

# Verifying NPMS plant records: General guidance

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## Introduction

This NPMS-specific guidance is intended to be read alongside the general iRecord verifier guidance available on the verification page of iRecord [here](#). For BSBI vice-county recorders, it should also be read in conjunction with [the general guidance](#) on how records from the indicia/iRecord infrastructure are shared and handled within the [BSBI Distribution Database](#).

### 1. How are NPMS records collected and stored?

The core aim of the National Plant Monitoring Scheme (NPMS) is to sample plant communities within habitats of conservation value using small plots. Volunteers [choose a 1km square](#) from those available, locate a series of plots within it, and record vascular plants within them up to twice a year. For more detail about the design of the scheme see the *British Wildlife* overview by [Walker et al. \(2015\)](#) and the [NPMS Survey Guidance](#) documentation. (A more technical review is presented by [Pescott et al. 2019](#)).

Data on habitat type, species abundance and some other associated information are submitted to the [NPMS website](#), and stored in the same data management system (indicia) underpinning [iRecord](#). NPMS species records, viewed as individual occurrences, can then be verified through the iRecord verification interface, in the same way as biological records submitted directly to iRecord and other linked recording websites.

### 2. Who verifies NPMS records?

Generally vascular plant verification in iRecord is carried out by BSBI vice-county recorders (VCRs), or those working closely with them. As not all BSBI VCRs wish to take on NPMS verification, the NPMS team (BSBI and UKCEH botanical staff) also verify some data, and some verifiers may cover NPMS records from a wider area than their own vice-county. Efforts are made to ensure that BSBI staff are aware of all NPMS verifiers, and the areas over which they are acting, to minimise the potential for conflict with BSBI VCR activity (although note below the difference between NPMS record verification within indicia and within the BSBI DDb).

### 3. Differences between NPMS records and other vascular plant records in iRecord

There are some important differences between records collected as part of the NPMS and the wider vascular plant records in iRecord. For this reason, verifiers who cover both types of record within the iRecord platform will be given separate filters to select from the 'Context' dropdown on the [iRecord verification page](#).

The screenshot shows the iRecord verification interface. At the top is a navigation bar with links: Home, Record, Explore, Summarise, Activities, Verify (active), Forum, and Help. Below this is a 'Verification' section with a sub-header: 'This is the main verification page. A full guide to its use is available on the [verifiers' resources](#) page. See also the other options under the Verify menu, for photo records and for iNaturalist records.' The main area contains a search bar, a 'Context' dropdown menu, a 'Status' dropdown menu, and a 'Photos' dropdown menu. The 'Context' dropdown is open, showing a list of filters: 'NPMS; South Lincolnshire; Harding-Morris, James' (highlighted), 'Vascular Plants (non-NPMS); South Lincolnshire; Harding-Morris, James', and 'filter...'. Below the dropdown are buttons for 'Apply filter', 'Reset', and 'Create a filter'.

Figure 1. Selecting the relevant NPMS filter from the verification page. Example for BSBI staff member with both VCR and NPMS verification filters.

#### 3.1. NPMS surveys are of plots or “relevés”, not full lists from large areas

Probably the most fundamental difference from typical biological recording is that the NPMS asks volunteers to record small within-habitat plots twice a year. This obviously means that the samples are not full lists from a broader area; plot recording typically misses rarities, will create many records

of the most typical species from a habitat, and this will be exaggerated by the fact that two samples per plot a year are requested from surveyors. From the point of view of square-bashing, this creates many more records of common species than traditional recording. This output, however, is in-line with the central aim of the NPMS, which is to characterise habitat quality and plant community composition at small scales.

### 3.2. Some NPMS surveys are based on sets of indicator species, which contain some unfamiliar aggregates

To encourage less experienced recorders to take part in the NPMS, there are three levels of survey available to recorders. The “Wildflower” and “Indicator” surveys both work from limited lists of positive and negative indicator species, which you can find in the [NPMS species guidance document](#), whilst the “Inventory” survey is for those who can record all vascular plant species they find. Some of the Wildflower and Indicator habitat lists include the following unfamiliar aggregates:

Table 1. Custom aggregates used within the National Plant Monitoring Scheme indicator lists.







