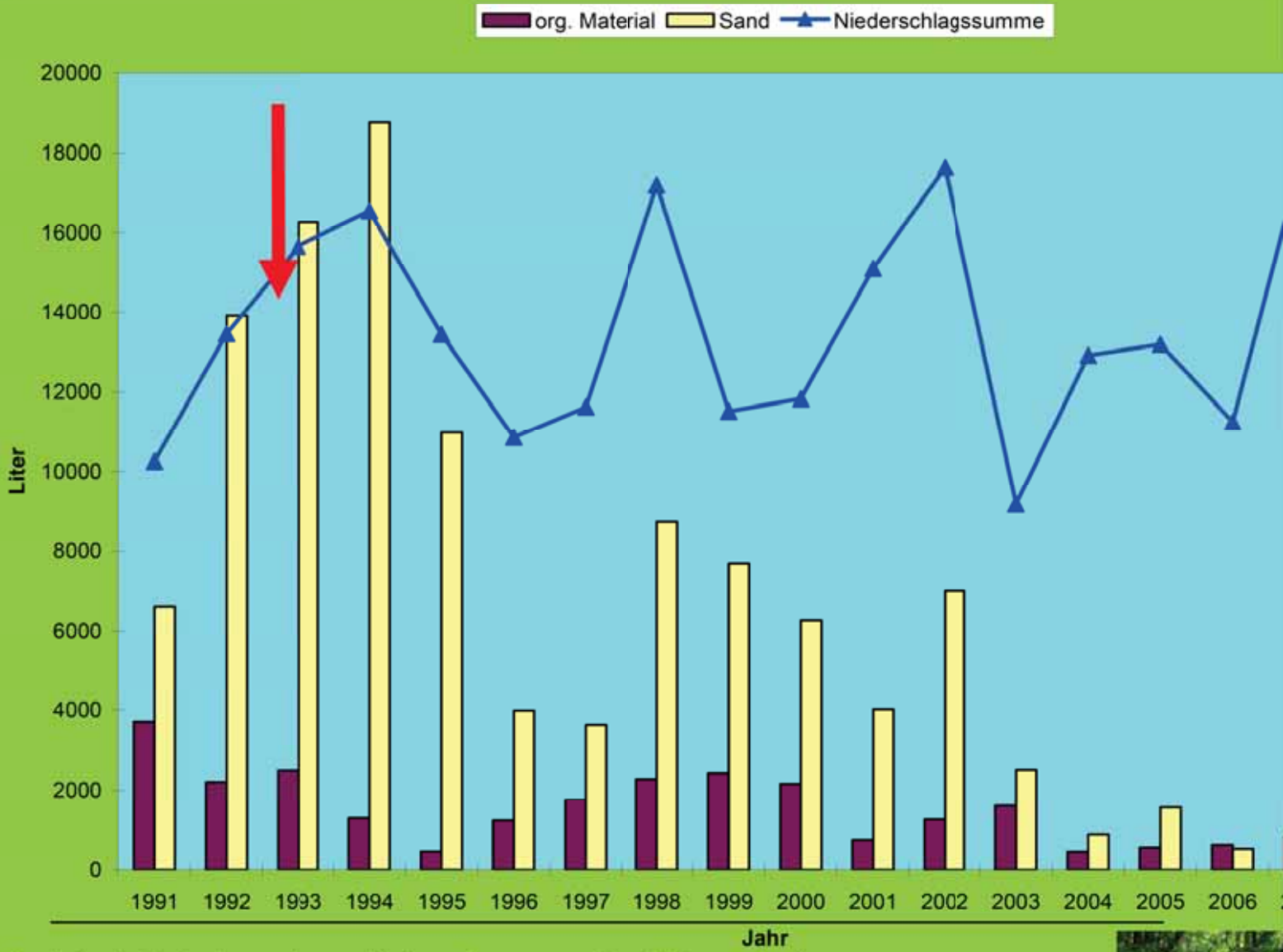
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Annual sediment drift in the experimental channel and ra



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First fast success
prevention to mobil
and mud

Gravel comes back
surface

comeback
of the
Minnows
Phoxinus phoxinus

(BLESS 1992)



