Broads Authority

26 January 2018 Agenda Item No 9

Broads Water Plant Survey Results 2017

Report by Environment and Design Supervisor & Environment Officer

Summary:	This report summarises the results from the annual water plant survey carried out during summer 2017. A total of 22 broads were surveyed using a standard rake sampling technique and the Rivers Bure, Yare & Wensum were surveyed for water plants, using a similar rake methodology. Barton and Hickling broads were surveyed using hydroacoustic survey equipment, to gain greater accuracy and resolution of the volume of water plants growing in the water, and their spatial extent over the bed of these broads.
	A summary of the data gathered from a selection of broads is highlighted in this report alongside general conclusions, including the value these surveys provide for informing waterways management decisions.
	The full survey report is available on the Broads Authority website: <u>http://www.broads-authority.gov.uk/news-and-</u> <u>publications/publications-and-reports/conservation-publications-</u> <u>and-reports/water-conservation-reports</u>
Recommendation: That the report is noted.	

1 Introduction

- 1.1 The Broads Authority has been surveying water plants within the open water bodies of the Broads since 1983 and has consequently collated a valuable dataset which allows monitoring and analysis of long terms trends of aquatic plants across the system.
- 1.2 This report summarises the findings of the annual water plant survey undertaken June to August 2017. The survey encompassed 22 broads utilising the same revised Broads point survey method that has been in use for the past three years.
- 1.3 The annual water plant survey also includes river water plant surveys. These began in 2015 with each main river placed on a rotational survey schedule; the aim is to survey each river stretch at least once every five years. This year, the survey was undertaken on stretches within the Rivers Bure, Yare and Wensum.
- 1.4 As part of the annual water plant survey, hydroacoustic data is also gathered to show the volume of plants in the water column, and their spatial coverage across the bed of specific broads. The methodology involves a survey grid crossing the entire width of each broad to gain sufficient accuracy and

coverage. These surveys were carried out in Barton Broad during June and four surveys in total occurred at Hickling Broad between April and October, with a denser survey grid applied to the Western half of the Broad. This increased survey effort at Hickling reflects the expanding growth in water plants in recent seasons.

1.5 The full survey report, available on the website, includes complete results for each surveyed broad and river stretch, displayed within charts and tables to show abundance values for each species recorded. The results from the hydroacoustic surveys are discussed as a separate section within the full report.

2 Results

- 2.1 Once again in response to the recent and on-going trend of mild winters and springs and an earlier growing season, the start of the broad's surveys began in early July and continued until the end of August. This is about two weeks earlier than surveys carried out prior to 2014. This slight shift ensures the peak growth of water plants is captured during the survey period.
- 2.2 It should be noted that water plants can be very variable between years and between broads, hence the value of a long-term monitoring strategy. The underlying cause why a certain plant species outcompetes another in a particular year can be related to a whole host of reasons including, competition for light early in the growth season, water levels and nutrient availability.
- 2.3 Bearing this in mind, the following points provide a summary of the data collected in the 2017 season for a selection of broads:

Martham North remains one of the healthiest broads with high abundance values recorded for stoneworts.

Two surveys were undertaken at *Hickling Broad* this year (June and July) to help assess water plant growth earlier in the season. The results show an increase in the abundance of Intermediate stonewort which is now on a par with levels recorded in 2015 when it was the dominant species. Between the two surveys, the abundance of Spiked water milfoil also increased.

Positive results were gathered from *Heigham Sound* this year with an increase in the number of species and a new species (Shining pondweed) recorded there for the first time.

A change in species dominance occurred at *Horsey Mere* with Spiked water milfoil recorded as the dominant species rather than Mare's tail as in previous years.

The rare Holly-leaved naiad was recorded as the most abundant species within *Cockshoot Broad*.

Rigid hornwort was recorded as the most abundant species within *Cromes Broad* with important species such as Water soldier and Holly-leaved naiad also recorded.

Whitlingham Little Broad recorded an increase in overall plant abundance since 2014.

