

Making a Buzz for the Coast

**STRAND 6: Have you seen this bee? Shrill carder monitoring project**

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| This strand of the project was delivered by BBCT volunteer Chloe Rose from the Natural History Museum, as part of a training programme designed to address a critical and growing shortage of wildlife identification and recording skills in the UK. ‘Identification Trainers for the Future’ is a HLF funded project led by the Museum in partnership with the Fields Study Council and NBN Trust. |
| **Key objectives to STRAND 6:**   * Raise awareness about the shrill carder bee, its importance to Kent’s heritage and its rare and threatened status * Increase our understanding and monitor shrill carder bee distribution along the Kent and East Sussex coast * Train local communities to identify the shrill carder bee and encourage them to submit photographic records * Recruit and train a small team of expert volunteers to deliver pre-verification process for photographs and records submitted * To raise awareness about the importance of bumblebees and the social, cultural, environmental and health benefits they provide |
| **Brief description:**  While there are some distribution records for the shrill carder bee, there are areas along the coast with apparently suitable habitat, with no or very few records for this species. It is unclear whether this is because the shrill carder bee is not present in these areas (or only in very low numbers) or whether the absence or abundance of records is due to recorder bias.  A way in which this problem can be addressed is to launch a citizen science project to help monitor the distribution and spread of the shrill carder bee. It will also help raise awareness of the plight of this bee and its importance to Kent’s heritage.  A handy, easy-to-use pocket sized and credit card sized ‘shrill carder bee identification card’ can be created, explaining how to spot this bee using it’s distinctive shrill buzz and colour pattern and how to submit photographic records online.  Before creating a mass participation project, this identification resource will be tested to see if it possible to correctly identify this bee using this resource or if there is an element of prior knowledge, or training required. |
| **Method:**  This pocket and credit card sized “have you seen this bee” ID guide are double sided, containing concise information and images on ID characteristics, look-a-like species, habitats and where to submit photographic records online. The resource was tested on three categories of capabilities to see if previous knowledge and experience was required to correctly identify this species.  Group 1 identifiers (21 participants) No prior experience of identifying or recording species.  Group 2 identifiers (36 participants) Experience of bumblebee identification/some prior training in bumblebee ID.  Group 3 identifiers (28 participants) Have recorded and identified other wildlife but have had no prior bumblebee identification experience.  The ID challenge included a PowerPoint containing 18 pictures and 3 videos. There were 10 shrill carder images and the rest were look-a-like species and bee mimics. The quiz was designed to be challenging, imitating the difficulties of identification when out in the field. Participants were given 2 minutes in which to look at the card, reading the information on the bees defining characteristics and studying the pictures. They were then asked to sit through the quiz, which took approximately 5 minutes (10 seconds per slide and approximately 30 seconds for each video) and mark down which slides they thought contained a shrill carder bee.  This ID resource was tested on 85 people on a range of venues including; Margate Library, Faversham Library, the Natural History Museum, the RSPB Brighton office and after a BBCT Identification workshop. |
| **Results:**    The results show that people who placed themselves in group 1 ‘No prior experience of identifying or recording species’ on average were able to correctly identified 6 out of 10 shrill carder bees and had an average of 2 that were misidentified, meaning they mistook similar looking species to be a shrill carder bee. Group 2 and 3 however, people who are experienced in bee ID or have had prior experience in identifying and recording other species, both on average were able to correctly identify 7 out of the 10 with only 1 misidentified.    The table above shows that there were 8 people who received 10/10, 5 of those people where from Group 2, which is what would be expected as this was the group who had prior bumblebee identification experience. Out of those 8, only 2 received 100% (10 correctly identified and 0 misidentified), both of which were from Group 2. In contrast to that however, out of the 6 people who only got between 1 and 3 correct, 3 of these were in Group 1 and 4 were in Group 2 but none from Group 3. The majority of participants were on average, able to correctly identifying between 6 to 9 shrill carder bees, these results may however be effected as the number of people participating in each group were not the same. There were for example only 21 participants in Group 1 compared to Group 2, which had 36 participants. |
