



APPLICATION OF ALTERNATIVE FISHING GEARS AIMING TO REDUCE BY-CATCH IN THE BALTIC SEA COASTAL FISHERIES

LIFE NATURE PROJECT: USE OF BY-CATCH SAFE FISHING GEARS IN LITHUANIA, LATVIA, ESTONIA (2005-2009)

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Studies in LT have suggested that up to 10-15% of all wintering birds die in gillnets



- According to our Estonian colleagues seal by-catch is “unacceptably high”
- Seals causes high economic losses for fishermen

Typical conflict: nature conservation *versus* fishery



Our approach: we are not going to “ban something”, let’s recognize problems and try to solve them together

Threats and aims of the project

LT:

- Aim: reduction of wintering birds by-catch in gillnets by using alternative gears is essential for ensuring the favourable conservation status of bird species protected in the proposed marine Natura 2000 sites

EE and LV:

- Aim: to reduce seal by-catch using seal-safe fyke nets and increase profitability of fishery through reducing seal damage to gear



Applied methods

LT:

- A. Long-lines, aiming to reduce bird by-catch when catching cod and possibly salmon between November – April**
- B. Herring traps, aiming to reduce bird by-catch when catching herring and possibly smelt**

EE and LV:

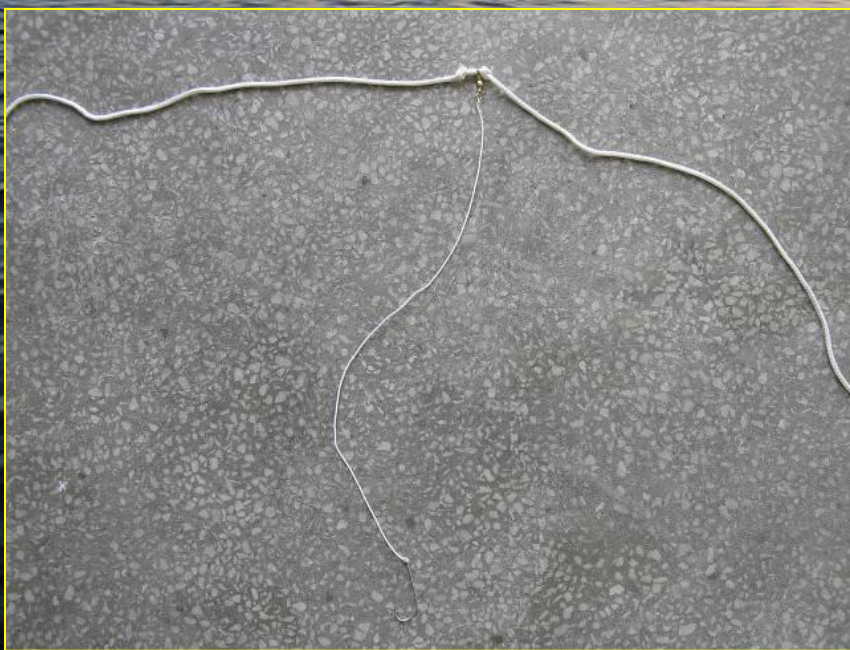
- C. "Seal-safe" fyke nets aiming to reduce seal by-catch and seal damage to the catch**

USE OF BY-CATCH SAFE FISHING GEARS IN LT

A. Longlining

The gear (for cod):

- Each longline is 500 m and 100 hooks, anchored at the end
- Baited on shore using peace of herring
- Snoods are stuffed into cuts of the plastic longlining bowl
- Usual setting time is at dusk, while hauling time is next morning



USE OF BY-CATCH SAFE FISHING GEARS IN LT

A. Longlining

The gear (for salmonids):

- Each longline is 500 m and 20 hooks
- Pelagic, floats hold at surface
- Snoods are 2 m long
- Baited by herring



USE OF BY-CATCH SAFE FISHING GEARS IN LT

A. Longlining

Methodology

- Gears were tested by experts first during 2005/2006 and 2006/2007
- Fishermen used longlines during 2007/2008 and 2008/2009

