

Control of giant hogweed *Heracleum mantegazzianum* along the Avon Water in The New Forest, Hampshire, UK

A case study in controlling an invasive non-native plant in a
landscape characterised by fragmented land ownership

A report prepared on behalf of RINSE
(Reducing the Impact of Non-native Species in Europe)



Giant hogweed adjacent to the Avon Water (photo: Trevor Renals)

Report prepared by
Hampshire and Isle of Wight Wildlife Trust
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RINSE

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SUMMARY

This report has been prepared by Hampshire and Isle of Wight Wildlife Trust on behalf of RINSE (Reducing the Impact of Non-native Species in Europe). to highlight the challenges involved in controlling an invasive non-native plant species in a landscape characterised by a fragmented pattern of land ownership.

The report draws on the experience of the New Forest Non-Native Plants Project which, since 2009, has co-ordinated a programme to eradicate giant hogweed *Heracleum mantegazzianum* along the Avon Water.

The pattern of land-ownership along the Avon Water in the mid-nineteenth is compared to the current pattern of land-ownership during the early twenty-first century, revealing a trend towards increasing sub-division of fields and fragmentation of land ownership.

A detailed case study focussing on South Sway Farm highlights the fragmentation which has occurred since the mid-twentieth century. During the mid-twentieth century the case study area was in a single ownership; by the start of the New Forest Non-Native Plants Project the case study area had been sub-divided into four separate ownerships. The land has since been further fragmented and the case study area is currently in ten separate ownerships.

This trend towards increasing sub-division of fields and fragmentation of land ownership has implications for the control of invasive non-native plant species at the catchment scale.

An increase in the number of land owners / land managers necessitates additional work for the Project Officer co-ordinating a catchment-scale eradication programme, to ensure that all relevant landowners/managers understand the need for control and agree to co-operate in the eradication programme. The frequency of land sales requires constant vigilance by the Project Officer to ensure that contact is made with the purchasers.

The sub-division and sale of land is often associated with a change of land use. Traditional grazing management by cattle is typically displaced by conversion to paddocks for recreational horse keeping. Alternatively land is converted to 'amenity' land or is left un-managed, facilitating the spread of invasive non-native species. Sub-division of land is often accompanied by erection of fences adjacent to the watercourse, resulting in a narrow strip of land which is difficult to manage and which is vulnerable to invasion by non-native species.

1. INTRODUCTION

1.1 The RINSE Project

RINSE (Reducing the Impact of Non-native Species in Europe) is a European Project which focuses on ways of controlling invasive non-native species across the Two Seas Programme area. It also aims to improve awareness of the threats posed by invasive non-native species. For further information see www.rinse-europe.eu

The Project has been funded by the European Union – Interreg IVA 2 Seas programme and has a total of nine partners from France, England, Belgium and the Netherlands.

Hampshire and Isle of Wight Wildlife Trust is a partner in the RINSE project.

1.2 Hampshire and Isle of Wight Wildlife Trust

Hampshire and Isle of Wight Wildlife Trust (HIWWT) is the leading nature conservation charity in the two counties of Hampshire and the Isle of Wight. With support from over 27,000 members and 900 volunteers, HIWWT works to protect wildlife and wild places, managing 48 nature reserves, running 3 education centres and offering advice to landowners and land managers. HIWWT is part of a UK-wide partnership of 47 local Wildlife Trusts, with a collective membership of more than 800,000 people working together to conserve our precious natural heritage. HIWWT is one of the nine partners co-operating in the RINSE Project.

1.3 The New Forest Non-Native Plants Project

The New Forest Non-Native Plants Project (NFNNPP) aims to stop the spread of invasive non-native plants in The New Forest area, particularly along watercourses and in wetland habitats.

The objectives of The New Forest Non-Native Plants Project are to:-

- identify where non-native invasive plants are a problem, particularly within river valleys;
- arrange for control work to be undertaken by volunteers and contractors;
- commission research into control methods;
- raise awareness of the need to control invasive non-native plants and to prevent them spreading into our countryside.

The NFNNPP is hosted by Hampshire and Isle of Wight Wildlife Trust (HIWWT) and funded by a partnership of local and national organisations. The NFNNPP was set up in 2009 and a full time Project Officer is employed by HIWWT to liaise with landowners, raise awareness of the problems caused by invasive non-native plants and arrange for practical control work to be undertaken.

Recognising the need for invasive non-native plants to be eradicated at the catchment scale the Project Officer co-ordinates control programmes and provides advice, encouragement and practical help to landowners and land managers.

1.4 The New Forest

The New Forest is located in Southern England as indicated on the map below. Control and eradication of invasive non-native plants in the New Forest is a priority due to the area's high ecological and landscape importance. This is reflected in the designation of the New Forest as a National Park.



Figure 1 – Location of the New Forest

The 'core' of the New Forest is the 'Crown Land' managed by the Forestry Commission. The 'Crown Land' comprises plantation woodlands together with the 'Open Forest' which is characterised by lowland heathland, acid grassland and ancient woodlands which retain their landscape character and wildlife value through the activities of the commoners who exercise their rights to graze their animals (ponies, cattle, donkey, pigs) on the 'Open Forest'.

The 'core' area of 'Open Forest' and plantation woodlands is fringed by privately-owned land, some of which is managed by commoners to provide 'back-up' land for their animals to graze during the winter when the 'Open Forest' does not provide sufficient food to sustain the animals. Many of the privately-owned fields surrounding the Crown Land are increasingly being managed as amenity land or are used as grazing for recreational horse-keeping, with the fields fenced to separate the animals from the adjacent watercourses. Such changes in management have implications for the spread of invasive non-native plants such as giant hogweed.

A large proportion of the New Forest National Park is recognised as being of national nature conservation importance through designation as Sites of Special Scientific Interest (SSSI) in accordance with the Wildlife and Countryside Act 1981 (as amended). The New Forest National Park contains National Nature Reserves designated under the National Parks and Access to the Countryside Act 1949.

The internationally important, extensive areas of lowland heath, ancient woodland, valley mires, river valleys and coastal marshes support a very high number of rare species.

Substantial parts of the New Forest National Park are regarded as being of international ecological importance through designation as Special Areas of Conservation and Special Protection Areas under the relevant EC Directives and as wetlands of international importance under the terms of the Ramsar Convention held in Iran in 1971.

1.5 What are invasive non-native species?

An invasive non-native species is any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live. Many of these impacts are caused as invasive non-native species upset the natural balance within an ecosystem. Invasive non-native species can cause this disruption by outcompeting native species (by growing more quickly or being more aggressive), by being a vector for an exotic disease, through genetic impacts or by directly predating and grazing native species which have no defence against the new threat.

Invasive non-native species are widespread in the RINSE project area and continue to be introduced in a wide variety of ways including the horticultural and pet trade, commercial shipping and tourism.

1.6 The Invasive Non-Native Species Framework Strategy for Great Britain

The work of the New Forest Non-Native Plants Project helps implement at the local level The Invasive Non-Native Species Framework Strategy for Great Britain ^{Ref 1}.

This document, published in 2008 by the Department for Environment, Food and Rural Affairs, recognises that “one of the greatest threats to biodiversity across the globe is that posed by invasive non-native species”. The Strategy provides a high-level framework and details the key actions required to address the problems caused by invasive non-native species.

The Strategy recognises the need for control at the catchment scale and acknowledges that effective partnership working is critical to the successful control and eradication of invasive non-native species.

1.7 Giant hogweed

Giant hogweed *Heracleum mantegazzianum* was introduced to the UK in the nineteenth century as an ornamental garden plant but is now regarded as a highly invasive non-native species detrimentally affecting semi-natural habitats and posing a risk to human health.

