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Conference Abstract

A web-based tool to standardise reporting and interpret results of eDNA qPCR assays

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Abstract

Environmental DNA, or eDNA, methodologies can enable the rapid detection of a target species without either visual or physical confirmation of the species presence. Over the last decade, targeted quantitative PCR (qPCR) assays have become an increasingly useful method employed by government and non-government agencies alike for purposes such as protecting and preserving ecosystems from invasive species, or for the conservation of endangered species. As the application of eDNA to answer ecological questions pushes the limits of qPCR-based detection, there is a pressing need to standardise the way qPCR results are reported and interpreted, as well as the way qPCR assays are evaluated for use outside of the remit of the original study.

Natural England is one such government agency who have begun to use eDNA methodologies more widely to answer ecological questions. However, while some qPCR assays available for detecting the presence or absence of species such as the great crested newt (*Triturus cristatus*) have been specified, validated and quality assured to a high degree (Biggs et al. 2014), existing qPCR assays for other species are generally less well developed and validated. Additionally, for some species there are multiple qPCR assays available, with each being developed and validated to different stages. As such, Natural England identified a need to understand how the data derived from eDNA should be interpreted dependent on the level of qPCR assay development, and ultimately the

confidence they can have in the accuracy of resulting data, including the associated risk of false positives or false negatives.

NatureMetrics has developed a prototype web-based tool and protocol (European Technical Readiness Level 5) which would enable end users such as Natural England to inform their interpretation of qPCR results. The prototype is currently in the beta testing stage and is expected to be available in the coming months. The web-based tool will simplify qPCR assay evaluation, enabling end users to select the most appropriate qPCR assay for their needs, as well as standardise the reporting and interpretation of their qPCR results by generating a report at both the sample and site level from the inputted qPCR data.

Keywords

environmental DNA, quantitative PCR, detection, standardisation, software

Presenting author

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