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Our ref: 12/13-075 and 12/13-076

Your ref:



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Dear Janet

**UKTAG consultations:
Phosphorus standards for rivers and
Proposed recommendations on biological standards**

Dear Janet

I attach below comments from Natural England on the two current UKTAG consultations on revisions to standards under the Water Framework Directive, concerning phosphorus in rivers and proposed recommendations on biological standards.

I am sure there will be opportunities to discuss these comments further in UKTAG meetings, otherwise please contact Dr Alastair Burn on 0300-060-0904.

Yours sincerely

Rob Cooke
Director, Land Use
Natural England

Consultation response from Natural England:

Natural England has been charged with the responsibility to ensure that England's unique natural environment including its flora and fauna, land and seascapes, geology and soils are protected and improved. Natural England's purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

1. Phosphorus standards for rivers:

Introduction:

Conservation agencies are represented on UKTAG and have been involved in various of the task teams which have helped to develop recent recommendations, including the rivers task team which developed revised proposals for phosphorus. The main focus of our contribution to those task team discussions has been on the implications for standards used to define conservation objectives for rivers designated under national and international designations, and especially for river SACs .

The conservation agencies have responsibility for setting conservation objectives for designated wildlife sites, and hence for the standards which underpin those objectives. A UK-level process (UK Common Standards) exists between the conservation agencies for agreeing internal guidance on environmental and biological targets used in assessing the condition of designated features and therefore in evaluating whether the conservation objectives of sites are met. The internal guidance on SSSI/SAC river habitat was subject to detailed review in 2009/10, in consultation with the UK environment agencies and UKTAG. The review of this guidance has continued through the UKTAG review of WFD standards, during which time there has been considerable work to investigate how alignment of standards derived under the two processes might be possible.

The attempted alignment where possible of the standards used under WFD and Habitats Directive is a complex process and still underway. It has not been possible for UKTAG to incorporate into the phosphorus consultation the thinking on this issue that has so far taken place within the task team or UKTAG. However given the significance to the conservation agencies of the relationship between the UKTAG proposals and the standards used in conservation objectives for SAC and SSSI rivers, our comments on the present consultation are restricted to that specific issue, rather than the use of the proposed new approach for P standards for rivers generally.

PRINCIPLE 1: The UKTAG recommends that new site specific phosphorus standards for rivers are adopted based on a new model of the relationship between phosphorus concentrations and biology

The new model and the derivation of P standards from the measured relationship with biological condition, reduces some of the previous discrepancy between classification based on P and that based on biology of rivers as measured using WFD biological metrics. The use of a predictive model to generate tailored, reach-based standards avoids the step changes in standards that arise from the application of standards using a river typology based on only few types, and is a useful development that ideally would be applied within conservation objectives.

A different approach to the use of available evidence has led to differences in the standards considered necessary to support river ecology under WFD compared to the targets used to assess the condition of SSSI/SAC river habitat within conservation objectives by the conservation agencies. The conservation agencies generated an evidence base (Mainstone 2010a) on nutrients in rivers and a review of existing Common Standards P targets for SSSI/SAC river habitat (Mainstone 2010b), which have been fed into the UKTAG review.

We would stress that the quantitative value of a standard cannot be considered in isolation from an understanding of how compliance with a standard will be judged and achieved. However where we have been able to compare the numerical standards generated by the proposed new WFD model with those currently being proposed for Natura 2000 river habitat quality, alignment tends to occur with predicted WFD reference conditions as well as standards for HES, rather than standards for GES. This is because of the adoption of greater precaution in ensuring standards fully protect ecological functioning and integrity of designated sites, including the whole characteristic biological community in its unimpacted state. UKTAG will be aware that further work is currently underway to examine the general relationship between standards used under WFD and those in commons

standards for designated sites, and their use in decision making.

PRINCIPLE 2: The UKTAG suggests that the proposed new default phosphorus standards for rivers are adjusted to take account of observed local biology

We recognise the need to incorporate handling of uncertainty in applying the proposed phosphorus standard-setting process in practice. Where choices and prioritisation have to be made about investment in the face of limited resources, then an adjustment to the objective (eg setting a different timescale for achieving a standard) for a river based on local evidence for condition may be one way of establishing priorities. However to adjust a phosphorus standard based on local biology implies a closer understanding of the relationship between phosphorus and biological change than we think is justified in the case of sites designated for their special nature conservation interest, where a different approach to handling uncertainty is needed.

Good ecological status must be set to be widely applicable to water bodies generally. In dealing with designated sites, which represent a subset of rivers designated for their particular nature conservation importance, we think that the additional level of precaution needed to ensure that activities should have no significant adverse effect on site integrity requires a different emphasis in handling uncertainty than for water bodies more generally. Therefore a wider range of evidence is drawn on in reaching conclusions about risks to the conservation status of a site than that based on the site's biological condition alone as given by routine monitoring. We do not think the approach proposed by UKTAG would be justified in making an adjustment to P standards, and hence in determining conservation status, for rivers designated for SSSI/SAC river habitat.

