British & Irish Botany 8(2): 196-214, 2026

The early introductions of *Cotula coronopifolia* (Buttonweed; Asteraceae) in Britain

David M. Wilkinson[1*], Christopher D. Preston[2], Andy J. Green[3]

[1]Natural Sciences, University of Lincoln, UK and Classics and Archaeology, University of Nottingham, UK; [2]Cambridge, UK; [3]Conservation Biology and Global Change, Estación Biológica de Doñana, Spain, and Natural Sciences, Manchester Metropolitan University, UK.

***Corresponding author:** dwilkinson@lincoln.ac.uk

This pdf constitutes the Version of Record published on 28th August 2026.

Abstract
The history of late 19th century and early 20th century introductions of the southern African plant *Cotula coronopifolia* to Britain is described, based on the historic literature and herbarium specimens. This is then compared with the results of a recently published molecular genetic study of the European populations. The earliest record of *C. coronopifolia* in cultivation in Britain is from the Edinburgh Physic Garden in 1683. The first record of it growing in the wild was from London in 1869. The first record in the wild from Scotland was from just north of Edinburgh in 1871, and for Wales was near Llandrindod Wells in 1890. The most important early population was on The Wirral in Cheshire. This was first recorded in 1885 (although anecdotally it had been present for a few years prior to this date). This population flourished and may have given rise to the majority of the plants growing in the wild in Britain today, as most plants whose genetics have been studied belong to the same genetic lineage as the Wirral plants – which are said to have been imported from Scandinavia. *C. coronopifolia* is known to be dispersed by water birds; however it was also actively being spread by botanists around 1900, as many botanists at the time viewed the plant as an interesting addition to the British flora. Early 20th century attempts to spread the plant in North Wales were effectively experiments in the ease with which it colonized new sites, and showed this was often unsuccessful. This study also highlights the importance of herbaria in reconstructing the history of introductions, as herbarium sheets contain important information on early records that have not previously been published.

Keywords: Alien plants; invasive plants; Botanical Exchange Club; herbarium; assisted colonisation; bird dispersal

Introduction
Introduced (alien) species are commonly identified as one of the key global causes of extinction (e.g. Hambler & Canney, 2013), although human introductions have caused few, if any, extinctions of native species in Britain (Wilkinson, 2021). Even for people who think that the negative effects of introduced species have been

exaggerated (e.g. Davis, 2009; Thompson, 2014; Thomas, 2017) it is clear that alien plants are important as they now make a substantial contribution to the flora of Britain and Ireland. Indeed in Britain 'there are very roughly as many species of naturalised or frequently recurrent alien flowering plants as natives' (Stace & Crawley, 2015, p. 1) - so half of the British flora is comprised of introduced species, even if the very numerous infrequent casuals are excluded. Of these alien species Stace & Crawley (2015) estimated that around 5% can be described as 'invasive', defined as 'naturalised plants of semi-natural habitats that attain a substantial portion of the biomass of the invaded plant community', and so potentially problematic in at least some conservation contexts. However, categorising species as invasive can often be a matter of opinion, with different authors not always agreeing, in part because a given species may behave differently in different parts of its introduced range. The subject of this study provides a nice example; Stace & Crawley (2015) did not list *Cotula coronopifolia* (Buttonweed, or Brass Buttons) as invasive in their monumental synthesis of the natural history of alien plants in Britain - however in many parts of continental Europe it is considered invasive, a threat to native vegetation, and is the subject of control measures (Sánchez-Garcia *et al*., 2024; Tomasson, 2020; Wilkinson, 2023). It is also considered invasive in Australia (Mabberley, 2017).

The genus *Cotula* is primarily a southern hemisphere taxon comprising 55 species with a particular diversity in South Africa, and several species have become garden ornamentals (Christenhusz *et al*., 2017; Mabberley, 2017). *C. coronopifolia* L. is a southern African species[1] which was in cultivation in Britain by the late 17th century, and has been known from the wild since 1869, and its British distribution is currently expanding (Stroh *et al*., 2023)[2]. It is a plant of wet, often saline, conditions, and in his *New Flora* Clive Stace (2019) described it as naturalised 'in Cheshire since *c*.1880'. Our study uses archival sources (both publications and herbarium sheets) to establish the early history of introductions of this species to the wild in Britain in the late 19th and early 20th centuries. These results are then compared with the results of a recent molecular genetics study of European *C. coronopifolia* plants. Some philosophers draw a distinction between the philosophy *of* science (science as a subject of philosophical inquiry) and philosophy *in* science – where the aim is to use the methods and approaches of philosophy to 'address scientific problems and to provide scientifically useful proposals' (Pradeu *et al*., 2024). Taking a similar approach to characterising the history of botany, much of this paper can be considered history *in* botany – using archival information to inform our understanding of the biology of *C. coronopifolia* in Britain. In addition, our discussion involves more conventional history *of* botany questions – for example describing changing views of plant introductions in both the technical and more

[1] There has been considerable discussion about whether *C. coronopifolia* is native to Australia and New Zealand. In *Flora of Australia* Thompson (2015) concluded that it was naturalised in both areas, despite many early records, whereas Webb (1988) considered that it was native to New Zealand, where it was first collected by Banks & Solander in 1769, and also to Australia. Elser & Astridge (1987) described the species as introduced in New Zealand, but without giving a detailed rationale for this view. A study of *C. coronopifolia* in the Southern Hemisphere, similar to this one, would be informative.

[2] Note the reference in Stroh *et al*. (2023) to the species being 'known from north-western England by 1985', appears to be a typo for 1885. As described later in this paper, 1885 was the date of the first record for the species on the Wirral, Cheshire.

popular literature, and the role of the Botanical Exchange Club in distributing specimens widely through British herbaria.

An obvious starting point to such a study is *Plant Atlas 2020* (Stroh *et al*., 2023), the online version of which allows changes in plant distribution over time to be visualised, with the earliest date class being 'pre-1930'. The Atlas suggests that *C. coronopifolia* was present at five different locations in Britain and Ireland before 1930. These were London, Liverpool/Cheshire area, S.E. Scotland, Yorkshire and S.W. Ireland. The last two of these appear to be errors as we have found no records of pre-1930 occurrences for Yorkshire or Ireland. In both cases the Atlas dataset describes these records as being before 1994, and it seems likely that the mapping software on the website incorrectly allocates these records to the earliest available date class (i.e. pre-1930). The earliest record in the wild for Yorkshire appears to be from 1959 at Newton Ings, Fairburn (Wilmore, 2000), and the earliest for Ireland (County Cork) is 1950 (Reynolds, 2002). As this paper focuses on the early (late 19th and early 20th century) introductions, these locations are not discussed any further. We have identified one additional 19th century record from Mid-Wales, this is described below along with detailed descriptions of the introductions around London, S.E. Scotland, and the Liverpool/Cheshire area.

