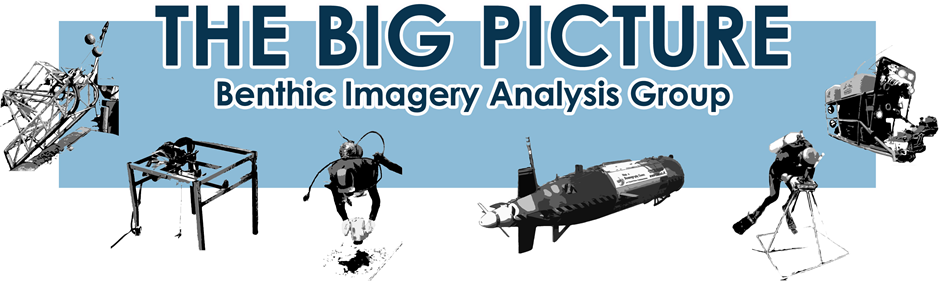
# Epifaunal Identification Protocol Guidance

Version 2

March 2022



|  |  |  |
| --- | --- | --- |
| Version | Released | Notes and changes |
| 1 | 31/03/2021 | Original version |
| 2 | 30/03/2022 | Annex 1 added, containing release notes for the new EIP v14 spreadsheet. |

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## Project Background

The Epifaunal Identification Protocol (EIP) has been created by JNCC and the Big Picture Quality Assurance Framework project to help standardise the level to which different species should be identified to depending on different assigned image quality categories.

The recommendations within the EIP spreadsheet have been decided through workshops with imagery analysis experts from the BIG PICTURE Group.

In advance of the workshops, Image Quality categories were reviewed by the EIP Project Steering Group. A set of Image Quality categories and definitions were developed for the EIP informed by the NMBAQC image quality guidelines. These definitions are provided in Section 2 below.

JNCC recognise that not all relevant taxa are included within the current version of the EIP, with many still to be added to this spreadsheet. The current version has been produced to be used as a live document, and will be updated over time as users suggest additions. Release notes for updated versions of the EIP are provided in section 5.

To add taxa to the EIP please email the taxon name and Aphia ID, where applicable, to [TheBigPicture@jncc.gov.uk](mailto:TheBigPicture@jncc.gov.uk) for consideration. Future workshops will consider the taxa that have been asked to be added and recommendations will be made for each image quality.

Please note all entries within the EIP are recommendations that can be disputed should a valid reason be provided (such as significant analyst experience in identifying specific groups of fauna) which means that the classification can be taken to a lower level than currently recommended.

## Image/Video Quality Guidelines

Only Excellent, Satisfactory and Poor Quality Categories are used for the EIP, as Very Poor quality images or video should not be used for taxonomic identification.

### Video Guidelines

**Excellent**–  Water is clear, entire field of view has a constant and even illumination, colour is well-saturated, limited wash out into one side of spectrum, camera moving at a speed of <0.5 knots with no blurring and at a constant angle (or as close to when using drop frames), seabed and scaling device (where used) is visible for the majority of the tow. There may be very occasional issues with viewing the seabed but these occurrences last for <5 % of the tow. All levels of analysis are expected to be possible.

**Satisfactory**- Seabed easily observed, small amounts of suspended matter but this does not affect the visibility. Speed of camera may sometimes vary, with occasional or minor blurring (but remains at ≤1 knot), lighting is sufficient to appropriately illuminate organisms. There may be occasional issues with viewing the seabed and the scaling device (where used) but these occurrences last for 5-20 % of the tow. This level of quality is not expected to affect analysis, level 5 biotope analysis is likely to be possible.

**Poor**- Suspended matter, poor illumination (insufficiently lit for detailed taxonomic identification), dense fauna or flora (e.g. kelp) or disturbed sediment results in a partially obscured view of the seabed. Due to the nature of kelp, the substrate is likely to be obscured in imagery where this habitat is present. Camera speed and distance to the seabed is variable throughout the tow (or over 1 knot throughout the tow), including issues in focus/blurring and fluctuations in dark/distant or overexposed imagery, leading to challenges with detailed taxonomic identification. Poor quality imagery may result in an inability to identify small or cryptic species. The factors described above are present for between 20-50 % of the tow. Quantification of large or conspicuous epifauna may still be possible but it is recommended that a qualitative assessment of abundance is used. Broadscale habitat mapping (EUNIS Level 3) is still possible.

**Very Poor** - Suspended matter, dense fauna or flora (e.g. kelp) or disturbed sediment obscures most of the seabed. When the seabed is visible the camera is often moving too fast, resulting in constant blurring of organisms. Camera often moves too far from the seabed resulting in a lack of illumination and visibility. These problems are likely to be present for 50-80 % of the tow. Quantitative or qualitative estimates of organism abundance are not recommended. It may still be possible to determine broadscale habitats;

**Zero**- For whatever reason (camera too far from the seabed, camera moving too quickly, lack of illumination, sediment disturbance, dense gathering of fauna or flora (e.g. kelp)), there is no view of the seabed at all for >80% of the tow. Data are not usable.

### Stills Guidelines

**Excellent**- Water is clear, image is fully focused and entire field of view has a constant and even illumination. Image colour is well-saturated, limited wash out into one side of spectrum, seabed and scaling device (where used) is clearly visible. Small and cryptic taxa can be clearly seen and identified. All levels of analysis are expected to be possible. Field of view categories 2 or 3 apply.

