

Where Does Orchid Conservation End and Gardening Begin?

Richard Bateman

Background

At the time of writing (July 2010), an energetic series of exchanges has just been posted on the HOS discussion forum in response to the news of a substantial increase in numbers of anthropomorphic *Orchis* plants present at the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust's (BBOWT) famous Hartslock Reserve, near Goring in Oxfordshire. More specifically, concern was expressed at the numbers of flowering and especially non-flowering plants identified as hybrids between the Monkey Orchid (*Orchis simia*) and the Lady Orchid (*O. purpurea*), hereafter termed the Lonkey Orchid (*O. ×angusticruris*; Fig. 1). Total numbers of the hybrid over the period 2006–9 were reported as 23 (7 flowering), 29 (11), 72 (12) and about 130 (27) (cf. Raper 2006–10; Bateman *et al.* 2008; Cole 2010). The corresponding total for 2010 was reported as 300, of which 77 flowered (Bill Temple, pers. comm. 2010; Raper 2006–10). In contrast to the near-exponential increase in the hybrids, numbers of the parental species were fairly stable over this period at about 400 Monkey Orchids and a modest increase from 7 to 23 Lady Orchids.



Figure 1: Lonkey Orchid (*Orchis ×angusticruris*), shown in its habitat at the BBOWT Hartslock Reserve, Oxfordshire (left) and in close up (right).

Photographed in 2006 by Richard Bateman

Assuming that the Lonkey Orchids show high fertility, as seems likely, these population dynamics clearly suggest a growing probability that the Lonkeys will indulge in considerable gene exchange with one or both parents, potentially converting the larger of Britain's two native populations of Monkey Orchid into a morphologically and genetically blurred introgressed swarm. Not surprisingly, this realisation prompted some spirited exchanges on the HOS discussion forum regarding whether the Lonkey Orchids, and arguably also the more modest number of Lady Orchids, should be expunged from the site in order to preserve the genetic purity of the long-established and nationally rare Monkey Orchids.

Recent research on the Lonkey Orchid yielded rapid but complex fruit

The laudable policy of open access practised at Hartslock meant that my Kew colleagues and I were able to begin morphometric and genetic study of the Lonkey Orchids in 2006, the year of their original discovery (Bateman 2006b; Raper 2006–10; Bateman *et al.* 2008). It was also fortunate that we had already gathered various kinds of data from populations of anthropomorphic *Orchis* species (a group that also includes the Military Orchid, *O. militaris*, and the eastern Mediterranean Punctate Orchid, *O. punctulata*) from across Europe to inform a different, long-term research project. This prior knowledge provided an exceptionally robust framework within which the Hartslock plants could be interpreted.

Fieldwork had already taught us that anthropomorphic *Orchis* species routinely form hybrid swarms elsewhere in Europe (for example, in the Vercors region of France: Figs 2 & 3). Their gradational morphology suggested that the first-formed hybrids were subsequently crossing with each other and back-crossing with both parents. Widespread evidence of gene exchange was found in supposedly pure individuals of every one of these species. Analyses of nuclear (ITS) gene sequences and genome fragmentation data (AFLP) showed that *O. simia* clearly shared genes with *O. punctulata* in the eastern Mediterranean and with *O. militaris* further west, while *O. purpurea* appeared to consist of two distinct genetic groups, one dominantly occurring in the UK and the other dominantly occurring in Continental Europe. Evidently, despite being widely accepted by orchid systematists as full species, these taxa are not strongly reproductively isolated (Fay *et al.* 2007; Bateman *et al.* 2008). Although *O. militaris* appeared morphologically intermediate between *O. simia* and *O. purpurea*, it proved on closer examination to be the most genetically distinct and cohesive of the three species.

