North Wales Dragonfly Newsletter No. 60. 8th March 2012.

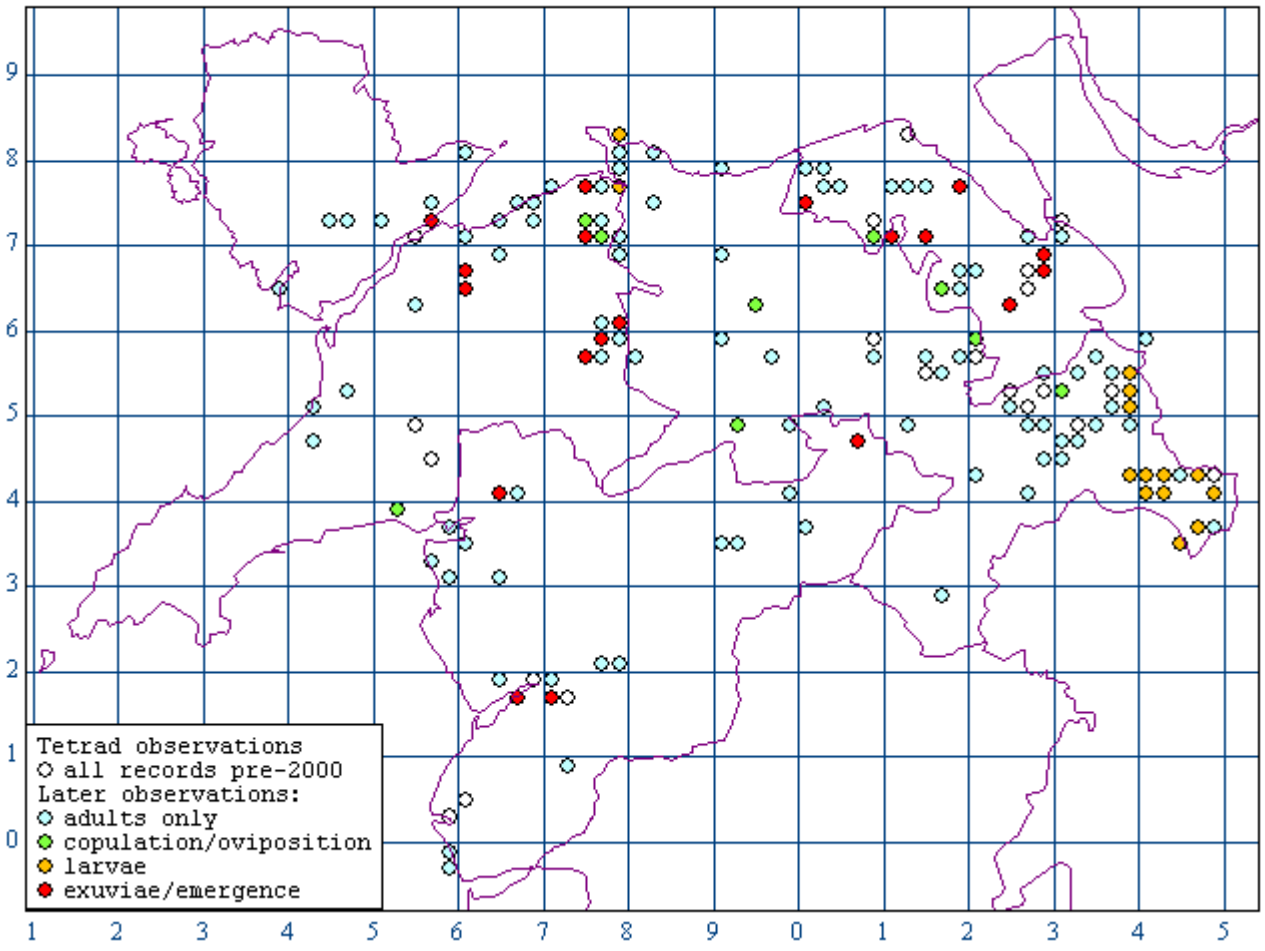
Hi all,

I've been playing around with the DMAP software, kindly supplied for me by **Cofnod**, which produces publication quality multiple species coincidence maps and single species breeding maps. I'm indebted to **Mike Weideli** of Littlefield Consultancy for patiently coming up with ways, not at all obvious to me, to export data from Recorder 6 to show breeding criteria in a range of different colours and to discriminate pre-2000 records from later records. Here are a few selected results to show that your records are being put to some use. I hope also that they will encourage you to send in even more records before the end of 2012 to beat the deadline for the new British atlas.

