Annex 5. Sea trout SR stock assessment

Sea trout stock-recruitment (SR) based assessment: Summary of procedures used to (i) generate river specific run and egg deposition estimates from rod catch and (ii) derive SR curves and associated reference points from these data.

Box1: Procedures to generate run and egg deposition estimates from rod catch

- **Declared rod catch**
  - All fish

- **Catch declaration rate**
  - Range: 0.91 to 0.73
  - National estimate from catch return/reminder system
  - Annually adjusted

- **Rod exploitation rate**
  - Range: ~0.03 to 0.30
  - River specific estimate from rod catch effort/flow model
  - Annually adjusted

- **Total rod catch**
  - ≤1.5lbs
  - >1.5lbs

- **Rod released fish**
  - ≤1.5lbs
  - >1.5lbs

- **Rod killed fish**
  - ≤1.5lbs
  - >1.5lbs

- **Run estimate**
  - Pre-rod fishery
  - ≤1.5lbs
  - >1.5lbs

- **Post-rod release mortality**
  - Rods
  - Killed fish ≤1.5lbs
  - Other
  - Killed fish >1.5lbs

- **Proportion mature fish**
  - General estimate from Welsh Dee Index river programme
  - ≤1.5lbs = 0.80
  - >1.5lbs = 1.00

- **Proportion female fish**
  - General estimate from Welsh Dee Index river programme
  - ≤1.5lbs = 0.70
  - >1.5lbs = 0.90

- **Rod catch mean weight**
  - Size classes ≤1.5lbs and >1.5lbs
  - River specific estimates
  - Annually adjusted

- **Fecundity**
  - Weight-fecundity relationship for Dyfi sea trout (after Harris, 1970)
  - Log10 Eggs = -0.798 Log10 Weight** + 0.860

- **Total eggs**
  - Spawners ≤1.5lbs
  - Spawners >1.5lbs
  - All fish

* Further details - see Box 2
**Further details - See Box 3
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Box 2. Rod exploitation rate model – based on exploitation rate estimates from counted rivers and utilising angling effort and flow as ‘predictor’ variables.

\[
\log_{10} \text{Extant rod exploitation rate (\%)} = 0.015888 \times \text{Rod days fished per km} - 0.00007552 \times (\text{Rod days fished per km})^2 + 0.29255 \times \text{Post-July inseason flow index} - 0.0335 \\
R^2 = 0.718; P < 0.001
\]

Box 3. Application of ‘whitling’ run (fish ≤1.5lbs) and egg deposition estimates (all fish) to derive SR relationships and assess CL compliance (Teifi example shown).