Figure 2 (opposite page): Mount of flowers of Lady Orchids (l), Military Orchids (m) and their hybrids (h) from the population shown in Figure 3.
Photos by Richard Bateman

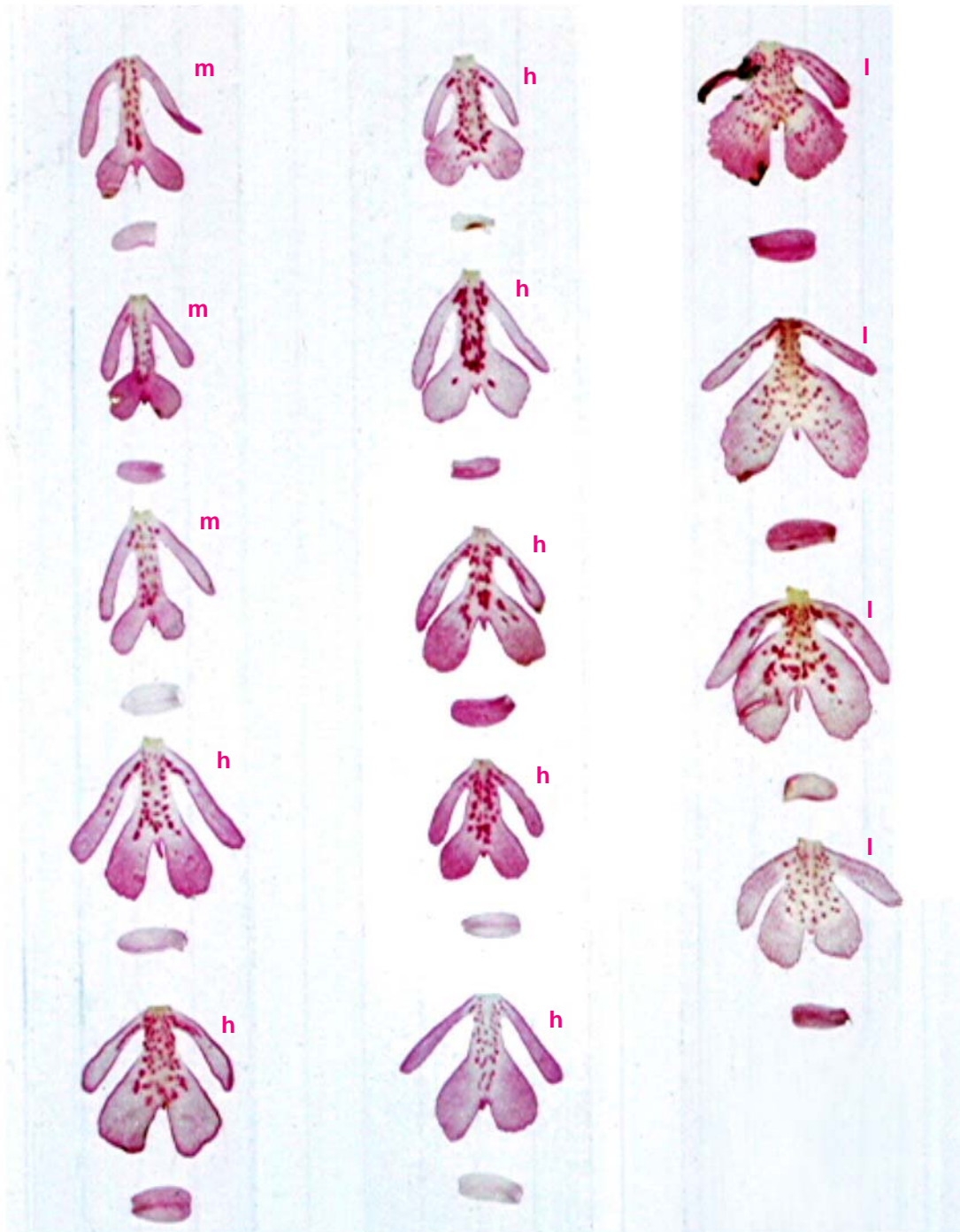




Figure 3 (above): Hybrid swarm of Lady and Military Orchids in the Vercors, southern France.

Photos by Richard Bateman

Returning to the hybrid Lonkey Orchids at Hartslock, maternally inherited plastid sequences clearly showed that *O. purpurea* was their mother and the later-flowering *O. simia* was their father (Bateman *et al.* 2008). Corresponding morphometric studies suggested that the Lonkey Orchids had inherited approximately twice as much of their outward appearance from their mother as from their father. The genetic data were then used to explore the potential causes of the surprisingly recent arrival of *O. purpurea*, which first flowered at Hartslock only in 1999 (e.g. Raper 2006–10). The one *O. purpurea* population in the vicinity that is widely accepted as native could not have been the source of the Hartslock plants, as it has a typically British complement of genes, whereas those at Hartslock have genes far more typical of Mediterranean populations. This explanation also rules out as a source the more distant UK concentrations of *O. purpurea* in Kent. Assuming that no orchid enthusiast was so foolish as to deliberately plant tubers of *O. purpurea* at Hartslock, these data strongly suggest that the Lady Orchids travelled from the Mediterranean as seeds. This could have occurred either in high-level air currents or through accidental or deliberate introduction by man (Bateman 2006a, b; Bateman *et al.* 2008). Sadly, there is no known scientific test that can distinguish between these competing explanations. Deliberate introduction remains a distinct possibility, with obvious implica-

