

Jersey Cudweed *Gnaphalium luteoalbum* L. at Dungeness RSPB Reserve, East Kent

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ABSTRACT

A potentially native population of the Critically Endangered Jersey Cudweed *Gnaphalium luteoalbum* L. was discovered at Dungeness in East Kent (v.c. 15) in 1996. From an original population of a few hundred on an area of pumped silt, the plant has spread rapidly and it now grows on the damp margins of many of the old gravel pits within a 1 km radius of where it was first found. The number of plants and their flowering time are both influenced by the water levels, and the population varies between tens and hundreds of thousands of plants. Even in poor years, the population at Dungeness is much larger than that at the only other native British site on the West Norfolk coast. The cudweed is almost certainly a recent colonist at Dungeness, and its mode of arrival could have been natural or artificial. The Royal Society for the Protection of Birds, which manages the Dungeness reserve, is treating the plant as a native. Areas of suitable habitat are being maintained and the population is monitored annually.

KEYWORDS: native, colonist, monitoring, Red data bank

JERSEY CUDWEED IN BRITAIN

Jersey Cudweed *Gnaphalium luteoalbum* L. is a very rare British plant, classified as Critically Endangered in the British Red Data Book (Wigginton 1999). Until recently, the only extant colony considered to be native was that at Holkham National Nature Reserve in West Norfolk (v.c. 28) — most of the other recent records refer to casual occurrences, but the species is well established in at least one site, in Dorset (v.c. 9) (Fig. 1). Eric Philp's discovery of Jersey Cudweed at the Royal Society for the Protection of Birds' Dungeness nature reserve, East Kent (v.c. 15) in 1996 was therefore of considerable interest because the plant could have colonised the area naturally, adding a second native British site. This paper records the history and spread of Jersey Cudweed at Dungeness, and provides details of the habitat, life-history, and conservation of the plant, and speculation about its origin. Nomenclature follows Stace (1997).

HISTORY OF JERSEY CUDWEED AT DUNGENESS

In 1996, several hundred plants were found in the area of the New Excavations at TR065184. They were growing on silt that had been pumped from the nearby New Diggings pit (central point at TR070190) between September 1993 and June 1994. Figure 2 shows how the plant has spread from this original site. In 1997 it was found on the western shore of Burrowes Pit, and by the south-east corner of the ARC Pit at TR073192, over 1 km away. An estimate of the population size suggested that there were 10,000 plants present that year. The following year, the number of plants around the New Excavations was estimated to be over 12,000, with another 6,000 along the shore of Burrowes Pit, and "several thousand" at the ARC Pit. A single plant was found by a gravel pit in Denge Marsh at TR054183, 1 km from the nearest plants on the New Excavations in 1997.

By 1999, Jersey Cudweed had colonised most of the area it occupies today: the margins of most of the pits in the New Excavations; the western shore of Burrowes Pit; and the north-west and south-east of the ARC Pit. The population had become very large, and the estimate for 1999 was 100,000 plants. Half of these were along the side of one of the pits (Pit C) in the New Excavations, but in spring 2000 the water levels in this pit were much higher, and there were few plants.



FIGURE 1. Distribution of Jersey Cudweed in Britain by 10 km squares. Circles show introductions, squares show native sites. ● = Pre-1970, ● = 1970–1987, ● = 1987 onwards. Data from the Biological Records Centre.

Instead, the bulk of the total population of 17,500 was found at the south-east end of the ARC Pit, where there were an estimated 10,000 plants.

In 2001, the margin of Pit C again supported a huge number of plants, estimated at over 20,000. About 350,000 plants covered the ground to the south-east of the ARC Pit and turned it grey. The large numbers of plants appeared despite high water levels in May and June, and they flowered well into October. A survey at the end of May 2002 found a similar number of plants (25,000) along the edge of Pit C and 3,560 plants around the other pits in the New Excavations. There were no plants around the ARC Pit, but at least 3,000 had appeared here by September.

The size and location of the population at Dungeness clearly varies between years. This is likely to follow the availability of suitable habitat, which is determined by the extent, timing, and location of flooding.

