

## THE AUSTRALIAN STONECROP *CRASSULA HELMSII* PROBLEM

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Further to the reference to New Zealand stonecrop in the B.H.S.C.C. 'A policy on the translocation of the Common Frog', *B.H.S. Bull* 46. p. 32, several members have requested information on what this plant looks like. In some parts of the country it has become a major problem for aquatic and adjoining ecosystems. The following information has been produced from information provided by Dr. F.H. Dawson, mainly from (Dawson & Warman, 1992) the English Nature/Institute of Freshwater Ecology leaflet '*Crassula helmsii* Focus on Control'. For persons already with the plant in their ponds the leaflet has a section on control methods, these are out of the scope of this article.

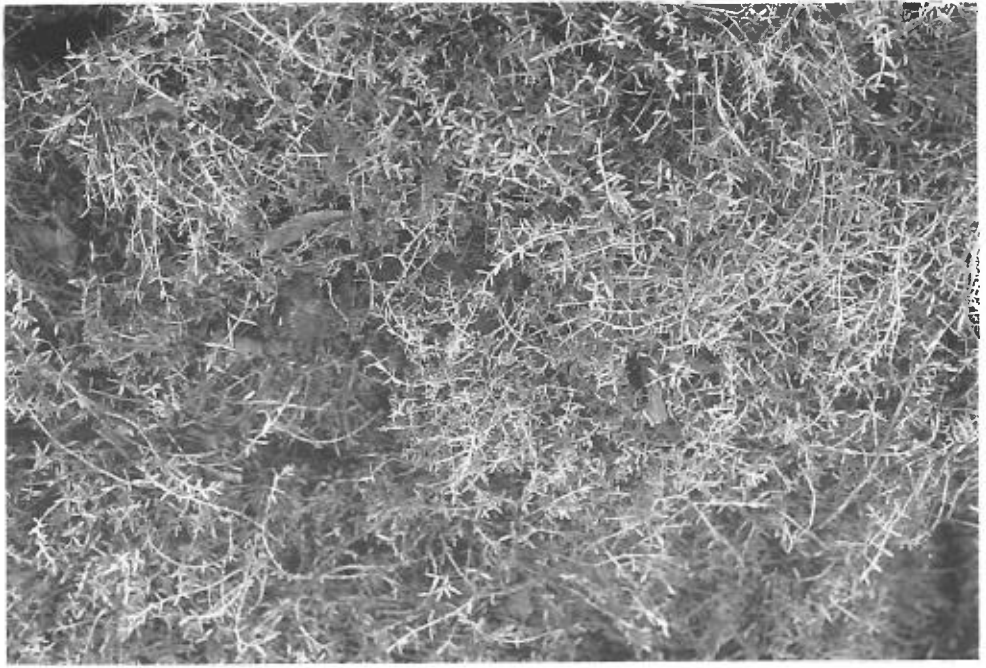
It seems likely that there has only been one introduction responsible for this widespread invasion as there is very little morphological variation in Britain when compared with the range of forms seen across Australia. The plant does not seem to support aquatic invertebrate life as well as the native species so a monoculture of this species is detrimental to the overall species present.

I have noticed that ponds which have the tendency to dry out seem to dry out quicker when they become subject to *Crassula* invasion, this could possibly be due to water loss by transpiration from the mass of leaves at the surface being faster than simple evaporation from the water surface.

The plant has already been accidentally introduced into a B.H.S. reserve pond for Natterjack Toads, it is thought by a member on mud on his wellington boots and has now spread to three other of the reserves ponds so one has to be extremely vigilant. Herbicides have been tried without success, growth is checked but the plant has not been killed. In Dawson (1994) he states 'Causes of expansion and invasion by this plant include (i) human activities, e.g. transfer on fishing nets, during transfer of fish, emptying aquaria, botanists and zoologists during surveys and pond clearance; and (ii) movement of wildlife, e.g. ponies in the New Forest and southern England. Passive drift has occurred along canals and drains, but not yet along rivers'. In the Summary he states 'The present distribution based mainly upon information from vice-county recorders indicates that the spread of the plant has been less from natural factors, e.g. animals, than from human activities. There have been deliberate introductions although passive distribution with other water plants, recreational and associated activities, particularly fishing and fish transfer, and the reintroduction of amphibians and reptiles seem to be common, albeit nearly unconfirmable, modes of spread'. Perhaps this article may reduce the spread by some humans, those of the B.H.S.