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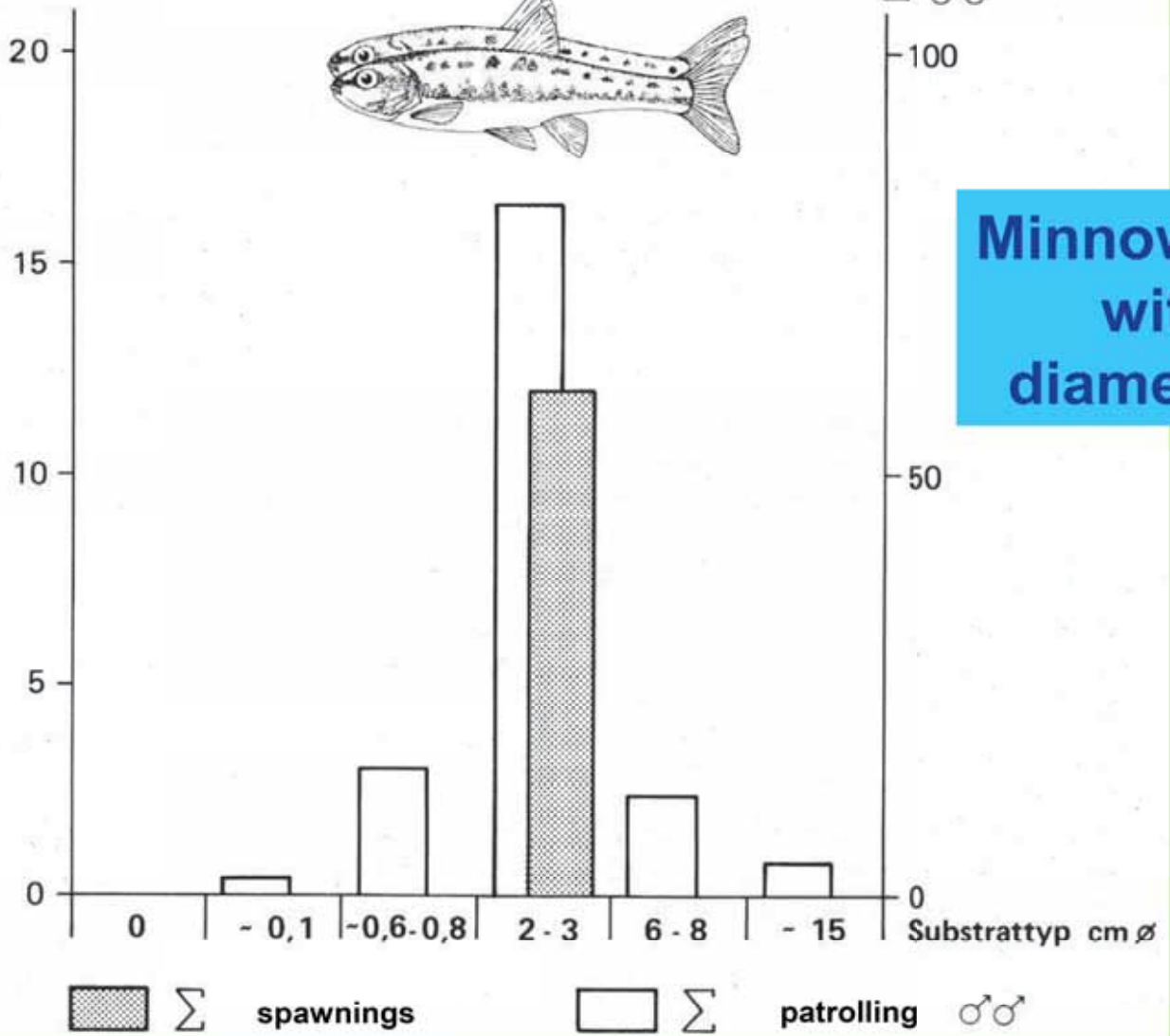
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Σ spawnings

