O40

Enhanced attractiveness in the invasive *Impatiens glandulifera?*

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Impatiens glandulifera, also known as Himalayan balsam, is known for its prolific spread across Europe and Northern America. *I. glandulifera* is listed among the "100 of the Worst" list of invasive species by DAISIE (www.europe-aliens.org). *I. glandulifera* out-competes and replaces native flora, significantly reducing biodiversity. *I. glandulifera* is known to preferentially attract pollinators away from native flora, incurring a reduction in both the seed set and fitness of nearby flora, enabling *I. glandulifera* to conquer the invaded environment (Chittka & Schürkens, 2001). The nectar of *I. glandulifera* is rich in sugars (~50% sugar) and is produced in large volumes, facilitating the attraction of pollinators. Along the River Barrow in Carlow there is a population of *I. glandulifera* which is dominated by a typically rarer white morph. White morphs have been observed to persist in populations in larger numbers where there is an ecological advantage (Dormant *et al.,* 2010). The nectar of the white morph and the wildtype are juxtaposed to investigate if this observed phenotypical change has affected the attractiveness or fecundity of the species, and consequently, its invasive status. The quantity of nectar produced and the nutritional composition of the nectar (sugar and amino acid composition) are compared to determine if the morphs differ in their attractiveness to pollinators.

Chittka I., & Schürkens S. (2001) Successful invasion of a floral market. Nature. 411: 653.

Dormont, L., Delle-Vedove R, Bessière J.-M., Hossaert-Mc Key M. & Schatz B. (2010). Rare white-flowered morphs increase the reproductive success of common purple morphs in a food-deceptive orchid. New Phytologist. 185:300-310.

O41

Reconstructing the spread of a global invader: a genetic study of red swamp crayfish, *Procambarus clarkii*

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Biological invasions are one of the biggest threats to global biodiversity. Understanding how introduced species succeed and become widely distributed within non-native areas is critical to reduce the threats posed by them. Propagule pressure (i.e. the size and number of introduction events) is thought to be one of the key elements driving invasion dynamics. Over the last 100 years, freshwater ecosystems have been widely invaded by the North American red swamp crayfish, *Procambarus clarkii*. In order to confirm the "official" history of the red swamp crayfish invasion process throughout globe, we aim to (1) determine whether there had been unrecorded introductions and (2) establish the genetic structure of native/invaded populations and (3) analyze the invasion dynamics. To do this, 1416 crayfish from 22 native and 100 invaded sites in the Northern Hemisphere were analyzed using mitochondrial gene sequences (COI) and 864 of them were analysed with 14 polymorphic microsatellites loci. A total of 65 haplotypes were found, 15 of which were shared between at least two populations. As expected, our results showed that the native area has the highest haplotype diversity (Hd: 0.902). However, diverse hotspots in some invaded areas, such as United States (Hd: 0.804) or South-western Spain (Hd: 0.663 and 0.716) were lower than native area, indicating possible bottlenecks due to the propagule pressure. Our results suggest a large and/or diverse population for initial introduction events and a spread involving several subsequent secondary introduction events thereafter with losses of genetic diversity, possibly due to the accumulation of population bottlenecks. However, the finding of new haplotypes also suggests that additional translocations of crayfish other than those initially introduced may have happened. Such additional introductions have so far not been well documented in the literature.

O42

Extrafloral néctar in phyllodes from invasive Acacia longifolia: why, how, when

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Plants respond to the environment and to interactions with other biotic life around them thanks to a number of different kind of strategies. Nectar is one of them: at the base of mutualisms enhancing plant reproduction (flower nectar for pollinators) or defence (extrafloral nectar for ants), it is also thought to be an overproduction of the plant ('leaky phloem' hypothesis and/or 'sugar excretion' hypothesis). However, it has not yet been addressed from the point of view of invasive species. *Acacia* is a genus that resulted especially aggressive out of its homerange, able to establish interactions with native generalist pollinators thanks to the abundance of its resources. Most acacia species produce extrafloral nectar, mainly thought to be related to plant defence. In few species (e.g. *A. pycnantha* and *A. longifolia*) it has been thought to be related to pollination. Yet its presentation may be puzzling: on which phyllodes? To what extent? What about the secretory structure? At what time of the year? We will present data on acacia phyllodes and nectar morphologies, nectar presentation during pollination on a daily basis, and discuss them in the light of role of nectar in other alien invasive species.