Hampshire & Isle of Wight Wildlife Trust

The New Forest Non-Native Plants Project

Control of Cotoneaster in the New Forest 2015 to 2021

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March 2021

Publication Details

This document should be cited as: Chatters, C. (2021). *The New Forest Non-Native Plants Project: Control of Cotoneaster in the New Forest 2015 to 2021.* Hampshire and Isle of Wight Wildlife Trust.

Front Cover: Photograph taken on 14 September 2015 by Catherine Chatters of *Cotoneaster horizontalis* at Beaulieu Heath in The New Forest.

The name of the relevant photographer or source of the image is acknowledged beneath each picture. All other photographs have been taken by Catherine Chatters (New Forest Non-Native Plants Officer).

Published by:
Hampshire and Isle of Wight Wildlife Trust
Beechcroft House
Vicarage Lane
Curdridge
Hampshire
SO32 2DP

A company Ltd by guarantee & registered in England No. 676313; Charity No. 201081.

Document Control

Version	Author name	Date	Signed off by	Date
Draft	*Catherine Chatters*	*15 March 2021*	*Clive Chatters*	*22 March 2021*
Final	*Catherine Chatters*	*23 March 2021*	*Clive Chatters*	*23 March 2021*

Summary

The New Forest Non-Native Plants Project was set up in May 2009 to stop the spread of invasive non-native plants in the New Forest area. The Project is hosted by Hampshire and Isle of Wight Wildlife Trust and supported by a partnership of organisations.

The Project initially aimed to focus on five invasive non-native plants, namely Himalayan Balsam *Impatiens glandulifera*, Japanese Knotweed *Fallopia japonica*, Giant Hogweed *Heracleum mantegazzianum*, American Skunk Cabbage *Lysichiton americanus* and New Zealand Pygmyweed *Crassula helmsii*.

Since then the number of target species has increased five-fold and includes a number of Cotoneaster species.

Cotoneasters have been introduced to the UK and are popular in cultivation but have colonised the countryside where they can spread and cause damage to the environment.

Cotoneasters have been recorded at numerous locations on Crown Land in the New Forest and have invaded species-rich habitats which are of national and international ecological importance.

This report summarises the work undertaken to control Pitcher Plants at eleven locations in the New Forest:

- East Boldre
- Beaulieu Heath
- Stoney Cross
- Lyndhurst
- Greenmoor
- Crockford
- Roadside banks near Slufters
- Burley
- North of the A35
- Open Forest near Bramble Hill Hotel
- Highland Water Inclosure.

The work undertaken by the New Forest Non-Native Plants Project has substantially reduced the population of Cotoneaster at these locations. Many mature Cotoneaster plants have been treated and future work will include control of seedlings and immature plants.

The report refers to eleven areas where Cotoneaster has been recorded during 2020.

The report considers the future of the New Forest Non-Native Plants Project. It emphasises that further work is needed to complete the control of Cotoneaster at sites where work has already been undertaken and highlights the need for monitoring. The report recommends control be undertaken at a number of additional sites which were recorded during 2020. The report highlights the need to secure funding to enable this work to continue.

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APPENDICES

1. INTRODUCTION

1.1. Hampshire and Isle of Wight Wildlife Trust

Hampshire and Isle of Wight Wildlife Trust (HIWWT) is the leading nature conservation charity in the counties of Hampshire and the Isle of Wight. With support from over 25,000 members and 1,500 volunteers, HIWWT works to protect wildlife and wild places, managing nature reserves, running education centres and offering advice to landowners and land managers. HIWWT is part of a UK-wide partnership of 46 local Wildlife Trusts, with a collective membership of more than 800,000 people working together to conserve our precious natural heritage.

1.2. The New Forest Non-Native Plants Project

The New Forest Non-Native Plants Project (NFNNPP) was officially launched on 22 May 2009 to help stop the spread of invasive non-native plants in the New Forest area, particularly along watercourses and in wetland habitats. The Project is hosted by HIWWT and supported by a partnership of organisations.

Many non-native plants have been introduced to the UK as garden plants, where they have grown quickly, spread rapidly and invaded the countryside, causing damage to the environment and the economy and, in some cases, even posing a risk to human health. Some invasive non-native plants have become established in the countryside due to irresponsible disposal; others have become established in the countryside due to deliberate planting; others have probably been spread as a result of birds eating berries and depositing the seeds in their droppings.

Although individual landowners have a legal responsibility to prevent the spread of a number of invasive non-native species, co-ordinated control at the catchment scale is necessary if they are to be eradicated but this will realistically only be achieved if landowners are given encouragement and practical help. The NFNNPP performs a pivotal role in co-ordinating control at the catchment scale and giving support and assistance to landowners.

Since 2009 funding for the New Forest Non-Native Plants Project has been secured from a variety of sources including:

- DEFRA
- Environment Agency
- Natural England
- Forestry Commission / Forestry England
- The Heritage Lottery Fund / National Lottery Heritage Fund administered through The New Forest ‘Our Past, Our Future’ landscape partnership scheme
- New Forest National Park Authority’s Sustainable Development Fund
- The New Forest Higher Level Stewardship scheme
- The New Forest Trust
- donations from landowners.

Catherine Chatters is employed as a full time Project Officer and Joanne Gore is employed as a part-time Project Officer.

The New Forest Non-Native Plants Project aims to:

- identify where invasive non-native plants are a problem
- 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 prevent them spreading into the countryside.

A Steering Group is chaired by a representative of the Trust and meets three times a year, usually during January, May and September. Currently, the Steering Group comprises representatives of the Trust, the New Forest National Park Authority, Forestry England, Natural England and the Environment Agency.

A Forum meeting is held once a year, usually during early March (although the meeting scheduled for 3 March 2021 had to be cancelled due to the Covid-19 pandemic). The Forum meeting is an opportunity for information exchange between the Project Officers and a wide range of interest groups including landowners, land managers, volunteers, local naturalists, non-government organisations and statutory bodies.

The Project initially aimed to focus on five invasive non-native plants, namely Himalayan Balsam *Impatiens glandulifera*, Japanese Knotweed *Fallopia japonica*, Giant Hogweed *Heracleum mantegazzianum*, American Skunk Cabbage *Lysichiton americanus* and New Zealand Pygmyweed *Crassula helmsii*.

Since then the list of target species has increased five-fold and includes a number of Cotoneaster species.

Partnership working is fundamental to the success of the Project and effective partnerships have been developed with landowners, volunteers, consultants, contractors and local naturalists. The Project recognises that partnership working, co-operation and co-ordination are essential if invasive non-native plants are to be controlled effectively or eradicated at the catchment scale.

The New Forest Non-Native Plants Project helped to implement, at the local level, The Invasive Non-Native Species Framework Strategy for Great Britain published in 2008 by Department for Environment, Food and Rural Affairs (DEFRA, 2008) which recognised that 'one of the greatest threats to biodiversity across the globe is that posed by invasive non-native species'.

Since the review of the original Strategy, the Project now helps to implement The Great Britain Invasive Non-Native Species Strategy published in 2015 by Department for Environment, Food and Rural Affairs (DEFRA, 2015).

This Strategy recognises that invasive non-native species 'are a significant and growing problem'; it provides a high level framework, recognises the need for control at the catchment scale and acknowledges that effective partnership working by local action groups such as the New Forest Non-Native Plants Project is critical to the successful control and eradication of invasive non-native species.

1.3. Why control invasive non-native plants in the New Forest?

The New Forest (Figure 1) is recognised as being of high landscape importance through its designation as a National Park and of high ecological importance through its national and international nature conservation designations.

The core of the New Forest National Park is the Crown Land managed by Forestry England. The Crown Land partly comprises plantation woodlands known as Inclosures. The Crown Land also includes the Open Forest which is characterised by lowland heathland, acid grassland and ancient woodland habitats which retain their landscape character and wildlife value through the activities of the commoners who exercise their rights to graze their animals (ponies, cattle, donkeys, pigs and sheep) on the Open Forest.

The core area of Open Forest and plantation woodlands is fringed by privately-owned land within the National Park, 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 them. 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 watercourse. Such changes in management have implications for the spread of invasive non-native plants.

The high number of statutory nature conservation sites within the New Forest reflects its ecological importance. Much of the land within the National Park has been notified as Sites of Special Scientific Interest in accordance with the Wildlife and Countryside Act 1981 (as amended) and the 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 heathland, ancient woodland, valley bogs/valley mires, river valleys and coastal marshes support a very high number of nationally rare (and some internationally rare) species.

The majority of the New Forest National Park lies within the Natura 2000 network of European Sites, through designation as a Special Area of Conservation (SAC) under the EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora and/or through classification as a Special Protection Area (SPA) under the Wild Birds Directive (Council Directive 79/409/EEC). Large areas are also designated as Ramsar Sites (wetlands of international importance) under the terms of the Ramsar Convention held in Iran during 1971.

These ecologically important habitats in the New Forest area are vulnerable to invasion by non-native plants.

The species-rich habitats where the NFNNPP has undertaken work to control Cotoneaster are all within the New Forest SSSI and are recognised as being of international nature conservation importance, through designations including the New Forest SAC and the New Forest SPA.

The control of invasive non-native plants in the New Forest area is justified by a) the high concentration of ecologically important habitats and b) the potential for habitat restoration.

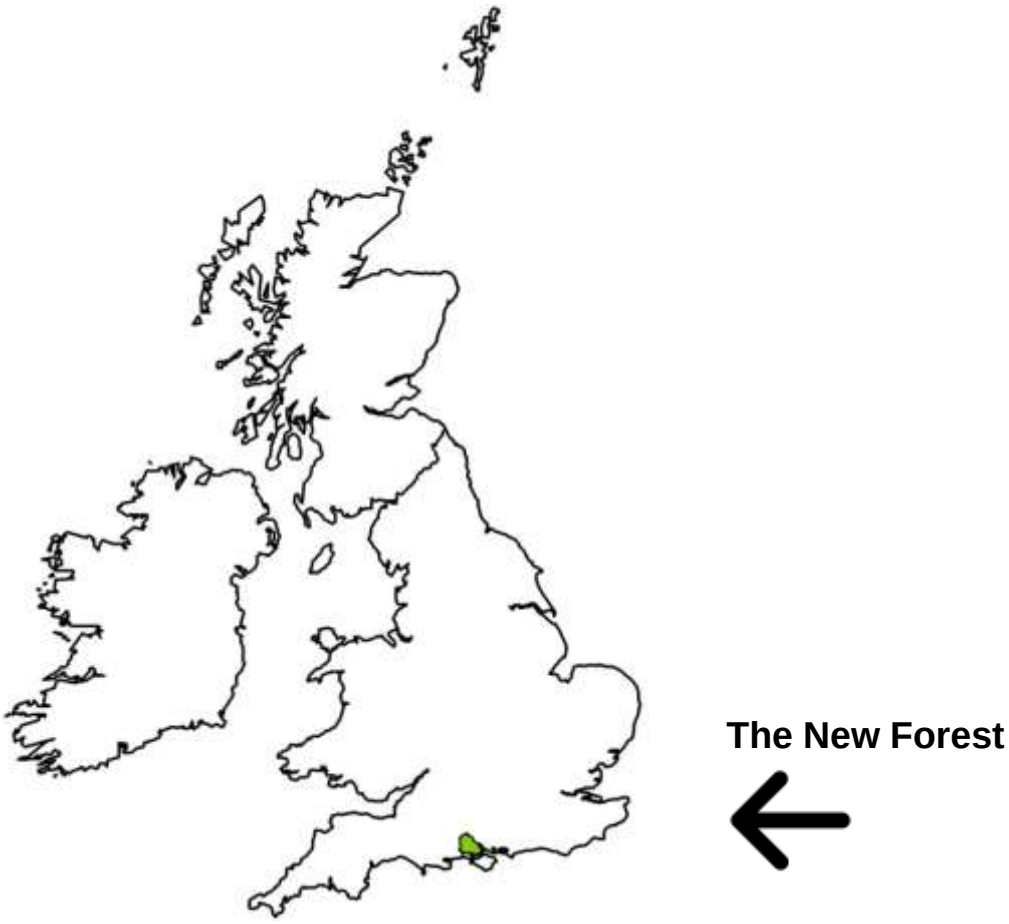


Figure 1: Location of the New Forest, Hampshire

2. COTONEASTER

2.1. Cotoneaster in the United Kingdom

Cotoneasters constitute a large group of shrubs and small trees which can be evergreen or deciduous. Although there is one species of Cotoneaster *Cotoneaster cambricus* which is considered to be native to North Wales (Pearman, 2017; Stace, 2019), the majority of Cotoneasters growing in the UK are the result of horticultural introductions from Northern India, the Himalayas and China.

Cotoneasters have been in cultivation in the UK since 1824 and they are now popular garden plants which are widely cultivated.

Cotoneasters are becoming increasingly naturalised due to birds which eat the berries and spread the seeds. Where they become established, they can become dominant to the exclusion of native species (Dodge, Wade, Ames and McKee, undated).

Five species of Cotoneaster are listed under Schedule 9 to the Wildlife and Countryside Act 1981 (as amended) with respect to England and Wales. As such, it is an offence to plant them in the wild or otherwise cause them to grow in the wild. The five species of Cotoneaster which are listed under Schedule 9 are:

- Entire-leaved Cotoneaster *Cotoneaster integrifolius*
- Himalayan Cotoneaster *Cotoneaster simonsii*
- Hollyberry Cotoneaster *Cotoneaster bullatus*
- Small-leaved Cotoneaster *Cotoneaster microphyllus*
- Wall Cotoneaster *Cotoneaster horizontalis*

2.2. Cotoneaster in the New Forest

A number of Cotoneaster species have become established within the New Forest, particularly in areas where the characteristically acid heathland soils have been modified and become more alkaline in character. For example, populations of Cotoneaster have become established on the sites of former war-time airfields where roads, runways and buildings have altered the characteristics of the surrounding soils, through leaching of calcium carbonate from concrete.

During 2015 Catherine Chatters, New Forest Non-Native Plants Officer, became aware of Wall Cotoneaster *Cotoneaster horizontalis* growing on the former World War I airfield at East Boldre and the former World War II airfield at Beaulieu Heath. Catherine Chatters visited these sites in September and October 2015 and realised that there were other Cotoneaster species present in addition to Wall Cotoneaster. Despite having a key to Cotoneasters prepared by botanist John Norton identification of the various Cotoneasters proved to be challenging so she sought help from experts.

John Norton (Committee member of Hampshire Flora Group), Eric Clement (non-native plant specialist), Martin Rand (Botanical Society of Britain & Ireland Recorder for South Hampshire Vice County 11) and Mike Rowe (local botanist) visited Beaulieu Heath and East Boldre with Catherine Chatters on 14 December 2015 (Figure 2) and identified four species of Cotoneasters, the first two of which are listed under Schedule 9 of the Wildlife and Countryside Act 1981:

- Wall Cotoneaster *Cotoneaster horizontalis*
- Himalayan Cotoneaster *Cotoneaster simonsii*
- Spreading Cotoneaster *Cotoneaster divaricatus*
- Diel's Cotoneaster *Cotoneaster dielsianus*

The following information about these four species of Cotoneaster has been extracted from The New Atlas of the British & Irish Flora (Preston, Pearman & Dines, 2002):

Wall Cotoneaster *C. horizontalis* is native to Western China. It was introduced into cultivation in Britain around 1879 and is extremely popular in gardens. It was first recorded in the wild in 1940 and appears to be increasing rapidly. It occurs as a garden escape or throw-out and is also frequently bird-sown. It reproduces rapidly from seed, becoming naturalised and posing a threat to native vegetation.

Himalayan Cotoneaster *C. simonsii* is an erect, deciduous shrub which is frequently naturalised, often originating from bird-sown seed. It was introduced from the Himalayas in 1865 and has become very popular in gardens and amenity planting schemes. It was first recorded in the wild in 1910 and its distribution has increased considerably since it was mapped in the 1960s.

Spreading Cotoneaster *C. divaricatus* is a medium-sized, spreading deciduous shrub, frequently found as a bird-sown garden escape, populations often becoming well-naturalised. It was introduced to cultivation in 1904 from Western China and was first recorded in the wild, in Kent, in 1983. It is probably under-recorded and may be spreading.

Diel's Cotoneaster *C. dielsianus* was introduced from China and has been cultivated in Britain since 1900. It is an erect, arching deciduous shrub found as a garden escape and has been recorded in the wild since 1965. It may be increasing but is probably under-recorded.

Figure 2: Eric Clement, Mike Rowe and Martin Rand identifying Cotoneaster at Beaulieu Heath on 14 December 2015

Beaulieu Heath and the site of the former airfield at East Boldre are part of the Crown Land managed by the Forestry Commission (now Forestry England). The NFNNPP contacted the Forestry Commission and offered help with the control of Cotoneaster at these sites, in particular to help stop the spread of the species listed under Schedule 9. Since then the NFNNPP has surveyed other sites where Cotoneaster has invaded the Crown Land and has arranged for control work to be undertaken using funding provided by the New Forest Higher Level Stewardship scheme.

2.3. Cotoneaster control methods

The NFNNPP investigated Cotoneaster control methods used by other organisations:

Plantlife had organised control of Cotoneaster in England at Portland, Torbay and the Avon Gorge using hand-held weed-wipers (Ben McCarthy, Director of Strategy, Plantlife International, *pers com*).

Butterfly Conservation had controlled *Cotoneaster integrifolius* on Portland (through the Portland Limestone Grassland Restoration Project) using herbicide treatment, followed by removal of dead growth (Davis, 2013).