Giant hogweed seeds prolifically, with a single plant being capable of producing 50,000 seeds ^{Ref 2} and, as it thrives in damp places alongside watercourses, substantial colonies can develop downstream of the original seed source, often spreading for many kilometres.

The giant hogweed sap contains photosensitising compounds called furanocoumarins (also called furocoumarins) which react with sunlight to form ‘burning’ blisters and purple discolouration of human skin. The tall plants (up to 5 metres high) capable of causing phyto-photodermatitis therefore impede access to watercourses for fishermen and other recreational user groups and present particular challenges to land managers.

Under the Wildlife and Countryside Act 1981 (as amended) ^{Ref 3} it is unlawful to plant giant hogweed in the wild or otherwise cause it to grow in the wild. Although responsibility to prevent the spread of giant hogweed in the wild lies with the individual landowners, successful control and eradication needs to be undertaken at the catchment scale requiring the commitment and cooperation of numerous landowners along a watercourse.

2. GIANT HOGWEED IN THE AVON WATER CATCHMENT

2.1 Establishment of giant hogweed along the Avon Water

Within the New Forest National Park, giant hogweed has been recorded in a few isolated locations, particularly along road verges, but the main area where it has become established is on land adjacent to the Avon Water. It is believed to have been introduced to a garden on the bank of the Avon Water some time in the twentieth century and has since spread downstream, colonising both banks of the watercourse.

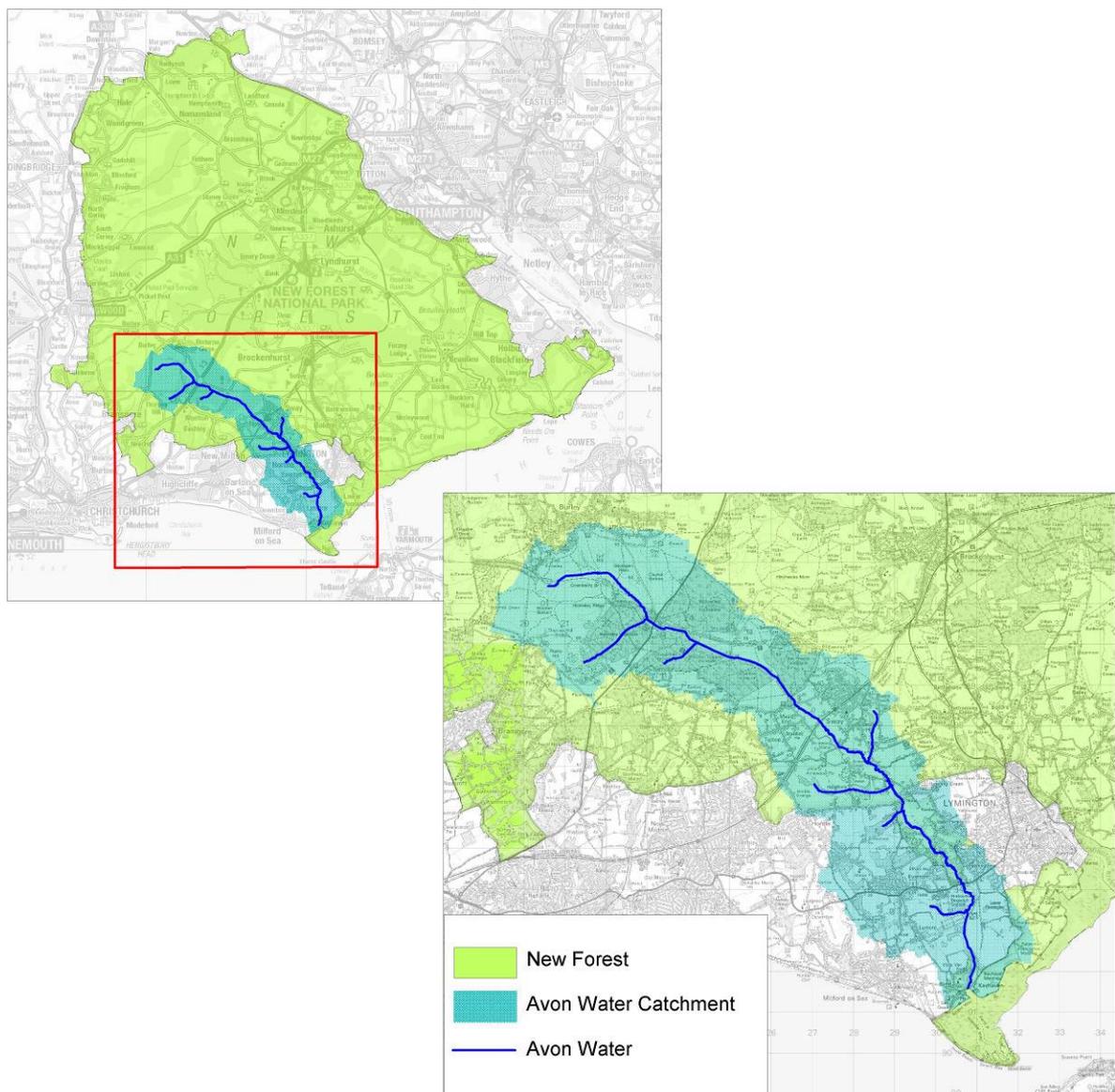


Figure 2 – The Avon Water and its catchment

2.2 Extent of giant hogweed along the Avon Water

When the NFNNPP was initiated, the project partners were aware that giant hogweed occurred on the banks of the Avon Water but the full extent of the giant hogweed alongside this watercourse was unknown.

During summer 2009 the New Forest Non-Native Plants Officer began to make contact with landowners along the Avon Water to ascertain the distribution of the giant hogweed and assess the extent of the problem so that a strategy for its control and eradication could be formulated.



Giant hogweed infestation along the Avon Water during autumn 2009
(photo: Trevor Renals)

The Project Officer utilised a variety of ways to identify the relevant landowners. Letters were written to the 'owner or occupier' of houses in close proximity to the Avon Water; laminated signs were attached to field gates asking the landowner to contact the Project Officer; enquiries were made to The Land Registry; a number of landowners were identified through conversations with the owners of neighbouring properties.

During 2009 the Project Officer ascertained that the giant hogweed population extended for a distance of approximately 4 km along the banks of the Avon Water.