Of these early introductions, the population on the Wirral, Cheshire has attracted most attention in the botanical literature. As noted above, it is mentioned in Clive Stace's (2019) *New Flora* and is also the only early population mentioned in two 20th century books which listed plant introductions in Britain. Dunn (1905) wrote that 'In England it is thoroughly established near Birkenhead in Cheshire, where it is supposed to have been purposely introduced', while Clement & Foster (1994) wrote that it had been 'Known since about 1880 on saline marshes near Birkenhead'. When its introduction became known, contemporary botanists gave their opinions on the perceived advantages and disadvantages of the addition of this species to the British flora. These are discussed below as they provide an interesting perspective on changing views on plant introductions over the 20th century.

We first briefly review the plant's introductions to Scandinavia, Germany and the Netherlands – as these are the likely source for at least some of the British populations. We then summarise its early occurrence in British horticulture. In the main part of this paper, we describe the history of its appearance in the wild in the four locations with late 19th century records. The Scottish and Welsh populations became extinct, although the Scottish population around Galashiels survived for over 60 years.

Introductions in continental Europe

After its discovery in the wild in London in 1869, Thiselton Dyer (1872) drew attention to its history in the Low Countries, as described in the Dutch *Flora Batava* (Kops & van der Trappen, 1846). It was growing in Leiden Botanic Garden 'towards the end of the seventeenth century'; these were plants that were 'believed by some to have been originally derived from Cape of Good Hope'. Originally assumed to be frost sensitive, it was grown under glass at Leiden, however the plants turned out to be hardy and not to need such care. Gardening, including the cultivation of many rare and exotic plants, was the height of fashion in the Dutch Republic in the 17th century, and there were strong links to what is now South Africa through the Dutch East India Company which had its own botanic garden in The Cape (Jardine, 1999,

2009). So the importation of decorative southern African plants to Leiden Botanic Garden seems a plausible origin for early *C. coronopifolia* in Europe. Edward Newman (1870), reporting its first occurrence in the wild in Britain, suggested that as well as being directly imported to Europe from The Cape by the Dutch, the Spanish populations had perhaps arrived by way of South America[3].

According to Thiselton Dyer (1872), the first European record from the wild was on the coast at 'Emden, in E. Friesland' (part of the Wadden Sea) in 1741 'on ground inundated in winter'. Toorn (1980) also suggested it was first found in the wild near Emden (in 1739 – a few years earlier than Thiselton Dyer suggested), and spread in Germany and Denmark during the 18th and 19th centuries. After about 1850, some decline in N.W. Europe was noted. In the Netherlands it expanded around Amsterdam between 1835 and 1839. There are also a few early records from Sweden with herbarium sheets from 1887 and 1890 – the suggestion here was that it may have been introduced with ballast (Tomasson, 2020); there are also earlier records of this species on the Swedish coast from 1853 (Hylander, 1971). In addition there are also a small number of plants in Norwegian herbaria – the oldest record being from 1875 in Bergen (**BG**).

History in cultivation

The earliest record of *C. coronopifolia* in cultivation in Britain is from 1683 in a catalogue of plants in the Edinburgh Physic Garden, under the pre-Linnaean name of *Chrysanthemum Africanum procumbens, flore cernuo, nudo, luteo* (Sutherland, 1683). Given the species presence in Leiden by this time, it is likely relevant that there were strong intellectual links between Scotland and the Dutch Republic in the 17th century (Raffe, 2015). This is the only 17th century British horticultural record which we have been able to find. However during the 18th century it is recorded in a variety of gardens in S.E. England, including Kew and the Chelsea Physic Garden (Box 1). So it appears that the species featured in a number of specialist gardens in Britain from the late 17th century onwards. It was also listed by John Cushing in *The exotic gardener* (1814) 'in which the management of the hot-house, green-house and conservatory is fully and clearly delineated … containing all the species known to be cultivated in the above Departments'. Significantly, Cushing was Foreman to Messrs Lee and Kennedy, a leading nursery, so it is possible that the species started to become more widely available to British gardeners during the 19th century. It is still available from some British garden centres and by online purchase today.

Early occurrences in the wild in Britain

The four parts of Britain with early records in the wild are described below in order of the earliest record from that area.

The London area

Duggie Kent (1975) summarised the early records from the county of Middlesex[4], all of which he treated as casual occurrences. In 1869 it 'occurred in some plenty… in a

[3] The source for 'the geographical details' is given as 'Mr Watson' – presumably Hewett Cottrell Watson, then Britain's leading plant geographer (Egerton, 2003). The suggestion that the Spanish populations came from South America appears to have been speculative.

[4] Now mainly included within Greater London, but Middlesex is still used in botanical recording as VC21.

Box 1: Examples of the cultivation of *Cotula coronopifolia* in British gardens during the 18th century.

1714 Listed by James Petiver (1716, p. 354, as Braynes *Cape* Naked Dasie with six Latin synonyms) amongst the "*divers* Rare Plants, *Observed the last* Summer A.D. 1714. *in several* Curious Gardens *about* London *and particularly* the Society *of* Apothecaries *Physick-Garden at* Chelsea".

1732 Described and illustrated by J.J. Dillenius (1732, t. 23 and p. 27, as *Ananthocyclus Coronopi folio*) in *Hortus Elthamensis*, his book based on the garden of James Sherard at Eltham, Kent.

1759 Listed by Philip Miller in ed. 7 of *The Gardeners Dictionary* (1759, as *Cotula foliis lanceolato-linearibus, amplexicaulibus pinnatifidis*) who was clearly familiar with its cultivation, presumably in the Chelsea Physic Garden. "If the Seeds of this Sort are sown on a warm Border, where the Plants are to remain, they will require no other Culture, but to keep them clean from Weeds".