Design of longlining

- Longlines were used in parallel with traditional gill nets (50-55-60mm) at the same location and depth to test the effectiveness
- Both gears were set and taken out at the same time
- Time needed to prepare and set out gears was recorded and catch was compared

USE OF BY-CATCH SAFE FISHING GEARS IN LT

A. Longlining

Process of setting and hauling bottom longlines

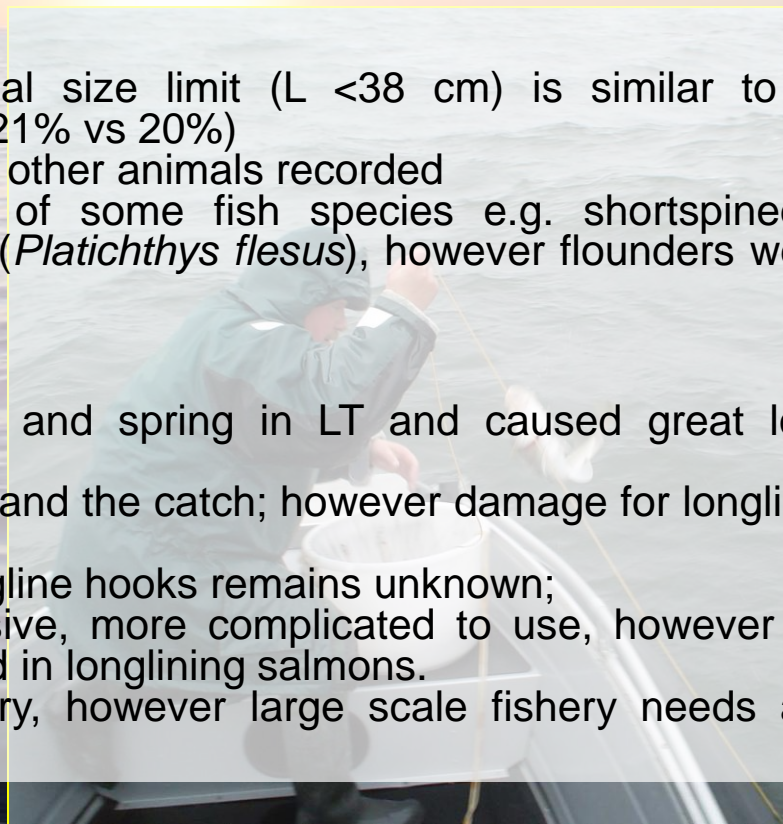
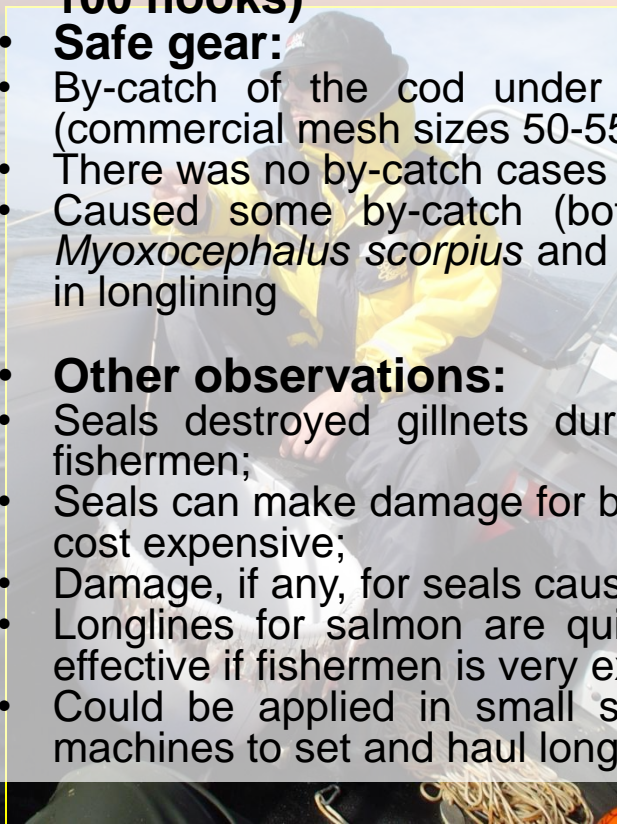