tions for conservation of the bona fide natives at the site. Should remedial action be taken?

The increasingly interventionist nature of orchid conservation in Britain

For most of the second half of the 20th Century, the most popular form of intervention in orchid populations to be sanctioned by conservation bodies was artificial pollination; humans wielding paint brushes simply substituted for supposedly less reliable insect pollinators. An early example of this strategy was the hand-pollination programme instituted by Hector Wilks in 1958 at the only persistent native population of *Orchis simia* other than Hartslock, located near Faversham in Kent (e.g. Bateman & Farrington 1989); this straightforward intervention apparently boosted the population from 10 to 162 plants in just six years (Harrap & Harrap 2009).

I paid my first visit to the (by then somewhat smaller) native population of *Orchis simia* at Faversham in 1980. From there, I travelled further East through Kent to the Kent Trust reserve at Parkgate Down, where a small cluster of plants derived from seed collected from the Faversham population had been scattered in 1958. Once the first tranche of seedlings had appeared they were protected within an increasingly conspicuous enclosure. As many HOS members will know, that nucleus of plants has since spread across the site to build a population that has become sufficiently large to resist most of the vicissitudes that it is likely to face, either natural or man-induced. In contrast, the population at the original Faversham site has declined in recent years, despite (or perhaps because of?) the construction of an impressively intimidating perimeter fence. As an example of the deliberate introduction of native orchid stock into a novel site, Parkgate Down appears easily defensible on the pragmatic grounds of successful preservation of a severely threatened genetic lineage. On the other hand, it is unlikely that there was a previous, natural population of *Orchis simia* at Parkgate Down, where Monkey Orchids now occur alongside small populations of other uncommon orchids that are assumed to have reached the site without human assistance. Is this site a nature reserve or has it become a botanic garden?

The flagship among the many projects designed to expand our native populations of threatened orchids must surely be that propagating the Lady's Slipper, *Cypripedium calceolus*. I was privileged to visit the last remaining native plant occurring in the wild, at its spectacular West Yorkshire locality, over three years from 1979 (Fig. 4) – before the subsequent conservation-motivated ban on casual visits, but after an efficient permanent summer wardening scheme had been introduced in 1970. Perched rather precariously on its rocky hillside, that lone plant appeared frighteningly vulnerable, even though it represented a population known with certainty to have occupied the site since 1930 (Harrap & Harrap 2009) and probably much earlier. Remarkably, that plant still survives, the clone having spread considerably

across the slope during the last three decades. Nonetheless, there exist few more obvious desperate cases for conservation intervention. Since 1983, a well-funded research programme has applied several different horticultural approaches in an attempt to propagate new individuals that share all, or at worst half, of their genes with that one remaining wild plant in Britain (e.g. Ramsay & Stewart 1998). In the last 20 years several thousand aseptically produced young plants have been introduced to 23 localities in northern England, at least one of which is now open to visitors. Although these plantings have suffered very high mortality, and survivors have been slow to flower (Harrap & Harrap 2009), these reintroductions are widely regarded as a qualified success.



Figure 4: Comparison of the last remaining native individual of *Cypripedium calceolus* (left) with a flourishing population of this species in the Vercors region of southeast France (right).

Photos: left by Derek Turner Ettlinger, right by Richard Bateman

The benefits and limitations of conservation genetics

Modern high-profile projects designed to reintroduce, or to bulk up, populations of rare orchids such as *Cypripedium* are often supported by conservation genetic studies. Most such studies are based on several prior assumptions regarding these popu-

lations, most notably: (a) high levels of genetic diversity are beneficial as they permit flexible responses to environmental change, and (b) long-established native populations will have become well adapted to their local environment through the action of natural selection.

