Field-testing of otter-safe fykes in Northern Germany
Cost-benefit analysis
Simon Rohner1, Anja Reckendorf1, Ursula Siebert1
1Institute for Terrestrial and Aquatic Wildlife Research, University of Veterinary Medicine Hannover, Foundation, Germany

History
The drowning of Eurasian otters (Lutra lutra) in fykes is regarded as a major cause of death a.o. [1]. Yet data varies among countries and most references are outdated for Germany and neighbouring countries [2]. Previously developed exit traps [based on 3] showed both, a high success rate of captive otters being able to free themselves [4], as well as retention of fish [5] in controlled experiments. Now, these modified fykes were tested under field conditions in cooperation with fishermen in Schleswig-Holstein (SH), Germany.

Methods
• Test sites: rivers Trave (Fig. 1) and Sly Firth (Schlei), due to high natural currents
• Trial conduction: May – October, to account for varying abiotic factors
• Fyke setup: regular and modified fykes together in predefined chains
• Experimental setup: recording of setting/hauling time, entanglements within the mesh
• European eels (Anguilla anguilla) >45cm length as indicators for total catch
• Statistical analyses were conducted with the programme R (Version 4.0.3)

Results
• The modification of fykes with otter exits, their service (e.g. cleaning, latex lacing replacement) and maintenance (replacing lost springs, fixing torn mesh, etc.) is time-consuming and labour intensive.
• Handling of modified fykes took significantly longer compared to regular fykes: fyke setting +40-87 sec, hauling of fykes +16.5-28.5 sec (both depending on exit type).
• Steel hoop exit option: most time consuming, most entanglements (Fig. 2).
• River Sly Firth: regular fykes caught significantly more eels >45cm; all other differences among catches in both rivers not statistically relevant.

Challenges: Covid19-Pandemic and subsequent restrictions, only temporal sporadic availability of fishermen, high abundances of invasive species and eel predation by birds.

Discussion
• Otter-safe fykes seem to catch fish almost as good as regular fykes.
• Previously documented trapping performance [5] was confirmed: fish most likely don’t escape via otter exits, even if subjected to changing currents (strength/direction).
• Many entanglements, especially by the steel hoops, demand for technical improvement of the tested exit options.

Necessity of otter exits in SH’s fisheries remains questionable:
– Otters can be found almost all over SH nowadays [6].
– Major cause of otter death in SH is roadkill.
– SH inland fisheries (mostly small family businesses) declined continuously for decades [2] and are low in numbers.
– Additional labour and expenses need to be determined and appropriate compensation paid to the fishermen for mandatory use of otter-safe fykes.

⇒ A mandatory implementation of otter-safe fykes should be carefully evaluated