USE OF BY-CATCH SAFE FISHING GEARS IN LT

A. Longlining

Results and lessons learned:

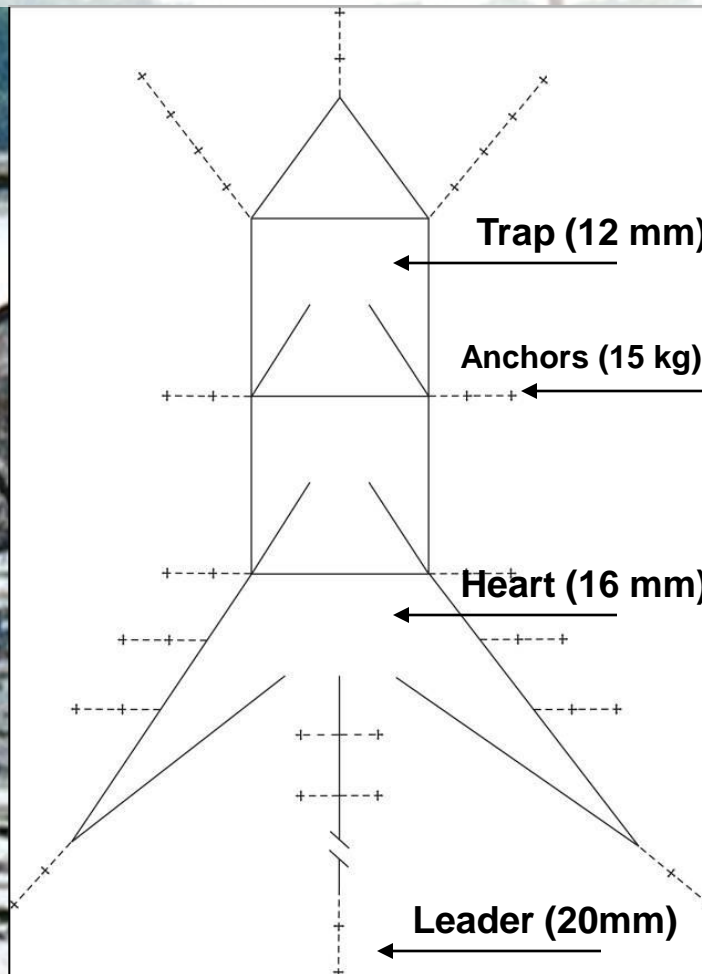
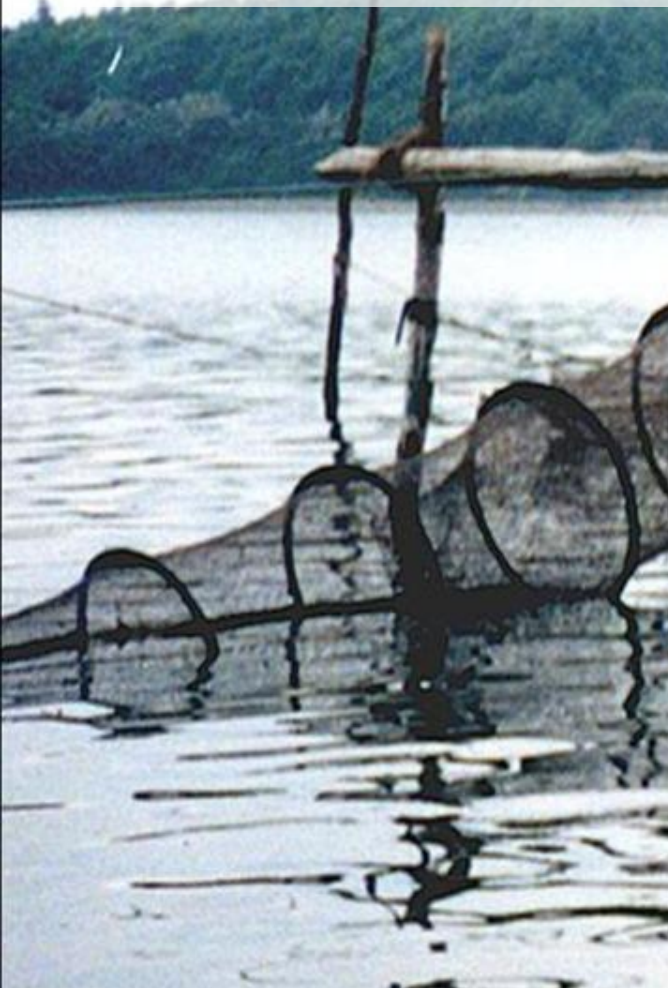
- **Easy to set out (~20 min for 100 hooks / 100m nets)**
- **Effective gear at catching cod (1,9 kg of cod in 100 m of nets vs. 5.5 kg per 100 hooks)**
- **Safe gear:**
 - By-catch of the cod under commercial size limit (L <38 cm) is similar to gill nets (commercial mesh sizes 50-55-60 mm; 21% vs 20%)
 - There was no by-catch cases of birds or other animals recorded
 - Caused some by-catch (both gears) of some fish species e.g. shortspined sculpin *Myoxocephalus scorpius* and flounders (*Platichthys flesus*), however flounders were larger in longlining
- **Other observations:**
 - Seals destroyed gillnets during winter and spring in LT and caused great losses for fishermen;
 - Seals can make damage for both gears and the catch; however damage for longlines is not cost expensive;
 - Damage, if any, for seals caused by longline hooks remains unknown;
 - Longlines for salmon are quite expensive, more complicated to use, however could be effective if fishermen is very experienced in longlining salmons.
 - Could be applied in small scale fishery, however large scale fishery needs automatic machines to set and haul longlines



