

The bulb trade—a threat to wild plant populations

Mike Read

Every year millions of bulbs, corms and tubers are being dug up in the wild to supply the market for garden plants. In many cases the level of exploitation is so high that it threatens some species with extinction in their natural habitats. Some have already been lost. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which has been so successful in controlling damaging trade in certain species of animals, has yet to address the bulb trade effectively. One of the difficulties to be overcome is assessing its true extent and its effect on wild populations. In 1987 the FFPS contracted its staff botanist, Mike Read, to investigate the trade in wild-collected plants in Turkey. The findings reported here point clearly to the need for further research, more legislation and the promotion of sustainable methods of propagation in the countries of origin.

The trade in bulbs* is centuries old. Tulips taken back home from Istanbul by the ambassador of Ferdinand I were in flower in Augsburg in 1559. Between 1700 and 1730, rare forms could fetch '500–1000' gold coins. The trade has waxed and waned over the years, but investigations have now exposed that in the last 15 years imports of wild bulbs have reached enormous and frightening proportions. It is now revealed that in the last 10 years alone, Turkey has exported — among a list that would fill many pages of a mail-order catalogue, or many feet of supermarket shelf-space — 71 million anemones, 20 million cyclamens, 62 million summer snowflakes (*Leucojum*) and 111 million winter aconites (*Eranthis*). The export of snowdrops alone has risen to over 30 million a year. Turkey appears to be by far the greatest source of wild-collected bulbs, but it is by no means the only country losing its wild-flowers to the trade — the exploitation is occurring from Canada to India, from Portugal to Japan.

The transfer to cultivation of plants and seeds

*In this article 'bulb' is used in its broad sense to include 'tuber', 'corm', 'rhizome' and other underground storage organs.

The bulb trade

collected from the wild is one of the requirements of the birth of civilizations, for it became obvious that propagation of one's own plants has significant advantages — not least increasing the volume and reliability of the 'crop', and avoiding the need to keep moving on as wild plant resources dwindled. Millennia later, such important lessons have still not been fully understood. Plants are still being gathered from the wild in excessive quantities when now much advanced propagation techniques could produce better, healthier and ultimately cheaper plants, certainly at a fraction of the environmental cost.

Why then has there been this upturn in a completely unnecessary and damaging trade? First, the discovery of species suitable for Western gardens has not always led to propagation of these species in the nurseries and greenhouses of the horticultural trade, simply because, for some, gardening is a business where short-term profit outweighs other considerations. In other words, if a marketable species is available from the wild at a lower cost than from artificial propagation, then the wild 'supply' can be exhausted first, regardless of the consequences. Second, the millions of gardeners who buy these wild-

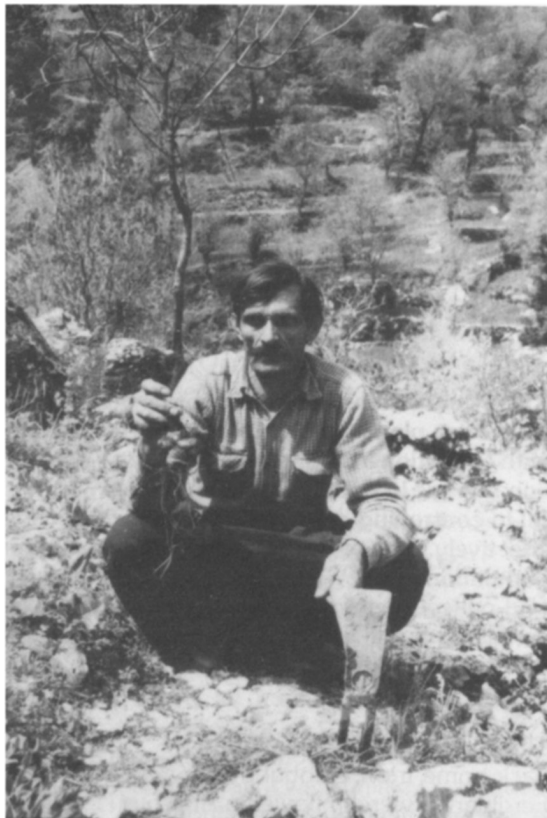
127

collected plants are neither aware of their origin, nor of the low quality and unhealthy nature of the plants they are buying. Third, the horticultural world is always searching for novelty. Ironically the plant breeders' efforts have produced bigger and bolder garden hybrids and cultivars that are increasingly inappropriate to the average garden, which shrinks in size with each passing year. The alternative source of novelty is, of course, nature.