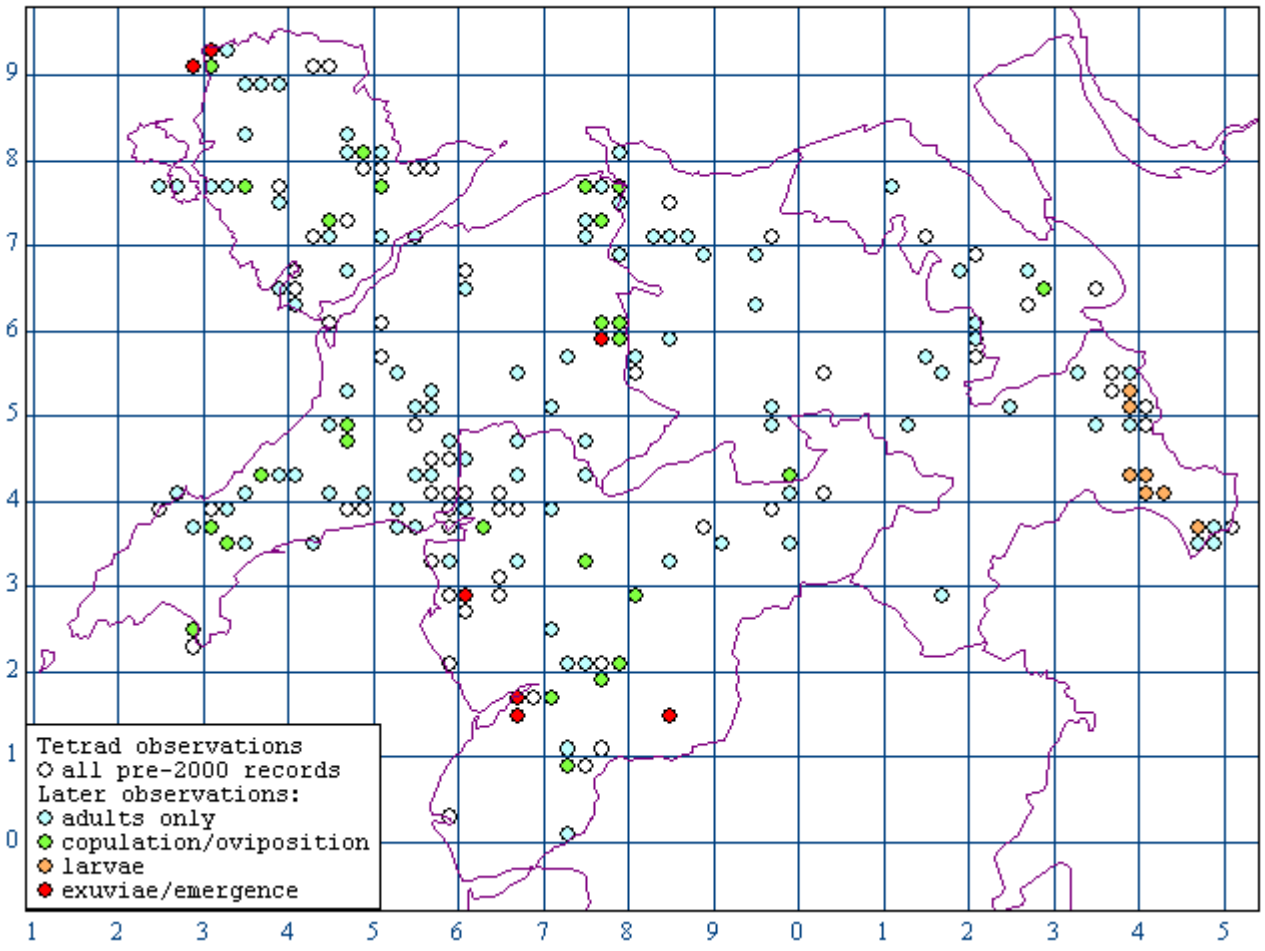
Selected single species breeding maps

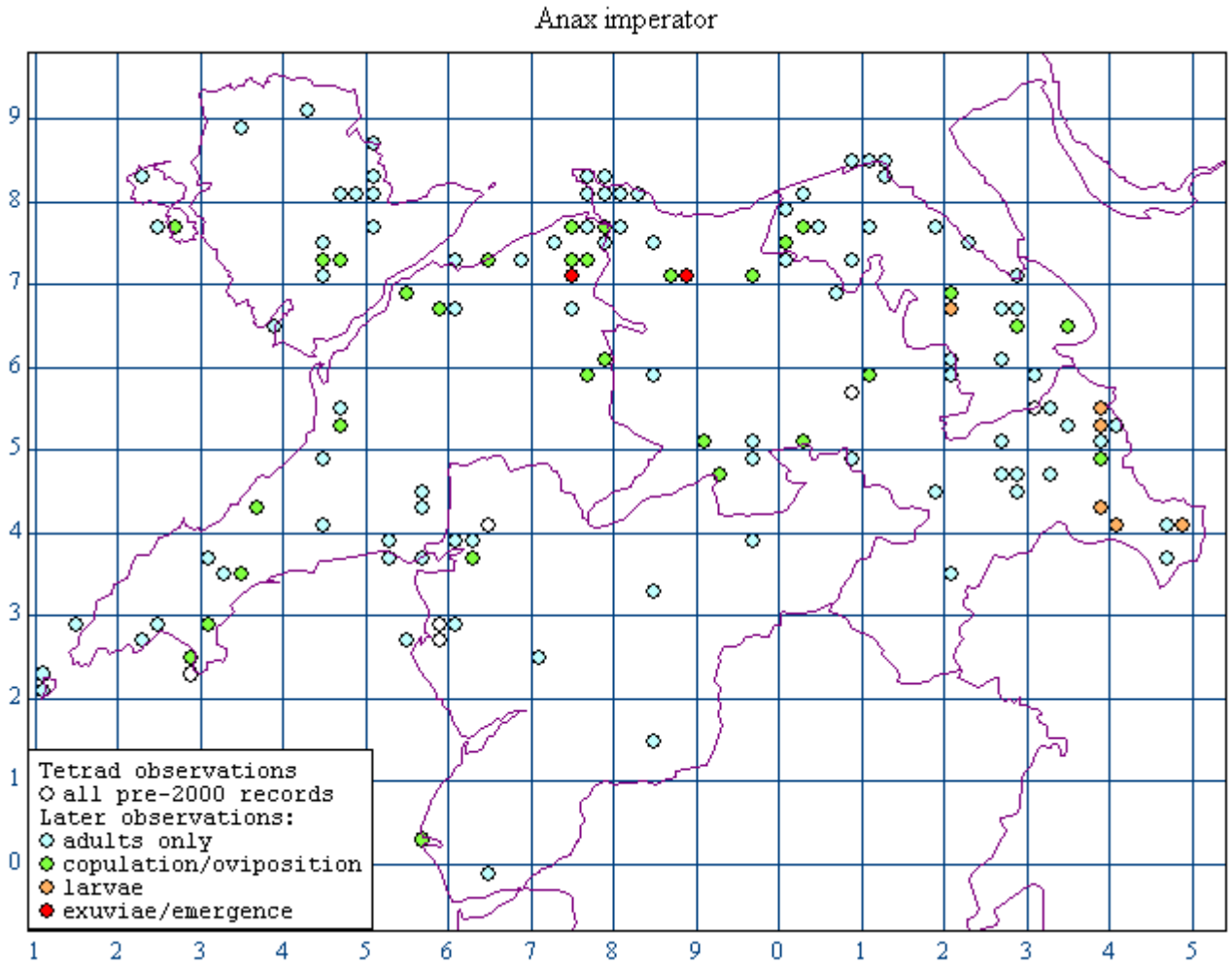
These maps allow discrimination between the various Odonata breeding criteria and also between pre-2000 and later records. Open circles indicate pre-2000 records only whereas filled-in circles refer to later records that might also include pre-2000 records. The colours denote breeding catogories arranged in a low to high priority order: blue denotes adult records only; green denotes attempted breeding (copulation and oviposition); orange denotes larval records; red circles indicate records with proof of successful breeding (final instar exuviae and/or emergence). Circles are at tetrad resolution.