In my opinion, neither of these precepts should be accepted at face value. High levels of genetic diversity characterise orchid species that routinely cross-pollinate, whereas dominantly self-pollinating species tend to have less diverse and less flexible genomes. Yet, within the British Isles, this handicap has not prevented the self-pollinating *Cephalanthera damasonium* from becoming more numerous and ecologically tolerant than the cross-pollinating *C. longifolia*. A similar comparison can be made between the widespread self-pollinating *Ophrys apifera* and nationally endangered cross-pollinating *O. fuciflora*. And although the cross-pollinating *Epipactis helleborine* is admittedly more frequent than its self-pollinating descendant, *E. phyllanthus*, the latter will happily occupy more heavily shaded woodland than its fecund forbear; in no way does its impoverished genome appear maladaptive.

Secondly, if long-established native populations are indeed supremely well adapted to their present environments, their exceptional fitness should mean that they will experience little difficulty in countering any foreign invaders that somehow reach their habitats. Admittedly, the increase in the size of the population of putatively foreign Lady Orchids at Hartslock has been no more rapid than that of the native Monkey Orchids, but nor has it been less rapid. The population explosion among the Lonkey Orchids can readily be ascribed to hybrid vigour – a common phenomenon that is a by-product of increased genetic diversity within the individual plants. Assuming that these primary hybrids have high fertility (an assumption that, to the best of my knowledge, still requires confirmation), some back-crossing with the parental species is likely to occur, but the progeny are less likely to show hybrid vigour. Much will depend on the preferences of local pollinators and whether habitat conditions encourage some degree of spatial separation. In this context, it is interesting to note that, despite their increasing numbers, both the Lady Orchids and their hybrid offspring seem inclined to remain in a small area of the Hartslock reserve close to the woodland that crowns the hillside, rather than moving downhill to join the sun-loving Monkey Orchids. Although short, this distance may constitute sufficient spatial segregation to limit gene exchange.

For the sake of argument, let us accept the questionable precepts that (a) high genetic diversity and (b) strong local adaptation are both consistently beneficial. Given that, by definition, small orchid populations can support only a modest amount of genetic diversity, here we have a strong driver for bulking up shrinking populations. And as long-term exposure to local environments improves fitness, here we have a strong driver for maintaining the genetic purity of the population. However, it seems

to me that these two powerful drivers become contradictory once our local population has shrunk to a perilously small size; this process, commonly termed a population bottleneck, afflicted both the Hartslock and Faversham populations of *O. simia* in the mid-20th Century. Once the genetic diversity of the population has been reduced as a direct result of its shrinkage, we can achieve a rapid increase in its genetic diversity only by introducing genes – as plants, or seed, or pollen – from other surviving populations, thus threatening its hard-won local adaptiveness. As conservationists, we are faced with a classic Catch 22 dilemma that offers no easy solutions. Thus, Bateman *et al.* (2008, p. 707) concluded that only “an optimist might argue that a fresh, yet limited, injection of genes from demonstrably successful, expansive plants of a closely related species [*O. purpurea*] ... could help to return the Hartslock population of *O. simia* to its former levels of collective diversity and individual vigour.”

Another, less theoretical, conundrum is presented by the quantity and nature of the genetic data made available to conservationists. There is a strong temptation to limit the cost of, and time expended on, such a study by focusing the analysis on the population(s) that are causing conservation concern. This tactic usefully allows us to assess levels of genetic diversity in that population, but it prevents us from knowing whether this level of diversity is typical or atypical of the species elsewhere in its distributional range. Divergence from the norm is particularly likely in isolated populations of a species located along the margins of its distribution. It was the fortuitous availability of a large pre-existing body of genetic data on anthropomorphic orchids that allowed Bateman *et al.* (2008) to reconstruct the complex history of the Monkey, Lady and Lonkey Orchids at Hartslock; this in turn led them to identify the Lady Orchids as almost certainly having been derived from a non-UK source.

