



Cumbria Dragonfly Atlas

February 2020

*David Clarke &
Moustafa Eweda*



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Acknowledgments

It is a pleasure to acknowledge the work of the many people whose records contributed to this atlas, although, regrettably, it's impossible to apportion credit individually as there are over 600 names in the database. Data from the 1960s and the following two decades derive especially from local recorders who participated in the national dragonfly recording scheme run by the Biological Records Centre (BRC). We thank the BRC and its successor the British Dragonfly Society as custodians of the national dataset, the Cumbrian part of which is included in the analyses presented here. Much work in collating and managing our local records has been done by staff at the Cumbria Biodiversity Data Centre (CBDC), and we would like especially to thank the former Recording Officer Gary Hedges, the current officer Stuart Colgate, and the team of Tullie House volunteers.

We are pleased to have had the benefit of Bob Merritt's expertise on Odonata and atlases and are doubly fortunate that he and Heather and Tony Marshall gave close attention to draft versions. Pam Taylor (BDS), Stephen Hewitt and Mike Abbs have also commented. The faults remaining are ours alone and user feedback will hopefully lead to further improvements.

Providers of species images are credited on the relevant pages. Thanks are given to Linda and John Reinecke for generously permitting use of high quality images from their website www.flickr.com/photos/linjohnpics/collections/. Uncredited images are by David Clarke.

David Clarke &

Moustafa Eweda

February 2020



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Cover page dragonfly clipart © SeekClipart.com

Introduction

Cumbria now has twenty-three breeding species of dragonfly, and six recorded migrants/vagrants. Of the twenty-three, five (Migrant Hawker, Emperor, Broad-bodied Chaser, Black-tailed Skimmer, Ruddy Darter) have been added since the mid-1990s. Two species now widespread, the Emerald Damselfly and the Common Darter, were added to the list for the old county of Cumberland (i.e. VC 70) in the 1940s by Carlisle entomologist F.H. Day, whose activities had covered the whole of the earlier part of that century.



No species has been lost. Of the six migrants/vagrants, five are species that occur elsewhere in Britain from time to time – Vagrant Emperor, Lesser Emperor, Red-veined Darter, Yellow-winged Darter, Scarlet Darter. The sixth, the Hairy Dragonfly, is perhaps different: unless there is an undiscovered local colony, it is presumed to be an internal migrant from elsewhere in the British Isles, possibly from Ireland or SW Scotland.

Even amongst the longer-established residents there are signs of change. For example, the Banded Demoiselle has spread from its Solway strongholds to colonise much more of the Eden catchment and, further west, the Derwent and other rivers draining towards the Irish Sea. At the same time the species has moved into the south of the county, almost certainly from Lancashire. Southern Hawker and Keeled Skimmer are now more frequent, Emperor seems well-established and Broad-bodied Chaser is consolidating its range northwards. Whilst general climate warming must be a factor, it is clear that the all too rare periods of good summer weather are associated with significant dispersals. Of the breeding species ‘new’ since 1995, only the Ruddy Darter has regressed from its peak distribution of the early 2000s.

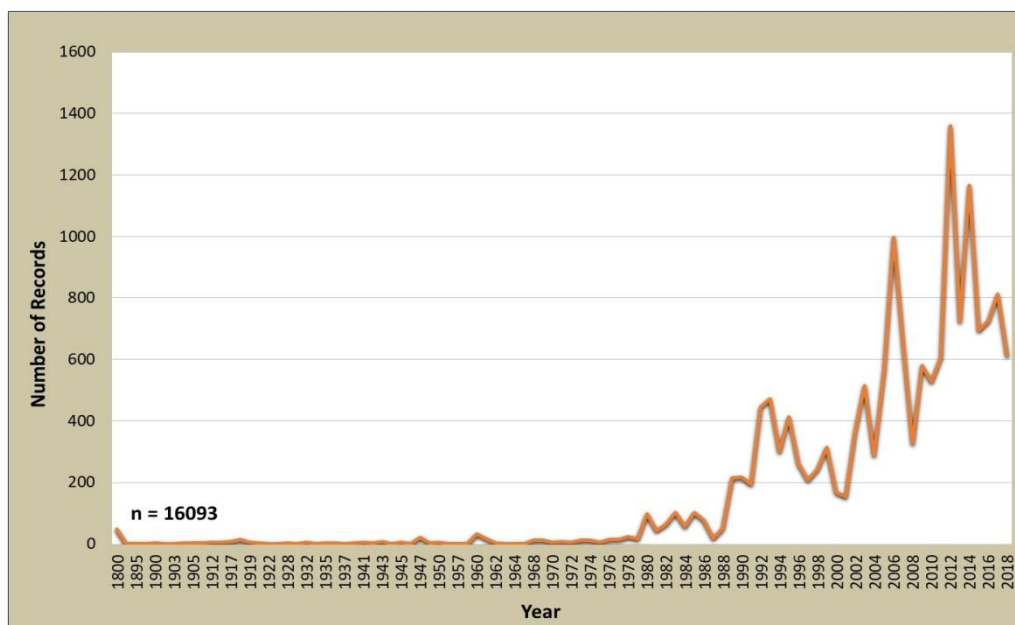
Provisional Cumbrian distribution maps were produced in pamphlet form by Tullie House Museum, Carlisle, in 1994, with an updated version in 2005. These were the first fruits of available computerised data, using both local and national data sources. By 2005 the total number of species recorded had risen from nineteen in the early 90s to twenty-three and it has been twenty-nine since 2011. The main reasons for this are two-fold: first, a genuine advance in the ranges of northward-spreading generalist species; second, the growth of interest in dragonfly recording, notably among the bird-watching fraternity. These trends are well-represented in the impressive national atlas produced by the British Dragonfly Society in collaboration with the Biological Records Centre, under the auspices of the Natural Environment Research Council, in 2014 (see reading list, p. 68).

This present atlas is the first attempt at an online, updatable, atlas and is a collaboration between David Clarke, British Dragonfly Society County Recorder for Cumbria, and Dr Moustafa Eweda, Data Officer for Cumbria Biodiversity Data Centre (CBDC) – the Local Records Centre for the county, based at Tullie House Museum, Carlisle. David has written the species accounts and sourced the images, while Moustafa has been responsible for data analysis, producing maps, developing the online maps and creating the phenology charts based on the cleaned data, which includes all available records up to the end of 2018. Both of us worked on the dataset to eliminate duplicates and correct other errors.

What the data reveal

Growth of records

The graph shows the increasing trends in flow of data, which accelerated greatly once computer-based recording developed at Tullie House Museum following re-development in 1990 and the appointment of a full-time Natural Sciences curator, Stephen Hewitt. The advent of CBDC in 2010 marked a further impetus to the growth of records.



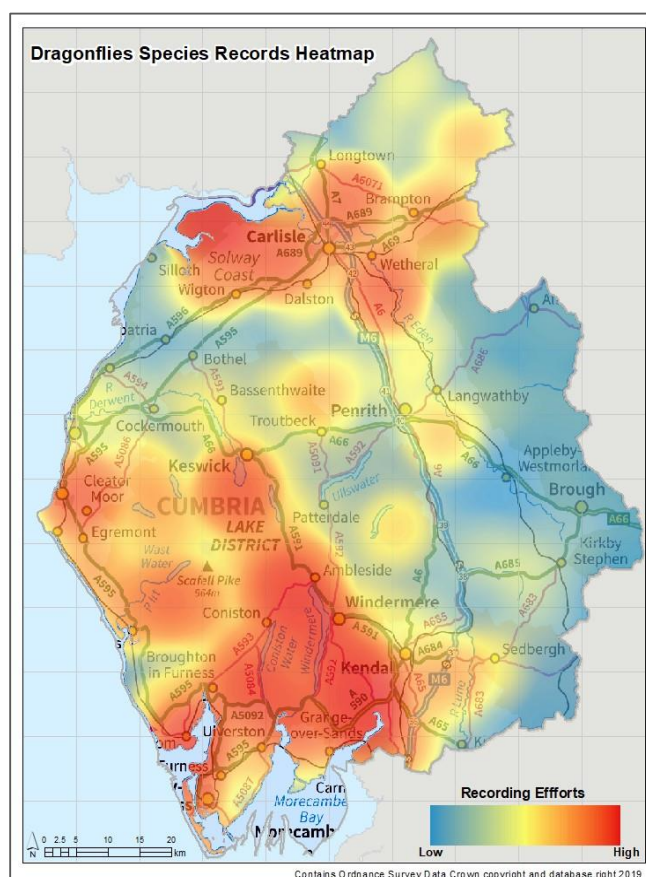
Growth in Odonata data held at Tullie House Museum 1800 to 2018

Where the records come from

The 'heatmap' of recording effort reflects in part the distribution of people in a largely rural area. The Cumbria natural history community is a major source of records, not least from the various local Societies, over a long period. Indeed, the partnership between Carlisle Natural History Society and Tullie House Museum has largely been responsible for the growth of biological recording in the area over the past 120 years,

The almost inevitable bias of data to the Lake District National Park area is a factor to be kept in mind. In an area that receives significant tourism, annual wildlife records are augmented by visitors, some of whom come for this very purpose.

Online recording is increasingly a source of records. At present CBDC downloads from the BRC programme *iRecord*. The British Dragonfly Society have their own activity within this web-based programme, especially for capture of data relating to breeding.



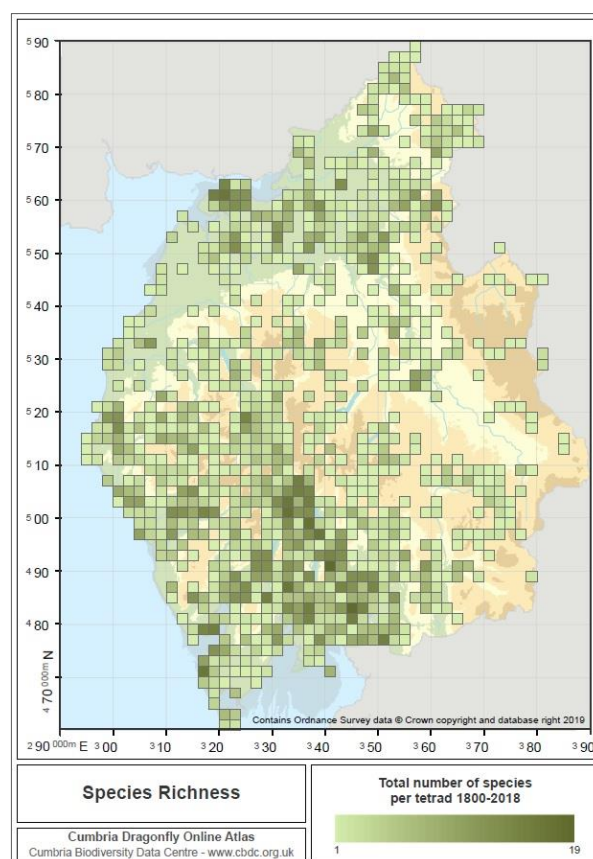
Species-richness

The number of species per tetrad may usefully be compared with the map of recording effort as shown in the 'heatmap'. There is clearly a large degree of coincidence between the two, showing that, unsurprisingly, recorders tend to gravitate to the richest areas in the county.

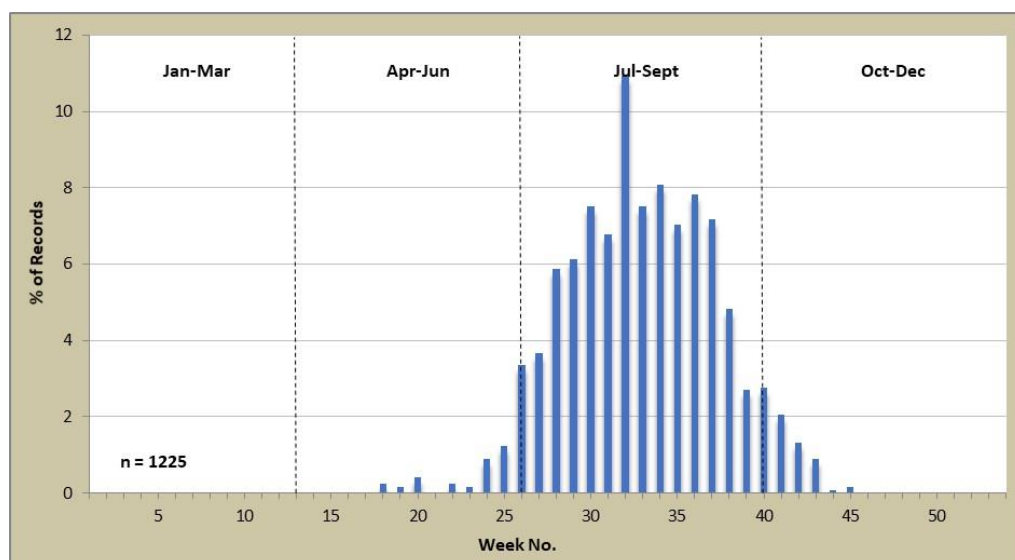
The main sequence of species-pages brings the records up to date. Areas that remain the most data-deficient do not always reflect the absence of Odonata! We hope that blanks on the maps will be filled by viewers of this Atlas.

Phenology charts

The phenology charts such as that below are a 'first' for the county. Species that have relatively large amounts of data, such as Large Red Damselfly and Common Hawker (respectively a 'Spring species' and a 'Summer species'), offer the most opportunity for further analysis.



Application of statistical techniques may bring out subtle changes that may have occurred in many resident species. CBDC encourages such research usage of their data. It should be noted that the charts relate to the whole of Cumbria: an area that is some 120 km in extent N-S and up to 90 km E-W, with varying terrain, from sea level to almost 1000 metres. There are large variations in local climate and weather.



Phenology of the
Common Hawker
(*Aeshna juncea*)

Whilst all care has been taken, it has not always proved possible to completely eliminate records based on life history stages such as larvae or exuviae during the flight period: these make up a very small proportion of the data. The records selected for phenology analysis have been limited to those for which full dates (i.e. dd/mm/yyyy) are available, thus making for a slightly different selection to those used for mapping.

Species pages: Status and Notes sections

‘GB Status’ refers to the UK mainland; occurrence of a species on the island of Ireland is mentioned only when it appears relevant to Cumbria records. ‘Confusion species’ applies to species currently recorded in Cumbria: others are likely to occur in future. The Notes expand on the initial summaries. Comments on identification do not replace guidebooks (see Reading List).

Species maps

The species maps have given an opportunity to record not only distribution, but the recent changes referred to above. The variability of data resolution over the entire period (1800- 2018) has meant that tetrad level mapping has been the best compromise. The choice of mapping periods has inevitably been somewhat arbitrary, though chosen with a view to showing recent gains in species most clearly. What can only be inferred from the maps is breeding presence.

The 16,093 records mapped include all those with at least 2km x 2km (tetrad) resolution. The number of records used may thus differ slightly from those used for phenology. As with the phenology charts, records based on larvae or exuviae contribute a minimal part of the data.

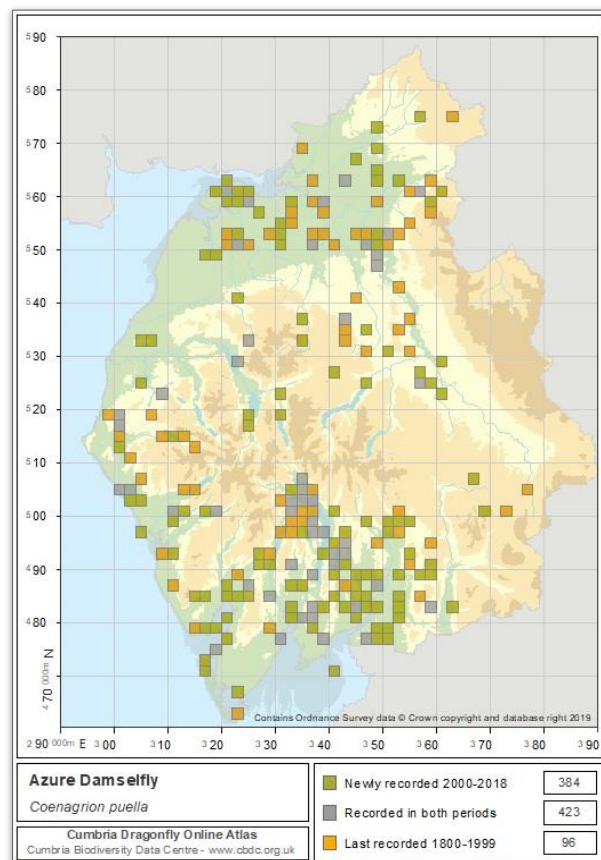
Odonata are now well served by a plethora of identification aids, and since larvae and exuviae are now included in these resources (see reading list), recording potential extends to all seasons.

Map interactivity

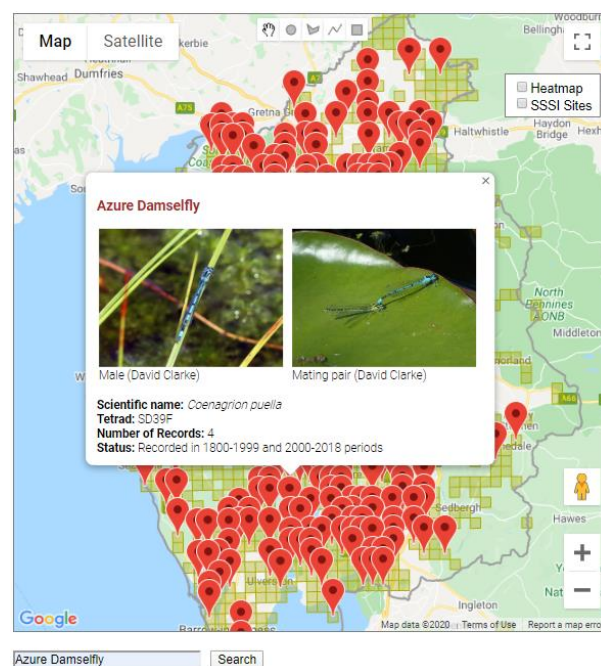
An online interactive map was developed with an aim to improve access to Atlas data. This online map shows the distribution of dragonfly records represented by tetrad grids on top of ‘Google map’. Information on how many species and number of records can be obtained by clicking on relevant tetrad.

A heatmap layer shows where recording activity has taken place. Also, a Sites of Special Scientific Interest (SSSI) layer has been added to the background. Both layers can be switched on/off as required.

The map provides a tool for searching for species recorded in Cumbria using common names. Species photos, number of records, information on location and records mapping period can be browsed by clicking on species pop-up markers.



Topographical maps available under the Ordnance Survey OpenData licence have proved invaluable in an area with such varied geography.



<https://www.cbdc.org.uk/wildlife-in-cumbria/cumbria-dragonfly-atlas/>

Some Cumbria dragonfly habitats

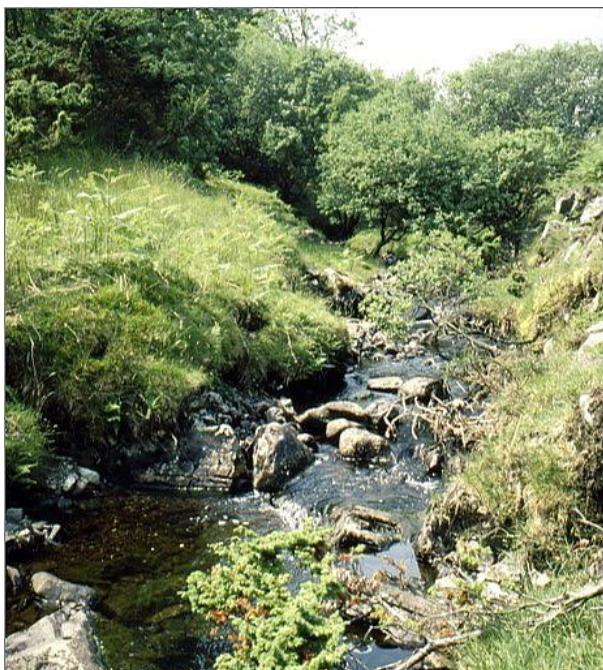


top left

A flushed mire, Mosedale, Skiddaw fells: Keeled Skimmer has spread to such sites in this area, at its current altitudinal limit. Other widespread 'moorland' species occur. (NY33)

top right

Exposed upland tarn at 500m, Steel Fell, Wythburn. Common Blue and Large Red Damselfly, Common Hawker, Four-spotted Chaser and Black Darter are the main species. (NY31)



mid left

Loughrigg Tarn, near Ambleside.

A deep tarn with rich margins. One of many sites for Downy Emerald in the central Lake District. (NY30)

bottom left

Mere Beck, Torver Common, Coniston.

A typical Lake District site for Beautiful Demoiselle and Golden-ringed Dragonfly. (SD29)



top left

Barkbooth Lot, Winstler (Cumbria Wildlife Trust). A rich pool with breeding Emperor, Downy Emerald and many other species. (SD49)

top right

Soddy Gap, Great Broughton, Cockermouth. A reclaimed industrial site with large and small pools. Black-tailed Skimmer and Broad-bodied Chaser are recorded. (NY03)



mid left, upper

High Arnside Tarn, Coniston. A species- rich site in the southern Lake District. Adjacent flowing-water habitats make this an especially rich area. (NY30)

mid left, lower

Low Church Moss, Beckermeth. A tarn with rare neutral fen margins. The only Cumbria site for Variable Damselfly. [Access private]. (NY00)



bottom left

River Derwent, Isel, Cockermouth. Now a breeding site for the Banded Demoiselle, which is still expanding its Cumbria range. (NY13)



above: Solway sites. *left:* a 'scrape' on the RSPB North Plain Reserve; *right:* Lily Tarn, Bowness Common. (NY26)

The mosslands of the Solway Firth provide a large area of wetland habitats, many in conservation ownership/management.

mid left, upper

A dune-slack tarn at Sandscale Haws NR, Barrow. Coastal sites in the SW such as this regularly record migrant dragonflies. (SD17)

mid left, lower

Drumburgh Moss NNR, south Solway (Cumbria Wildlife Trust). An important site for moorland species; currently hosting an introduction project for the White-faced Darter.

bottom left

Foulshaw Moss, Witherslack (Cumbria Wildlife Trust). An extensive restored mossland near Morecambe Bay. Breeding species include the re-introduced White-faced Darter. Many other species breed or are recorded. (SD48)

Emerald Damselfly

Lestes sponsa

♂ mature



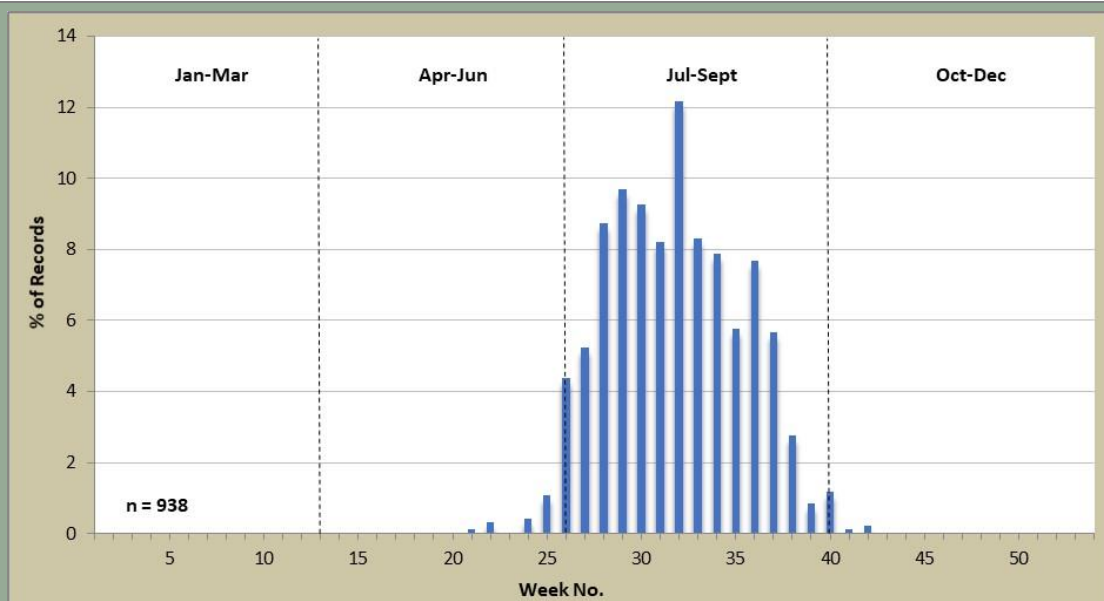
Richard Speirs

♂ immature



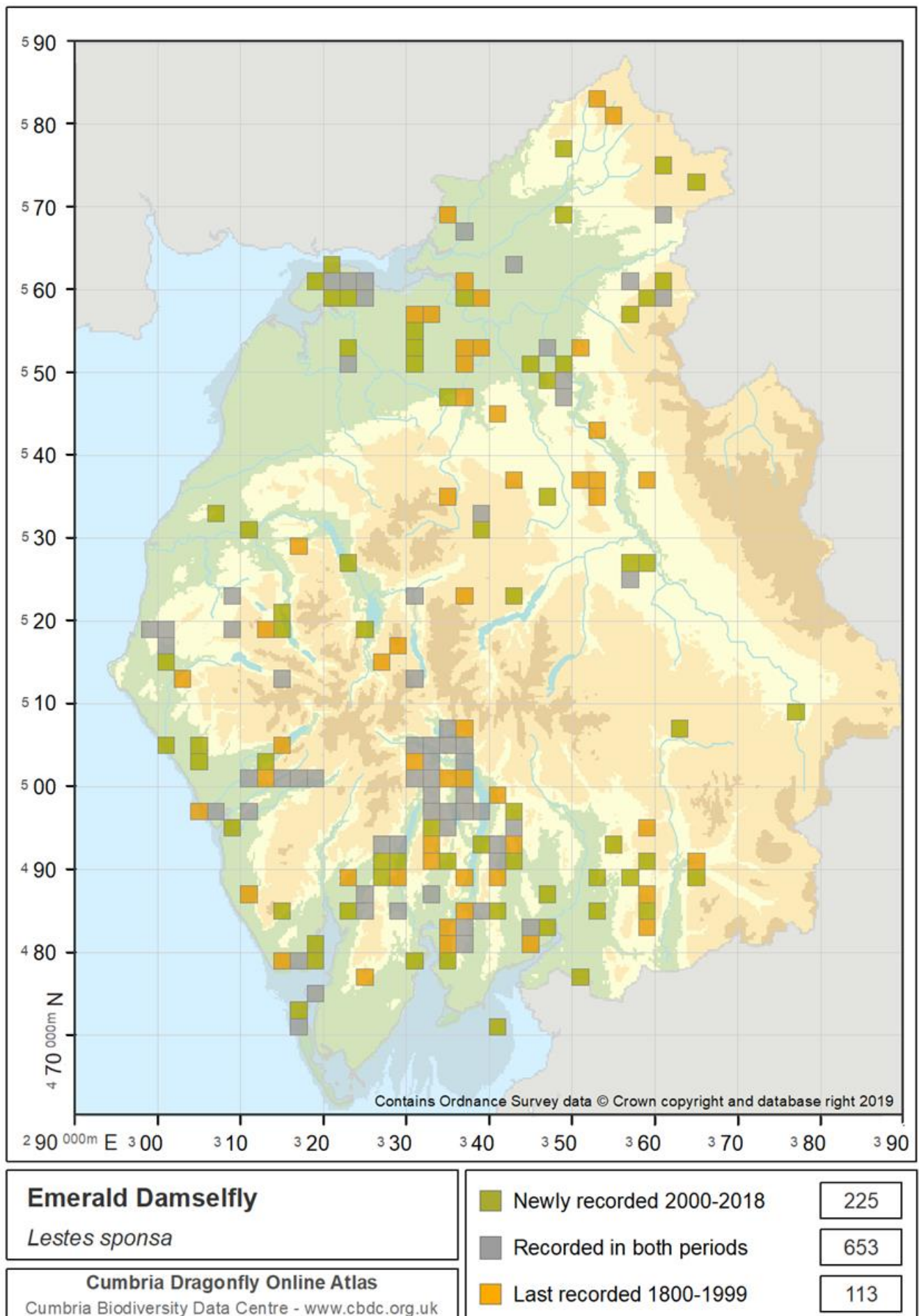
Richard Speirs

- a) **GB Status:** common and widespread throughout most of the UK
- b) **Cumbria Status:** common and widespread
- c) **Confusion Species:** none at present; some other Emeralds are spreading in the UK



