

Introduction to identifying and recording ladybirds

Questions and Answers from Webinar on 7th May 2020

Thank you so much to everyone who participated in the webinar “Introduction to identifying and recording ladybirds”. We have enjoyed responding to all the questions that were posted. Please do get in contact if you have further comments or questions:

Ladybird-survey@ceh.ac.uk

@UKLadybirds

General ladybird ID questions

Are the spots on the pronotum counted in the spot count? Or is it just the spots on the elytra?

- Just the spots on the elytra (wing cases).

What is the best way to identify harlequin ladybirds from others?

-Harlequin ladybirds are generally bigger than most ladybirds but the combination of brown legs and the black “M” or solid black trapezoid shape on the pronotum are excellent ID features. Perhaps one of the most surprising features of harlequin ladybirds, and one that often causes confusion in identification, is the variation in colour of the wing cases. Most harlequin ladybirds are orange-red with black spots but some are black with red spots.

How many species of inconspicuous ladybird are there in the UK?

- We think that 22 inconspicuous ladybirds are now resident in the UK.

What is the ladybird with the most spots in the world?

*- The one with the most spots that we know of is the potato ladybird, *Epilachna vigintioctopunctata*, which has 28 spots. This is not resident in the UK but has been reported here once. In the UK the 24-spot ladybird is the spottiest.*

Does the size change over time or between locations or the size is always have the same?

- Adult ladybirds do not change in size or colour pattern. Male ladybirds are often smaller than female ladybirds. The larvae do grow and change in appearance a bit as they get bigger. There is some evidence that different colour patterns are more prevalent in some regions than others but within the UK there is no evidence of size varying as far as we know.

Is there a difference in colour pattern between sexes?

- In most cases no. The elytra are the same for both sexes but in a few species the pronotum colour or head colour may be slightly different, e.g. in the 22-spot ladybird the pronotum is predominantly white in males but yellow in females. In ladybird species generally, the most obvious difference is that females are usually rather larger than males.

How many ladybird species are there in the UK in total?

- There are 47 resident species.

What is the best type of habitat to find inconspicuous ladybirds?

- *The habitat varies by species but a good approach would be searching a mix of deciduous and coniferous trees, plus lower vegetation including grasses. Several species may be found in ivy, so that is a good place to look.*

Does the orange ladybird always have that flared rim to the wing cases?

- *Yes, and this flared rim and rim of the pronotum are quite translucent.*

Are there any variations in species in the Channel Islands?

- *Yes, the Channel Islands has a few species not found in the UK, for example *Exochomus nigromaculatus*, but is also missing a few of the UK species.*

I had heard that the 22 spot ladybird is sexually dimorphic with the male having a white pronotum is this true?

- *Yes, this is true, at least sometimes - the pronotum is predominantly white in males but yellow in females.*

I have recorded a couple of Larch ladybirds, is this a common ladybird and are many other ladybirds without obvious spots?

- *The larch ladybird is quite common in particular habitats, i.e. conifer woodland and especially larch trees. It is one of the species that does particularly well in Scotland. There are other species without obvious spots, for example in the UK the striped ladybird.*

Are most of these species (except for the Harlequin) native to the UK?

- *Yes, except for the Harlequin all of the conspicuous species discussed are native. Although on the list of 47 species there are a number of other non-native species.*

Do the inconspicuous ladybirds have longer antennae?

- *Mostly not, but several species do. Our species in the genera *Rhyzobius* and *Coccidula* have longer antennae.*

Can the pronotum colouration and wing colour patterns vary in the 10-spot? And in other species?

- *Yes both of these are very variable in the 10-spot. Some other species also vary a lot, e.g. 2-spot, harlequin and hieroglyphic ladybirds.*

What do you recommend for macro photographing record shots?

- *Most digital cameras have a macro setting, but pictures from mobile phone cameras can also be good.*

Do any other lady birds other than harlequin have dimples on back of wing case?

- *Not really, and the ridge at the back of the wing cases is a good feature to look for on the harlequin.*

Is it possible to identify between species at the pupal stage of ladybirds?

- *Yes, though it can be tricky. The colour of pupae varies a lot depending on how warm it is as they develop (with paler pupae in warmer conditions). Pupae and larvae of the conspicuous ladybirds are illustrated in field guide (Roy and Brown 2018 – see resources below). Sometimes it is possible to ID the pupa from the shed larval skin at the base of the pupa.*

Will we cover the difference in the ladybird larvae?