1768 Listed by John Hill (1768) in the catalogue of plants cultivated at Kew.

1789 Listed by William Aiton (1789, vol. 3, p. 235) in *Hortus Kewensis*, "a catalogue of the plants cultivated in the Royal Botanic Garden at Kew".

brickfield in Green Lane, Highbury New Park, London, where it was found by Mr. P. Gray' (Bennett, 1870). Watson (1870, p. 535), quoting Gray, described the site rather differently, 'a building lot nearly opposite the new church of St. Augustine in Highbury New Park Road'. Plants collected by Gray from this site in 1869 are in the herbaria of the Natural History Museum (**BM**) and Kew (**K**). Newman (1870) reports the find at Highbury, and describes it as 'covering a large patch of ground, growing most luxuriantly and flowering abundantly'. The origin of this population was considered uncertain but clearly introduced and not native. Newman suggests that it is unlikely to be a garden escape as it 'has never been cultivated as a garden plant; nor is it likely to be, for it has nothing whatever to recommend it to the florist'. This is clearly incorrect (see Box 1), but does suggest it was not widely grown in British gardens in the mid-19th century.

Two later records from Middlesex are listed by Kent (1975). He cited a specimen collected by J.E. Cooper at Hackney Marshes in 1912 (**BM**); we have not traced this in **BM** though there is a specimen collected by Cooper from 'Waste ground, Hackney Marshes, 14 July 1913'. Kent also cited Cooper's published record from Muswell Hill in 1913 (Cooper, 1914) [5]. In addition to these records from

[5] It is possible that Cooper simply recorded the species once, at Hackney Marshes in 1913. This would be the case if Kent's 1912 date is an error for 1913 and if the abbreviation indicating records from Hackney Marshes in Cooper's paper, H.M., has been transposed to that indicating records from Muswell Hill, M.H. Despite the 1913 specimen, Cooper (1914) made no reference to the species at Hackney Marshes in his paper, though he listed many other casuals from that site.

Middlesex there is also a 1912 herbarium sheet at Kew from Surrey. Unfortunately, the details given on the sheet are rather limited. The specimen was provided by Mrs Winterbottom, Hazeldene, Hindhead, Surrey – but it is not clear if this is just her address or also where the plant was found.

The fact that London is not mentioned in Dunn's (1905) book on *The Alien Flora of Britain* suggests that there was no extant London population at the time. Despite the later reports, Hayward & Druce (1919) in their book on introduced plants around Galashiels (see the section on S.E. Scotland, below) did not mention any London population in their discussion of the Scottish plants – the only other British population they mention in passing is the one 'naturalised in Cheshire'. As Druce was very well connected in British botany and lived in Oxford (Allen, 1986), this also implies that the London occurrences were not regarded as significant in the early 20th century.

South East Scotland

As described above, Edinburgh has the earliest known example of *C. coronopifoilia* in cultivation in Britain. The earliest record from the wild in Scotland are two herbarium sheets of plants found in 1871 on the 'Roadside near Aberdour, Fife' (Fig 1). The location is just north of Edinburgh across the Firth of Forth, and has apparently never featured in the botanical literature. Nearby is Aberdour Castle and Gardens, which was abandoned by the 19th century, but in the late 17th century various exotic plants are known to have been introduced to the grounds from Edinburgh Physic Garden, which contained *C. coronopifolia*. There is a surviving list of plants purchased by Aberdour from the Physic Garden in August 1691 – this lists over 40 species, but does not mention *C. coronopifolia*. However it was mainly listing large, expensive plants[6]. So *C. coronopifolia* may have been included but not listed, or moved by accident, or acquired on another occasion. Excavation at Aberdour gardens suggests they had aquatic plants as pollen from waterlily (no scientific name given) was found in the historic garden sediments, this was rather to the surprise of the excavators presumably because of a lack of archival records of water plants in the garden (Hynd & Ewart, 1983). So, it looks very plausible that this earliest Scottish record from the wild was a garden escape, however it may be unrelated to the later larger population south of Edinburgh described below.

[6] Most of these plants cost over £1.00. In the 17th century that would have paid a skilled tradesman for 11 days work at the time according to the National Archives 'Currency converter 1278-2017', so these are expensive plants. The plant list and prices are given in Hynd & Ewart (1983).



Figure 1. Herbarium specimen collected from 'Roadside near Aberdour, Fife' in 1871. This is the earliest record of *C. coronopifolia* growing in the wild in Scotland. The fact that only one small plant is included on the sheet may suggest that there was not an extensive population of this species at the site (there is one additional slightly larger plant at E, collected on the same day [E01375763]). From the herbarium of the Royal Botanic Garden Edinburgh, E01375762.

The next earliest record in the wild for S.E. Scotland is also an herbarium sheet from **E**, from Leith Dock in 1888 (E01375761). However, the key site for this species in Scotland was the banks of the Tweed near Galashiels. When it was first found there in 1908, it was described as the first time it had been found in Scotland (Hayward & Druce, 1919), as neither of the two previous records appear to have been published and so were likely unknown to most botanists. There are then several herbarium sheets in **E** from the Galashiels area, with specimens collected from the area over the next few years. Hayward & Druce (1919) described the species as being found 'plentifully… in each successive year' following its first discovery in 1908. As well as *C. coronopifolia*, Hayward & Druce (1919) list seven other introduced *Cotula* species found along the course of the River Tweed. The population of *C. coronopifolia* seems to have survived to at least the late 1960's as there are herbarium sheets from 1966 and 1969 (E01375764 & E01375765). Following this, the species became extinct in the area, although the exact date of extinction is unknown. The general context for this population is that the Galashiels

area had a long list of introduced plants – mainly imported by accident as part of large scale processing of wool from abroad (Hayward & Druce, 1919; Stace & Crawley, 2015). This included wool from South Africa, Australia and New Zealand (Hayward & Druce, 1919), so it is likely that this population originated directly from the Southern Hemisphere, rather than having escaped from horticulture. Certainly that was the contemporary interpretation (Hayward & Druce, 1919).