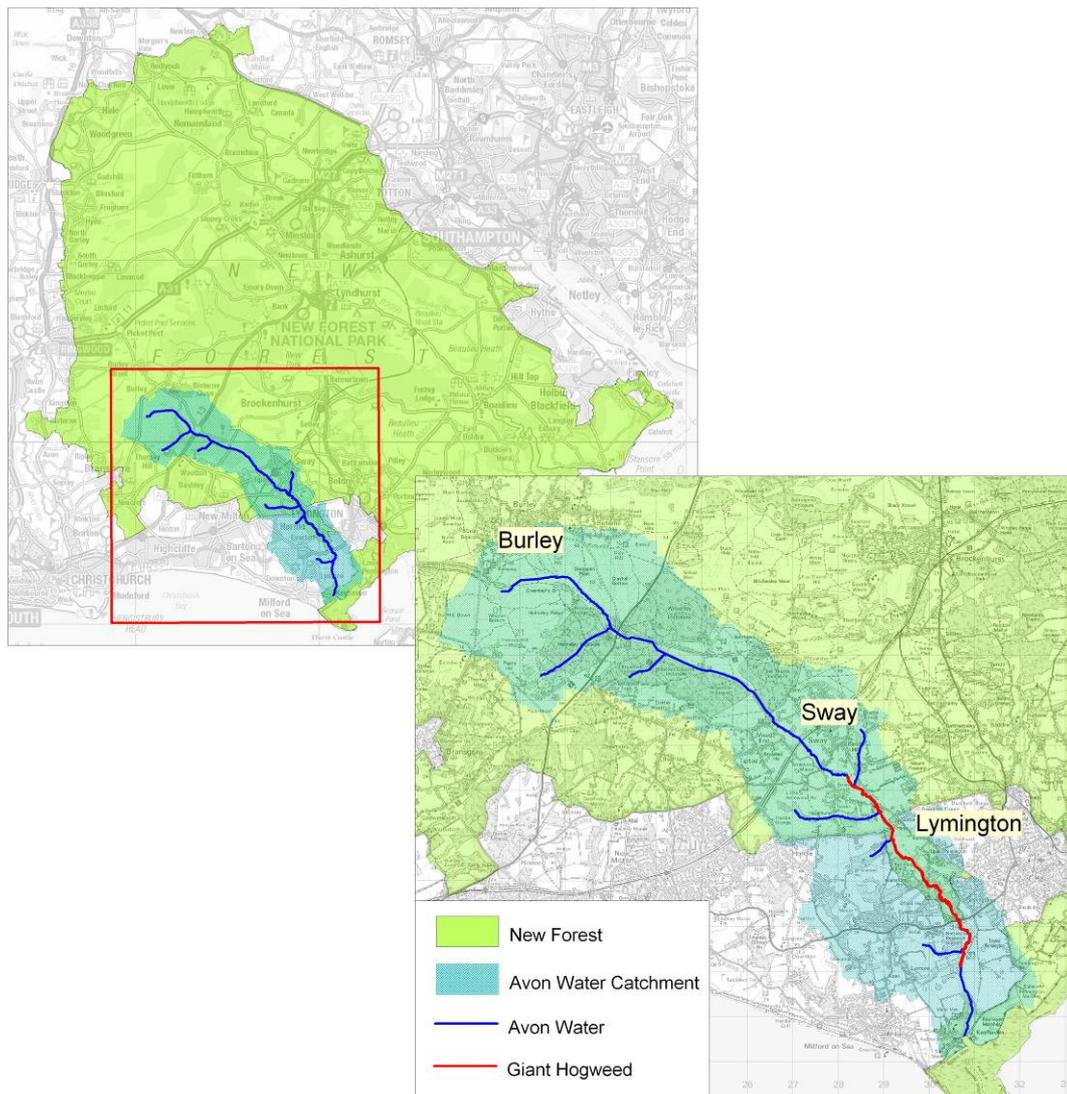


Figure 3 – Distribution of giant hogweed on the Avon Water

2.3 Control of giant hogweed at the catchment scale

Having ascertained the extent of the giant hogweed population along the Avon Water and identified the relevant landowners, the Project Officer needed to secure their co-operation to implement a control programme with the aim of eradicating the giant hogweed at the catchment scale. This necessitated contacting all relevant landowners and agreeing a suitable treatment method. Useful advice on alternative methods for controlling giant hogweed was available in the Environment Agency's booklet ^{Ref 4} which has since been revised ^{Ref 5} to reflect changes in legislation.

To enable landowners to understand the need for control at the catchment scale and develop a sense of responsibility towards owners further downstream, the Project Officer hosted a meeting for landowners during autumn 2009 to agree a co-ordinated strategy for control and eventual eradication.

The majority of landowners chose to accept the Project Officer's offer to arrange a co-ordinated programme of chemical treatment by professional contractors using a herbicide which is approved for use near water. A handful of landowners who had small infestations of giant hogweed chose to undertake control themselves by digging or application of herbicide.

The co-ordinated programme of herbicide control by professional contractors combined with hand-digging and herbicide treatment by individual landowners commenced during 2010.

3. FRAGMENTED LAND OWNERSHIP ALONG THE AVON WATER

3.1 Changes in land ownership during the New Forest Non-Native Plants Project

During 2009 when the Project Officer first identified the relevant landowners along the Avon Water, the giant hogweed occupied 41 separate land parcels in the 4km section indicated on the map at Figure 3.

Since 2009 the pattern of landownership along this section of the Avon Water has become increasingly fragmented as land parcels have been divided and sold. At the time of writing (April 2013) the giant hogweed population now occupies land in 44 separate ownerships.

This increasing fragmentation has implications for the giant hogweed eradication programme coordinated by the NFNNPP. These implications are explored in Section 5 of this report.

3.2 Fragmentation of land ownership since the mid-nineteenth century

The trend towards increasing fragmentation of land ownership along the Avon Water can be more fully appreciated by a study of nineteenth century documents held by the Hampshire Record Office (HRO). Ruth Kernohan, who volunteered for HIWWT, undertook research at the HRO on behalf of the NFNNPP to determine the pattern of land ownership along the Avon Water using information contained in the relevant mid-nineteenth century Tithe apportionments and accompanying maps.

The mid-nineteenth century tithe surveys provide information relating to the ownership and occupancy of land, the extent of land owned and / or occupied and the land use of a particular parcel. Tithe surveys derive from the Tithe Commutation Act of 1836 which reformed the way in which the established Church was financed by a tax (or 'tithe') on local agricultural output and 'are among the most important manuscript sources used by English historical geographers and economic historians researching questions concerning landownership, management and use' ^{Ref 6}

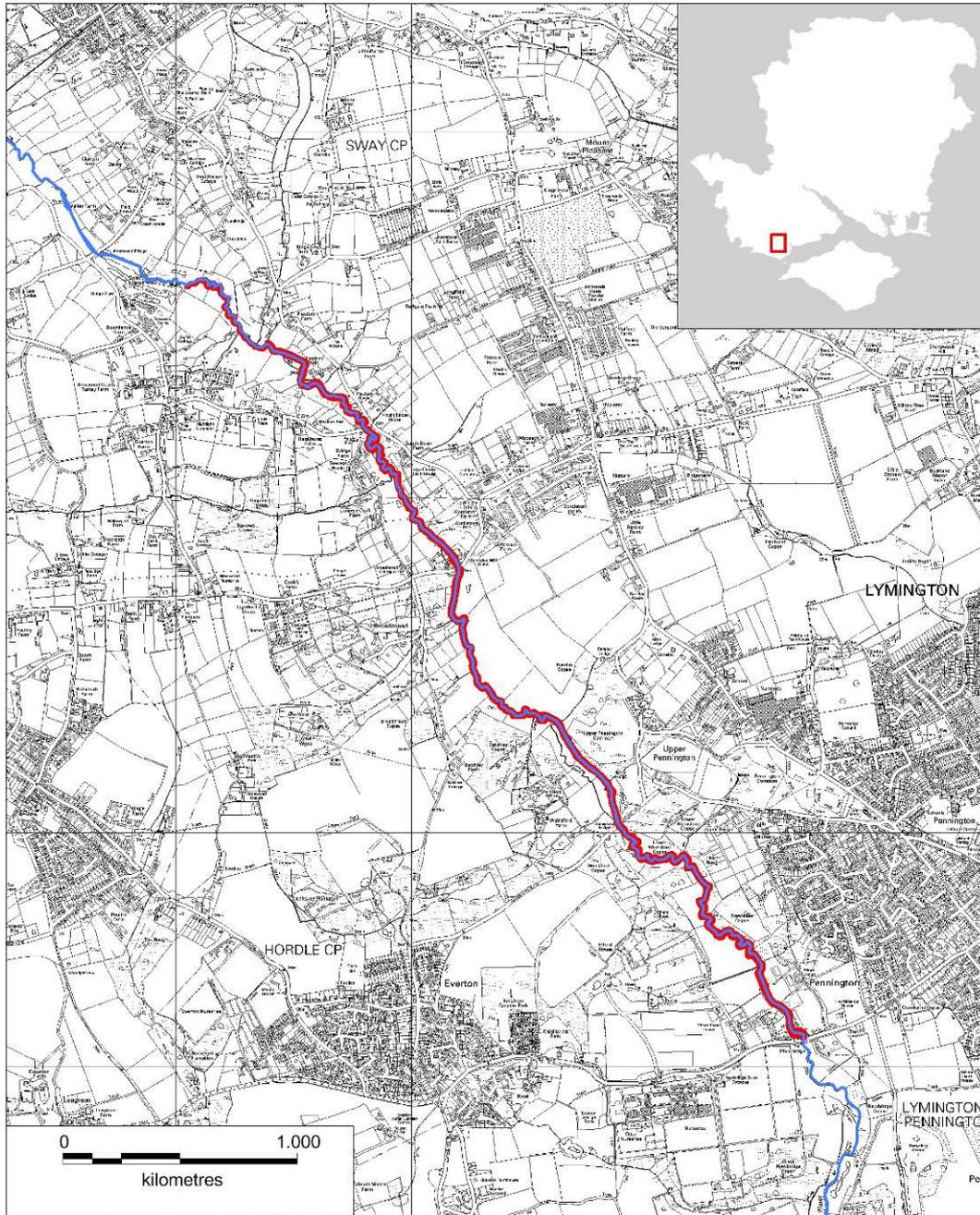
A tithe survey of a tithe district (usually a parish in Southern England) consists of three related documents: tithe apportionments are the legal instruments which specify the amount of the reformed tax (tithe rent-charge) apportioned to the owners of particular land parcels; tithe maps identify those tithe areas and provide a record of their boundaries; tithe files contain locally generated papers from the process of tithe commutation.