We should also consider briefly two forms of “unnatural selection” that together fall under the auspices of “artificial selection”. Both are forms of directional selection that drive the average appearance and genetic composition of the population in a particular direction through the intervention of man – one of the sources of inspiration for Charles Darwin’s profound evolutionary insights. The first, and most clearly damaging, form of artificial selection affecting rare orchid populations I will term ‘herbarium selection’. Evidence from the many herbarium specimens collected in the Goring area, together with contemporary accounts by field botanists, clearly reveal preferential selection of the more robust specimens of *O. simia* by Victorian and Edwardian herbarium collectors. It seems likely that their depredations substantially reduced the vigour of the residual population (Bateman & Farrington 1989; Bateman *et al.* 2008), even before extensive ploughing of the site in 1949–50 (e.g. Harrap & Harrap 2009) almost eliminated the remainder and so caused an exceptionally narrow population bottleneck. In fact, I am inclined to attribute the strikingly modest stature of the Hartslock Monkey Orchids relative to most other popula-

tions of the species more to herbarium selection than to reduced population size; not only has overall genetic diversity decreased, but the beneficial genes that allowed plants to reach larger sizes have been preferentially removed from the population. If so, the population may lie further from its adaptive optimum than most observers have supposed.

The antithesis of “herbarium selection” is what Ian Denholm and I mischievously termed “conservation selection” many years ago, in an article published in the internal magazine of the then Nature Conservancy Council (Bateman & Denholm 1982). It is almost inevitable that the vigour of individual plants will be used by conservationists as a proxy for the health of the population that they constitute. The more vigorous plants are more likely to form the basis of breeding programmes, whereas at the other end of the scale of perceived success, struggling and/or diseased plants may be weeded out of the population in a process that owes much to gardening. But natural selection is as fickle and unpredictable as the environmental shifts that drive it, causing the plant to constantly indulge in a myriad of trade-offs needed to balance the many contrasting but essential aspects of its life. Even when we deliberately force a plant towards a clear and simple goal, such as yielding a larger ear of wheat, unexpected negative features usually emerge, such as discovering that the stem is too weak to support the larger ear of wheat. It is remarkably difficult to improve upon nature.

Then there is the question of which kinds of genetic analysis should be applied to the populations of interest. Most regions of most genes, including ITS, tend to show little or no variation within species. In contrast, genetic fingerprinting techniques such as those used in forensic science and paternity cases (e.g. AFLPs and microsatellites) can usually be optimised to identify, and distinguish among, individual organisms. Which of these techniques best reveals genetic diversity within our orchid populations? This is no mere academic query. During the late 1990s, genetic studies of the few individuals of Lady’s Slipper remaining in England, both wild and captive, suggested strong similarity with the sole survivor, still hanging on by its root-tips to its West Yorkshire retreat and subjected to routine hand-pollination (Fig. 4). Thus, other individuals suspected to have been brought into cultivation from former native populations were duly crossed with the Yorkshire plant. Seedlings successfully raised from the resulting capsules were then planted out in other carefully selected locations. So far, so good.

However, subsequent analyses using more sophisticated genetic techniques (Fay *et al.* 2009) revealed differences between the genuine wild plant and some of those with which it had been crossed. The decision was therefore taken to uproot some of the recently planted juvenile orchids because of their newly recognised genetic ‘impurities’. Rumours suggest that a similar dilemma has been posed by a “brave”

decision to bulk up the formerly small native population of *Orchis militaris* in Buckinghamshire using plants derived from the larger and better known native population further east. Do earlier studies that suggested strong genetic similarity between these two Buckinghamshire populations of *O. militaris* tell the whole story? Was the western population sufficiently threatened to warrant taking the risk of disrupting its genetic cohesion? And, recognising that the resources available to our hard-pressed conservation organisations are unlikely to increase in the wake of the credit crunch and subsequent austerity drive, can we develop protocols that reduce the risk of indulging in further costly and potentially wasteful ‘two steps forward, one step back’ programmes of species conservation?