USE OF BY-CATCH SAFE FISHING GEARS IN LT

B. Trapnets

The gear. Outline of trap net used in the area of the open coastal waters of the Baltic Sea in LT and LV



USE OF BY-CATCH SAFE FISHING GEARS IN LT

B. Trap nets



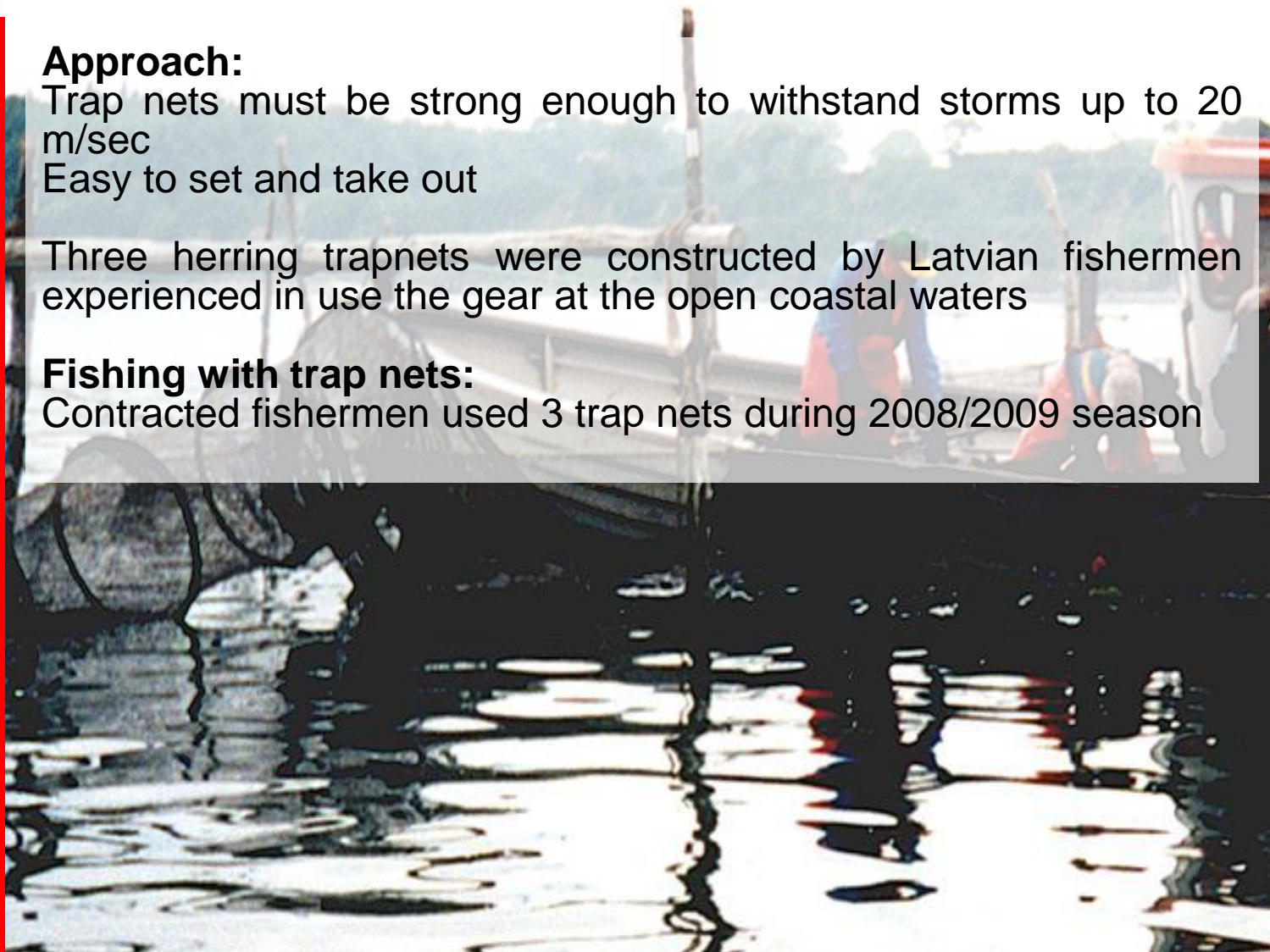
Approach:

Trap nets must be strong enough to withstand storms up to 20 m/sec
Easy to set and take out

Three herring trapnets were constructed by Latvian fishermen experienced in use the gear at the open coastal waters

Fishing with trap nets:

Contracted fishermen used 3 trap nets during 2008/2009 season



USE OF BY-CATCH SAFE FISHING GEARS IN LT

Results and lessons learned:

- Trapnet is not complicated to use if fishermen are experienced (takes few hours);
- One trapnet was damaged after storm but the gear was repaired
- Fishermen in LT faced first conflict with seals who destroyed the netting material
- Algae and *Cercopagis pengoi* grow on the net and limits the effectiveness of the gear
- By-catch of fish below commercial size limit can be rather big, however fish can be released
- The gear catches other fish species effectively in addition to herring. Therefore, it could be used for longer season than it was originally expected and planned
- The results are positive, since two similar gears have been obtained and used by not contracted company; one contracted company constructed additional gear on their own expenses;

Limiting factors:

- Storms (especially during cold-water period)
- Floating ice, which could cause great damage or even loss of the gear
- To set out or take out the gear is labour and time consuming activity for inexperienced fishermen
- Need for large enough boat to operate
- Costs of new gear