Σ patrolling $\sigma\sigma$



Minnows n
with 2
diameter t

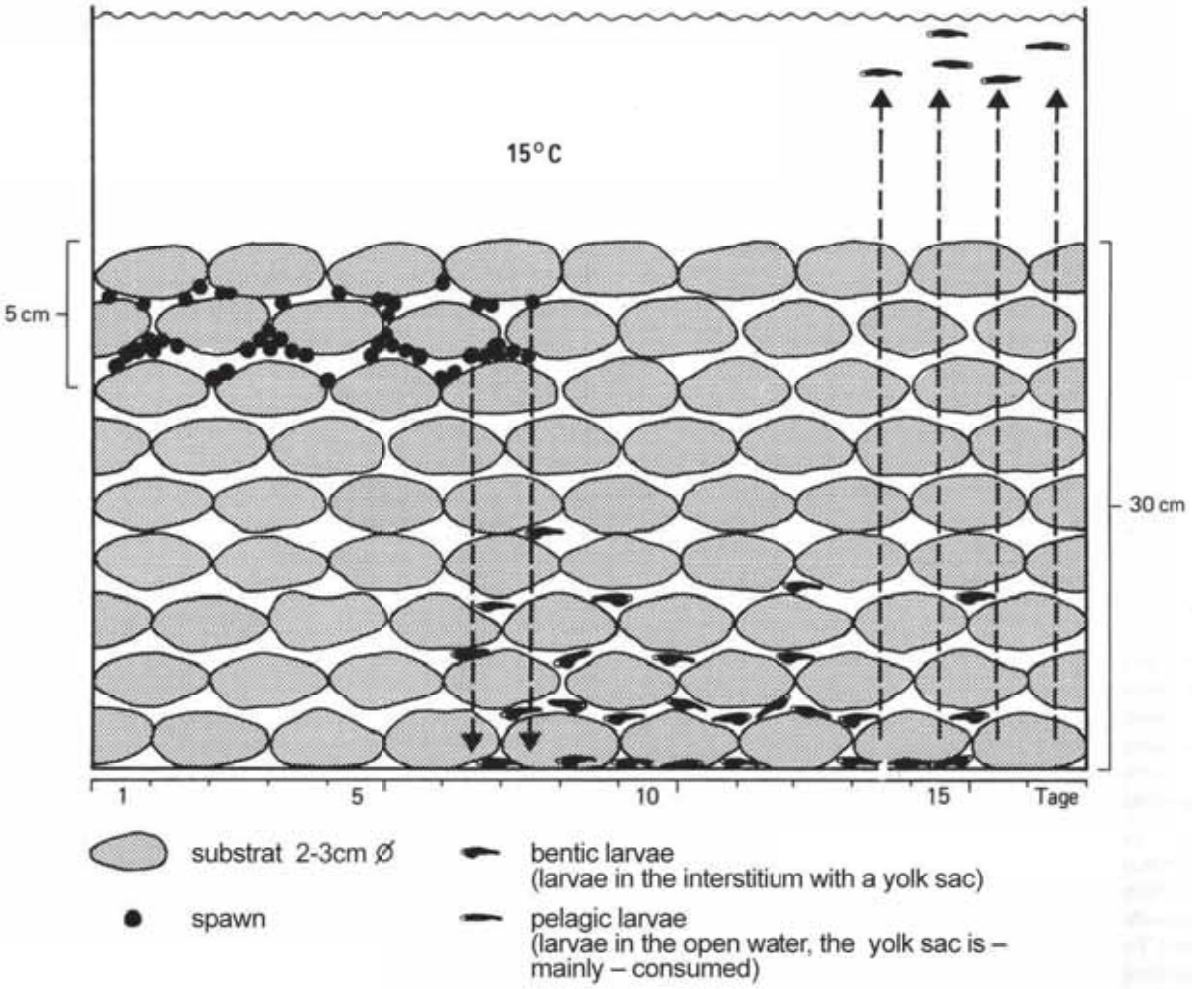
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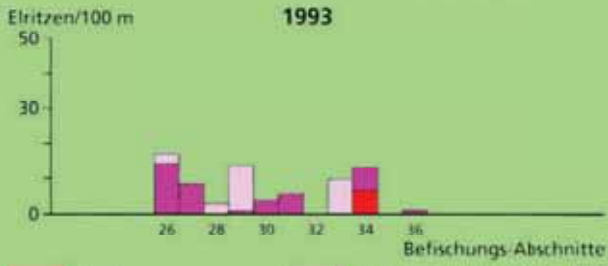
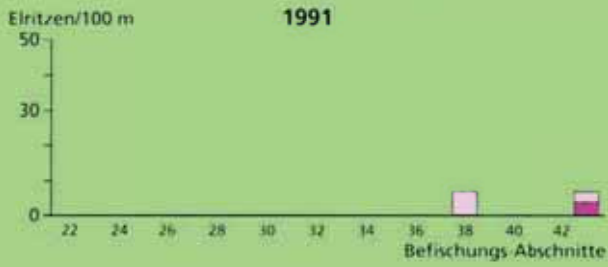
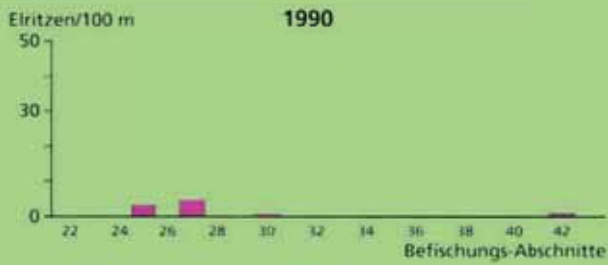
The larvae
in the m
space b
the gr



(BLESS 1992)

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■ Brut
 ■ Elritzen < 5 cm
 ■ Elritzen > 5 cm

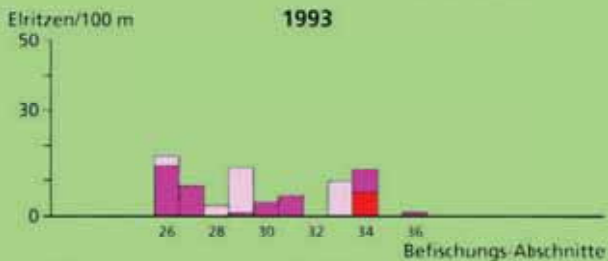
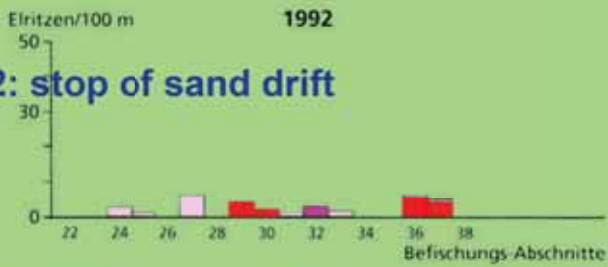
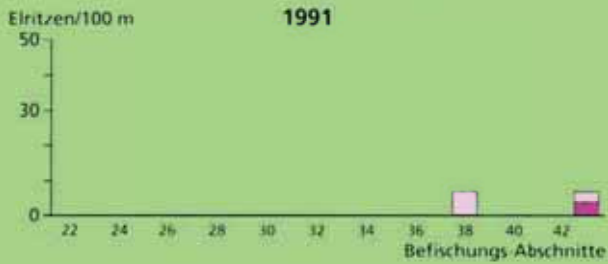
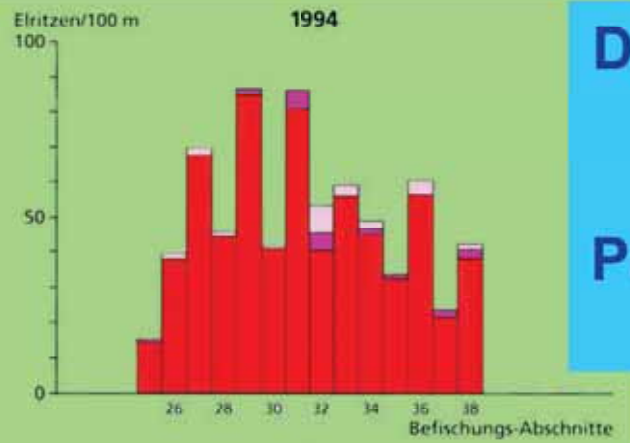
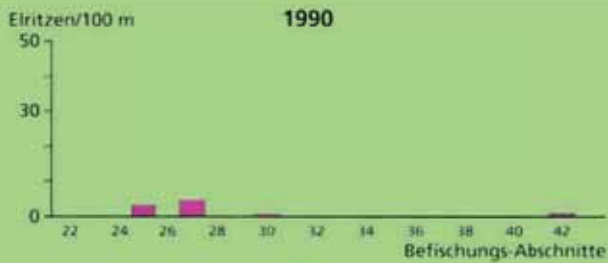
Summer 1992: stop of sand drift