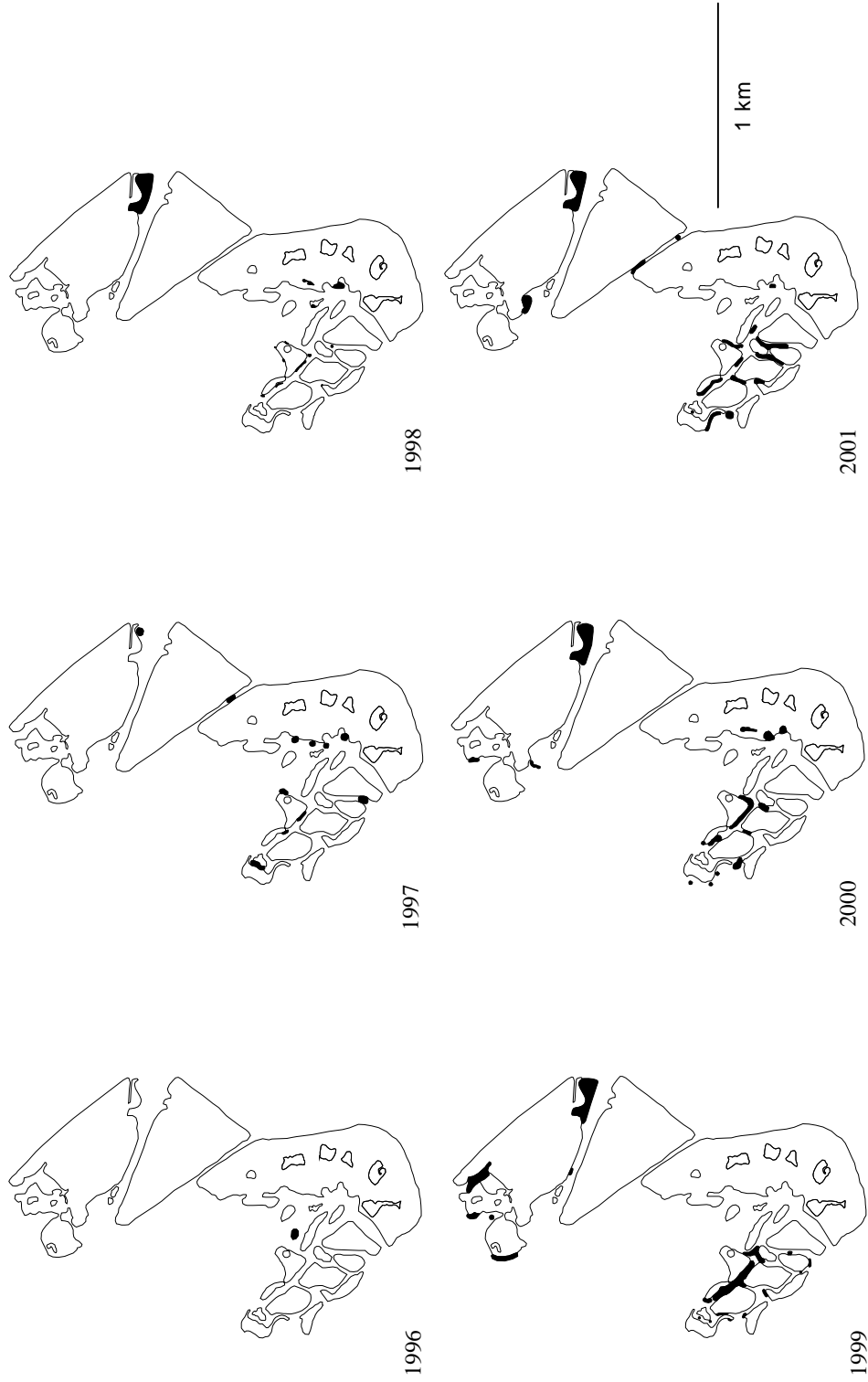


FIGURE 2. Distribution of Jersey Cudweed at Dungeness, 1996-2001. See Figure 3 for names of pits.