<i>Arctium minus/nemorosum</i>	<i>Polygala serpyllifolia/vulgaris</i>
<i>Betula pubescens/pendula</i>	<i>Rumex crispus/obtusifolius</i>
Conifer seedlings/saplings	<i>Thymus polytrichus/pulegioides</i>
<i>Elodea canadensis/nuttallii</i>	<i>Ulex gallii/minor</i>
<i>Juncus inflexus/effusus/conglomeratus</i>	<i>Viola reichenbachiana/riviniiana</i>

Records of such taxa should not be rejected simply because they are considered “uninformative” relative to a conventional species distribution mapping philosophy. These aggregates are designed to aid beginners, but they are also considered to be of a type that minimise ecological information loss relative to an aim of assessing habitat quality: in these cases, data for the aggregates in Table 1, and their implied segregates, are combined to produce NPMS species trends and indicators (e.g. see <https://www.npms.org.uk/trends>). Records of these taxa should not be rejected out of hand within the indicia/iRecord system.

### 3.3. Automated verification of a subset of records

To ease the verification burden, which is likely to be greater than for “square-bashing” due to the points above regarding the numerous records of common species generated by the NPMS, some auto-verification flags are added for some taxa. These are always available for review by human verifiers. Automated verification is based on a series of rulesets stored within iRecord. These auto-reviews add the following symbols (Table 2) to records to help recorders and verifiers identify potential errors if a record ‘fails’ any of these checks, sending a notification to the recorder:

Table 2. Auto-verification symbols currently in use in iRecord.

Symbol	Meaning
	Passes all rule checks; <b>OR</b> No rule checks available for this species
	Fails at least one rule, in which one or more of the three following reasons will be displayed:
	Fails on identification difficulty (hover over icon to see details)
	Fails due to being outside the known range
	Fails due to being outside the flight/activity period
	Records from this source do not have rule checks applied



The two main checks are as follows:

- **Known range:** This is the most important auto-check and uses the known range of a species as defined by the BSBI *New Atlas* (Preston et al., 2002) and additions. BRC aim to update this to reflect *Plant Atlas 2020* (Stroh et al., 2023) distributions in 2024. Specifically, the geo-spatial reference assigned to a record (lat./long., grid reference) is automatically checked to see whether it falls within the known range of a species at the 10 × 10 km grid square (hectad) scale. Records made from outside this range are flagged, although the ruleset has the ability to ‘learn’ from the decisions made by verifiers, i.e. they are updated where records outside the known range are accepted as correct.
- **Identification difficulty:** The second main rule check is the perceived ease with which a species can be identified. All British and Irish plants have been scored on a scale of 1-4 in terms of the identification difficulty as shown in Table 3 below. These categories are taken from [Ellis & Walker \(2011\)](#) and range from (1) plants that can be easily identified by beginners such as Daisy *Bellis perennis* or Dandelion *Taraxacum officinale* agg. to (4) those that are hardest to identify and need to be checked by an expert, such as microspecies of Dandelions, Brambles and Hawkweeds.

Table 3. Identification difficulty rankings used within iRecord. Originally contributed to Ellis & Walker (2010) by the late Trevor James.