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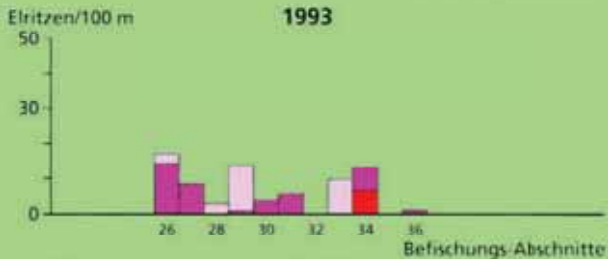
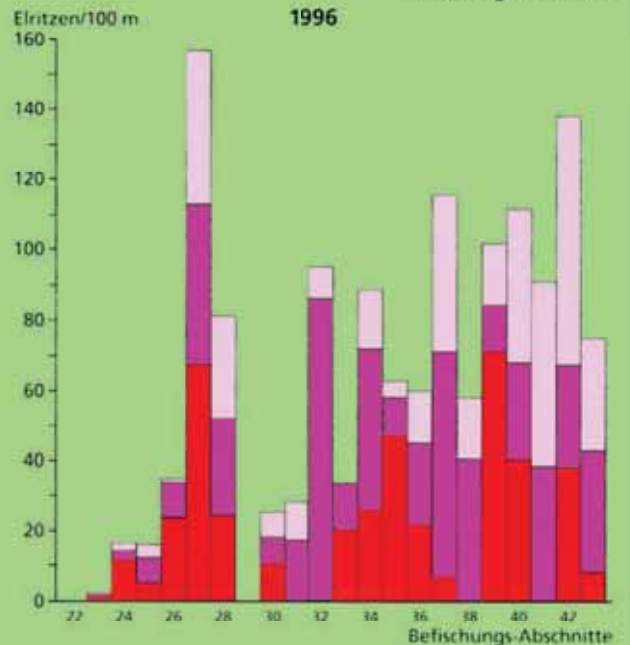
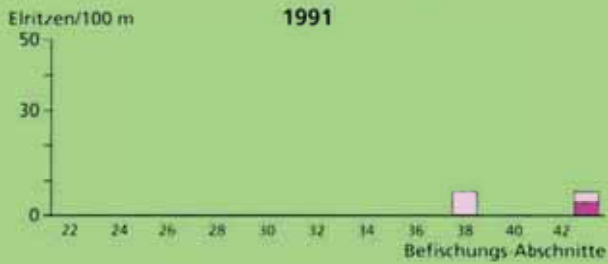
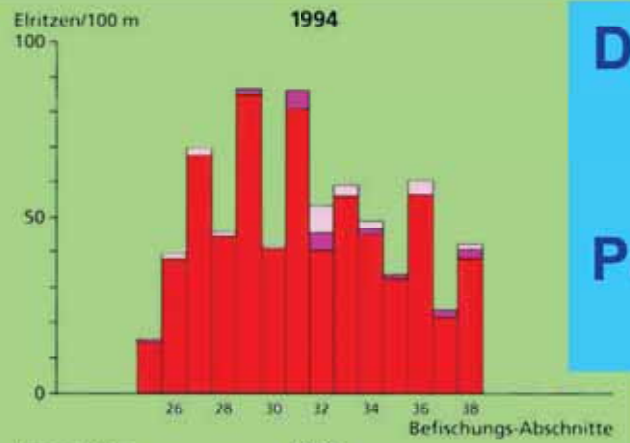
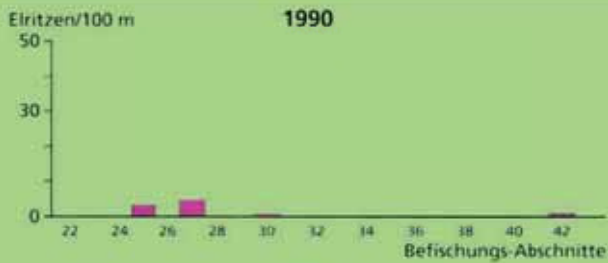
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1997
First shells of young
FPM