Conwy Council had commissioned contractors to control Cotoneaster at Great Orme Country Park**.** Glyphosate-based herbicide was ideally applied in June / July by brush at 15% volume with 2% 'Mixture B' (a wetting agent) and by hand-held sprayers at 5% volume with 2% 'Mixture B'**.** The use of 'mixture B' as a wetting agent was very beneficial in tackling the waxy leaves of the Cotoneaster. Timing also made a big difference. When treatment was undertaken in late June or early July, the Cotoneaster plants were dying off within days and the herbicide had been fully translocated within a week or two. However, when herbicide treatment was undertaken in late August, it took two weeks for plants to die off and four weeks for the herbicide to be fully translocated. Dead material was cut and burnt on corrugated metal sheets in October / November. Monitoring of seedling growth is required. (Chris Woodall, Assistant Country Park Warden for Conwy County Borough Council*, pers com*).

The NFNNPP decided to commission suitably qualified contractors to control Cotoneaster in the New Forest using herbicide applied with a knapsack sprayer.

2.4. Trial using 'Tree Poppers' to control Cotoneaster

During January 2016 the Project Officer was approached by Alan Martin, a contractor who was interested in trialling 'Tree Poppers' as a method of Cotoneaster control. In liaison with the Forestry Commission, the NFNNPP arranged for a trial to be undertaken on 18 November 2016 at Stoney Cross in the New Forest to assess the effectiveness of using Tree Poppers to control Cotoneaster. A note prepared by the Project Officer to summarise the results of this trial is appended to this report at Appendix 1.

3. CONTROL OF COTONEASTER AT EAST BOLDRE

3.1. Cotoneaster at East Boldre

Cotoneaster has colonised the site of the Royal Flying Corps Training Airfield (RFC Beaulieu) at East Boldre (which closed in 1919) where calcium from the remains of former airfield facilities (hangars and other buildings) has leached into the surrounding heathland soils.

3.2. Work undertaken between 2015 and 2020

The NFNNPP surveyed the site of the former airfield at East Boldre during October 2015. Cotoneaster was discovered to be growing in the vicinity of concrete, some of which was clearly visible above ground (Figure 3) and some of which was hidden beneath vegetation, for example on the site of a former 'Belfast Double Truss Hangar' at SU 36233 00444.

Figure 3: *Cotoneaster horizontalis* growing in the vicinity of concrete on the site of the former airfield at East Boldre; photographed on 1 October 2015.

The results of the surveys undertaken on 1 October and 19 October 2015 are shown on the map at Figure 4.

The NFNNPP commissioned Southern Counties Forestry Ltd to undertake herbicide treatment to control the Cotoneaster at East Boldre during 2016, 2017, 2018, 2019 and 2020.

Monitoring was undertaken by the NFNNPP and the results are shown on the maps at Figures 5, 6, 7, 8 and 9.

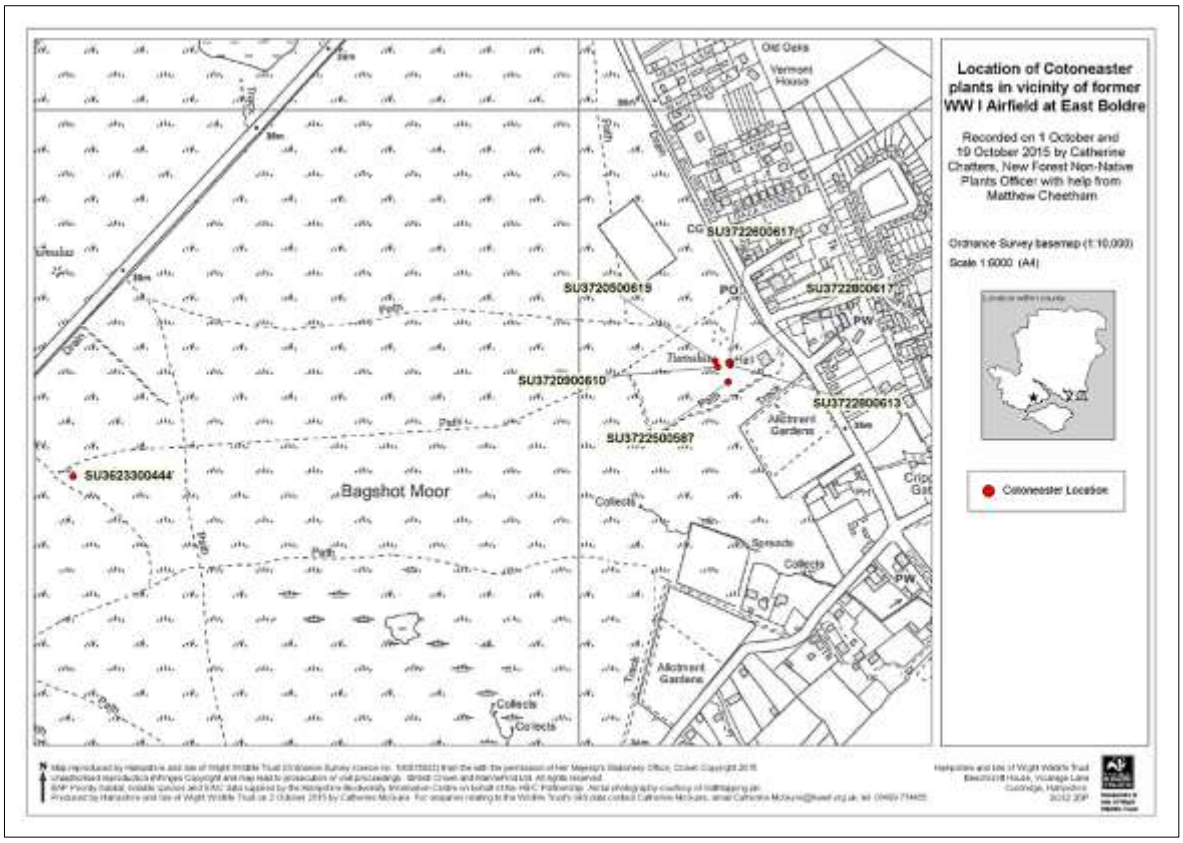


Figure 4: Cotoneaster recorded on site of former airfield at East Boldre during October 2015

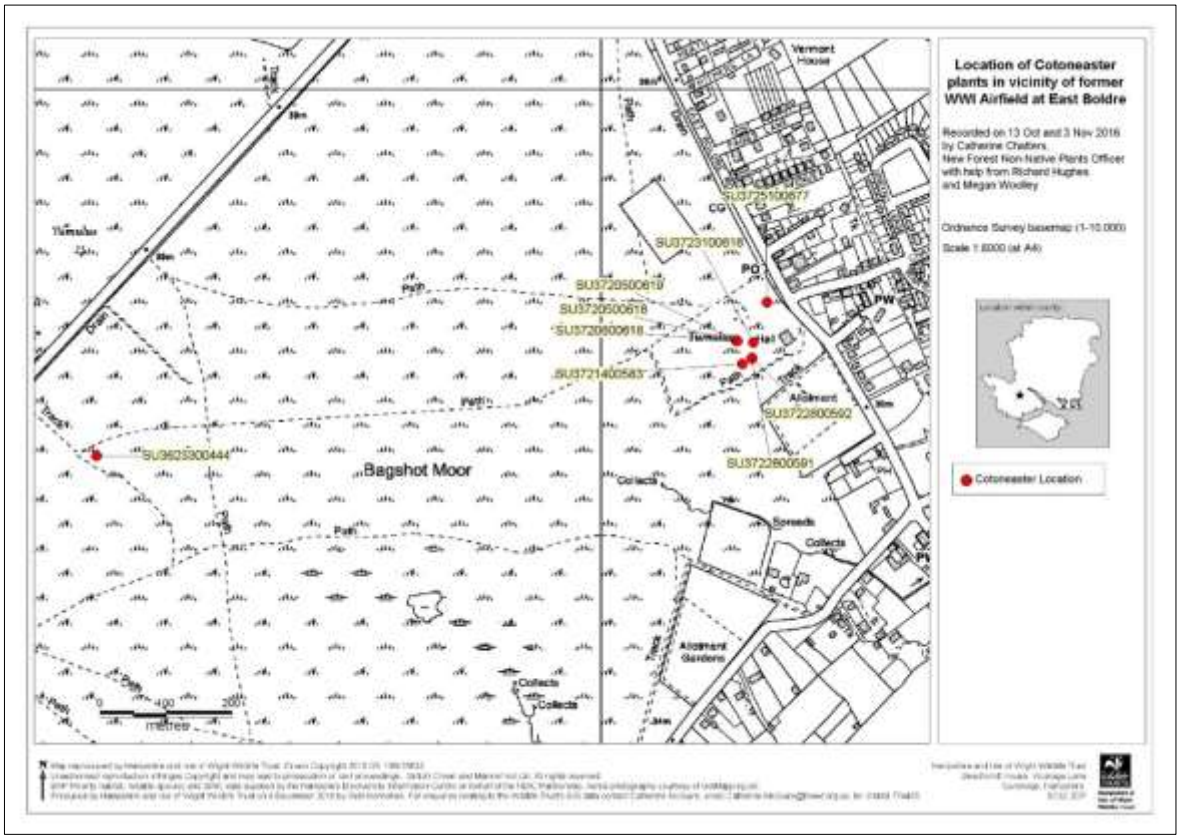


Figure 5: Cotoneaster recorded on site of former airfield at East Boldre during October and November 2016

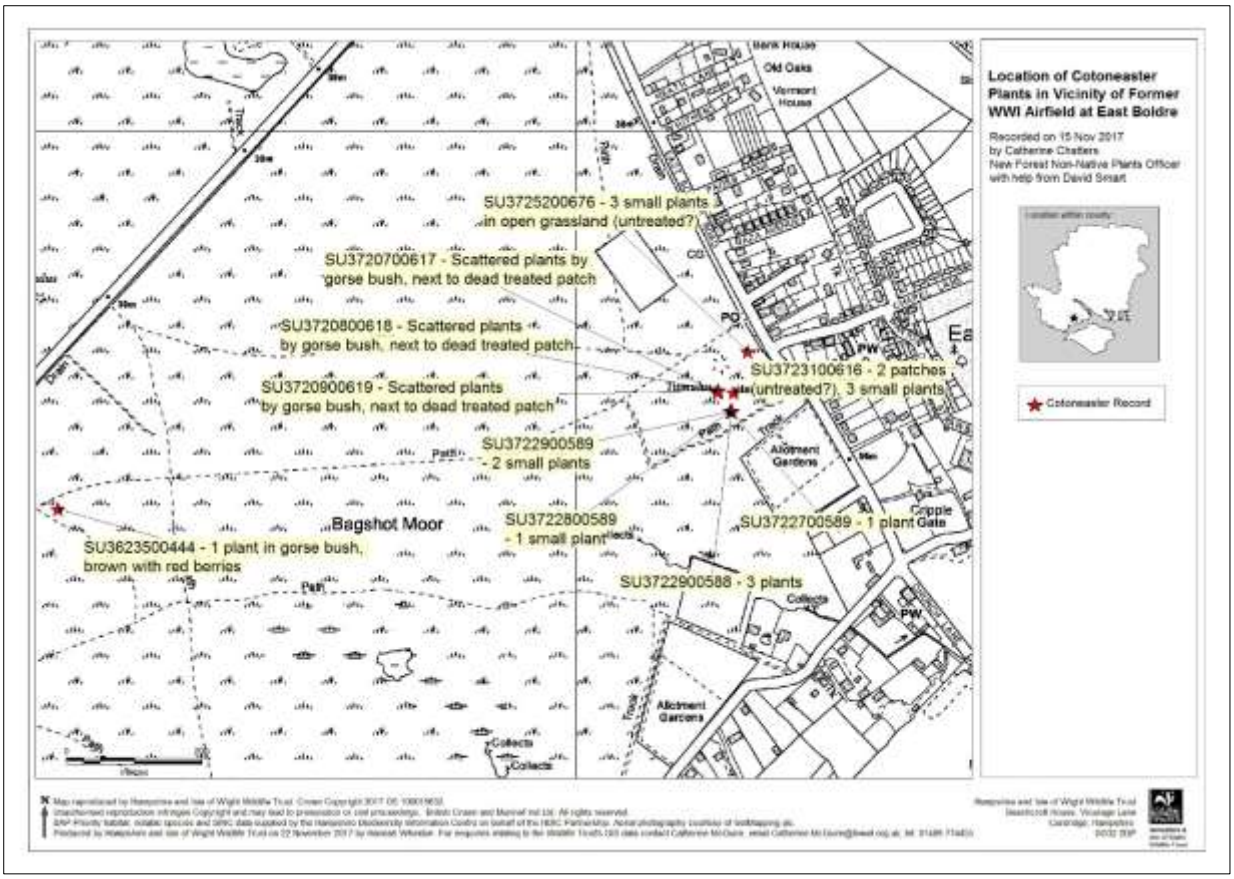


Figure 6: Cotoneaster recorded on site of former airfield at East Boldre during November 2017

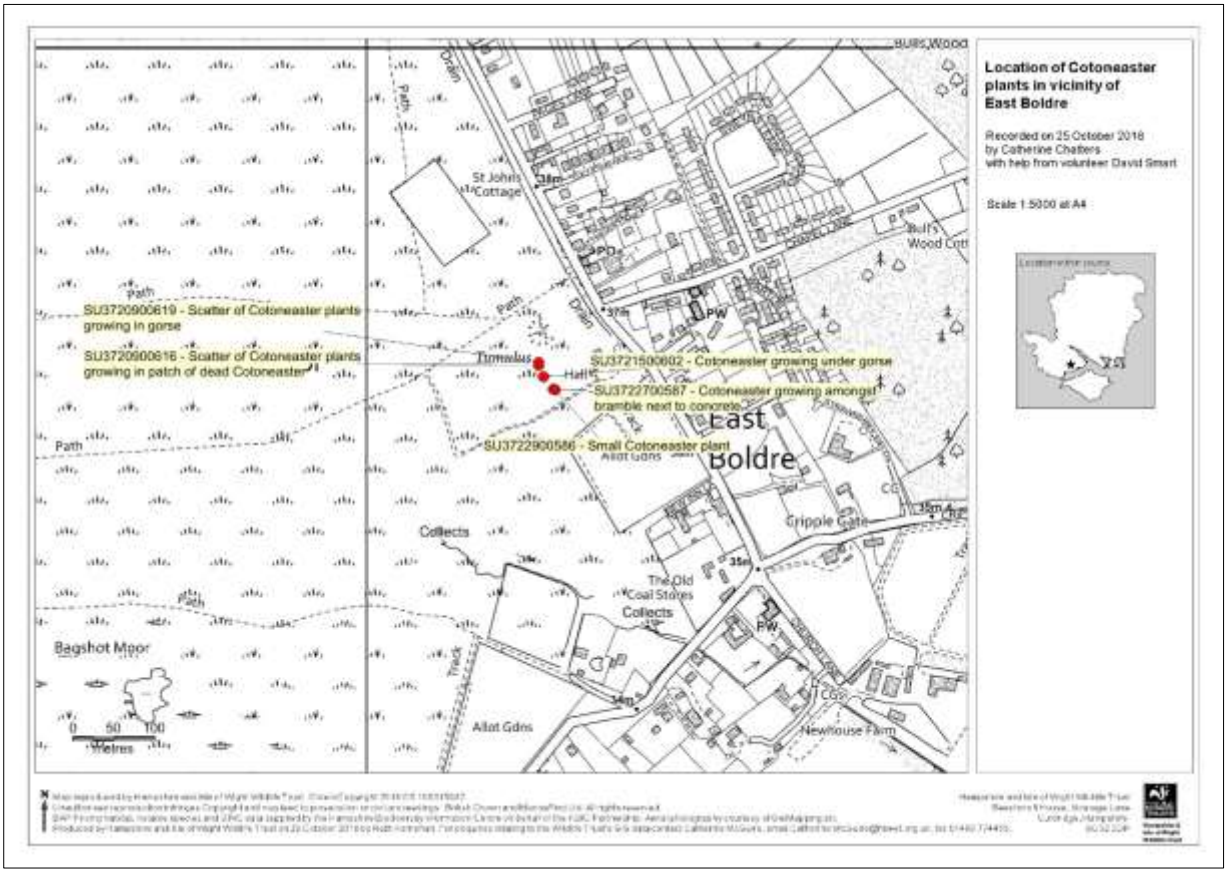


Figure 7: Cotoneaster recorded on site of former airfield at East Boldre during October 2018