HABITAT OF JERSEY CUDWEED AT DUNGENESS

On 5 September 2002 Dungeness was visited to look at the habitats and distribution of Jersey Cudweed. Figure 3 shows the areas surveyed:

1. south-east corner of the ARC Pit
2. New Excavations
3. in front of Firth Hide on Burrowes Pit.

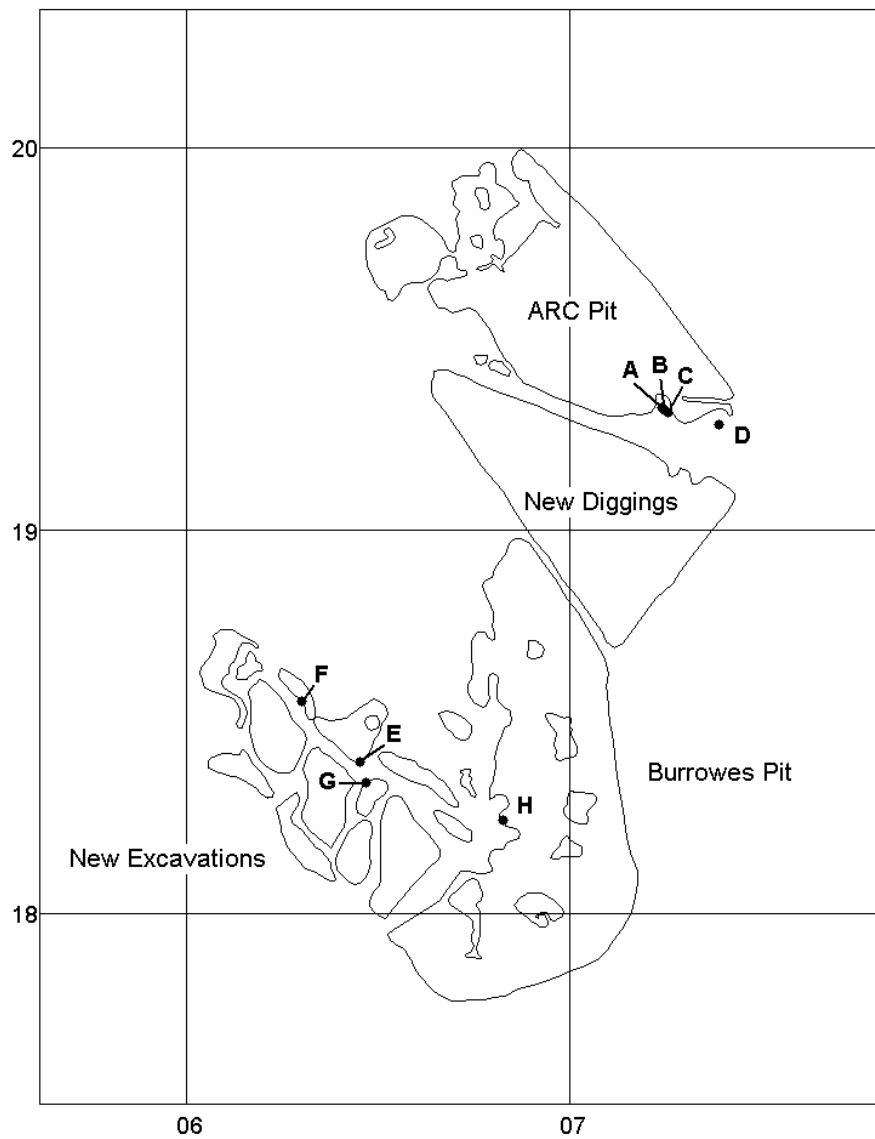


FIGURE 3. Jersey Cudweed sites (A–H) used for habitat analysis in September 2002. Grid lines and numbers show 1 km squares of National Grid 100 km square TR.