The chain of trade

The pathway of trade that leads, for instance, from a Turkish villager to a Western gardener is complicated, and has taken a lot of unravelling. Bulbs can often change hands five or six times along the way. The summary given here is an example of the type of route taken for one of those species collected in enormous quantities for large commercial enterprises and should not be taken to hold true for all cases, least of all for the very rarest species most persistently sought after by specialist collectors.

In the village of Bayir, near Marmaris on Turkey's south-western coast, collecting is organized by Nazmi Kalayci, a local farmer who started collecting *Cyclamen* in 1980. For him and his fellow villagers, the flowers are a welcome free harvest. The ready market for *Cyclamen* bulbs provides a much-needed means of increasing their meagre income. Although Nazmi has managed to uproot as many as 1000 bulbs from the steeply sloping, stony soil around his village in a single day, the total is usually far more modest. During the plants' flowering season many members of the village community are involved, and 10–15 tons of bulbs have been collected around Bayir in a single season. While in the last 4 years Nazmi has been able to increase the price they sell the bulbs 10-fold, this difference is more than accounted for by massive inflation. It works out at less than one penny per *Cyclamen*, and it is back-breaking and sometimes dangerous work. A letter from a villager who lives on the slopes of Mount Anamas in Beysehir-Sarkikaraagac (southern Turkey) describes how in recent years the snowdrop bulbs collected around his village have become restricted to rough and dangerous slopes, and how many accidents



A Turkish villager collecting cyclamen tubers (*Mike Read*).

have been occurring. He expressed the villagers' fears that in the future lives might be lost.

The Turkish traders send out representatives to travel from village to village, buying up large numbers of a mixture of species. The villagers of Bayir sell their bulbs to an employee of the largest of all Turkish bulb-export companies, Marla, based near Istanbul. These wild-collected bulbs are brought together to be sorted for size and species, cleaned and stored — ideally in dry and cold conditions — in large warehouses. Sometimes storage conditions leave a lot to be desired, and many wild bulbs die from desiccation or rotting while in storage.

Dutch buyers from many of the famous bulb houses in The Netherlands visit their Turkish contacts in late spring and early summer and buy up consignments of many species. Prices vary with species and age of the bulbs, snow-

Oryx Vol 23 No 3, July 1989



Cyclamen hederifolium growing in south-west Turkey (Mike Read).

drops make roughly £20/1000, cyclamens make £90/1000.

Bulbs are transported across Europe on large lorries to their destinations, the Dutch bulb companies, which are ready to rapidly sort, pack and sell them on again. Very few appear in the enormous Dutch horticultural auctions; generally buyers are already lined up. Those bulbs that are destined to reach the UK have been ordered by retailers and wholesalers and the greatest part of the deliveries comes by boat through Felixstowe and Harwich in August and September, mixed in with much greater quantities of hybrids and cultivars produced by the Dutch growers. Many of the wild bulbs will appear in their Dutch packets in garden centres and small high street retail outlets. Many more, having arrived in bulk from Holland, are packaged by UK-based wholesalers and are sold to large garden centres, supermarket chains, even 'do-it-yourself' stores. Many others will appear in the pages of mail-order catalogues.

And so it is that British gardeners will pick up, buy and plant endangered, but colourfully marketed wild plants from the meadows, mountain pastures and woodlands of countries many thousands of miles away.

The labelling 'Produce of Holland' serves to complete the deception. Worse still the utterly fraudulent 'Grown in Holland' continues to appear on packets of rare Turkish bulb species that have even been banned from export from Turkey.

Where do the bulbs come from?

Research has so far produced evidence that wild

The bulb trade

bulbs are being commercially exported from at least Canada, Hungary, India, Japan, Nepal, Portugal, Turkey and the United States. This list is almost certainly incomplete. Most certainly the very rarest species and forms are being arduously sought out and collected by many hundreds of specialist fanciers. This is occurring worldwide, wherever bulbs grow wild, and represents an enormous pressure towards extinction.

Where do the bulbs go to?