### INTRODUCTION

*Crassula helmsii* (T. Kirk) Cockayne, Australian Swamp Stonecrop, often known as *Tillaea recurva* to the water gardener or aquatic supplier, is a plant native to Australia and New Zealand which has rapidly expanded its distribution in Britain over the last two decades.



**Plate 1.** *Crassula helmsii* from drying pond. New Forest



**Plate 2.** *Crassula helmsii* with flowers. New Forest.



**Plate 3.** Dry pond showing covering of *C. helmsii*. New Forest

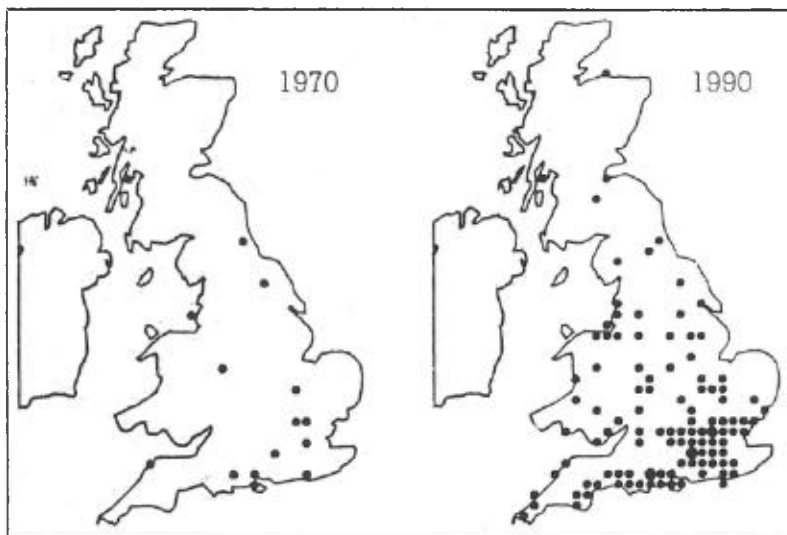
Since its initial invasion of Britain, this alien species has rapidly increased its distribution and by October 1991 had invaded c. 320 aquatic areas with the frequency of new sites being invaded still doubling about every two years. There are basically two forms of invasion; first that of a new site in a region or super county, secondly by a more local spread from established sites. This local or secondary invasion phase seems to take place rapidly and is well illustrated by the increasingly rapid spread of *Crassula* in the New Forest in Hampshire in the last 11 years following its availability at aquatic centres.

Primary introduction probably results from a wide range of human activities associated with water, including water gardening and fishing, whilst secondary introduction may also involve transfer by wildlife. Primary introduction has been accelerated because *Crassula helmsii* is generally available from aquatic centres as an 'oxygenating plant' for ponds, whilst secondary introduction has been aided by the high viability of extremely small fragments which can be transported with mud or by wildlife to establish themselves at new sites.

Much of the success of *Crassula helmsii* in any one situation related to its vigorous growth which continues throughout the year without a die-back period during winter, and to its ability to colonise a variety of different habitat types. *Crassula helmsii* has been found in acid to alkaline waters of ponds and lakes; experimentally it will grow well in flowing waters and it is also known from semi-saline sites. It has also been recorded growing on damp ground from above 0.5 metre above water level and to water depths of over 3 metres.

Unfortunately *Crassula helmsii* does not appear to be just another invading aquatic plant, since it is quickly able to dominate aquatic areas, outcompeting native species. No site once dominated has returned from near total dominance.

From this evidence it is important that the spread of this plant should be restricted and indeed halted as soon as possible.