Poorly documented introductions undermine conservation and science

‘Unofficial’ introductions of orchids have a long and questionable history in Britain, and I am hardly the first observer to rail against this practice. For example, arguably the finest UK field botanist of the 20th Century wrote in the *Flora of Surrey* (Lousley 1976, p. 359) that “the doubts attached to the record of a single plant [of *Ophrys sphegodes*] in chalk scrub above Limpsfield are particularly disappointing. In 1942 Dr F. Rose transplanted *O. sphegodes* from Queen Down Warren, Kent, to a Down behind Titsey Church, and Mr Brookes’ discovery is thought to be one of the progeny. Thus, Kent has lost the root of a rarer orchid, Surrey has gained a doubtful record, and science [is thus] confused by the unknown history of an abandoned root.” And later (p. 360), “*Orchis* [sic] *purpurea* has its headquarters in Kent and appears to be making attempts to spread westwards; these take the form of small numbers of plants appearing on the E side of Surrey and usually soon dying out. It is therefore most unfortunate that in 1942 Dr F. Rose sowed seed near the main road up Titsey Hill and failed to keep his experiment under close observation. The site is so near to that of the plant found by Miss Smith in 1959 that it is impossible to say whether this is a natural appearance or not.” Two years after Ted Lousley penned these waspish comments, I accidentally encountered my first ever plant of Lizard Orchid, *Himantoglossum hircinum*, in a



Figure 5: A splendid Lizard Orchid photographed in 1978 near Box Hill, Surrey, presumed to have originated from seed deliberately spread at the locality several years earlier.

Photo by Richard Bateman

nature reserve close to Box Hill in Surrey (Fig. 5); only much later did I learn that this too was the result of seed spread several years earlier by Francis Rose. Rightly or wrongly, my excitement at my unexpected find immediately evaporated.

Returning from emotive to more rational arguments, the superb plant atlas of the British Isles produced by BSBI (Preston *et al.* 2002) recognises four categories of residency of plant species in the British Isles. By definition, “Native” plants made their way here by their own devices, whereas species placed in the three remaining categories are considered to have received assistance from man, either deliberately or inadvertently, in reaching our shores. ‘Archaeophytes’ arrived before AD1500 (most are species connected with early agriculture or forestry; it seems unlikely that Julius Caesar or William the Conqueror brought orchids with them from the Continent), “Neophytes” arrived after AD1500 but are similarly found in semi-natural habitats, and ‘Casuals’ also arrived relatively recently but have not yet established themselves far beyond human habitation. Of course, assigning any species to one of these categories relies on circumstantial evidence at best, based primarily on historical documentation but supported in some cases with direct dating of the species’ arrival from the fossil record and/or indirect dating using genetic diversity measures. Also, should we in fact assign populations rather than species to these categories? For example, it seems reasonable to assume that at least the majority of populations of *Orchis purpurea* in Kent are genuinely native, whereas the population at Hartslock could be accused of being a neophytic interloper.

One problem with uncertainties surrounding potentially man-assisted arrivals is that there is a risk of rejecting as neophytes genuinely natural invasions, particularly where seed can easily be transported by wind (as in orchids) or by animals that indulge in long-distance migration. Given the increasingly well-documented correlation of range expansions and contractions of orchids such as *Himantoglossum hircinum* in apparent response to changes in climate (e.g. Carey 1999), it seems reasonable to assume that the accelerating rate of climate change will rapidly affect populations of at least a significant proportion of our native orchids. Some, such as the Ghost Orchid, *Epipogium aphyllum*, may rapidly become extirpated, but in compensation, new orchid species are likely to invade our islands (Bateman 2006a). The last three decades have witnessed confirmed reports along the south coast of England of one or a few individuals of first *Ophrys balearica*, then *Serapias parviflora* and finally *S. cordigera*. Understandably, these reports were soon followed by arguments regarding the status of these presumed new arrivals; in particular, should they be categorised as bona fide natives or as neophytes? The more tinkering that we indulge in with regard to our native flora, however well-intentioned, the greater is the risk of mistakenly rejecting genuine invasions as mere man-assisted neophytes.

Broader implications: a personal perspective

The study of the anthropomorphic *Orchis* species and hybrids at Hartslock conducted by Bateman *et al.* (2008) could in theory be viewed as a triumph of “forensic conservation”. We were able to identify the newly arrived Lady Orchids as being of likely Continental origin and to detect within ostensibly pure Monkey Orchids the traces of past hybridisation with the Military Orchids that grew alongside them in the 19th Century. We were even able to detect low levels of genes derived from Continental rather than British Monkey Orchids. This perplexing result eventually gained an explanation at a HOS meeting, where I first heard the rumour that, in the late 1980s or early 1990s, a single spike of *O. simia* removed from a population in France had provided pollinia that were transferred to some of the Hartslock plants, with the aim of improving the genetic diversity of the population (R. Manuel, C. Raper & N. Phillips, pers. comm. 2008). Admittedly, this in-depth knowledge of the Hartslock *Orchis* population(s) was gained at the expense of considerable time and resources, and as a by-product of a broader, pre-existing study of the genus (previewed by Fay *et al.* 2007).