-We covered a few but the illustrated field guide (Roy and Brown 2018 – see resources below) or this downloadable ID sheet should help:

https://www.coleoptera.org.uk/sites/www.coleoptera.org.uk/files/ladybird_larvae.pdf

Do all the larval instars look the same apart from size?

-Size varies a lot but also the colour patterns and markings change over time and so late instar (3rd and 4th instars) larvae are the most straightforward to identify.

Can the larvae of a 7-spot and scarce 7-spot be separated?

-It is very tricky to separate them – the scarce-7-spot has slightly more orange markings.

Ladybird habitats and diet

A few questions about diet. How broad is the ladybirds' food range, which species has the "wackiest" diet?

- Most species are predators and feed on small pest insects such as aphids and scale insects. Some eat a broad range of these and others are much more choosy. A few species eat tiny mildews and two eat plants. The 16-spot ladybird is perhaps the most unusual or "wackiest", feeding on pollen, nectar and tiny fungi.

How much do habitat and dietary preferences vary between species?

- These vary a lot. Regarding habitat preferences, some species are generally found on deciduous trees, some on conifers, some in grassland and other low plants. Some species are very generalist and others quite specialist, perhaps mainly restricted to one plant species. Some species, such as the Adonis ladybird, like dry conditions, whilst others, such as the water ladybird, like reedbeds and wet grasslands. 16-spot ladybirds are commonly found in grasslands. Regarding dietary preferences, please see question above.

Is there much direct interaction/competition between individual larvae of different species?

-predatory larvae will compete with one another for food and there are also direct interactions with some larvae eating others both of the same species (cannibalism) and different species (predation).

Is there any habitat that ladybirds prefer?

-Please see response to the question above.

Do the larvae and adults feed on the same thing?

- Yes, and this is quite unusual for beetles.

Is it common for ladybirds to pupate on walls rather than being on vegetation?

-This is very common – it is possible that a wall represents a warmer substrate.

Are there any other beetle families that could be confused with the Coccinellidae?

-There are quite a few look-a-likes including leaf beetles but also carpet beetles but ladybirds are small to medium sized beetles with short antennae.

Are the spikes on the ladybird larvae called tubercles?

-the little pads that the spikes and bristles come from are the tubercles.

Ladybirds through the year

Is there a season for surveying? Is there a best time of year to look for ladybirds? What is the best habitat and time of year to look for ladybirds?

- April to September is the best time. There is often a drop in adult numbers in early summer (particularly June) as many of the ladybirds are larvae at that time.

When do adult ladybirds usually emerge, and is there a difference in emergence times between species (as there is in butterflies). Thank you!

- Yes the species do vary a bit. All ladybirds in the UK overwinter as adults and they tend to emerge properly around March. Some species, such as the pine ladybird, emerge earlier (often February) and some, such as the 14-spot ladybird, emerge later (around April). This will vary depending on where you are in the UK.

Where and when do ladybirds hibernate? What is their usual life span, given they hibernate?

- Most species overwinter from September or October to February or March. Where they do this varies a lot, depending on the species. Some species (e.g. harlequin and 2-spot) like to overwinter in buildings, some in tussocks of vegetation, some in reed or grass stems, some low down to the ground and even in the soil. Mostly they like cool, dry, sheltered places. Most ladybirds probably live for a few months and sometimes up to a year, though rarely it can be longer.

How long is a ladybird life cycle and how do you know its age?

- Most ladybirds probably live for a few months and sometimes up to a year, though rarely it can be longer. It is hard to tell the age of a ladybird, though very pale adults are likely to be young. The wing case colour darkens with age, so a dark red 7-spot ladybird is likely to be old (perhaps born last year). The number of spots does not vary with age!

Is it only the adult ladybird that lays eggs, not larvae?

-Yes – the larvae are the immature stages.

Is it possible to determine which instar a larva is in?

-it is possible to measure the head capsule size as a guide but there is not information readily available for all species. It is often possible to determine it to either first or second, second or third, third or fourth. Sometimes the markings vary between third and fourth instar too.

Status and trends

How do you deal with bias/misidentification in records from citizen science?

-There are various statistical ways we can deal with the bias in the distribution of recorders or the detectability of the species. We check all the records that we use in the trends analysis and correct the misidentifications. We worked with some collaborators in North America to look at the ways in which such biases might affect our interpretation of the data and concluded every record counts and can help us address many different questions:

<https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/110185>

Are Ladybirds in decline? What are the population trends (if any exist) for specific species?

