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**Project title: CHARACTERISTICS OF PHYSICAL AND SELECTIVE  
PROPERTIES OF THE BACOMA AND T90 COD CODEND TYPES  
AND WAYS TO IMPROVE THEIR CONSTRUCTION**

Project team:

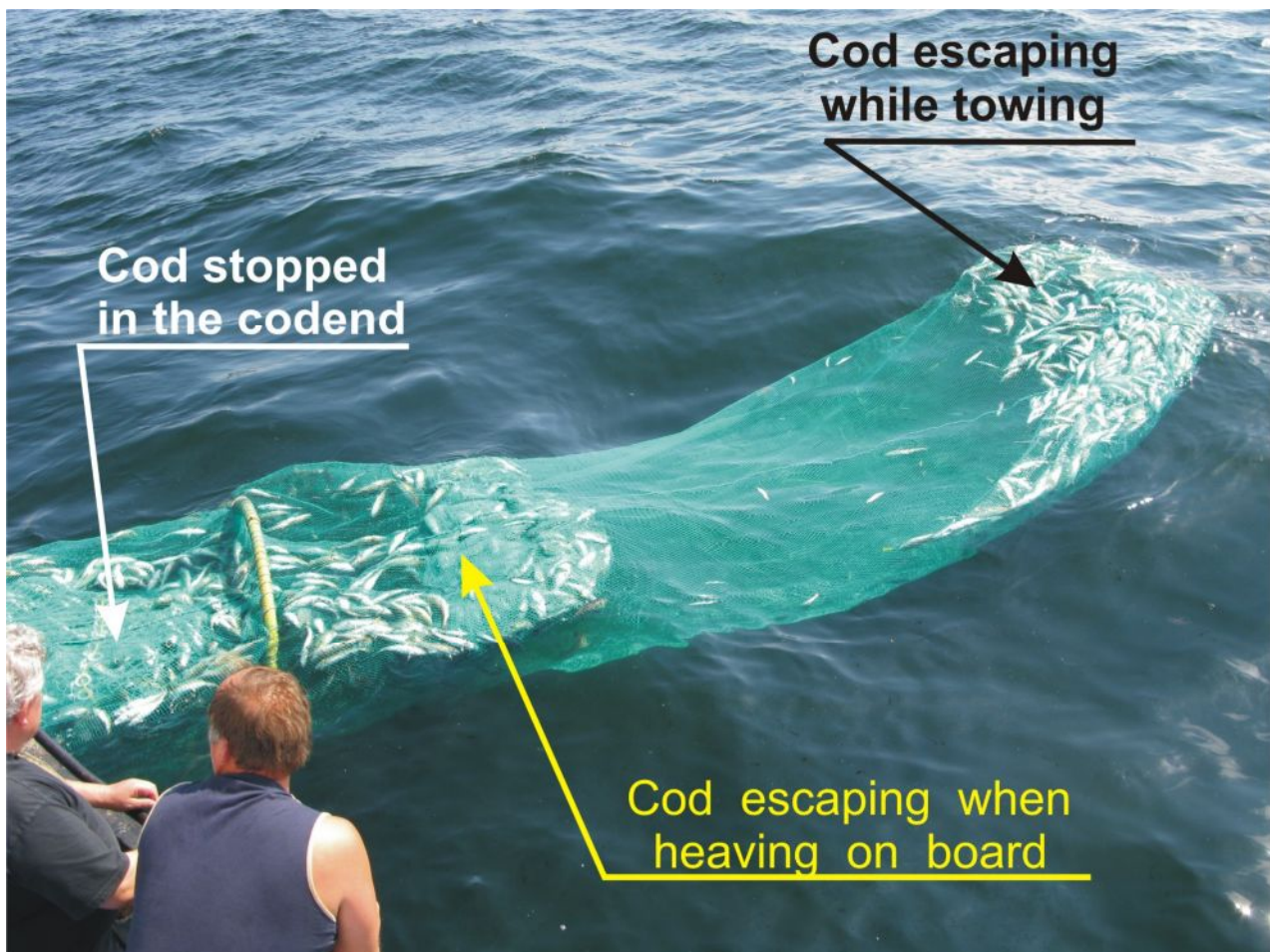
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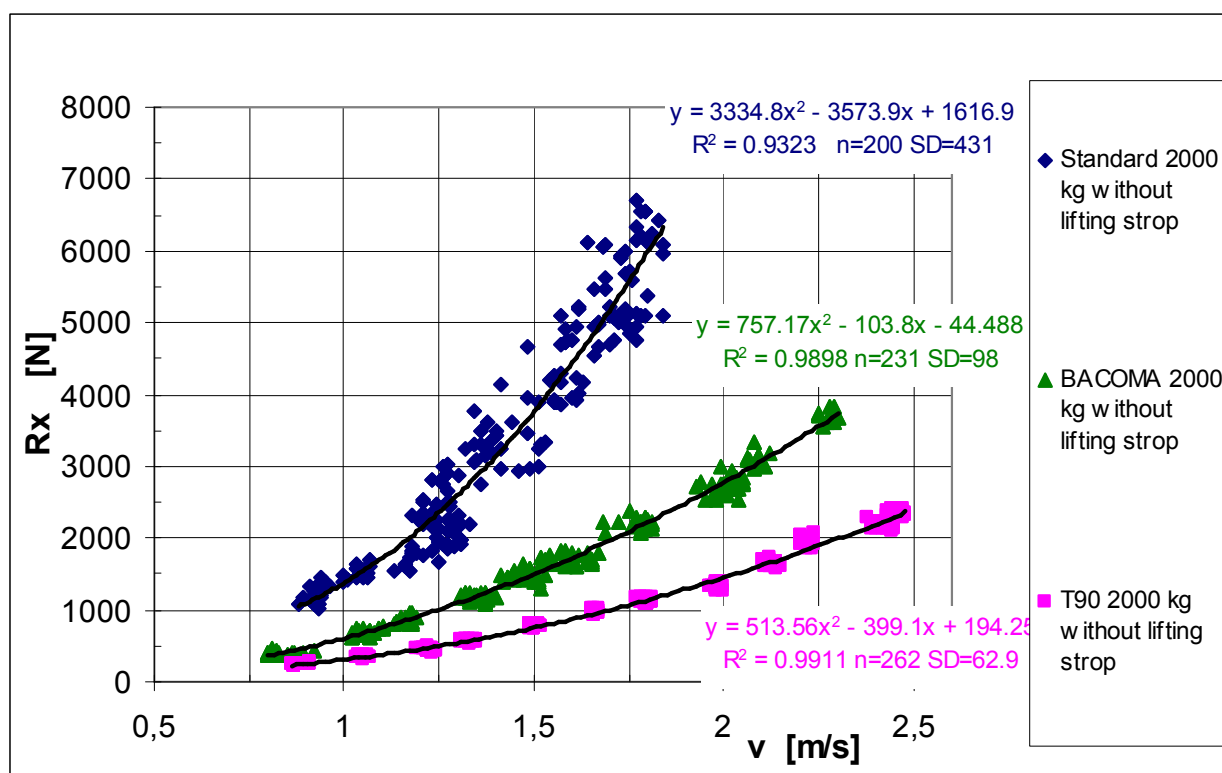
## OBJECTIVE OF THE PROJECT