During the mid-nineteenth century, the section of the Avon Water currently infested with giant hogweed (as indicated on the map at Figure 3) lay within three parishes, namely Boldre Parish, Hordle Parish and Milford Parish and was therefore subject to three separate Tithe apportionments and maps ^{Ref 7,}
^{Ref 8, Ref 9, Ref 10, Ref 11, Ref 12}

By examining the tithe apportionments and maps relating to these three parishes and comparing with current ownership boundaries, the increasingly fragmented pattern of land ownership along the Avon Water is vividly apparent.

To study this increase in fragmentation objectively, Ruth Kernohan devised and utilised the following methodology:-

- The maximum length of riverbank, where ownership boundaries coincide in both eras (ie mid-nineteenth century and early twenty-first century) was selected for comparison. At the Northern end this occurred at shared field boundaries and at the Southern end this occurred at a road (refer to Figure 4 below).
- The sections of ownership were digitised onto 1:10 000 Ordnance Survey (OS) GIS map layer.
- The lengths of ownership were calculated using GIS and these data were exported to MS excel for analysis.



- Avon Water
- Section of comparison

Figure 4 – Section of the Avon Water subject to the study of fragmentation of land ownership between the mid-nineteenth century and the early twenty-first century

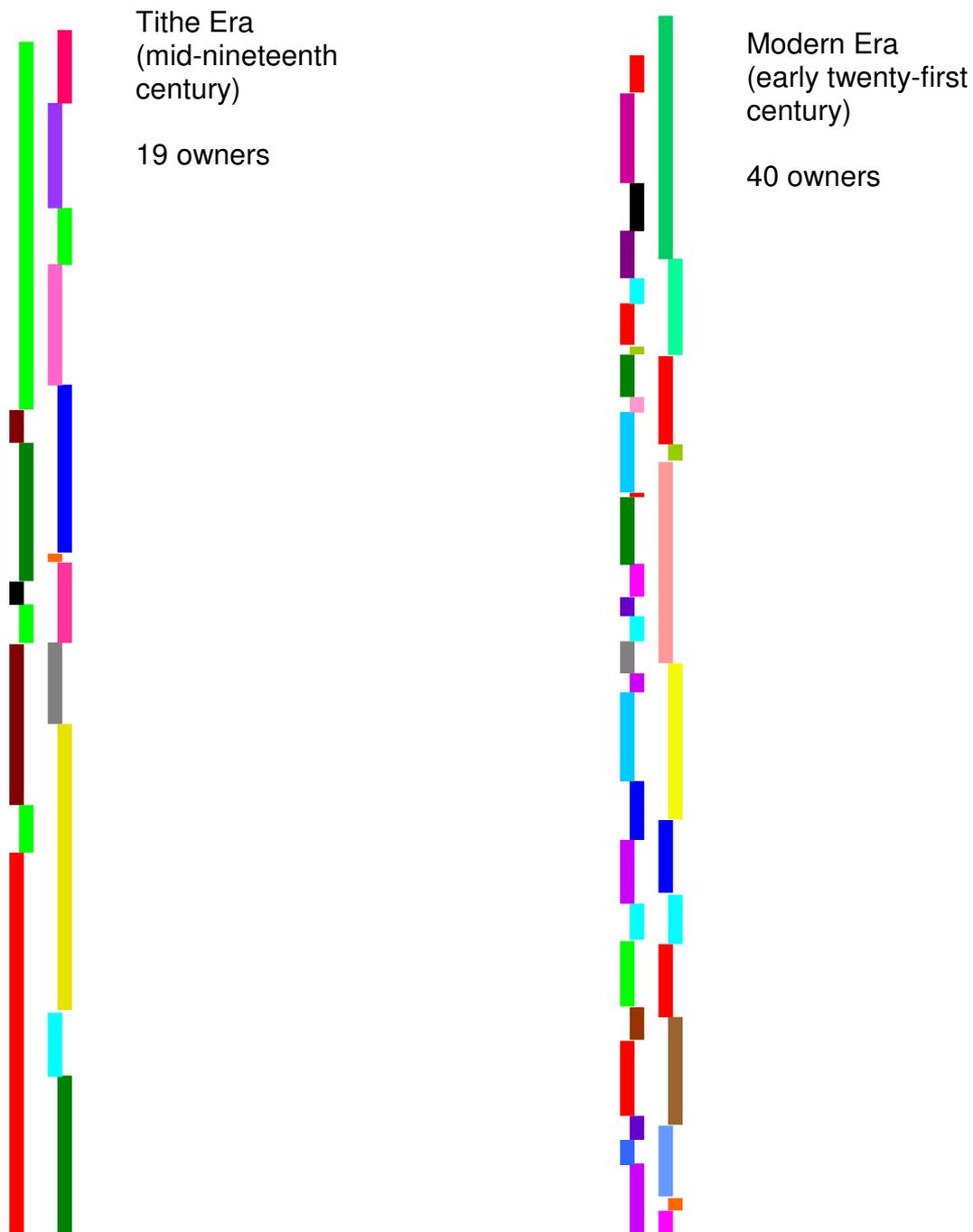


Figure 5 - Abstracted, scaled representation of land ownership along the same length of the Avon Water in the 1850s and in 2012

The diagrams above in Figure 5 vividly demonstrate the increasing fragmentation of land ownership along this stretch of the Avon Water (as indicated in Figure 4) which occurred between the mid-nineteenth century and the early twenty-first century. By 2012 the number of land ownerships along this length of riverbank had more than doubled to a total of 40 ownerships since the 1840s and 1850s when the Tithe surveys revealed a total of 19 separate ownerships.