-some species are showing distribution declines, some are stable and a few are increasing. We have some population trends for ladybirds within specific regions but not across the UK. The table below gives the number of verified records for each species followed by the overall distribution trend from 1995-2015. For more information see:

Outhwaite et al. (2019) <https://www.nature.com/articles/s41597-019-0269-1>

Numbers of records for each species of ladybird and distribution trend

<i>Coccinella septempunctata</i>	23212	Decrease	<i>Aphidecta oblitterata</i>	538	Decrease
<i>Harmonia axyridis</i>	22505	Increase	<i>Myrrha octodecimguttata</i>	353	Stable
<i>Adalia bipunctata</i>	11654	Decrease	<i>Chilocorus bipustulatus</i>	285	Stable
<i>Propylea quattuordecimpunctata</i>	7553	Stable	<i>Scymnus suturalis</i>	216	Stable
<i>Adalia decempunctata</i>	4364	Stable	<i>Coccinella hieroglyphica</i>	164	Decrease
<i>Exochomus quadripustulatus</i>	4043	Stable	<i>Myzia oblongoguttata</i>	160	Stable
<i>Halyzia sedecimguttata</i>	3712	Increase	<i>Coccidula scutellata</i>	142	Decrease
<i>Psyllobora vigintiduopunctata</i>	3458	Decrease	<i>Henosepilachna argus</i>	138	Stable
<i>Calvia quattuordecimguttata</i>	2967	Stable	<i>Scymnus frontalis</i>	125	Stable
<i>Subcoccinella vigintiquatuor punctata</i>	2134	Stable	<i>Rhyzobius chrysomeloides</i>	113	Increase
<i>Tytthaspis sedecimpunctata</i>	1641	Stable	<i>Scymnus auritus</i>	105	Decrease
<i>Chilocorus renipustulatus</i>	1419	Stable	<i>Scymnus interruptus</i>	101	Stable
<i>Coccidula rufa</i>	1281	Decrease	<i>Nephus quadrimaculatus</i>	93	Stable
<i>Rhyzobius litura</i>	1256	Stable	<i>Coccinella magnifica</i>	90	Stable
<i>Anisosticta novemdecimpunctata</i>	1062	Decrease	<i>Nephus redtenbacheri</i>	85	Decrease
<i>Coccinella undecimpunctata</i>	963	Decrease	<i>Coccinella quinquepunctata</i>	76	Stable
<i>Anatis ocellata</i>	743	Decrease	<i>Scymnus haemorrhoidalis</i>	68	Decrease
<i>Harmonia quadripunctata</i>	734	Stable	<i>Stethorus punctillum</i>	50	Decrease
<i>Hippodamia variegata</i>	690	Stable			

Are you seeing any change in distribution which can be accounted for climate change? Will we see new species from Europe moving north in their distribution?

-some species are occurring more frequently in the north of England and Scotland than previously which suggests a northward expansion. It is possible that new species could colonise from Europe.

Are we likely to get 'plagues' of ladybirds as there have been in the UK in the past?

-Ladybird abundance varies year on year. In some years there have been very high numbers recorded such as in 1976 when 7-spot ladybirds were super abundant across the UK. These peaks in ladybird

number will happen in the future and will depend on overwintering survival, prevailing weather conditions and availability of food.

What effects are likely to be seen in ladybird abundance as a consequence of climate change?

-It is very difficult to predict. Some species will benefit and others will not. We are already seeing changings in the distribution of some species, including some species moving northwards, which is likely to be a consequence of climate warming.

Harlequin ladybirds and other non-native ladybirds

I've seen some *Harmonia axyridis* with one elytra a different colour to the other, what causes this and is it common?

-This is quite rare but is thought to be a genetic mutation although sometimes damage such as from frost or a bird pecking the elytra can also cause changes to colouration.

Why are Harlequin ladybirds bad?

-Harlequin ladybirds appear to be top predators within the groups of insects that feed on aphids. As such they are strong competitors of the other species but also eat the other insects that feed on aphids. So the main concern is that they could reduce diversity. It is already apparent that the composition of ladybird communities is changing with harlequin ladybirds being amongst the most abundant and 2-spot ladybirds having shown a sharp decline in distribution.

