



Eva Crane Trust

ECTD_160

TITLE: When important honey plants are invasive weeds.

SOURCE: *Bee World* 62 (1) 28 – 30

DATE: 1981



Bees in Agriculture

When important honey plants are invasive weeds

The conflict of interests when plants valued by beekeepers are invasive weeds is mentioned on page 3. In Australia the battle for and against eradication of *Echium lycopsis* (syn. *plantagineum*) has been raging for the last three years.

In the Northern Hemisphere, the plant—which has pretty purple flowers—is known as purple viper's bugloss, and it is valued as a member of the wild flora in many areas. It was introduced into Australia some eighty years ago and has spread over much of the southern area, in Western Australia, South Australia, Victoria, New South Wales, and Tasmania. In dry areas it is a useful feed for livestock—hence its name Salvation Jane. With suitable management practices, it can be highly productive, with a nutritive value similar to that of subterranean clover (*Trifolium subterraneum*). In areas with higher rainfall the plant is known as Paterson's curse: it grows so strongly that it reduces pasture production, and it can contain pyrrolizidine alkaloids in sufficient amounts to poison sheep, cattle, pigs and horses. The alkaloid content tends to vary with the plant's stage of growth, the type of soil, the amount of fertilizer used, and the climate. In view of the situation, pest insects that might control the plant were sought in other countries, and by 1978 two were selected as showing great promise: a leaf-miner moth *Dialectica scalariella* and a flea beetle *Longitarsus echii*¹.

News that the Australian Agricultural Council had approved the release of these insects on 30 January 1979 brought a vigorous protest from the Federal Council of the Australian Apiarists' Association. The Council's submission to the AAC² reported that a third of the economy of many Victorian commercial beekeepers depended on the plant as a honey source, half the economy in South Australia, and a quarter in New South Wales. The submission ended with the words 'The viability of this small,

efficient, Australian primary industry, an industry proud of its record of independence of Government subsidisation, an industry which in remaining viable has so much to offer Australian agriculture in the area of incidental and commercial pollination, is seriously at risk'. There was a further submission, and in March it was announced that the proposed biological control programme would be deferred until the situation has been further evaluated³.

A cost/benefit analysis of biological control of the plant in Southern Australia⁴ came to the conclusion (which would not necessarily apply in wetter areas) that in most circumstances biological control would have greater costs than benefits. The maximum benefit to pastures was estimated at A\$800 000 in ideal circumstances, and the maximum loss to the honey industry at A\$2 000 000, per year.

Debate continued, and the AAC finally decided to proceed with the biological control programme. The President of the FCAAA made an impassioned plea against the decision at a meeting of the Victorian Grassland Society in April 1980⁵. In July 1980 the Australian High Court granted a temporary injunction restraining Government scientists from making further releases of the moth *Dialectica scalariella* to eradicate *Echium lycopsis*, until a further hearing⁶.

There the Australian story rests for the present, and we move on to New Zealand, where *Echium lycopsis* had also been introduced. It is known there by the neutral name blueweed, and has become well established in river beds and open country. In recent decades it has been sprayed with herbicides as a noxious weed, but by 1979 it was removed from the schedules of the Noxious Plants Act, and beekeepers will continue to harvest honey from it⁷.

In North America another introduction from Europe is in a somewhat similar position. Purple loosestrife (*Lythrum salicaria*) was probably first introduced in 1843, near New York. It has spread greatly along swampy margins of waterways, and beekeepers may harvest up to 60 kg per hive from the plant⁸. It is a perennial, with flower stalks up to 2 m high; it has a long flowering period (June to September) and seeds freely, so it can quickly colonize new areas. It can also reproduce from fragments of cut stems, and when plants that grow near water are cut down, flotation can take viable pieces to new areas. The plant 'seems very likely to invade all shallow water marshes throughout the northeast, north and central regions' of the USA. Once it is firmly established in a large wetland or watershed, control becomes exceedingly expensive⁹.

Some other plants can lead to a similar conflict between the beekeepers and the farmers who want to crop the land; some that grow in North America (and elsewhere) are listed below^{10, 11}; a few yield honeys that are unpalatable.

<i>Ampelamus albidus</i>	climbing milkweed
<i>Centurea maculosa</i>	spotted knapweed
<i>Centaurea repens</i>	Russian knapweed
<i>Centaurea solstitialis</i>	star-thistle
<i>Cirsium arvense</i>	Canada thistle
<i>Heliotropium curassavicum</i>	wild heliotrope

<i>Melaleuca leucodendron</i>	cajeput
<i>Polygonum cuspidatum</i>	Japanese bamboo, knotweed
<i>Polygonum persicaria</i>	smartweed, heartsease
<i>Prosopis glandulosa</i>	mesquite
<i>Rhus diversiloba</i>	poison oak
<i>Schinus terebinthifolius</i>	(Brazilian) pepper tree
<i>Tamarix gallica</i>	tamarisk, salt cedar
<i>Taraxacum officinale</i>	dandelion

References

References are listed in the order in which they are cited, 1-8 (relating to *Echium lycopsis* in Australia) being in chronological order.

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