

**WATER RESOURCES ACT 1991**

**THE WALES ROD AND LINE (SALMON AND SEA TROUT) BYELAWS 2017**

**THE WALES NET FISHING (SALMON AND SEA TROUT) BYELAWS 2017**

**DOCUMENT NRW/2R/A**

**APPENDIX TO THE REBUTTAL PROOF OF EVIDENCE**

**OF**

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**On behalf of  
NATURAL RESOURCES WALES**

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## **Appendix 1**

### ***Responses to specific questions about the validity of juvenile electrofishing (EF) survey methods raised by one Objector<sup>1</sup>***

- 1 The application of juvenile electrofishing (EF) survey data, for salmon and trout fry and parr, is addressed in Annex 1 of the Technical case (APP/4). In practice, there are significant challenges in using data from what is often only a handful of electrofishing survey sites for juvenile salmon and trout to understand the status of river stock at the whole catchment level.
  
- 2 To support adult stock assessments (and to address the concern that the quality of angler returns will diminish, either because stocks continue to decline and/or anglers become less willing to report their catches[AT/2 para 22]) NRW are currently exploring - as part of an external contract - how electrofishing survey (EF) data collected on juvenile salmon and trout might be better used to provide information on the status of whole river stocks (i.e. at the same scale at which adult spawners are assessed). This includes potential change to low-effort EF survey methodologies to improve catchment coverage and sampling frequency.

**Question 1.** Most EF survey sites are sampled by a single fishing run through the site – termed: semi-quantitative or SQ sites, a few are sampled by multiple runs (usually 2 or 3) – termed quantitative or Q sites. The depletion in the catch from multiple fishings at Q sites is used to estimate the population by ‘removal methods’. On SQ sites, sampling efficiency is estimated based on site characteristics (width) and the target species/age group. In this case, efficiency estimates are used to raise the SQ catch to derive a population estimates (i.e. it is not the case that the single run total catch is multiplied by 3 to give the equivalent result to a 3 run Q fishing).

**Questions 2 and 3.** EF settings are principally adjusted according to the target species and the conductivity of the water. The same settings are maintained throughout the survey - whether Q or SQ - at any one site.

**Question 4.** These EF survey techniques have been used for many years: C. 1980s onward.

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<sup>1</sup> PJG/2, Questions 1 to 9

**Question 5.** Very small feeder streams (perhaps less than around 2m wide) may be too small for MSW salmon spawners, if salmon at all.

**Questions 6.** Most EF sites probably cover streams of C. 2-10m wide, so any systematic bias regarding the sampling of spawning areas frequented by MSW salmon is unlikely. However, that is not to say that changes may not have occurred in the spatial distribution of spawning fish (and their offspring) -relating to the marked shift in proportions of 1SW and MSW salmon seen in recent years.

**Questions 7.** Results from the 2018 EF surveys in Wales have not yet been examined.

**Questions 8.** NRW are aware of results such as those referred to on the Girnock Burn, but cannot know if such effects will be seen on Welsh rivers, and so must remain precautionary in our response to the poor recruitment of juvenile salmon and trout across Wales in 2016<sup>2</sup>.

**Questions 9.** EF survey are used in assessments at site and sub-catchment scales (e.g. for WFD classifications of Water Body status) and to examine general trends. However, extrapolation of results from a few sites to infer whole catchment production – at the same scale at which adult stocks are assessed for Conservation Limit compliance is more problematical but is being examined.

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<sup>2</sup> NRW/2 paras 3.34 to 3.43