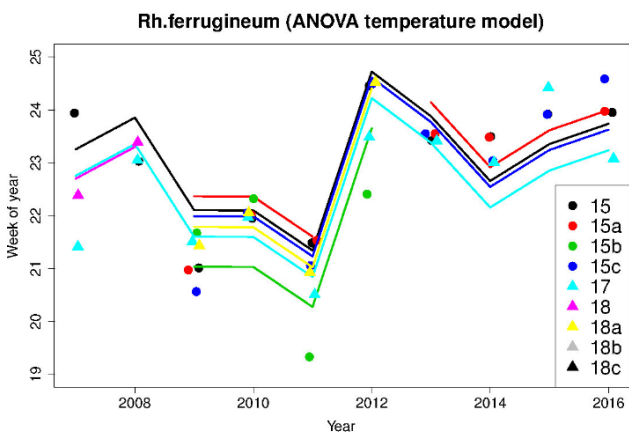
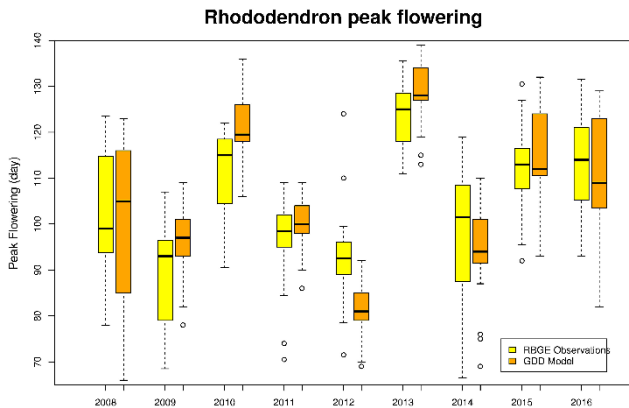
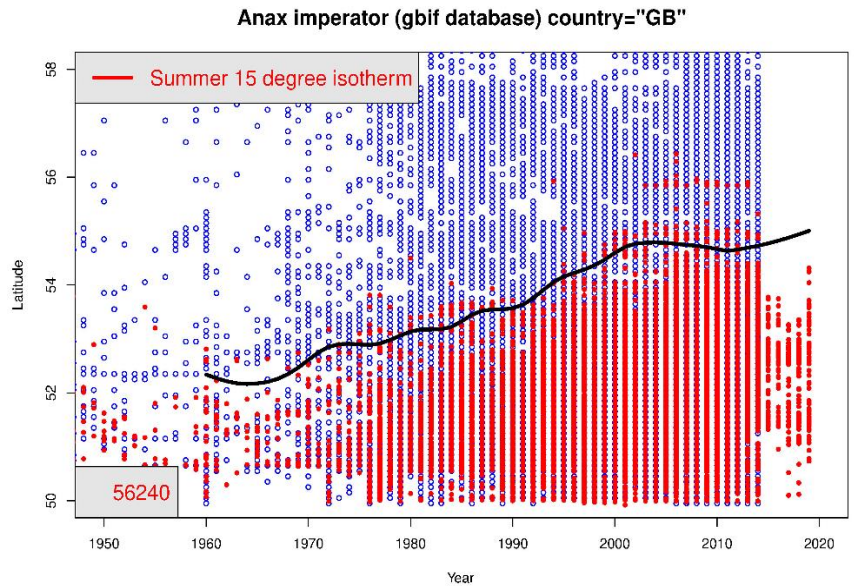


Citizen Science Stroll: Findings

The British Dragonfly Monitoring Scheme is an excellent example of a particularly well-run and productive citizen-science project. Insects, such as dragon, damsel and butterflies are found to be exhibiting clear changes in range. For example, in Scotland, the leading (northern) edges of the ranges of several dragonflies – *Aeshna mixta*, *Anax imperator* (Red dots in Fig 1), *Orthetrum cancellatum* - have moved 300km poleward as they track rising summer temperatures (the 15° isotherm).



Rhododendrons, in general, naturally occur in regions of high rainfall and humidity, with a temperate climate and acidic soils. As a result, a lot of species from around the world grow well in Scotland. Globally, many Rhodo. taxa (~ ¼) are under threat of extinction in the wild.

However, phenological observations in Edinburgh (2008 to present) reveal that several temperate Rhodo. species are capable of adapting to climate change. First, their flowering dates (all three stages – 1st flowering date, peak date (Fig 2) and last date), along with budding and leafing times, are found to exhibit high plasticity, e.g. *R. ferrugineum* (Fig 2), i.e. show a close association between interannual springtime temperatures (Orange bars in Fig 2) and flowering dates (Yellow bars in Fig 2).

Second, they possess strong within-species phenotypic variance (10-days in Fig 3) - a useful trait for responding to environmental changes. Thirdly they hybridize. Fourthly they propagate easily (vegetatively, and through vast numbers of small seeds, *cf. ponticum*, and indeed can become invasive).

Threatened Plants of Central and South Chile: the temperate rainforests of Chile and Argentina are a unique ecosystem. They include many red-listed species (e.g. *Fitzroya*). Monitoring of phenology (by satellite and ground-truth) is a key tool in quantifying the impact of climate variability on the vegetation, as central Chile (a climate hot-spot) becomes hotter and drier, and more at risk to wildfires.