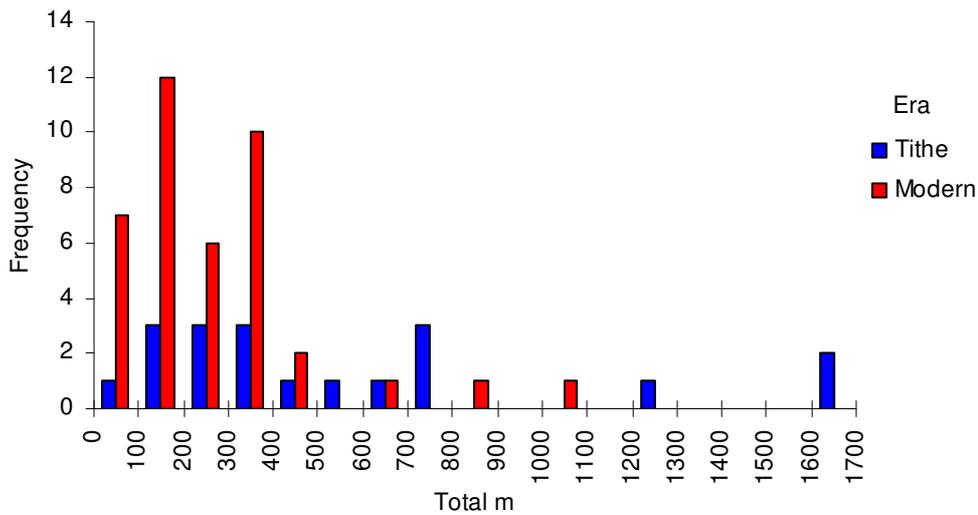


Figure 6 - Frequency distributions of ownership lengths in the Tithe Era and Modern Era

Figure 6 demonstrates that shorter sections are more frequently owned in the Modern era compared to the Tithe era, with nearly half the landowners owning less than 200m of river bank. Performing the Mann-Whitney U statistical test reveals that the difference in the medians of section lengths owned between the Tithe and Modern eras is significant ($Z = 2.63$, $P < 0.05$).

4. CASE STUDY – SOUTH SWAY FARM

4.1 Introduction to the case study

To illustrate the increasing fragmentation of land ownership witnessed along the Avon Water, more detailed research has been undertaken on behalf of the NFNNPP, focusing on South Sway Farm.

This case study relates to the roughly triangular area indicated in red on the lower of the two maps below

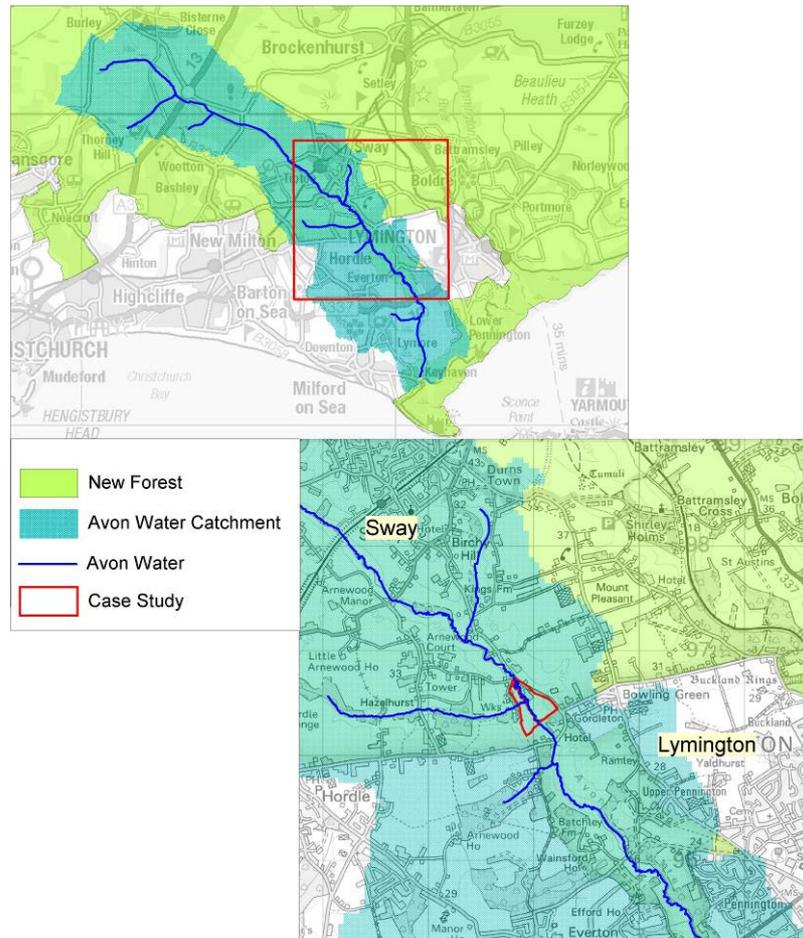


Figure 7 location of South Sway Farm case study area (triangular area outlined in red on the lower of the two maps)

The research involved examination of tithe documents held at HRO [Ref 7](#), [Ref 8](#), [Ref 9](#), [Ref 10](#), a study of sale particulars relating to South Sway Farm House and associated land parcels [Ref 13](#), [Ref 14](#) and conversations with local residents.

Following a period of consolidation between the mid-nineteenth century and the mid-twentieth century, the ownership of the case study area has been subject to increasing fragmentation.

4.2 Changes in ownership of the case study area between the mid-nineteenth century and the late-twentieth century

An examination of the tithe apportionments and accompanying tithe maps for the parishes of Boldre and Hordle has revealed that during the mid-nineteenth century the case study area was in two separate ownerships; South Sway Farm occupied land surrounding the farm house, along South Sway Lane, to the east of the Avon Water; the land to the west of the Avon Water was in a different ownership as indicated on the map at Figure 8 below.

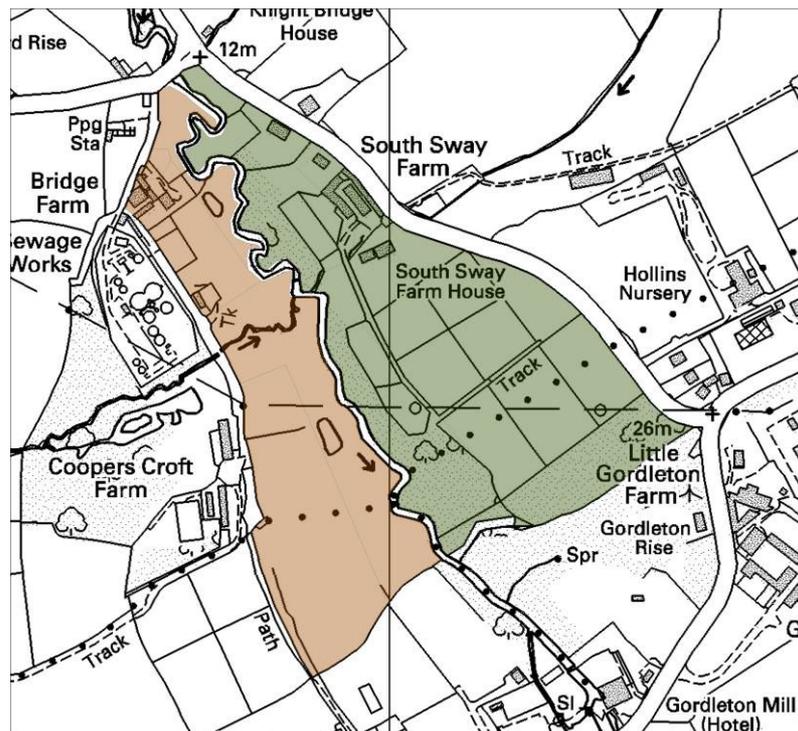


Figure 8 – ownership of case study area during the mid-nineteenth century

Sale particulars ^{Ref 13} reveal that at some stage between the mid-nineteenth century and the mid-twentieth century the case study area had become a single holding of approximately 89 acres (36 hectares) known as 'South Sway Farm' as indicated in the map below at Figure 9. South Sway Farm House together with approximately 64 acres (26 hectares) of land, farm buildings, a cottage, a bungalow and woodland occupied land to the east of the Avon Water; Bridge Farm House with approximately 15 acres (6 hectares) of land and farm buildings lay to the west of the Avon Water.