Aeshna cyanea



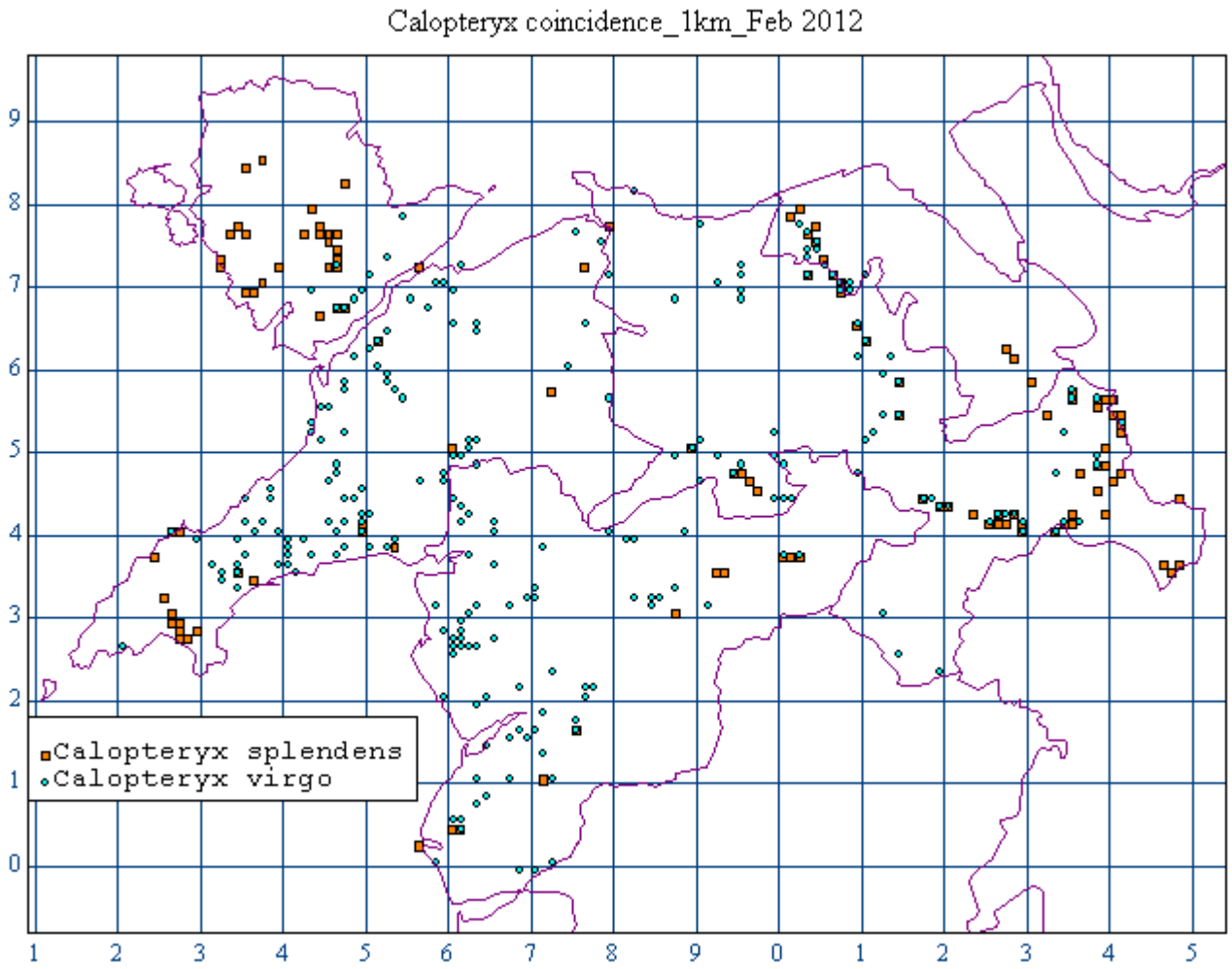
Lestes sponsa



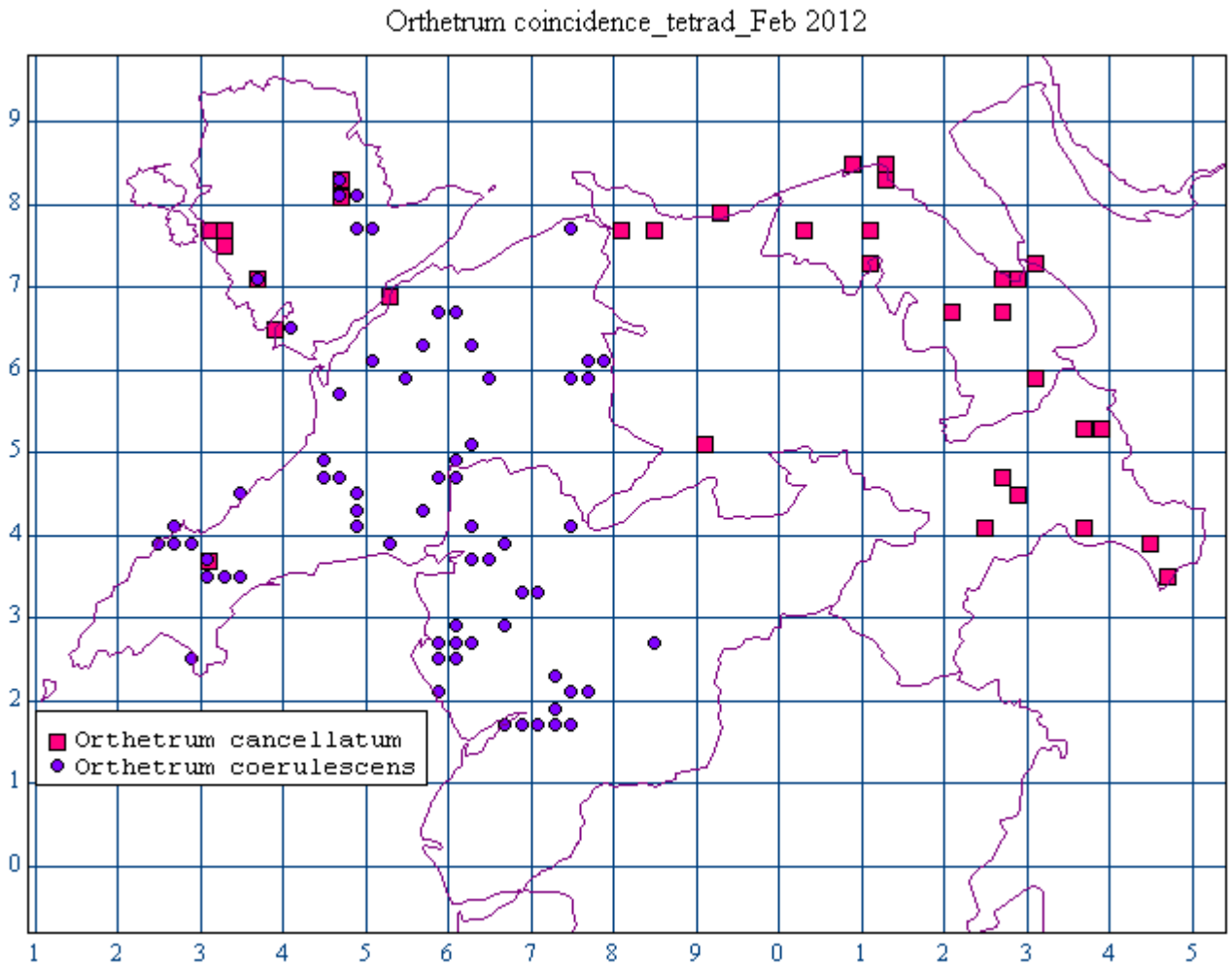


Multiple species maps

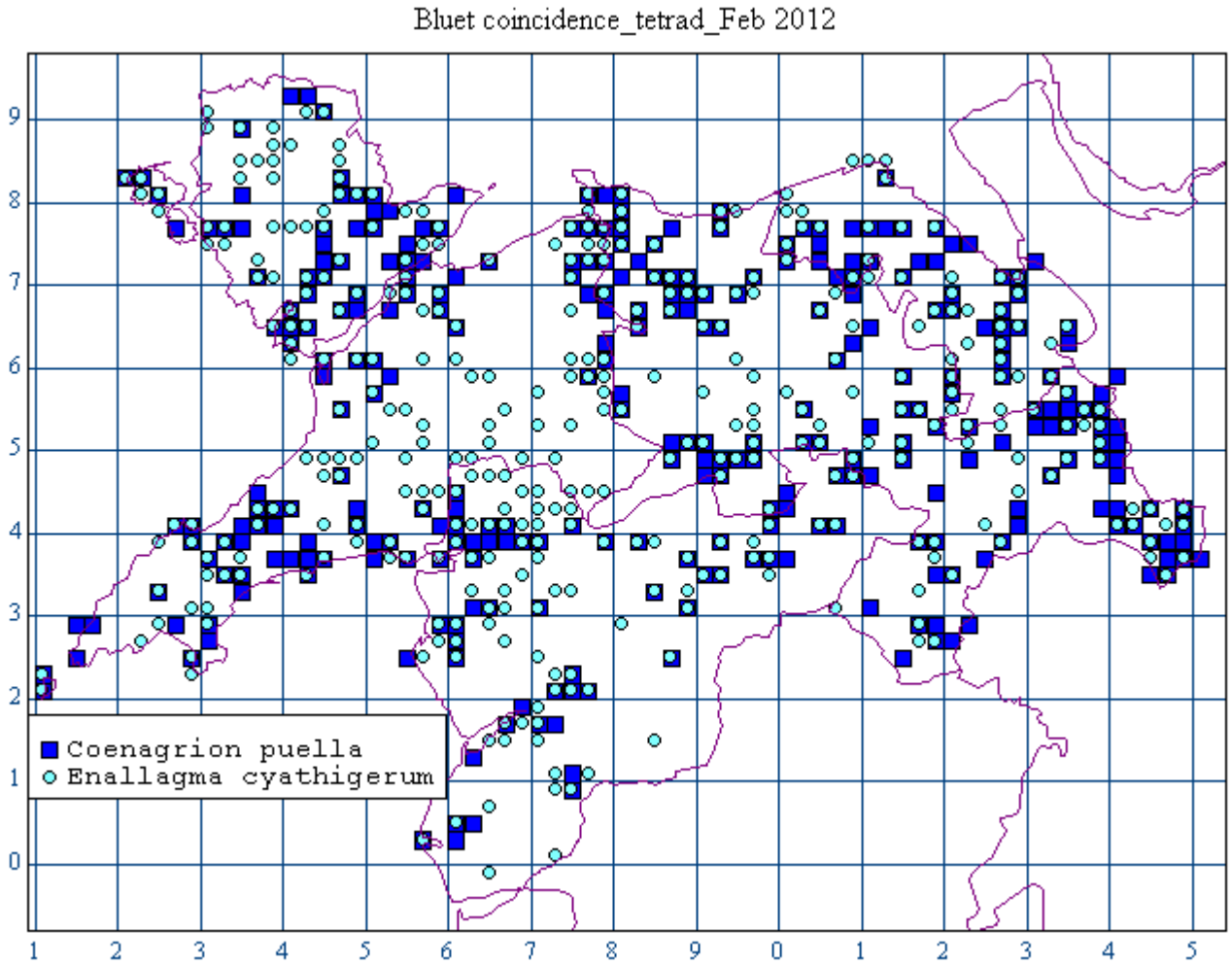
Unfortunately, unlike the single species breeding maps these maps do not currently allow for pre-2000 records to be distinguished from later records, nor do they allow for the various breeding stages – copulation, oviposition, larvae, exuviae, emergence – to be shown. In other words, these multispecies plots show records for all breeding categories covering all years.



