

Report to the Marine Alliance for Science and Technology for Scotland (MASTS)

Prepared by: Ellen Last, Joint Nature Conservation Committee

Workshop title: Contaminants pressure benchmarks workshop

Location: Hornbeam House, Crewe

Date: 3rd December 2019

Attendees:

Laura Robson (co-chair, JNCC), Ellen Last (co-chair, JNCC), Susan Zapalla (JNCC), Harvey Tyler-Walters (MBA), Heidi Tillin (MBA), Suz Henderson (SNH), Karen Robinson (NRW), Mark Charlesworth (NRW), Tom Hutchinson (Plymouth Uni), Francesca Bevan (MCS), Laura Foster (MCS), Ben Green (EA), José Seco (University of Aveiro, Portugal), Jon Barber (Cefas), Mark Johnston (NE), Alison Brand (Aberdeen Uni)

Workshop context:

Sensitivity assessments were developed in the UK to identify the likely effects of pressures, caused by human activities and natural events, on marine species, habitats and features. These assessments are available on the [MarLIN website](#) and through Scotland's Feature-Activity Sensitivity Tool ([FeAST](#)). These present the likely effects of a range of anthropogenic pressures, which are assessed using defined scales of 'resistance' (tolerance) and 'resilience' (recovery) against a [defined 'benchmark level'](#) of effect. The benchmarks are designed to provide a 'standardised' level of effect against which to make an assessment. Where possible, benchmarks are quantified in terms of magnitude, extent, duration or frequency. However, it has been difficult to reach a consensus on the standard benchmark levels for the contaminant and nutrient pressures, as defined by the Intercessional Correspondence Group on Cumulative Effects (ICG-C) (OSPAR, 2011):

- Hydrocarbon & PAH contamination
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals)
- Transition elements & organo-metal (e.g. TBT) contamination
- Introduction of other substances (solid, liquid or gas)
- Nutrient enrichment

The benchmarks for the contaminant pressures are currently set at "Compliance with all Annual Average (AA) Environmental Quality Standards (EQS), conformance with Probable Effects Level (PELs), Environment Assessment Criteria/Effects Range Low (EACs/ER-Ls)". The existing benchmark for the 'Nutrient enrichment' pressure is "Compliance with Water Framework Directive (WFD) criteria for good status". These benchmarks result in a score of 'Not sensitive' at the pressure benchmark and don't allow for discrimination between those habitats or species which may be more sensitive than others. As a result, both these contaminant and nutrient enrichments pressures are not adequately represented within sensitivity assessments. This expert workshop was therefore arranged to discuss how best to address chemical contaminants (pollutants) in sensitivity assessments.

Workshop summary:

The aim of the workshop was to:

- Integrate contaminant pressures into marine sensitivity assessment
 - Ensure applicability to marine benthic species and habitats, and mobile species; and

- Ensure resultant sensitivity assessments are applicable to the needs of the Statutory Nature Conservation Bodies (SNCBs) and 'advice on operations'.

These aims were addressed through the following workshop objectives:

- Revisit existing pressure definitions and 'benchmark' levels
- Revisit the scope of assessment:
 - Effects from local effluents/releases
 - Sedimentary burdens
 - Pollution incidents (e.g. spills)
 - Bioaccumulation
- Examine other approaches
- Recommend the best approach(es) to take forwards

At the start of the workshop, a few presentations were given to provide attendees with an overview of the subject, the sensitivity approach and the application of contaminant sensitivity assessments (see Workshop context section above). This was followed by a number of presentations to prompt discussion on potential approaches to address the contaminant pressure benchmark issues. Mark Charlesworth from Natural Resources Wales presented the WFD and OSPAR assessments relating to chemical contaminants. A key point raised was the mixed thresholds for the standards used nationally and internationally for water, biota and sediment. Susan Zapalla from JNCC presented on the chemical exposure pathways from land to sea, including the resulting bioaccumulation risks. Tom Hutchinson from the University of Plymouth gave a presentation on the Adverse Outcomes Pathways approaches. Understanding the effect pathways of contaminants when they enter organisms was deemed to be a useful tool to feed into the sensitivity assessments and help understand population effects.

Suz Henderson from Scottish Natural Heritage presented information about FeAST and put forwards a new proposal to introduce three separate benchmarks for each chemical contaminant pressure:

1. Compliance with all AA EQS, conformance with PELs, EACs/ER-Ls
2. Mixing zone (exceedance of EQS)
3. Accidental spill/bioaccumulation

No other approaches were suggested during the workshop, so this suggestion formed the basis of the afternoon's discussion and brainstorming session. The current list of contaminant pressures was also discussed to ensure it was still appropriate. The following recommendations were made:

- There is some value in keeping a 'compliance with EQS' benchmark.
- For the mixing zone, the benchmark could relate to a 10-fold or 100-fold increase above EQS. Data on breaches of EQS may be useful to ensure benchmarks are relevant to real-life scenarios. It was noted that some chemicals don't have a regulatory EQS.
- For accidental spills, no specific benchmark was put forwards, however a number of literature sources were recommended to help set a benchmark. This included reports on oil spills, the tiers for oil spill response, OSPAR oil spill guidance and the Environment Agency's general spill categorisation system.
- It wasn't deemed possible to set a benchmark for bioaccumulation. However, this could be considered in the evidence base instead.

- The ‘Synthetic compound contamination’ pressure could be broken down into biocides, antifoulants and pharmaceuticals (instead of grouping these), however evidence may not be available at this level of detail. All other pressures were deemed appropriate, however it was noted that TBT is a biocide, so should be listed under the synthetics pressure rather than under the organo-tin pressure.
- For the pressure ‘Nutrient enrichment’, a recommendation was made to set a benchmark based upon “a deterioration between WFD classes”. This could potentially be a change from ‘good to poor’ or ‘good to bad’; detail on the use of WFD status definitions will be fed into this.
- It was noted that chemical assessments use the terminology of ‘risk’ rather than ‘sensitivity’. The MarLIN guidance or evidence bases will therefore need to make this terminology difference clear to users.

Outcomes and next steps:

A full workshop report will be prepared, which will detail the recommendations made at the workshop. This will be circulated for review by the workshop attendees, other experts who were unable to attend, as well as the MarLIN Steering Committee and FeAST Working Group. The benchmark proposals will also be trialled for the sensitivity assessment of a few habitat/species to better understand how these will work in practice. The results will be reviewed, and the MarLIN Steering Committee will ultimately be responsible for agreeing whether to take the approach to take forwards. Standards will be aligned wherever possible through discussion with Defra and other groups/bodies. Once the new pressure benchmarks are approved, these will be used to update the sensitivity assessments for both MarESA and FeAST, from which they will be fed into advice on operations and Marine Protected Area conservation advice.

We are grateful to MASTS for the funding to support delegate attendance at the workshop, as costed below:

Participant	T&S costs
José Seco	£280
Francesca Bevan	£20
Tom Hutchinson	£200
Total	£500