Level	Description	Examples
1	Species that can be relatively easily identified even by inexperienced recorders using up-to-date field guides. This includes 137 taxa for which records would be accepted from anyone without the need for additional evidence.	<i>Bellis perennis</i> , <i>Urtica dioica</i>
2	Species where care is needed for identification (1436 taxa) for which records would be acceptable from a reliable botanist at the local or national level, or from a source that is able to assure that this is the case with reasonable certainty.	<i>Alchemilla alpina</i> , <i>Poa compressa</i> , <i>Stellaria pallida</i> , <i>Vicia sylvatica</i>
3	Species that are difficult to identify (1323 taxa) for which a record would only normally be acceptable if it has been checked and validated by the BSBI Vice-county Recorder for the area concerned (or by another regional expert or other authority recognised by the BSBI).	<i>Ajuga pyramidalis</i> , <i>Carex montana</i> , <i>Lycopodium annotinum</i> , <i>Rosa tomentosa</i>
4	Species that can only be identified following critical assessment (1825 taxa). A record would only normally be acceptable from an expert in the taxonomic group concerned, or from a person recognised by such an authority. Such experts should be known to the BSBI or its related taxonomic community as a recognised authority on the group concerned. This would include, but not be exclusive to, the BSBI’s own panel of referees and experts.	<i>Hieracium</i> , <i>Rubus</i> , <i>Taraxacum</i> , most hybrids

Since the NPMS was launched in 2015, these checks have been used to auto-verify a subset of common species submitted to the scheme. Records of species that are classed as identification difficulty level 1 or 2 according to the criteria mentioned above, that are within their known hectad range are automatically accepted. As a verifier, however, you are always able to review these auto-verified records.

#### 4. Other considerations when reviewing NPMS data

Respecting the contributions of volunteers to the NPMS is a crucial part of verification, especially given the direct flow of decisions between the surveyor and the verifier: decisions on records are not made behind closed doors, but are transparent (see also section 5 below). As with all human

exchanges, this means that queries and feedback to recorders should be performed respectfully, and that records should only be marked as “not accepted” if we have good evidence that a mistake has been made (see the [page 3 of the NPMS document on verification for surveyors](#) if you are not familiar with the levels of verification used within iRecord). Plausible records of common species should not be rejected simply because the verifier does not know the recorder, or for other reasons that are not relevant to the NPMS (e.g. grid reference deemed “too precise”; centroid used for plot locations [the standard within the NPMS]). Verifiers should also remember that often a redetermination will be a better route than rejecting a record: for example, sometimes recorders have accidentally selected unusual infraspecific taxa where a species-level determination was intended (e.g. *Convolvulus arvensis* var. *stonestreetii* where *C. arvensis* was obviously meant). There is no merit in rejecting records like this when they can be simply redetermined to the species level.

In general, there are numerous things we can do to increase our confidence in a record before hitting “reject”:

- Ask the recorder for clarification using the “Raise a query with recorder” button.
- Check the record against current BSBI distribution mapping, including at finer scales where possible; either on the public website (<https://bsbi.org/maps>), or through the BSBI DDb if you have member access (<http://database.bsbi.org/>).
- Contact a local expert (if that is not already you!). See <https://bsbi.org/local-botany> for information on local vice-county recorders.
- Use NPMS plot/location information associated with the record to inspect previous species recorded for a plot. Often this will reveal a highly probable identity for an erroneous or less useful record (such as a genus-level occurrence).
- Inspect records made across a surveyor’s NPMS plots and samples. Such a view of a surveyor’s activities help to form a picture of their knowledge level, and can often provide the confidence required to accept a record of a less common or harder to identify species. For example, a grass without a photo may be easily accepted once one sees that the recorder has recorded numerous plausible grasses across other plots, or that they normally submit photos when they are unsure.

This is not an exhaustive list, and obviously local knowledge of an area or vice-county will also play a large part in verification.

### 5. How do NPMS recorders interact with verifiers?

NPMS recorders can view any queries added to their records by verifiers on the NPMS website, and those that are also registered on the iRecord website can also view their messages there as with any other iRecord record. The iRecord verification process also allows the verifier to send an email to the recorder through the iRecord system, and in such cases the email will contain a link back to the record on iRecord to allow the recorder to amend the entry, or to respond to the verifier. If the NPMS recorder does not have an iRecord account, they will have to login to the NPMS site to make the required change. The NPMS team has been making improvements to the NPMS website to highlight the existence of verifier comments and emendations, although we cannot guarantee that messages will be seen and responded to by surveyors.