Notes:

- a) Occurs in a wide variety of habitats, usually where there is much emergent vegetation
- b) Found up to moderate altitude; a late-season species which may linger well into autumn
- c) The metallic green of this species is distinctive, though tones down to a greyish colour with age. Males develop a powder blue patch at the base and tip of the abdomen when mature; immature males resemble females. Typically rests with wings spread at 45°



Banded Demoiselle

Calopteryx splendens

♂



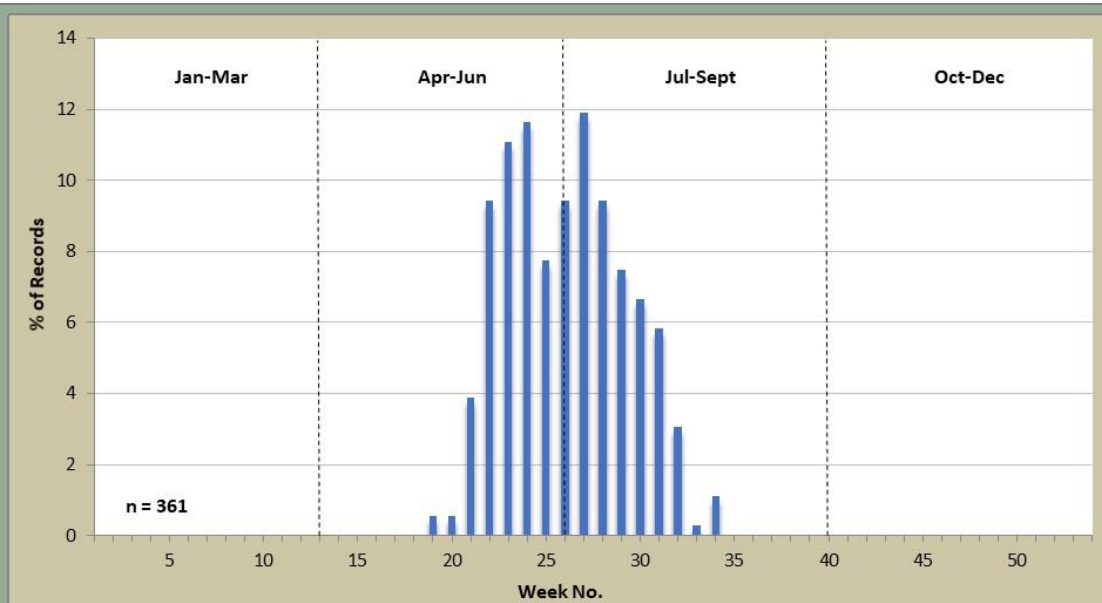
David Clarke

♀



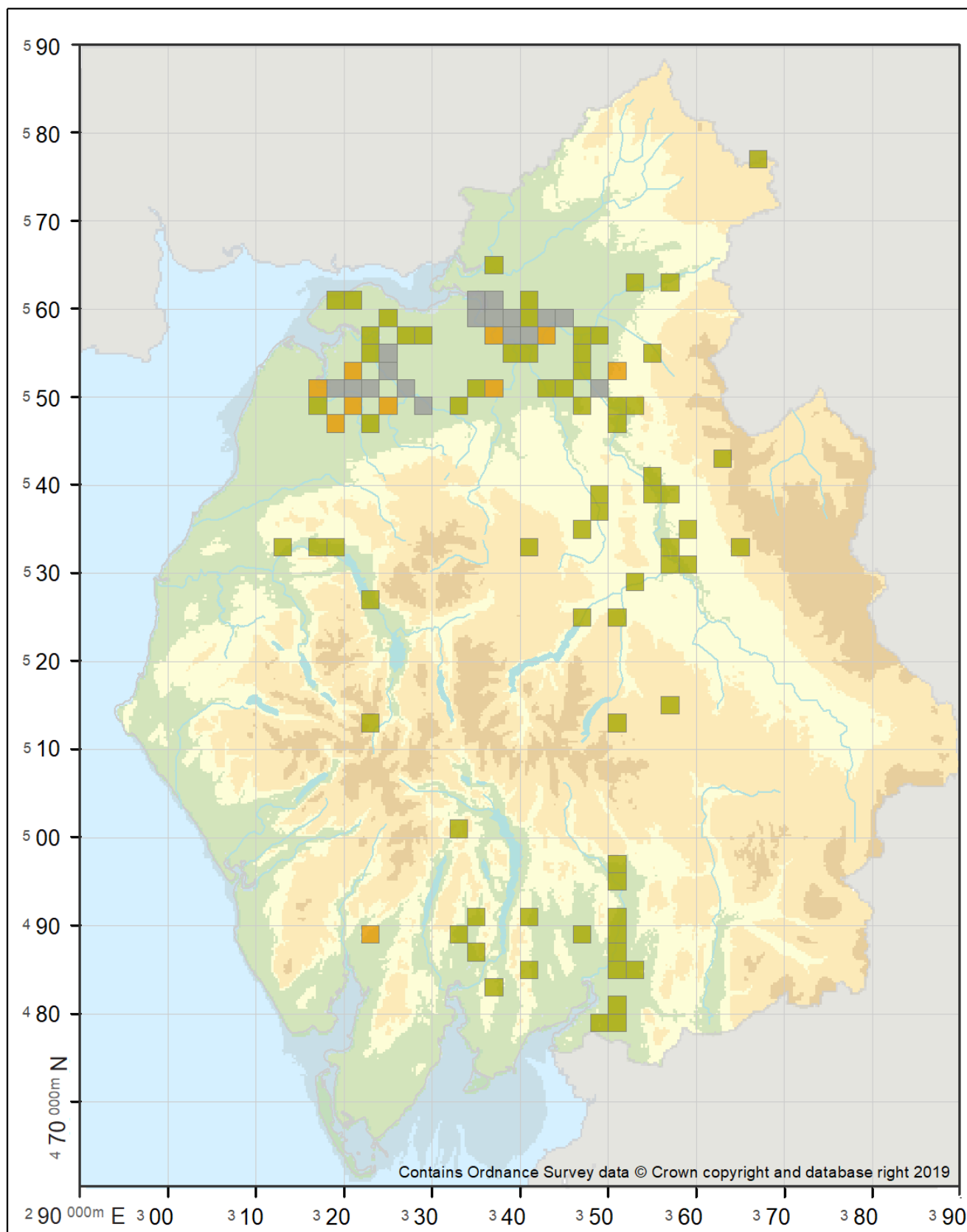
David Clarke

- a) **GB Status:** common and widespread throughout most of England now spreading in Scotland
- b) **Cumbria Status:** currently spreading on lowland rivers
- c) **Confusion Species:** Beautiful Demoiselle female



Notes:

- a) Occurs on slow-flowing stretches of rivers and streams
- b) Until c. 1980 only occurred on lower reaches of Solway rivers. Some exceptional movements occurred in the hot summer of 2018. Colonisation of south Cumbria may be from Lancashire
- a) The females of this and the Beautiful Demoiselle are very similar and need examination at close quarters to confirm ID. Check which males are present ... occasionally both species can occur together



Banded Demoiselle

Calopteryx splendens

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

178

■ Recorded in both periods

200

■ Last recorded 1800-1999

10

Beautiful Demoiselle

Calopteryx virgo

♂



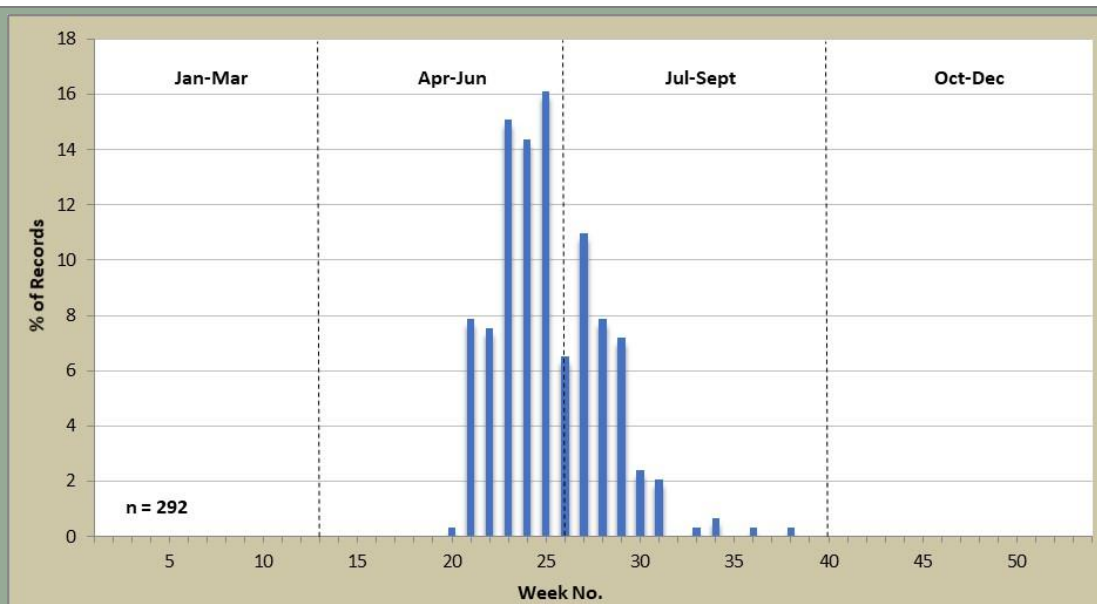
David Clarke

♀



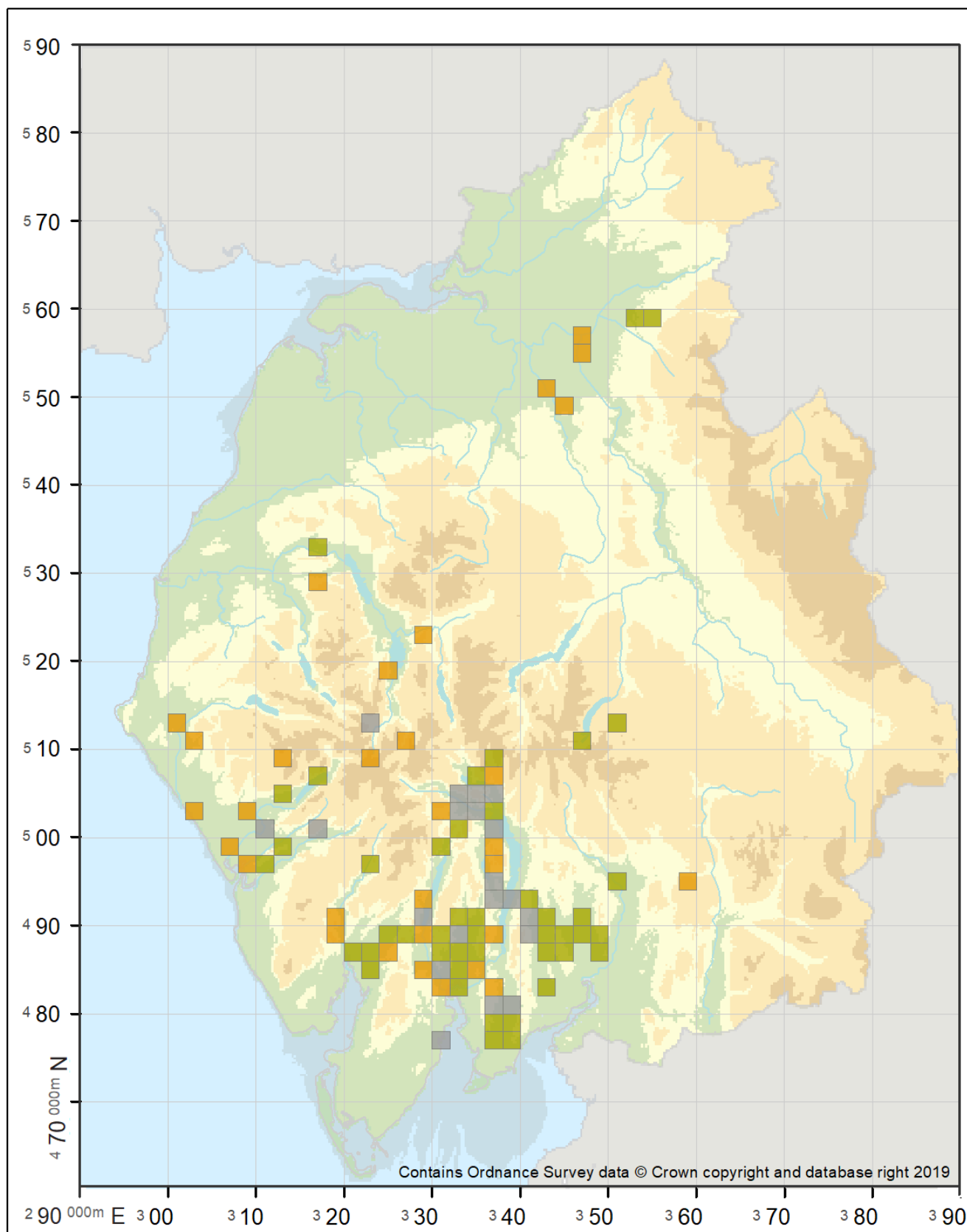
Mo Richards

- a) **GB Status:** widespread in western England and parts of western Scotland
- b) **Cumbria Status:** lowland sites in central and southern areas
- c) **Confusion Species:** Banded Demoiselle



Notes:

- a) Occurs on faster flowing stretches of rivers and streams than Banded Demoiselle
- b) A lowland species; lost from sites on the Eden and Petteril near Carlisle pre 1950. Recently casual in NE
- c) The females of this species and Banded Demoiselle are very similar and best identified by the presence of males. Occasionally both species can occur together (though may still breed in slightly different states of water flow). In such situations, females may need close examination



Beautiful Demoiselle

Calopteryx virgo

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

167

■ Recorded in both periods

112

■ Last recorded 1800-1999

49

Azure Damselfly

Coenagrion puella



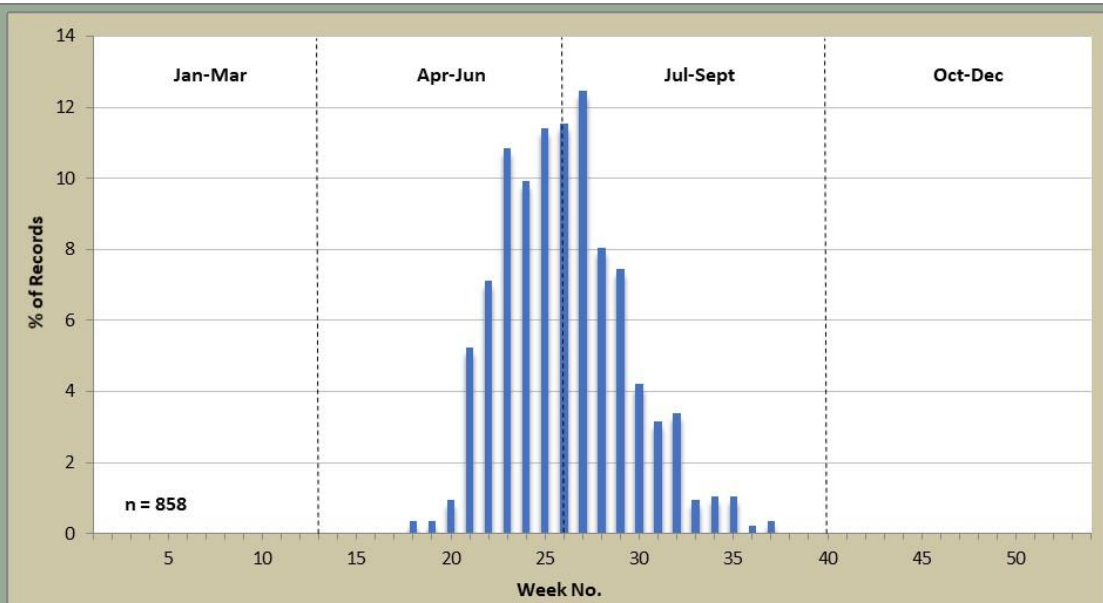
David Clarke

Mating pair



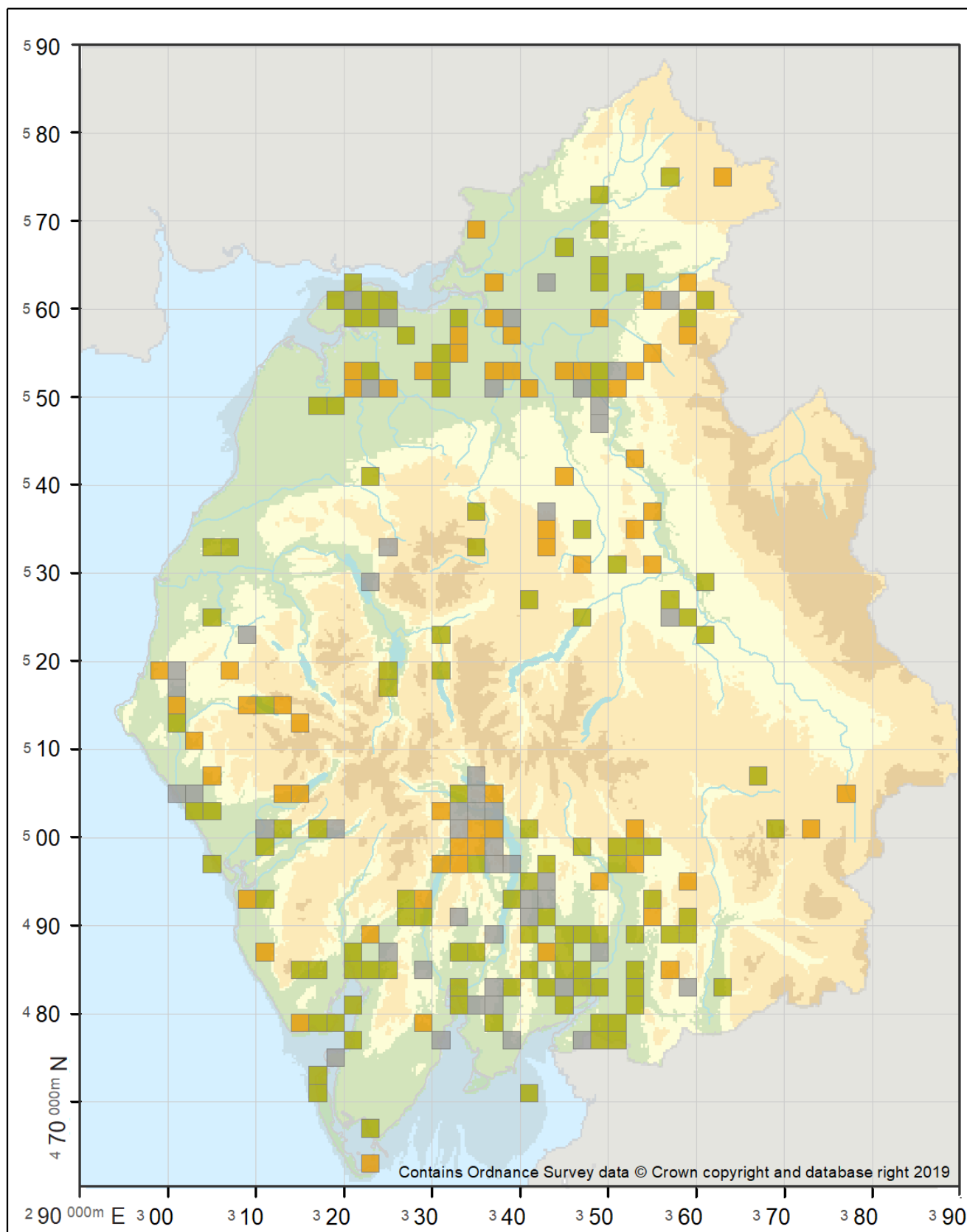
David Clarke

- a) **GB Status:** common and widespread throughout most of the UK (except northern Scotland)
- b) **Cumbria Status:** common and widespread
- c) **Confusion Species:** other blue damselflies



Notes:

- a) Occurs in a wide variety of habitats, usually where there is much emergent vegetation
- b) As above: a lowland species
- c) Males have a flat-bottomed U-shaped marking on abdominal segment 2; females closely resemble those of *C. pulchellum*: shape of prothorax should be checked. (Both species can occur at the same site)



Azure Damselfly

Coenagrion puella

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

384

■ Recorded in both periods

423

■ Last recorded 1800-1999

96

Variable Damselfly

Coenagrion pulchellum

♂



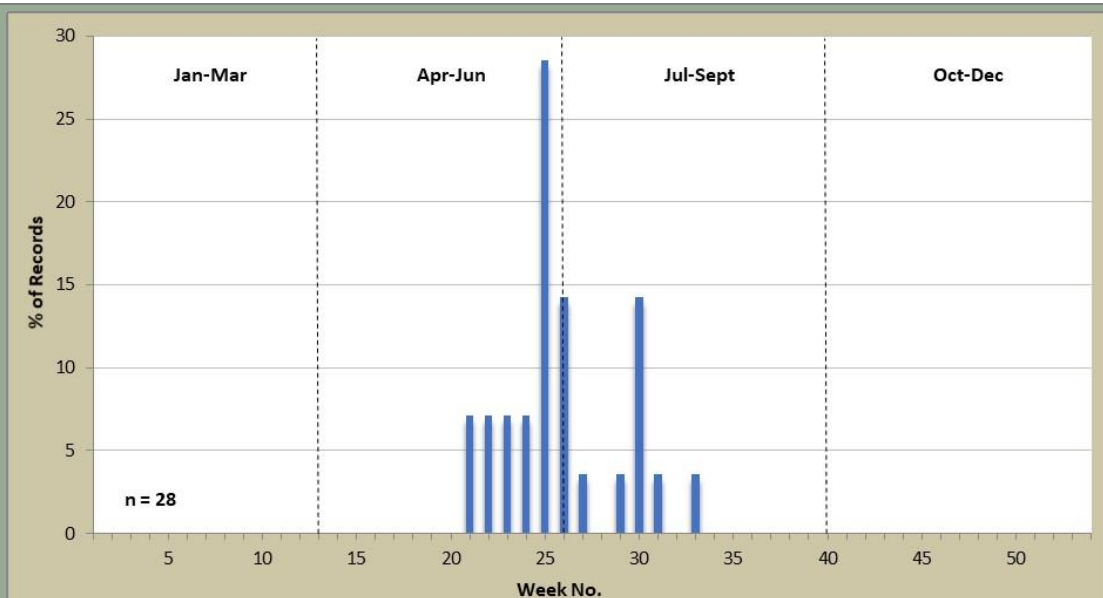
David Clarke

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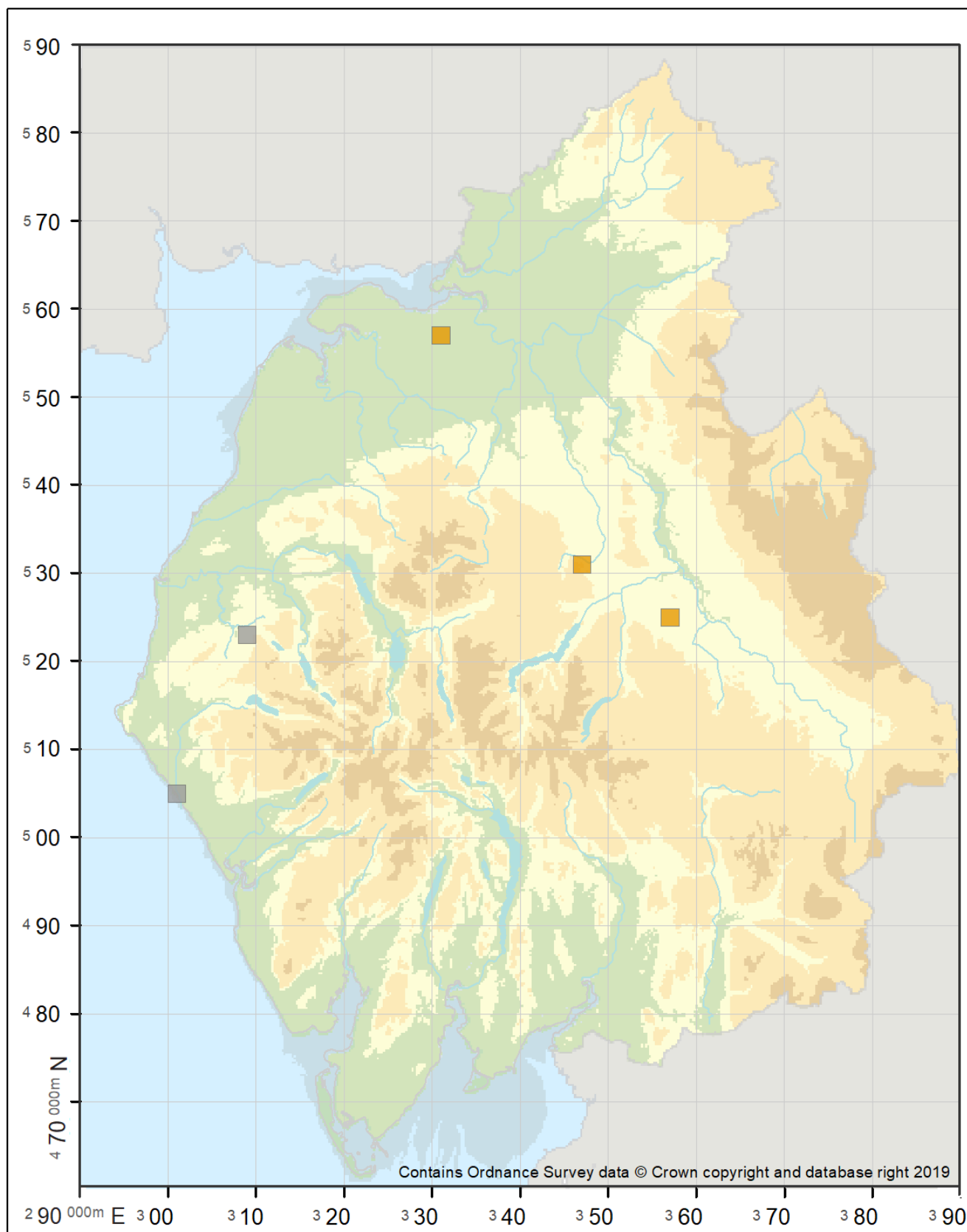
David Clarke

- a) **GB Status:** local and declining in some areas
- b) **Cumbria Status:** rare and vulnerable – possibly only one remaining site
- c) **Confusion Species:** other blue damselflies



Notes:

- a) A species of fens and other neutral/alkaline waters. (More frequent in SW Scotland than in Cumbria)
- b) Lost from several sites pre 1950; the remaining site has a small population, potentially threatened by development
- c) Male has wine-glass shaped marking on segment 2; thoracic stripes often interrupted – like quotation marks. Genitalia examination may be needed to confirm. Females v like those of *C. puella*: shape of prothorax hind margin differs. (Both species can occur at same site)