Roughly two-thirds of wild-collected bulbs go to The Netherlands. The other third goes to a range of countries including the UK, the USA and West Germany (Figure 1). However, most of the bulbs entering The Netherlands are subsequently re-exported, worldwide, though indications are that the UK, USA and West Germany together take over half of the wild bulbs trafficked through The Netherlands (Figure 2). Since 1982 the Dutch share of the wild bulb market has probably fallen back a little as increasing numbers of dealers from other importing countries deal directly with traders in the exporting countries.

How many bulbs — and of which species?

The collection and trade in wild bulbs has been rising rapidly since World War II. By 1972, 25 million bulbs a year were being dug out of the ground in Turkey, and exported. Ten years later the figure of 25 million had been exceeded for snowdrop bulbs alone. In Turkey, at least 20 types of bulbs have suffered exports in excess of 100,000 in one year. Figures 3 and 4 show the details of this increase. In each case these figures should be considered a minimum, as the number of bulbs exported from Turkey without any documentation can only be guessed at. Elsewhere, Portugal for instance is exporting 1,000,000 wild *Narcissus* bulbs annually.

The export and import data are grouped into genera. Details for individual species are extremely difficult, sometimes impossible to come by. Exports for many genera fluctuate from year to year (within the overall upward trend), depending on weather, the efforts of individual traders and to a lesser extent on fashions in importing countries. Consequently, data for any

specific year are of limited value. Table 1 gives the average exports from Turkey for the years 1983–1987 (1987 is the last year for which any accurate figures are yet available) inclusive, and the highest exports for a single year since 1972.

The Law

International

The legislation of the Convention on International Trade in Endangered Species (CITES, now ratified by nearly 100 countries) is only relevant here at present to species of *Cyclamen*, all

of which are on Appendix II, requiring that exports be monitored by means of the issuing of permits. Turkey has not yet ratified CITES. In November 1988 at the inaugural meeting of the CITES Plants Committee, at Kew Gardens in London, it was agreed to propose the addition of both *Galanthus* and *Sternbergia* to Appendix II of the convention.

EEC

In implementing the CITES legislation regarding *Cyclamen*, all species have been granted the protection of listing on Annex C2 of EEC regulation