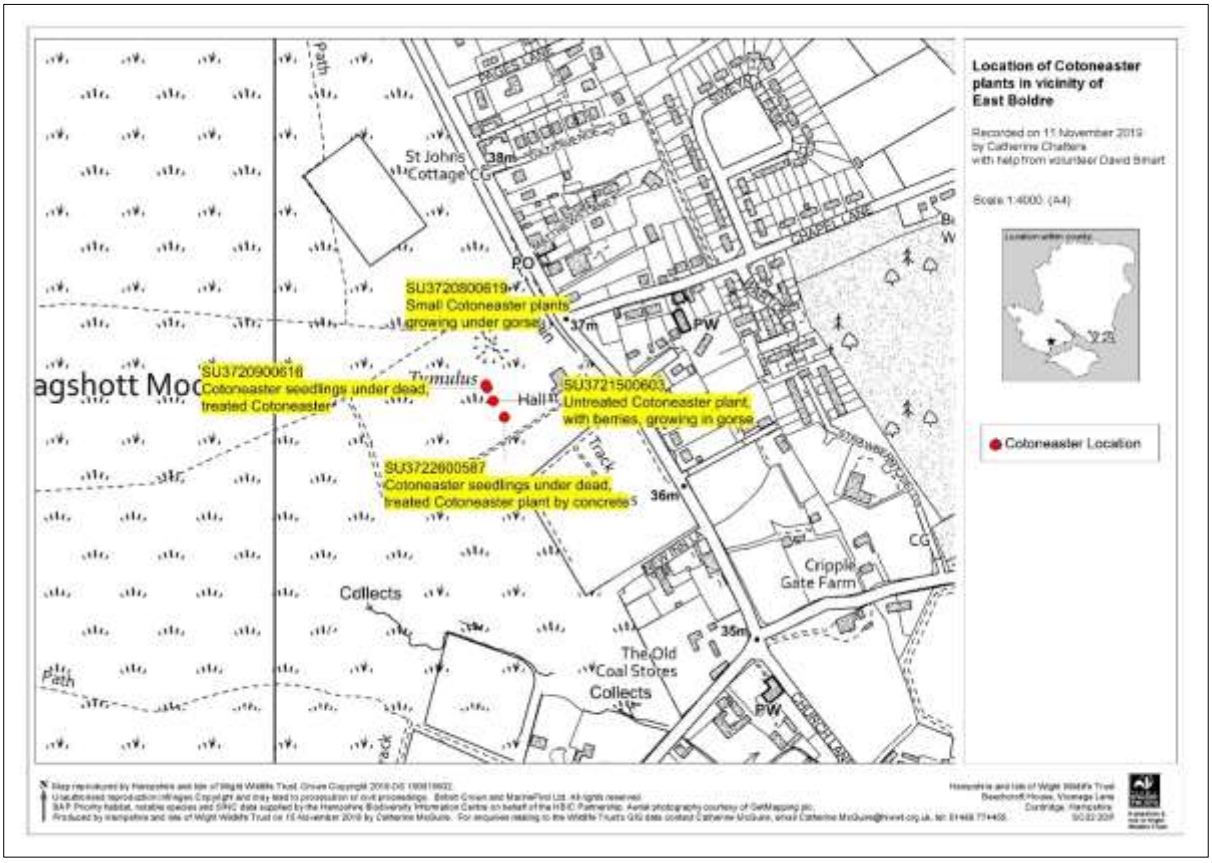
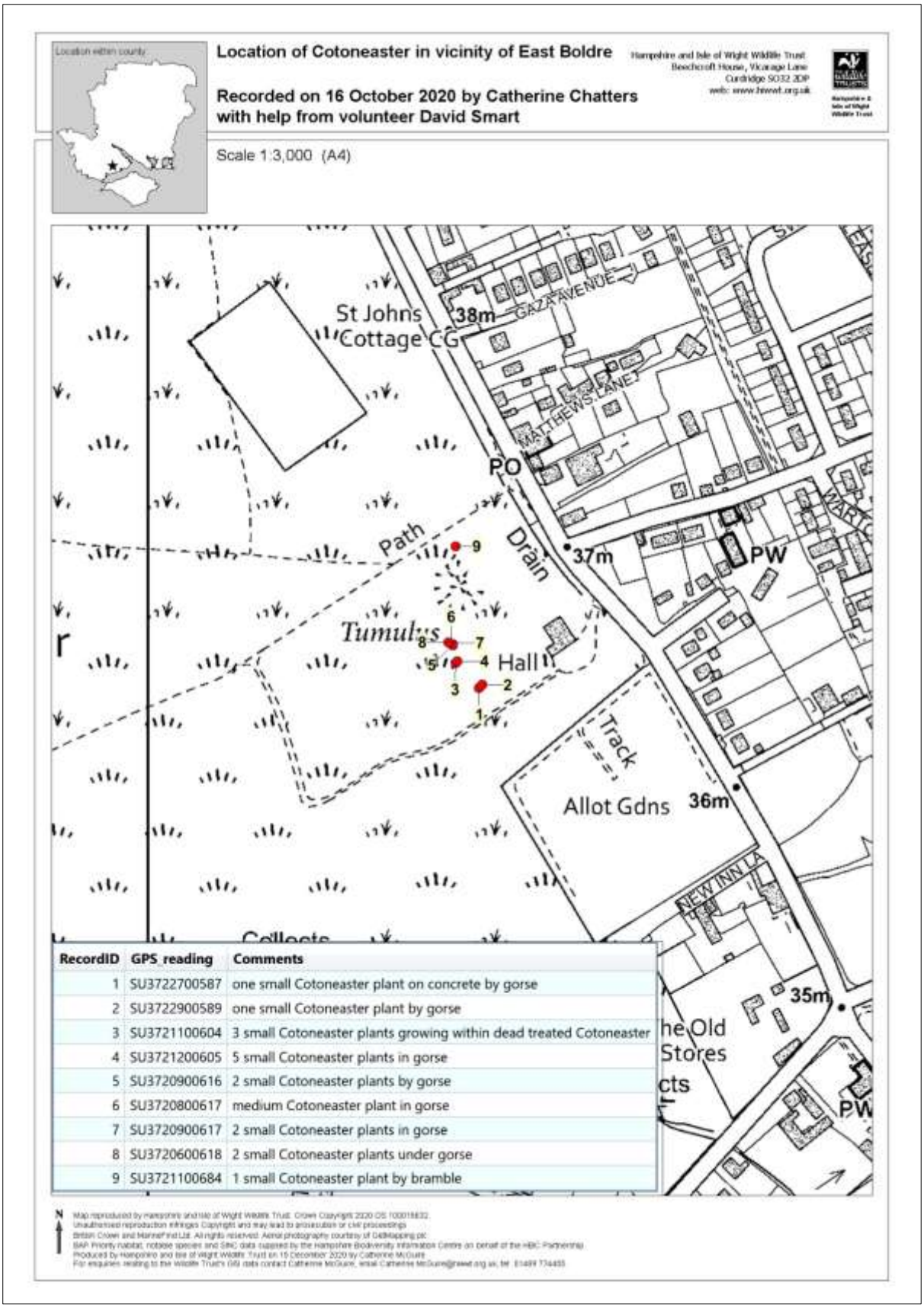


Figure 8: Cotoneaster recorded on site of former airfield at East Boldre during November 2019



RecordID	GPS_reading	Comments
1	SU3722700587	one small Cotoneaster plant on concrete by gorse
2	SU3722900589	one small Cotoneaster plant by gorse
3	SU3721100604	3 small Cotoneaster plants growing within dead treated Cotoneaster
4	SU3721200605	5 small Cotoneaster plants in gorse
5	SU3720900616	2 small Cotoneaster plants by gorse
6	SU3720800617	medium Cotoneaster plant in gorse
7	SU3720900617	2 small Cotoneaster plants in gorse
8	SU3720600618	2 small Cotoneaster plants under gorse
9	SU3721100684	1 small Cotoneaster plant by bramble

Figure 9: Cotoneaster recorded on site of former airfield at East Boldre during October 2020

3.3. Observations relating to control of Cotoneaster at East Boldre

The effect of the herbicide treatment undertaken during 2016 was clearly seen when the monitoring was undertaken on 13 October 2016. Cotoneaster plants which had been treated appeared brown, presumably dead, as shown in the photograph at Figure 10. However, there were some small, living plants which had not been treated and an example is shown in the photograph at Figure 11.

Figure 10: Photograph taken on 13 October 2016 showing Cotoneaster which had been treated with herbicide during 2016

Figure 11: Photograph taken on 13 October 2016 showing Cotoneaster which had not been treated with herbicide during 2016

When the monitoring was undertaken on 11 November 2019, some small Cotoneaster plants were found growing under gorse; these Cotoneaster plants had not been treated with herbicide. An example is shown in the photograph at Figure 12.

Also, during the monitoring visit on 11 November 2019, the Project Officer observed Cotoneaster seedlings which had germinated under dead, treated Cotoneaster plants, as shown in the photograph at Figure 13.

Figure 12: Photograph taken on 11 November 2019 showing small Cotoneaster plants growing under Gorse at SU 37208 00619

Figure 13: Photograph taken on 11 November 2019 at SU 37209 00616 showing Cotoneaster seedlings which had germinated under dead, treated Cotoneaster

4. CONTROL OF COTONEASTER AT BEAULIEU HEATH

4.1. Cotoneaster at Beaulieu Heath

Cotoneaster has colonised the site of the former airfield known as RAF Beaulieu, which operated between 1942 and 1959, where calcium from the remains of former airfield facilities (roads, runways and buildings) has leached into the surrounding heathland soils.

The majority of the runways and buildings have been removed although the perimeter road has been retained as a recreational route for walkers and cyclists and a portion of one of the runways has been retained for use by a model aircraft club. The position of the former runways and other features associated with the airfield can be seen on the Light Detection and Ranging (LiDAR) image at Figure 14. A photograph of the cross-section of the perimeter road is shown at Figure 15.

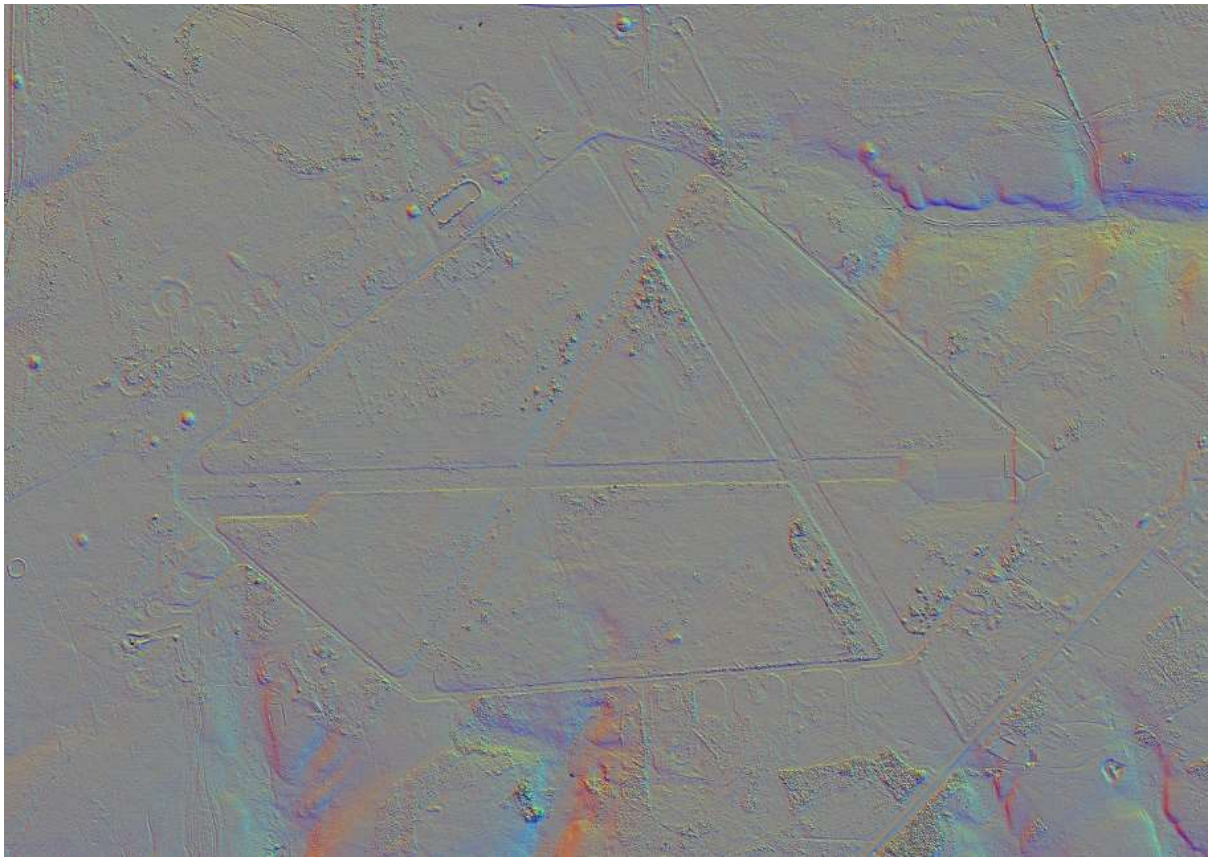


Figure 14: LiDAR image showing the position of former runways and associated features at RAF Beaulieu on Beaulieu Heath (image kindly provided by the New Forest National Park Authority)

4.2. Work undertaken between 2015 and 2020

The Project Officer, with the help of a volunteer, surveyed the Cotoneaster at Beaulieu Heath during September and October 2015 and found it to be growing in the vicinity of the perimeter road (Figure 16) and other features associated with the former airfield. The results of the surveys undertaken in autumn 2015 are shown on the map at Figure 17.

The NFNNPP commissioned contractors to treat the Cotoneaster with herbicide during 2016, 2017, 2018, 2019 and 2020.

Further surveys were undertaken by the NFNNPP with help from volunteers during 2016, 2017, 2018, 2019 and 2020. The main species recorded were *C. horizontalis* and *C. simonsii*. The results of these surveys are shown on maps indicating the distribution of Cotoneaster plants at Figure 18, Figure 19, Figure 20, Figure 21, Figure 22.

Figure 15: A cross-section through the perimeter road of the former airfield at Beaulieu Heath showing concrete underlying the tarmac. Photograph taken on 28 November 2016.

Figure 16: Volunteer Cynthia Swann standing by Cotoneaster growing on edge of perimeter road on site of former airfield at Beaulieu Heath during survey with NFNNPP on 14 September 2015