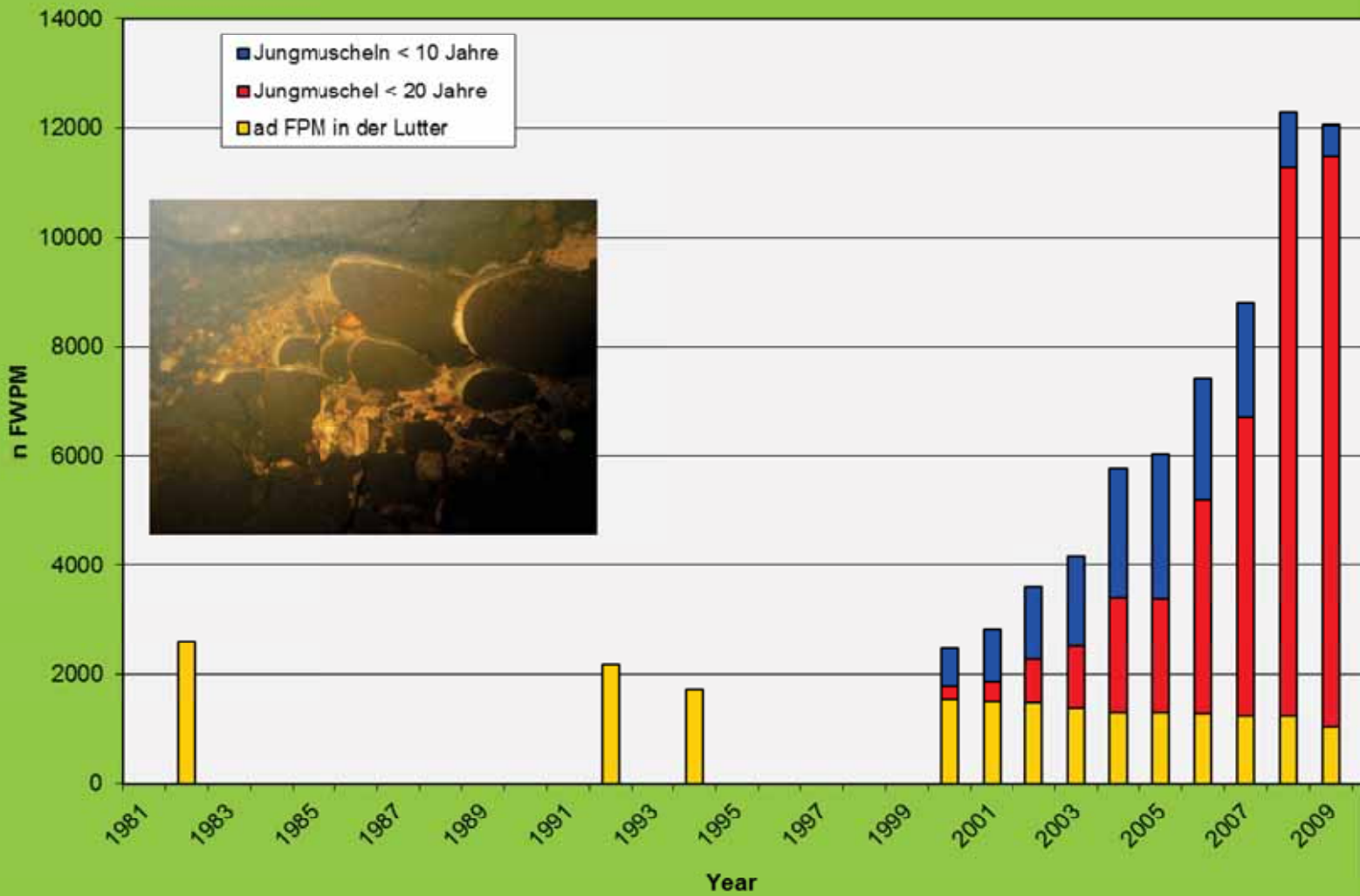
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Margaritifera margaritifera Population development in the




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**Next generation
naturally attached
trout with pearl
larvae in the gills (
2006)**

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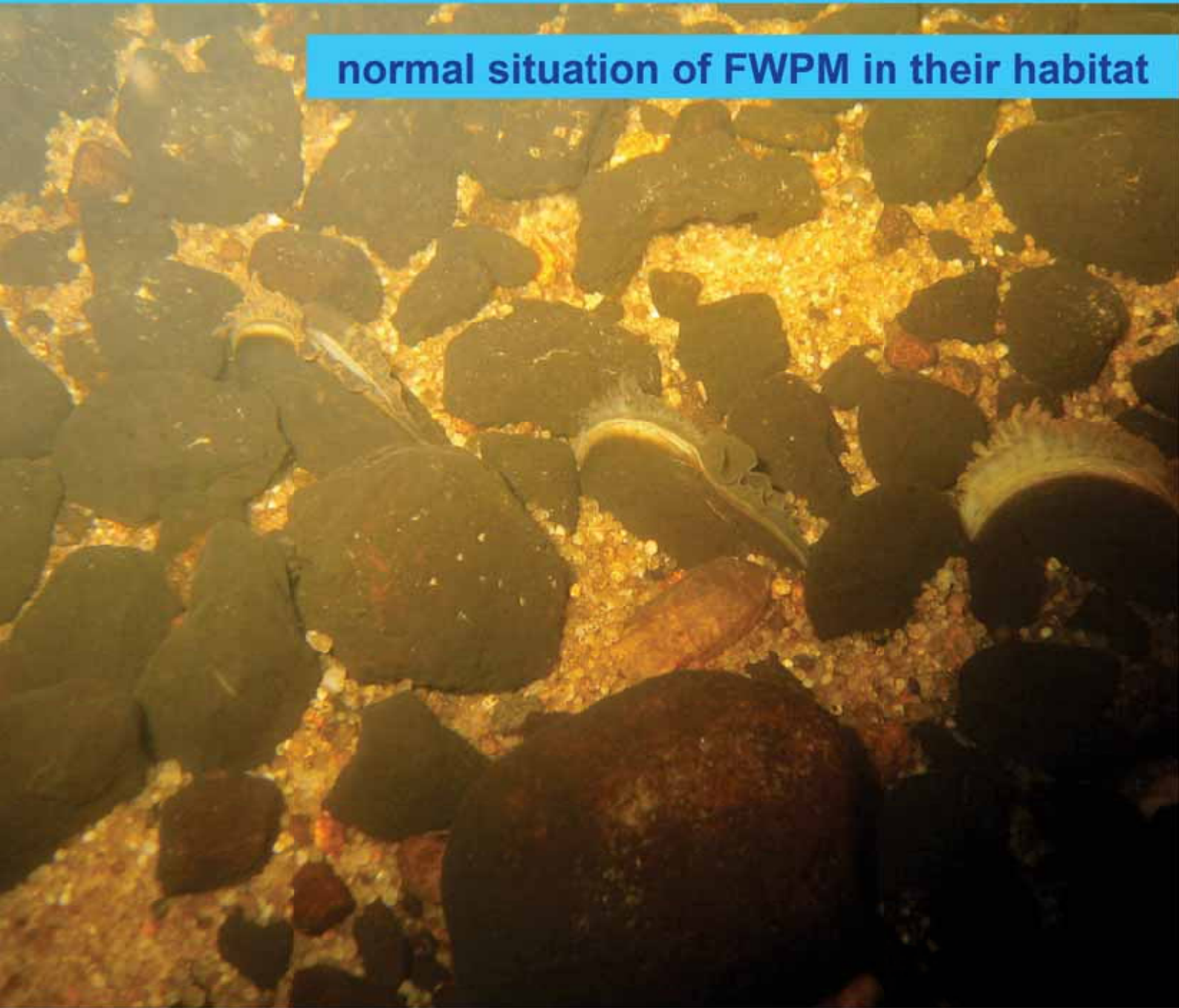
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But: also new problems „grow up“ in „undisturbed“ river