USE OF BY-CATCH SAFE FISHING GEARS IN LT



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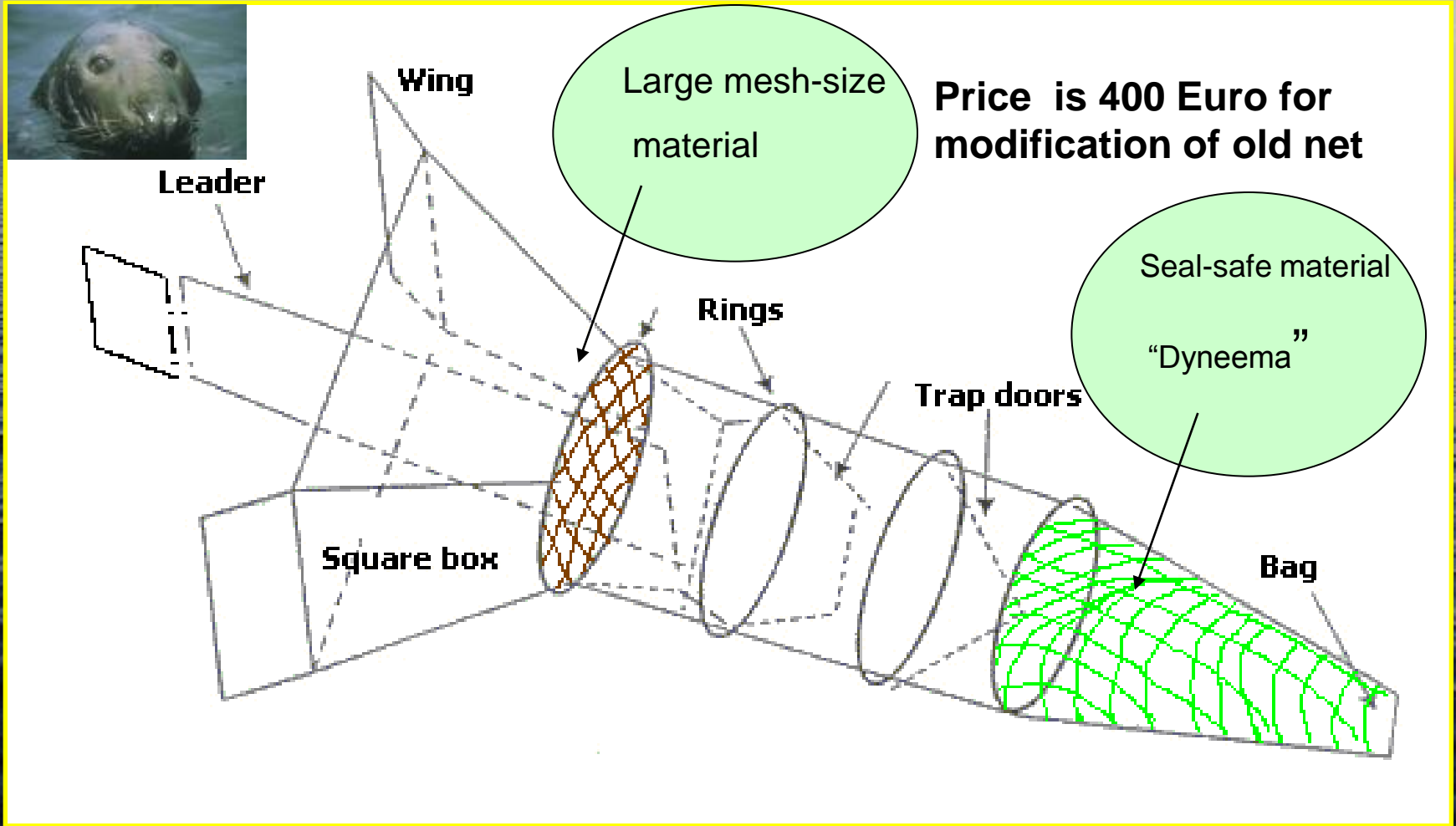