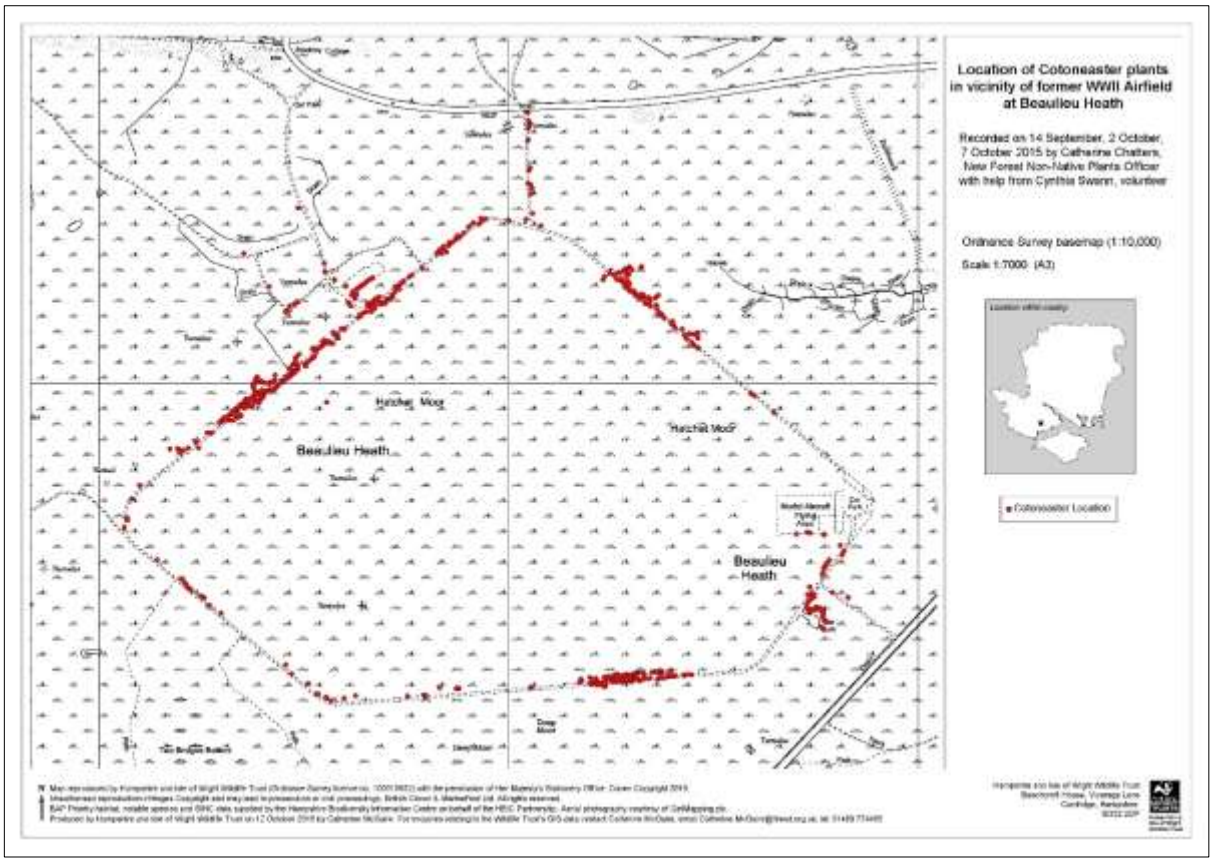


Figure 17: Cotoneaster recorded at Beaulieu Heath in September and October 2015

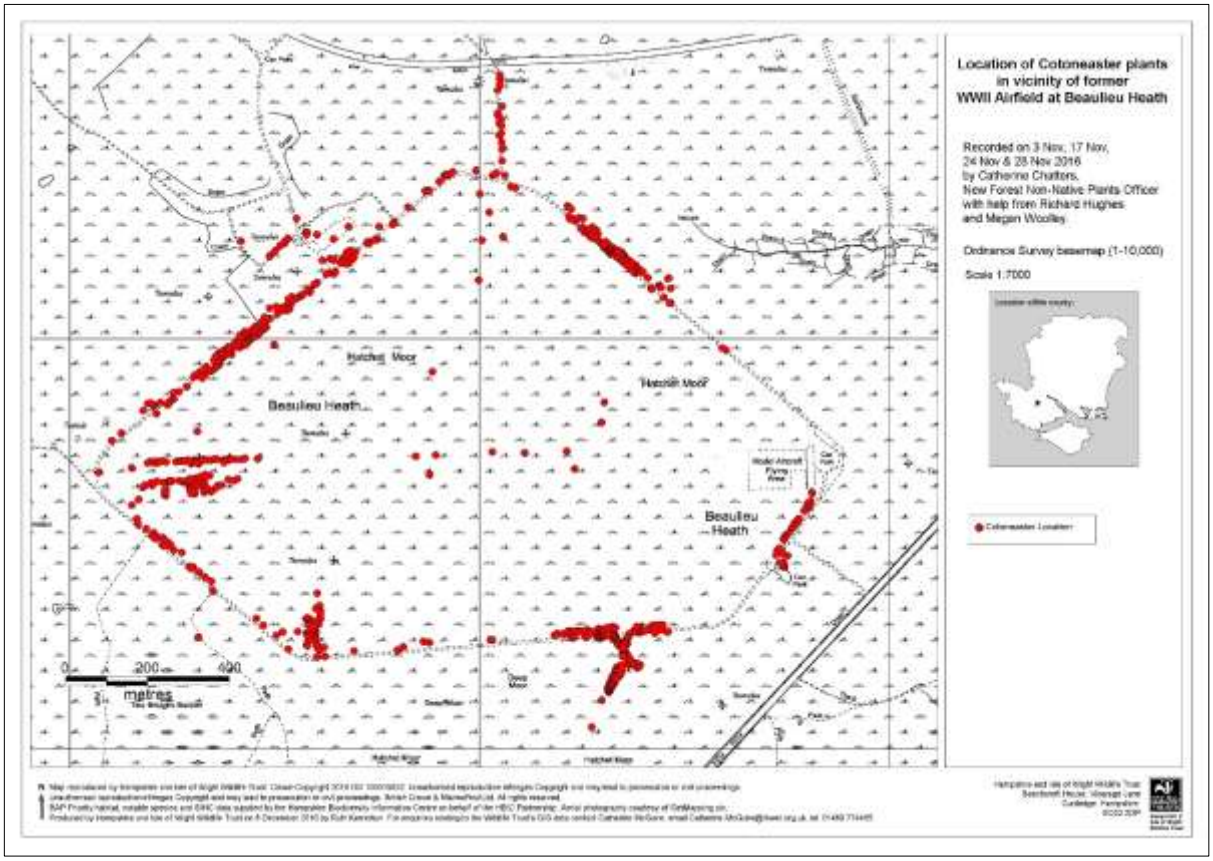


Figure 18: Cotoneaster recorded at Beaulieu Heath in November 2016

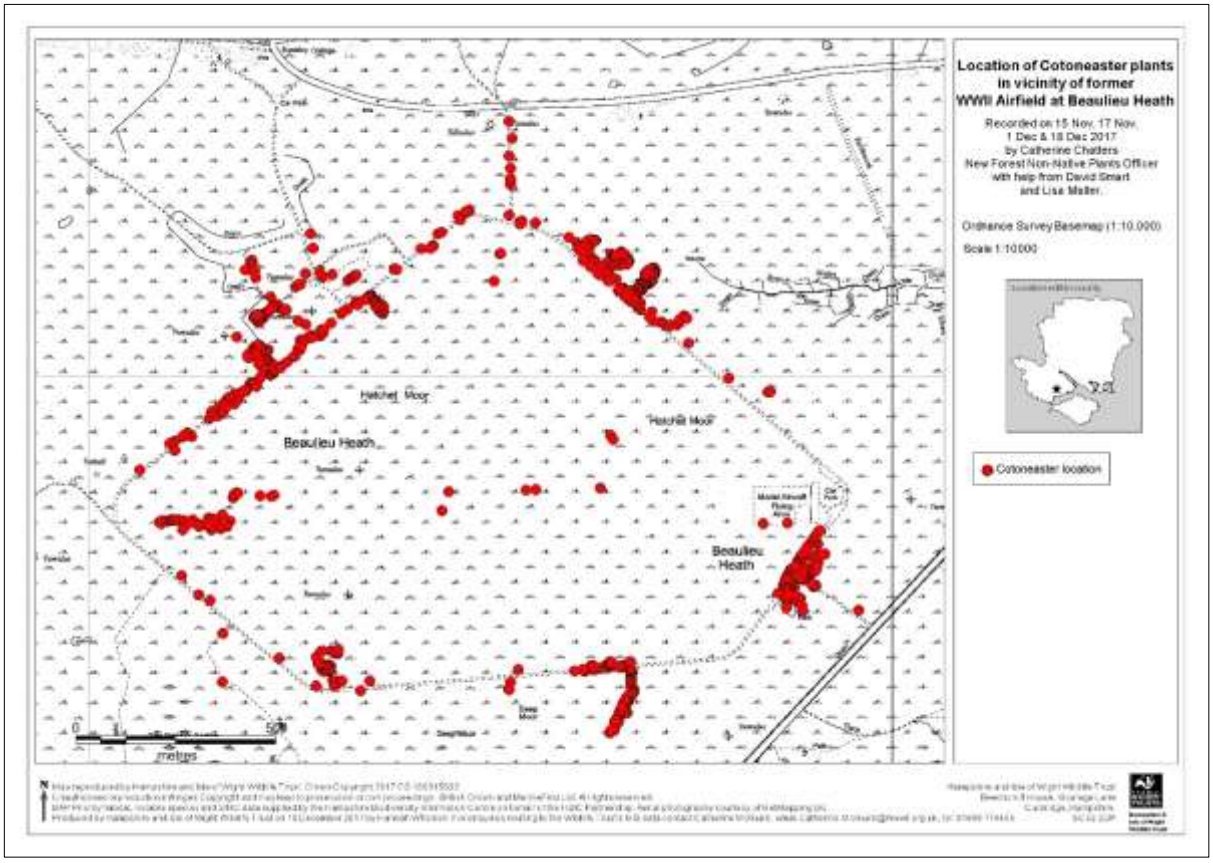


Figure 19: Cotoneaster recorded at Beaulieu Heath in November and December 2017

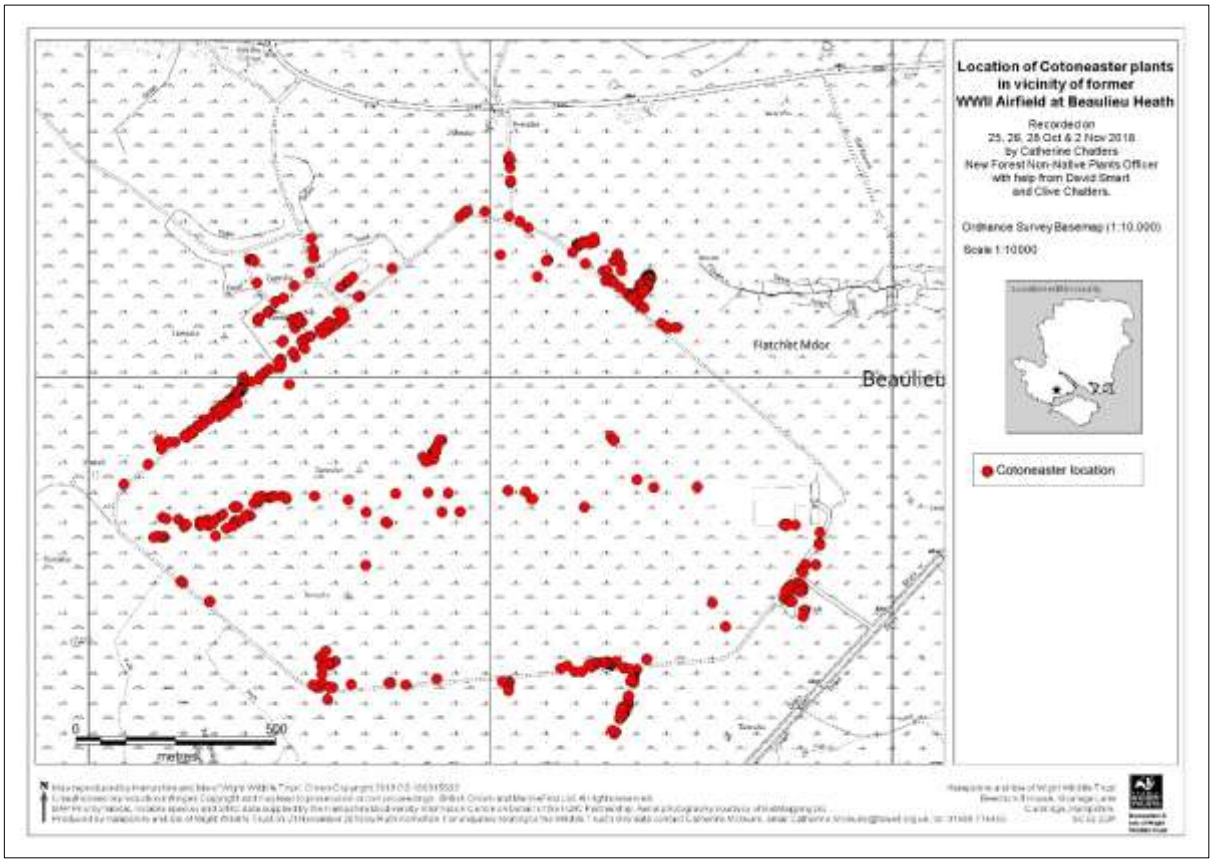


Figure 20: Cotoneaster recorded at Beaulieu Heath in October and November 2018

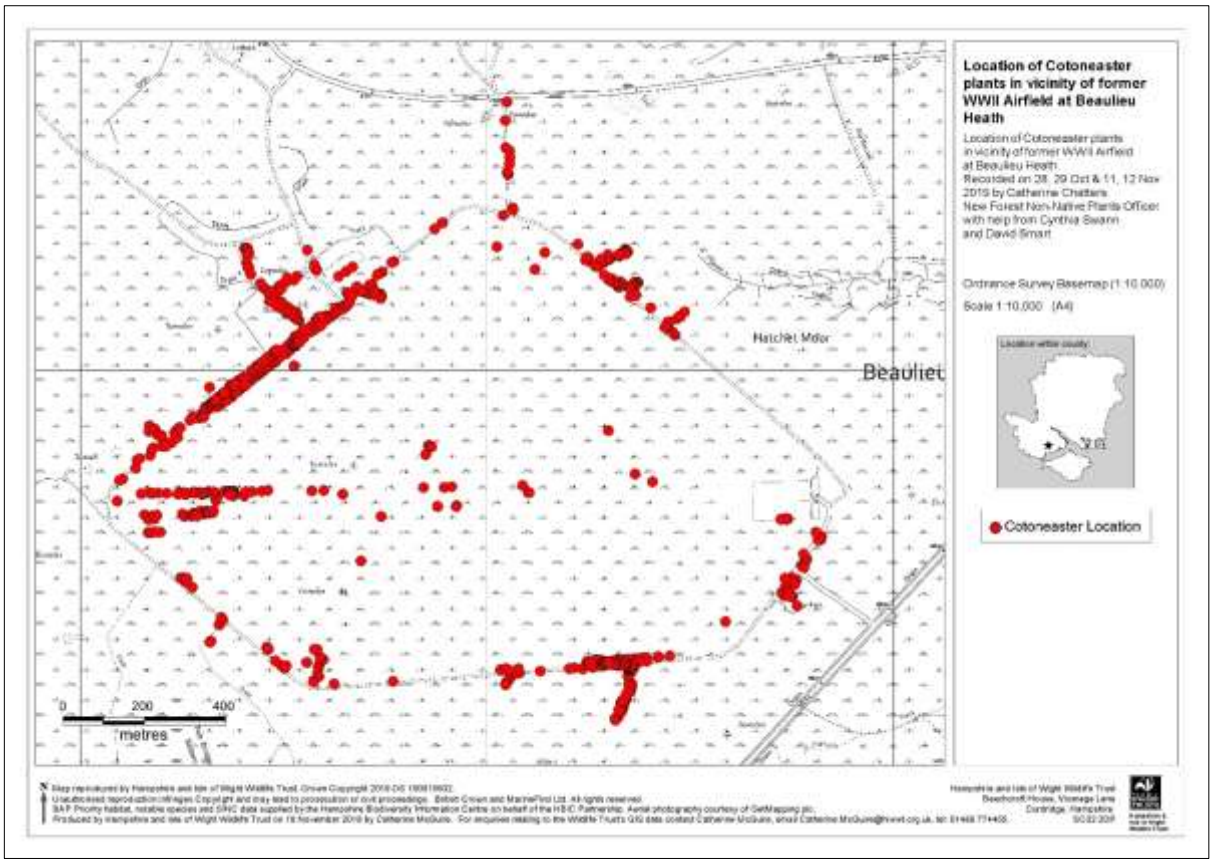


Figure 21: Cotoneaster recorded at Beaulieu Heath in October and November 2019

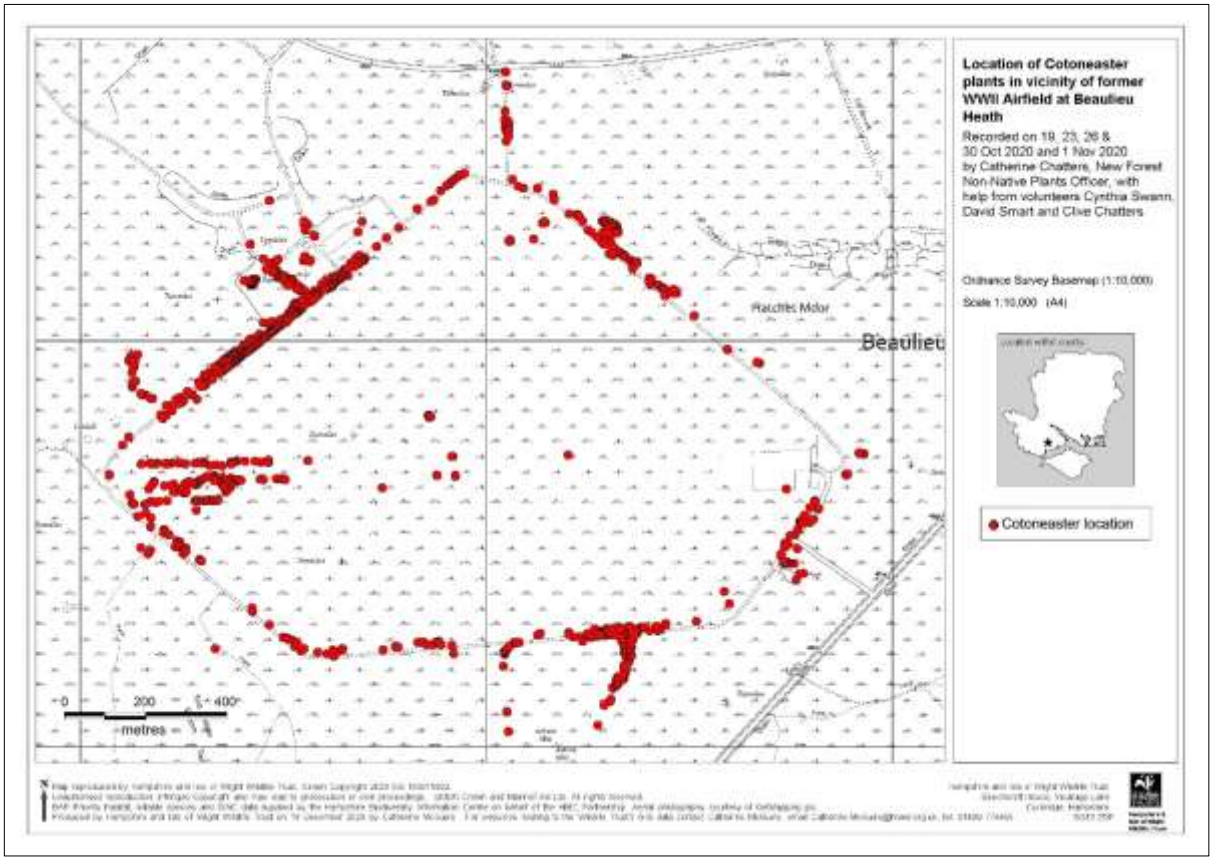


Figure 22: Cotoneaster recorded at Beaulieu Heath in October and November 2020

4.3. Observations relating to control of Cotoneaster at Beaulieu Heath

By November 2017 there was very good evidence that the herbicide treatment undertaken in 2016 and 2017 had been effective. An example of a dead Cotoneaster plant that had been treated with herbicide is shown in the photographs at Figure 23 and Figure 24.

Figure 23: Dead Cotoneaster plant photographed on 15 November 2017

Figure 24: Close up of dead Cotoneaster plant photographed on 15 November 2017

Figure 25: Red leaves were characteristic of many of the *C. horizontalis* plants recorded at Beaulieu Heath in November 2017. This plant was photographed on 15 November 2017.