Overall, we hope that the process of verification is one of learning for the surveyor, and, equally, that there will also be occasions where a query is merely an opportunity for greater confirmation to be given: being contacted by a verifier does not necessarily mean that the record is wrong!

### 6. Relationships between iRecord-based and BSBI DDb-based verification

Whilst this document focuses on the verification of NPMS data undertaken through iRecord, all indicia data, including NPMS occurrences, are also shared with the BSBI DDb (Figure 2). [Separate guidance](#) can be found for BSBI VCRs undertaking the review of NPMS data within the DDb. Probably the most important point to make here is that verification decisions made with the DDb will not be synced back to iRecord and the NPMS. This means that BSBI VCRs can there make independent

decisions on how to treat the NPMS data for their purposes without disrupting the separate aims of the NPMS. This also means that for full engagement with the NPMS and its volunteers, BSBI VCRs would ideally engage with NPMS verification within iRecord (verified records can then be easily move to the main workspace in the DDb without further review).

To summarise:

- Decisions to change (or ignore) NPMS data in the DDb are not synced back to the NPMS indicia database.
- Records imported from the NPMS indicia database are held in a specific workspace in the DDb prior to VCR review.
- Verification information from iRecord is retained with records imported to the DDb. This means that if verification decisions do not need reviewing, records can be easily moved into the main DDb workspace.
- Within the BSBI DDb, records cannot be edited. Redeterminations or other edits should be made at source within iRecord.
- Whilst records within the DDb cannot be edited, they can be effectively left in “stasis” in the indicia workspace of the DDb, rather than being copied across into the main workspace.

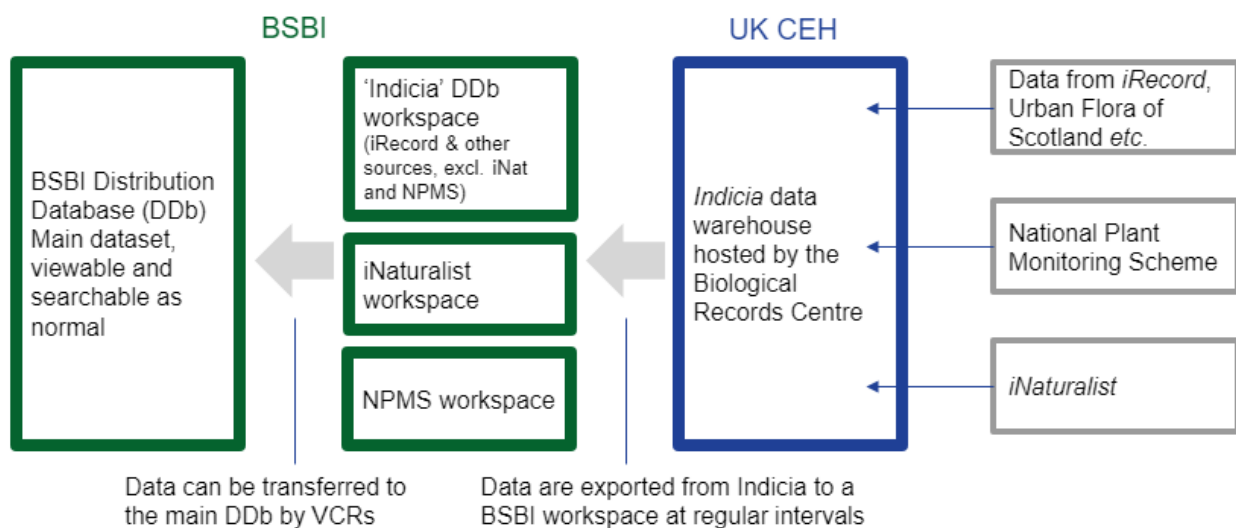


Figure 2. Schematic showing the relationship between BRC website-based data collection and the BSBI DDb.

### Further reading and references

- UKCEH. 2020. *iRecord Guidance for verifiers*. Version 5.1. Biological Records Centre, UK Centre for Ecology & Hydrology. <https://irecord.org.uk/resources-verify>
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