Why do harlequins vary so much and why are they bad for native species?

-Most harlequin ladybirds are orange-red with black spots but some are black with red spots. They are all the same species. The bright colours of ladybirds are thought to be warning predators that they are not appetising because they contain a cocktail of foul tasting chemicals. Such warning colouration is called aposematism. From an evolutionary perspective all aposematic ladybirds should look the same and thereby give a consistent warning message to potential predators; the variation in colour pattern presents a conundrum.

*The 2-spot ladybird *Adalia bipunctata* is another variable species. The typical form is, as the name suggests, red with two black spots. But 2-spot ladybirds also commonly display black colouration with four or six red spots. Some detailed studies have shown that 2-spot ladybirds are much more palatable than other ladybird species and so they mimic their more toxic relatives. In some localities this will be red ladybirds with black spots and in others black ladybirds with red spots. However, harlequin ladybirds are among the most distasteful so this does not explain their colour pattern variation.*

So what else could explain the variation? There is evidence to suggest that colour pattern varies with temperature. Dark colour forms heat up more rapidly than orange-red colour forms – so called “thermal melanism” – and might have an advantage over the orange-red colour forms at low temperatures. We have shown that the orange-red colour form of harlequin ladybirds is less likely to occur in woodlands than the black colour – perhaps providing some tantalising evidence that temperature effects might be at play. Additionally recent research has shown that the black spots on harlequin ladybirds are larger when the ladybird has pupated at cool temperatures compared to those which pupate in the warm summer months.

How did an Australian ladybird make it to the UK?

*-*Rhyzobius forestieri* has been introduced into some countries to control scale insects.*

Do harlequin feed on aphids and why they are not so popular as the native ladybirds?

-Harlequin ladybirds feed on aphids but they also feed on other insects. They are generalist predators. They are perhaps less popular because of the threat they pose to other insects through competition and predation.

How do you get rid of harlequin ladybirds without harming other insects?

-Harlequin ladybirds are so easily confused with other ladybirds and are undoubtedly here to stay so we don't recommend killing them. They can be moved if they are in the way but there are no effective control strategies that would not affect other "non-target" species.

Has Bryony Ladybird always been present in continental Europe, or has it been transported from elsewhere?

-it is native to mainland Europe.

Predators and parasites

Are any ladybird species the preferred diet of another animal (despite their defence compounds), and which are the most common parasites/pathogens of ladybirds?

*-Ladybirds are not known to be the preferred food of any predators but they do have a number of specific parasites. Two natural enemies are often considered among the most important causes of mortality in adult predatory ladybirds: the braconid wasp, *Dinocampus coccinellae*, and pathogenic fungi within the genus *Beauveria*. The wasp *Dinocampus coccinellae* lays eggs in adult ladybirds – a single wasp larva hatches within the ladybird and begins to feed on the host. Eventually it emerges to spin a cocoon between the legs of the ladybird in which it has developed. This parasite-host interaction can be observed in the field: the parasite cocoon is particularly conspicuous in the spring when it can be seen attaching 7-spot ladybirds (and others) to various surfaces such as fence posts and trees.*

*The most common pathogen attacking ladybirds is the fungus *Beauveria bassiana* which causes 'white muscardine' disease in many insects. It persists as tiny spores, usually in soil but also on tree bark or leaves. The fungus spreads by infecting overwintering ladybirds in sheltered spots such as crevices or leaf litter. Scientists have shown that ladybirds avoid places with lots of fungal spores and move away from ladybirds that succumb to the disease.*

*Just after the webinar someone sent a photo of a harlequin ladybird with a *Laboulbeniales* infection – this is a fungus that forms little yellow fruiting bodies on the surface of the beetle.*

Are the larvae more edible?

-The larvae are more likely to be eaten by other ladybird larvae or other predators but they also contain the distasteful chemicals and are often also physically defended with spines.

Definitely interested in the link to parasites if that could be posted.

-Please send sightings using iRecord and for more information see:

<https://www.ceh.ac.uk/news-and-media/blogs/understanding-ladybird-parasites>

You are welcome to contact Helen Roy: ladybird-survey@ceh.ac.uk

My 8yr old son would like to tell you he loves spiders and wonders what is the relationship between Spiders and Ladybirds please?