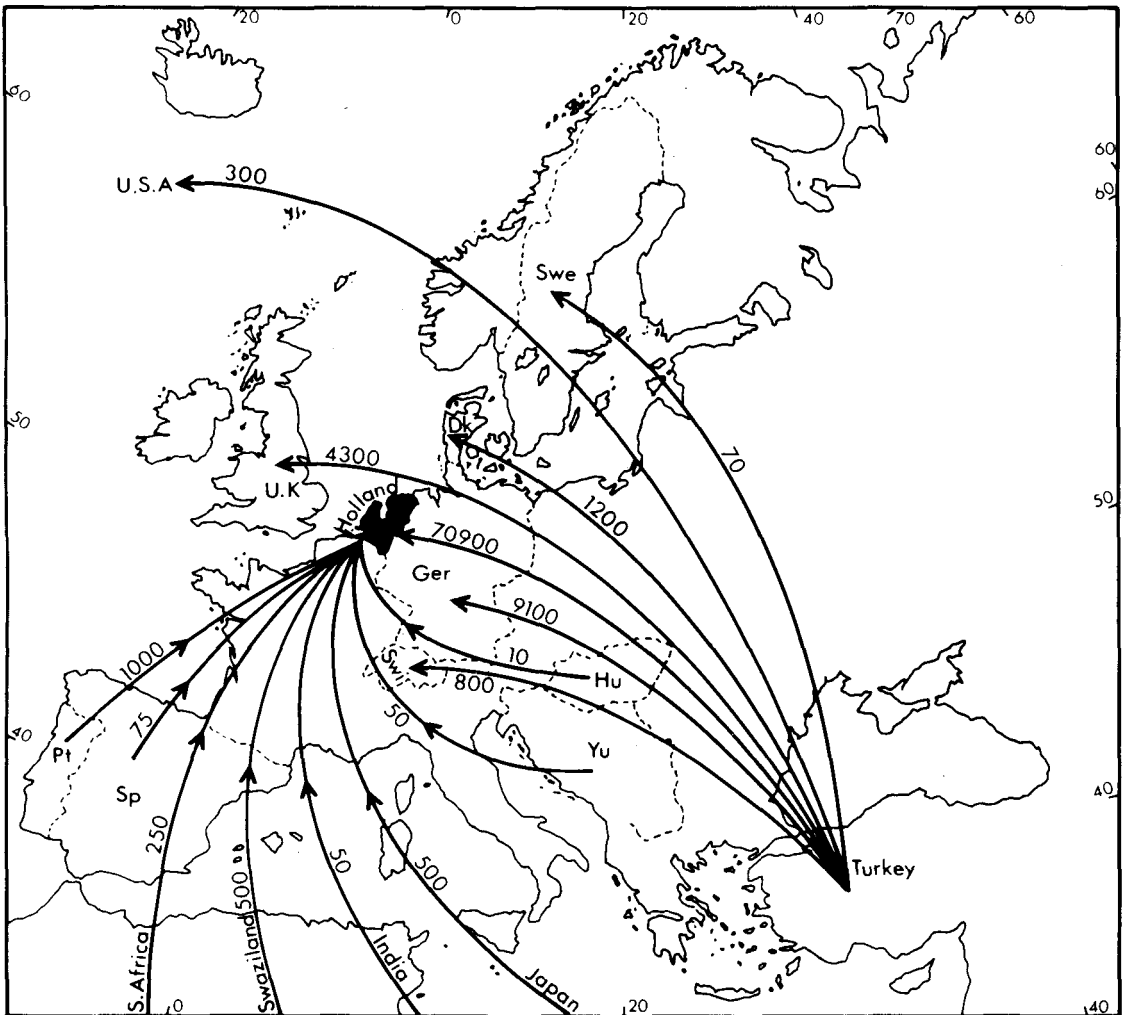


Figure 1. Numbers of wild bulbs from countries of origin (approximate numbers × 1000).

3026/82. Three species have been given additional protection equivalent to being on Appendix I of CITES, thereby effectively banning their export, or the sale of wild-collected specimens. These are *Cyclamen balearicum*, *C. graecum* and *C. creticum*. There is no general EEC legislation preventing the over-exploitation of threatened plant species.

National

The level of protection afforded to wild plant species varies considerably from country to country, as does the effectiveness of such legisla-

tion and its enforcement. Even a country such as Turkey, which at first would appear to have a substantial package of relatively well-enforced legislation covering wild plants and their exploitation, suffers from subtle flaws in this legislation, which render it largely useless. Under Turkish law a whole range of species is banned from export, with many more coming under a quota system with only a limited amount of 'wild' material being allowed out. 'Cultivated' material is not subject to restriction, and it is in the interpretation of 'cultivation' that problems — and massive loopholes — arise (see Collection or cultivation?).

