## How to build amphibian passages and fences Lars Briggs, Amphi Consult and FPP Consulting. Ib@amphi.dk

#### Do we need amphibian passages?

Transportation corridors cause spatial separation of different parts of home ranges of frogs:



# What species of amphibians are killed on the roads?

- **Common species &** mass migration: **B.bufo**, **R.temporaria**
- Important in food chain Góry Stolowe:
- 2 main species -
- **10-20.000 adults**



- Less common species: P.fuscus, B.bombina, B.viridis, T.cristatus, R.arvalis, etc. Listed in EU habitat directive
- Via Baltica:
- 9 species >2-3.000 adults



# What kind of the passage structures are we talking about?

#### **Tunnels:**



#### **Guiding structures:**



#### **Tunnels:**

#### What hole will atract amphibians?

Does the lenght/shape/size of the tunnel matters?

#### Lenght: as short as possible

#### **Shape:** as open as possible (humidity!!!)





#### **Tunnels:**

#### Does the material the tunnel is built with matters?





#### **Tunnels:**

#### Does the water/soil in the tunnel matters?

#### Humid but with no standing water!



most species will not use it sometimes Rana sp.



the best is top soil or sand flor with ground contact.

#### concrete floor could be improved by top soil or sand layer , eg.

Tunnel use by migrating P.fuscus has risen from 40 to 80% after spreading 50mm thick layer of sand with a little soil on the tunnel floors (Iris John,2003).







#### How long frog will go along the fence?



## A1 motorway: 1,5 x 2 m tunnels Rana temporaria on moist humus



# A1 tunnel with Bombina on moist sand



## Bufo viridis on dry sand



#### What fence elements work best?



#### What fence elements work best?

#### concrete













#### How to secure side roads - gratings?



#### **Guiding board**

![](_page_15_Picture_2.jpeg)

![](_page_16_Picture_0.jpeg)

#### **HUMAN FACTOR!!!!**

![](_page_16_Picture_2.jpeg)

#### MAINTENANCE/HOW THINGS ARE MADE?:

![](_page_16_Picture_4.jpeg)

#### EVEN BEST DESIGNED SYSTEMS MIGHT FAIL BECAUSE NOT ENOUGH CARE DURING BUILDING and/or LACK OF MAINTENENCE<sup>17</sup>

## Every connection must be sealed. Amphibian climp excellent

![](_page_17_Picture_1.jpeg)

## What we can do to improve existing structures?

#### SMALL CHANGES MIGHT MAKE THE DIFFERENCE:

![](_page_18_Picture_2.jpeg)

## A bad repair of a bad tunnel

![](_page_19_Picture_1.jpeg)

### A better repair of a bad tunnel

![](_page_20_Picture_1.jpeg)

### Rana T on the stone path through a tunnel with water. Polish M A1

![](_page_21_Picture_1.jpeg)

## The stone path with clay cover. Frogs climp excellent up to path

![](_page_22_Picture_1.jpeg)

![](_page_23_Picture_0.jpeg)

## The pond in beetween the houses How to get there safe to breed ?

![](_page_24_Picture_1.jpeg)

## Water in cities. Frogs in cities. Fun for children .and adults.

![](_page_25_Picture_1.jpeg)

# GOOD: Betontunnel and betonfence

![](_page_26_Picture_1.jpeg)

# GOOD: Betontunnel and metalfence

![](_page_27_Picture_1.jpeg)

## FILM of Rana temporaria migration in tunnels in Poland

![](_page_28_Picture_1.jpeg)