| **Misidentified shrill carder bees**   |  |  |  |  | | --- | --- | --- | --- | | **Bee image** | **Number of people who misidentified as shrill carder bee** | **Bee image** | **Number of people who misidentified as shrill carder bee** | |  | **Slide 2**  Lapidarius Male  **14 people** |  | **Slide 12**  Volucella Bombylans  **9 people** | |  | **Slide 4**  Lapidarius Male  **11 people** |  | **Slide 14**  Muscorum worker  **5 people** | |  | **Slide 5**  Pascuorum Worker  **8 people** |  | **Slide 16**  Humilis  **4 people** | |  | **Slide 8**  Eristalis intricarius  **6 people** |  | **Slide 17**  Pascuorum female  **10 people** | |  | **Slide 9**  Muscorum worker  **0 people** |  | **Slide 20 (video)**  Pascuorum  **5 people** | |  |  |  | **Slide 21 (video)**  Distinguendus Queen  **54 people** |   The results on the above table show that the most commonly misidentified shrill carder was slide 21, a video of the *distinguendus,* most likely to be due to the black stripe across the thorax. The other slides 2 and 4, both of which are male lapidarius and slide 17, a female pascuorum were also regularly misidentified. This suggests that these two species would be the most useful to have as the look-a-like species on the pocketsize ID guide. The distribution of the *distinguendus* is limited to theNorth coast of Scotland, and some of the Scottish islands and therefore would be unlikely to be confused and not necessary to include on the guide  **Correctly identified shrill carder bee**   |  |  |  |  | | --- | --- | --- | --- | | **Bee image** | **Number of people who misidentified as shrill carder bee** | **Bee image** | **Number of people who misidentified as shrill carder bee** | |  | **Slide 1**  Sylvarum Queen  **62 people** |  | **Slide 11**  Sylvarum Worker  **58 people** | |  | **Slide 3**  Sylvarum Worker  **56 people** |  | **Slide 13**  Sylvarum Worker  **64 people** | |  | **Slide 6**  Sylvarum Queen  **80 people** |  | **Slide 15**  Sylvarum Male    **55 people** | |  | **Slide**  Sylvarum Worker  **65 people** |  | **Slide 18**  Sylvarum Worker  **39 people** | |  | **Slide 10**  Sylvarum Worker  **43 people** |  | **Slide 19 (video)**  Sylvarum Worker  **53 people** |   The table above shows that the easiest shrill carder picture to identify was slide 6. This slide clearly shows all of the ID features. Slide 18 however, received the lowest number of IDs, maybe down to positioning of the bee in the photo. Slide 10 has a picture of a shrill carder quite deeply buried in a flower, with no visible red tail, this also had a low number of identifications. The pictures with the lowest number of people that identified them should not be included in any of the guides, these were however chosen specifically to be difficult for the purpose of the test.  **Conclusion**  This report investigated whether it was possible to identify a rare, under recorded bee using a small pocket size ID guide and how those with or without prior experience compared in the identification of this bee. On the whole, out of the 85 participants tested, 83% received an average score of 6 or more correctly identified bees. The results show that the average scores don’t vary greatly between the three competencies; group 1: correctly identified- 6, misidentified- 2 and group 2 and 3 scored the same on average: correctly identified- 7 misidentified- 1. This demonstrates that people with prior knowledge in species identification do have a higher accuracy, however, it also shows that even without those skills the shrill carder bee has enough definable characteristics, that it can be identified using just a small pocketsize ID guide. There are however limitations to these results when taking into account that the photos and videos used can’t fully replicate field conditions. In order for someone to correctly identify shrill carder out in the field, they may require a net and pot to closely examine. However, the project is only relying on people sending in pictures for verification, so the ID guide could still be used effectively as a resource for this strand of work.  **“Using identification guides: Does expertise aid image matching?” – Further studies**  Visual species identification is integral to many conservation activities. Prior studies have been carried out on how experts and non-experts compare in the identification of bumblebees. Gail Austen a PHD student from Kent University assessed participants’ expertise with two naming tasks. Experts named on average 20.7 species of UK bumblebees, whereas non-experts could name less than one. Similarly, experts correctly selected 19.7 UK bumblebee species from a list of 40, whereas non-experts selected less than two. Visual identification was then investigated with a matching task, in which observers decided whether two concurrent bee images depict the same or two different species. Accuracy was below 60% and comparable for experts and non-experts. However, experts were more consistent in their answers when the same stimuli were repeated, and more cautious to committing to a definitive answer. These findings demonstrate the difficulty of the visual identification of bees, even under highly optimised conditions and is something that should be factored into conservation activities. Further investigations of the differences between expert and non-expert observers might also provide a route to training. |
| **Recommendations**  *Testing tool kit:*   * Define people’s expertise based on how many bumblebees they can identify IE: 0, 1-3, 3-8,or 8+. * A lot of people incorrectly identified the great yellow video clip as a shrill carder bee (even group 2). This may have been unfair to include as there was no details of the great yellow on the ID guide and it’s one of the only other bumblebees that has the black stripe across the thorax. Also the reality of confusion between these two species is unlikely as these they do not co-occur in Great Britain, only in Ireland.   *ID guide:*   * The sketched picture on the front looks quite dark compared to what the species actually appears like, picture can be changed or made lighter to aide identification. * Possible change in terminology from ‘thorax’ to ‘area between 2 wings’. * Specify on guide to take 2 pictures, dorsal and lateral if possible, to help verification process. * Include on the look-a-like pictures information on why it’s not those i.e. ‘no black stipe’. * Humilis is commonly seen alongside sylvarum but a faded male lapidarius is more likely to be confusion species   **Next Steps**   * Use the same approach for other easy-to-identify rare species such as great yellow and blaeberry bumblebee. * Information on where to send the pictures needs to be decided and added to the ID guide. * Pocket size and credit card ID guide for shrill carder to be updated using feedback from BBCT and participants.   Ideally this ID resource would be tested in the field with same group categories so we can see how easily  people can positively ID sylvarum in the field. |