



## Water Soldier, *Stratiotes aloides*

**Water Soldier, *Stratiotes aloides*, is an aquatic perennial, native to the broads and fens of Lincolnshire, Norfolk and Suffolk, but it has also been introduced to other still and slow flowing freshwater habitats. During summer this plant is comprised of floating rosettes of jagged-edged, spikey olive-green leaves, and supports white flowers while in bloom. With the onset of winter the rosettes sink to the waterbody's bed and stay in a submerged, dormant state until the onset of spring.**

### Ecological Benefits of Water Soldier

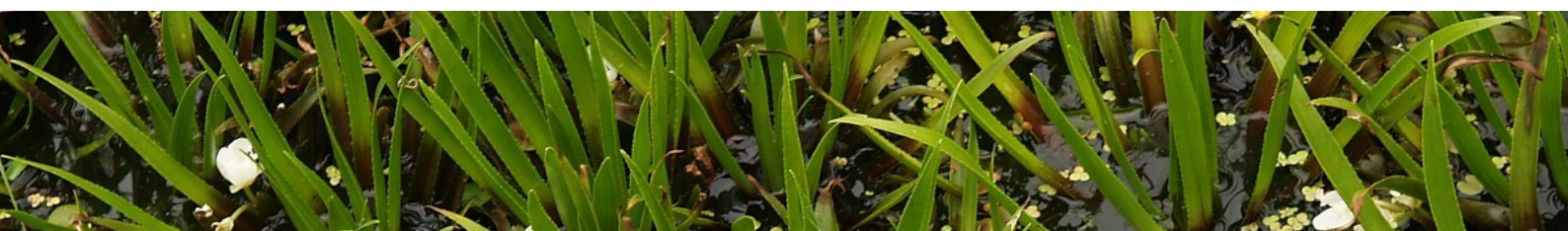
In many wetlands Water Soldier plays a beneficial role, supporting an abundance of aquatic life, including Dragonflies, whose larvae hunt and seek refuge amongst its leaves. The adults use the plants for egg laying, perching and emergence (the tapering, serrated leaves providing perfect emergence sites for larvae of various sizes). The rare and protected Norfolk Hawker, *Aeshna isosceles*, favours, and breeds at, sites with abundant Water Soldier. In recent years, this Dragonfly species has spread out from its traditional strongholds to colonise new areas where Water Soldier is present. An excellent example of this can be seen at Paxton Pits Nature Reserve, Cambridgeshire, where a substantial breeding population of Norfolk Hawkers can be observed, along with an abundance of other species, carrying out their life cycles amongst the Water Soldier.

### Managing Water Soldier

In some wetland sites Water Soldier has grown to become the dominant aquatic plant within the waterbodies. The triggers for these occurrences are still poorly understood, although there may be a link with water nutrient levels, or the origin of the plant's population. When this change happens the impact is not necessarily negative, as Water Soldier provides a valuable habitat for aquatic invertebrates. However, in some cases, when the growth of Water Soldier is believed to pose a threat to other aquatic plants of conservation value within a wetland, management action may be deemed necessary. In other instances, the removal of plants may be carried out to maintain areas of open water, in a similar manner to which the growth of other aquatic plants, such as Broad-leaved Pondweed (*Potamogeton natans*), sometimes need controlling.

Water Soldier management should be carried out in an ecologically sensitive manner, limiting disturbance to wildlife. For example, vigorous Water Soldier removal using automated machines can cause turbidity, releasing nutrients from the waterbody bed. This, in turn, can lead to the excessive growth of other nutrient loving plants, such as duckweed. Removed waste vegetation should also be disposed of safely; leaving waste plant material to decompose by the water's edge can result in the seepage of decaying material and nutrients back into the waterbody.

Care should be taken to carefully weigh up the benefits of the removal, or management, of Water Soldier against the potential negative impacts of disturbing the aquatic life it supports. To assist in this assessment it is important that well planned ecological survey work is conducted beforehand. Norfolk Hawker is a legally protected species and anyone wishing to carry out Water Soldier management on a site that supports Norfolk Hawker needs to acquire a licence before work can start (you also need a licence for physically handling the larvae or adults of Norfolk Hawker).







**Water Solider blooming**



**Submerged Water Soldier**



**Dominant Water Soldier growth**



**Duckweed dominance after removal**



**Norfolk Hawker**



**Norfolk Hawker larva**

## Useful websites

Information on Norfolk ecology and habitat management: [www.british-dragonflies.org.uk](http://www.british-dragonflies.org.uk)

When you need to apply for wildlife licences: [www.gov.uk/guidance/wildlife-licences](http://www.gov.uk/guidance/wildlife-licences)

Paxton Pitts Nature Reserve: [www.paxton-pits.org.uk](http://www.paxton-pits.org.uk)

**Image credits:** Page boarder, Krabbescheer, Saxifraga-Hans Dekker; Water solider, Jörg Hempel; Water Soldier submerged, Serge Gosselin; Duckweed , Steve Cham; Dominant Water Soldier growth, Krabbescheer, Saxifraga-Jan van der Straaten; Norfolk Hawker, Paul Ritchie; Norfolk Hawker larva, Christophe Brochard.

## British Dragonfly Society

*Working to conserve dragonflies and their wetland habitats*

Charity number 1168300

Produced 2018