Cheshire and the Liverpool area

The first published reference for *C. coronopifolia* growing in this region we have found is in *The Flora of Liverpool: Third Appendix* (Brown, 1887), a point confirmed by Dallman some decades later (Dallman, 1935)[7]. Brown (1887) gave the date of discovery as *c.*1886, while noting that it is 'supposed to have originated some years ago'. The later *Flora of the Liverpool District* (Green, 1902) gives the first record as 1886 in 'marshes just S. of Leasowe Castle' – one year later than the earliest herbarium record (see below). Green (1902) described it as having 'spread over the neighbourhood, and continues down to 1901', and 'It is supposed to have been introduced by the late Lady Cust, who planted it at Leasowe Castle'. This Leasowe Castle suggestion was also made by Charles Bailey (in Groves, 1886). Bailey reported that he had been told that her 'habit was to bring home foreign plants for cultivation in the grounds surrounding the castle'. Lady Mary Anne Cust (*née* Boode) had wide natural history interests, including an extensive egg collection. She inherited considerable wealth from her father's plantations in the West Indies and compensation derived from the abolition of salve labour, which she used to fund her travel and natural history interests (Birkhead, 2025).

Following 1885 there are many herbarium sheets of Leasowe specimens in British collections – for example we have seen multiple 1886 sheets, then others from 1888, 1889, 1891, 1894, 1897, 1898, 1899, 1900, 1901, 1903, 1905, 1906, 1908 and so on (Figure 2). Many have Botanical Exchange Club stamps – so were collected from Leasowe, then distributed to botanists around the country to add to their collections. The Botanical Exchange Club was the forerunner of The Botanical Society of Britain and Ireland, and provided a clearing house for the exchange of herbarium sheets between members. Charles Bailey (of Manchester) was one of the early discoverers of the Leasowe *C. coronopifolia* population, and also the secretary of the club from 1879 to 1903 (Allen, 1986). This explains the large number of surviving herbarium sheets, often with Botanical Exchange club stamps, as many sheets of this interesting new addition to the flora must have been distributed to members.

[7] A.A. Dallman was a friend of Charles Bailey who was involved in the original discovery of this population of plants, so presumably had a first-hand account of the history of the discovery.



Figure 2. Herbarium specimens of *Cotula coronopifolia* collected by Charles Bailey from near Leasowe lighthouse on the Wirral in 1908. Now in the collections of the Royal Botanic Garden Edinburgh (E01375769).

The earliest known herbarium material was collected on 18th August 1885 by Henry Searle (Searle & Bottomley material now in **BM** – described as 'in a ditch about half a mile from Leasowe Castle') and more was collected on the 29th August by Charles Bailey (specimens now in Birmingham University (**BIRM**) and **BM** – early Bailey specimens were widely spread via Botanical Exchange Club). When Bailey published the news of the find in a local paper (*Manchester City News* – two articles 5 and 12 September 1885)[8] he was told that others had seen it in that general area for at least 8–10 years before. So the first occurrence in the wild around Leasowe was likely in the mid to late 1870's. The following year, Bailey (in Linton, 1887) adds that it has now been found at two more sites nearer the coast, and that it 'occurred in the greatest luxuriance in damp clayey ground'. He also adds that the plants were more 'robust' than examples he had seen in continental Europe (however we have seen a range of robustness in modern British plants).

[8] Reprinted in Dallman (1935), and also as a privately published pamphlet by Charles Bailey.

In the second edition of *The Flora of the Liverpool District* (Green, 1933) it is described as still around Leasowe but 'diminishing', and also now at Hillside (near Southport, north of Liverpool). In fact it had already spread to this area at the time the first edition of this flora was published in 1902, as there is a herbarium sheet from 1900 from Birkdale (just north of Hillside), in the herbarium of the South London Botany Institute (**SLBI**) - digitised on the herbarium@home web site. These sites just south of Southport would have been very accessible to Liverpool based botanists around 1900 as there was a railway station at Birkdale.

Mid-Wales

Although not previously mentioned anywhere in the botanical literature, there is also an 1890 record from Llandrindod (Powys, mid Wales). This comes from a herbarium sheet in **BM**, and was from the herbarium of the Reverend H.J. Riddelsdell, however the collector is not recorded[9]. It came to him via the Reverend W.H. Purchas. Riddelsdell is known to have some connections to the area visiting it some years later (July 1909) with a group from the Cotteswold [sic] Naturalist Field Club (Woods, 1993), however his interest in the area likely predates this visit. He was born in London very close to the site of the first record for *Cotula coronpifoila* in the wild in Britain, and was a student at Jesus College, Oxford (Foster, 1893) – a college with longstanding links to Wales which could explain his interest in the area. He later published on the plants of mid and south Wales, along with the flora of Gloucestershire (Desmond, 1994).

There are no mentions of any records (historical or modern) for *C. coronopifolia* in Ray Woods (1993) *Flora of Radnorshire*. This appears to be the first record for Wales for a plant growing in the wild, but presumably the population didn't survive long, and we have failed to find any mention of this Llandrindod population in the botanical literature of the time. We have no reason to connect this record with the deliberate early 20th century introductions of plants to North Wales described in the section below, as the known examples of this happened 20 years after the date on the Llandrindod record.

'No small curiosity' – the attitude of late 19th and early 20th century botanists to the Liverpool population

For the population on the Wirral and around the Liverpool area we have multiple accounts of how the contemporary botanists viewed this plant. The fact that many local botanists considered it of interest is shown by the fact that it is one of the plants illustrated on the title page of both editions of the *Flora of the Liverpool District* (Figure 3), along with the fact, described above, that herbarium specimens were widely dispersed via the Botanical Exchange Club. This interest clearly extended to the correct apportioning of credit for first finding the species near Leasowe Castle. In his President's address to the Liverpool Naturalists Field Club (which was responsible for the two editions of *The Flora of the Liverpool District*), Robert Brown (1899) suggested that there had been 'several claimants' to first finding it. The Liverpool Naturalists Field Club credited Miss Wall and Mr R.H. Day

[9] Riddelsdell acquired Purchas' herbarium after his death in 1903. This later went to Bristol where it was destroyed in the Second World War (Kent & Allen, 1984). The fact that this sheet is now in **BM** and did not go to Bristol implies it was not acquired with the rest of Purchas herbarium or had been separated from the main collection for some reason.

(Brown, 1887; Green, 1902), while the earliest herbarium specimens were collected by Henry Searle, Mr Bottomley and Charles Bailey a year before the first date given by the Field Club publications. Dallman (1935) suggests that his friend Charles Bailey felt rather overlooked for his role in finding the plant, and indeed Bailey later republished his *Manchester City News* articles from 1885 in pamphlet form, presumably to help establish his role in the story. Bailey in the second of his 1885 *Manchester City News* articles describes receiving correspondence from several people who had seen the plant prior to its formal discovery. It's clear that the Liverpool and Manchester botanists (especially Charles Bailey) considered it a noteworthy discovery, one where priority mattered.