2. Proposed recommendations on biological standards:

Introduction:

The conservation agencies have focussed attention on UKTAG work on the supporting ecological standards, and have therefore not been able to engage with UKTAG task teams in their development of revisions to biological standards. There has therefore been only limited work thus far to examine the extent of alignment between the biological measures used as metrics in standards under WFD and the use of biological metrics or indicators used in conservation objectives for designated sites. Our comments therefore primarily relate to the generic approach to using biological measures to assess condition of freshwater designated sites (especially rivers) and to those areas where we have compared metrics used to assess water body status with those used in Common Standards monitoring for designated sites. The review of Common Standards guidance for SSSI/SAC river habitat has included consideration of biological targets (e.g. Mainstone and Hatton-Ellis 2011), and has produced some proposals in this area.

Additional comments are provided in relation to marine designated sites, and again the interaction with Common Standards monitoring.

Comments on the proposals:

There are a number of reasons why adoption of biological standards for designated sites may differ from that for water bodies generally under WFD:

- The extent or scale of the habitat considered under Habitats Directive may be greater than that considered as the water body and so not confined to the narrower definition of water body under WFD. For example, for designated river SACs and SSSIs the 'river habitat' feature is defined as the whole of the river channel and its banks (including hydrologically connected floodplain habitat), as an example of the natural 'river type'. This includes all biotopes (including ephemeral and perennial biotopes) and the whole characteristic community of the river as an example of type.

- Available biological measures of habitat integrity may fail to address comprehensively the full range of pressures which influence site integrity. The approach under CSM for designated sites addresses the nature of impacts on ecosystem processes and the limitations of individual measures of habitat integrity. For instance, a biological indicator might reflect impacts on the general quality of the habitat at a given location but not to the quality or extent of specific biotopes at that location or within the wider river reach, both of which would be important considerations for favourable condition of SSSI/SAC river habitat.
- Thresholds for biological metrics may not be established at a level which is sufficiently protective of community structure and function necessary to ensure the integrity of designated sites. Biological metrics are selected under WFD in order to provide information on the nature of pressures acting on a water body. In assessing the condition of designated sites selected for their nature conservation interest, a more complete understanding of the status of the composition of characteristic communities and maintenance of their integrity, including functioning of supporting ecosystems, is important.

In those instances where the relationship between WFD biological metrics and compositional change in river biota has been analysed (macro-invertebrate ASPT and diatom TDI) the values for good ecological status have been judged by the conservation agencies to be insufficient to protect favourable condition of rivers designated SSSI or SAC for their river habitat. In contrast, the values for high ecological status have been judged to be more compatible with favourable condition. For example, the good/moderate boundary for ASPT was found by a 2008 UKTAG analysis (referenced in Mainstone 2010c) to equate to an average loss of 4.6 BMWP 'families', and 1 major taxonomic order (e.g. stoneflies). However, the situation across habitat/waterbody types is far from simple - in lakes, there is generally a closer linkage between favourable condition targets (environmental and biological) and standards for good ecological status, since the latter are set at a more protective level.

With regard to the marine and estuarine tools we would like to acknowledge the huge amount of work that has been put in to the development of these tools, defining status class boundaries and metrics to calculate 'confidence of class'. Whilst similar issues exist around the use of the biological standards and thresholds for marine sites as highlighted above for freshwater systems, many of these tools have relevance to undertaking Common Standards Monitoring (CSM) Assessments. In particular many of the individual parameters collected under the WFD tools maybe used directly to inform CSM attributes, in particular where temporal trends in these parameters can be assessed over time.

Future work priorities:

In the short term, an urgent priority is to agree targets in conservation objectives so they can be written into RBMP2 in a way that provides clarity for stakeholders.

The conservation agencies aim to do further research into general biological indicators for SSSI/SAC river habitat that can measure compositional change directly and which integrate the signals from all WFD pressure-sensitive indicators. We hope this work can be undertaken collaboratively with the environment agencies. This should lead to closer understanding of the relationships between WFD metric and Common Standards attributes for biological indicators and greater opportunities for aligning biological standards and sharing data in assessing pressures. We would also highlight that the potential for such alignment may be particularly great for the marine environment where work is ongoing to develop indicators and target thresholds under the Marine Strategy framework Directive.

We agree that, in respect of freshwaters, a UKTAG priority is to work on ecological indicators for

water resources (flow) pressure, as well improving understanding of biological metrics for the key pressures of nutrients (P and N) and organic pollution.

References

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