normal situation of FWPM in their habitat

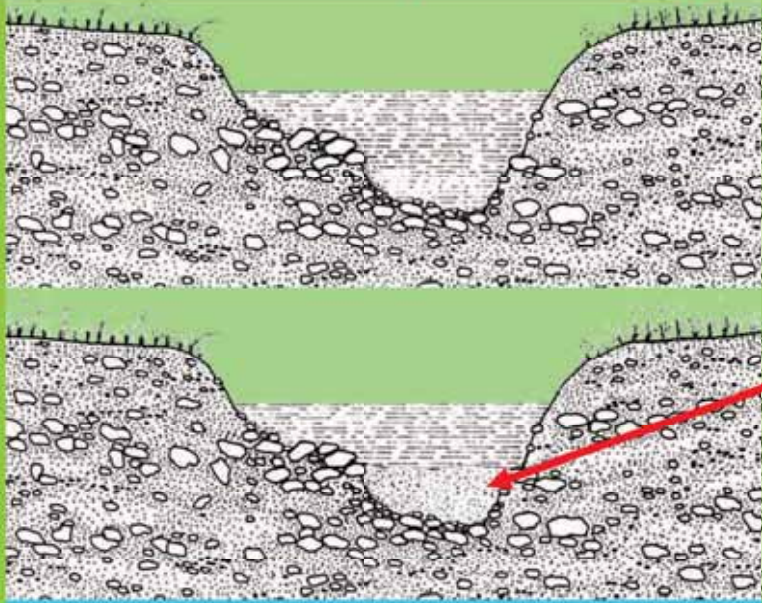


But: also new problems „grow up“ in „undisturbed“ river

very problematical situation for FWPM in some stre



But: also new problems „grow up“ in „undisturbed“ river



Sand input causes reduction of the river profile

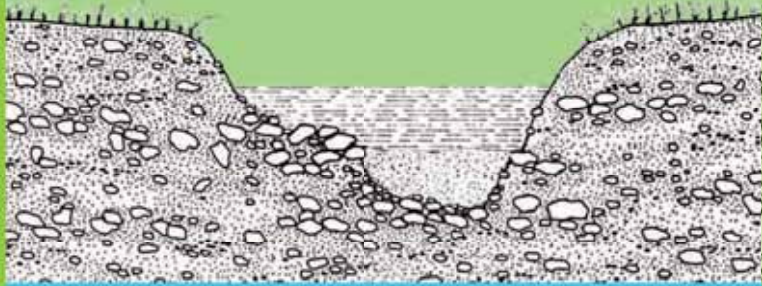
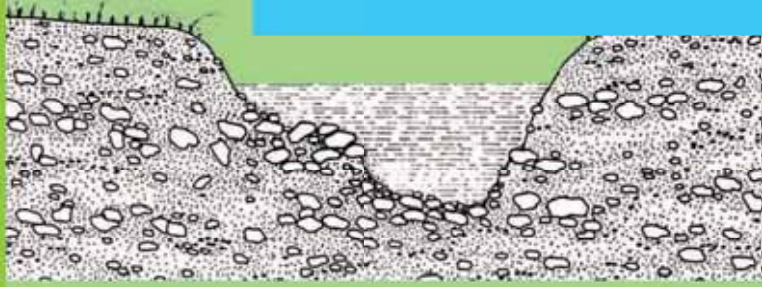
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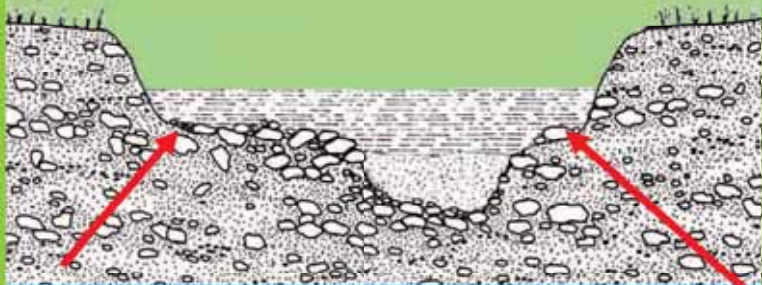
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new problems „grow up“ in „undisturbed“ river segments