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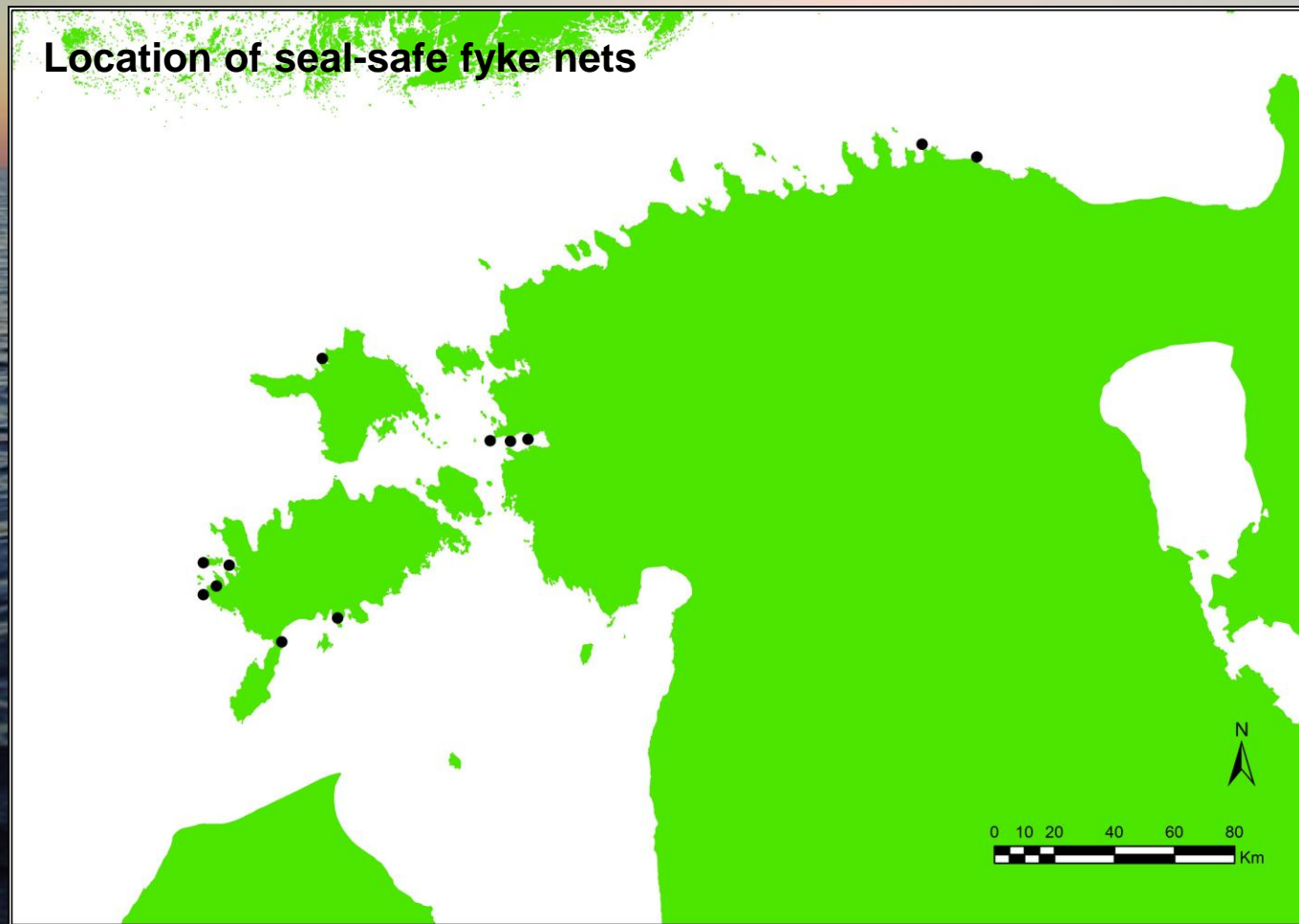
Composition of fish catch in project' trap nets, %		Composition of fish catch in old large herring trap-net, %	
<i>Clupea harengus membras</i>	84,8	<i>Clupea harengus membras</i>	98,5
<i>Belone belone</i>	7,8	<i>Carassius carassius</i>	0,1
<i>Abramis brama</i>	0,1	<i>Belone belone</i>	1,3
<i>Salmo salar</i>	0,1	<i>Osmerus eperlanus</i>	0,1
<i>Platichthys flesus</i>	2,4	<i>Platichthys flesus</i>	0,1
<i>Perca fluviatilis</i>	0,6	<i>Perca fluviatilis</i>	0,1
<i>Sander lucioperca</i>	0,1	<i>Alosa fallax</i>	0,1
<i>Alosa fallax</i>	3,8		
<i>Salmo trutta</i>	0,1		
<i>Psetta maxima</i>	0,1		
<i>Coregonus lavaretus</i>	0,1		
<i>Osmerus eperlanus</i>	0,1		