During November 2017 many of the *C. horizontalis* plants at Beaulieu Heath had very prominent red leaves as shown in the photograph at Figure 25. The Project Officer realised that the combination of red berries and red foliage made it relatively easy to locate *C. horizontalis* plants in the autumn/winter but during the summer, when the foliage is green, locating Cotoneaster plants is much more challenging for the contractors undertaking the herbicide treatment. The Project Officer also realised that finding *C. simonsii* plants is more difficult than locating *C. horizontalis* plants, especially where the *C. simonsii* plants are small and growing amongst Gorse.

By October 2019 the surveys revealed that Cotoneaster seedlings had germinated beneath Cotoneaster plants which had been killed by the herbicide treatment, as shown in the photographs at Figure 26 and Figure 27. The surveys undertaken in October 2020 also revealed numerous Cotoneaster seedlings which had germinated beneath dead, treated plants, as shown at Figure 28 and Figure 29. These were described as 'seedlings under dead plants' on the recording forms.

Although the herbicide treatment undertaken since 2015 had effectively killed a great many Cotoneaster plants, the monitoring has revealed numerous plants which had not been treated and which had produced berries, for example as shown in the photograph at Figure 30.

When the survey was undertaken during 2015 the surveyors focused on the vicinity of the perimeter road and did not investigate the areas formerly occupied by the runways forming the distinctive 'A' shape which can be discerned on the LiDAR image at Figure 14. Since 2016 the Project Officer has ensured that the routes of the former runways have been thoroughly surveyed each year. However, the Project Officer recognised that the Contractor would have difficulty locating the relatively isolated plants growing along the edges of the former runways so during 2018, 2019 and 2020 detailed maps with individual grid references have been prepared to help the contractor find these plants. Copies of these maps are shown at Figure 31, Figure 32 and Figure 33.

Figure 26: Photograph taken on 29 October 2019 showing seedlings germinated beneath dead, treated plant

Figure 27: Photograph taken on 29 October 2019 showing close-up of seedlings germinated beneath dead, treated plant at SU 34268 00644

Figure 28: Photograph taken on 19 October 2020 showing Cotoneaster seedlings which have germinated under dead, treated plant at SU 34857 00817

Figure 29: Photograph taken on 19 October 2020 showing Cotoneaster seedlings which have germinated under dead, treated plant at SU 34858 00814

Figure 30: Mature *Cotoneaster horizontalis* with berries photographed on 12 November 2019

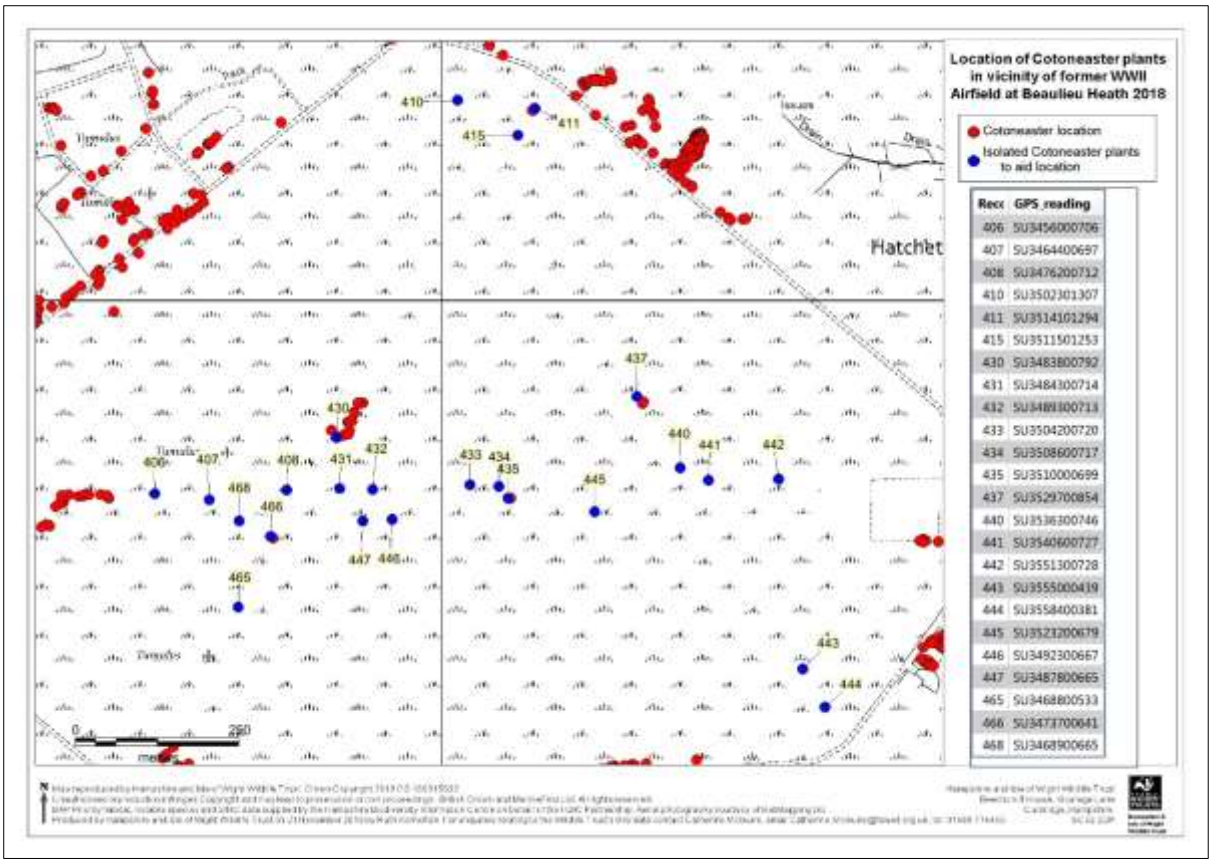


Figure 31: Map showing isolated Cotoneaster plants recorded at Beaulieu Heath during 2018

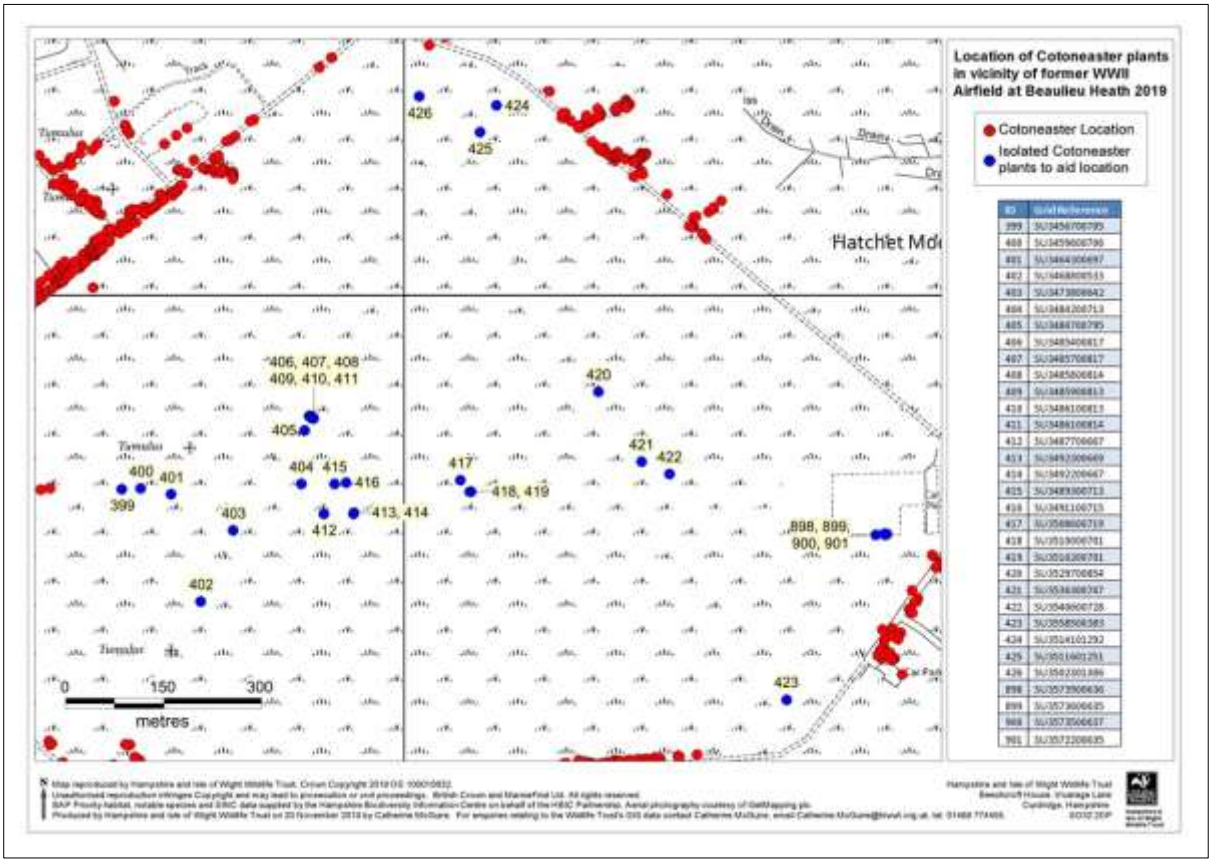


Figure 32: Map showing isolated Cotoneaster plants recorded at Beaulieu Heath during 2019

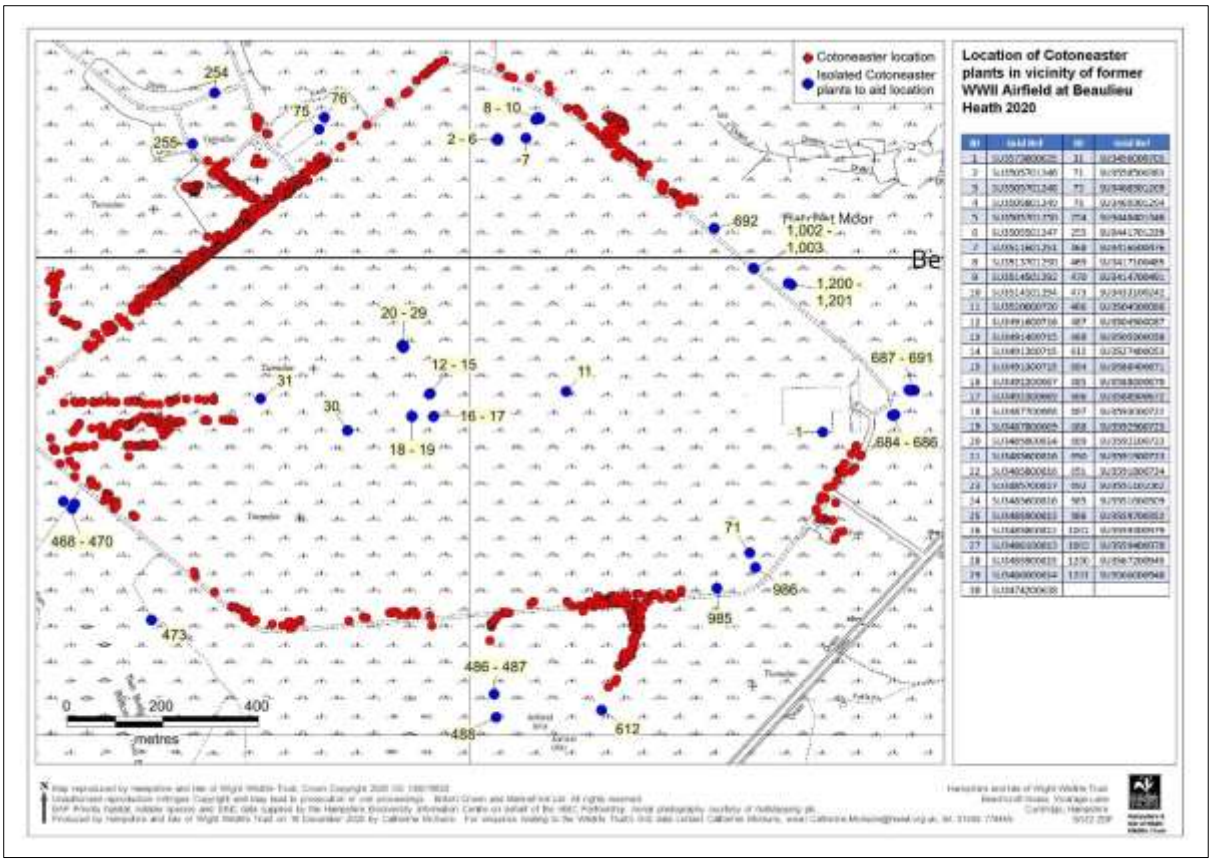


Figure 33: Map showing isolated Cotoneaster plants recorded at Beaulieu Heath during 2020

Although the herbicide treatment undertaken by the contractors since 2015 has resulted in a substantial and very noticeable reduction in the Cotoneaster population at Beaulieu Heath, this is not apparent from the maps (Figures 17 – 22). The reason for this is that when the Cotoneaster at Beaulieu Heath was first surveyed by the NFNNPP in 2015, large areas dominated by Cotoneaster, particularly prostrate bushes of *C. horizontalis*, were recorded as a single GPS reading and a note made on the recording form to indicate a 'large patch in vicinity of' that particular grid reference. As the herbicide treatment progressed and more Cotoneaster plants were killed, in subsequent years GPS readings were taken of individual plants, rather than 'patches' of plants. However, an individual, small plant would still be represented on the map by the same sized red dot as a substantial 'patch' of plants recorded in previous years. This 'granularity' issue disguises the fact that the herbicide treatment has had a very discernible impact on the Cotoneaster population at Beaulieu Heath.

Where *C. horizontalis* plants have been effectively treated with the herbicide, this has resulted in bare ground, allowing Cotoneaster seeds to germinate, as shown in Figures 26 – 29. When this was first observed by the Project Officer, the dead Cotoneaster plants were still intact and could be located relatively easily. However, by 2020 the Project Officer had noticed that some of the dead, treated Cotoneaster plants had begun to disintegrate; the Project Officer is therefore concerned that it will become increasingly difficult for the contractors to find the Cotoneaster seedlings which had germinated beneath dead, treated plants, if the treated plants have disintegrated and no longer serve as markers to indicate where seedlings and very young plants need to be treated.

The surveys undertaken at Beaulieu Heath highlight the importance of detailed monitoring following herbicide treatment, to identify where Cotoneaster plants need to be treated in future years. However, as the herbicide treatment progresses, Cotoneaster plants become harder to find, so the time taken to undertake thorough, detailed monitoring must not be under-estimated.

The monitoring by the NFNNPP at Beaulieu Heath has also highlighted the benefit of having more than one person to undertake the surveys. Monitoring is much more thorough when two people (eg Project Officer and a volunteer) can search for Cotoneaster plants, particularly when they are growing amongst dense stands of Gorse.

5. CONTROL OF COTONEASTER AT STONEY CROSS

5.1. Cotoneaster at Stoney Cross

Cotoneaster has colonised the site of the former World War II airfield at Stoney Cross where calcium from the remains of former airfield facilities (roads, runways and buildings) has leached into the surrounding heathland soils.

The majority of the runways and buildings have been removed although part of one of the runways is now a public road and some areas of concrete have been retained for recreational uses, for example in camp sites.

5.2. Work undertaken between 2018 and 2020

The Project Officer, with the help of a volunteer, surveyed the Cotoneaster at Stoney Cross during October 2015, October 2016 and November 2016 and found it to be growing in the vicinity of features associated with the former airfield. The results of these surveys are shown on the map at Figure 34.

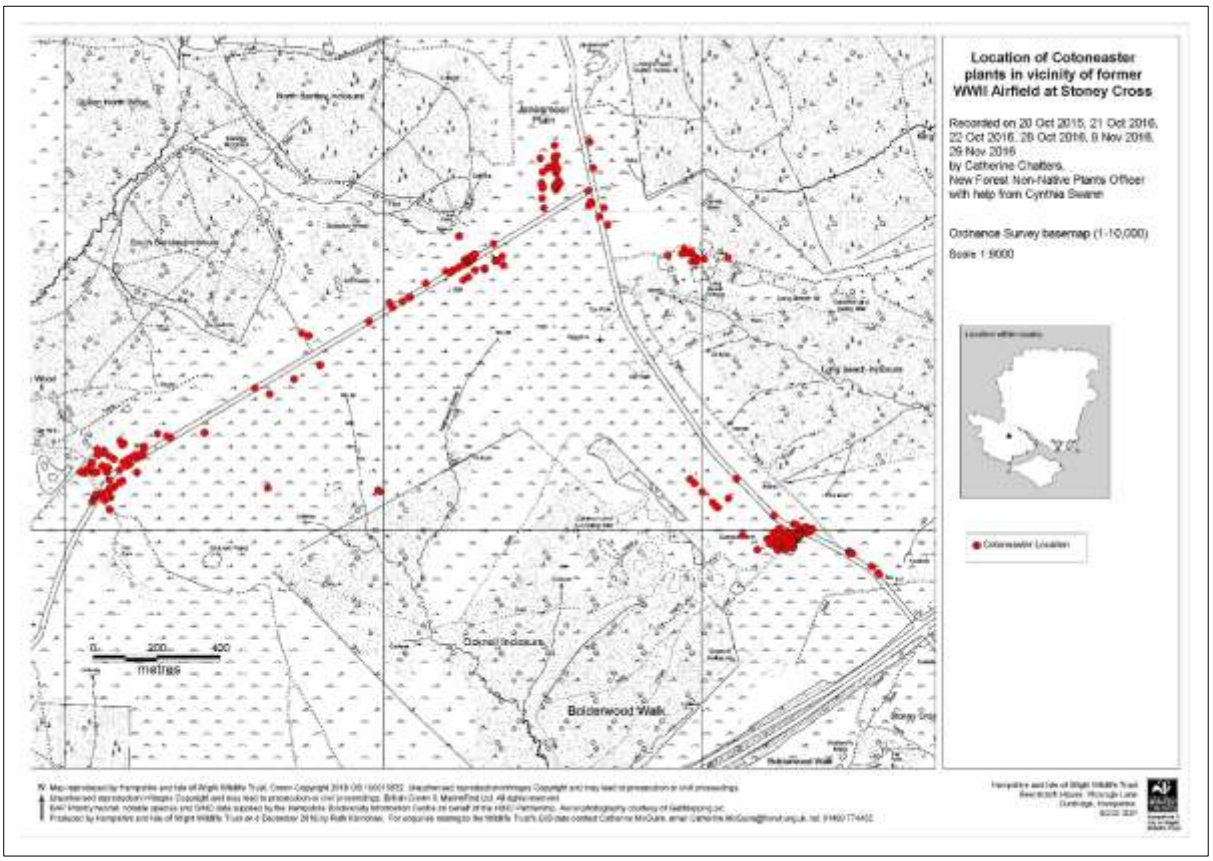


Figure 34: Cotoneaster recorded at Stoney Cross during 2015 and 2016

The Project Officer intended to commission a contractor in 2018 to control all the Cotoneaster that had been recorded during 2015 and 2016 at Stoney Cross. However, during January 2018 it became apparent that the Cotoneaster in the vicinity of the roads at Stoney Cross had been flailed by the Forestry Commission and the machine had scalped the surface, creating areas of bare ground in which Cotoneaster seeds were likely to germinate.