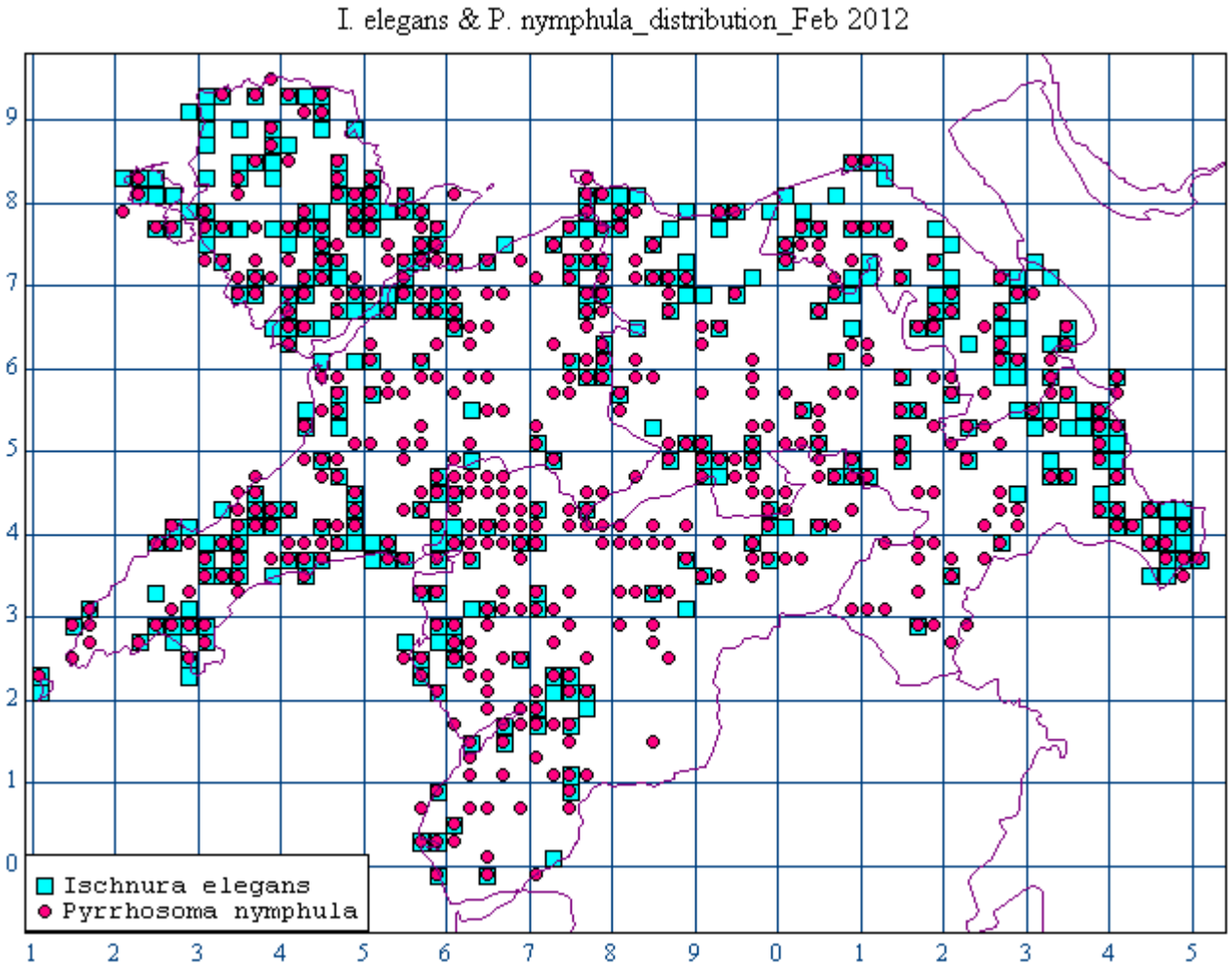
This 1 km resolution map shows the distribution of our two species of demoiselle, *Calopteryx splendens* (Banded Demoiselle) and *C. virgo* (Beautiful Demoiselle). They both breed in streams and rivers, the former preferring more slowly flowing water with muddy substrates and the latter faster, higher energy streams with sandy to granular substrates. Generally speaking, this translates into low-lying and hilly to mountainous terrains respectively. The map reflects this and shows that there are relatively few one km squares where both species are found together. It is clear that *C. virgo* is almost exclusively the species of western Snowdonian streams but that it also maintains its predominance along the streams and rivers of the eastern Lleyn. At the western end of the peninsular, however, *C. splendens* is predominant. In Anglesey, *C. virgo* is generally only found in the south-east along the Afon Briant system; elsewhere across the lowlands of Anglesey *C. splendens* is virtually exclusively present. For whatever reason, *C. virgo* is less abundant but still predominant in eastern Snowdonia. In the well recorded Conwy valley area neither species is common and the few records are typically for single adult occurrences. Across western Denbighshire demoiselles are generally confined to the large rivers. The Afon Elwy has a low population of only *C. virgo* and the Afon Ceirw/Merddwr system in the south maintains a mixed population. The Afon Clwyd system has a mixed population downstream but *C. virgo* tends to dominate upstream. To the south-east, the River Dee has a mixed population of the two species with *C. splendens* becoming predominant in the more gently flowing downriver stretches and also along its Afon Alun tributary.