The objective of the project was to characterize the geometric-resistance parameters and selectivity attributes of the BACOMA and the T90 cod codends constructed in accordance with Council Regulation (CE) No 2187/05 of 21 December 2005 as well as to indicate possible improvements. The research was conducted both, at the Model Research Station (MRS) at Insko Lake and at sea on the fishing boat. The following tasks have been implemented:

- **Geometric-resistance attributes** of the codends recognition both, the empty ones and filled with the catch imitation (500 kg, 1000 kg, 1500 kg and 2000 kg in weight),
- **Specific construction of split small-meshed cover** design for the codend in order to get information on numbers of the Baltic cod leaving the codend while fishing as well as when heaving the net on board,
- **Selectivity assessment of the investigated codends surveillance** during:
  - towing the trawl,
  - heaving the trawl net on board.

### TOWING RESISTANCE

„T90”, „BACOMA” and „STANDARD” Baltic cod codends comparative surveys conducted at the Insko Model Research Station indicated what follows:



- T90 codend filled with 500 kg to 2000 kg of catch imitation do not increase its towing resistance, which is an extremely valuable feature, positively affecting the trawl net geometry, thus reducing the fuel consumption by towing fishing boat.
- the T90 codend when filled with 2000 kg of catch imitation and with no splitting stop have the resistance:
  - 5-times lower compared to STANDARD codend,
  - 2- times lower compared to BACOMA codend.