**Satisfactory** - Seabed is clearly seen although up to 10% of the image may be obscured by shadowing or disturbed sediment/kelp; scaling devices are still visible (if used). Image is in focus but may be slightly over or under exposed. Lighting is sufficient to appropriately illuminate organisms. Small and cryptic taxa are still expected to be visible. This level of quality is not expected to affect analysis, level 5 biotope analysis is likely to be possible. Field of view categories 1 to 3 apply.

**Poor** - Some elements of the image may be in focus (there may be some blurring but conspicuous species can still be identified) but other aspects such as illumination, turbidity, exposure or the angle of the camera could affect image analysis and taxonomic identification. Suspended matter, over/under exposure, uneven and inconsistent illumination (insufficiently lit for detailed taxonomic identification), dense fauna or flora (e.g. kelp) or disturbed sediment results in a partially obscured view of the seabed (up to 50% obscured). Due to the nature of kelp, the substrate is likely to be obscured in imagery where this habitat is present. Large/conspicuous taxa may be enumerated but small and cryptic taxa are likely to be missed. Broadscale habitat mapping (EUNIS Level 3) is still possible. Images may fall into various field of view categories depending on the issue.

**Very Poor** - Image is predominantly blurred either due to suspended matter or unfocussed. Images are generally in field of view categories 1 or 4 (see below). Organisms are unlikely to be distinguished. Broad scale habitat may be determined in some cases.

**Zero** - No view of the seabed at all due to significant over exposure or the camera is too

far from the seabed, Images not usable

## Guidance for how to use the EIP

The EIP is split into three sections.

WoRMS Taxonomic ID is the first section of the EIP, detailing different taxonomic identifiers. This section details the taxa considered for the image quality assessment.

The second section is the morphotaxa or other comparable classifications section with a comparable CATAMI class for each species entered. Addition to this section of other commonly used taxonomic identifiers such as OTU classifications is planned for future iterations of the EIP.

The third section of the EIP is linked to the Image Quality categories. This lists a recommended ID per taxa/morphotaxa for each of the three quality categories listed above (Excellent, Satisfactory and Poor). This section of the EIP provides the recommendation for which taxa should be identified to which taxonomic level within each category.

## EIP Tools

The EIP tool can be used for taxa specific recommendations.

To use the tool you simply need to enter either a species name or Aphia ID and quality level and the tool will provide you with a recommendation for that taxa and image quality.

The EIP has also been integrated into the NMBAQC Epibiota Quality Assurance Framework ‘Full QAF’ and ‘Comparison’ tools. These tools provide a check on any dataset completed within their standard proformas against the EIP and the corresponding Image Quality.

Please refer to the QAF guidance document on the NMBAQC website for more information. [Epibiota\_QAF\_Guidance\_20210331.docx](file:///C:\Users\James%20Albrecht\Downloads\Epibiota_QAF_Guidance_20210331.docx)

All tools can be found here; [https://www.dassh.ac.uk/qaf/](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.dassh.ac.uk%2Fqaf%2F&data=04%7C01%7CJessica.Taylor%40jncc.gov.uk%7Cc4943710c0c14a6bfdbc08d8eef8b147%7C444ee4e8b2fd491d8c318b0508370a6b%7C0%7C1%7C637522099192286829%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C2000&sdata=kPwq42uaaMX%2FAIbqdnNpUOrl3m6YChnXDETN8ldp1bg%3D&reserved=0)

## EIP release notes

### EIP version 13

The first publicly available version of the EIP released in March 2021. Created following 6 workshops held between 13th January and 17th February 2021.

Taxa were selected from Priority Marine Feature and Feature of Conservation Importance species and habitat descriptions as well as taxa suggested by the Big Picture Group.

### EIP version 14

Released in March 2022. Updated after 5 workshops held between 1st and 22nd February 2022.

A search was undertaken to identify taxa to be considered for inclusion in the new version of the EIP. These taxa were then cross referenced against the existing EIP to remove any that had already been considered.

Taxa were identified from the following sources.

* Epibiota listed in the biotope descriptions of the Marne Habitat Classification of Britain and Ireland[[1]](#footnote-1)
* Epibiota suggested by members of the Big Picture Group
* Taxa identified in imagery from JNCC surveys conducted between 2015 and 2021
* Taxa identified in imagery and stored as records in Marine Recorder V20220124[[2]](#footnote-2)
* Epibiota in the MarLIN species list[[3]](#footnote-3)

223 new taxa from 10 phyla were added to version 14 of the EIP (Table 1).

Table . Taxa reviewed and added to the EIP version 14

|  |  |
| --- | --- |
| Phylum | Number of Taxa added |
| Annelida | 11 |
| Arthropoda | 25 |
| Bryozoa | 7 |
| Chordata | 36 |
| Cnidaria | 22 |
| Echinodermata | 17 |
| Mollusca | 19 |
| Nemertea | 3 |
| Porifera | 21 |
| Rhodophyta | 62 |

1. <https://mhc.jncc.gov.uk/> accessed February 2022 [↑](#footnote-ref-1)
2. <https://hub.jncc.gov.uk/assets/b9934e31-39b6-41f9-9364-d1e93db68307> accessed February 2022 [↑](#footnote-ref-2)
3. <https://www.marlin.ac.uk/species> accessed February 2022 [↑](#footnote-ref-3)