A particularly dense area of Cotoneaster plants in the south-east of Stoney Cross had not been flailed so the Project Officer commissioned the contractor to herbicide only those plants during 2018. The Project Officer commissioned further work to control the Cotoneaster in 2019 and 2020. The results of monitoring undertaken during 2018, 2019 and 2020 are shown in Figure 35, Figure 36 and Figure 37.

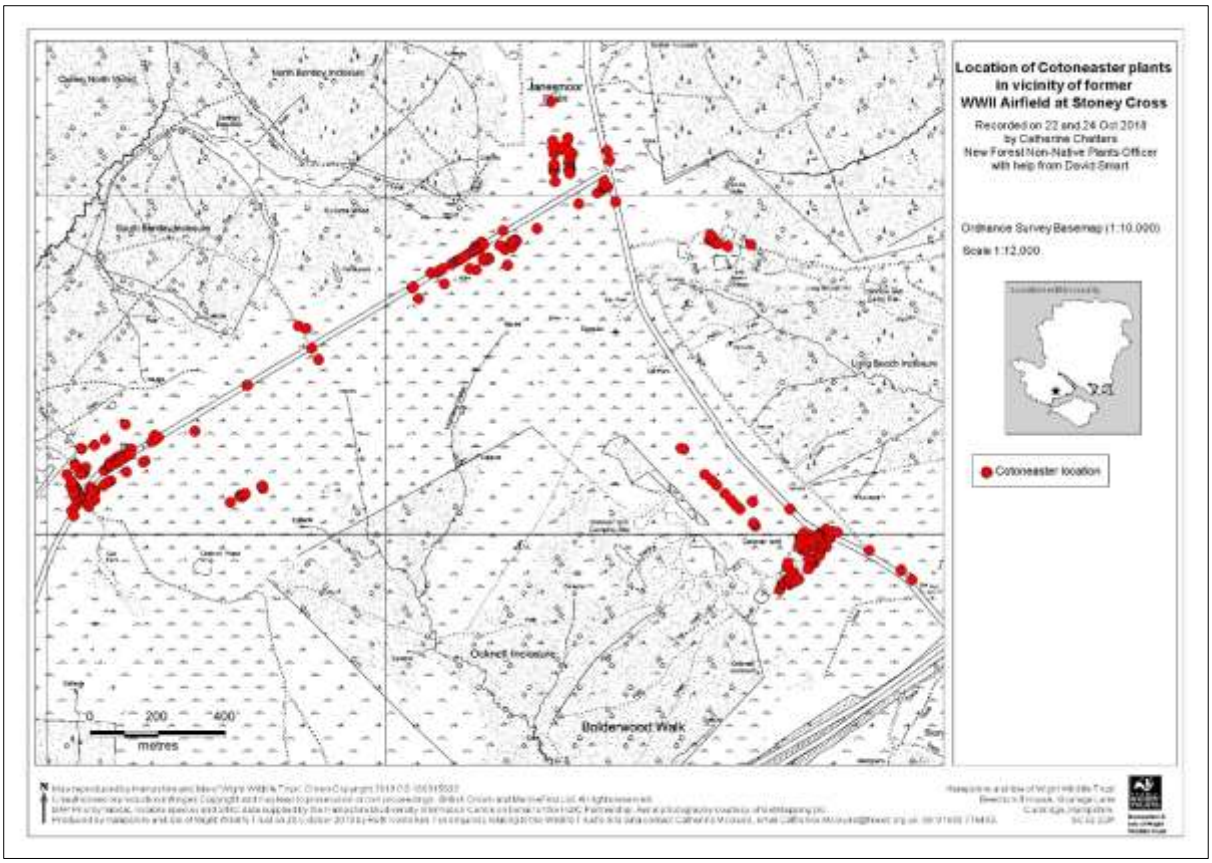


Figure 35: Cotoneaster recorded at Stoney Cross during 2018

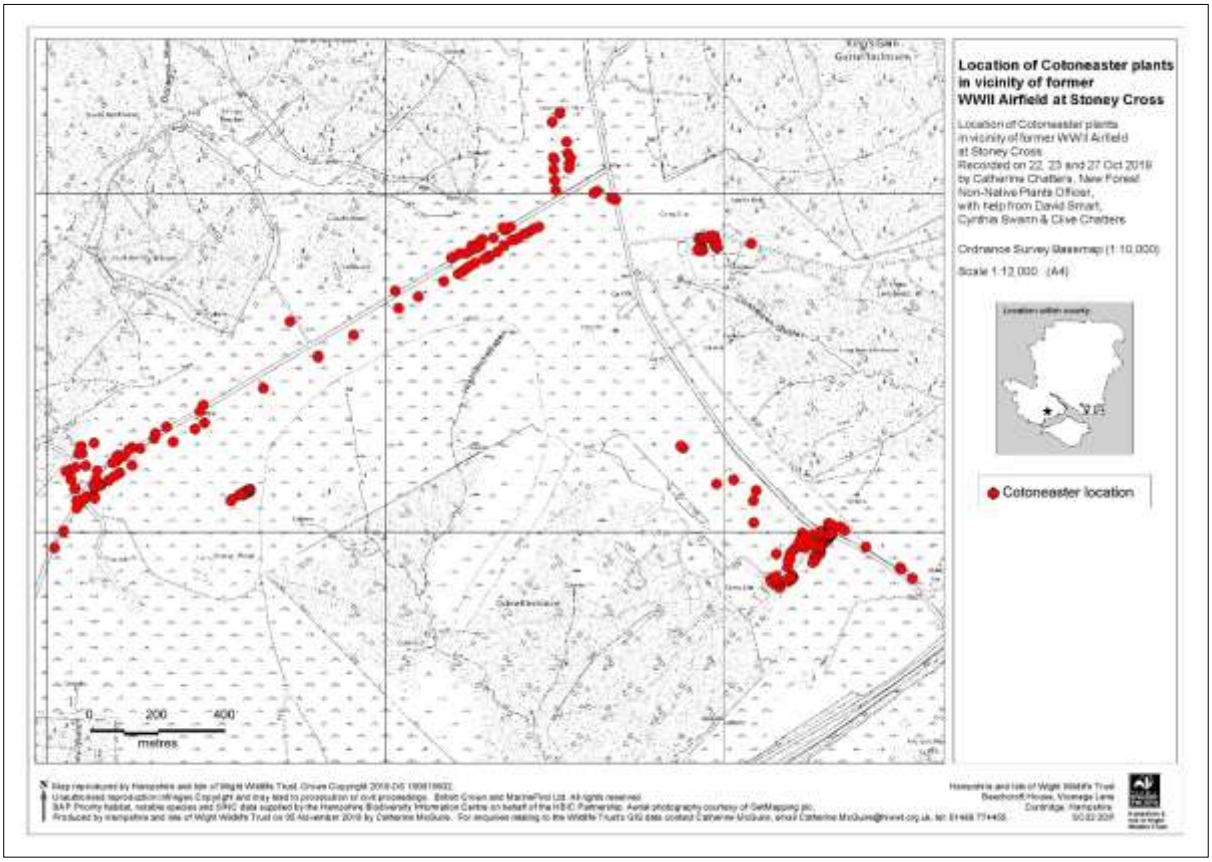


Figure 36: Cotoneaster recorded at Stoney Cross during 2019

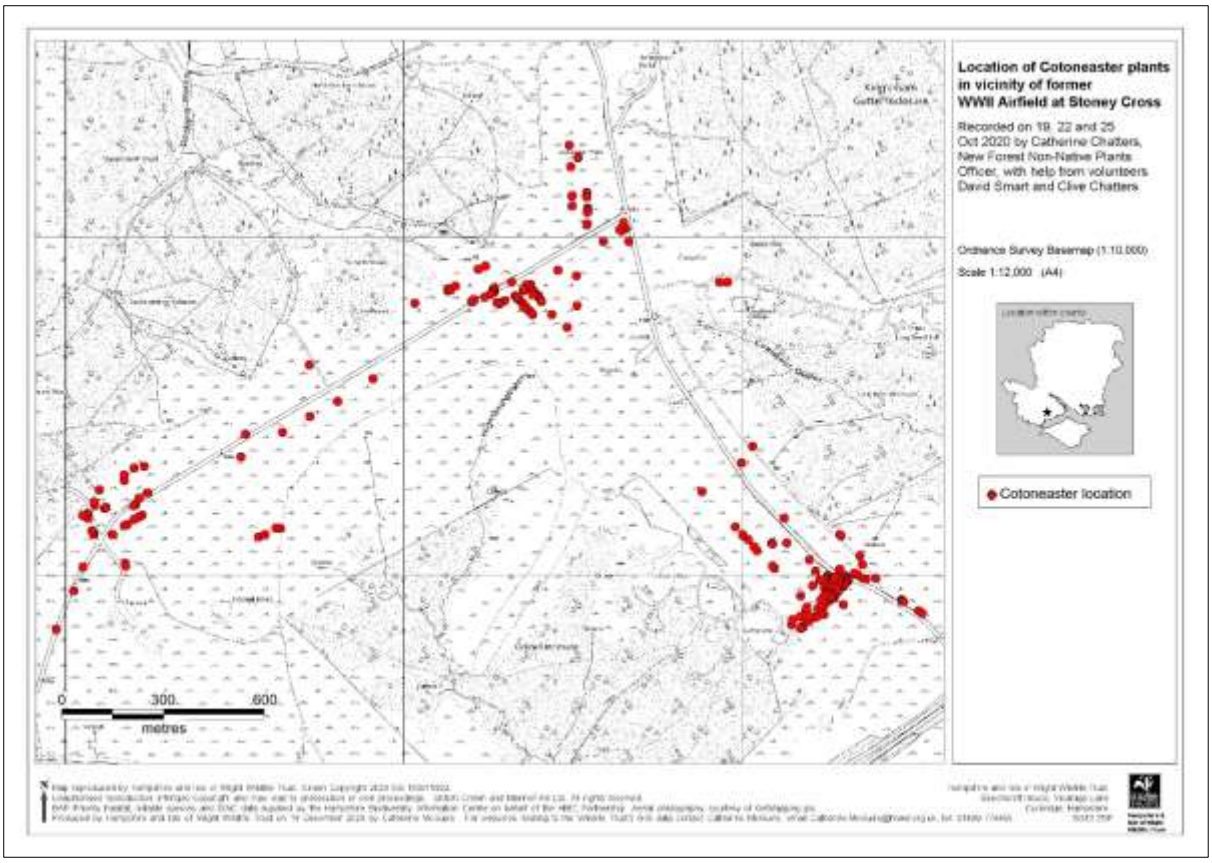


Figure 37: Cotoneaster recorded at Stoney Cross during 2020

Many of the Cotoneaster plants recorded at Stoney Cross were *C. horizontalis* and relatively short *C. simonsii* but the surveys revealed some 'tree'-sized Cotoneaster plants up to approximately 6 metres tall as shown in the photographs at Figure 38 and Figure 39.

The contractor controlled the majority of the Cotoneaster plants at Stoney Cross with herbicide but during 2019 plants which were more than shoulder height were cut down. The stumps were treated with herbicide and the arisings were burnt on site.

5.3. Observations relating to control of Cotoneaster at Stoney Cross

During the monitoring undertaken in October 2019 it was apparent that the herbicide treatment undertaken in 2018 and 2019 had been successful, with many Cotoneaster plants looking brown and dead, although some of the treated plants had berries as shown in the photograph at Figure 40.

The monitoring undertaken in October 2019 also revealed the presence of Cotoneaster seedlings which had germinated under dead, treated plants, as illustrated in the photograph at Figure 41. Cotoneaster seedlings such as those shown in the photograph at Figure 42 will be a challenge for the contractor to locate when treatment is undertaken the following year, due to their size and the fact they are growing amongst other vegetation.

Monitoring visits in 2019 revealed mature Cotoneaster plants which had not been treated and which would require treatment in the future; an example is shown in the photograph at Figure 43.

Figure 38: Volunteer David Smart standing by one of the 'tree'-sized Cotoneasters on 22 October 2018

Figure 39: Close up of leaves and berries of a 'tree'-sized Cotoneaster photographed at Stoney Cross on 28 October 2016 at SU 24969 12843

Figure 40: Photograph taken on 23 October 2019 showing berries on treated Cotoneaster plant

Figure 41: Photograph taken on 23 October 2019 showing Cotoneaster seedlings which had germinated under a dead, treated Cotoneaster plant

Figure 42: Cotoneaster seedlings photographed at Stoney Cross on 23 October 2019

Although the herbicide treatment undertaken by the contractors since 2018 has resulted in a marked reduction in the Cotoneaster population at Stoney Cross, this is not apparent from the maps (Figures 34 – 37). When the Cotoneaster here was first surveyed by the NFNNPP in 2015 and 2016, relatively large areas dominated by Cotoneaster, particularly prostrate bushes of *C. horizontalis*, were recorded as a single GPS reading. As the herbicide treatment progressed, GPS readings were taken of individual plants, rather than 'patches' of plants. This 'granularity' issue disguises the fact that the herbicide treatment has had a very discernible impact on the Cotoneaster population at Stoney Cross.

Figure 43: Mature *Cotoneaster horizontalis* photographed at Stoney Cross on 23 October 2019

To help the contractor locate relatively isolated plants in subsequent years, detailed maps were prepared following the monitoring undertaken in October 2019 and October 2020. These maps are shown at Figure 44 and Figure 45.