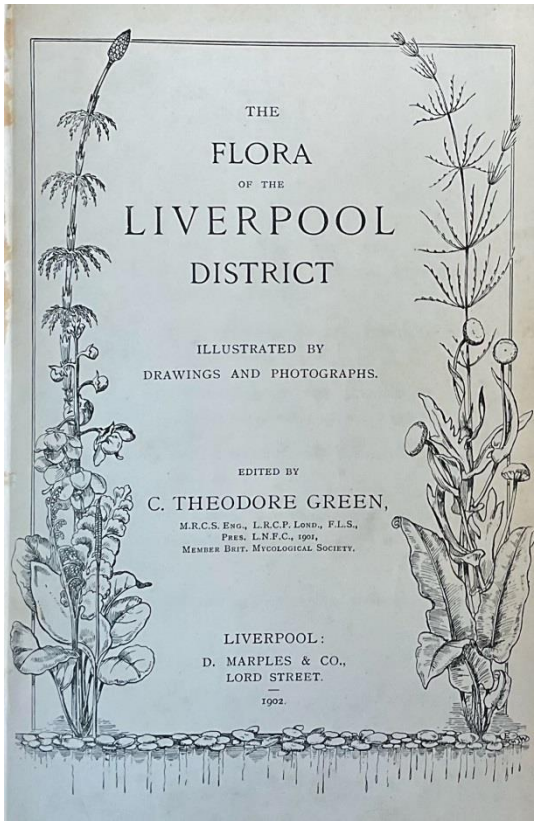


Figure 3. The title page from The Flora of the Liverpool District (Green, 1902), showing *Cotula coronopifolia* flowering on the right hand side of the page. It was drawn by the botanist, artist and teacher Emily Margaret Wood – see Wilkinson & O'Regan (2024) for background on Miss Wood.

Emily Margaret Wood was one of the leading figures in the Liverpool Field Naturalist Club, and in a short article in the first volume of the *Field Naturalist Quarterly* she described the Wirral population of *C. coronopifolia* as 'no small curiosity', suggesting it made an 'exceedingly pretty sight' (Wood, 1902). However she also suggested that 'it has a tendency to drive out other water plants once it establishes itself in a congenial site'. However, two years later in a popular article in the *Liverpool Mercury* (13 June 1904), she dropped her worry about its potentially invasive nature, writing that 'Some introduced plants are perfectly harmless, and even ornamental' citing *C. coronopifolia* at Leasowe as an example. She described it as 'flourishing in the muddy ditches', and repeated the suggestion that it came from

Castle gardens and that the Castle got it from Norway[10]. Indeed Green (1902) described the species as 'a Native of N. Europe' – this was corrected to 'Alien' from South Africa in the second edition of the Flora (Green, 1933). Wood was not the only natural history writer to consider *C. coronopifolia* an interesting and attractive addition to the local flora. In his 1903 book *Picturesque Cheshire*, the ornithologist T.A. Coward describes it as being found in 'numerous ditches and inland lagoons on the low lying fields', in the Wallasey Marshes near Leasowe - where it 'has spread and multiplied excessively'. He also described it as having escaped from Leasowe Castle gardens, and viewed it as 'forming an interesting and striking addition to the flora' (Coward, 1903, p. 250).

The interest in the Wirral population also led to botanists potentially spreading the species around Britain. There are several surviving herbarium sheets from 1901 with plants from a Cambridge garden grown from material collected at Leasowe on the Wirral[11], so clearly some botanists were not only collecting material from the wild but also replanting it and adding cultivated material to their collections. In addition botanists were also transplanting plants from the Wirral into new sites as a conservation measure. Dallman (1935) described attempts in 1912 and 1913 to move plants from Leasowe to similar looking habitats in several sites in North Wales. Some of these survived a few years, but none could be found by 1917[12]. Dallman also recorded that Dr E.J. Thomas had scattered seeds in 1917 at another North Wales site. The reason for moving plants was concerns that the Leasowe population was potentially threatened by unregulated development – although this informal development was later removed by the local authorities. Effectively what they were doing was the approach now referred to as conservation translocation or assisted colonisation (e.g. Abeli & Dalrymple, 2023), although unlike most modern examples this was the translocation of an introduced – and arguably invasive – plant species. Indeed Dallman (1935) commented that he was 'well aware that such an experiment is open to criticism'.

The genetics of the current British population

Sánchez-García *et al*. (2026) sampled seven UK populations in 2021–2022 and compared them with 18 from elsewhere in Europe and four from the native range in South Africa, using genome-wide data. Three clear lineages were detected in Europe, with little mixing of lineages within a given population. High selfing rates explain the stability of these lineages, and each lineage is likely to have arrived from a different native population, perhaps via separate introduction events.

In the UK, only two of the three European lineages were recorded. One was dominant in six populations, including one from the Wirral as well as two others from the Merseyside/Cheshire region, two from Yorkshire (in the vicinity of Newton Ings)

[10] Some of the confusion over the source may be explained by the fact that Norway and Sweden were united as one country at the time. A source in southern Scandinavia seems likely, there is more evidence for plants in the wild at the time for (modern) Sweden and Denmark than for Norway, but as noted above there are some Norwegian records dating back to 1875. Note however that there is no surviving evidence to suggest if the material came from the wild or from a Scandinavian garden.

[11] There are examples in the collections of Birmingham University, the South London Botanical Institute, and Aberystwyth University on the Herbaria@home web site.

[12] Dallman (1935) also records that while looking for surviving plants at some of these North Wales sites during the First World War he was challenged as a potential German spy!

and one from Devon. This lineage also includes some material sampled from the Netherlands (and also one Spanish sample). These results are consistent with the possible spread of the species across England from the original Wirral population, with no evidence for an independent spread from Middlesex or Scotland. No plants were sampled from S.E. England, so this study is unable to detect a possible different origin for the current population in this area. The seventh English population is the odd one out and came from Martin Mere in Lancashire (v.c. 59). The Mere in its current form was only created in the 1970s, specifically to attract waterbirds (Underwood, 2002).This site was thus likely colonised separately at a later date, probably from seeds transported by migratory waterbirds, since seeds of this species are known to be eaten by ducks and waders and to survive digestion (Lovas-Kiss *et al*., 2019; Wilkinson, 2023). The lineage found at Martin Mere is the same one that is dominant in Sweden, Spain and Portugal, as well as parts of the Netherlands, these all being part of a common flyway for various bird species.