Variable Damselfly

Coenagrion pulchellum

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

Newly recorded 2000-2018

0

Recorded in both periods

27

Last recorded 1800-1999

6

Common Blue Damselfly

Enallagma cyathigerum



Mo Richards

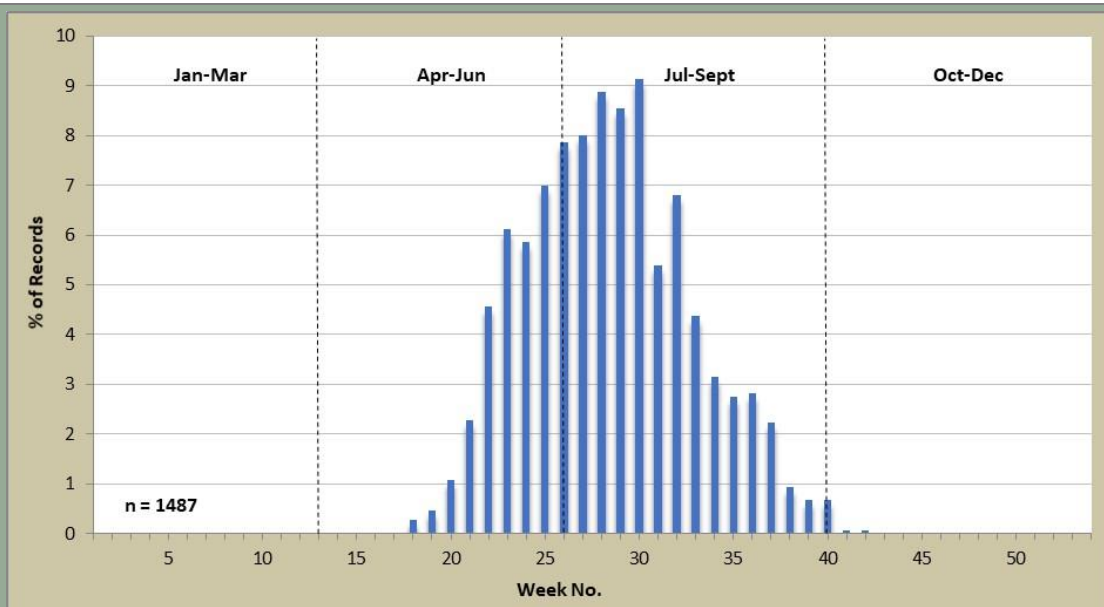


typical form



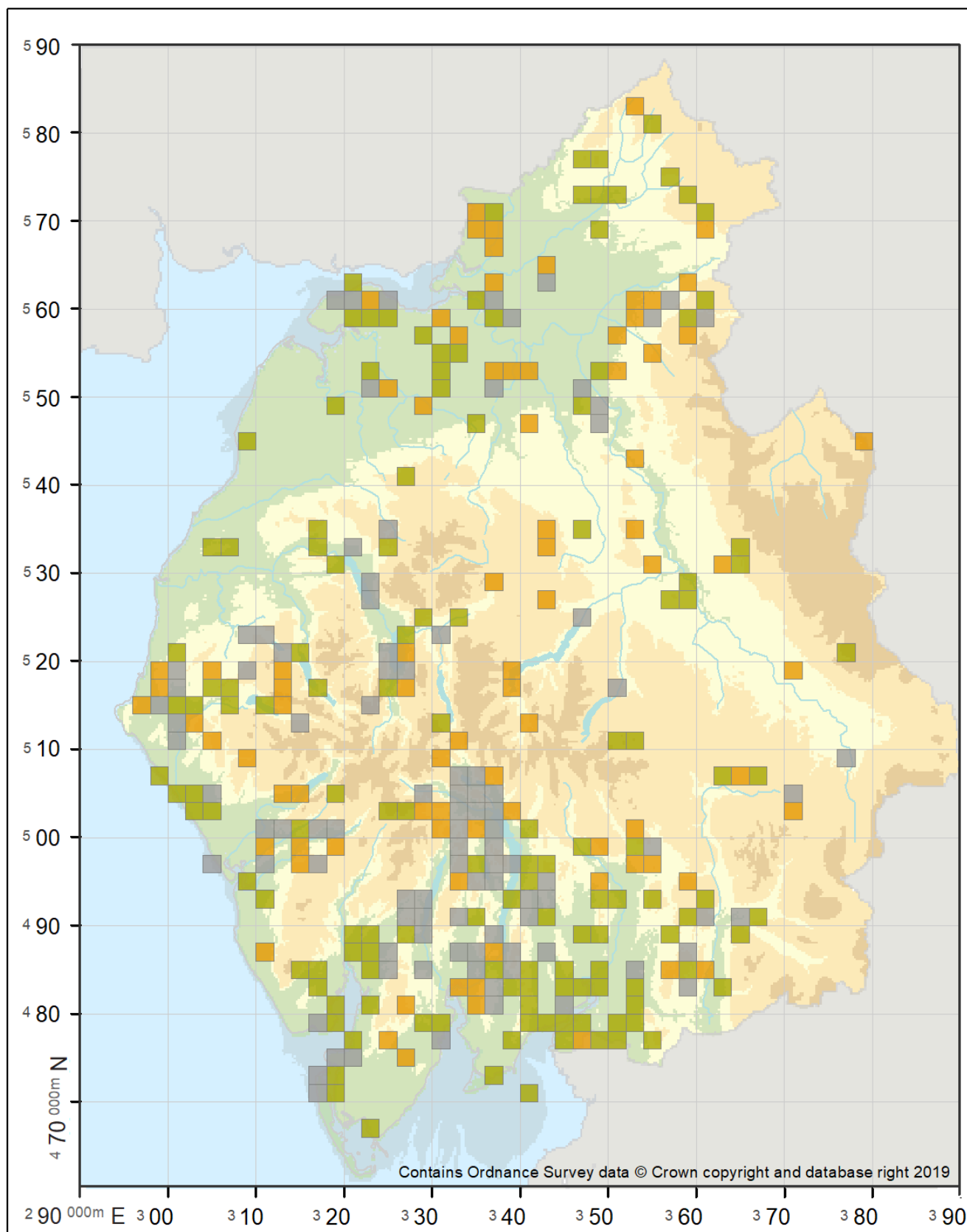
Linda & John Reinecke

- a) **GB Status:** very widespread and common
- b) **Cumbria Status:** frequent at pools and tarns in lowlands and uplands
- c) **Confusion Species:** other blue damselflies



Notes:

- a) Tolerates sites with minimal emergent vegetation
- b) Often the only 'blue' at exposed sites: unlike other 'blues' it often flies out well over open water
- c) The 'golf-tee' mark at the base of the male abdomen is normally diagnostic. The dorsal stripes on the thorax are broader than in similar species. Females are hard to distinguish from those of other 'blues', and have a variant showing male colouration. A spine below the eighth abdominal segment helps to separate it from *Coenagrion* species



Common Blue Damselfly

Enallagma cyathigerum

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

434

■ Recorded in both periods

972

■ Last recorded 1800-1999

146

Blue-tailed Damselfly

Ischnura elegans



Linda & John Reinecke

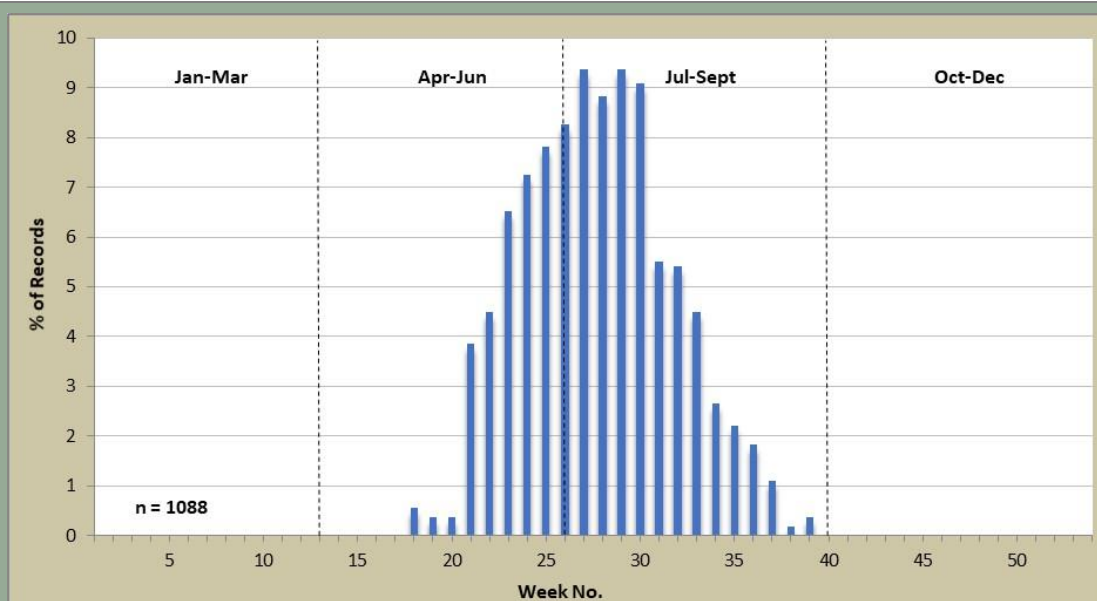


var. *rufescens-obsolata*



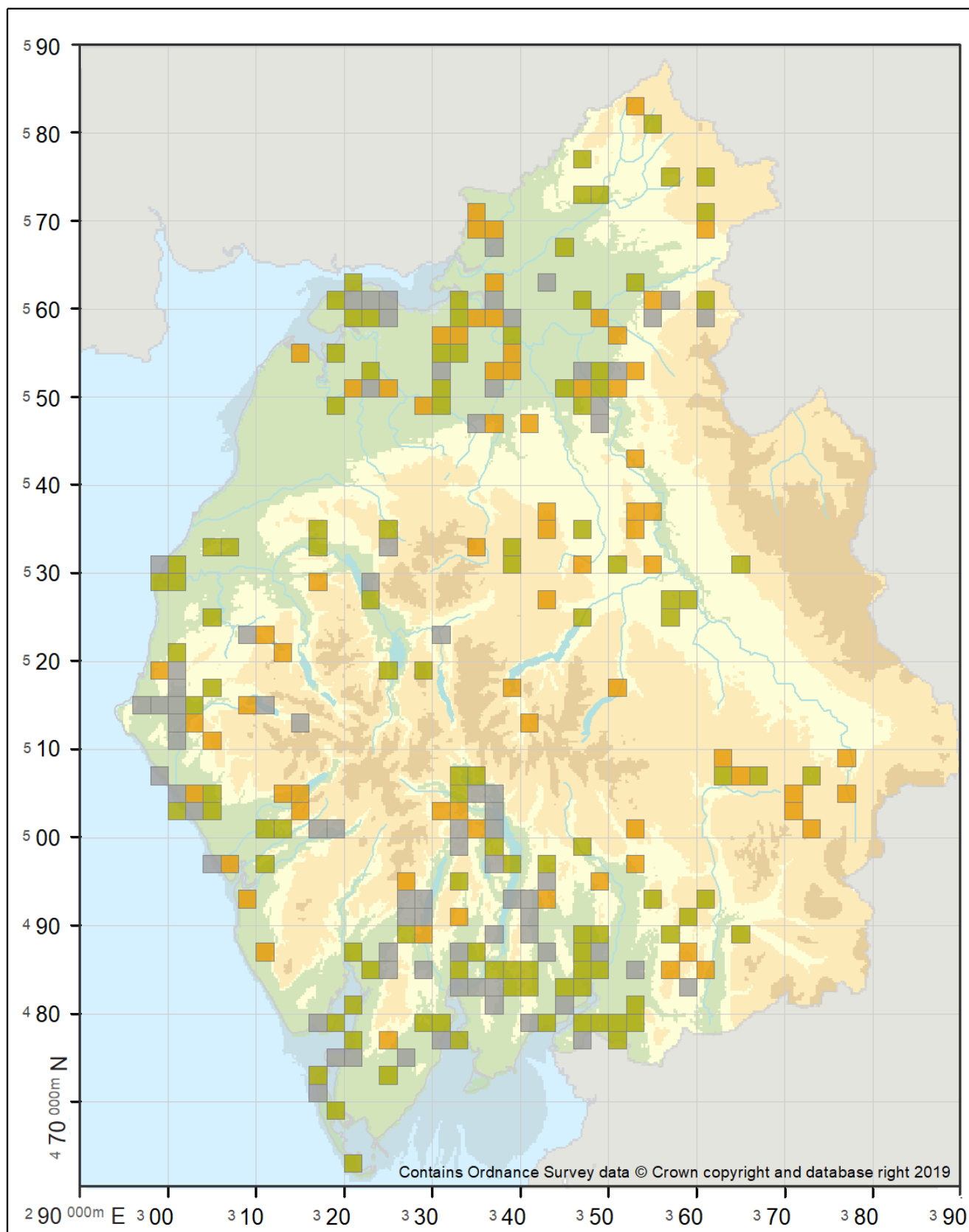
David Clarke

- a) **GB Status:** common and widespread throughout
- b) **Cumbria Status:** one of the commonest damselfly species
- c) **Confusion Species:** none (the Scarce Blue-tailed is a southerly species)



Notes:

- a) A species of many habitats, from garden ponds to acid moorlands
- b) Found almost everywhere, but prefers well-vegetated shallows
- c) The blue 'tail-light' of males is distinctive. Females have of complex variety of colour forms, some of which change colour as they mature. In some forms the colour patch near the tip of the abdomen is brown instead of the usual blue - see above. Consult Field Guides for more details



Blue-tailed Damselfly

Ischnura elegans

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

370

■ Recorded in both periods

629

■ Last recorded 1800-1999

136

Large Red Damselfly

Pyrrhosoma nymphula



David Clarke

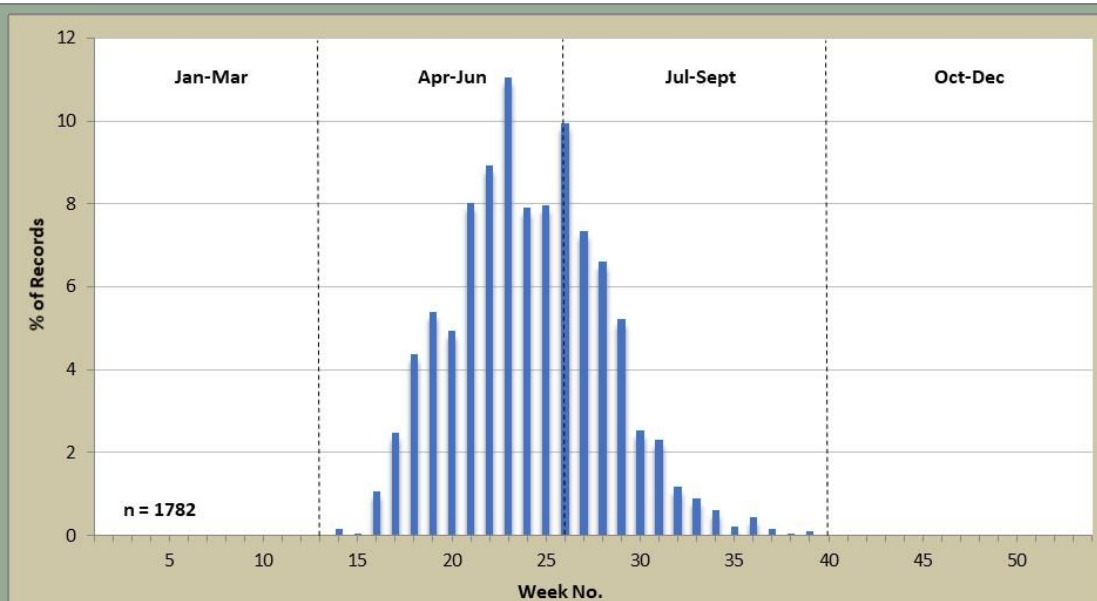


var. *melanotum*



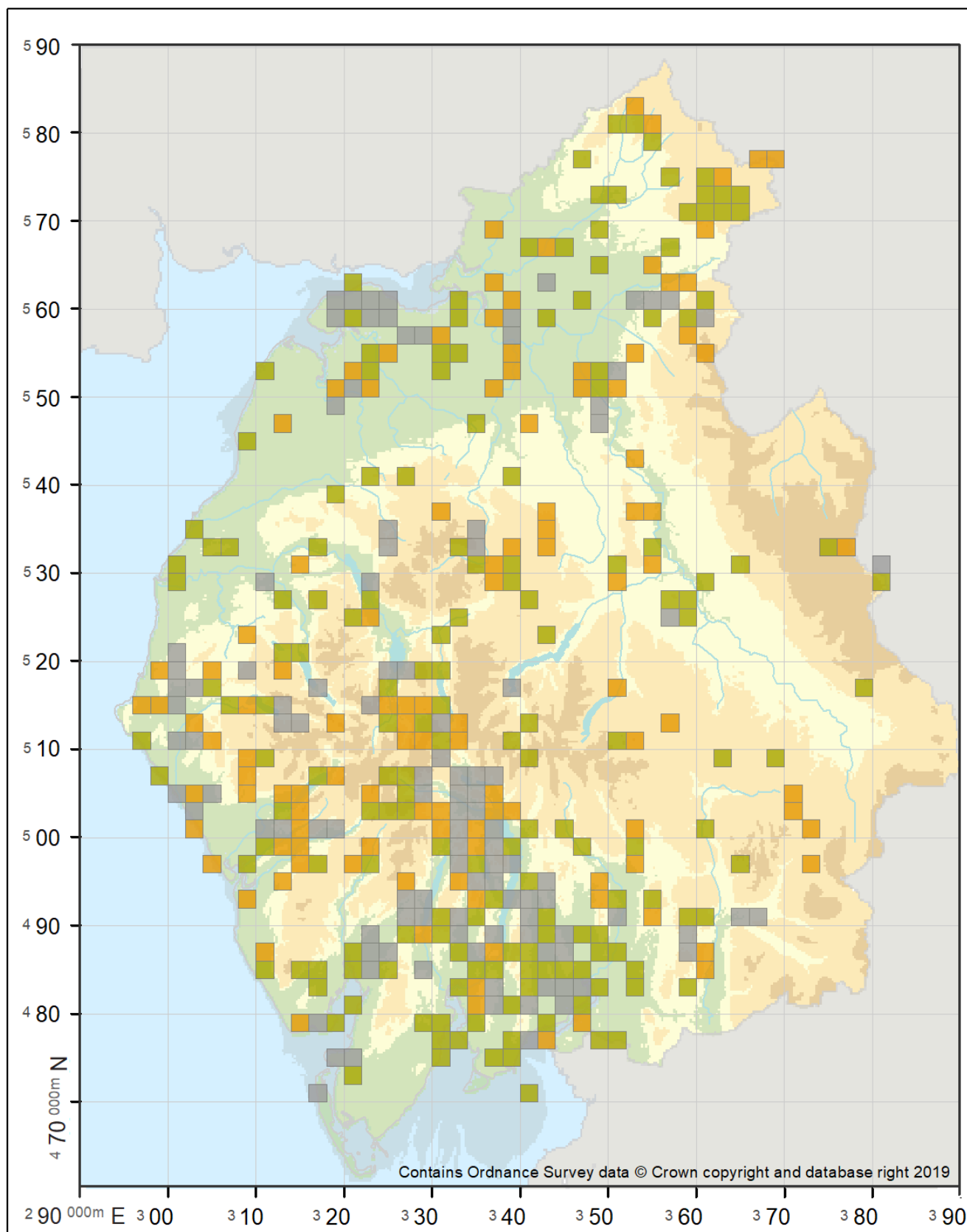
David Clarke

- a) **GB Status:** common and widespread throughout
- b) **Cumbria Status:** one of the commonest damselfly species
- c) **Confusion Species:** none



Notes:

- a) A species of many habitats, from garden ponds to acid moorlands
- b) Found almost everywhere
- c) The only damselfly in Cumbria with red (and no blue) on its abdomen. Females are mainly similar to males, but a dark form (see above) shows variable amounts of red, mainly at the sides and tip of the abdomen and on the eyes



Large Red Damselfly

Pyrrhosoma nymphula

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

510

■ Recorded in both periods

1185

■ Last recorded 1800-1999

197

Southern Hawker

Aeshna cyanea

♂



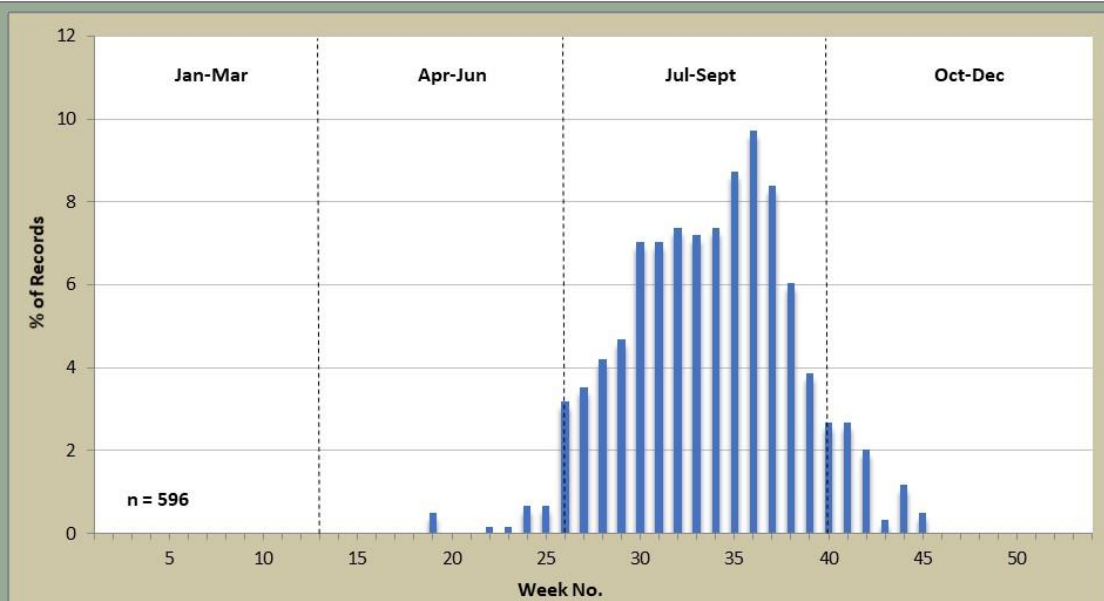
David Clarke

♀



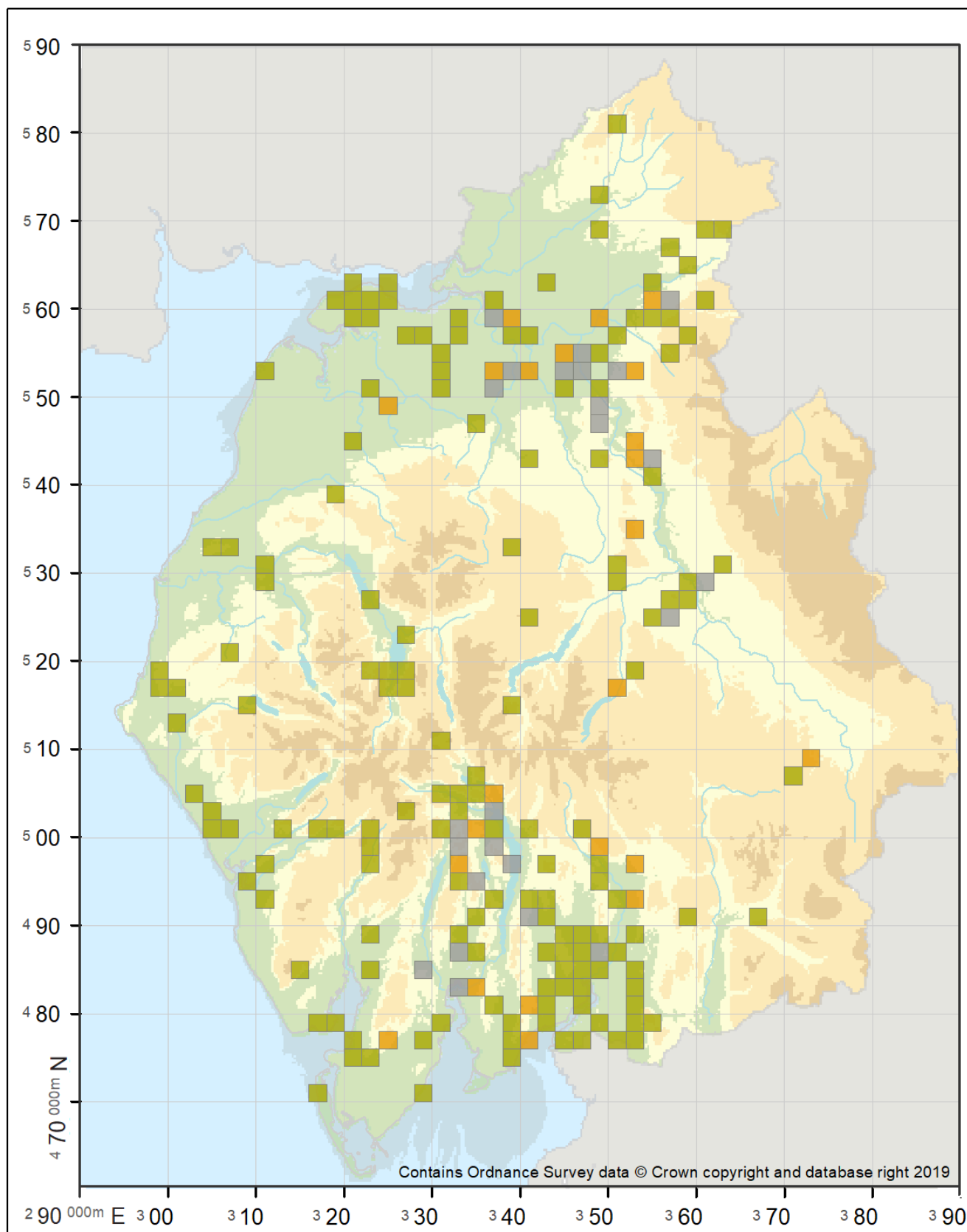
David Clarke

- a) **GB Status:** widespread; has increased in Scotland in recent decades
- b) **Cumbria Status:** a frequent lowland species, often uses garden ponds
- c) **Confusion Species:** other *Aeshna* species



Notes:

- a) A lowland species of many habitats, though avoiding acid sites
- b) Has become more frequent since late 20th century
- c) The complete bands of colour at the abdomen tip are unique to this species; the thorax in side view looks greenish and the spots on top of the thorax are larger than in other *Aeshnas*. Oviposits into moss, etc just above water level