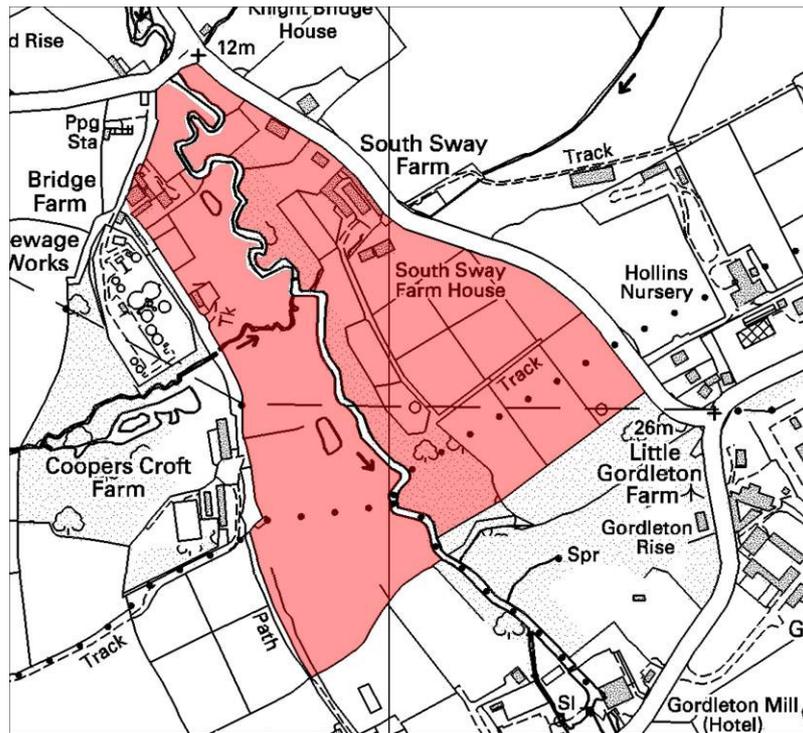


Figure 9 – ‘South Sway Farm’ during the mid-twentieth century

Discussion with local residents revealed that during the mid-twentieth century ‘South Sway Farm’ had been sub-divided and sold and, by the late 1950s, occupied three separate ownerships as indicated in the maps below.

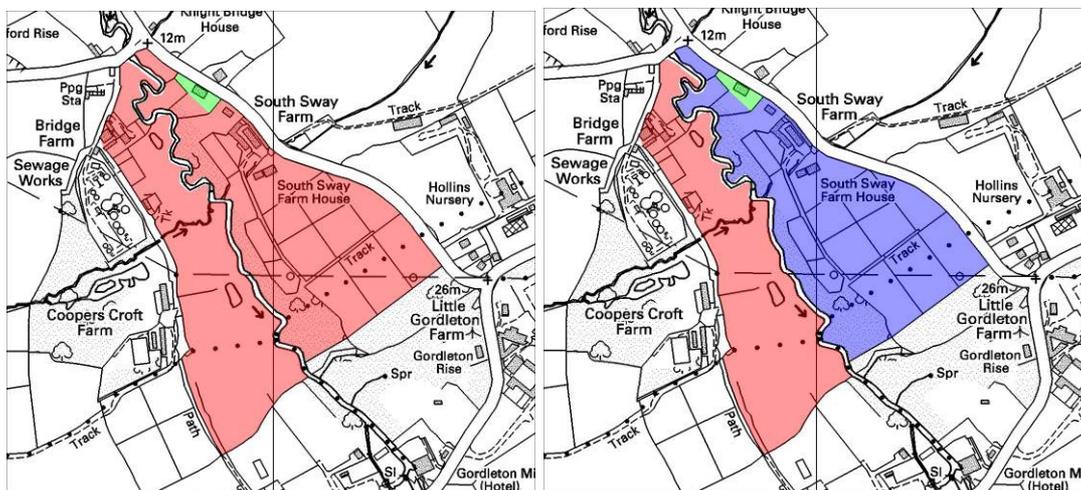


Figure 10 – By the late 1950s the case study area has been sub-divided into three separate ownerships

By the 1980s South Sway Farm House had been split from the surrounding farmland and sold.

4.3 Changes in ownership of the case study area since the start of the New Forest Non-Native Plants Project in May 2009

By May 2009, when the New Forest Non-Native Plants Officer started ascertaining land ownership along the Avon Water, the study area had been divided into four separate ownerships as indicated below.

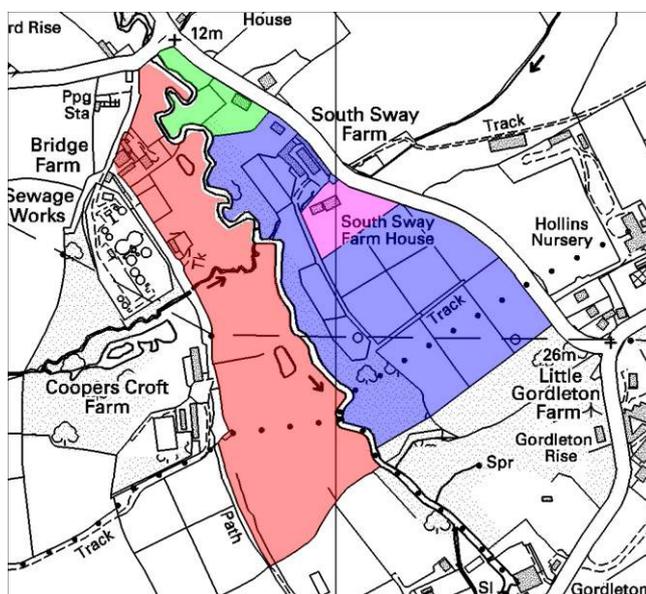


Figure 11 – At the start of the New Forest Non-Native Plants Project during 2009 the case study area was divided into four separate ownerships

4.4 Fragmentation of land ownership in the case study area to the east of the Avon Water since May 2009

During July 2009 the Project Officer met the owner of the house called 'Yew Tree' ie the area shaded green on Figure 11. At the time of the meeting the house and adjacent land was in the process of being sold. By October 2009 'Yew Tree' had been sold and the Project Officer made contact with the new owner to emphasise the need to control the giant hogweed. By April 2010 the new owner had met the Project Officer and agreed to participate in the giant hogweed control programme.

By early 2010 the area to the east of the Avon Water shaded purple on Figure 11 had been put on the market and divided into three separate lots comprising:-

- Lot One (house called South Sway Farm Cottage and approximately 0.8 of an acre)
- Lot Two (the barns and approximately 1.5 acres)
- Lot Three (approximately 11 acres)

Tenders were invited by 12 March 2010.

During late March 2010 the potential purchaser of Lot Two and Lot Three contacted the New Forest Non-Native Plants Officer and sought advice regarding the control of giant hogweed. He completed the purchase during 2010. Lot Two and part of Lot Three were subsequently sold, with the remaining part of Lot Three being retained.

By May 2010 the New Forest Non-Native Plants Officer was contacted by a local property developer who was proposing to purchase Lot One comprising the house (called South Sway Farm Cottage) and 0.8 acre of land. The Project Officer advised him that contractors had been commissioned by the NFNNPP to treat the giant hogweed on this land and emphasised the need for this land to be retained in the giant hogweed control programme. The Project Officer asked him to inform her if he succeeded in purchasing this property; he completed the purchase of South Sway Farm Cottage and the 0.8 acre of land and commenced renovation work.