Interestingly, Sánchez-García *et al*. (2026) also sequenced a plant purchased online from Lincolnshire Pond Plants Ltd, which was found to have a unique genetic make-up including influence from the third European lineage which was only dominant in one Swedish and one Dutch population. This suggests some mixing of horticultural populations over time. Since this plant was unique, if it is typical of commercially available plants in Britain it also suggests that the ongoing spread of *Cotula coronopifolia* across the UK might be driven by expansion from naturalised populations, and not from new introductions originating from garden ponds.

Discussion

Although in cultivation in Britain since the late 17th century, it was not until the second half of the 19th century that *C. coronopifolia* was recorded growing in the wild in Britain. Then over a period of only two decades it was found in the wild in London (1869), S.E. Scotland (1871), The Wirral (1885 – but known to have been seen for several years before its formal identification), and mid-Wales (1890). So after some 200 years as a garden plant it turns up in the wild in four very different parts of the country at broadly the same time. These dates are so close together that they raise the question, is it more than just chance that it was first found in the wild at this time (bearing in mind that it was already in the wild in other parts of Europe)? One obvious possibility is that there is a climate related explanation. The late 19th century is the very end of 'The Little Ice Age' with climate starting to become warmer; notably the years 1868-1871 had unusually warm summers (Kington, 2010). This would likely suit a South African plant from the Mediterranean climate of The Cape. There is also the possibility that after several hundred years in Europe, some populations of the plant had adapted to British conditions – the suggestion that the successful Wirral population was started by plants that had been growing in Scandinavia is clearly relevant in this context, especially if they came from the wild. Obviously 'improving' climate and local selection for N.W. European conditions are not mutually exclusive explanations.

The recent molecular genetics study showed that, with one exception, all the English individuals sampled were from the same lineage as the current Wirral population (Sánchez-García *et al*., 2026) – no non-English samples from the rest of Britain and Ireland were included in this study. This is consistent with the historical evidence described in this paper, which suggests that the population which started

at Leasowe on the Wirral was the most successful of the late 19th century introductions. This lineage was also found at limited sites in The Netherlands and Spain and is different from the more widespread lineages in continental Europe. If the historical sources attributing the origin of the Leasowe Castle plants to Norway are correct, then this lineage must have been present in the wild and/or cultivation in Scandinavia in the 19th century. Given the limited number of samples in the study by Sánchez-García *et al*. (only five localities from southern Scandinavia), it is clearly possible that this lineage may still be represented in this region.

The expansion of the Wirral population may have been facilitated by both botanists and birds. Archival information shows that plants were transplanted from the naturalised population on the Wirral to at least one garden (in Cambridge). In addition, Liverpool botanists at the start of the 20th century moved both plants and seeds from the Wirral to multiple sites in North Wales in an attempt to ensure the species survival in the wild in Britain. The suggestion that this species can be dispersed by birds has a long history. Ridley (1930, p. 617) suggested that many species in the genus *Cotula* were dispersed by their achenes becoming 'attached to the plumage of wading or swamp birds'. Recent studies of internal seed dispersal by *Limosa limosa* (Black-tailed Godwit) on the Wirral found *C. coronopifolia* seeds in the bird's faeces – 10 out of 22 of these seeds successfully germinated under laboratory conditions (Lovas-Kiss *et al*., 2019). Simulated gut passage increased germinability compared to control seeds (Sánchez-García et al. 2024). Given this high germination success rate, it seems likely that birds are an important means of dispersal for this species. Indeed, successful establishment of both native and alien plants often involves input from mutualists such as animal dispersers (Davis *et al*., 2001). A *C. coronopifolia* seed was also recently recovered from a regurgitated pellet of *Ardea cinerea* (Grey Heron) in north-west England, which was probably ingested together with its prey (Navarro-Ramos *et al.* 2022).

The early history of *C. coronopiifolia* in the wild in Britain provides interesting insights into the colonisation process. The long, possibly climatically related, latent period where for 200 years the plant is in cultivation in Britain but not recorded from the wild suggests that the switch to growing in the wild may not have been straightforward. In addition, the attempts by Liverpool-based botanists around 1900 to extend the number of sites at which it grew can be considered an interesting experiment on the difficulty of successful colonisation. Although choosing multiple sites in North Wales that appeared to match those on the Wirral where the plant grew successfully, they found it very difficult to establish new populations via transplanting plants, or scattering seeds. A central point about experiments is 'you bring about localised change to some part of the world, to see what happens next' (Godfrey-Smith, 2021, p. 261) - in this case introducing plants to apparently appropriate habitats to see if successful establishment follows. Although biologically very informative, experimentally attempting to increase the range of a non-native species like this would be considered unethical in most circumstances today. This makes the history of these past attempts particularly interesting and informative – colonisation of new sites can be a chancy and uncertain process, and the extent of these uncertainties ideally requires experimental data to quantify them, and for ethical reasons this is seldom available. The history of the Scottish Galashiels population is also interesting, showing that an apparently well-established population that survived for around 60 years can become extinct (although we cannot now

know the extent to which it was dependent on repeated reintroduction). Our field experience with searching for previously reported British *C. coronopifolia* populations suggests that these are sometime lost due to competition from larger plants (e.g. *Phragmites*) shading out the *Cotula*, which is an early successional species of open conditions.

The attitude of many botanists around Liverpool to this new species arriving in the local flora is interesting, as it is very different from the views that many conservationists were to develop later, with the mid-20th century rise of the field of invasion biology. This is a field which put a strong emphasis on the harm associated with introduced species, contrasting with the supposed benign behaviour of native species (see Davis (2009) for a critical review of the field). The excitement shown by many of the botanists involved in early studies of *C. coronopifolia* on the Wirral, and their efforts to use assisted colonisation to ensure the species survival, illustrate that less negative views of such species are possible, even amongst experienced botanists. As Lundgren *et al.* (2026) recently pointed out; 'Broadening our conservation ethos to include introduced species is contentious and requires critical thinking' but arguably revisiting such ideas is important in a rapidly changing world (e.g. Colding-Jørgensen *et al.*, 2025). In such a context, examples such as the one described in this paper are valuable in showing that the recent consensus in conservation biology about introduced species is less than 100 years old.