Southern Hawker

Aeshna cyanea

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

428

■ Recorded in both periods

167

■ Last recorded 1800-1999

45

Brown Hawker

Aeshna grandis

♂



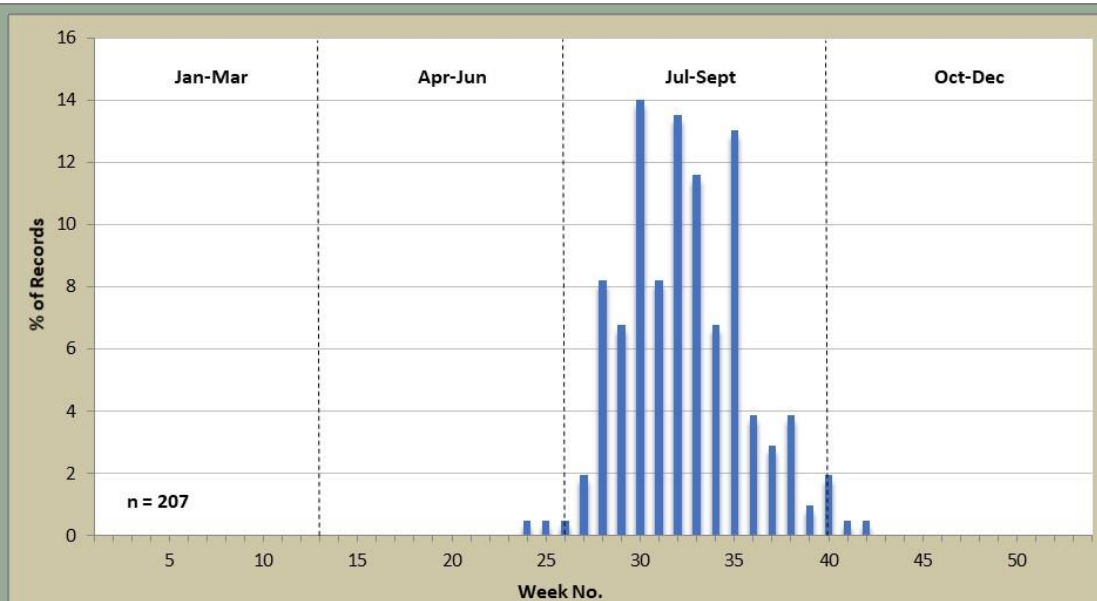
Ian Brodie

♀



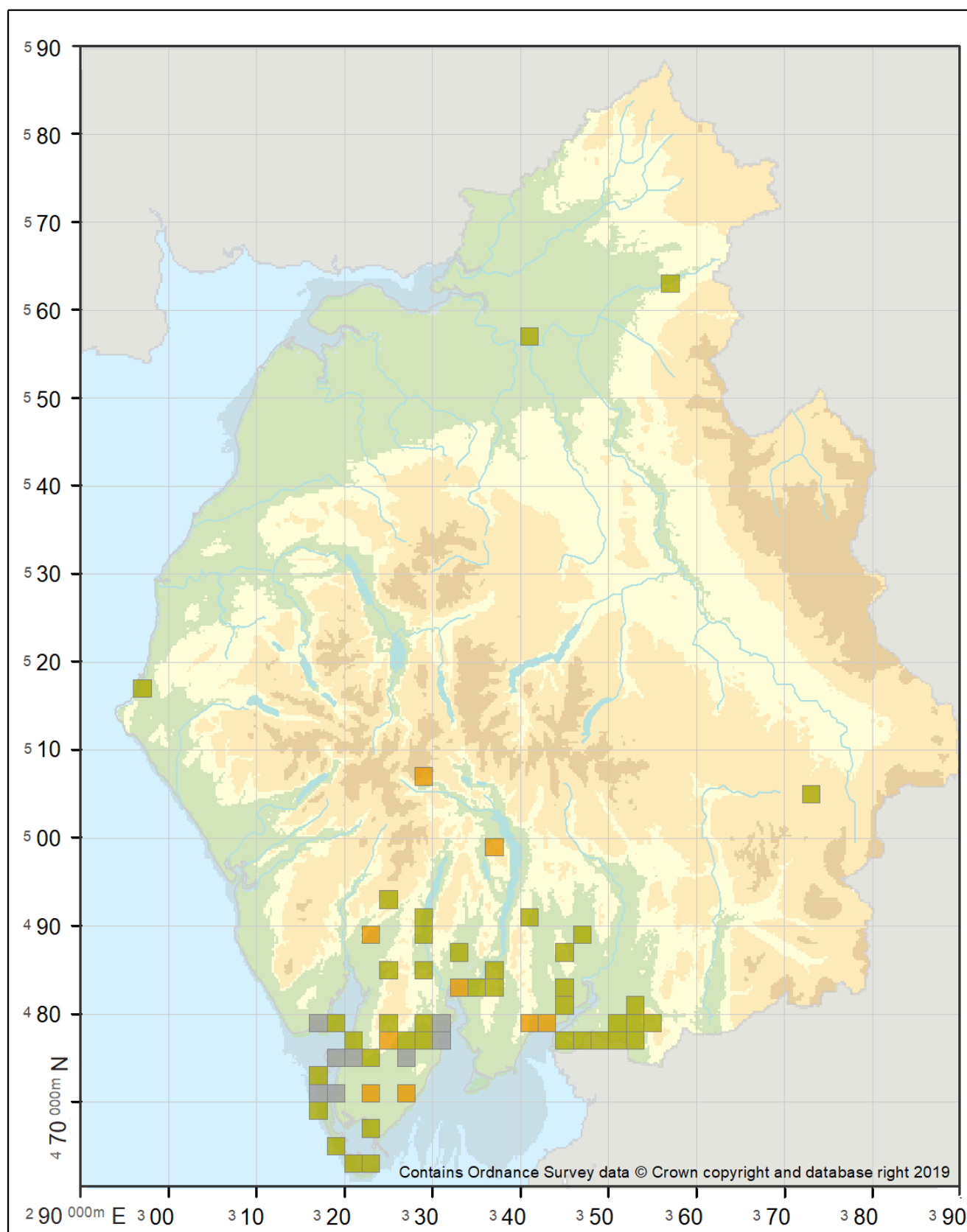
David Clarke

- a) **GB Status:** widespread in England except west and southwest
- b) **Cumbria Status:** Mainly very southern; rare/casual and non-breeding elsewhere
- c) **Confusion Species:** none



Notes:

- a) A lowland species of many habitats, avoiding acid water; reputed to be relatively pollution tolerant
- b) Despite occasional northern records, has shown little signs of the range-expansion which has taken this species further north in eastern England
- c) The brown abdomen and bronze wing colouration are not found in any other UK hawker species



Brown Hawker

Aeshna grandis

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

114

■ Recorded in both periods

91

■ Last recorded 1800-1999

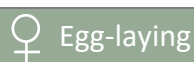
12

Common Hawker

Aeshna juncea

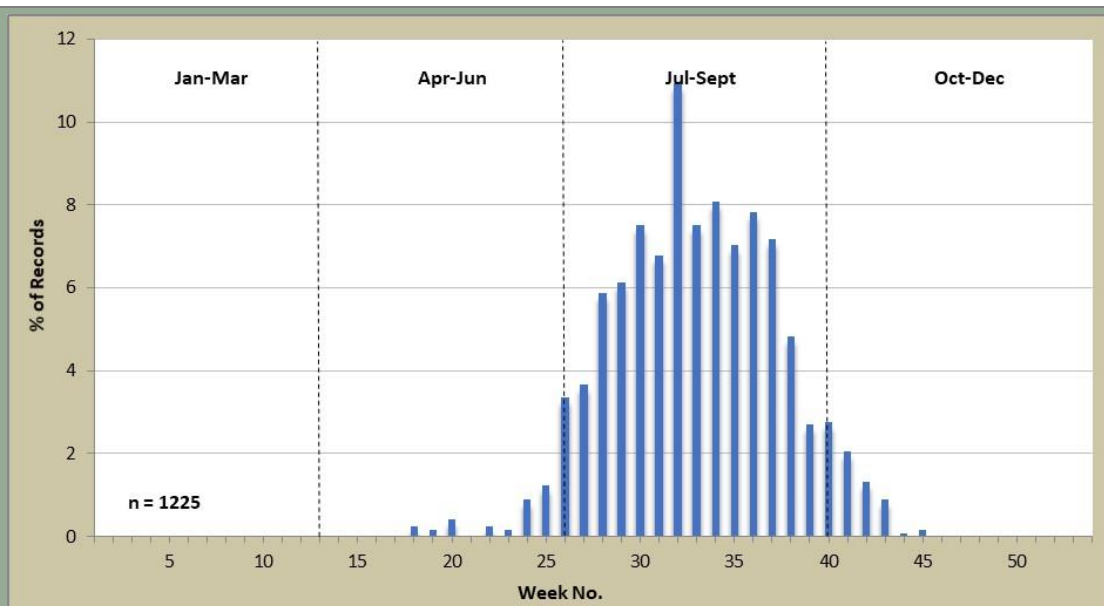


David Clarke



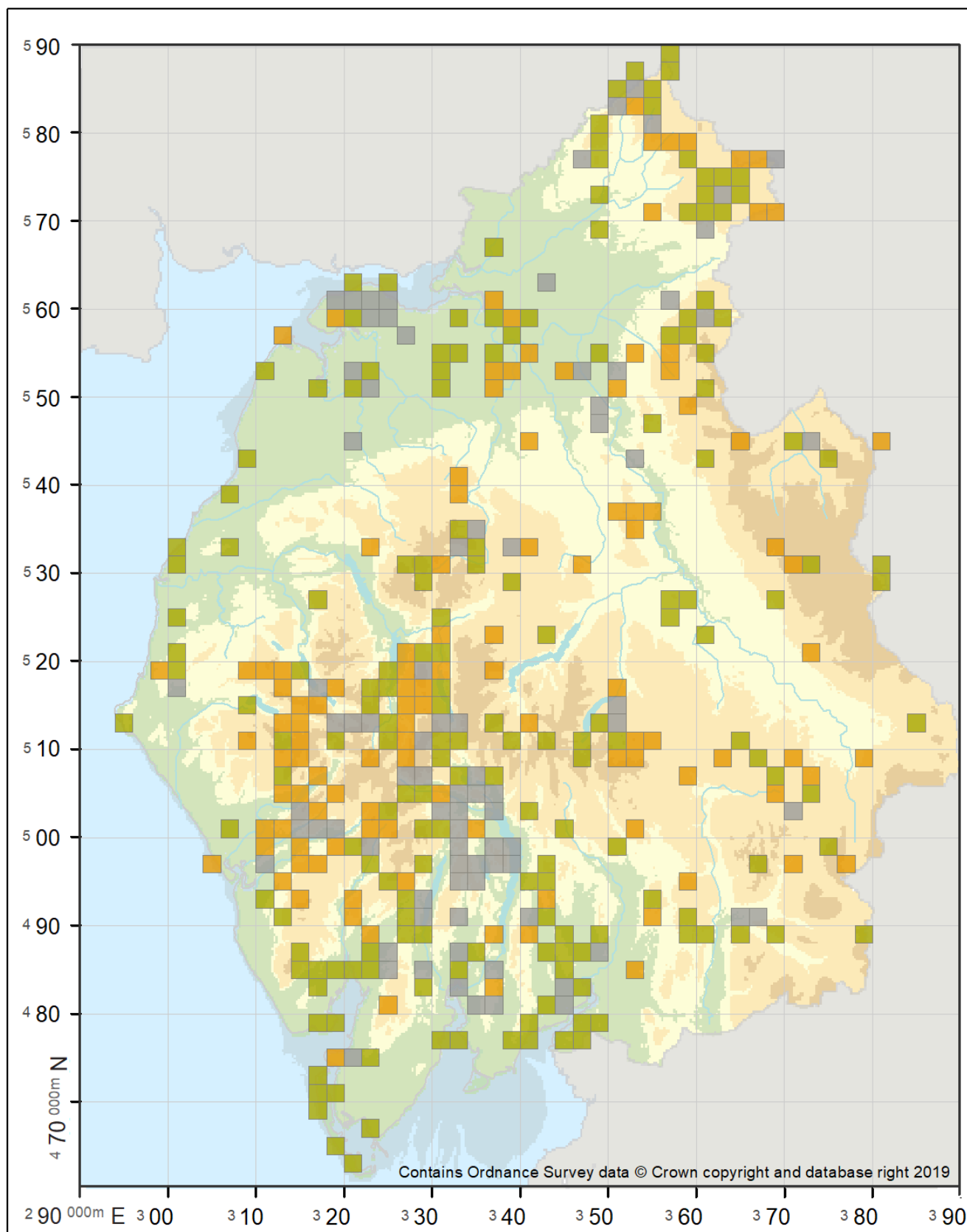
David Clarke

- a) **GB Status:** widespread in the west and north
- b) **Cumbria Status:** throughout the county, including upland sites
- c) **Confusion Species:** other blue-spotted hawkers



Notes:

- a) Widespread on acid pools and lakes, though uncommon in southern UK. Declining in parts of European range and may be doing so here
- b) Larvae have been found in pools at up to 650 metres altitude
- c) The yellow leading-edge wing vein (in both sexes) is diagnostic, though hard to see in flight. Abdomen spots may be yellow, green or blue in females. Always oviposits into submerged vegetation



Common Hawker

Aeshna juncea

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

416

■ Recorded in both periods

688

■ Last recorded 1800-1999

180

Migrant Hawker

Aeshna mixta

♂



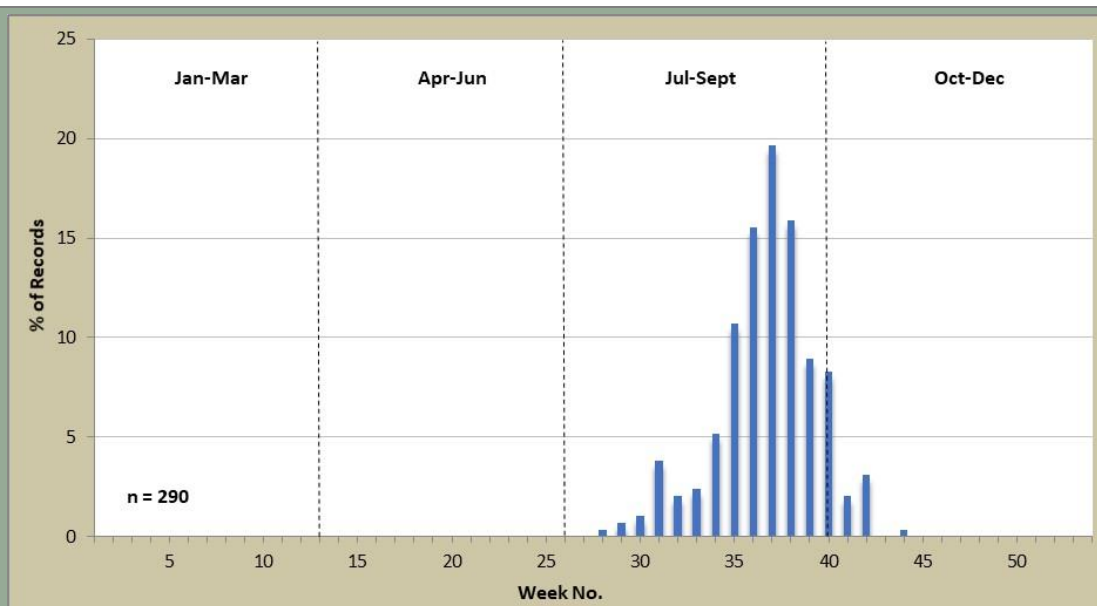
David Clarke

♀



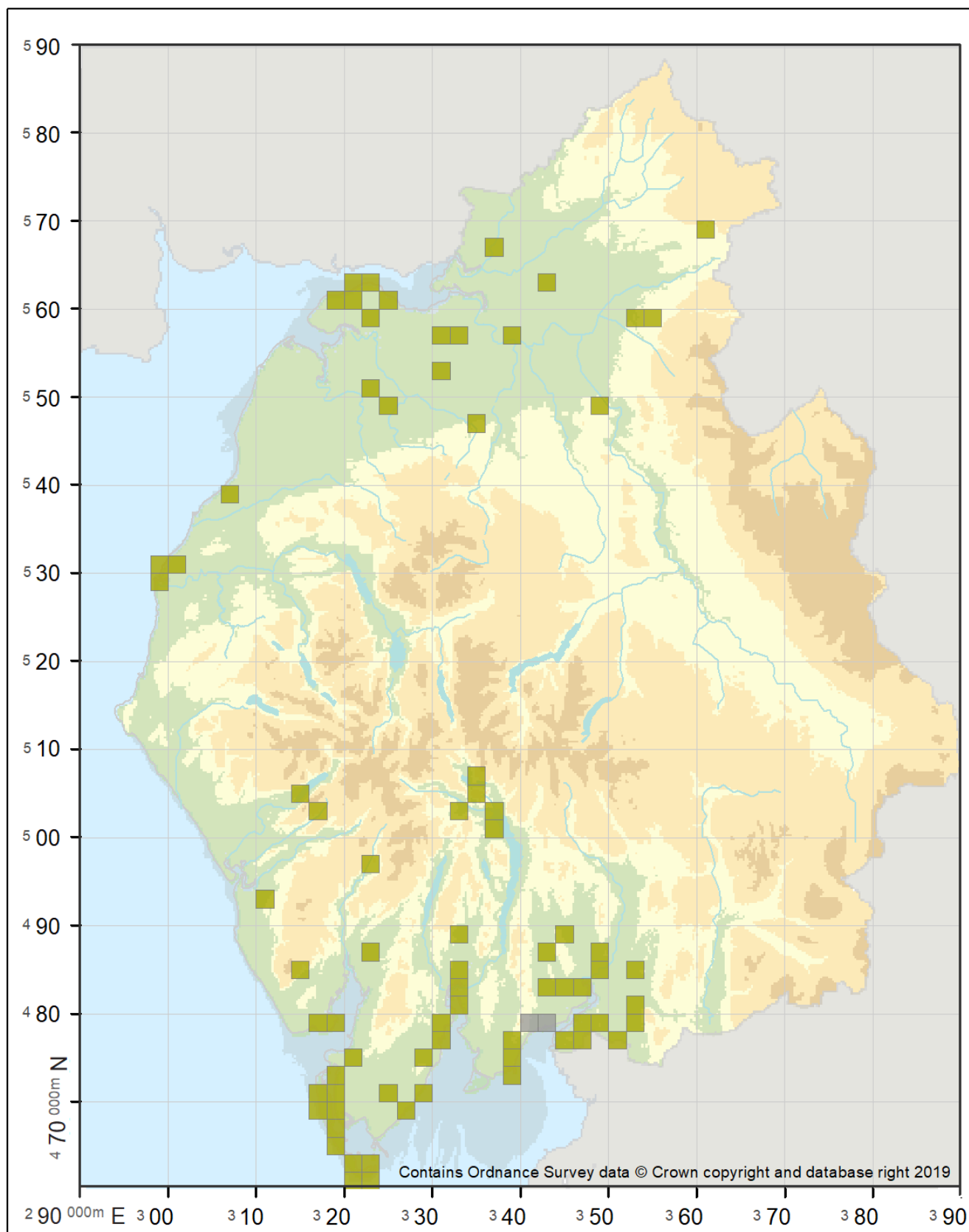
Tristan Reid

- a) **GB Status:** has spread northwards from early 20th C; breeding proved in SW Scotland, 2015
- b) **Cumbria Status:** first recorded c. 1995, now annually recorded
- c) **Confusion Species:** other blue-spotted hawkler species



Notes:

- a) A species of lowland marshes and warm, shallow neutral or non-acid pools
- b) Records come especially from coastal sites though occurs more widely in good weather periods
- c) Most closely resembles Common Hawker in markings; the colour and markings of the thorax, and lack of a yellow leading-edge wing veins are dependable features. Can occur in numbers (unlike other hawkers) and behaves without aggressive interactions



Migrant Hawker

Aeshna mixta

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

285

■ Recorded in both periods

10

■ Last recorded 1800-1999

0

Vagrant Emperor

Anax ephippiger



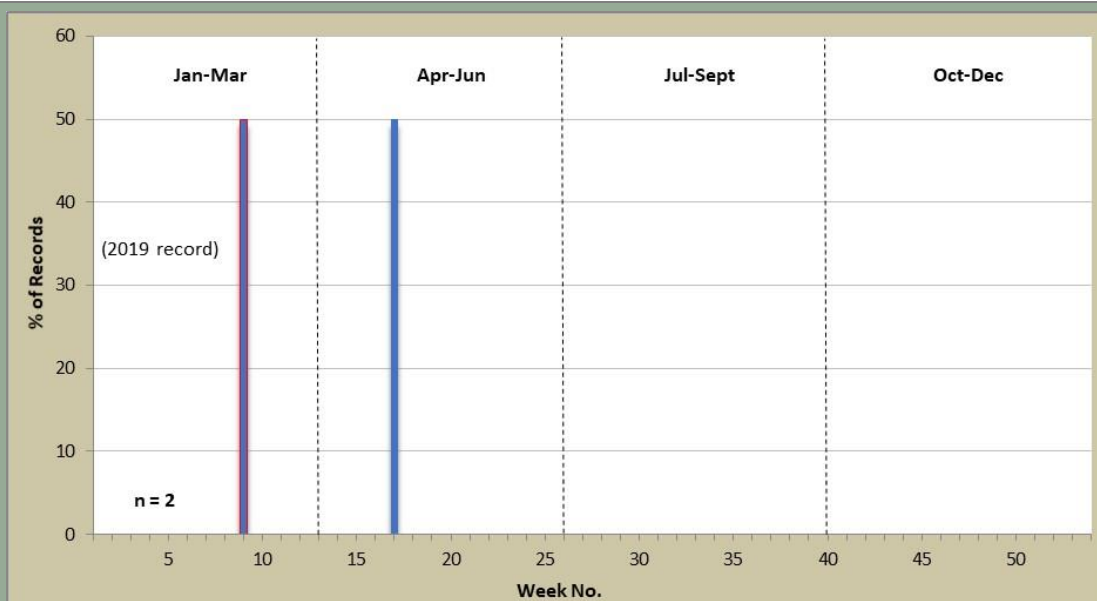
David Clarke

The photograph opposite shows an individual found alive at Caerlaverock, Dumfriesshire on 3rd November 1996. It is now in the Tullie House Museum collections

a) **GB Status:** vagrant, apparently becoming more frequent

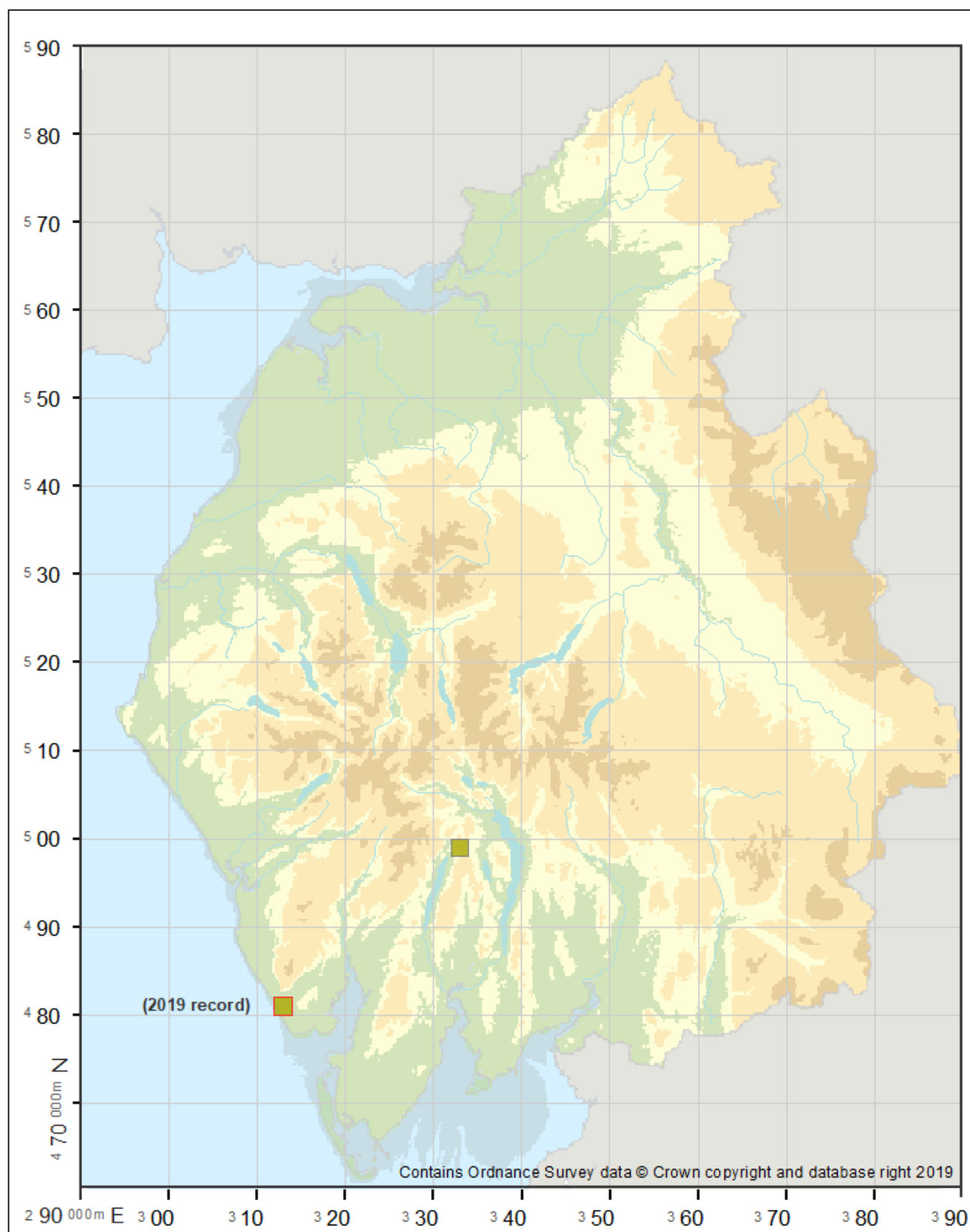
b) **Cumbria Status:** rare vagrant, two definite records, the first in 2011 (M. Hallet)

c) **Confusion Species:** Lesser Emperor



Notes:

- UK records are linked with periods of warm air streams from a southerly direction, relating to the Jet Stream position. The species breeds in arid areas of southern Europe/northern Africa
- Any dragonfly in winter months, especially December to March, is more likely to be this species than any other. (4 records in February 2019, 3 unconfirmable/unmapped)
- The Lesser Emperor (*Anax parthenope*) is another brownish species, and also a rare vagrant. The male has a conspicuous pale blue 'saddle' at the base of its abdomen - not violet as in Vagrant Emperor. It is less likely in winter