C: Seal safe fyke-net developed during the LIFE project used in EE and LV



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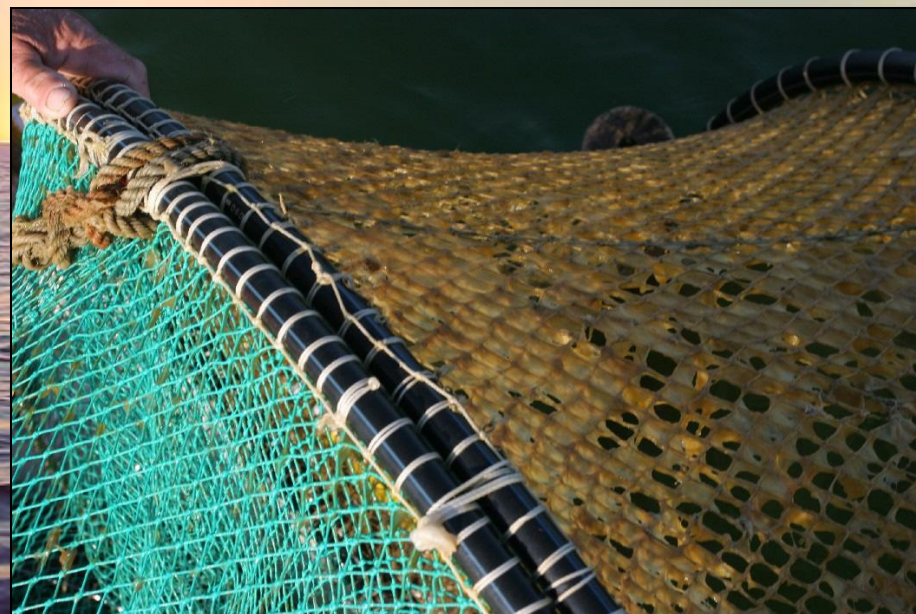


C: Seal-safe fyke nets in EE and LV. Results.

EE:

- Seals can not enter the fykes and drown (if metal panels in the entrance are at the place)
- Material is strong and seal-safe (very few problems with lost catch!)
- Material is lighter and easier to handle than the traditional material
- Material do not overgrow by algae and the gear become more effective in ~1 month compare to traditional gears
- This type gears (30) are now used by 15 fishermen in Estonia
- Compensation (60% costs of the purchased material) is available for EE from EU structural funds

C: Seal-safe fyke nets in EE and LV. Results.



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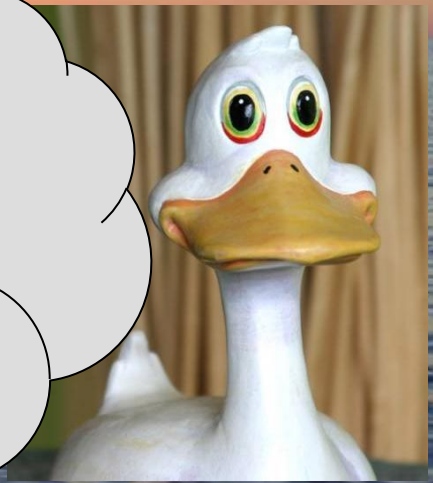
LV:

- “Dyneema” netting and bars essential for the seal safe gear, but there is need to find out additional modifications to make the catch fully safe.





**What is an
outcome of
the project:
less conflicts?
Yes!**





**Thank you!
By-catch conflicts
happen even on a
shore! 😊**