-Ladybirds are sometimes found in spiders webs but it is not clear whether all spiders then consume the trapped ladybird. It would be interesting to know the occurrence of ladybirds in spiders webs and any observations on the spider feeding. Or perhaps how long the ladybird remains in the web compared to other prey items. There is also a national recording scheme for spiders which has lots of useful information <http://srs.britishspiders.org.uk/>

If we find any ladybirds with fungus or cocoons should we send them to you?

-Please just send a picture or see link above for recording.

General ladybird ecology

How good is the ladybirds eyesight- they seem to know when I'm trying to photograph them - any tips?

-I often feel the same but more likely ladybirds are detecting the change in light pattern or movement. The eyesight of ladybirds is only one of their many senses and chemical cues in the environment are likely to be much more important.

When 2 colour types interbreed what colour are the progeny?

-The genetics is extremely complicated. There are no simple dominance patterns. Professor Mike Majerus studied this in detail and there is lots of information written by him in the Naturalist Handbook:

<https://pelagicpublishing.com/products/ladybirds-naturalists-handbooks-helen-roy>

Do they migrate? Do ladybirds range far when flying?

-Ladybirds can travel long distances and there are reports of ladybirds arriving from mainland Europe to the UK in large numbers. We have shown that ladybirds are potentially able to travel 18 km in a "typical" high-altitude flight, but up to 120 km if flying at higher altitudes, indicating a high capacity for long-distance dispersal.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0082278>

Are ladybird toxins purely distasteful or do they have other effects?

-Ladybird toxins are mainly distasteful in the quantities that other animals are exposed to through the interactions that take place in the natural world.

Where species have variation in their colouring/spot pattern, is this regional?

*-The 2-spot ladybird *Adalia bipunctata* is a variable species that has been suggested to show regional differences in colour pattern. The typical form is, as the name suggests, red with two black spots. But 2-spot ladybirds also commonly display black colouration with four or six red spots. Some detailed studies have shown that 2-spot ladybirds are much more palatable than other ladybird species and so they mimic their more toxic relatives. In some localities this will be red ladybirds with black spots and in others black ladybirds with red spots.*

Do we know why ladybirds evolved their patterns?

The bright colours of ladybirds are thought to be warning predators that they are not appetising because they contain a cocktail of foul tasting chemicals. Such warning colouration is called aposematism. From an evolutionary perspective all aposematic ladybirds should look the same and

thereby give a consistent warning message to potential predators; the variation in colour pattern presents a conundrum.

Does life expectancy differ from species to species?

-Ladybirds in the UK live for just over one year. They spend the winter as adults and emerge in spring to feed and mate. After the overwintered adults have reproduced they begin to die and so in June it is most usual to see only ladybird larvae. The new generation of adults appear through the summer months and feed in preparation for the winter months. Some ladybirds only have one generation per year in the UK for example 7-spot ladybirds. Some have multiple generations for example harlequin ladybirds.

What is the benefit of the hairs?

-The hairs could be a defence for the ladybirds but it is also likely that they play some sensory roles including sensing air currents and vibrations. Most insects have various tiny hair like structures (so called setae) in various places on their surface and they have many varied functions.

Do you have any idea why Orange ladybirds seem to be attracted to moth traps?

-Orange ladybirds and some other species, notably harlequin ladybirds, are attracted to light. It is puzzling why insects are attracted to light but perhaps the most strongly supported theory for moths is that they use the moon or stars to orientate, and adjust their flying track to keep the light source at a constant angle to the eye. It is not implausible that ladybirds are doing something similar.

If you were to collect a pupae to watch it hatch at home, how long would it be before the ladybird needed to feed and so needed to be returned to its host plant?

-The emerging ladybird would need to find food a few days after emerging but ideally provide food as soon as it leaves the pupal case.

Wildlife gardening

How can we attract ladybirds into our gardens and encourage them to stay?

-Ladybirds are highly mobile. They move from one place to another seeking food but also suitable places to lay their eggs. Leaving aphids on some plants will benefit ladybirds but also ensuring there are some places for the ladybirds to spend the winter. Some species move under the leaf litter for the winter and others go into cracks and crevices. Diversity of habitats and plants within a garden can be beneficial for many insects. There is some great advice on the Bumblebee Conservation Trust website:

<https://www.bumblebeeconservation.org/gardeningadvice/>

Are there any issues with commercially-supplied ladybird larvae for garden aphid control?