Vagrant Emperor

Anax ephippiger

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

Newly recorded 2000-2019

2

Recorded in both periods

0

Last recorded 1800-1999

0

Emperor Dragonfly

Anax imperator

♂



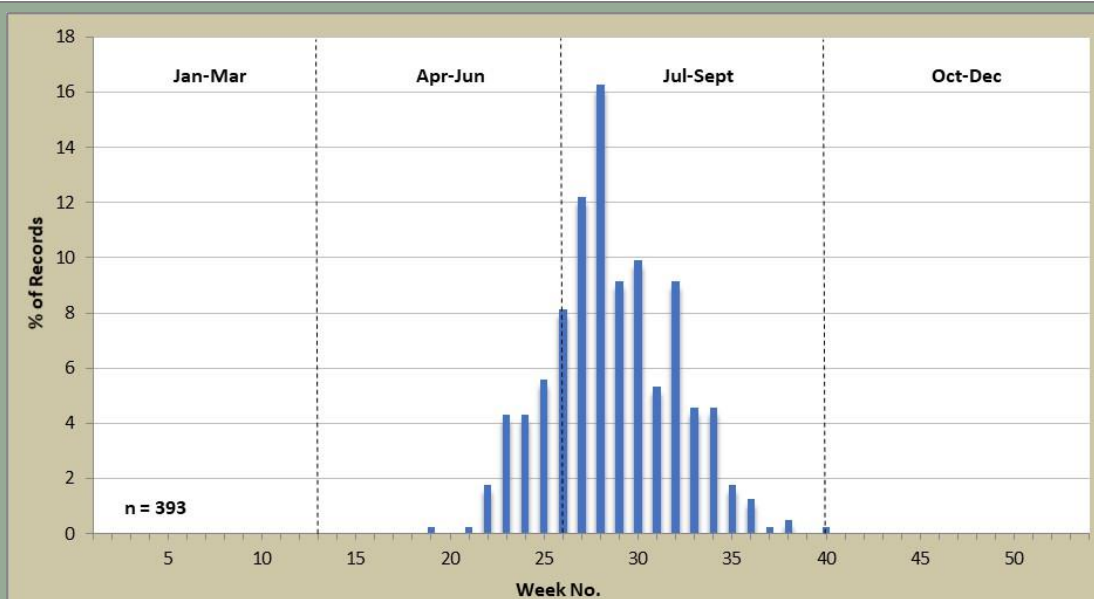
David Clarke

♀



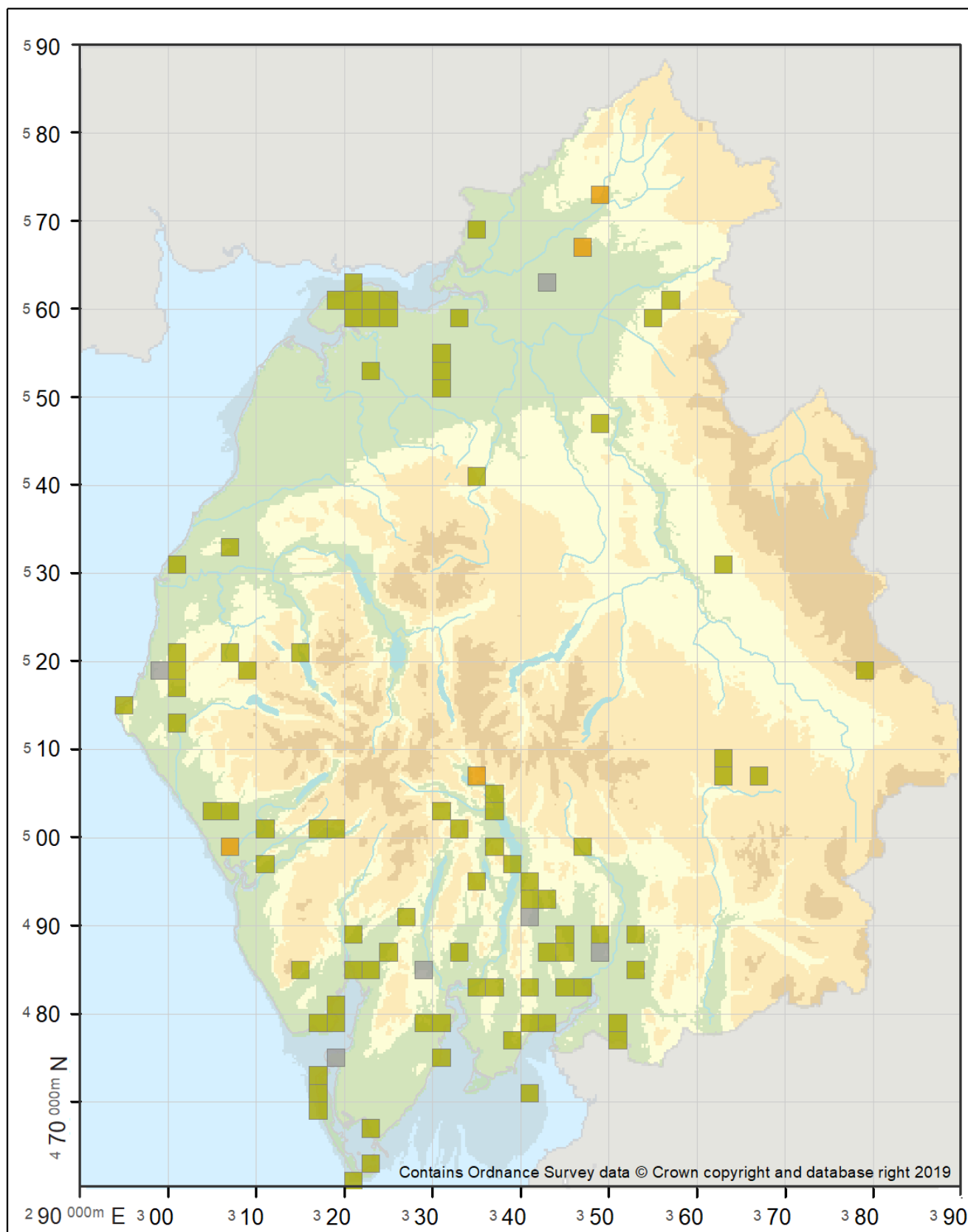
David Clarke

- a) **GB Status:** resident with range expansion northwards in 20th C, which still continues
- b) **Cumbria Status:** first recorded c. 1995, now widespread
- c) **Confusion Species:** other large blue hawkers



Notes:

- a) Expanded range into northern England in second half of 20th century, now occurring in Scotland
- b) Always a lowland species, but now recorded widely around the county. An established breeder at large pools and lakes. Coastal mosslands are especially favoured
- c) The greenish thorax combined with an unspotted rich blue abdomen of the male is distinctive. Southern Hawkers have a similar overall colour combination, but with a spotted abdomen, making the blue less striking. Females can sometimes be blue



Emperor Dragonfly

Anax imperator

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

330

■ Recorded in both periods

60

■ Last recorded 1800-1999

6

Lesser Emperor

Anax parthenope



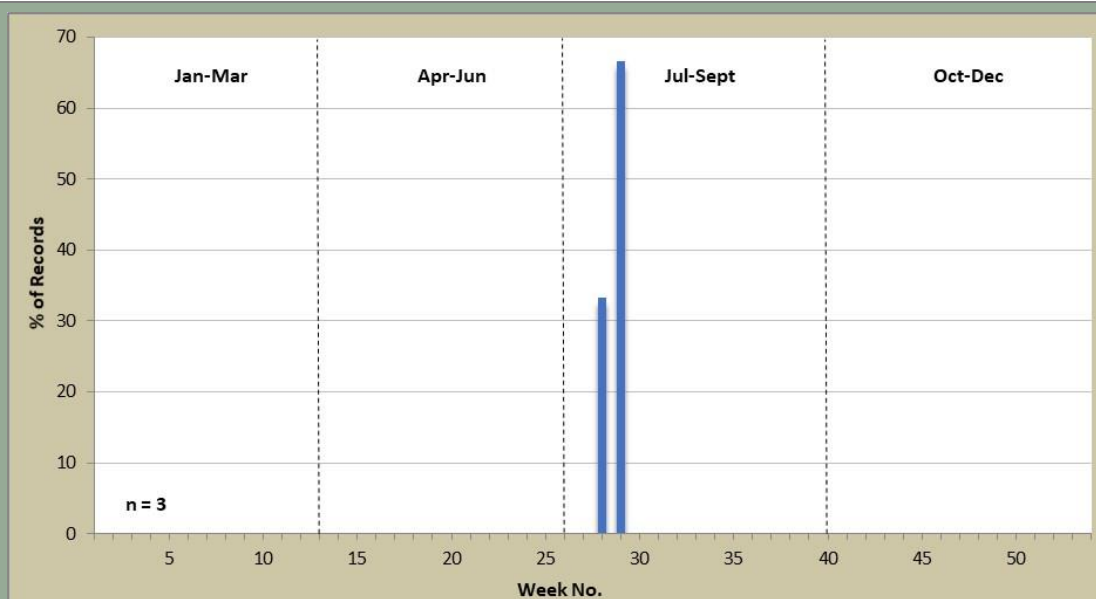
Linda & John Reinecke

Egg-laying pair



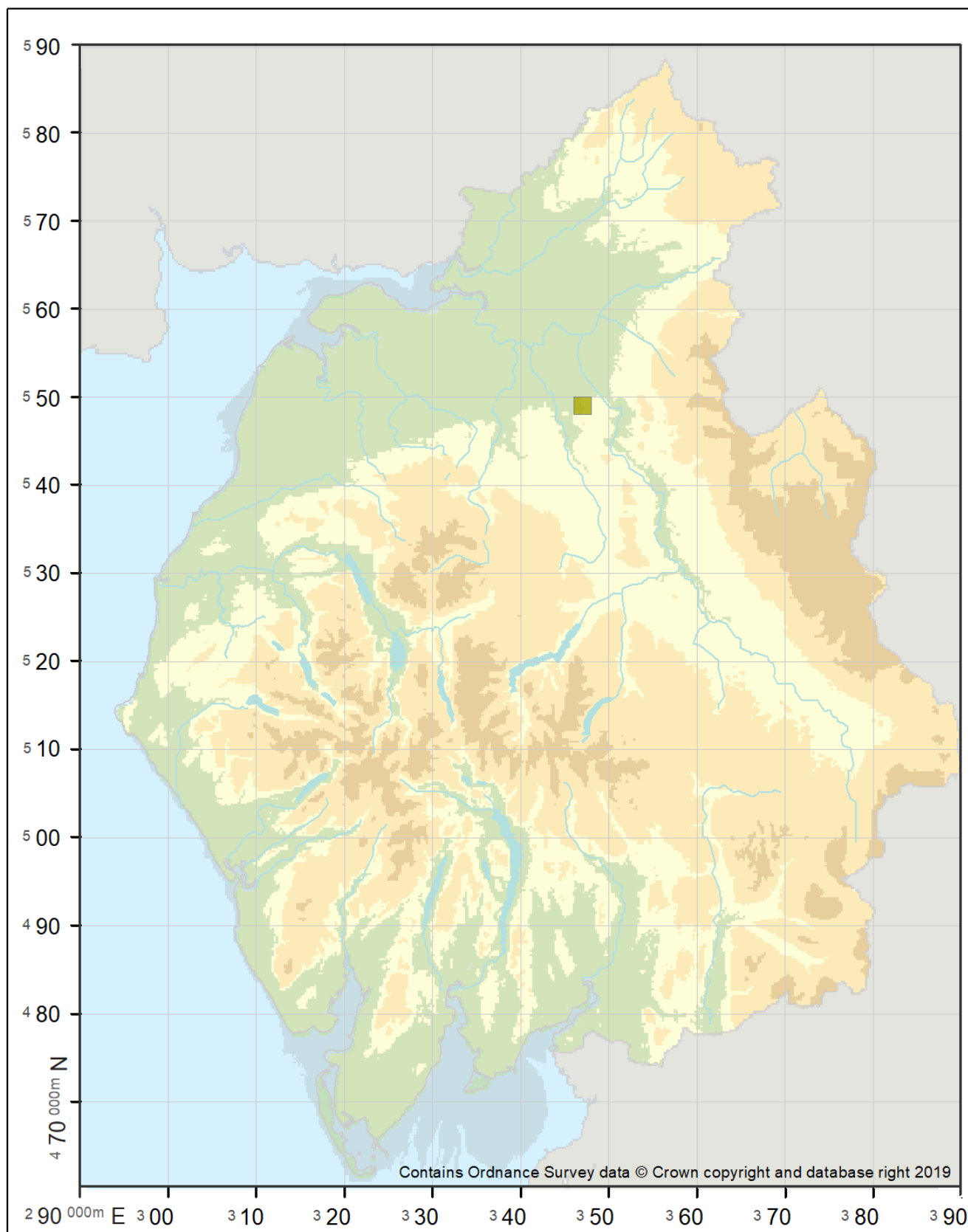
Linda & John Reinecke

- a) **GB Status:** vagrant, apparently becoming more frequent
- b) **Cumbria Status:** rare vagrant, one record, 2006 (N. Franklin)
- c) **Confusion Species:** Vagrant Emperor



Notes:

- a) Sometimes breeds in the south of the UK, though colonies rarely persist. Climate warming may result in it becoming an established species at some future time
- b) A single male was present at an Eden valley site for several days in the hot July of 2006, when other migrants occurred in the area
- c) Vagrant Emperor (*Anax ephippiger*) is another brownish species, and also a rare vagrant. The green eyes and pale blue 'saddle' of the Lesser Emperor male help to identify it. This species is unlikely in winter, when Vagrant Emperor can occur



Lesser Emperor

Anax parthenope

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

4

■ Recorded in both periods

0

■ Last recorded 1800-1999

0

Hairy Dragonfly

Brachytron pratense

♂



Linda & John Reinecke

♀

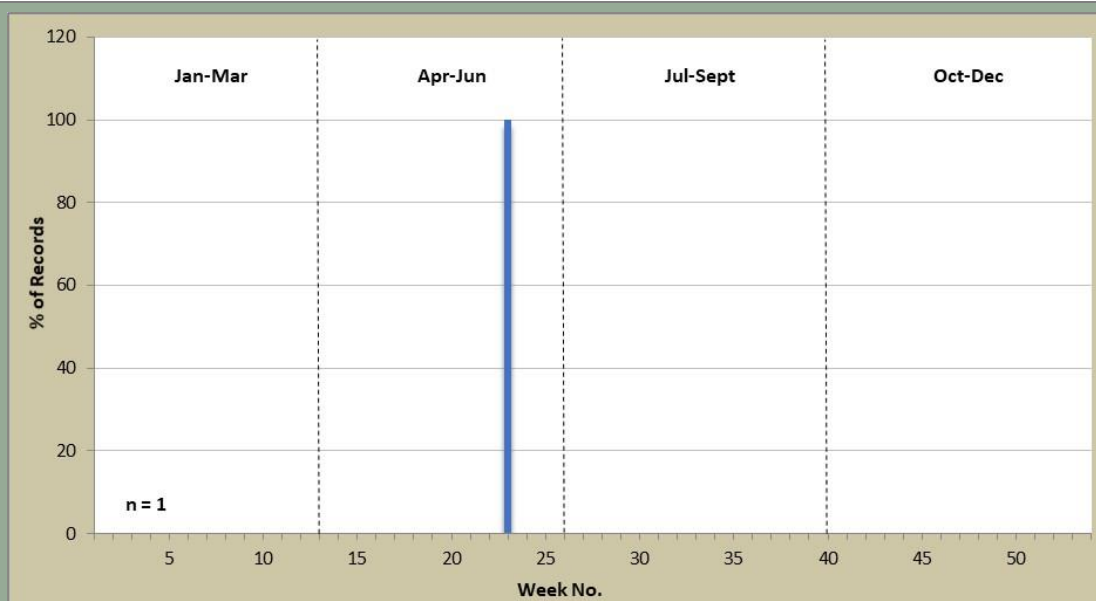


Linda & John Reinecke

a) **GB Status:** local, mainly south of Humber, also W/SW Scotland (and in Ireland)

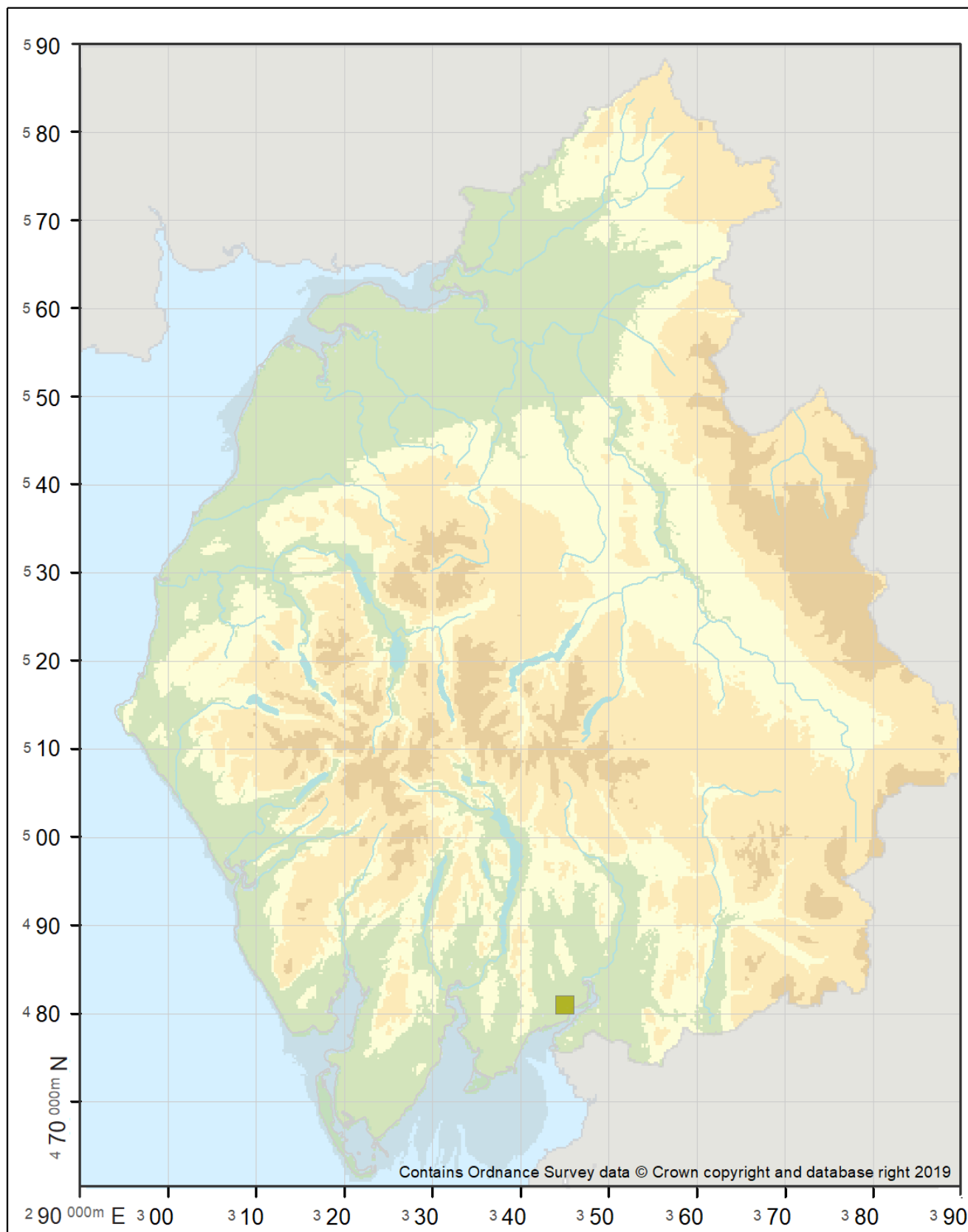
b) **Cumbria Status:** rare vagrant, one record – 2003 (G. Jones)

c) **Confusion Species:** other blue-spotted hawkler species



Notes:

- A species of neutral or alkaline lowland fens and marshes, preferring well-vegetated pools and ditches. It has an early flight season. Not usually migratory
- A single male seen at Meathop Moss on 7 June 2003 by an experienced entomologist. There are no known populations anywhere nearby (the species is not recorded from the Lancashire vice-counties, 59 & 60). An origin from Ireland or SW Scotland remains a possibility
- Hard to identify unless well seen and settled. Early flight period is a pointer, though not proof of ID



Hairy Dragonfly

Brachytron pratense

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

1

■ Recorded in both periods

0

■ Last recorded 1800-1999

0

Golden-ringed Dragonfly

Cordulegaster boltonii



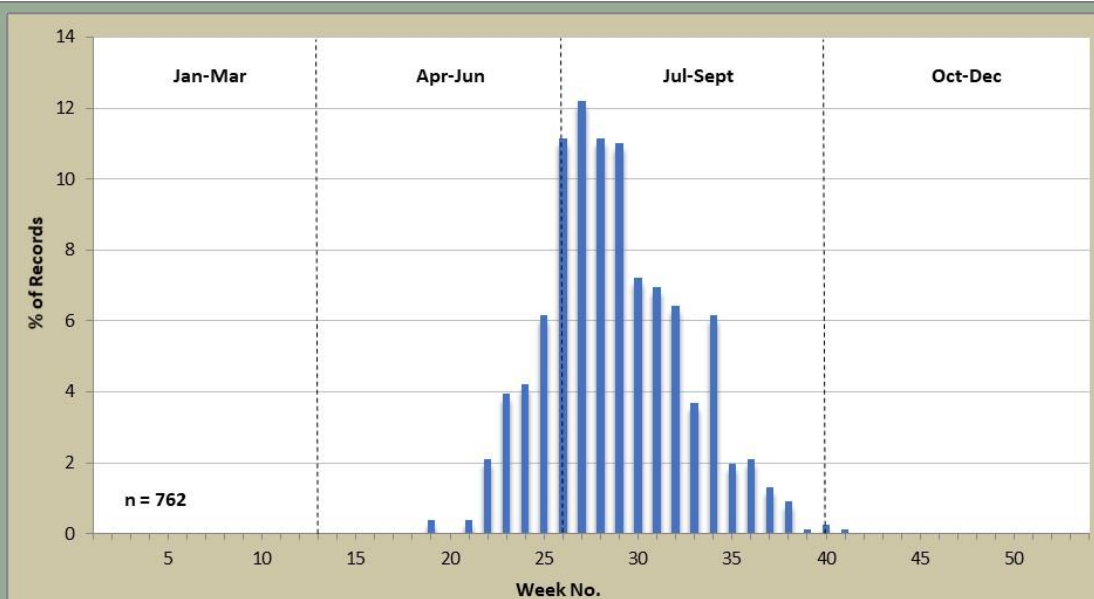
David Clarke

Mating pair



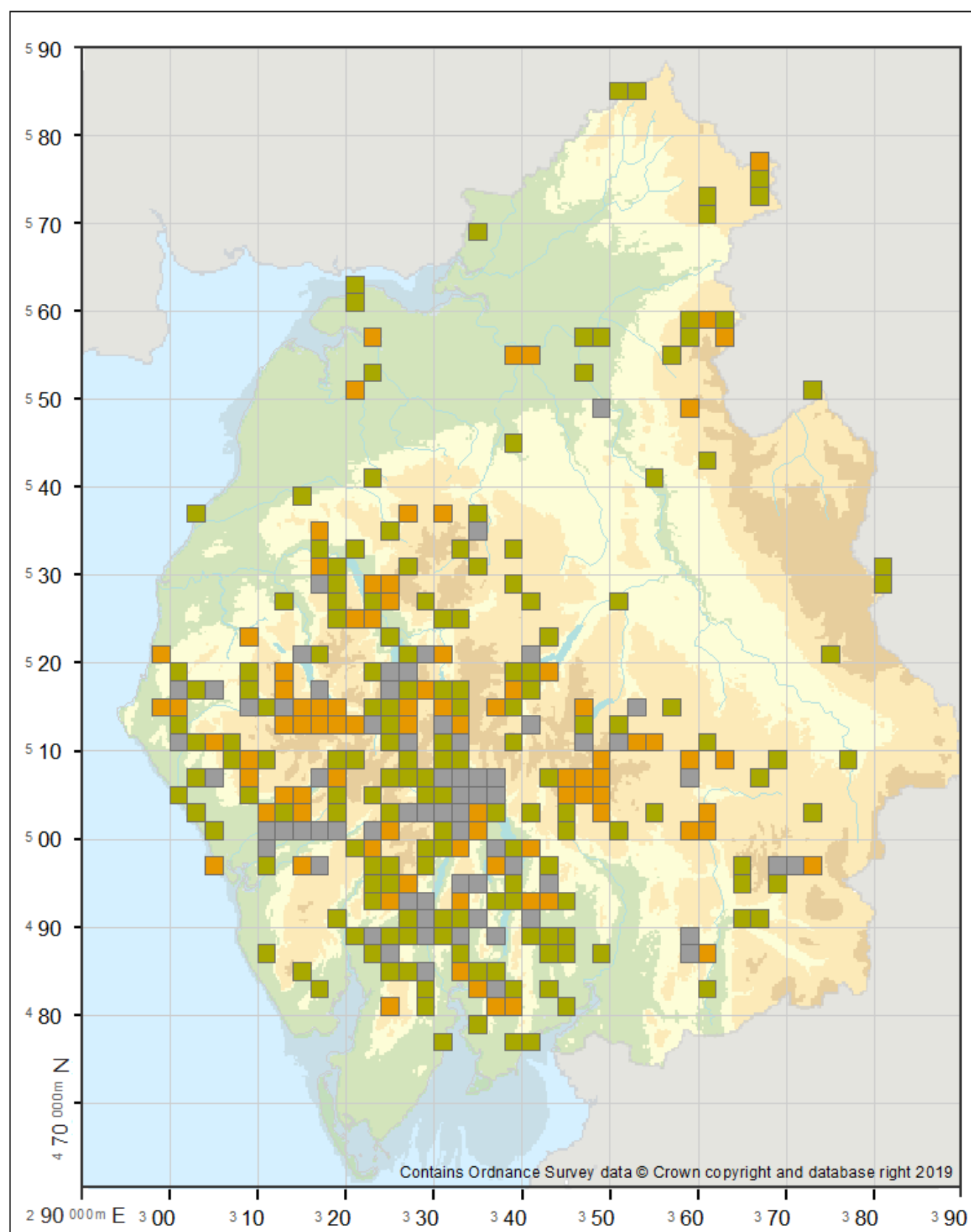
David Clarke

- a) **GB Status:** widespread in western and southern areas
- b) **Cumbria Status:** frequent in upland and uncultivated areas
- c) **Confusion Species:** unlikely to be confused with most other large species



Notes:

- a) Absent only from south-eastern lowlands (and from Ireland)
- b) Shallow moorland streams and flushes are the favoured breeding habitat. Larval stages take several years to complete growth
- c) Combination of large size and black body with thin yellow bands is unique. Eyes brown when immature