By June 2010 part of the land comprising 'Lot Three' had been sub-divided into six paddocks and was on the market. A new access had been created from South Sway Lane, necessitating removal of part of the hedgerow. Tree felling and engineering operations had also occurred adjacent to the river involving earth-moving to re-grade the land. New fencing had been installed along the river bank.

During June 2010 the Project Officer wrote to the estate agent, highlighting the presence of giant hogweed and asking him to inform potential purchasers of the giant hogweed control programme initiated by the NFNNPP.

During June 2010 the Project Officer met a potential purchaser of one of the paddocks to give her advice about the need to control the giant hogweed.

During July 2011 the property developer who had purchased South Sway Farm Cottage and the 0.8 acre of land informed the Project Officer that he had put the property on the market.

During Summer 2011 South Sway Farm House (the original farm house associated with South Sway Farm) was put on the market. During February 2012 the Project Officer met the new owner of South Sway Farm House to discuss control of Japanese knotweed.

By December 2011 South Sway Farm Cottage had been sold and the Project Officer made contact with the new owner who had changed the name of the property to 'Tangmere House'. Following a meeting with the Project Officer in February 2012, the new owner agreed to participate in the giant hogweed control programme.

As already stated, the southern-most block of land at South Sway Farm which had been sold during Spring 2010 had been divided into 6 parcels (Lot A, Lot B, Lot C, Lot D, E, Lot F) to be sold individually as horse paddocks. Lot C and

Lot D were the two parcels immediately adjacent to the Avon Water and which had been colonised by giant hogweed. During February 2012 the Project Officer contacted the Land Registry in an attempt to ascertain the owners of these two parcels of land (Lot C downstream and Lot D upstream).



Photographs taken on 9 February 2012 within 'South Sway Farm' case study area to the east of the Avon Water

As requested by the Project Officer, the estate agent forwarded details about the New Forest Non-Native Plants Project to one of the purchasers. During March 2012 the person who had purchased Lot C contacted the Project Officer and they arranged to meet on site on 23 March 2012 to discuss the giant hogweed control programme. The Project Officer had already agreed with the previous owner of this land that the giant hogweed would be included in the 2012 herbicide treatment programme so it was important for the Project Officer to secure co-operation from the new owner of Lot C. The new owner of Lot C agreed to this parcel of land being included in the giant hogweed control programme during 2012.

By December 2012 the Project Officer had ascertained the owners of Lot A, Lot B and Lot E but these parcels of land are not infested with giant hogweed and the owners of these paddocks are not involved in the New Forest Non-Native Plants Project.

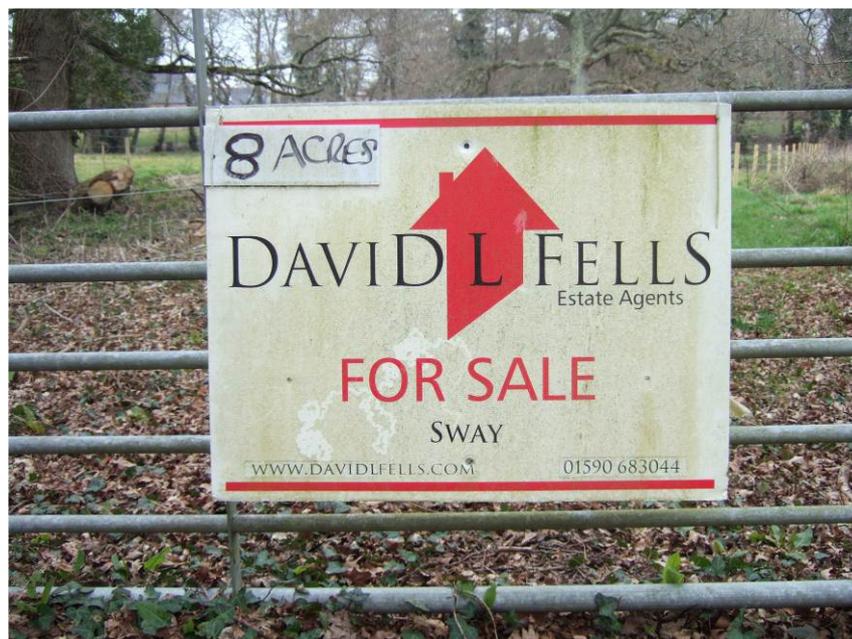
4.5 Fragmentation of land ownership in the case study area to the west of the Avon Water since May 2009

At the start of the New Forest Non-Native Plants Project during May 2009 the property within the study area to the west of the Avon Water was in a single ownership. This property comprised the house known as Bridge Farm together with adjacent fields. The land was subsequently divided and the northern area, together with the farm house, was put on the market. (The remaining 8.2 acres of land in the south was retained by the owners).

During October 2010 the Project Officer had a site meeting with a potential purchaser of the farm house and adjacent land at Bridge Farm to discuss the giant hogweed control programme but this potential purchaser decided not to buy the property.

In March 2011 the sale of the farm house and adjacent land at Bridge Farm had been completed. The Project Officer met the new owner to discuss the need for giant hogweed control. The new owner agreed to participate in the giant hogweed herbicide treatment programme.

By Summer 2011 the remaining 8.2 acres of land (ie land to the south of Bridge Farm) were put on the market. At the time of writing (April 2013) the land has not yet been sold. The current owner continues to co-operate with the giant hogweed control programme.



Land for sale during April 2013, resulting from the sub-division of the case study area to the west of the Avon Water