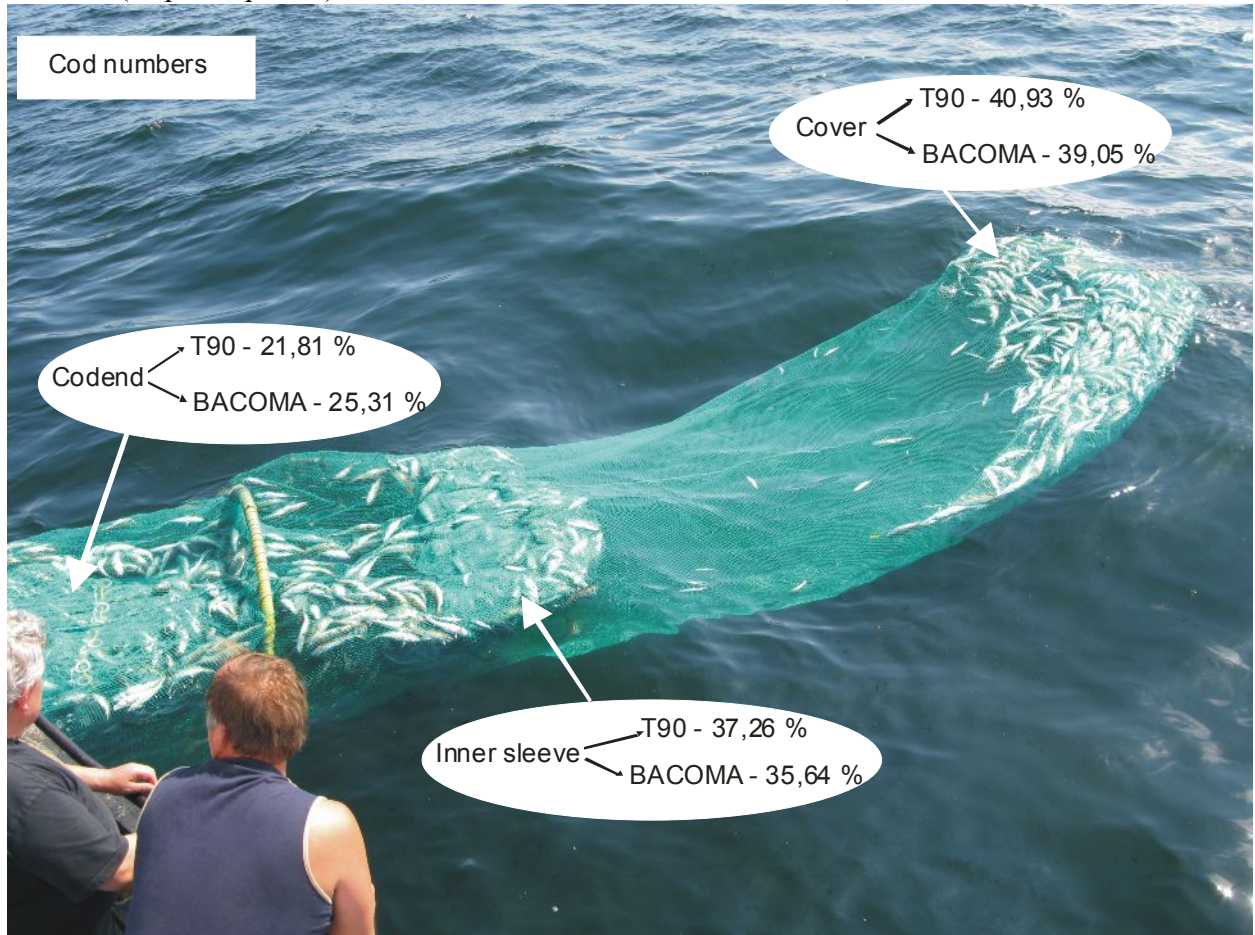
## SELECTIVITY ASSESMENT

T90 and BACOMA codends selectivity indicators

Items	T90	BACOMA
L <sub>50%</sub> [cm]	42,19	40,93
L <sub>25% - 75%</sub> [cm]	39,46 - 44,93	37,61 - 44,25
R <sup>2</sup> [-]	0,966	0,967
SR [cm]	5,47	6,64
Retention at L=38 cm [%]	15,69	27,49
Discard [%]	3,57	8,13

The L<sub>50%</sub> for T90 codend equal 42,19 cm, whereas for BACOMA codend equal 40,93 cm; it gives higher selectivity for T90 codend. It is important to say that a small percentage of undersized cod (waste) captured with T90 codend equal to 3,57 %, it is over two times lower compared to results for BACOMA codend, where the waste is 8,13 %. The above given values based on surveys done during a third quarter of a year do not need to be accurate for the whole year round, due to seasonal changes in cod girth, feeding differences (empty/full stomach) and gonads' development. The project team postulate to conduct such surveys also in other seasons and on various locations.