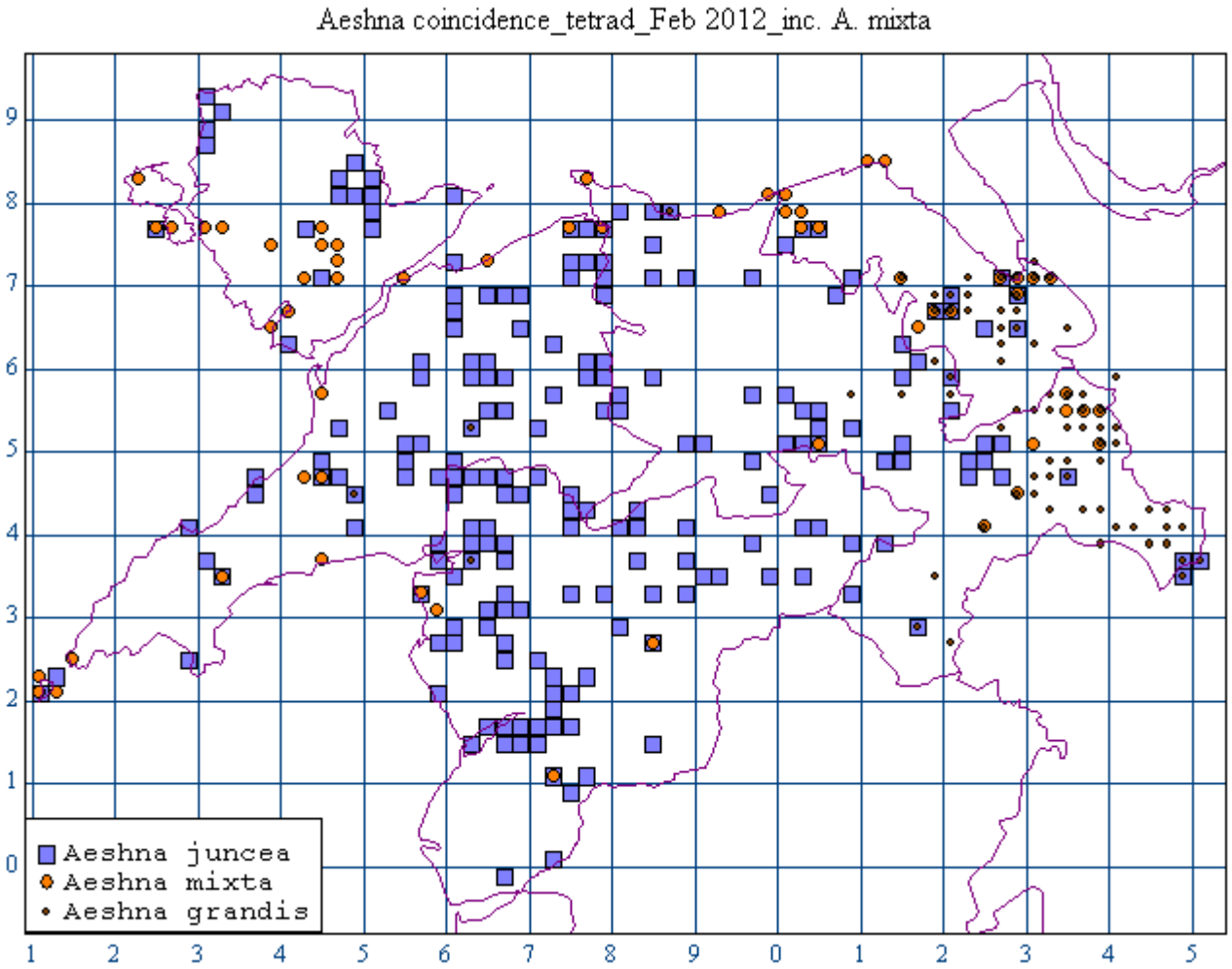
This tetrad resolution map shows the almost mutually exclusive occurrences of our two *Orthetrum* species, *O. coerulescens* (Keeled Skimmer) and *O. cancellatum* (Black-tailed Skimmer). The former is a long established resident of the swampy *Sphagnum* pools, ditches and streams in the western part of North Wales. In contrast *O. cancellatum*, more at home in lowland lakes with some bare margins, entered the north-east of our region as recently as 2000 as part of a supposed climate change-induced range expansion. Over the next few years it continued its westwards range expansion although there are still few records from Anglesey and western Caernarvonshire. Its most westerly proved breeding locality is at Abergele. The two species are only known to have occurred in the same one km squares at Cors Erddreiniog NNR and Malltraeth Marsh NNR (only a pre-2000 record for *O. coerulescens*) in Anglesey and Cors Geirch NNR along the Lleyn.



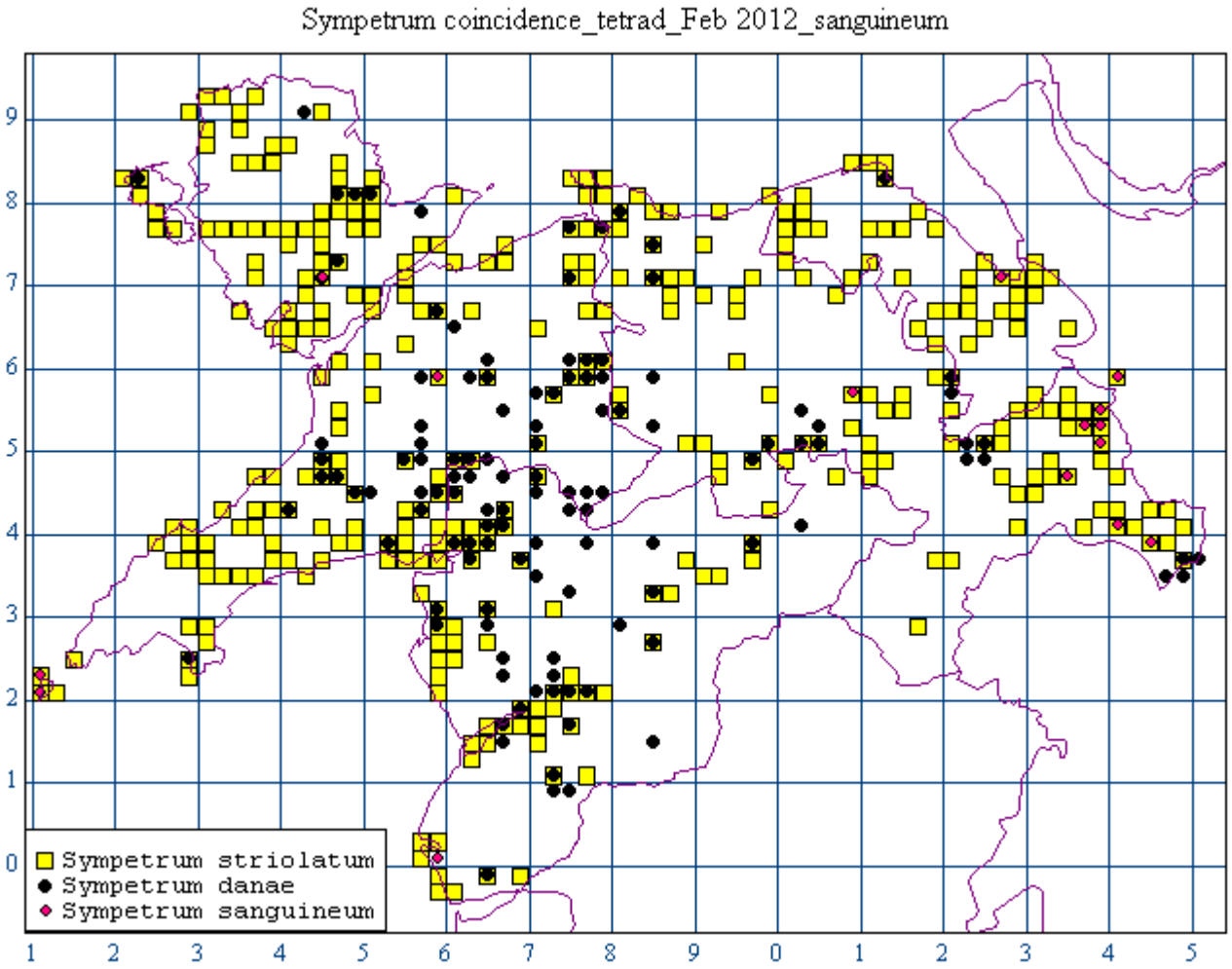
This tetrad map shows that our two most common blue pond damsels, *Coenagrion puella* (Azure Bluet, one of several European bluets), and *Enallagma cyathigerum* (Common Bluet, our only American bluet) are widely distributed across North Wales with a fair amount of coincidence. However, unlike *E. cyathigerum*, *C. puella* is generally not present in the heart of Snowdonia and when it does occur there it is confined to the lower lying areas along the major valleys. This situation is repeated to a lesser extent across the Denbigh Moors. These distributions fit in with the preferred habitats of both species. *C. puella* prefers sheltered ponds with plenty of emergent vegetation whereas *E. cyathigerum*, though less fussy, favours more open-water ponds, lakes and reservoirs. One interesting area is central northern Anglesey where *C. puella* appears to be absent even though the area is low lying.