SOUTH-EAST ARC PIT

Jersey Cudweed was abundant in three damp furrows in the sand at TR072119 (A–C on Fig. 3). The first of these hollows (A) had c. 500 flowering plants and thousands of non-flowering rosettes. Most of the flowering plants were under 15 cm tall and only just starting to flower. The vegetation in the hollow was typical of an open sandy area, with Buck's-horn Plantain *Plantago coronopus* the most abundant species, and the damp nature was clearly indicated by Knotted Pearlwort *Sagina nodosa*, Marsh Pennywort *Hydrocotyle vulgaris*, and Purple Loosestrife *Lythrum salicaria*. The other two hollows (B and C) were similar to the first and each had c. 1,000 plants, most of which were rosettes or at an early stage of flowering. To the south-east of the hollows, Jersey Cudweed was scattered in taller, but still open, vegetation (D) where there were about 100 flowering plants between the Pit and the road, and many more non-flowering rosettes. The cudweed was absent from the drier, more moss-dominated sand around the rabbit warren.

NEW EXCAVATIONS

The Cudweed around the New Excavations was much taller (c. 30–50 cm) than that at the ARC Pit, and most plants had finished flowering. There were very few non-flowering rosettes. One of the largest concentrations (E) was on shingle and sand on the bank above a pit. There were thousands of plants here, but only one non-flowering rosette was found. The vegetation was taller than that in the furrows at the ARC Pit, with lots of Canadian Fleabane *Conyza canadensis* and Black Medick *Medicago lupulina*, and typical of a drier site. Another site (F) had no non-flowering rosettes, but hundreds of fruiting plants. These were in ranker vegetation dominated by Black Medick on fairly moist sand. There were c. 1,000 plants on wetter sand at G, amongst open vegetation typical of seasonally flooded open ground. Most of these plants were in fruit, with a few smaller ones still flowering, and fewer than 20 non-flowering rosettes.

BURROWES PIT

Jersey Cudweed grows on the islands in front of Firth Hide (site H). The islands were not visited but from the hide it could be seen that most of the plants were quite tall and at an advanced stage of flowering. They were growing amongst frequent Water Mint *Mentha aquatica*, Common Fleabane *Pulicaris dysenterica*, and Common Centaury *Centaureum erythraea*, with occasional Scentless Mayweed *Tripleurospermum inodorum*, Silverweed *Potentilla anserina*, Gipsywort *Lycopus europaeus*, and Canadian Fleabane *Conyza canadensis*.

The favoured habitat at Dungeness seems to be seasonally flooded ground. Around the New Excavations this had become quite well vegetated by September, but it would have been more open earlier in the year. The effect of seasonal flooding was demonstrated by the exceptionally high water levels in 2000/2001, when sand at the ARC Pit that had been dry for many years was inundated. It was in this area that a huge stand of c. 300,000 plants was found in 2001. There was no such flood in 2001/2002, and the show of plants was much smaller in 2002 (perhaps only 3000), and they were mostly on the damper, more sparsely vegetated areas. This ability to vary its germination time (Scampion 1993) may allow the species to exploit new areas as this habitat becomes available, and this must give it an advantage over plants with more rigid life cycles.

FLOWERING TIME

In September the plants at the ARC Pit were at a much earlier stage in their life cycle than those around the New Excavations and Burrowes Pit. Variation in the germination time of Jersey Cudweed is probably correlated with water levels (Scampion 1993). The south-east corner of the ARC Pit did not flood in 2002, but it may have been generally damper than the New Excavations, and this could explain the difference in flowering time between the two sites. The RSPB, warden Pete Akers, has seen the plant in flower in December.

It has been suggested that this plant is biennial at Dungeness, but the observations support the conclusion that it is behaving as an annual. There were almost 30,000 plants around the New Excavations in May 2002; these had probably germinated the previous autumn, over-wintered as rosettes, and flowered in the summer. As there were no plants at the ARC Pit in May, these must have germinated during the early summer and flowered in the autumn.

Jersey Cudweed is often considered to be a native British plant. Its status in the floras varies: “introduced” (Keble-Martin 1965), “probably introduced” (Clapham *et al.* 1987), probably native (Simpson 1982), “native” (Stace 1997), “unquestionably a native” (Petch & Swann 1968). Usually, only the populations in the Breckland and coastal sand dunes of East Anglia have been considered to be candidates for native status. It was recorded in Breckland records between 1852 and 1956, since when the only possibly native population has been that at Holkham. Most other records are of casual occurrence (Preston *et al.* 2002), but there is an established population at Holton Heath in Dorset.