Golden-ringed Dragonfly

Cordulegaster boltonii

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

281

■ Recorded in both periods

420

■ Last recorded 1800-1999

120

Downy Emerald

Cordulia aenea

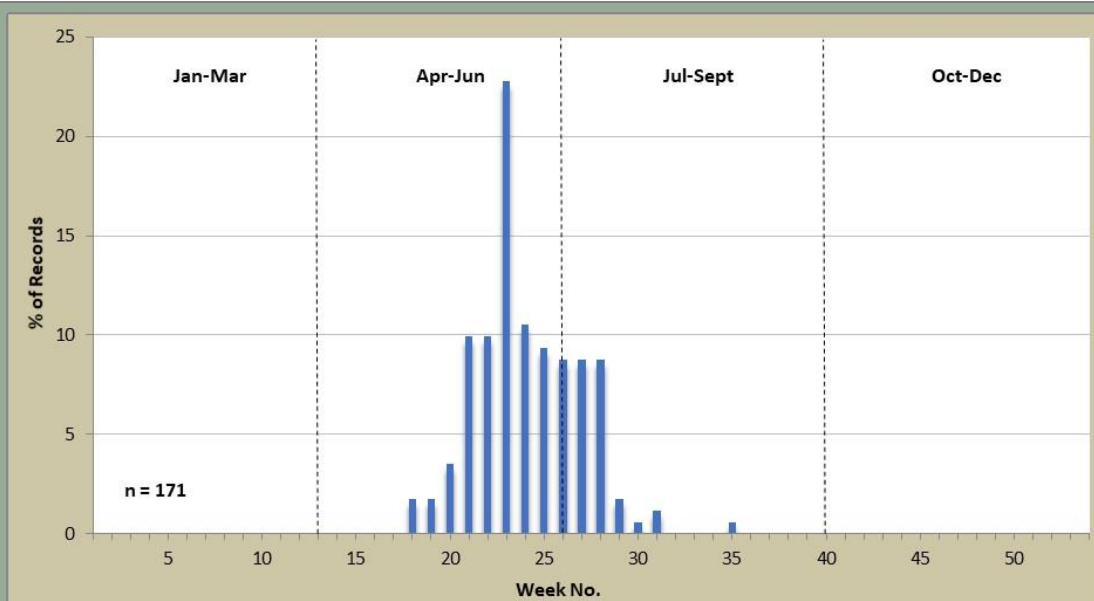


Mo Richards



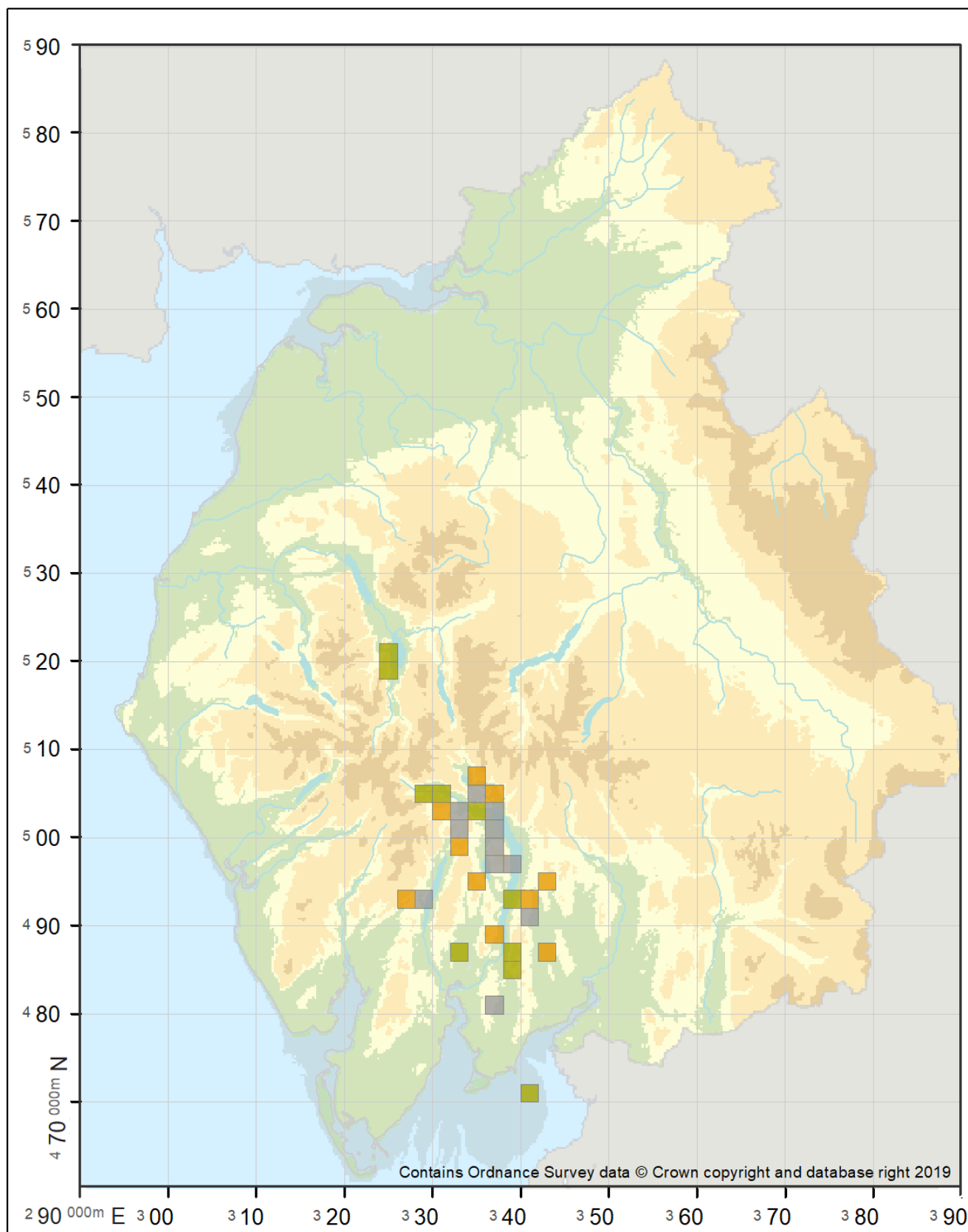
Mo Richards

- a) **GB Status:** local, with very disjunct distribution
- b) **Cumbria Status:** central and southern Lake District only
- c) **Confusion Species:** none, if well seen



Notes:

- a) Seems to be associated with old-woodland areas especially. Populations probably too widely separated for any genetic interchange
- b) Prefers large pools/small lakes with fairly deep water at margins. Often found in adjacent woodlands. Flight period early: mid-May to July
- c) Looks dark when seen distantly and then might be confused with several species. Close up, shows dark metallic green body. Fast flight over open water. Eyes brown when immature



Downy Emerald

Cordulia aenea

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

41

■ Recorded in both periods

122

■ Last recorded 1800-1999

28

Scarlet Darter

Crocothemis erythraea

♂ (mature)



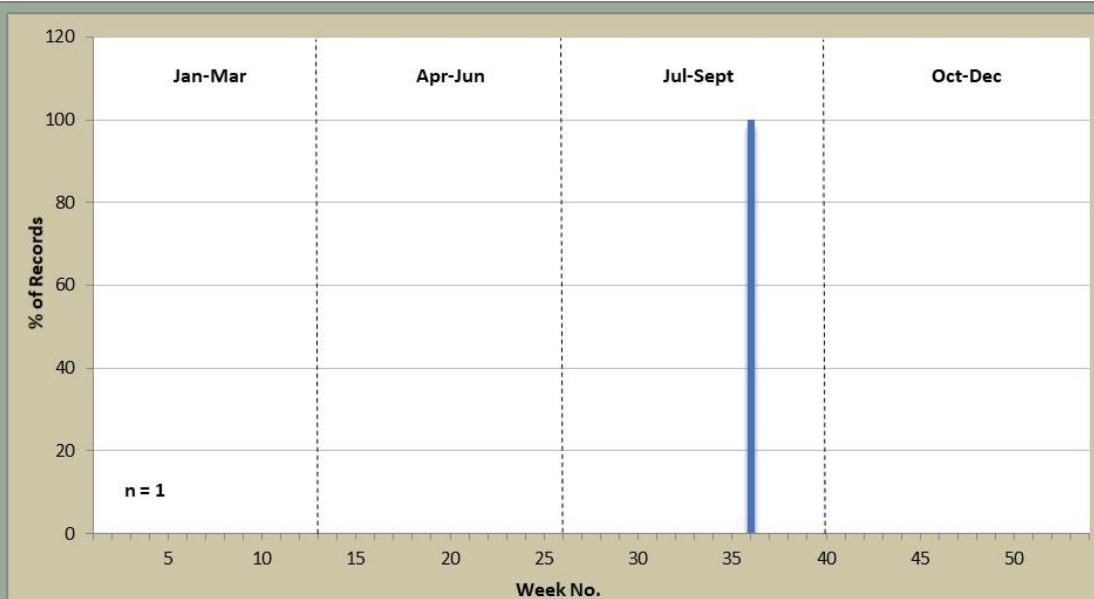
Linda & John Reinecke

♂ (sub-mature)



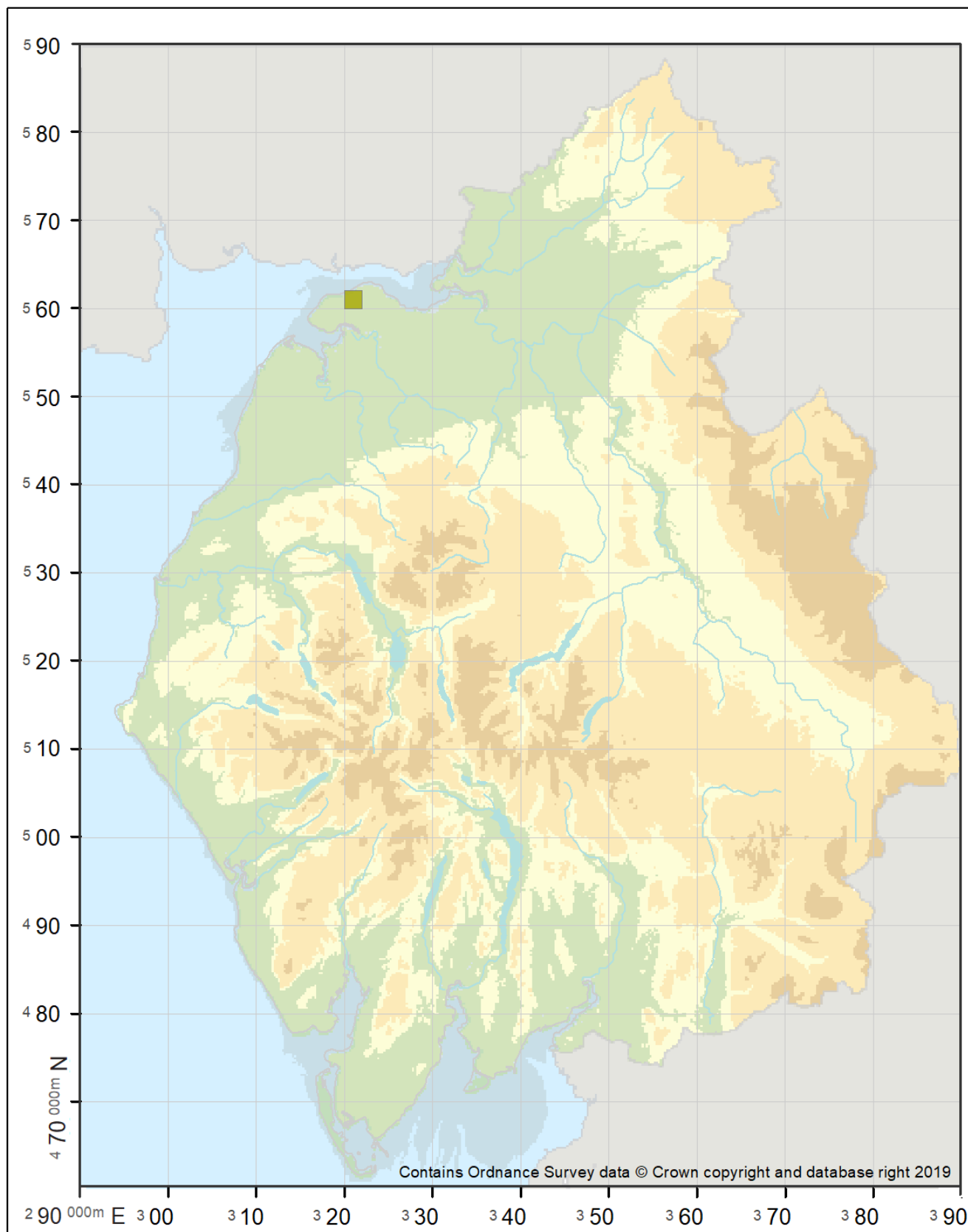
Linda & John Reinecke

- a) **GB Status:** vagrant from southern Europe, infrequently recorded
- b) **Cumbria Status:** rare vagrant, one record – 2004 (T. Reid)
- c) **Confusion Species:** other red darters; Four-spotted Chaser



Notes:

- a) Few UK occurrences, mainly very southerly
- b) A single individual, briefly observed, and subsequently diagnosed as a sub-mature male, was at Bowness-on-Solway gravel pits on 30 August 2004. (Accepted nationally as correct)
- c) Mature males are bright red and noticeably much more broad-bodied than *Sympetrum* species. Females and immatures are straw-coloured and might be confused with Four-spotted Chasers. They have no wing spots, and yellowish wing bases



Scarlet Darter

Crocothemis erythraea

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

1

■ Recorded in both periods

0

■ Last recorded 1800-1999

0

White-faced Darter

Leucorrhinia dubia

♂



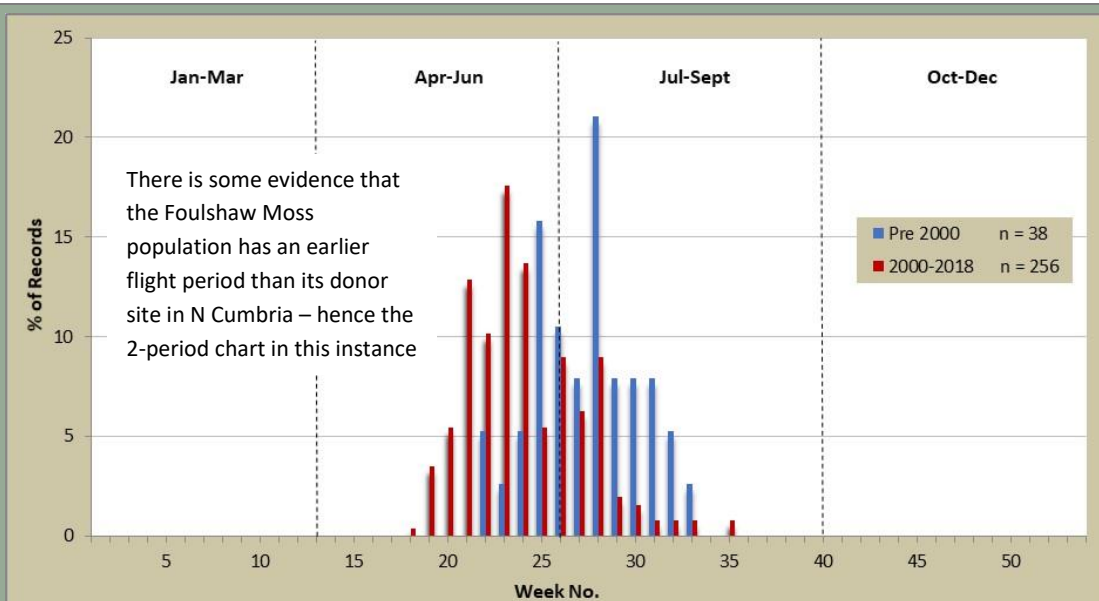
David Clarke

♀



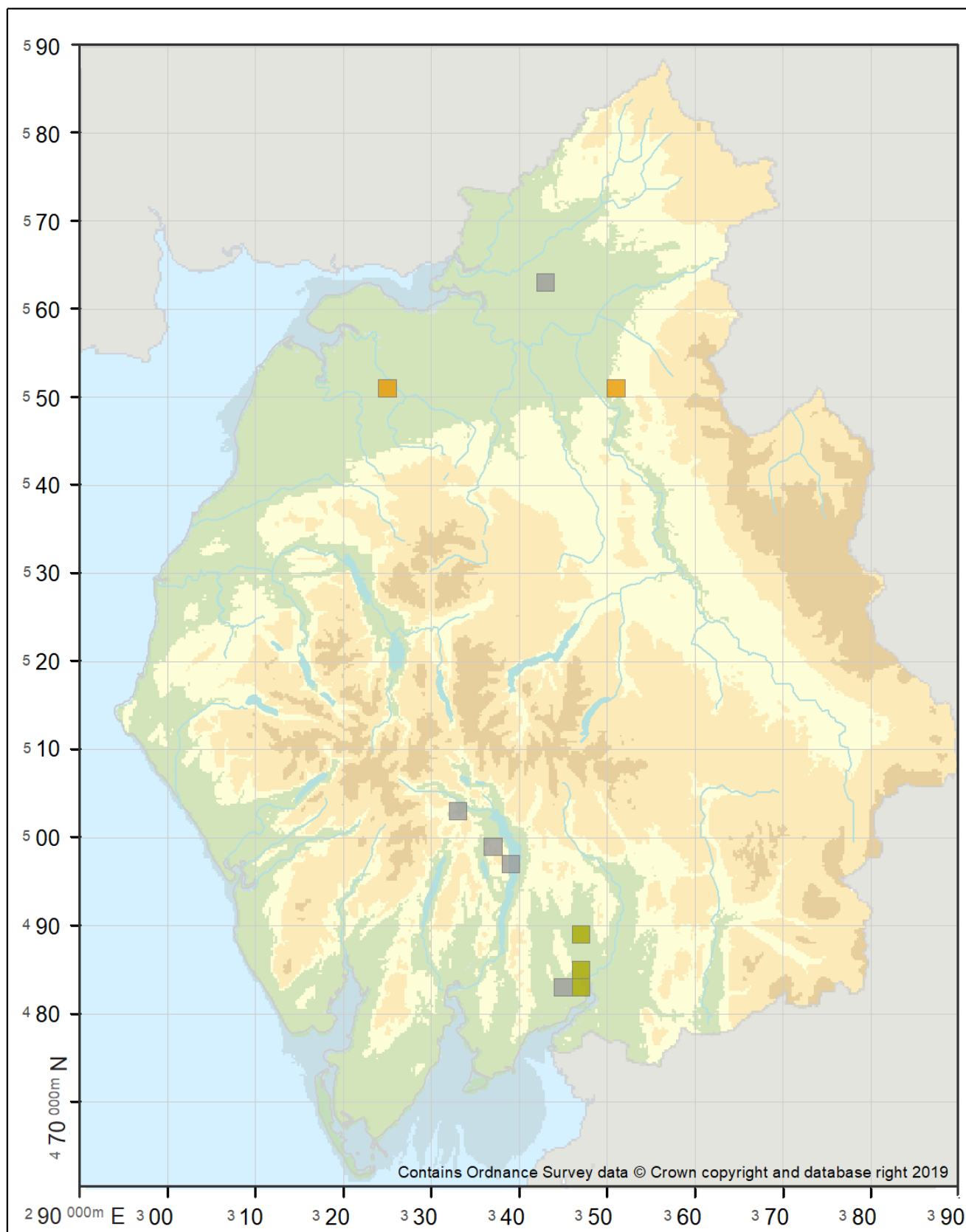
Ian Brodie

- a) **GB Status:** rare and vulnerable in England; local and mainly western in Highland Scotland
- b) **Cumbria Status:** two main populations, another uncertain; lost from at least two sites in 20th C
- c) **Confusion Species:** none when seen well



Notes:

- a) Now only two long-established sites south of Cumbria. There are re-introduction projects in Cumbria and Cheshire
- b) Established site near Carlisle has been donor source for successful re-introduction to Foulshaw Moss in S. Cumbria. A tiny remnant population still appears to exist in Claife Heights, Windermere. An introduction project at Drumburgh Moss, Solway, started in 2019
- c) The dark wing-bases and colour immediately separate from Black Darter. The 'face' is much whiter than that of Four-spotted Chaser, which is much larger and more robust



White-faced Darter

Leucorrhinia dubia

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

26

■ Recorded in both periods

270

■ Last recorded 1800-1999

8

Broad-bodied Chaser

Libellula depressa

♂



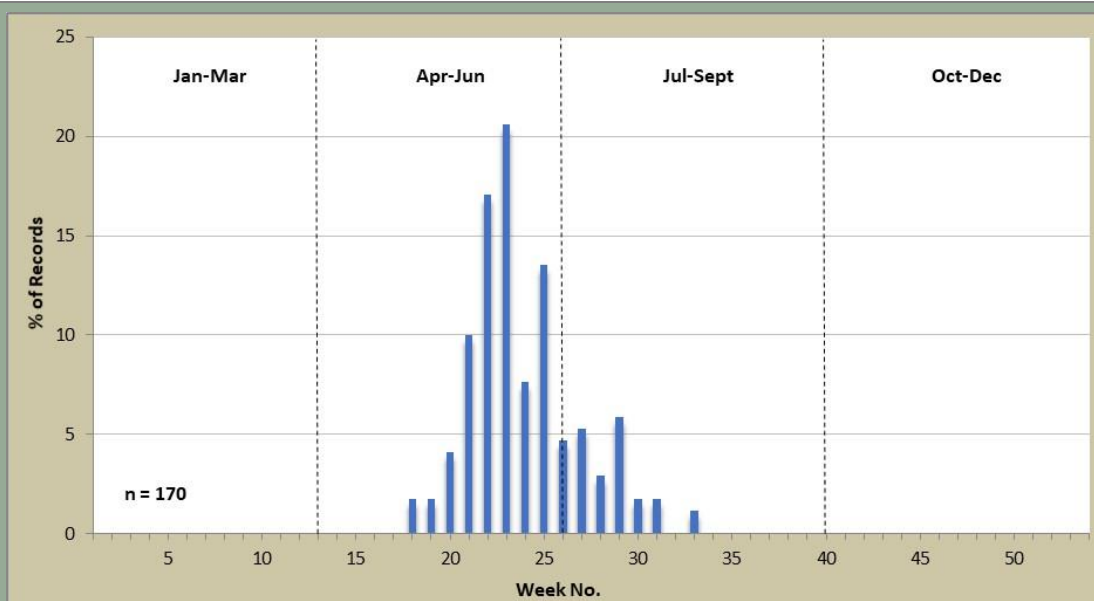
David Clarke

♀



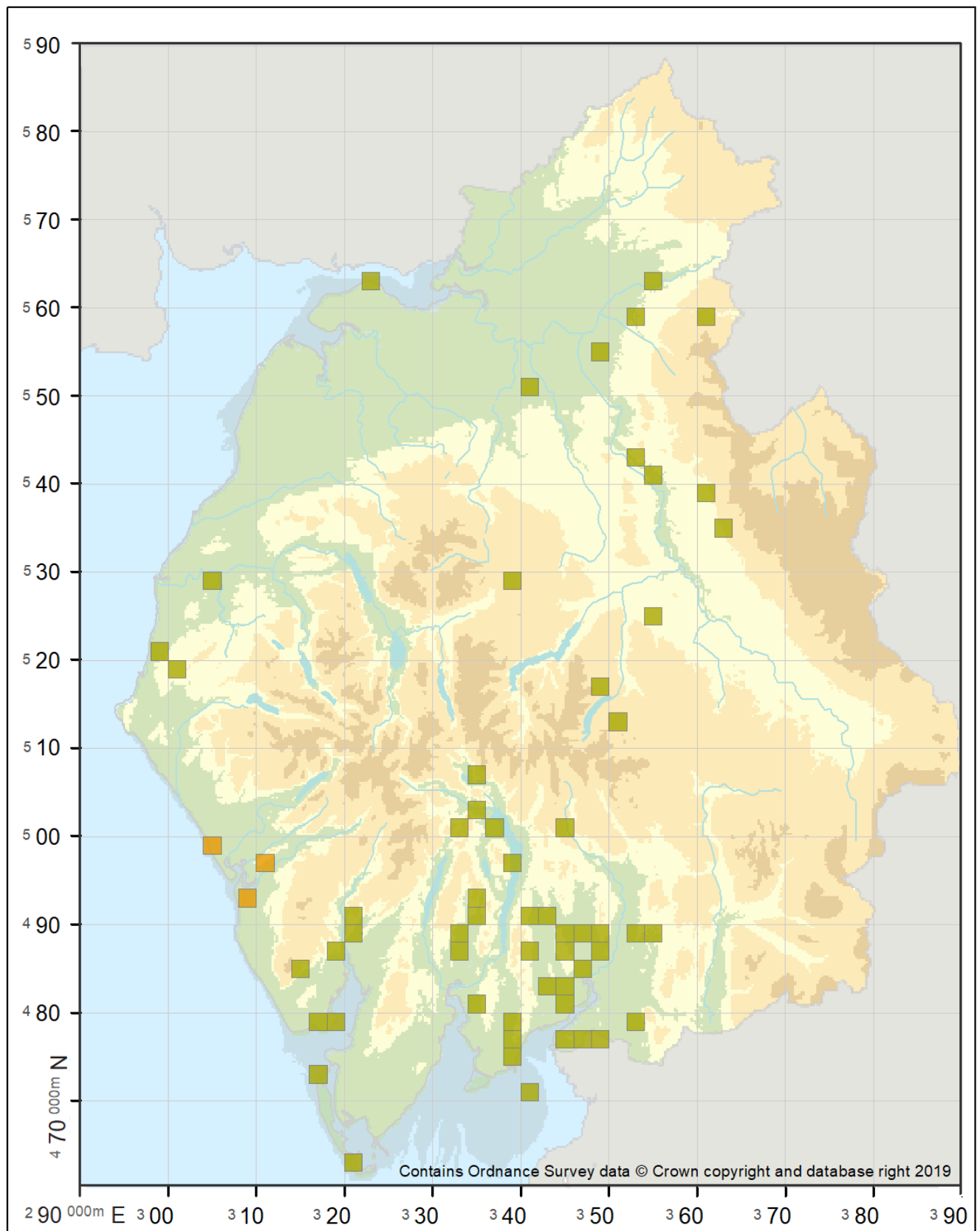
David Clarke

- a) **GB Status:** widespread; has recently expanded range into most of northern England
- b) **Cumbria Status:** recent colonist, mainly post-2000, still expanding its range
- c) **Confusion Species:** Black-tailed Skimmer in some stages of immaturity



Notes:

- a) A generalist species of lowland ponds and small lakes, including bare-margined sites
- b) Established breeder in south Cumbria; increasingly seen further north, especially in good summers
- c) Dark wing-bases and very broad abdomen are distinctive. Fresh, and maturing individuals can show confusing transitional markings, sometimes leading to confusion with both sexes of Black-tailed Skimmer



Broad-bodied Chaser

Libellula depressa

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

168

■ Recorded in both periods

0

■ Last recorded 1800-1999

3

Four-spotted Chaser

Libellula quadrimaculata



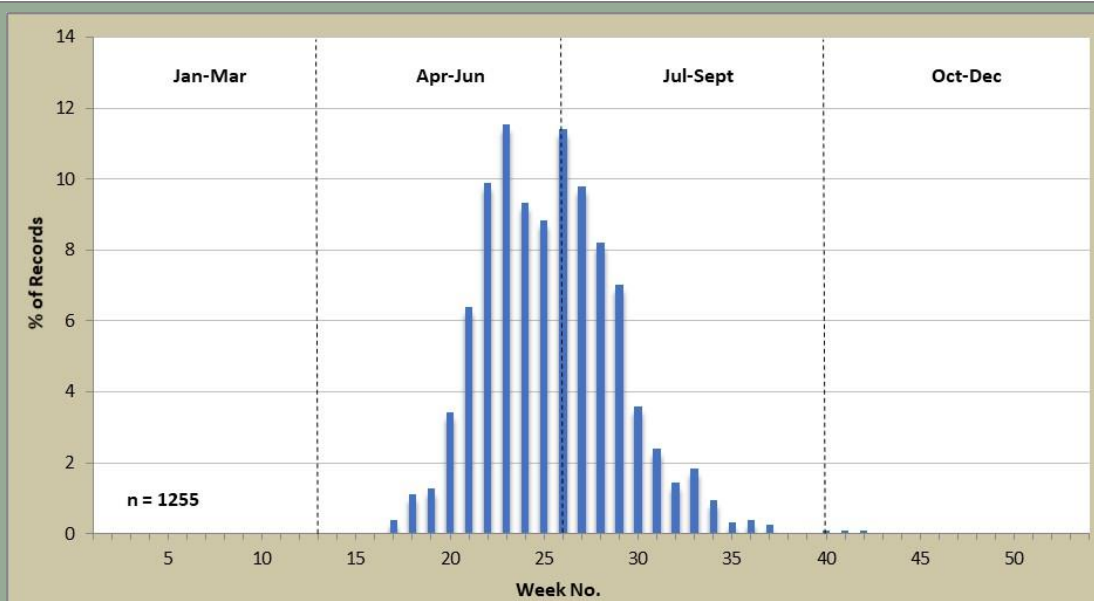
David Clarke

Emerging



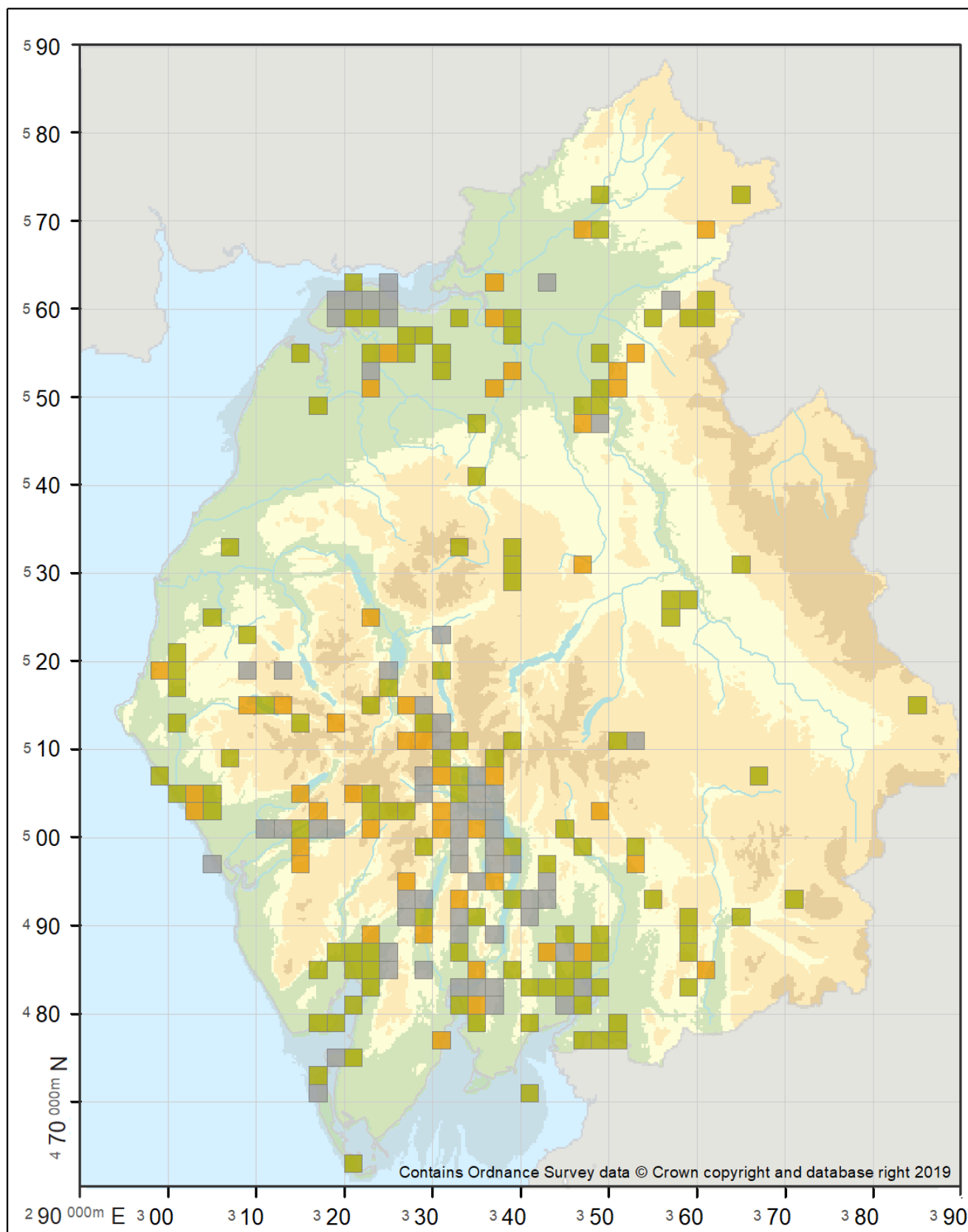
David Clarke

- a) **GB Status:** widespread in a variety of habitats
- b) **Cumbria Status:** widespread, often numerous
- c) **Confusion Species:** possibly Broad-bodied Chaser/Black-tailed Skimmer immatures/females