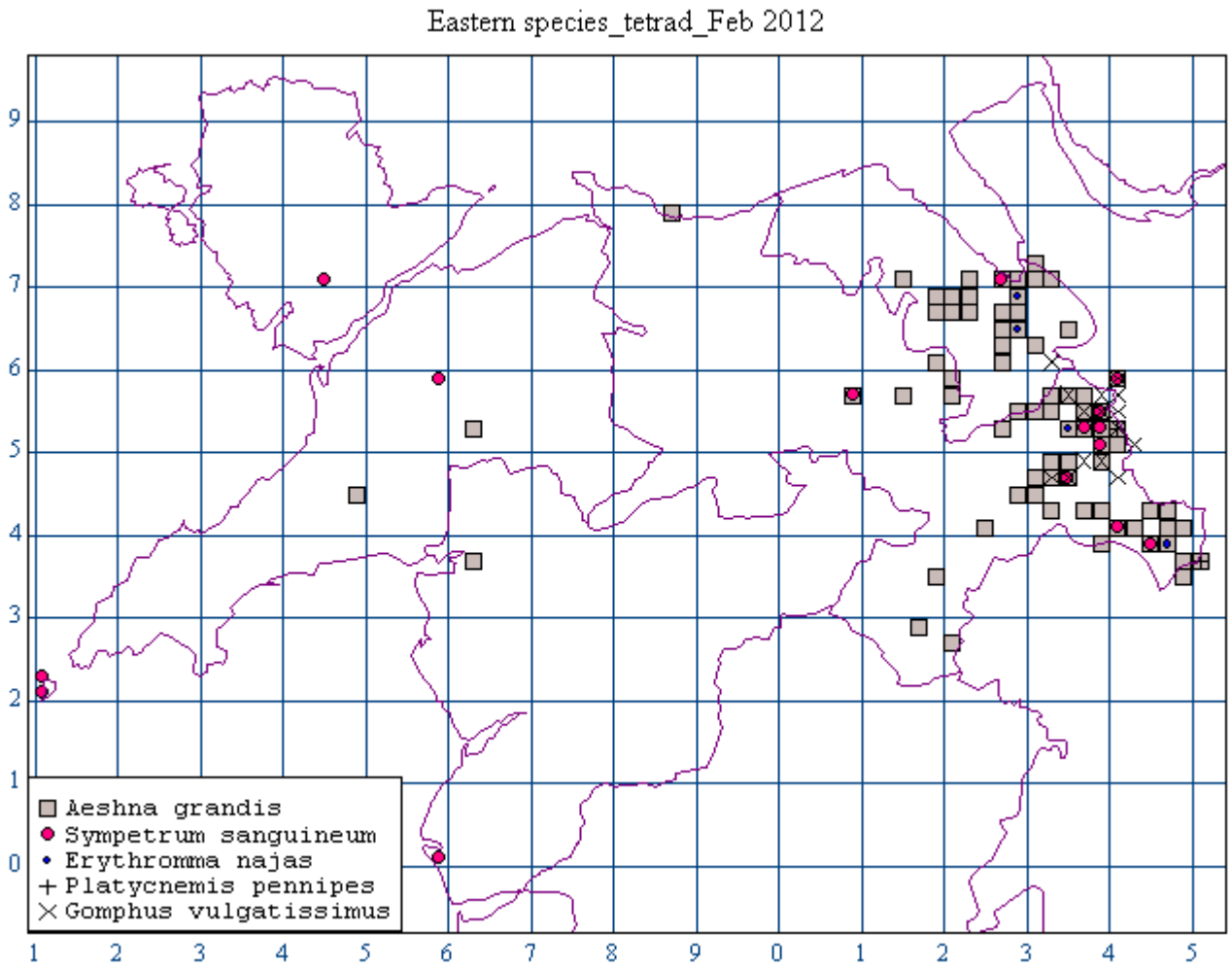
This map shows a similar distribution relationship of our other two common damsel species, *Ischnura elegans* (Common Bluetail) and *Pyrrhosoma nymphula* (Large Red Damsel). In this case *I. elegans* is confined to still or slowly flowing waters of the lowlands where it will tolerate brackish conditions near the coast. *P. nymphula* is ubiquitous and is quite at home in coastal conditions as well as the mountain tarns and bog streams.