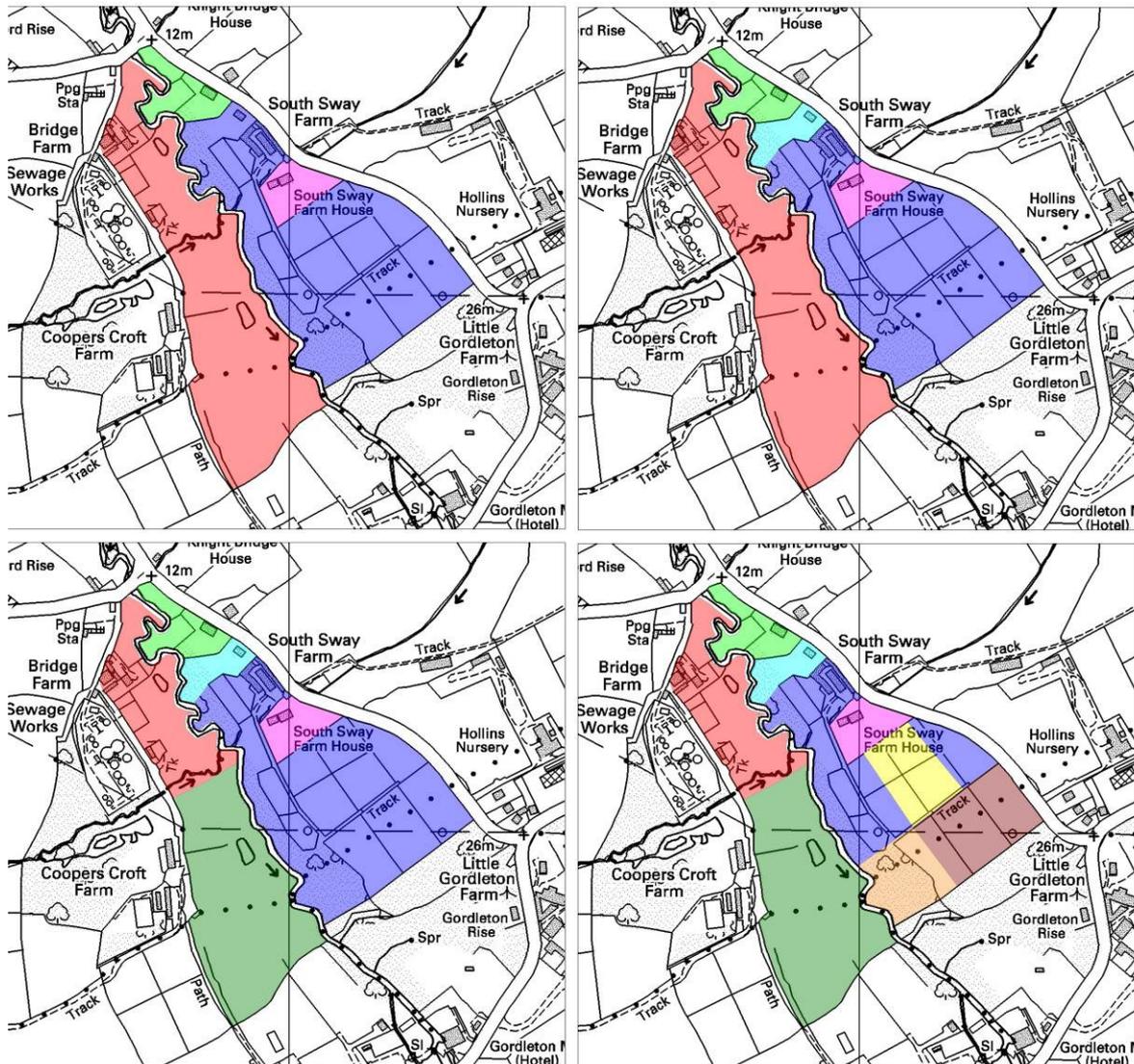


Figure 12 - Fragmentation of land ownership within the case study area between the start of the New Forest Non-Native Plants Project in 2009 and April 2013

4.6 Summary of contact with landowners and potential purchasers in the case study area since May 2009

At the start of the New Forest Non-Native Plants Project in May 2009, the land within the study area was in four separate ownerships (one ownership to the west of the Avon Water and three ownerships to the east of the river).

By the end of 2012 the land to the west of the river had been split into two separate ownerships. The Project Officer therefore needed to establish a positive relationship with the new owner of Bridge Farm and, in the meantime, the Project Officer had attended a site meeting with a prospective purchaser who subsequently decided not to purchase Bridge Farm.

By the end of 2012 the land to the east of the river had been split into nine separate ownerships. The property known as 'Yew Tree' had been sold so the Project Officer had to establish a positive relationship with the new owner as well as making contact with the previous owner.

The house known as 'South Sway Farm Cottage' had been sold twice so the Project Officer had to establish a positive relationship with the two new owners as well as making contact with the previous owner and occupant.

The fields and stables associated with South Sway Farm had been sold and sub-divided so the Project Officer had to establish a positive relationship with three new owners as well as making contact with the previous owner and occupant and taking time to meet a potential purchaser who subsequently decided not to purchase the land.

5. IMPLICATIONS OF LAND OWNERSHIP FRAGMENTATION FOR GIANT HOGWEED ERADICATION PROGRAMME

This study of South Sway Farm provides an example of the increasing sub-division of land along the Avon Water and the corresponding increase in the number of landowners and / or managers. The continuing fragmentation of the pattern of land ownership along the Avon Water has implications for the giant hogweed eradication programme being coordinated by the NFNNPP.

5.1 Need to secure the co-operation of an increasing number of land owners and land managers

A successful eradication programme requires cooperation and involvement of all relevant land owners and land managers. All landowners need to recognise that they have responsibilities and that they are all pieces in the jigsaw' or 'links in the chain'. It is therefore imperative that the Project Officer is vigilant and aware of land being sold so that contact can be made with new landowners to ensure that they understand the need for control and to encourage them to participate in the eradication programme. This requires constant vigilance and a substantial amount of time, especially when sub-division of land results in an increasing number of people with whom the Project Officer needs to make, and sustain, contact.

Each year since 2009 the Project Officer has contacted all relevant landowners to ask whether they wish to accept the offer of herbicide treatment undertaken by suitably-qualified professional contractors commissioned by the NFNNPP or whether (in the case of a small minority of landowners) they wished to continue to control the giant hogweed on their land by physical methods, to avoid the use of herbicides. Having secured the participation of relevant landowners, each year the Project Officer has arranged a programme of herbicide treatment; securing the agreement of all relevant landowners is an increasingly challenging task as land is sub-divided and the Project Officer

has to make contact and gain the trust and cooperation of a rising number of people, sometimes at short notice prior to the start of the herbicide treatment programme.

5.2 Change of land use often associated with fragmentation of land ownership

The fragmentation of land ownership along the Avon Water is often associated with a change of use to 'amenity' land or the sub-division of fields into pony paddocks. Both these situations have implications for the control and eradication of giant hogweed.

The changing pattern of land ownership along the Avon Water is typical of the changing landscape along many watercourses in the New Forest area. Sub-division of farms often results in former farm houses being sold off separately from the majority of the associated land. Land retained with the former farm house is typically then used for 'amenity' purposes and is no longer part of a functioning farm; the new owner of the former farm house probably has no access to traditional grazing animals (eg cattle) or has no desire to graze livestock. The decline in traditional livestock grazing is a factor contributing to the spread of invasive non-native plants in the New Forest area.

The sale particulars relating to the sale of South Sway Farm in the 1950s ^{Ref 13} reveal that the farm buildings associated with South Sway Farm House included a cow stall for 34 cows and that the farm buildings associated with Bridge Farm House included a cow shed for 8 cows. A set of (undated) sale particulars for South Sway Farm ^{Ref 14} which were presumably prepared some time after the sale of the farm during the 1950s, indicate the presence of a former dairy (then used as a workshop), a milking parlour and a former cow shed (then used as a hen battery house). These sale particulars state that "The whole of the farm is at present in grass. Although used for rearing store cattle, horses, New Forest ponies and egg production, the farm is readily convertible to a Dairy Farm again."

At the start of The New Forest Non-Native Plants Project in 2009, none of the land within the case study area was used for cattle grazing. The only grazing undertaken within the case study area was for equestrian use.

The sub-division of land into paddocks for ponies / horses is often accompanied by the installation of fences along the river bank, where previously stock would have had access to the river bank. The erection of fences along the watercourse results in an un-grazed strip which becomes dominated with coarse vegetation, brambles and scrub. If giant hogweed becomes established here it is very difficult to control. The fence itself is a physical barrier; the dense growth of bramble and scrub makes access difficult; the proximity of the fence to the edge of the river bank often makes working in such a narrow strip dangerous and poses a challenge to the safety of the person attempting to undertake management.

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7. REFERENCES

Ref 1 The Invasive Non-Native Species Framework Strategy for Great Britain. Department for Environment, Food and Rural Affairs, 2008

Ref 2 Giant Hogweed Management in the United Kingdom Olaf Booy and Max Wade (2007) RPS Group plc

Ref 3 Wildlife and Countryside Act 1981 (as amended). In accordance with Section 14 (2) of the Wildlife and Countryside Act 1981 (as amended) it is unlawful to plant in the wild, or otherwise cause to grow in the wild, those species listed in Schedule 9, Part II.

Ref 4 'Protecting our native wildlife : Guidance for the control of invasive weeds in or near fresh water' published by Environment Agency. March 2007

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Ref 7 Boldre Tithe Apportionment, 1851. Hampshire Records Office Finding No 21M65/F7/26/1

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