Notes:

- a) Throughout the British Isles
- b) One of the commonest dragonflies, especially in moorlands and bogs. Has a relatively early flight season, mainly May-July
- c) The wing markings are unique to this species (both sexes are alike). The immature females of Broad-bodied Chaser and Black-tailed Skimmer are much yellower at first but change to more tawny shades with maturity and later ageing



Four-spotted Chaser

Libellula quadrimaculata

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

493

■ Recorded in both periods

736

■ Last recorded 1800-1999

72

Black-tailed Skimmer

Orthetrum cancellatum

♂



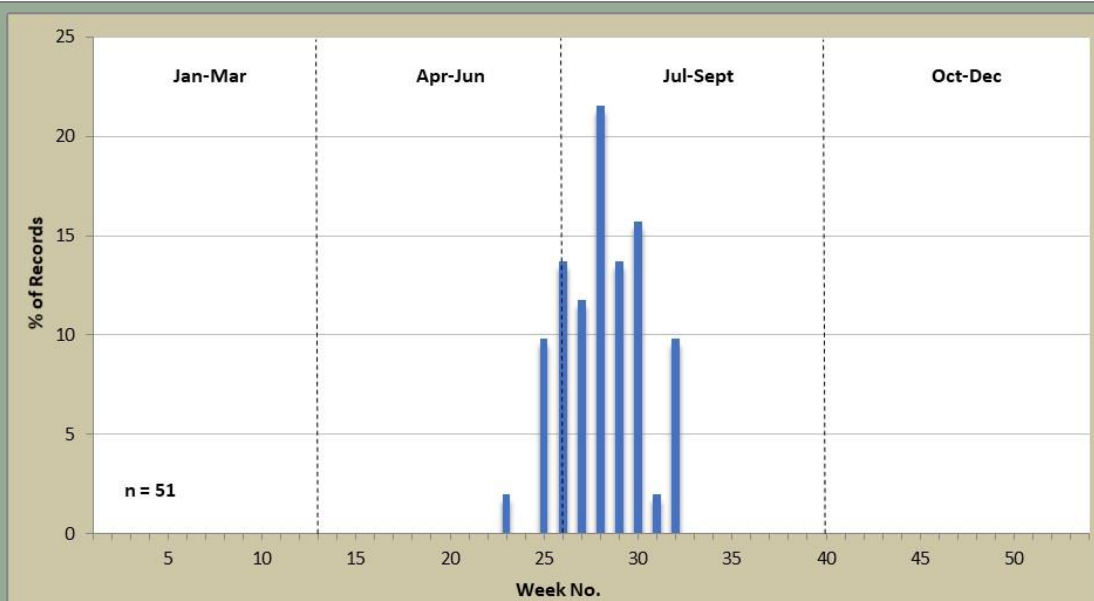
Nick Franklin

♀



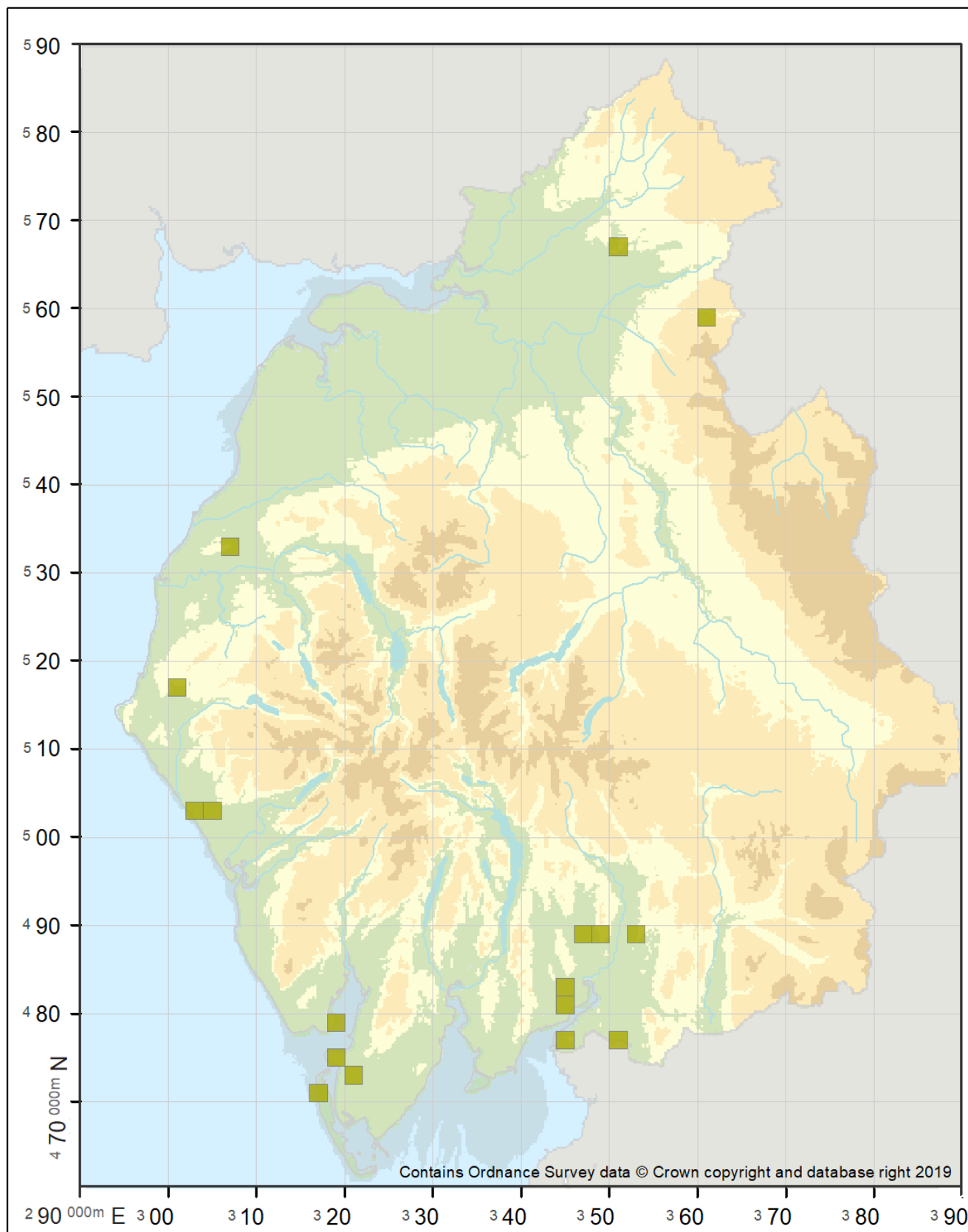
David Clarke

- a) **GB Status:** considerable range expansion from SE England since early 20th C.
- b) **Cumbria Status:** increasing migrant, very scarce/irregular breeder since 2005 (L. Robertson)
- c) **Confusion Species:** Keeled Skimmer male, females/immatures of Broad-bodied Chaser



Notes:

- a) A 'pioneer' species, occupying a wide range of pool types, including bare-margined sites
- b) Bred for a number of years near Gosforth; emerged at Tindale Tarn in 2008 following a 2006 immigration. Now breeds in south Cumbria and may continue to colonise northwards
- c) Males of Keeled Skimmer show much less black at abdomen tip and have orange pterostigmas – and different habitat preferences. Females and maturing males have been confused with maturing males of Broad-bodied Chaser, though the latter is much wider-bodied and has dark wing bases



Black-tailed Skimmer

Orthetrum cancellatum

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

54

■ Recorded in both periods

0

■ Last recorded 1800-1999

0

Keeled Skimmer

Orthetrum coerulescens



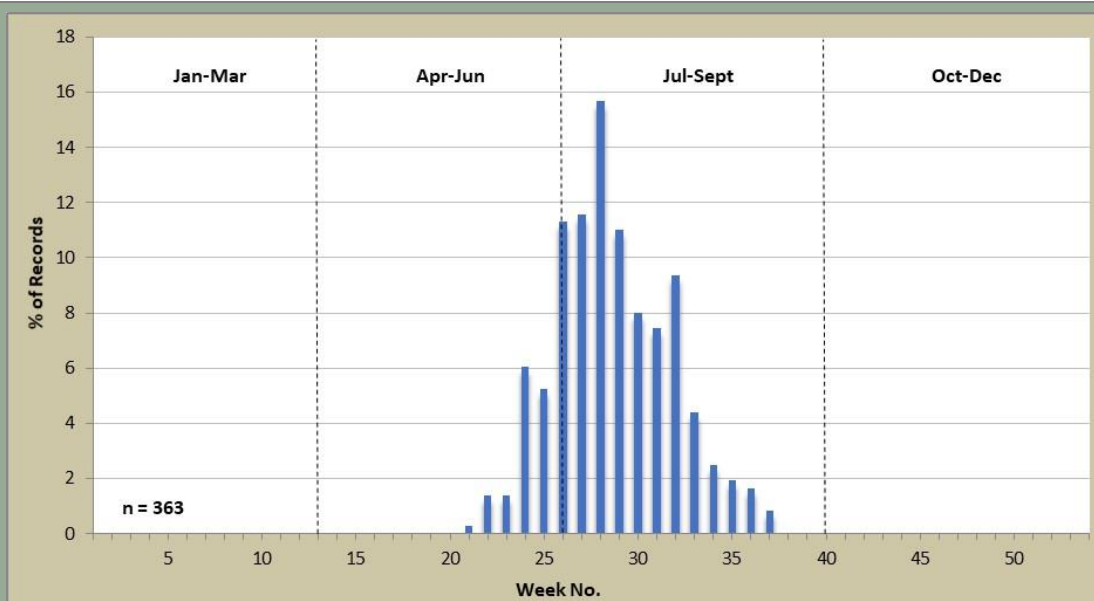
Nick Franklin

immature male



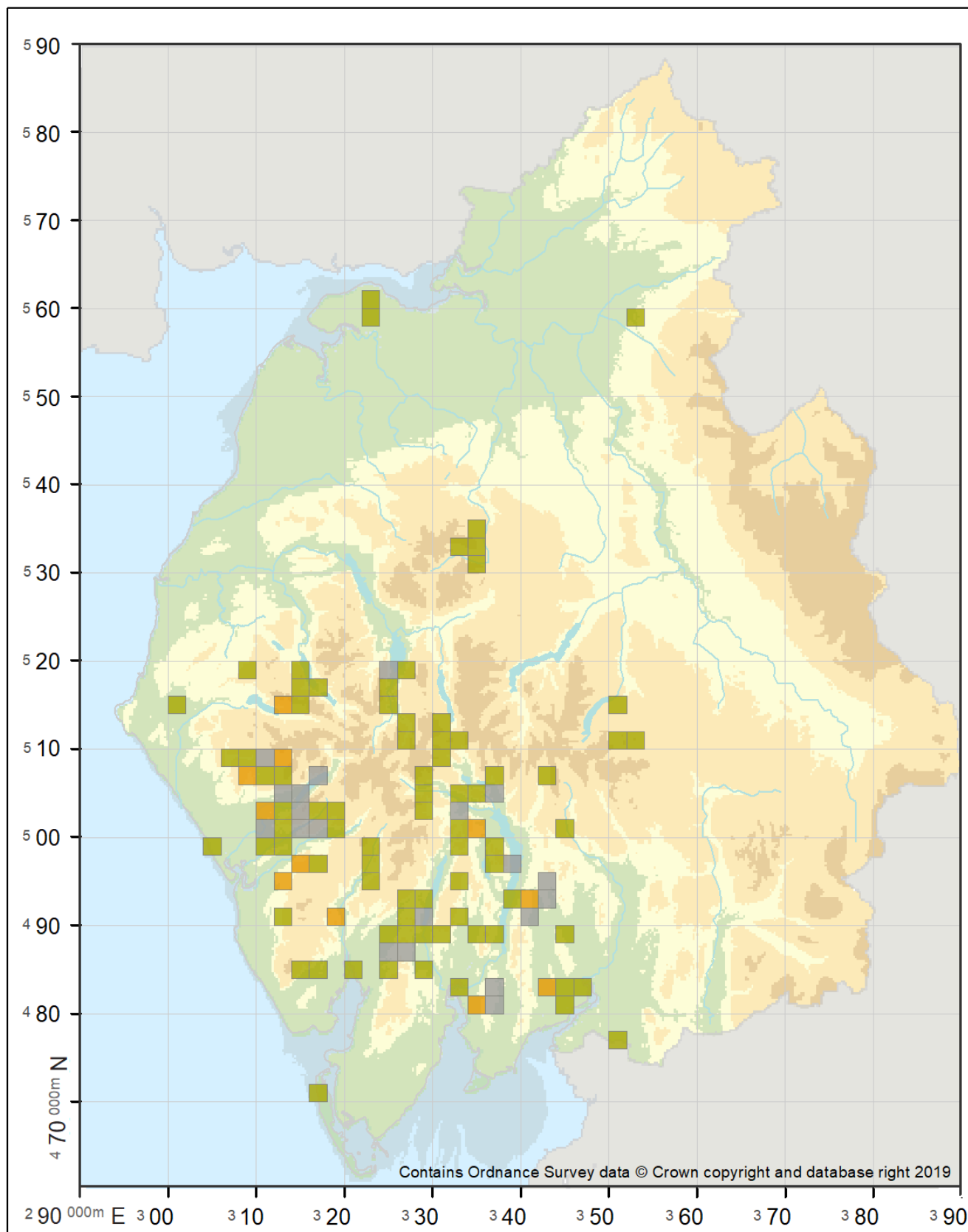
David Clarke

- a) **GB Status:** locally common in southern and western districts
- b) **Cumbria Status:** mainly southerly, but has expanded northwards in recent years
- c) **Confusion Species:** Black-tailed Skimmer; female/immature Common Darter



Notes:

- a) Limited by availability of boggy habitats with flushes and slow-moving runnels
- b) More records from north of the county in recent years; may be increasing its altitudinal limits - the current limit appears to be at around 250 m a.s.l.
- c) Immature males closely resemble females; the elongate orange pterostigmas immediately diagnose this species (black and shorter in Black-tailed Skimmer). A pair of pale stripes on top of thorax separate females/immatures from same of Common Darter



Keeled Skimmer

Orthetrum coerulescens

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

206

■ Recorded in both periods

147

■ Last recorded 1800-1999

20

Black Darter

Sympetrum danae

♂



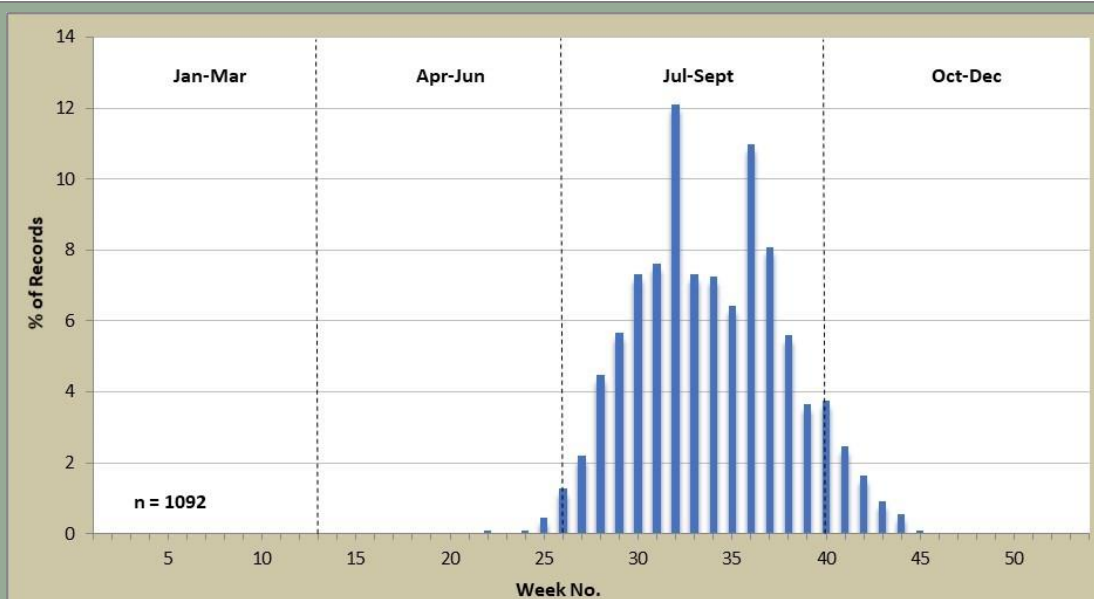
Mo Richards

♀



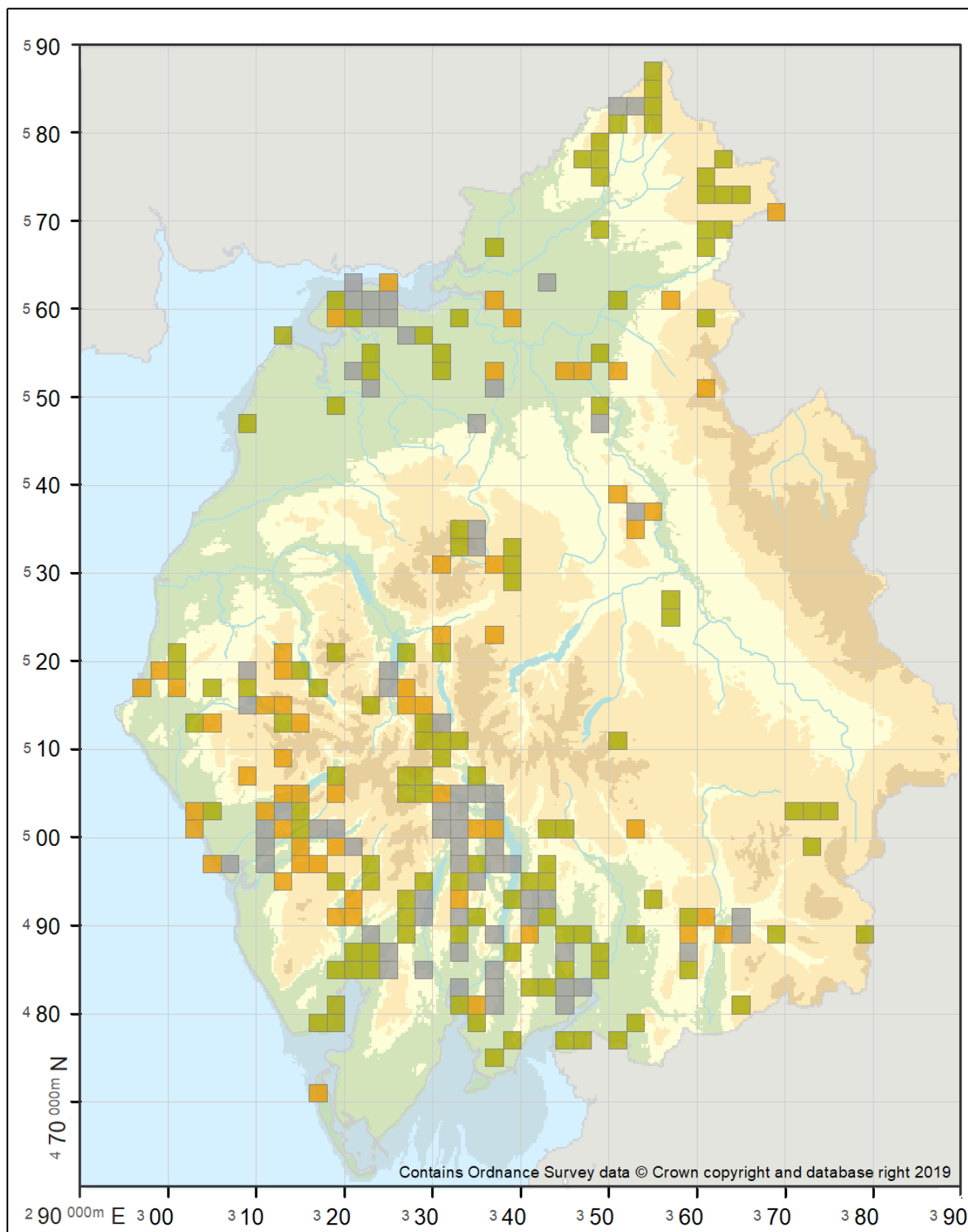
Linda & John Reinecke

- a) **GB Status:** widespread, especially in the north and west
- b) **Cumbria Status:** absent only in cultivated lowlands
- c) **Confusion Species:** females/immatures of other darter species



Notes:

- a) A late summer species of acidic moorland sites
- b) Often abundant on coastal moss-lands in the north and south of the county
- c) The smallest British dragonfly. The male has a wasp-waisted abdomen. A backwards-pointing triangular mark on the top of the thorax of immatures and females separates it from other *Sympetrum* species



Black Darter

Sympetrum danae

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

298

■ Recorded in both periods

753

■ Last recorded 1800-1999

89

Yellow-winged Darter

Sympetrum flaveolum

♂



Tristan Reid

♀

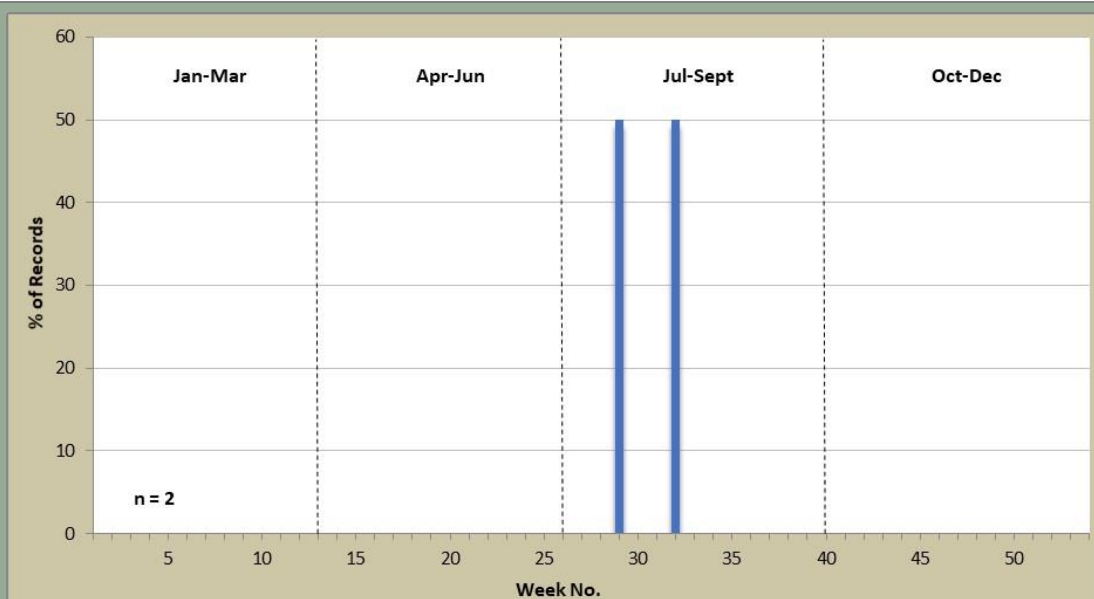


Saxifraga - Luc Hoogenstein

a) **GB Status:** irregular migrant, occasionally in large numbers

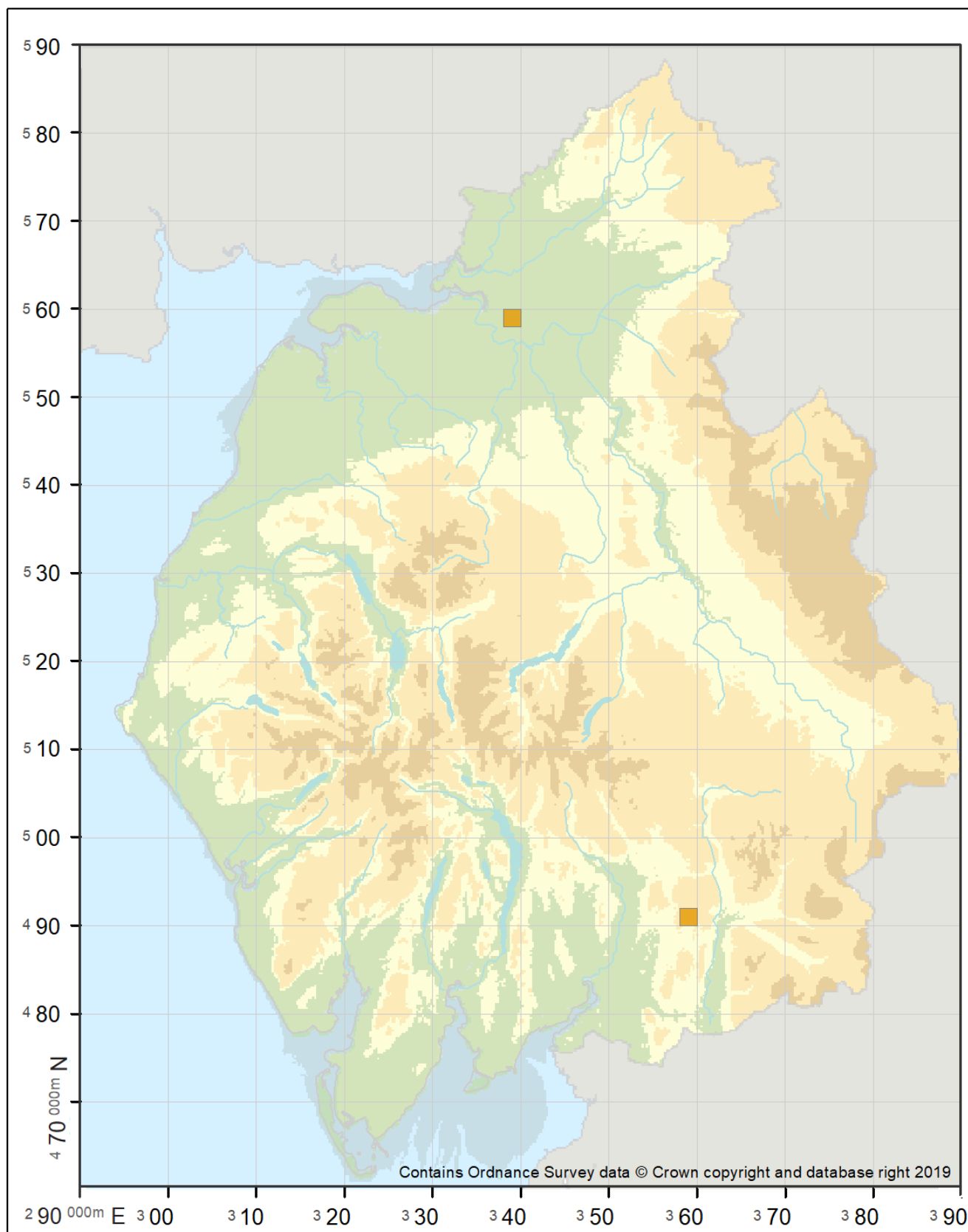
b) **Cumbria Status:** very irregular migrant

c) **Confusion Species:** other red-bodied darter species



Notes:

- a) Irregular migrant – (breeds at latitudes further north than the UK in Europe)
- b) Vagrant from Europe, two certain records, and one probable. Last confirmed record 1995
- c) Similar species: much like other red darters, but extensive yellow on wings is distinctive. Females also have more extensive yellow on the wings than other *Sympetrum* species



Yellow-winged Darter

Sympetrum flaveolum

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

Newly recorded 2000-2018

0

Recorded in both periods

0

Last recorded 1800-1999

2

Red-veined Darter

Sympetrum fonscolombii



Jeremy Roberts

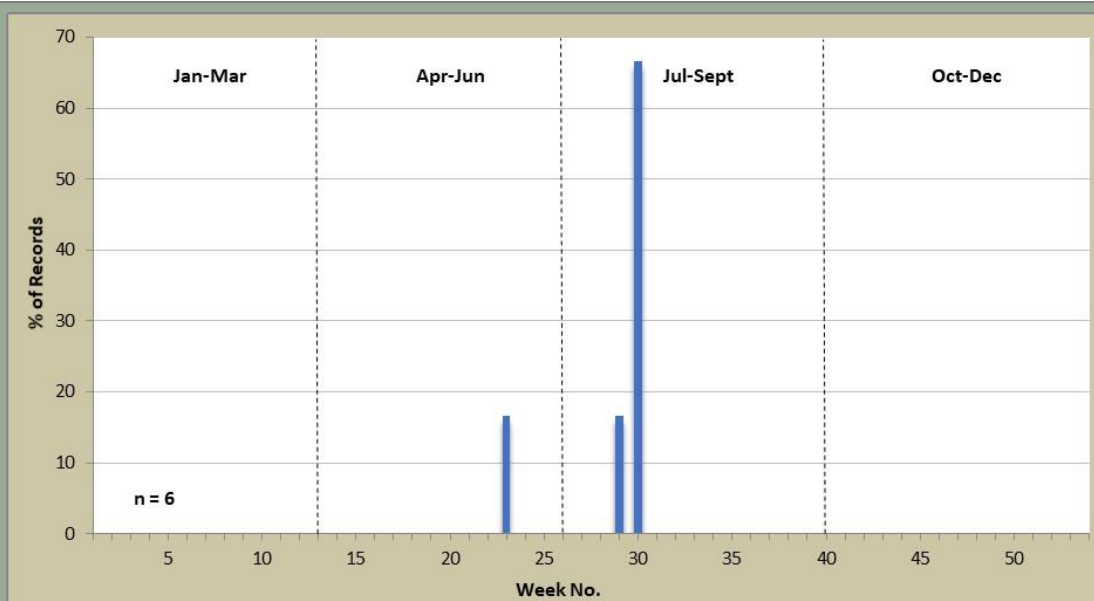


semi-mature



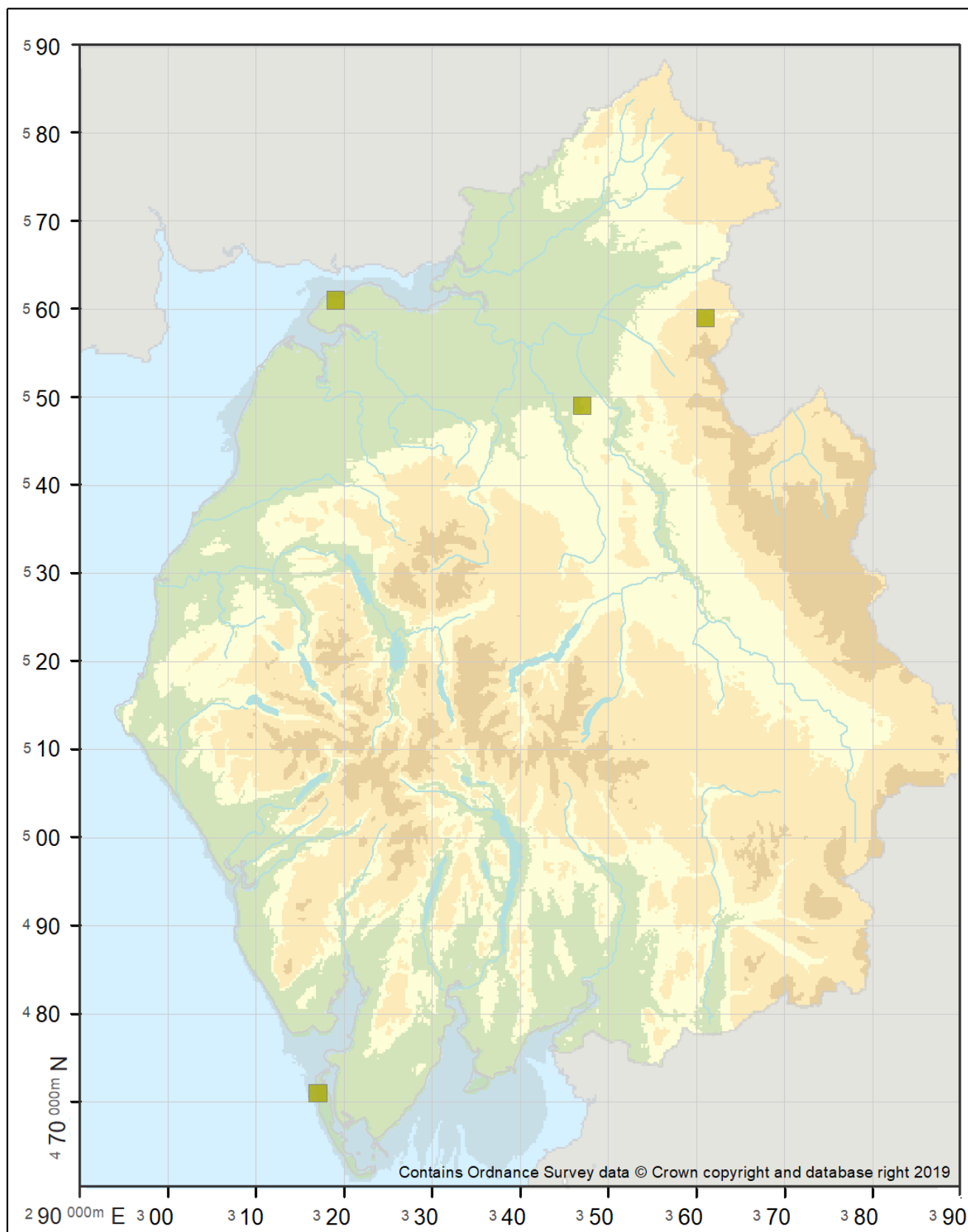
Linda & John Reinecke

- a) **GB Status:** fairly frequent migrant from Europe, sometimes breeds in south
- b) **Cumbria Status:** vagrant, with under 5 records, all post 2005 (most recently in 2019)
- c) **Confusion Species:** other red-bodied darter species



Notes:

- a) Regular migrant, often developing temporary breeding colonies, mainly southern
- b) Records expected to be coastal, though 2006 arrivals were inland and suspected of an easterly origin
- c) The extensive red venation and blue colour of the undersides of the eyes are good confirmatory characters. Females are more problematic – consult Field Guides



Red-veined Darter

Sympetrum fonscolombii

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

Newly recorded 2000-2018

8

Recorded in both periods

0

Last recorded 1800-1999

0

Ruddy Darter

Sympetrum sanguineum



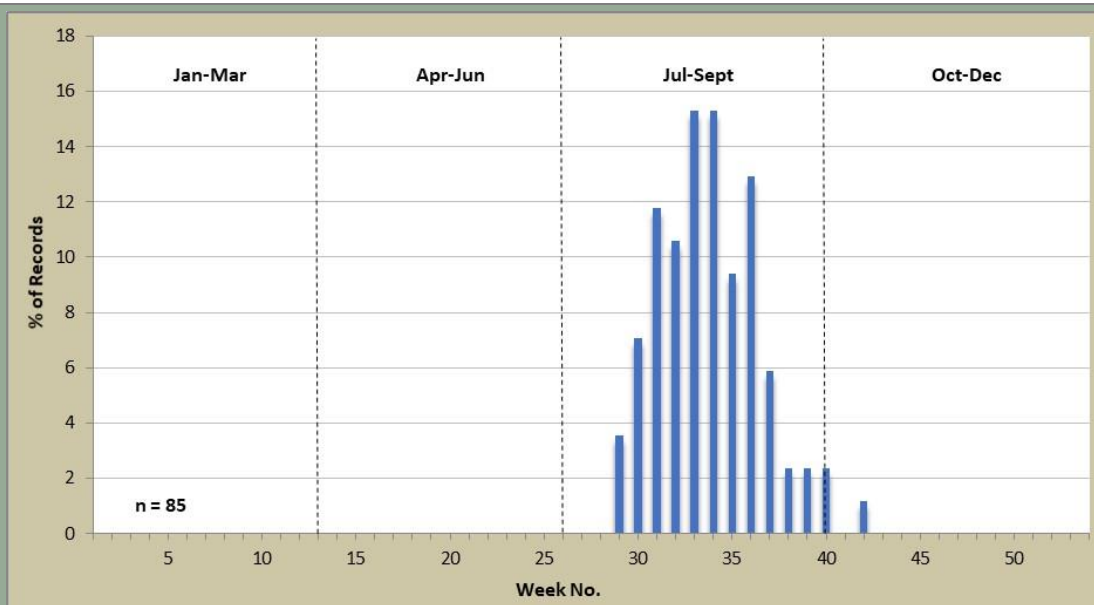
Tristan Reid

Mating pair



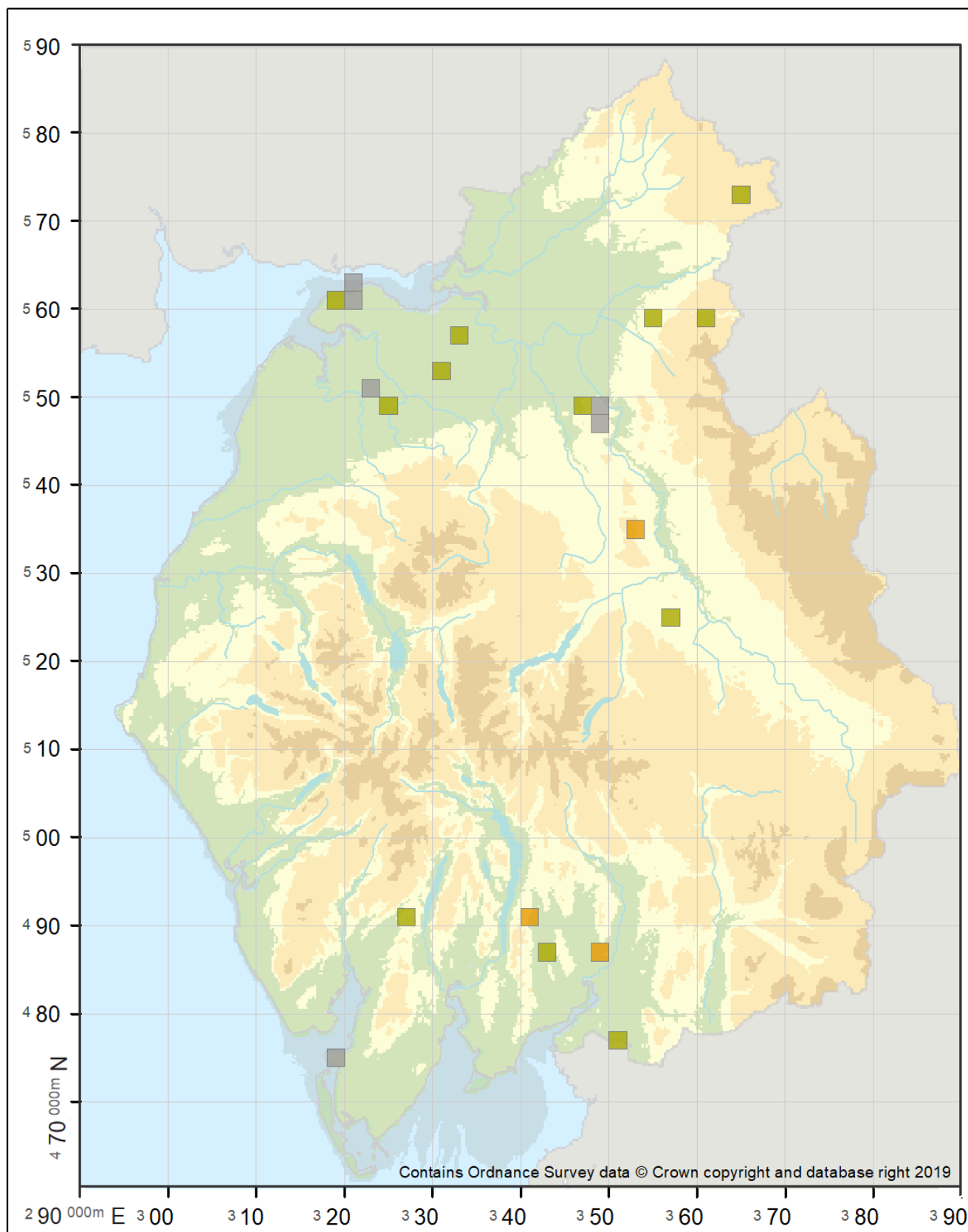
David Clarke

- a) **GB Status:** has spread northwards to most of England, especially since mid/late 20th C.
- b) **Cumbria Status:** first recorded 1997 (R. Wright): has declined considerably in recent years
- c) **Confusion Species:** other red-bodied darters



Notes:

- a) Northwards spread may reflect climate warming and responses to especially good summers
- b) A colonising species, though possibly very sensitive to poor summers. One regular site - near Solway Firth. A decline post c. 2008 is assumed to be weather-related
- c) Requires close viewing: the all-black legs and 'waisted' abdomen of males (as viewed from above), separate it from Common Darter. Females also have all-black legs. (The female in the RH image is fairly immature - as shown by her pale pterostigmas)



Ruddy Darter

Sympetrum sanguineum

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

17

■ Recorded in both periods

60

■ Last recorded 1800-1999

10

Common Darter

Sympetrum striolatum

♂



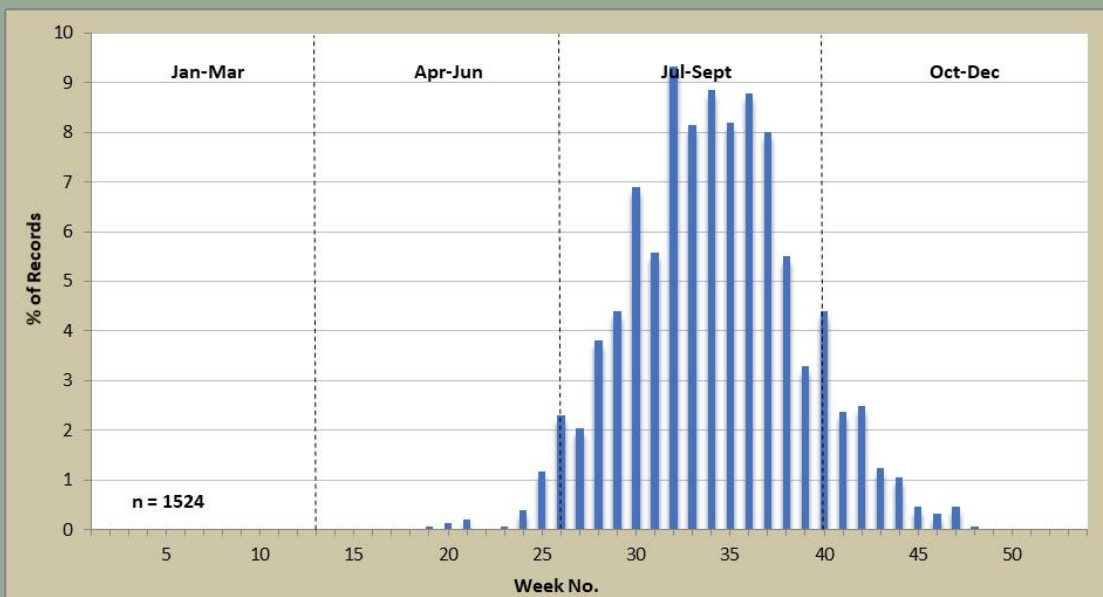
David Clarke

♀



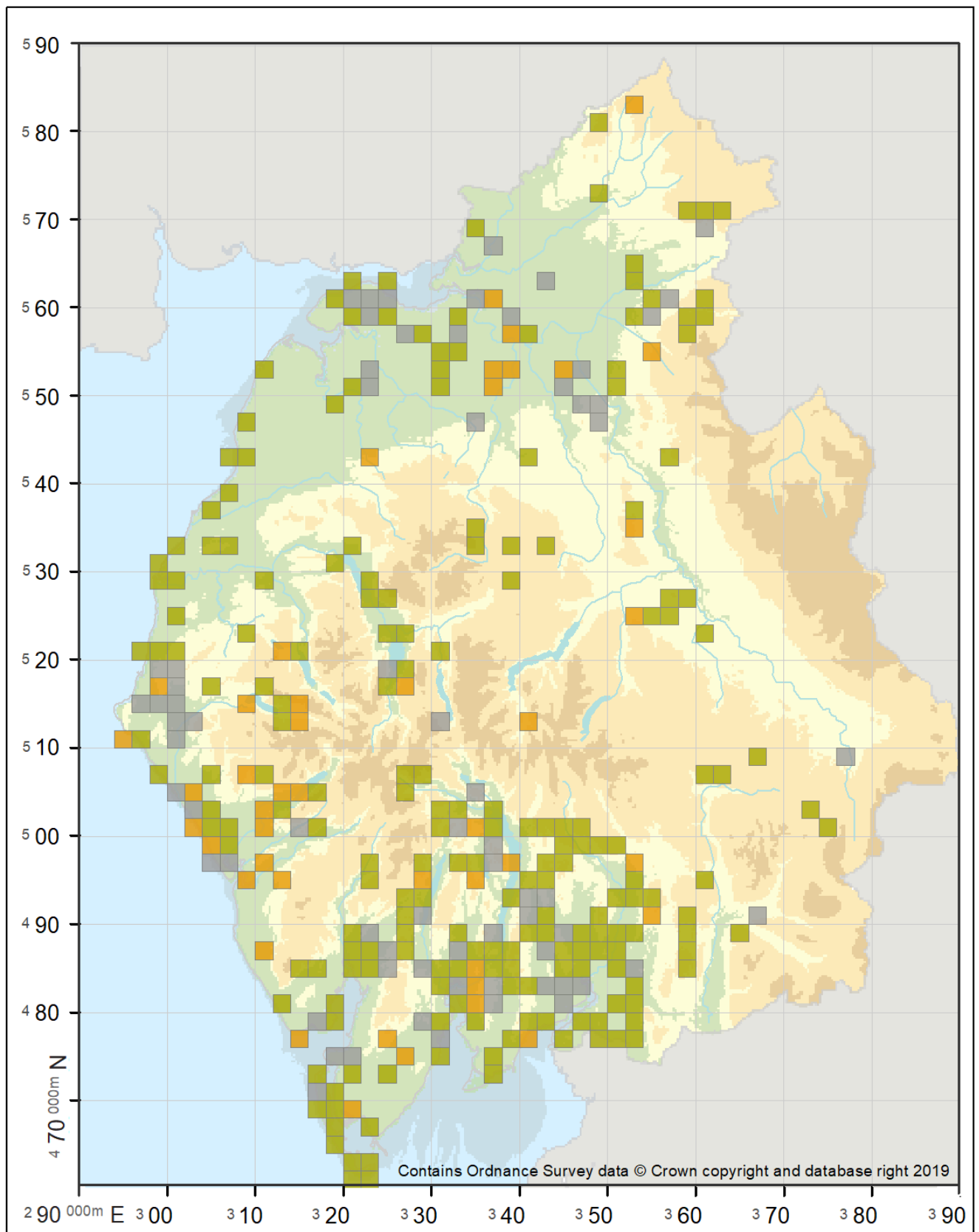
David Clarke

- a) **GB Status:** common and widespread
- b) **Cumbria Status:** common and widespread
- c) **Confusion Species:** other red-bodied darter species



Notes:

- a) Often numerous, occurs in a wide variety of habitats. Immigrants may swell numbers
- b) A lowland species, less common at the more acidic sites
- c) The white leg markings and straight-sided abdomen of the male (as viewed vertically) help confirm the species; the leg colour applies to both sexes



Common Darter

Sympetrum striolatum

Cumbria Dragonfly Online Atlas

Cumbria Biodiversity Data Centre - www.cbdc.org.uk

■ Newly recorded 2000-2018

615

■ Recorded in both periods

887

■ Last recorded 1800-1999

78

Reading & Resources List

The list below gives a small selection of the material available in print or on the internet relevant to the subject of this atlas.

More resources downloadable from CBDC

Clarke, D. (2005) *Cumbrian Dragonflies: a distribution atlas*. Tullie House Museum/Carlisle City Council, Carlisle. Based on some 6,000 records in the museum's Biological Records database (including national record sources). Locally circulated in pamphlet form; now available as pdf from:

www.cbdc.org.uk/wildlife-in-cumbria/cumbria-dragonfly-atlas

Cumbria Dragonfly species: contains full list of English and scientific names.

https://www.cbdc.org.uk/Dragonfly/Data/Cumbria_Dragonfly_Species_List.pdf

Cumbria Dragonflies per tetrad: contains data on the current number of species recorded per 2 x 2km tetrad of British National Grid.

https://www.cbdc.org.uk/Dragonfly/Data/Cumbria_Dragonfly_per_Tetrad.pdf

Other Cumbria-based publications

Birds & Wildlife in Cumbria: ISSN: 1363-5700. An annual journal published by Cumbria Naturalists Union, usually issued 2 years behind the current year: contains a dragonfly section summarising main records of the year.

Brodie, I. (2013) *An Atlas and Guide to the Dragonflies and Damselflies of the Arnside & Silverdale AONB*. Published by the Bittern Community Interest Company.

<https://www.arnsidesilverdaleaonb.org.uk/uploads/2016/04/dragonflyatlas.pdf>. The AONB straddles the Cumbria/Lancashire border. The author has been a recorder of dragonflies for many years and his records are in the CBDC database.

Carlisle Natural History Society's journal *Carlisle Naturalist* (1993-2012). ISSN: 1362-6728 and its successor *Lakeland Naturalist* (2013 onwards), ISSN: 2052-0654, carry occasional notes and articles on dragonflies in Cumbria, especially regarding newly recorded species, and events such as migrations and dispersals. Contents of all but the most recent issues can be searched via its website:

www.carlislenats.org.uk

Clarke, D. (1996) Dragonflies in Cumbria. In *Transactions of the Carlisle Natural History Society* ['Cumbrian Wildlife in the Twentieth Century'], 12:27-38. ISBN: 0-9525252-0-8. Reviews current and past status of all species and contains extensive references to earlier literature

Some national publications

Brooks, S. & Cham, S. (2014) *Field Guide to the Dragonflies & Damselflies of Great Britain and Ireland*. British Wildlife Publishing. 192pp. ISBN: 978 0 95649 028 5. A widely regarded identification guide.

Cham, C., Nelson, B., Parr, A., Prentice, S., Smallshire, D. & Taylor, P. (2014) *Atlas of Dragonflies in Britain and Ireland*. Telford: Field studies Council. 280pp. ISBN: 978 1 906698 49 2. The latest national atlas, containing much additional information about all UK species.

Cham, S. (2012) *Field Guide to the Larvae and Exuviae of British Dragonflies: Damselflies (Zygoptera) and Dragonflies (Anisoptera)*. British Dragonfly Society. ISBN: 9780955647123. An essential for extending the recording season.

Darter: the annual magazine/report of county dragonfly recorders, published by the British Dragonfly Society. Contains reports based on vice-counties (Cumbria consists of VC 69 & 70).

Merritt, R., Moore, N. W. & Eversham, B. C. (1996) *Atlas of the Dragonflies of Britain and Ireland*. London: HMSO. 149pp. ISBN: 0 11 701561 X. The national atlas that preceded the 2014 atlas referred to above.

Smallshire, D. & Swash, A. (2018) *Britain's Dragonflies: A Field Guide to the Damselflies and Dragonflies of Britain and Ireland*. Edition: 4. WILDGuides. ISBN: 978-0691181417. A widely regarded identification guide.

Dragonflies on the web

Dragonflies are extensively represented on the internet.

The British Dragonfly Society's website <https://british-dragonflies.org.uk/> carries a wealth of information about species, recording, latest sightings, publications, news and events.

For dragonflies in Ireland visit <http://www.habitas.org.uk/dragonflyireland/>

The wildlife photography website of Cumbria naturalists John and Linda Reinecke includes an extensive range of high-quality images of UK and European Odonata, a few of which appear in this atlas: www.flickr.com/photos/linjohnpics/collections/

Recording

The British Dragonfly Society encourages the use of the Biological Records Centre's *iRecord* programme, for which BDS has a bespoke recording format to capture breeding data. The BDS website (see above) gives advice on its preferred modes of recording. (For further details of *iRecord* see <https://www.brc.ac.uk/irecord/>).

CBDC has a downloadable spreadsheet for bulk records, which is designed for all taxa - see <http://www.cbdc.org.uk/recording-wildlife/share-your-records/>. It also has an online form for small numbers of records. (CBDC now downloads records from *iRecord* as one of its regular data sources).