-There have been problems with ladybirds introduced in this way – check that you are buying from a reputable supplier and know the species that you are obtaining. However, ladybirds are highly mobile and so gardening for wildlife (see above) is a sustainable way to enhance ladybird populations in your garden.

Is it worth using these sachets of ladybird food?

-We are not sure what these are but ladybirds can find lots to eat in a garden that is managed, at least in part, to support wildlife. See above.

Are the ladybird houses any good?

-Ladybirds are very diverse in their habitat preferences and so a ladybird house might get a few ladybirds moving in but more likely many other different species of insects will use the cracks and crevices that ladybird houses provide. So they can benefit many species including solitary bees. Such insect houses are very effective and can be made very simply:

<https://www.rspb.org.uk/get-involved/activities/give-nature-a-home-in-your-garden/garden-activities/buildabeebandb/>

Are there any studies showing that ladybirds are useful species in terms of pest reduction in arable environments?

-There are many studies that have looked at the beneficial role of ladybirds in arable environments. Along with many other beneficial insects (parasitic wasps, hoverflies, lacewings, ground beetles, predatory bugs and many more) they provide an important pest control service. There are many ways which land can be managed to support these predatory insects. For some more information:

<https://www.ceh.ac.uk/news-and-media/blogs/wildflowers-field-strips>

Recording

In submitting of ladybirds records - is iRecord sufficient? Or should be submit directly to CEH?

-iRecord is an on-line recording system developed by the UK Centre for Ecology & Hydrology (UKCEH) in partnership with others. The iRecord dataset for the UK Ladybird Survey is open for everyone to use. So if you have submitted your record through iRecord then it will be used by many others. The European Ladybird app is an app that links to iRecord includes information about ladybirds too but you might also be interested in recording many other non-ladybird species and in which case the iRecord app is an excellent one to choose. There is lots of information about apps here:

<https://www.brc.ac.uk/apps>

Which organisations make the most use of the ladybird data and records?

-UK Ladybird Survey data is open for everyone to use. We use it in our research but it is also used by other scientists around the world. All the data is made available to Local Environmental Record Centre so that the data can be used in planning decisions at the local level. The data is used to inform decision-makers about long-term trends:

<https://www.brc.ac.uk/theme/red-listing-and-indicators>

The harlequin ladybird dataset has helped us to better understand biological invasions and has informed the development of an alert system for all invasive non-native species in the Britain:

<http://www.nonnativespecies.org/alerts/index.cfm>

Are there any ladybird-specific conservation projects taking place?

-There are many organisations involved in insect conservation. There are no conservation projects currently focussed solely on ladybirds but many of the initiatives that are implemented to improve habitats for wildlife will benefit ladybirds too.

Additional resources and information

What reference guides / books would you recommend?

There is lots of information on the UK Ladybird Survey website:

<https://www.coleoptera.org.uk/coccinellidae/home>

The FSC charts are great for getting started:

<https://www.field-studies-council.org/shop/publications/ladybirds-guide/>

<https://www.field-studies-council.org/shop/publications/ladybird-larvae-guide/>

Also the RSPB Spotlight on Ladybirds:

<https://www.bloomsbury.com/uk/rspb-spotlight-ladybirds-9781472955852/>

The Field guide:

Roy, H.E. and Brown, P.M.J. (2018) *Field Guide to the Ladybirds of Great Britain and Ireland*.
(Illustrated by Lewington, R.) London: Bloomsbury Press.

When I talk to children at work (I am an education officer in a park) they are sometimes scared of ladybirds as their parents/teachers have warned them not to touch or get too close because they are poisonous. What do your experts recommend that I say in response to encourage and reassure our visitors and get them to love ladybirds?

-Ladybirds are so important to us. Many species are important in controlling pest insects such as aphids. They also all have their own stories to tell with diverse and fascinating life histories.

Will the recording and slides be available for download after the seminar?

-Yes and the recording of the webinar.

The pull out ID guides you mentioned, please can you confirm the publisher and author so I can purchase them - they look really easy to use!

The FSC charts are great for getting started:

<https://www.field-studies-council.org/shop/publications/ladybirds-guide/>

<https://www.field-studies-council.org/shop/publications/ladybird-larvae-guide/>

Can you do an FSC fold-out guide to the inconspicuous ladybirds?

That's a great idea!

What is the best resource (website and books) for Ladybird ID please?

-see above

Facebook: Ladybirds of the UK and Ladybirds of the British Isles

Twitter: @UKLadybirds