Sand input causes reduction of the river profile



This causes erosion on the sides to enlarge the river profile again

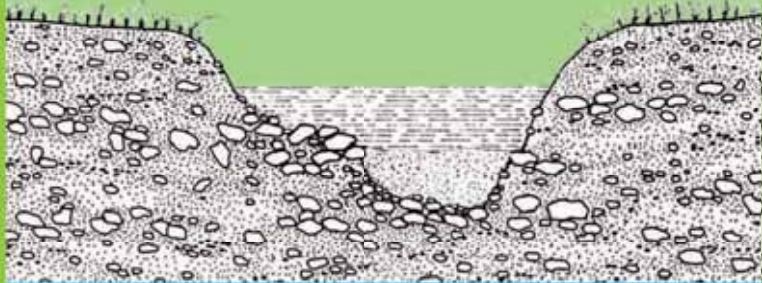
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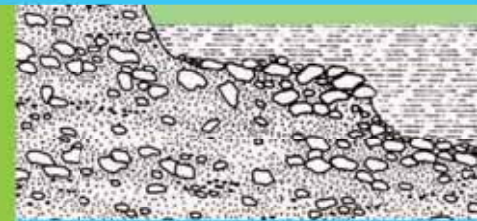
new problems „grow up“ in „undisturbed“ river segments



Sand input causes reduction of the river profile



This causes erosion on the sides to enlarge the river profile again



The reduction of the sand input of the Lutter project causes enlargement of the river profile

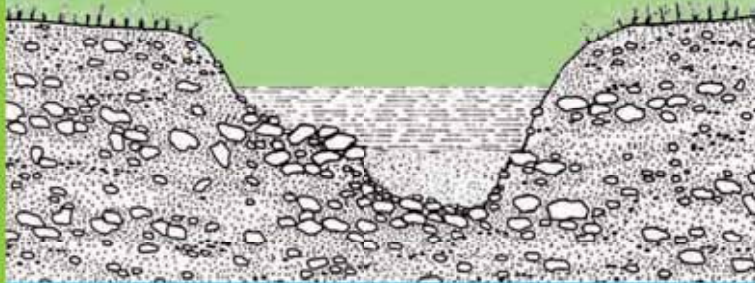
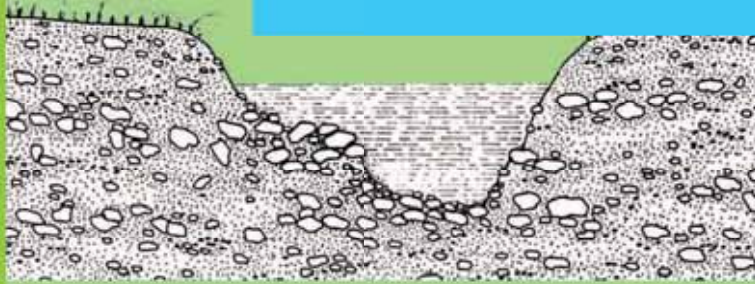
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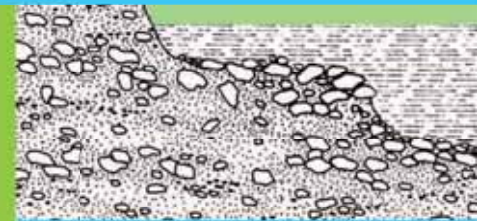
new problems „grow up“ in „undisturbed“ river segments



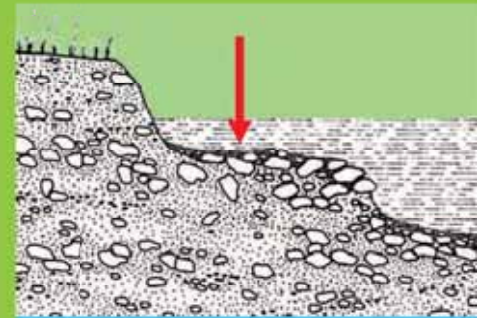
Sand input causes reduction of the river profile



This causes erosion on the sides to enlarge the river profile again



The reduction of the sand input of the Lutter Project causes enlargement of the river



This enlargement of the river causes a reduction of velocity and effects sedimentation of fines in stretches which rapidly overflow ... and „kills“ the here l

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Mussel

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The FWPM shell with bite
probably of Raccoon (*Procyon*)