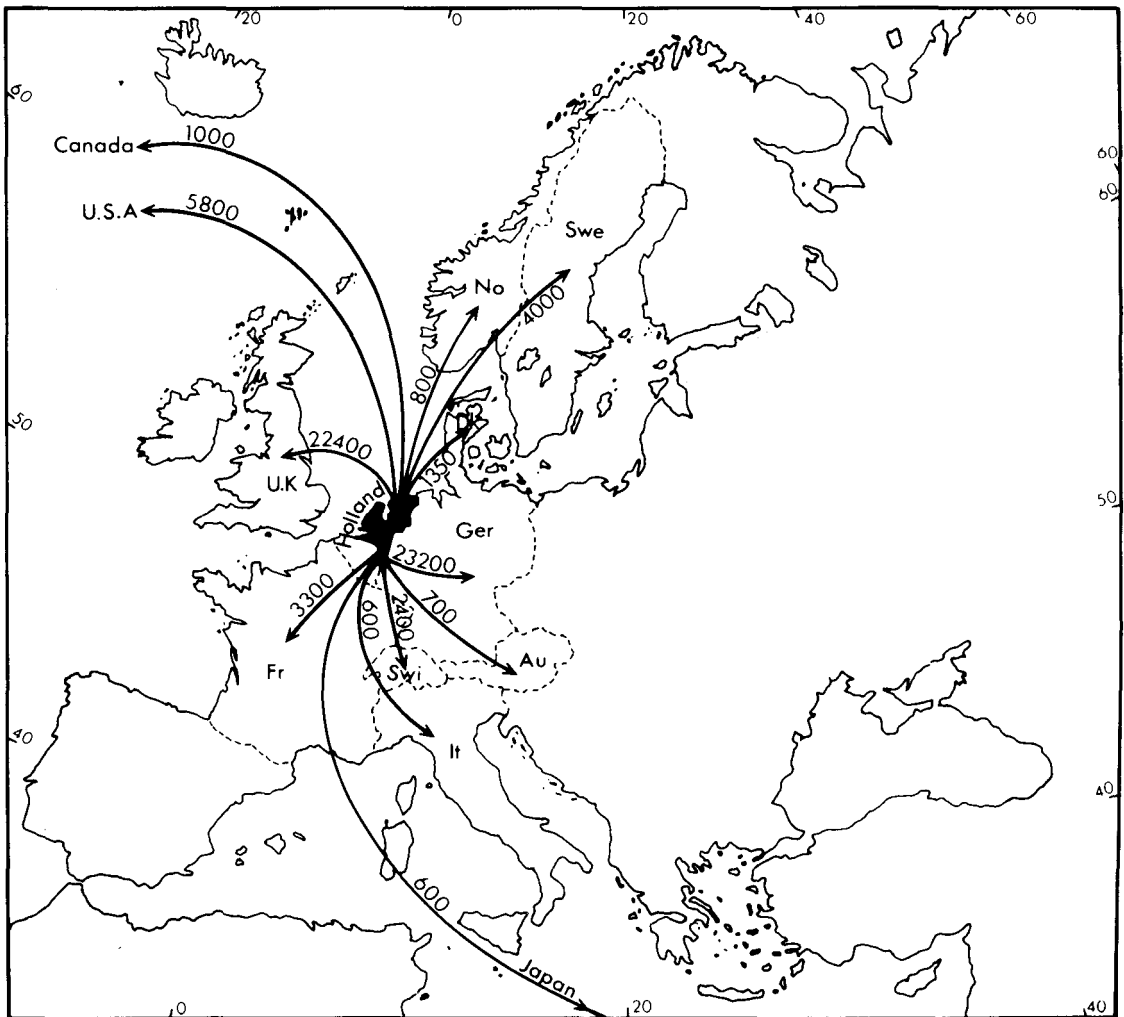


Figure 2. Numbers of wild bulbs trafficked through The Netherlands (approximate numbers x 1000).

Disease — the hidden threat

The implications of introducing unknown diseases with wild plants are frightening. Under UK legislation all plants (other than some consignments under 2 kg) have to be accompanied by plant health ('phytosanitary') certificates to be allowed into the country. The system is clearly not working. Dutch traders are allowed to issue their own plant health certificates for plants being re-exported. This is a very dangerous situation. At best, the insect pests and fungal spores that are often carried on wild bulbs ensure their rapid demise after planting. Under average garden conditions at least a third of wild-collected *Cyclamen* and *Narcissus* planted in the UK will never appear above the soil, few indeed will survive longer than a year. At worst, pests can spread to other plants in the garden, greenhouse or elsewhere. Colorado beetles have been observed on stocks of snowdrop bulbs belonging to a trader near Turkey's Black Sea coast. The bulbs were destined for The Netherlands and thence the UK. Narcissus fly has been imported to the UK on wild collected *Sternbergia*, bought in a supermarket. All kinds of moulds and fungi can be found on wild-collected bulbs sold through garden centres. The contrast with the vigorous, healthy, artificially propagated plants produced by The Netherlands is enormous, yet at the end of the chain of trade the gardener is given no indication whatsoever as to the foreign, wild origins of the plants he could be buying.

Conservation implications

The uncontrolled exploitation of any wild resource is dangerous. Dozens of wild bulb species are under threat of over-exploitation. Exactly how close we are to extinctions of wild populations or whole species is difficult to assess. Some have already been lost forever. Recently, thousands of bulbs of the beautiful white-flowered *Sternbergia candida* were 'on the market' within 2 years of its discovery as a new species. It now seems uncertain whether any remain at its only confirmed locality. As far afield as Chile a species of *Tecophilea* has been completely wiped out in the wild by the bulb collectors. In 1981 a shipment estimated as containing a quarter of the then known population of the rare *Cyclamen mirabile* was confiscated by UK

Customs. They were labelled as *Cyclamen hederifolium* as *C. mirabile* is banned from export from Turkey. *Cyclamen mirabile* is still on sale in the UK, now labelled as *C. europeanum* (a species that does not even occur in Turkey!). In northern Spain a subspecies of *Narcissus* has been collected to extinction.

