

Links and references to support the 'Biodiversity Entanglements' podcast

by Lucy Bastin, Aston University (<https://www.youtube.com/watch?v=vv9mcEI5Ljg0>)

Callaloo

The word 'callaloo' describes a range of leafy green vegetables, depending where it is being grown and eaten. In West Africa and in Trinidad and Tobago it's often the leaves of the taro plant (elsewhere variously known as dasheen, arbi, patra or madhumbe) or of the closely related cocoyam. Those leaves can be cooked in a host of ways: with thyme and Scotch bonnet pepper, with coconut milk and crab, with spiced besan flour, with okra / bhindi / ki ngombo, with salt pork...

[Brigid Ransome Washington says](#): '*Callaloo, a native West African dish, came to the Caribbean during the triangular slave trade along along the Middle Passage..... It forever connects the region to the reach and realities of slavery, centuries later. Sometimes a stew, sometimes a soup, callaloo is an ode to the masterful and resourceful way that enslaved Africans repurposed indigenous plant life and accessible aromatics into a deeply nourishing staple*'.

The **callaloo growing on Birmingham allotments is often a form of Amaranthus** - a plant genus which has [adapted to a huge range of climates, either as a food crop or an agricultural weed](#) - and sometimes both! The '[Sowing New Seeds](#)' project documented the variety and cultural context of crops grown on a sample of Midlands allotments. The researchers identified 21 different types of amaranth originating from Jamaica, China, Guyana, India, Vietnam, Nigeria and Bangladesh, and collated [a range of other information about the crops, the ways they are used and the people growing them](#).

Amaranths are not just grown only for their leaves, but often for their tiny seeds which can be eaten as a cereal or a flour. There are a multitude of **names for edible amaranths**: laf sag, ramdana, orache, love-lies-bleeding, chaulai, agrio, bleado, thotakura, morug, kalunay, bacon weed, lalshank, frost-blite, lambs' quarters, litoto, pappukura, lunak, yin-tsai, mutton tops, vlita, kulitis, cheera, pigweed, huauzontle, data, dugi, tangerio, fat hen, rajgira, bathua, chandan betu, quinoa, mborochet, goosefoot, dantu soppu, kiwicha, quintoniles, quelite cenizo, huāuhtli, rau dền, sokoyokoto, mulaikkira, queue-de-rénard, chepkerta, shravani math, pipazzu.... Recently there is a renewed interest in the potential of amaranth to support food security in adverse conditions, and in the [feasibility of harvesting both leaves and seeds from the same crop](#).

Callaloo as a dish is a powerful metaphor for home, and for distance from home, and as such it gives its name to a [long-established journal for writers and artists of the African diaspora](#). In that journal, in 2007, [Marlon B Ross wrote](#): '*It is easier to know where we are born than to know where we come from. What does it mean that the word callaloo is not in my unabridged dictionary of the English language? That Caribbean-English is not English enough? That callaloo is not English? How could this be, given the countless English explorers, conquerors, sailors, soldiers, slavers, colonists, missionaries, planters, miscegenators, subjects, citizens, exiles, expatriates, slummers, paradise-seekers, and tourists of the Caribbean who have relished the spice of callaloo on their tongues.*'

Common cow-wheat (*Melampyrum pratense*).

The Heath Fritillary (*Melitaea athalia*) is an endangered butterfly dependent on common cow-wheat as a larval foodplant, and is present in just a few small areas of Southern England. Its [population decline may have been slowed by careful habitat management](#) to encourage its host plant. A [new population of heath fritillary has just been identified at Victory Wood in Kent](#), following careful restoration to connect the woodland with other ancient woodlands nearby, and to encourage the growth of common cow-wheat.

Should we just accept extinctions and species decline? Should we only care about a plant species because it supports an endangered butterfly, or is it important in its own right?

Sarah Dalrymple, (@SarahEDalrymple) a conservation ecologist from Liverpool John Moore's University, points out that [Melampyrum pratense also acts as a host for several UK species of rust fungi, including an endangered species](#)

(*Puccinia nemoralis*) only known to be present in Wales. She makes a powerful argument for the species' importance in ecological assemblages:

'... the genus Melampyrum delivers a distinctive set of ecosystem processes that have been shown to have positive impacts upon their surrounding communities... their complex and unique ecology allows important interactions to take place. ... They engineer their ecosystems to the detriment of competitive dominants, and the benefit of community diversity, and play host to specialist invertebrates and fungi that in some cases, are themselves threatened.'

Common cow-wheat uses structures called haustoria to take nutrients from the roots of its hosts. The water and nutrients it obtains in this way allow it to put on a growth spurt that significantly improves its survival chances in a competitive environment ([Smith, 1963](#)). This paper has [some lovely illustrations of haustoria](#) from two related plant species that use the same strategy: And here's a paper which describes [how a healthy fungal network on those trees' roots improves the health of the common cow-wheat](#), as well as that of the trees. Some plants (including common cow-wheat) [persuade ants to disperse their seeds by attaching an attractive oily structure to the seed](#). This kind of mutualism is known as **myrmecochory**.

What other interactions and entanglements might this plant have, which we don't yet know about?

How did we show that the common cow-wheat at Sutton Park was limited in its spatial dispersal? By artificially sowing seed into suitable-looking habitat at varying distances from existing populations, and monitoring the replacement ratio (similar to the COVID r-rate!) of those new mini-populations over several years. Successful colonisation and population increase was more likely beyond 17.5 metres, implying that these patches of habitat could support populations, at least for a few years, but were physically unreachable for the plant despite their relative proximity. We observed a seedbank that persisted for up to three years but rarely longer, and a maximum natural dispersal distance of 112 cm over two years ([Bastin & Thomas, 2001](#)). This is congruent with the findings of [Průšová et al \(2013\)](#) who state '...we can expect that the large nutritious seeds will be target of predation, and the seed bank, if not amended with new seeds, will undergo rather fast exponential decline', and with the work of [Heinken, \(2004\)](#), who records an annual mean dispersal distance of 91 cm.

Citizen science and bioblitzes

The latest [Bioblitz event at Sutton Park](#) was held on the 18th September, with volunteers finding and identifying reptiles, insects, bats and other organisms across the park's rich woods, ponds, streams and heathland.

The previous Bioblitz in June 2021 identified five species recorded for the first time at the Park. Some of these discoveries come from looking harder, but in some cases they indicate species, such as rhinoceros beetle and lesser stag beetle, which are gaining ground due to careful management of the woods and heathland habitats.

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