Cotula coronopifolia can perhaps be added to a group of what might be called 'cherished aliens' – species which are known to be introduced but are nevertheless valued by local naturalists, and the wider public, rather than attracting the almost automatic disapproval normally given to introduced species. Such cherished aliens are normally both uncommon and attractive, distinctive or have cultural significance, and are associated with specific localities. They include *Crocus neapolitanus* (*C. vernus*) in meadows in Nottingham and at Inkpen, Berkshire (the 'Inkpen Crocus'), *Aristolochia clematitis* by the ruins of Godstow Abbey, Oxfordshire, *Sisymbrium irio* in the London area and *Laburnum* in hedges in west Wales (Mabey, 1996; Crawley, 2005).

Another theme that emerges from this work is the importance of herbaria. The first occurrence in the wild for both Scotland and Wales have, as far as we are aware, never previously featured in the botanical literature. We only know about them because of surviving herbarium sheets.

Acknowledgements

We thank Brycchan Carey, Maria Chamberlain, John Grace, Fred Slater, Kristna Bakke Westergaard, and Ray Woods for help and advice. We also thank Lorna Hyland at the Martine Museum Archives, Liverpool for access to the Liverpool Naturalists Field Club archive, Sally Dawson (for help at Kew), and John Hunnex (the Natural History Museum, London). The Royal Botanic Garden Edinburgh kindly gave permission to reproduce Figs. 1 and 2. AJG was supported by the Spanish Ministerio de Ciencia e Innovacion (project number PID2020–112774GB-I00/AEI/10.13039/501100011033).

References

Abeli, T. & Dalrymple S.E. 2023. Advances in plant conservation translocation. *Plant Ecology* 224:741–744.

Aiton, W. 1789. *Hortus Kewensis; or, A catalogue of the plants cultivated in the Royal Botanic Garden at Kew*. 3 vols. London.
Allen, D.E. 1986. *The botanists*: *A history of the Botanical Society of the British Isles through 150 years*. Winchester: St Paul's Biographies.
Bennett, A.W. 1870. *Cotula coronopifolia*, L. *Journal of Botany*, *British and Foreign* 8:8.
Birkhead, T. 2025. *The Great Auk*. London: Bloomsbury.
Brown, R. 1887. *Flora of Liverpool: Third Appendix*. Liverpool: Liverpool Naturalist's Field Club.
Brown, R. 1899. President's address. *Proceedings of the Liverpool Naturalist's Field Club* 1899:9–16.
Christenhusz, M.J.M., Fay, M.F. & Chase, M.W. 2017. *Plants of the world*. Kew: Royal Botanic Gardens Kew.
Clement, E.J. & Foster, M.C. 1994. *Alien plants of the British Isles*. London: Botanical Society of the British Isles.
Colding-Jørgensen, C.T., Ejrnaes, R., Svenning, J-C., & Bruun, H.H. 2025. A graduated nativeness definition for overcoming dilemmas and difficulties of vascular plants. *Oikos* e11635.
Cooper, J.E. 1914. Casual plants in Middlesex. *Journal of Botany*, *British and Foreign* 52:127–131.
Coward, T.A. 1903. *Picturesque Cheshire*. London and Manchester: Sherratt and Hughes.
Crawley, M.J. 2005. *The flora of Berkshire.* Harpenden: Brambleby Books.
Cushing, J. 1814**.** *The exotic gardener.* 2nd ed. London.
Dallman, A.A. 1935. *Cotula coronopifolia* L. *The North Western Naturalist* 10:21–28.
Davis, M.A. 2009. *Invasion biology*. Oxford: Oxford University Press.
Davis, M.A., Thompson, K., & Grime, J.P. 2001. Charles S. Elton and the dissociation of invasion ecology from the rest of ecology. *Diversity and Distributions* 7:97–102.
Desmond, R. 1994. *British and Irish botanists and horticulturists*. London: Natural History Museum.
Dillenius, J.J. 1732. *Hortus elthamensis*. 2 vols. London.
Dunn, S.T. 1905. *Alien flora of Britain*. London: West, Newman and Co.
Egerton, F.N. 2003. *Hewett Cottrell Watson*: *Victorian plant ecologist and evolutionist*. Aldershot: Ashgate.
Esler, A.E. & Astridge, S.J. 1987. The naturalisation of plants in urban Auckland, New Zealand 2. Records of introduction and naturalisation. *New Zealand Journal of Botany* 25:523-537.
Foster, J. 1893. *Oxford men 1880–1892*: *with a record of their schools*, *honours and degrees*. Oxford: James Parker and Co.
Godfrey-Smith, P. 2021. *Theory and reality: An introduction to the philosophy of science.* 2nd ed. Chicago: Chicago University Press.
Green, C.T. 1902. *The flora of the Liverpool District*. Liverpool: D. Marples & Co.
Green, C.T. 1933. *The flora of the Liverpool District*. 2nd ed. Arbroath: T. Buncle & Co.
Groves, J. 1886. Report of the distributor for 1885. *Report of the Botanical Exchange Club of the British Isles* 1885:122–140.

