

PhD Project

The Irish Damselfly: Identifying population genetic structure and optimizing habitat management for an iconic Irish species



Background

The Irish Damselfly or Crescent Bluet (*Coenagrion lunulatum*) is a rare but widespread coenagrionid damselfly that is found in scattered populations from Ireland to the far east of Russia and Japan (Figure 1). *C. lunulatum* is IUCN listed as 'Vulnerable' in Ireland and is thought to be in decline both in Ireland and across other parts of its range, with eutrophication, habitat loss and climate change thought to be the most significant threats.

As part of an ongoing PhD project that aims to contribute towards the effective management of the species, we would like to determine the phylogeographic relationship of Irish *C. lunulatum* to other populations across Europe. The Crescent Bluet was first recorded in Ireland during the 1980's and is strangely absent from Britain, hence the local name of the Irish Damselfly. In addition, almost no genetic work has been conducted on the species. We therefore hope to use a phylogenetic approach to estimate the relatedness of populations across the species range, estimate divergence times, and possibly infer a colonization route for the species in Ireland.

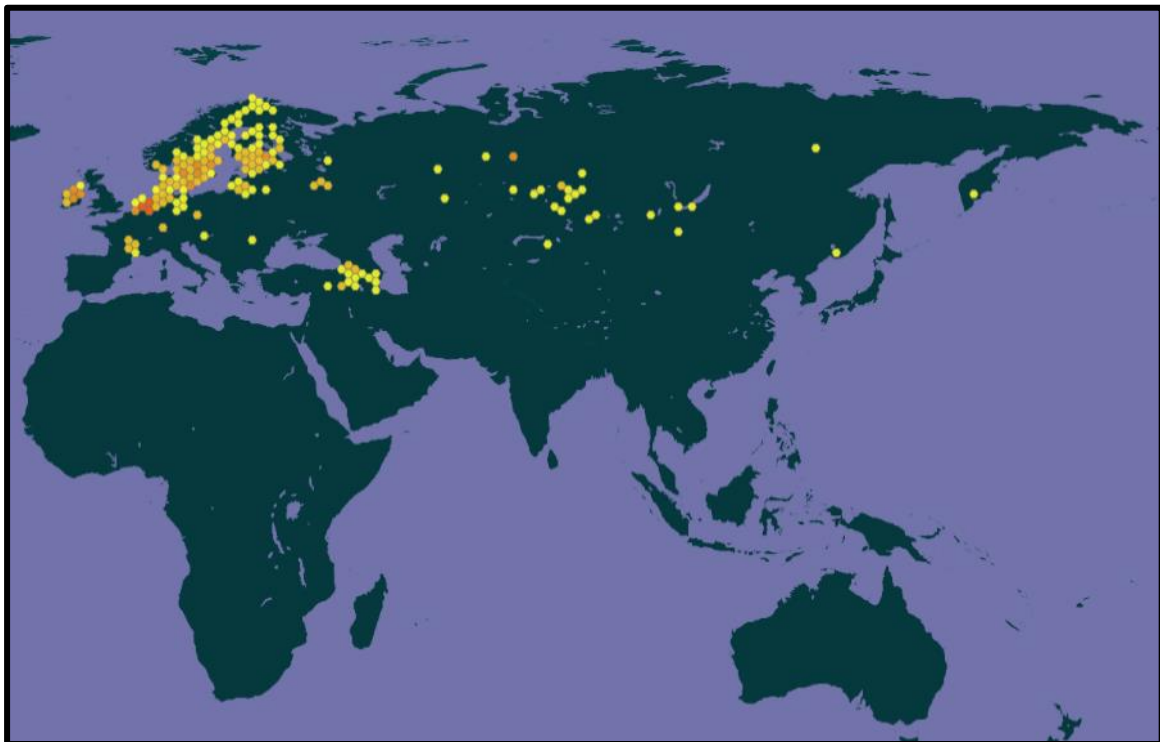


Figure 1. The distribution of the Crescent Bluet (*Coenagrion lunulatum*) (Source: gbif <https://www.gbif.org/species/1422025>)

Request for samples

For the phylogeographic study we will need tissue samples of *C. lunulatum* collected from countries across the species range. As listed by the IUCN, this includes:

Armenia, Austria, Azerbaijan, Belarus, Belgium, China, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Ireland, Kazakhstan, Latvia, Lithuania, Mongolia, Netherlands, Norway, Poland, Russia, Sweden, Turkey and Ukraine

We would ideally like at least 30 samples per country, collected across a wide geographical spread, with around 10 individuals from each location. We would also like to collect samples from the edge and center of the species' range where possible. As *Coenagrion lunulatum* is protected or occurs in low numbers across much of its range we are requesting:

- Whole specimens
- Leg samples (one middle leg preserved in ethanol)
- Exuviae
- Previously collected specimens

This PhD project will run from October 2021 – March 2025, based at Queen's University Belfast. If you would like to find out more, are able to contribute samples or are willing to collect samples in the field, please contact Claire McFarlane (PhD student):

Email: cmcfarlane05@qub.ac.uk

Primary Supervisor: Dr Sarah Helyar (s.helyar@qub.ac.uk)

With *Coenagrion lunulatum* occurring across such a wide range, and the summer field season so short, the success of this phylogenetic study will rely on additional contributions to collect samples. Any help would therefore be hugely appreciated. Thank you in advance.