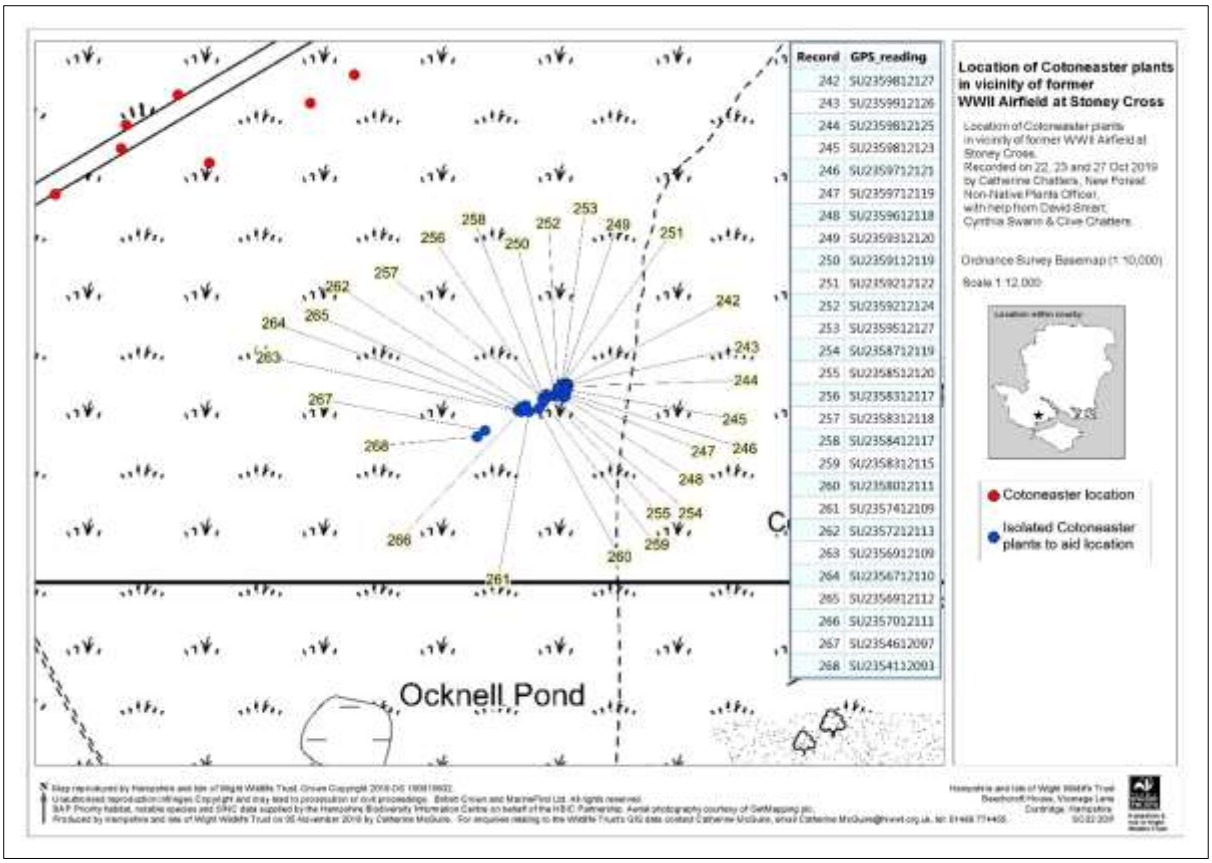


Figure 44: Map showing isolated Cotoneaster plants recorded at Stoney Cross during 2019

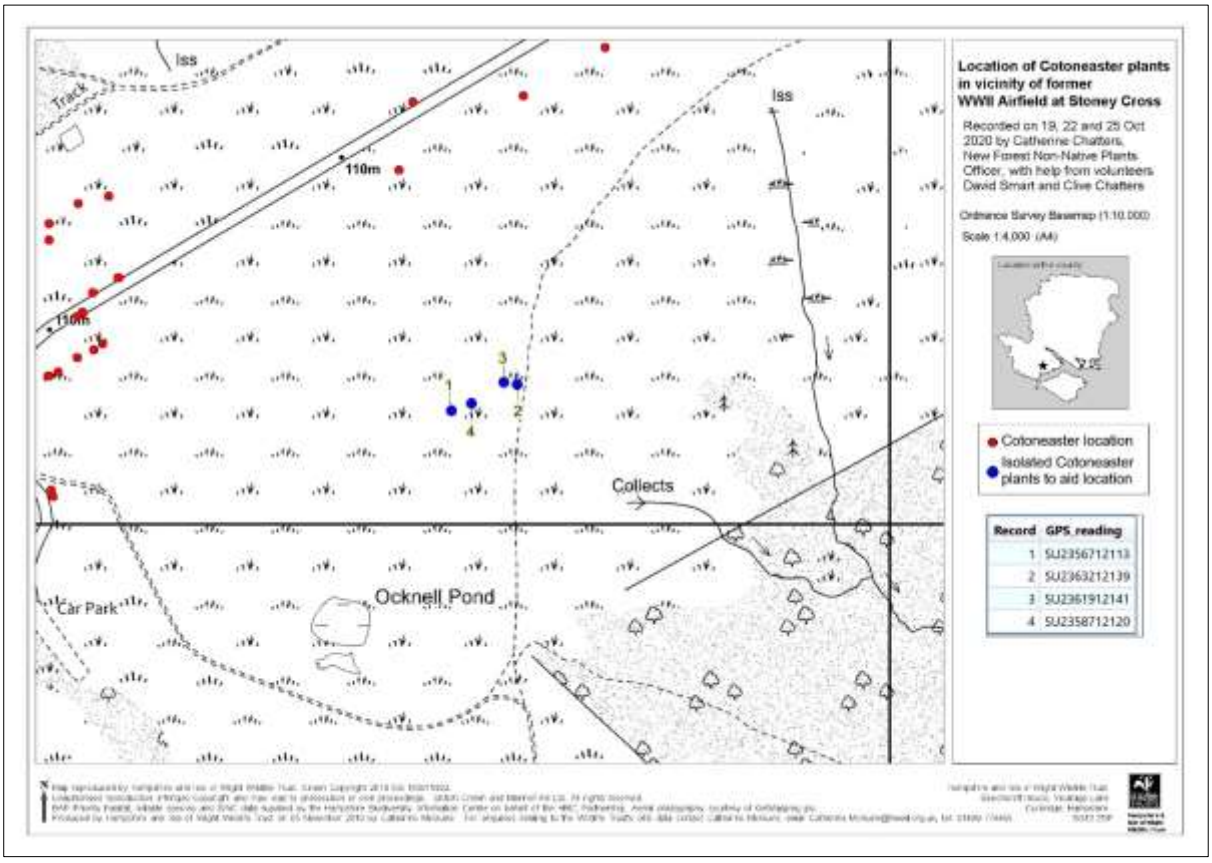


Figure 45: Map showing isolated Cotoneaster plants recorded at Stoney Cross during 2020

6. CONTROL OF COTONEASTER AT LYNDHURST

6.1. Cotoneaster at Lyndhurst

Cotoneaster has colonised heathland vegetation in the vicinity of the A35 at the eastern end of Southampton Road in Lyndhurst.

6.2. Work undertaken between 2017 and 2020

The Project Officer surveyed the Cotoneaster at Lyndhurst during November 2016 and the results are shown at Figure 46. The majority of the plants recorded were *C. simonsii*.

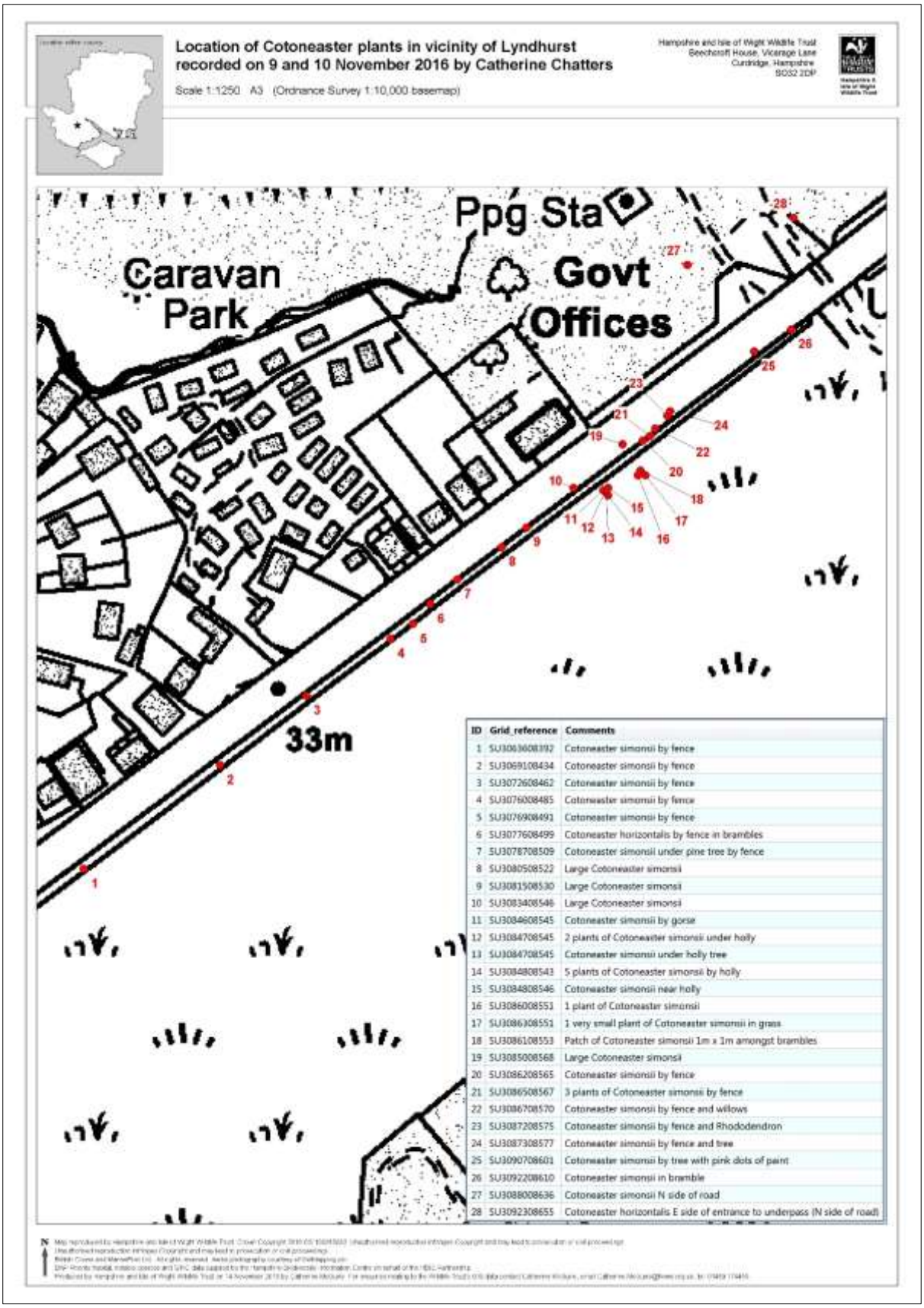
The NFNNPP commissioned a contractor to undertake foliar herbicide treatment of the smaller Cotoneaster plants combined with felling and stump treatment of the larger 'tree'-sized Cotoneaster plants during 2017.

The results of the work undertaken during 2017 were monitored by the Project Officer on 13 November 2017.

Further work was undertaken by the contractor during 2018, 2019 and 2020. The results were monitored by the Project Officer with help from a volunteer and the results are shown on the maps at Figure 47, Figure 48 and Figure 49.

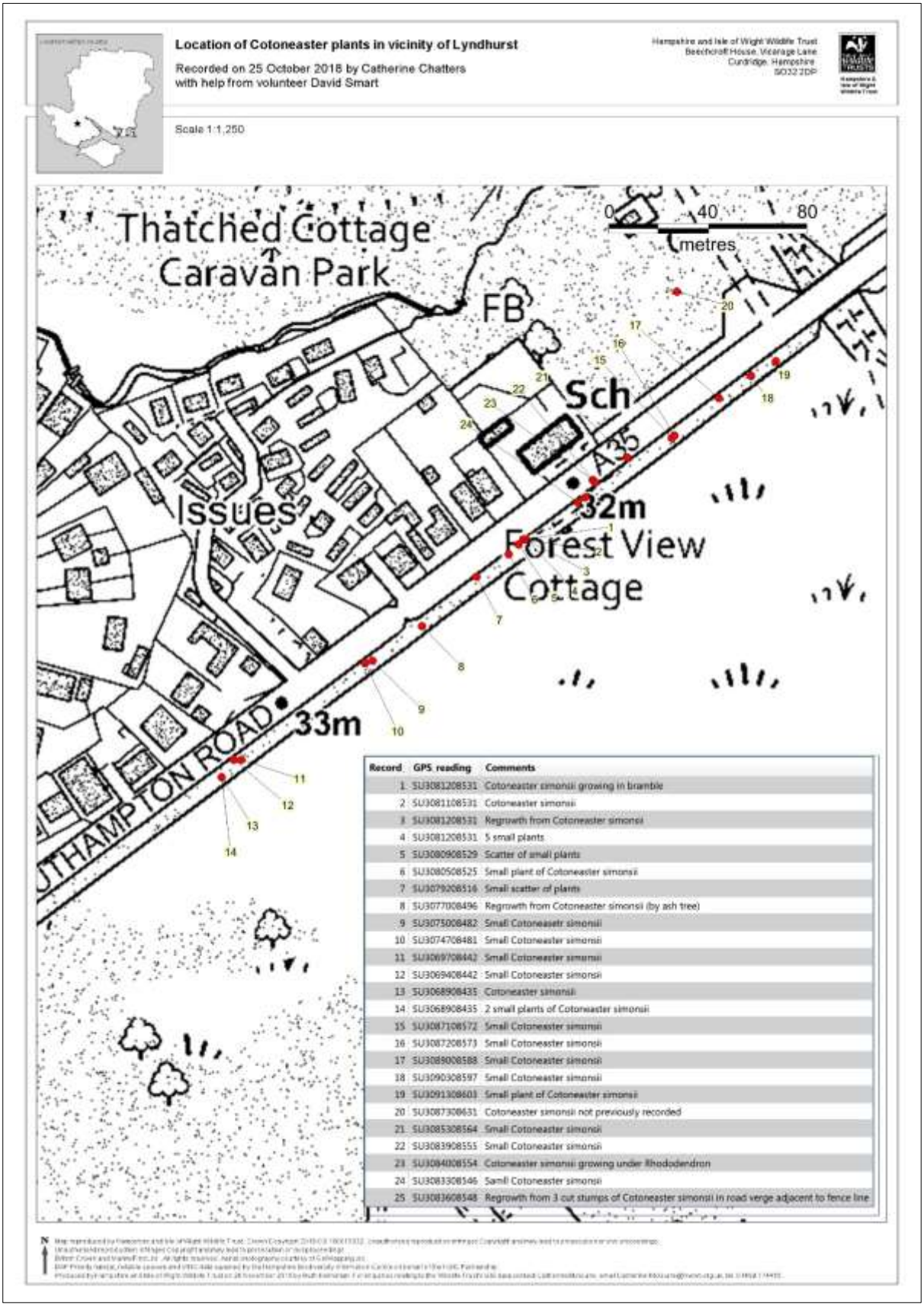
6.3. Observations relating to control of Cotoneaster at Lyndhurst

The work undertaken by the contractor on behalf of the NFNNPP has substantially reduced the Cotoneaster population at this location. The tall 'tree'-sized Cotoneaster plants have all been felled and the monitoring in 2020 has revealed that the majority of plants that require treatment are mainly the result of re-growth in the vicinity of treated plants. The maps shown at Figures 46 to 49 indicate the substantial reduction in the Cotoneaster populations as the number of records has decreased from 28 in 2016 to only 8 in 2020.



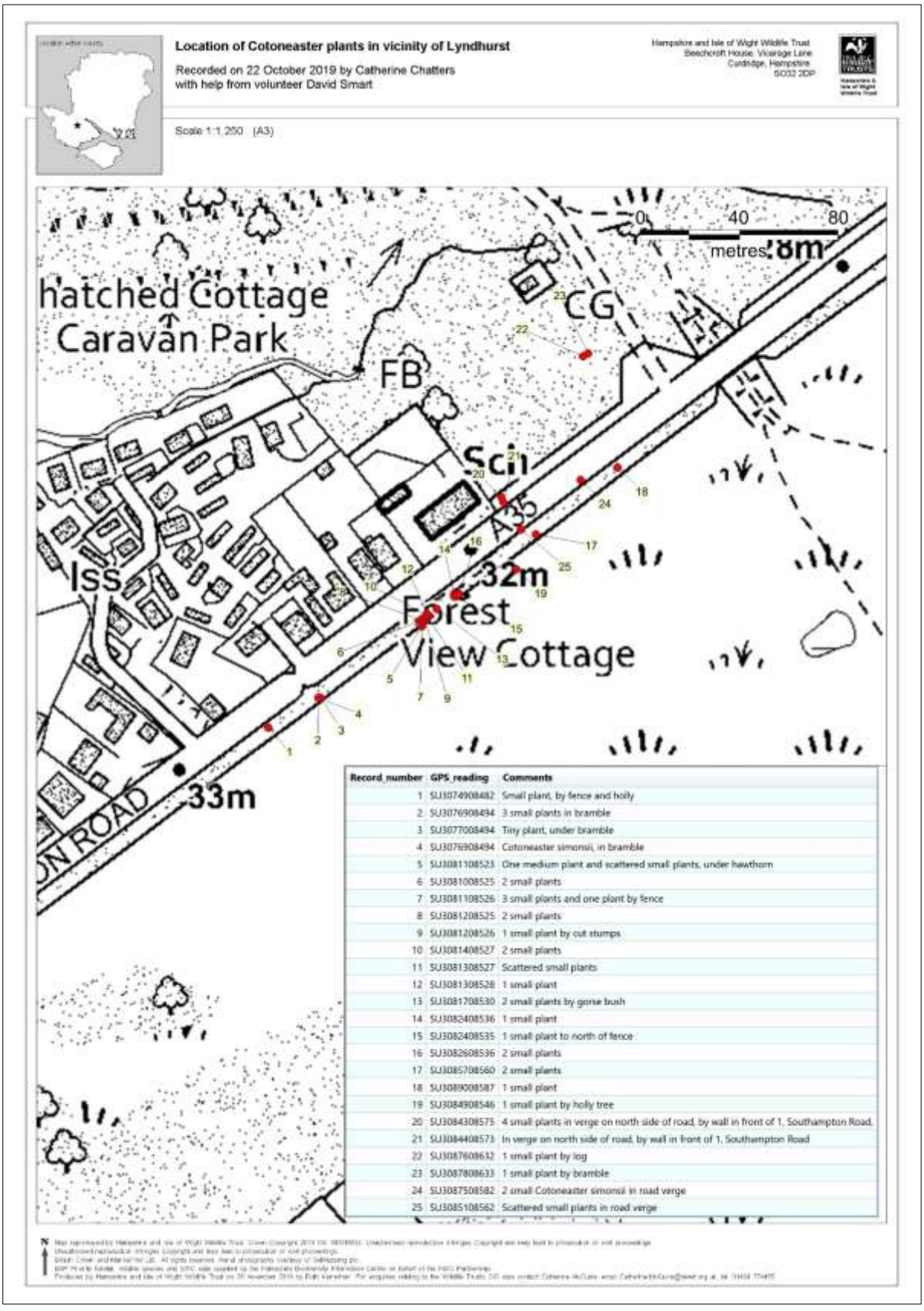
ID	Grid_reference	Comments
1	SU3063608392	Cotoneaster simonsii by fence
2	SU3069108434	Cotoneaster simonsii by fence
3	SU3072608462	Cotoneaster simonsii by fence
4	SU3076008485	Cotoneaster simonsii by fence
5	SU3076908491	Cotoneaster simonsii by fence
6	SU3077608499	Cotoneaster horizontalis by fence in brambles
7	SU3078708509	Cotoneaster simonsii under pine tree by fence
8	SU3080508522	Large Cotoneaster simonsii
9	SU3081508530	Large Cotoneaster simonsii
10	SU3083408546	Large Cotoneaster simonsii
11	SU3084608545	Cotoneaster simonsii by gorse
12	SU3084708545	2 plants of Cotoneaster simonsii under holly
13	SU3084708545	Cotoneaster simonsii under holly tree
14	SU3084808543	5 plants of Cotoneaster simonsii by holly
15	SU3084808546	Cotoneaster simonsii near holly
16	SU3086008551	1 plant of Cotoneaster simonsii
17	SU3086308551	1 very small plant of Cotoneaster simonsii in grass
18	SU3086108553	Patch of Cotoneaster simonsii 1m x 1m amongst brambles
19	SU3085008568	Large Cotoneaster simonsii
20	SU3086208565	Cotoneaster simonsii by fence
21	SU3086508567	3 plants of Cotoneaster simonsii by fence
22	SU3086708570	Cotoneaster simonsii by fence and willows
23	SU3087208575	Cotoneaster simonsii by fence and Rhododendron
24	SU3087308577	Cotoneaster simonsii by fence and tree
25	SU3090708601	Cotoneaster simonsii by tree with pink dots of paint
26	SU3092208610	Cotoneaster simonsii in bramble
27	SU3088008636	Cotoneaster simonsii N side of road
28	SU3092308655	Cotoneaster horizontalis E side of entrance to underpass (N side of road)