Hambler, C. & Canney, S.M. 2013. *Conservation.* 2nd ed. Cambridge: Cambridge University Press.
Hayward, I.M. & Druce G.C. 1919. *The adventive flora of Tweedside*. Arbroath: T. Buncle & Co.
Hill, J. 1768. *Hortus Kewensis*. London.
Hylander, N. 1971. Prima loca plantarum vascularium Suecicae. *Svenska Botanisk Tidskrift* 64 (1970), supplement.
Hynd, N.R. & Ewart, G. 1983. Aberdour Castle Gardens. *Garden History* 11:93–111.
Jardine, L. 1999. *Ingenious pursuits; Building the scientific revolution*. London: Little Brown.
Jardine, L. 2009. *Going Dutch*. London: Harper Perennial.
Kent, D.H. 1975. *The historical flora of Middlesex*. London: The Ray Society.
Kent, D.H. & Allen, D.E. 1984. *British and Irish herbaria.* London: Botanical Society of the British Isles.
Kington, J. 2010. *Climate and weather*. London: Collins.
Kops, J. & van der Trappen, J.E. 1846. *Flora Batava*, vol. IX, t. 658*.* Amsterdam: J.C. Sepp en Zoon.
Linton, E.F. 1887. Report of the distributor for 1886. *Report of the Botanical Exchange Club of the British Isles* 1886:143–164.
Lovas-Kiss, Á, Sánchez, M.I., Wilkinson, D.M., Coughlan, N.E., Alves, J.A. & Green, A.J. 2019. Shorebirds as important vectors for plant dispersal in Europe. *Ecography* 42:956–967.
Lundgren, E., Svenning, J.-C., Schlaepfer, M.A., Wallach, A., Andersson, A., Marris, E., Rohwer, Y. & Ramp, D. 2026. Many pasts, many futures: Navigating the complexities of species reshuffling to help prevent extinctions. *Cambridge Prisms*: *Extinction* 4:e2, 1–6.
Mabberley, D.J. 2017. *Mabberley's plant-book.* 4th ed. Cambridge: Cambridge University Press.
Mabey, R. 1996. *Flora Britannica.* London: Sinclair-Stevenson.
Miller, P. 1759. *The gardeners dictionary.* 7th ed. 2 vols. London.
Navarro-Ramos, M.J., Green, A.J., Lovas-Kiss, A., Roman, J., Brides, K., & van Leeuwen, C.H.A. 2022. A predatory waterbird as a vector of plant seeds and aquatic invertebrates. *Freshwater Biology* 67:657–671.
Newman, E. 1870. An unexpected visitor. *The Field* (26 February 1870) 35:189. Also cited in *Gardeners' Chronicle and Agricultural Gazette* 5 March 1870: 308–309.
Petiver, J. 1716. Botanicum hortense IV. *Philosophical Transactions of the Royal Society* 29:269–284 (1715), 353–364 (1716).
Pradeu, T., Lemoine, M., Khelfaouri, M. & Gingras, Y. 2024. Philosophy in science: can philosophers of science permeate through science and produce scientific knowledge? *British Journal of the Philosophy of Science* 75:375–416.
Raffe, A. 2015. Intellectual change before the Enlightenment: Scotland, the Netherlands and the reception of Cartesian thought 1650–1700. *The Scottish Historical Review* 94:24–47.
Reynolds, S. 2002. *A catalogue of alien plants in Ireland*. Glasnevin: National Botanic Gardens.
Ridley, H.N. 1930. *The dispersal of plants throughout the world*. Ashford: L. Reeve & Co.

Sánchez-García, R., Green, A.J., Tomasson, L., Hortas, F. & Ortiz, M.A. 2024. Invasive Buttonweed *Cotula coronopifolia* (Asteraceae) is halotolerant and has high potential for dispersal by endozoochory. *Plants* 13:2219.
Sánchez-García, R., Green, A.J., Ortiz, M.A., Garcea, C., Hortas, F., Reynolds, C., Rowentree, J., Serrao, E.A., Tomasson, L., Tremetsberger, K., van Leeuwen, C.H.A. & Ortego, J. 2026. Gemonic footprints of selfing, introduction history, and long-distance dispersal in an invasive alien plant. *Genome Biology and Evolution* evag124.
Stace, C.A. 2019. *New Flora of the British Isles.* 4th ed. Middlewood Green, Suffolk: C&M Floristics.
Stace, C.A. & Crawley, M.J. 2015. *Alien plants*. London: Collins.
Stroh, P.A., Walker, K.J., Humphrey, T.A., Pescott, O.L. & Burkmar, R.J., eds. 2023. *Plant Atlas 2020: Mapping Changes in the Distribution of the British and Irish Flora.* 2 Volumes. Princeton: Botanical Society of Britain and Ireland & Princeton University Press.
Sutherland, J. 1683. *Hortus medicus Edinburgensis: or a catalogue of the plants in the physical garden at Edinburgh*. Edinburgh.
Thiselton Dyer W.T. 1872. *Cotula coronopifolia*, L. *Journal of Botany*, *British and Foreign*. 10:107–108.
Thompson, I.R. 2015. *Cotula*. In: Wilson, A., ed. *Flora of Australia. Volume 37 Asteraceae 1*, 359–364. Melbourne: ABRS/CSIRO Australia.
Thompson, K. 2014. *Where do camels belong? The story and science of invasive species*. London: Profile Books.
Thomas, C.D. 2017. *Inheritors of the Earth; how nature is thriving in an age of extinction*. London: Allen Lane.
Tomasson, L. 2020. *Cotula coronopifolia – invasive or just another alien species*? Masters Thesis, Swedish University of Agricultural Sciences.
Toorn J. van der 1980. On the ecology of *Cotula coronopifolia* L. and *Ranunculus sceleratus* L. I. Geographic distribution, habitat and field observations. *Acta Botanica Neerlandica* 29:385–396.
Underwood, R. 2002. *Martin Mere. A dream comes true*. Liverpool: Hobby Publications.
Watson, H.C. 1870. *A compendium of the Cybele Britannica*. London: Longmans, Green, Reader, & Dyer.
Webb, C.J. 1988. *Cotula* L. In: Webb, C.J., Sykes, W.R. & Garnock-Jones, P.J., *Flora of New Zealand. Volume IV Naturalised Pteridophytes, Gymnosperms, Dicotyledons*, 167–169. Christchurch: Botany Division, D.S.I.R.
Wilkinson, D.M. 2021. *Ecology and natural history*. London: Collins.
Wilkinson, D.M. 2023. Plants on the wing: waterbirds and plant dispersal in Britain. *British Wildlife* 35:167–171.
Wilkinson, D.M. & O'Regan, J. 2024. Emily Margaret Wood: Botany, illustration, nature writing and teaching in Liverpool at the end of the long nineteenth century. *British and Irish Botany* 6:116–132.
Wilmore, G.T.D. 2000. *Alien plants of Yorkshire*. Yorkshire Naturalists Union.
Wood, E.M. 1902. On the occurrence of *Cotula coronopifolia* in Cheshire. *The Field Naturalist Quarterly* 1:300–301.
Woods, R.G. 1993. *Flora of Radnorshire*. Cardiff: National Museums of Wales.

Copyright retained by author(s). Published by BSBI under the terms of the Creative Commons Attribution 4.0 International Public License.

ISSN: 2632-4970

https://doi.org/10.33928/bib.2026.08.196