Martham South has shown some decline in stoneworts since 2014 while Hollyleaved naiad has increased within the Broad to become the second most dominant plant.

Both *Buckenham* and *Hassingham Broads* have shown a decline in plant abundance since they were last surveyed in 2015. At the time of the 2017 survey, the clarity of the water was very poor and only two species in total were recorded and in very low quantities.

Oulton Broad was surveyed this year and has been included in the water plant report for the first time. Low presence and abundance were recorded for a total of five species. This broad is heavily used, and during the summer months it is subject to activities which other broads in the system do not experience, in particular power boat racing.

Broads which continue to show poor results include Barton, Wroxham and Ranworth.

- 2.4 The results of the hydroacoustic survey undertaken at Barton showed negligible water plant growth across the greater part of the Broad, with only three transects showing significant positive readings localised to the Western corner of Turkey Broad and the Neatishead Arm (between 10-20% of the water column occupied by plants).
- 2.5 The four surveys undertaken at Hickling this year have enabled the spread and volume of plants to be tracked through the growing season. As expected, the area of bed occupied by plants and the volume inhabited within the water column expanded steadily from the first survey in April to the height of the season in August. Overall the results indicated that the navigation channel and middle of the broad had very limited plant growth, in stark contrast to the vigorous growth to the surface north of Pleasure Island, the South western side of the Broad and the North bay. In October there was a slight decline in the percentage volume inhabited and the percentage of bed covered by plants; this suggested the start of the expected decline in plants over the winter.
- 2.6 The results from the river plant survey on stretches within the Bure, Yare and Wensum in 2017 will form valuable baseline data as we continue to survey the rivers on a rotational schedule. The species presence and abundance data will also help to inform the Authority's weed-harvesting programme.
- 2.7 Record levels of weed-harvesting were undertaken in 2017 with an increase of 45 person days from the 2016 season which in turn had increased by 30 days since 2015. Improvements to water quality and clarity across the Broads alongside what seems to be a trend of milder winters and an earlier start to the

growing season are likely reasons for the increase in water plants within the river system. Continuation of these trends will result in the need for continued and increasing resources to maintain appropriate levels of weed-harvester operation throughout the growing season.

3 Conclusions and Future Applications

- 3.1 Now that there is a four year data set for the point based survey method, recent trends can be looked at more easily. However this data set is still only four years old and caution is advised in inferring longer term patterns from the sometimes high variability in growth of particular species between years.
- 3.2 The combination of rake based surveys and hydroacoustic surveys continue to be a very powerful tool for guiding site management, such as prioritisation of areas for restoration and ecological enhancement, e.g. Hickling Broad. Water plant growth has been raised as an impact on navigational access, particularly for users of the waterspace at Hickling. The survey and analysis of plant growth over the whole site is critical in establishing any likely impacts on this European Protected site and the conservation interest features at Hickling, whilst considering the management of plants outside of the marked channel.
- 3.3 The forward plan to rotationally survey two river sites each year is an important aim for these surveys and may need to expand. There has been increasing demand on the weed harvester operation and continued reports on increased water plant growth having an impacting on navigational access in specific areas. The key sites include the River Bure (Coltishall Lock to Belaugh), River Thurne (West Somerton to Martham Ferry; Waxham Cut & Catfield Dyke), River Ant (Tyler's Cut); River Wensum/Yare (New Mills to Whitlingham Broad), and the River Waveney (Geldeston Lock to Beccles). Observing the trends and species present at these sites will assist the sustainable management of these areas and strike a good balance between navigational access and ecological functioning. As water quality continues to improve and water plant growth responds accordingly, the challenge of managing appropriate water depth and safe navigation also continues.

Background papers:	Water Plant Survey Report 2017
	http://www.broads-authority.gov.uk/news-and- publications/publications-and-reports/conservation-publications-and- reports/water-conservation-reports
Authors: Date of report: Broads Plan Objectives 2017: Appendices:	Sue Stephenson & Gavin Devaney 12 January 2018 B2.1 and B2.6 None