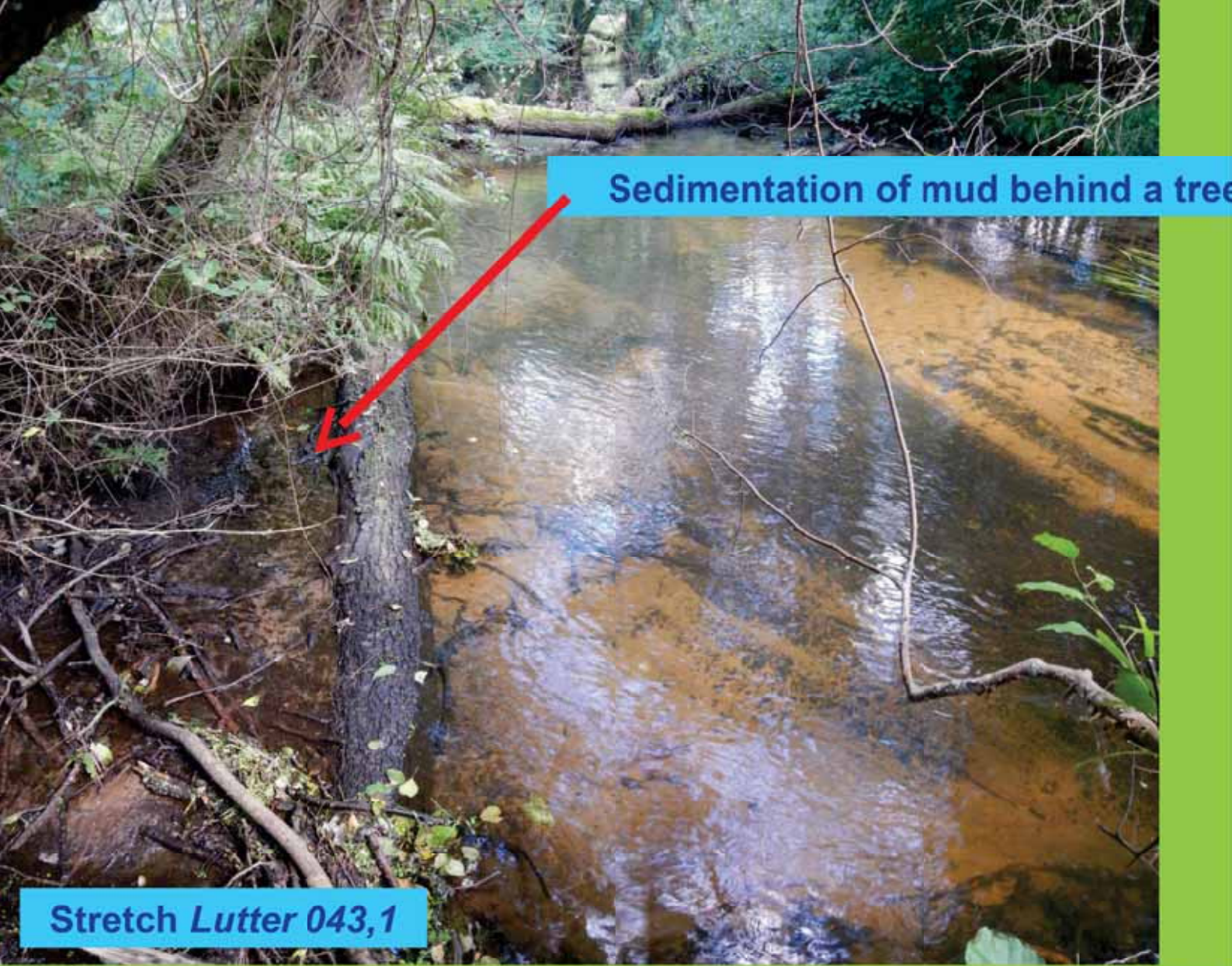
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Sedimentation of mud behind a tree

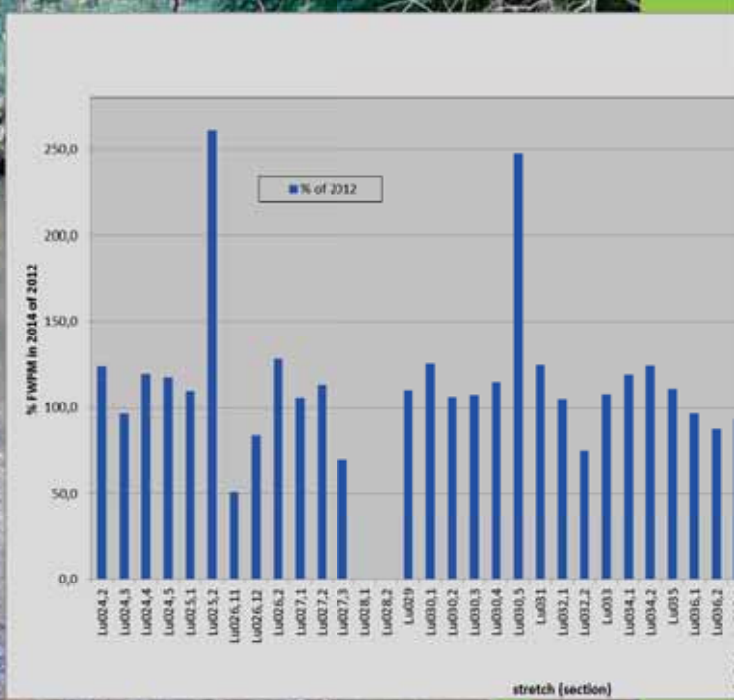
Stretch *Lutter 043,1*

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stretch *Lutter 043,1*

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Investigations in the River Lutter are still exciting



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... and sometimes I have to do „water manager



... and sometimes I have to do „water manager





Thank you
for your interest

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