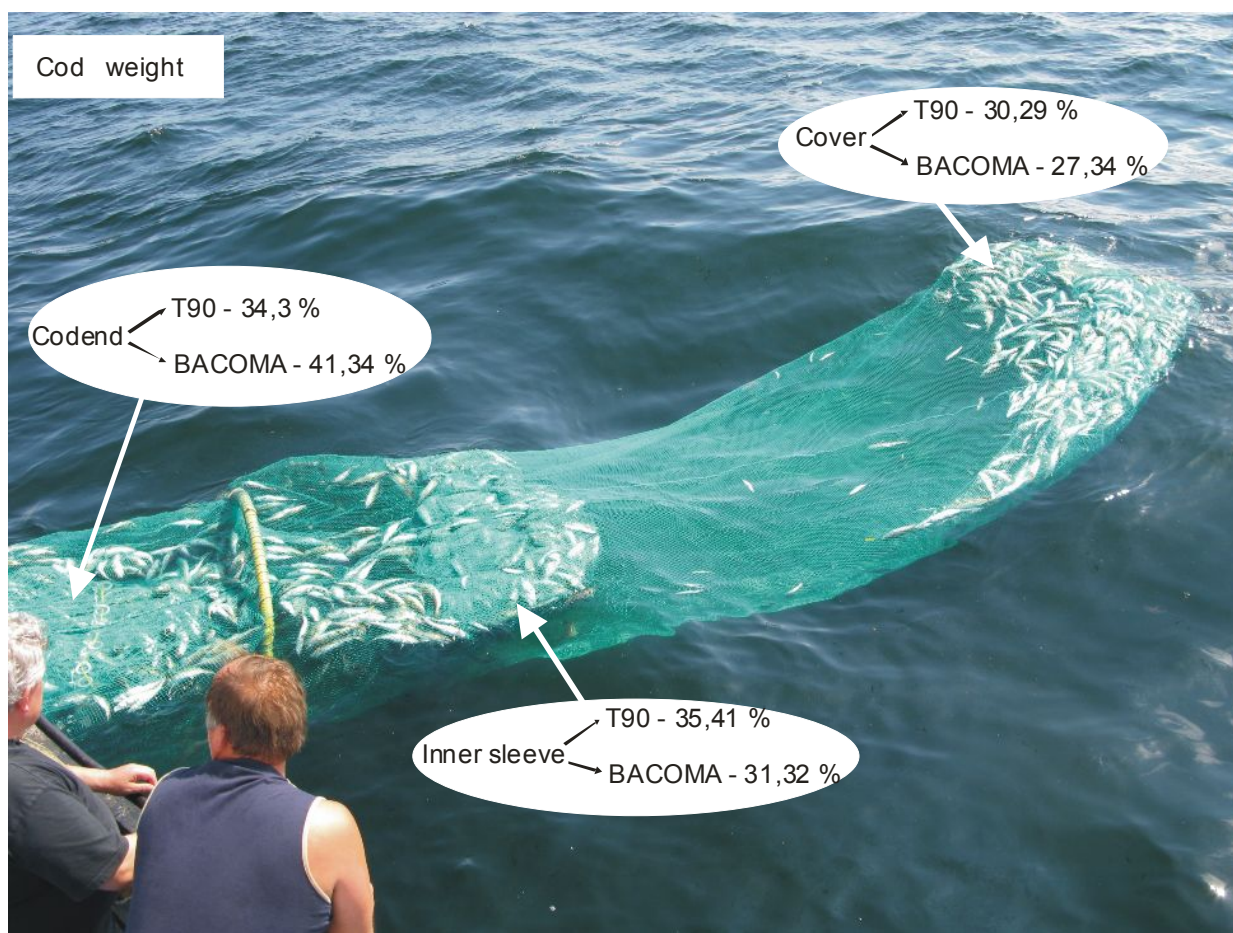
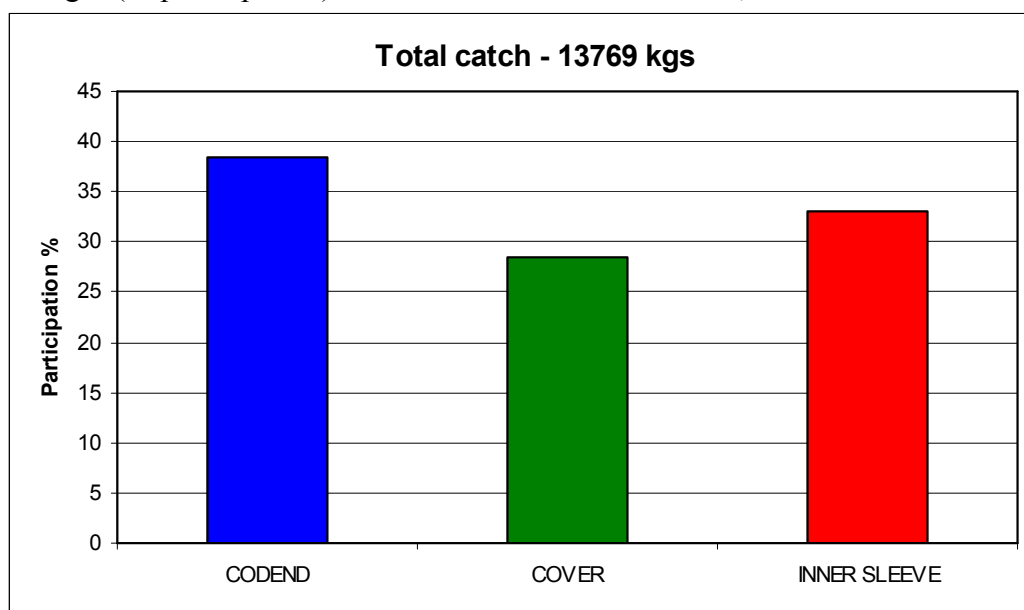
Cod numbers (% participation) in the T90 and BACOMA cod codends, the cover and the inner sleeve



### Definitions used:

- **codend:** weight / number of cod held within the T90 or BACOMA codend in one shot,
- **cover:** weight / number of cod escaping from codend during towing the trawl net) – held by the cover,
- **inner sleeve:** weight / number of cod escaping when boarding the trawl net, held in inner sleeve of the cover.

Cod weight (% participation) in T90 and BACOMA codends, cover and the inner sleeve



The innovative construction of a specific split cover for the codends have been designed. Owing to that cover, it was possible, for the first time at the Baltic sea, to quantify separately the cod number escaping the codend when towing and when heaving the trawl on board. The cod escaping during heaving the trawl have their swim bladder damaged, due to decompression, and die. Until now, a percentage of such cod was an unknown value. Conducted surveys, based on 25 survey drags indicated that 36,22 % of the captured cod individuals run away during heaving operation, it is 32,97 % of a total catch weight. **Obtained results put a new light onto fishing mortality value pointing to the urgent need for new approach to selectivity problem during trawling operation for the baltic cod.**