It is also important to note that hundreds of bulb species face substantial threats from other directions, such as changes in agricultural practice and road and building developments. In combination with collectors these can be enough to push a species over the brink. *Narcissus wilkommii* was last seen in the wild in 1988 in southern Spain when a hotel was built over its only remaining site.

There are two sides to the trade. On the one hand the large volume trade in once widespread species, with which this report is mostly concerned, and on the other the specialist trade in the very rarest, choicest species of interest to unscrupulous collectors and sometimes unwitting purchasers.

Little is known about the supply to specialist collectors of the deliberately 'obtained' rarest species. The prosecution and conviction in 1987 of a UK-based trader for the illegal import of cyclamens and orchids has made suppliers wary of giving information about their sources. Nevertheless, all indications point to the fact that every year thousands of the world's rarest bulb species continue to be pulled out of their wild habitats merely to embellish the collections of

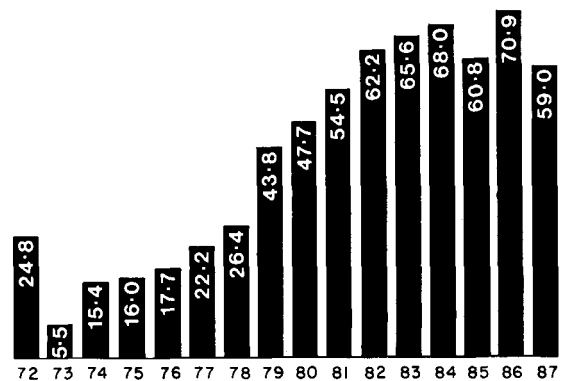


Figure 3. Numbers of bulbs (x1,000,000) exported from Turkey, 1972–1987.

specialist fanciers. Within the horticultural world this is truly an international scandal.

Collection or cultivation?

The advantages of a cultivated plant over a wild-collected plant of the same species are legion. The cultivated plant is likely to be healthier, free from pests and diseases. The cultivated plant is easier to establish having been raised in conditions broadly similar to those where it will finally grow. The cultivated plant does not have to suffer the abrupt break in growth that the wild plant does after uprooting. The cultivated plant can be expected to flower at a predictable time. The cultivated plant has been raised in conditions that need not be environmentally damaging. Furthermore, cultivation ensures a renewable, reliable supply of stock for trade.

Why then does collection from the wild continue? First, for countries where labour is cheap, the price differential is tipped in favour of wild plants. Second, the Dutch bulb trade has been importing bulbs for centuries and, although the major part of their sales is of home-produced plants, old habits die hard. Furthermore, there are those who simply have no concern for the future of wild species or at best mistakenly hold that their practices are not harmful.

However, in terms of the price differential a few of the more forward-looking traders are beginning to realize the transient nature of this situation. From a purely commercial point of view, traders would be well advised to switch to controlled propagation before they find themselves having created a demand that cannot be supplied from dwindling wild resources. That the

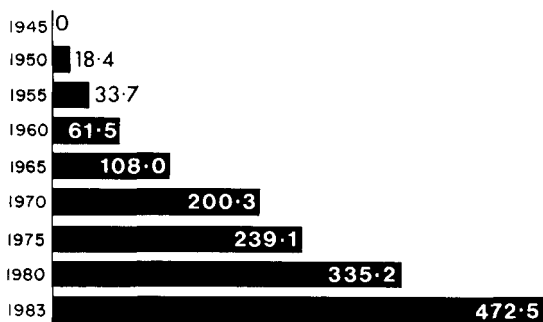


Figure 4. Weight of bulbs (x1000 kg) exported from Turkey, 1945–1983.

trade in wild-collected plants can be severely harmful to natural populations is well established. Also well established are the techniques that will be required to artificially propagate all those species that are being stripped from the wild. The introduction of new species to cultivation is something for which the horticultural trade can be justifiably proud. The continued, unnecessary exploitation of wild populations of species that are easy to propagate in cultivation, is not.

The most exciting progress of all would be the establishment of artificial propagation in the countries of origin. Not only would this minimize environmental damage, but it would provide a secure, safe and reliable income where it is most needed.