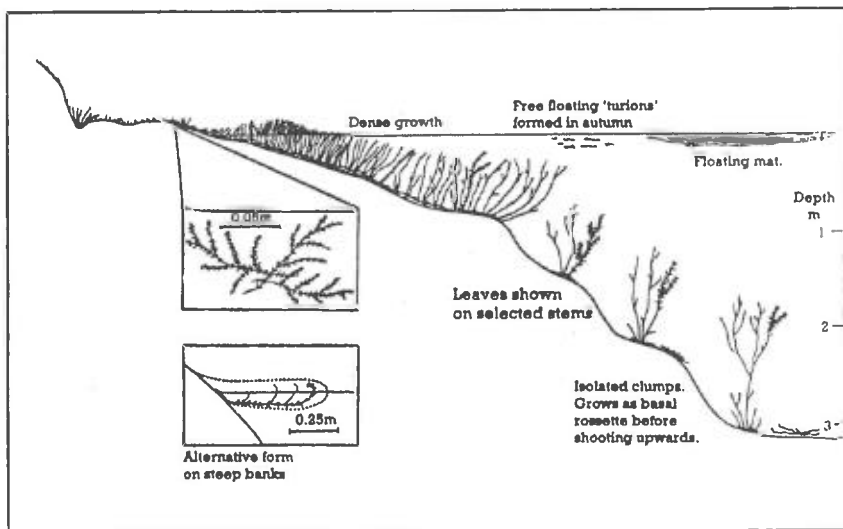


Increased recorded incidence of *Crassula helmsii* over 20 years

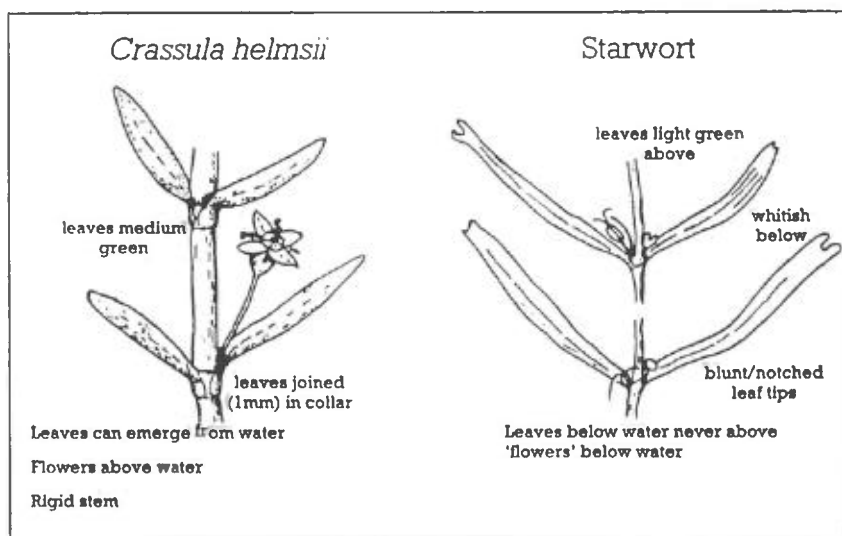
## IDENTIFICATION

*Crassula helmsii* can be found in the field, growing on damp soil in or near water as short dense stands, mid to yellowish-green and succulent-like in appearance, or underwater in loose stands reaching the surface.

The stems have pairs of unstalked opposite leaves (4-24 mm) borne on rigid stems. The aerial flowers are small and white with 4 petals on short stalks arising singly at leaf axils in summer. The joining of the leaf bases into a c. 1 mm collar is a distinctive characteristic and allows the plant to be readily distinguished from other species, such as *Callitriche* spp. or Starwort, especially in their underwater forms. The leaf shape is simple and varies from long narrow near parallel, to very slightly elliptical with sharp or bluntish tip. The leaf tip is particularly useful in distinguishing the underwater form of the plant from *Callitriche* spp. which has notched leaf tips.



The growth form of *Crassula helmsii* in physically different situations



The distinguishing features of *Crassula helmsii* and Starwort.

### CONTROL

Identification is an important first step in developing a control strategy and if there is any doubt over identification, information should be sought from the addresses given later. If samples are sent they should be dried and stored on herbarium-style sheets or may be sent by first class post, clearly labelled 'Fresh material. Store cool'.

Any confirmed occurrence should be notified to one of the addresses overleaf.

Apart from identifying the presence of *C. helmsii* it is also important to identify any associated flora, in order that adequate precautions can be taken to safeguard particularly important or vulnerable species.

## GENERAL POINTS

Remove fragments from boots and other equipment *before* leaving a site. All treated areas *must* be monitored by carefully examining several small areas for developing shoots or small buried rhizomes, looking both within the area previously occupied by the plant and within *adjacent* areas. Monitoring should be continued at *quarterly* intervals for up to 5 years following apparent elimination of *Crassula helmsii* (no elimination has so far been fully successful).

## FUTURE

An important element in the success against *Crassula helmsii* will depend on the recording and monitoring of its spread, and of attempts to eradicate it. It is therefore important that any new occurrences are registered with either the IFE or the Biological Records Centre and that any observations regarding control methods are reported.

Contact for identification, technical advice and notification of occurrences:

Dr. F. H. Dawson  
Institute of Freshwater Ecology  
River Laboratory  
East Stoke  
WAREHAM  
Dorset BH20 6BB  
Tel. (01929) 462314

Alternative contact for identification and notification of occurrences:

Biological Research Centre  
Institute of Terrestrial  
Ecology  
Monks Wood Experimental  
Station  
Abbots Ripton  
HUNTINGDON  
Cambs PE17 2LS

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