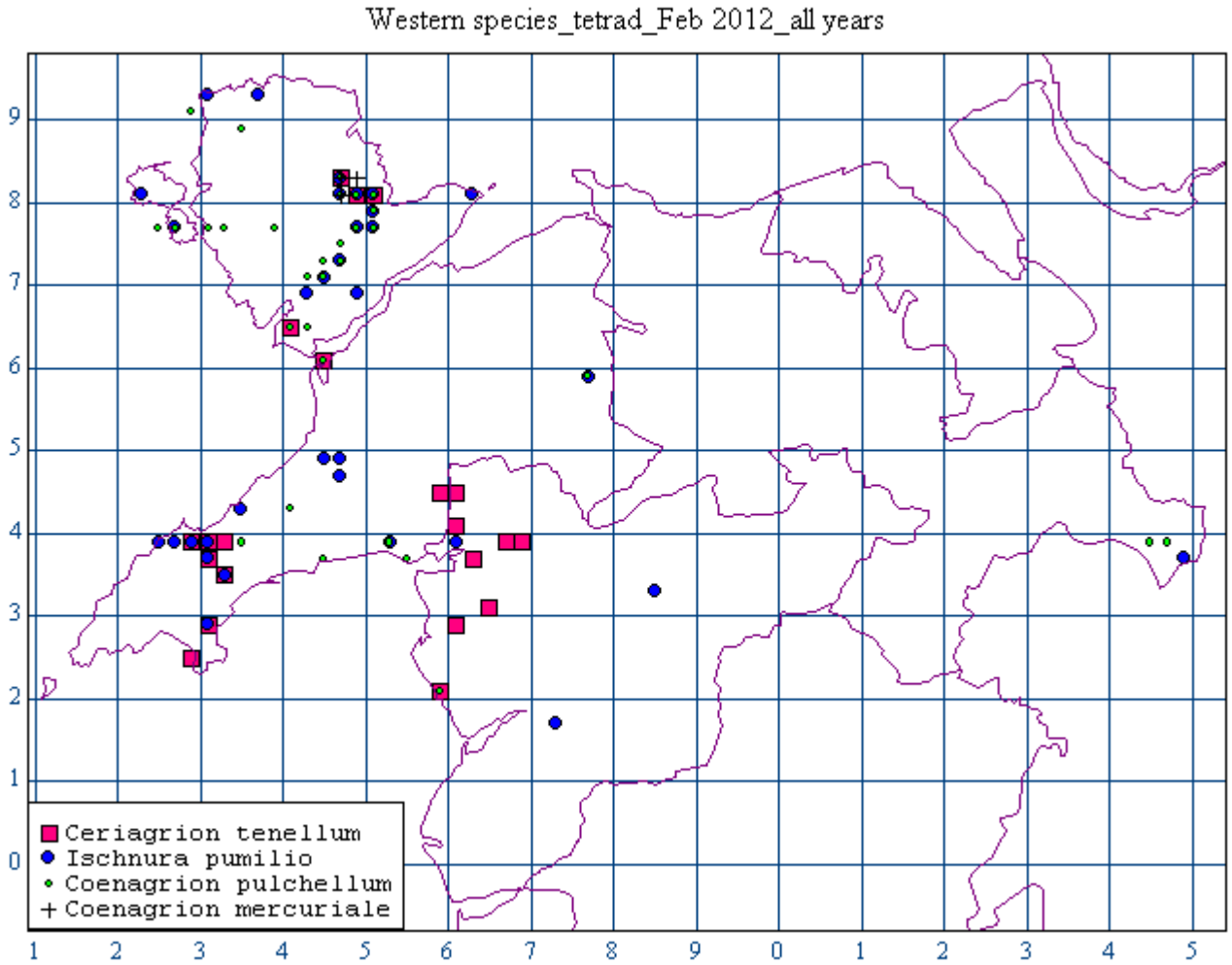
This tetrad map shows just three of our five common hawkers. *Aeshna juncea* (Moorland or Common Hawker) is a common and long established resident species that breeds in a variety of neutral to acidic still waters and is very at home in our moorland bog pools and large lakes and reservoirs. Conversely, *A. mixta* (Migrant Hawker) only arrived in North Wales in the late 1990s as a consequence of range expansion. It is now widely established as a common breeding species especially around the low-lying fringes of the region where its numbers may be enhanced in favourable years by fresh migrants. It breeds in ponds and lakes but it avoids our upland acidic ponds which is why there are precious few records from the interior of North Wales. Around our coasts it can tolerate brackish water. *A. grandis* (Brown Hawker) is confined to the east of North Wales where it is common. There appears to be no clear reason for this geographical restriction as it breeds in a variety of lowland ponds, ditches and lakes such as can be found around the coastal lowlands farther west. The few records that have come in from the west of the region have not been confirmed and those that have been accompanied by photographs have proved to be female *Aeshna juncea*. If you see a possible *A. grandis* outside its normal range please take a photograph and send it in.



This tetrad resolution map shows that our most common darter dragonfly, *Sympetrum striolatum* (Common Hawker), is widespread but not ubiquitous across North Wales. It breeds in a wide range of still water habitats and can even tolerate brackish conditions. A glance at the map shows, however, that it generally avoids the upland areas of Snowdonia and the Denbigh Moors where *S. danae* (Black Darter) is at home in the acidic *Sphagnum* bog pools. The latter species also occurs in similar habitats in the lowlands such as Fenns Moss and on Anglesey. The third species, *S. sanguineum* (Ruddy Darter), is currently confined to the extreme east of the region where it breeds in well-vegetated lowland ponds with cattle access. The scant records from more westerly locations probably relate to a migration in the 1997-9 period when it even bred on Bardsey Island. Why the species is now confined to eastern Denbighshire and Flintshire is a mystery as there are plenty of well-recorded locations with the right habitat around the coastal lowlands.



This tetrad map shows the species that would seem to be currently confined to eastern Denbighshire and eastern Flintshire. The symbols farther west generally refer to pre-2000 records. *Platycnemis pennipes* (Blue Featherleg or White-legged Damsel) has only recently entered the River Dee system and it is hoped that it will be found farther west in due course. *Gomphus vulgatissimus* (Common Clubtail) is confined to the more sluggishly flowing parts of the River Dee system and drainage farther west is probably to fast flowing. As previously mentioned, the reason why the three remaining species are so restricted in extent is not known as they are long established species here.



The species which are confined to the most western parts of North Wales are shown in this map, though two of the species also occur at Fenns Moss. The reasons for this distribution may vary according to species but probably include factors such as favourable warm climate in the low-lying coastal fringe due to the Gulf Stream (note that *C. tenellum, C. mercuriale* and *I. pumilio* are southern species at their most northern part of their ranges), frequency of large, well-managed fenland NNR and SSSI nature reserves, relative lack of agricultural disturbance, sprays and pollution, and probably not least, the geology which provides, amongst other things, base-rich waters and spring-line flushes.

Allan

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