Early attempts at such indigenous cultivation are in danger of badly misfiring. Some bulb species are now being ‘cultivated’ in the same countries from which they are being collected. However, this ‘cultivation’ does not fit into the usual understanding of the term, and does not take the

Table 1. Exports of wild-collected bulbs from Turkey

	No. bulbs exported	
	Average no./year 1983–1987	Highest in 1 year 1972–1987
<i>Anemone</i>	6,642,000	10,200,000
<i>Arum, inc. Dracunculus</i>	115,000	303,000
<i>Chionodoxa</i>	0	58,000
<i>Colchicum</i>	3,000	50,000
<i>Cyclamen</i>	2,123,000	5,000,000
<i>Eranthis</i>	11,528,000	13,510,000
<i>Fritillaria</i>	406,000	750,000
<i>Galanthus</i>	36,452,000	40,000,000
<i>Geranium</i>	110,000	240,000
<i>Gladiolus</i>	40,000	202,000
<i>Iris</i>	57,000	207,000
<i>Leucojum</i>	8,318,000	13,165,000
<i>Lilium</i>	229,000	595,000
<i>Merendera</i>	0	2,000
<i>Muscari</i>	1,000	467,000
<i>Narcissus</i>	26,000	855,000
<i>Ornithogalum</i>	11,000	151,000
<i>Oxalis</i>	0	20,000
<i>Panocratium</i>	0	10,000
<i>Scilla</i>	60,000	273,000
<i>Stembergia</i>	292,000	450,000
<i>Tulipa</i>	77,000	265,000
<i>Urginea</i>	6,000	20,000



Narcissus triandrus, commonly known as angel's tears, is collected from the wild in Portugal and is readily available in the UK (Mike Read).

pressure off the wild populations. What is happening is that wild-collected bulbs too small to be accepted by Dutch buyers are being briefly transplanted for a year or two in fields near the exporters' warehouses until large enough for export. A few of these transplanted bulbs may naturally set seed or produce small offshoots during this time. Normally, however, partial or complete replenishment of these stocks is required every year with further deliveries of small wild-collected bulbs. These transplanted wild bulbs are claimed as being artificially propagated. There is a further danger here, for if these procedures become widely established it becomes economically logical for the traders to strip entire wild populations rather than only taking those plants judged to be of a saleable size at the time of collection.

Recommendations

While the ideal solution would appear to be local cultivation of native species from seed, a number of steps have to be taken rapidly to avert further serious damage. Funding to make progress on the following is most urgently sought:

Legislation

Banning import of all wild-collected species of

bulbs — except where it has been clearly demonstrated that the levels of exploitation for the species concerned are indefinitely sustainable.

Instigation of EEC legislation requiring labelling of horticultural bulbs' origins at the point of sale, and identification to species level on all transit, trade and health documents.

Strengthening the controls covering the issue of plant health certificates for re-exported plants, especially in The Netherlands.

Addition of several genera (to include *Sternbergia* and *Galanthus*) to the Appendices of CITES.

Advisory

Dissemination of advice to consumers on how to avoid buying bulbs removed from dwindling wild populations.

Provision of advice on appropriate and sustainable methods of propagation to governing authorities, traders and growers in the exporting countries.

Research

Investigation of the 'undercover' trade in endangered bulb species.

Assessment of the extent of artificial propagation of endangered bulb species outside their countries of origin.

Acknowledgments

This report presents conclusions of research carried out by the FFPS. It also draws on research the author has carried out for the Wildlife Trade Monitoring Unit, Cambridge, funded by the World Wildlife Fund (US) and for the Royal Botanic Gardens, Kew. Many people have given valuable time, advice and knowledge, or provided facilities to assist in the research required. The following is by no means an exclusive list. UK: Richard Bailey, Rose Casserly, Chris Grey-Wilson, Chris Humphries, Sabina Knees, Beverley Lear, Gren Lucas, Brian Matthew, Sara Oldfield, Barry Thomas and the staff of FFPS; Greece: Byron Antipas, Peter Broussalis; The Netherlands: Minouk van der Plas-Haarsma, Ger van Vliet, Onno Wijnands; Portugal: Jorge Paiva; Turkey: Kerim Alpinar, Tuna Ekim, Paul Hurdle, Unal Kol, Neriman Ozhatay, Hasan Tahsin Veliagagil, Mecit Vural, Kemal Yasemin and the British Embassy, Ankara; USA: Mrs Russell Arundel, Faith T. Campbell.

Mike Read, 1 Fivelanes, Dobwalls, Liskeard, Cornwall PL14 6JL, UK.

Oryx Vol 23 No 3, July 1989