The appearance of the species at Dungeness is therefore of considerable interest, because if it has colonised naturally, this would be by far the most important British population, up to a thousand times larger than that at Holkham (Scampion 1993).

The natural history of Dungeness has been very well studied (Riley 1989) and it is inconceivable that a plant like Jersey Cudweed could have been present for long in such large numbers without being detected. This, together with its rapid spread during the last seven years, strongly suggests that it is a recent and successful colonist. But how did it arrive at Dungeness, and how has it spread so rapidly?

The silt where Jersey Cudweed was first found at Dungeness had been pumped from the New Diggings. This pit was excavated during the 1970s and 1980s (Findon 1985) and soon became flooded. It is possible that Jersey Cudweed seeds had found their way into silt at the bottom of the New Diggings whilst it was being worked, been covered by water for up to twenty years, and then germinated when they were pumped on to the New Excavations. If this had happened, it would still not answer the question of how the seeds arrived in the New Diggings in the first place. However, some of the equipment used to pump the silt had come from continental Europe, probably from Germany, and it is possible that the machinery could have been contaminated with Jersey Cudweed seeds (the species is local but widespread in Germany according to Fitter (1979)).

Jersey Cudweed need not have arrived with the silt. This may have simply provided a suitable habitat that the plant was able to colonise. Alternatively, it may have been found here first by chance, whilst it was actually present in low numbers for a few years, undetected in other areas before rapidly expanding.

Another species appeared for the first time at Dungeness reserve on the New Excavations in 1996. This was the Nationally Scarce Annual Beard-grass *Polypogon monspeliensis*, and it too has now spread to the ARC Pit and to other parts of the New Excavations. Like Jersey Cudweed, Annual Beard-grass is present just across the Channel in northern France (Eric Philp *in litt.* 25 August 2003). Both these species appear to have colonised the newly-available habitat at Dungeness and subsequently spread. Does the appearance of the two species together suggest that they had both arrived at the same time and from the same source? If so, this could favour natural colonisation as the origin, if we assume that they both arrived from northern France following conditions that favoured cross-Channel seed movement. Or it could suggest that they were both introduced from the same source. It may be worth noting that no obviously alien species have appeared with these plants, apart from the ubiquitous Canadian Fleabane *Conyza canadensis*, although the alien grass Rough Dog’s-tail *Cynosurus echinatus* has started spreading elsewhere on the Dungeness peninsula in a similar manner to *Polypogon monspeliensis* and *Gnaphalium luteoalbum* (Eric Philp, *in litt.* 25 August 2003).

It is more likely that Jersey Cudweed and Annual Beard-grass arrived independently and that they were both present as seed or at very low and undetected densities before their populations spread on the new habitat and became noticed. This is certainly the case for another species, Knotted Pearlwort *Sagina nodosa*. In his 1982 *Flora*, Eric Philp wrote “Repeated searches in the Dungeness–Greatstone area, where it used to occur, have failed to find this plant although there is a chance that it might still linger on there” (Philp 1982). In 2002 Knotted Pearlwort was abundant in the area of the ARC Pit where Jersey Cudweed was found, so it is possible for plants to persist as seed or at low density for many years without being seen, even at a well-known site like Dungeness.

Whatever its true history, Jersey Cudweed could have arrived naturally or it could have been accidentally introduced. Seed from the colonies in northern France may have crossed the Channel by wind or on birds, or it could have travelled in mud attached to vehicles or as a contaminant in bird food or seed sown in the nearby gardens. In the absence of any evidence to the contrary, the RSPB is treating the colonisation as natural, and Jersey Cudweed is recognised as one of the important botanical features of the site (Akers 2002). The plant is currently thriving, and the Management Plan for the reserve includes prescriptions to maintain the damp sand habitats that are important for Jersey Cudweed and many of the rare invertebrates at Dungeness. This will be done by controlling water levels, removing colonising vegetation, grazing, and experimentally disturbing ground to create more open conditions. Staff at the reserve will continue to monitor the cudweed to make sure that the management is effective in maintaining the population.

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