By now, readers will have ascertained that 30 years of cogitation has left me internally conflicted regarding the key question of when and how conservationists should intervene to rescue (or even resurrect) ailing populations of native orchids. From the perspective of a life-long orchid enthusiast, it is difficult for me to reject any measure that might allow me to continue to visit the orchids that I love in the countryside that I love. Yet even when applying such emotive criteria, I have mixed feelings, recalling my cruel disappointment at discovering my first Lizard Orchid to have been a “fake”. This and other similar experiences left me mulling over the question of at what point a supposed nature reserve becomes more accurately described as a botanic garden. On the other hand, at least some forms of intervention have yielded good results. The Hartslock population of Monkey Orchids fluctuated between none and nine flowering plants for two decades before hand-pollination was introduced in 1977; the population began a gradual but steady increase a few years later. Assuming that the expansion was indeed the result of the hand-pollination, this intervention may well have saved the population from extirpation.

Nonetheless, viewing these issues as a “dispassionate” scientist, I question some of the key assumptions that underlie many recent interventions. Even in rare cases when population-genetic data are gathered, different methods of assessing genetic diversity can give radically contrasting results. Routine prescriptions for high genetic diversity combined with adaptation to local conditions are contradictory and so difficult to fill. Moving from genetics to demographics, fluctuating population sizes (especially of flowering individuals) are typical of terrestrial orchids, making genuine downturns difficult to identify quickly. Also, the cause(s) of downturns can be extraordinarily difficult to identify with confidence, especially when (as in most



Figure 6: Is the near-endemic Northern Marsh-orchid of greater value to international conservation than our sole native Lady's Slipper?

Photo by Richard Bateman

cases) the population in question does not have a well-documented history. And lastly, a cold, hard review of species conservation conducted at a global scale, measuring limited available resources against likely medium-term gains, would almost certainly abandon such geographically peripheral populations to their fate. UK specialities such as the Northern Marsh-orchid, *Dactylorhiza purplella* (Fig. 6), would most likely be deemed of greater international importance than our anthropomorphic orchises or Lady's Slippers.

What lessons do I draw from these experiences? The most obvious and irrefutable conclusion is that all interventions must be subject to thorough, long-term and reliable documentation. The power of undocumented interventions to wreak havoc with both science and conservation has long been recognised but, in my opinion, it has usually been under-estimated. Secondly, given the questionable assumptions that underlie interventions and the decidedly mixed outcomes that

have ensued, it is essential that the decline in the relevant population(s) is shown to be long-term and life-threatening. Thirdly, every effort should be made to determine the cause(s) of the decline, so that any attempts to rectify that decline are targeted, and their likely consequences predicted as accurately as possible. It is all too easy to make matters worse rather than better. And lastly, active conservation efforts are undoubtedly most effective when pursued locally, but monitoring and, more controversially, prioritisation of species and sites are better decided nationally or preferably internationally. This contradiction of scale between assessment and intervention will inevitably continue to generate tensions within the conservation movement.

And all this monitoring and remedial work has to be achieved in the context of ever-more limited funding and a recognition that, in most cases, the health of the targeted orchid species is likely to rest largely on the health of the entire ecosystem of which it is merely one of many components. This widely accepted truism gives me a welcome opportunity to end by congratulating the committed BBOWT conservationists who have so successfully proctored the Hartslock Reserve, and to state that, despite their dubious parentage and excessive joie de vivre, I still would not advo-

cate expunging the Lonkey Orchids from Hartslock. Rather, I would suggest emulating Parkgate Down but in Oxfordshire, spreading seed extracted from Monkey Orchids in a locality that appears suitable but has not previously supported the species. For me, the Lonkey Orchids remain an interesting ongoing natural experiment in the effects of hybridisation – one “benefiting greatly from the fact that, unlike previous cases of introgression among anthropomorphic *Orchis* species, it will have been monitored since very soon after its inception” (Bateman *et al.* 2008, p. 707). In my view, the Lonkey Orchids have earned their (perhaps transient) place in the sun.

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