Figure 46: Cotoneaster recorded at Lyndhurst in November 2016



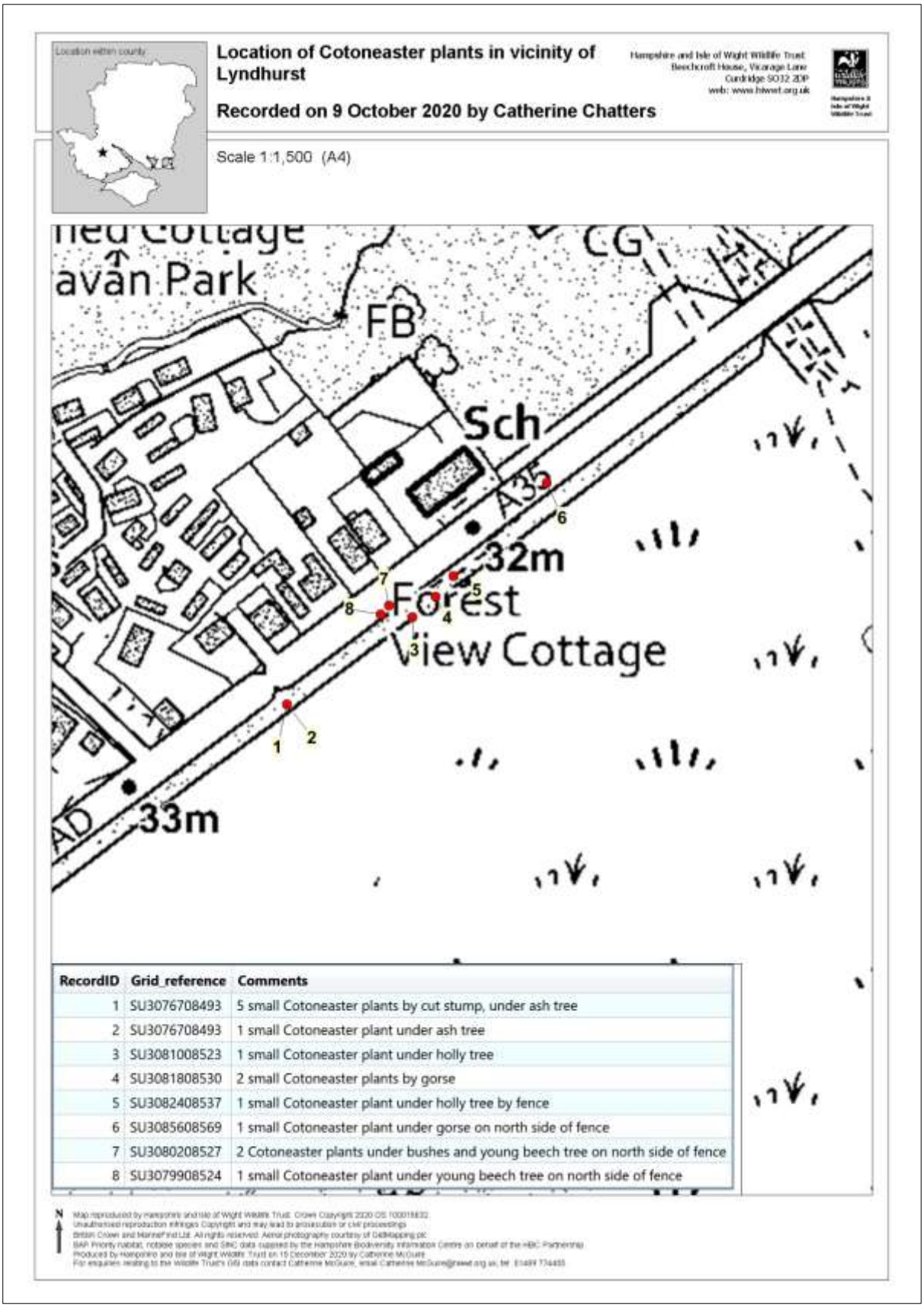
Record	GPS reading	Comments
1	SU3081208531	Cotoneaster simonsii growing in bramble
2	SU3081108531	Cotoneaster simonsii
3	SU3081208531	Regrowth from Cotoneaster simonsi
4	SU3081208531	5 small plants
5	SU3080908529	Scatter of small plants
6	SU3080508525	Small plant of Cotoneaster simonsii
7	SU3079208516	Small scatter of plants
8	SU3077008496	Regrowth from Cotoneaster simonsii (by ash tree)
9	SU3075008482	Small Cotoneaselr simonsii
10	SU3074708481	Small Cotoneaster simonsii
11	SU3069708442	Small Cotoneaster simonsii
12	SU3069408442	Small Cotoneaster simonsii
13	SU3068908435	Cotoneaster simonsii
14	SU3068908435	2 small plants of Cotoneaster simonsii
15	SU3087108572	Small Cotoneaster simonsii
16	SU3087208573	Small Cotoneaster simonsii
17	SU3089008588	Small Cotoneaster simonsii
18	SU3090308597	Small Cotoneaster simonsii
19	SU3091308603	Small plant of Cotoneaster simonsii
20	SU3087308631	Cotoneaster simonsii not previously recorded
21	SU3085308564	Small Cotoneaster simonsii
22	SU3083908555	Small Cotoneaster simonsii
23	SU3084008554	Cotoneaster simonsii growing under Rhododendron
24	SU3083308546	Samll Cotoneaster simonsii
25	SU3083608548	Regrowth from 3 cut stumps of Cotoneaster simonsii in road verge adjacent to fence line

Figure 47: Cotoneaster recorded at Lyndhurst in October 2018



Record_number	GPS_reading	Comments
1	SU3074908482	Small plant, by fence and holly
2	SU3076908494	3 small plants in bramble
3	SU3077008494	Tiny plant, under bramble
4	SU3076908494	Cotoneaster simonsii, in bramble
5	SU3081108523	One medium plant and scattered small plants, under hawthorn
6	SU3081008525	2 small plants
7	SU3081108526	3 small plants and one plant by fence
8	SU3081208525	2 small plants
9	SU3081208526	1 small plant by cut stumps
10	SU3081408527	2 small plants
11	SU3081308527	Scattered small plants
12	SU3081308528	1 small plant
13	SU3081708530	2 small plants by gorse bush
14	SU3082408536	1 small plant
15	SU3082408535	1 small plant to north of fence
16	SU3082608536	2 small plants
17	SU3085708560	2 small plants
18	SU3089008587	1 small plant
19	SU3084908546	1 small plant by holly tree
20	SU3084308575	4 small plants in verge on north side of road, by wall in front of 1, Southampton Road.
21	SU3084408573	In verge on north side of road, by wall in front of 1, Southampton Road
22	SU3087608632	1 small plant by log
23	SU3087808633	1 small plant by bramble
24	SU3087508582	2 small Cotoneaster simonsii in road verge
25	SU3085108562	Scattered small plants in road verge

Figure 48: Cotoneaster recorded at Lyndhurst in October 2019



RecordID	Grid_reference	Comments
1	SU3076708493	5 small Cotoneaster plants by cut stump, under ash tree
2	SU3076708493	1 small Cotoneaster plant under ash tree
3	SU3081008523	1 small Cotoneaster plant under holly tree
4	SU3081808530	2 small Cotoneaster plants by gorse
5	SU3082408537	1 small Cotoneaster plant under holly tree by fence
6	SU3085608569	1 small Cotoneaster plant under gorse on north side of fence
7	SU3080208527	2 Cotoneaster plants under bushes and young beech tree on north side of fence
8	SU3079908524	1 small Cotoneaster plant under young beech tree on north side of fence

Figure 49: Cotoneaster recorded at Lyndhurst in October 2020

7. CONTROL OF COTONEASTER AT GREENMOOR

7.1. Cotoneaster at Greenmoor

The Project Officer was alerted to the presence of Cotoneaster at Greenmoor by Alison Bolton (local resident and botanist) who helped to survey this site on 21 December 2016. The results of the survey are shown on the map at Figure 50.

7.2. Work undertaken between 2018 and 2020

The NFNNPP commissioned a contractor to undertake herbicide treatment in 2018; the site was monitored by the Project Officer with help from a volunteer in October 2018 and the results are shown on the map at Figure 51.

Further herbicide treatment was undertaken during 2019 and 2020. The results of monitoring visits during November 2019 and October 2020 are shown on the maps at Figure 52 and Figure 53.

7.3. Observations relating to control of Cotoneaster at Greenmoor

The work undertaken by contractors has substantially reduced the population of Cotoneaster at Greenmoor, particularly at the northern end of the site. The photograph taken on 16 October 2000 at Figure 54 shows an example of a Cotoneaster plant that has been successfully treated with herbicide.

The monitoring undertaken in October 2020 revealed Cotoneaster that had not been treated, as shown in the photograph at Figure 55.

Some of the Cotoneaster plants at Greenmoor were growing amongst Bramble and / or Gorse, as shown in the photograph at Figure 56. This sometimes makes it difficult to locate the Cotoneaster plants, particularly if they are small.

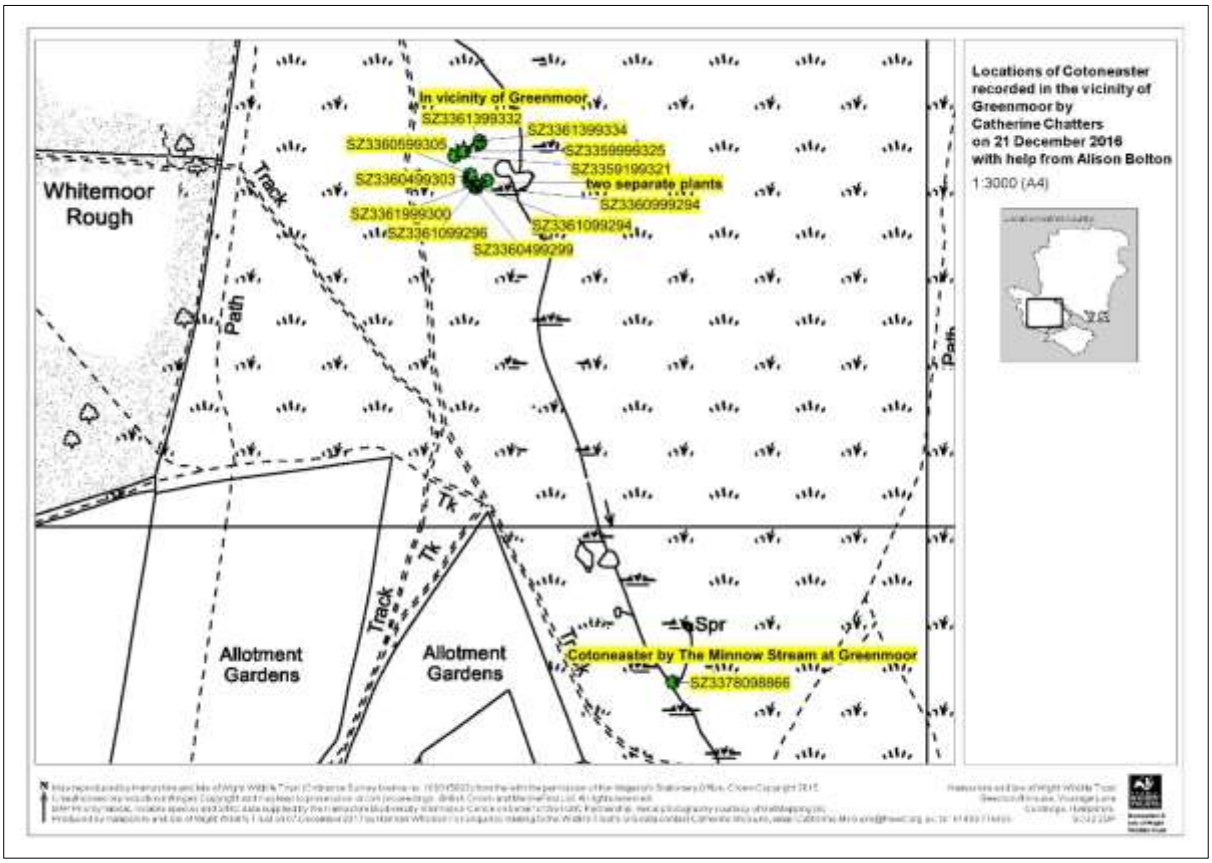


Figure 50: Cotoneaster recorded at Greenmoor during December 2016

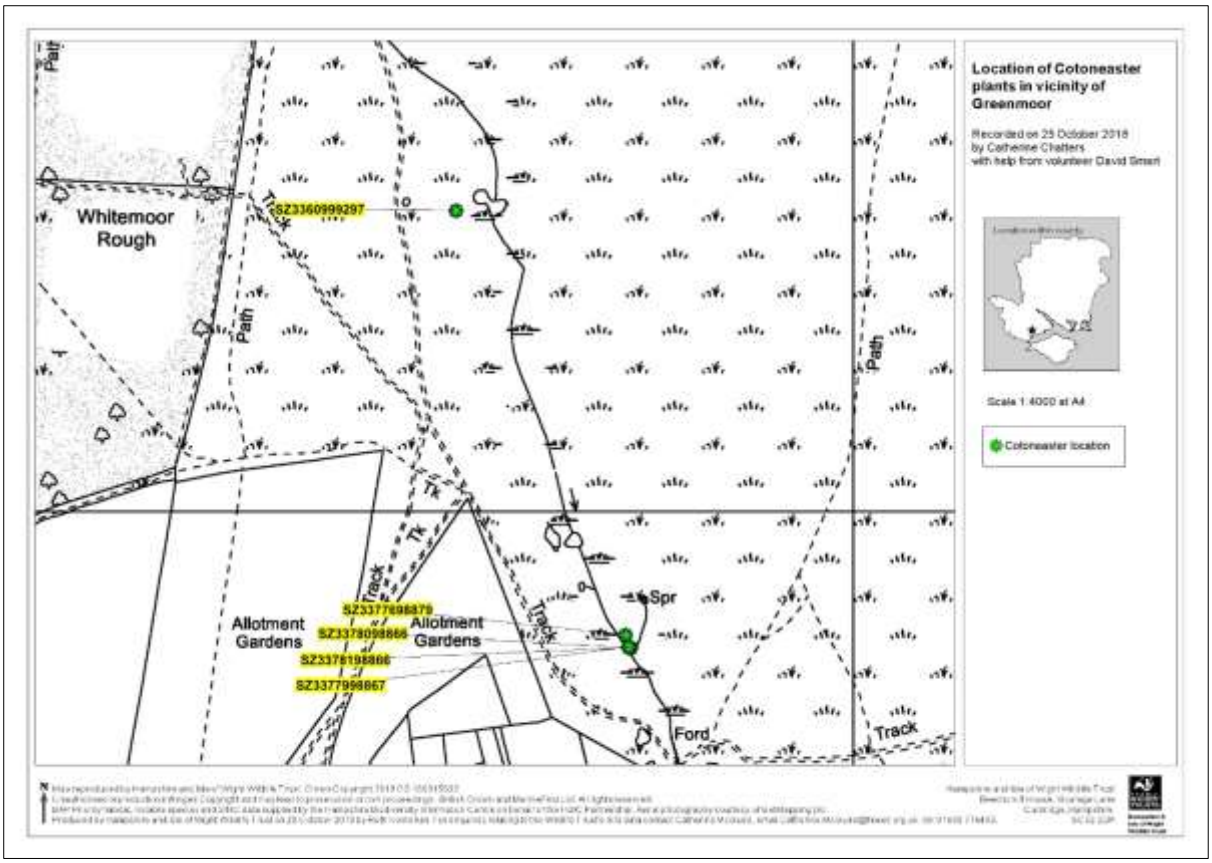


Figure 51: Cotoneaster recorded at Greenmoor during October 2018

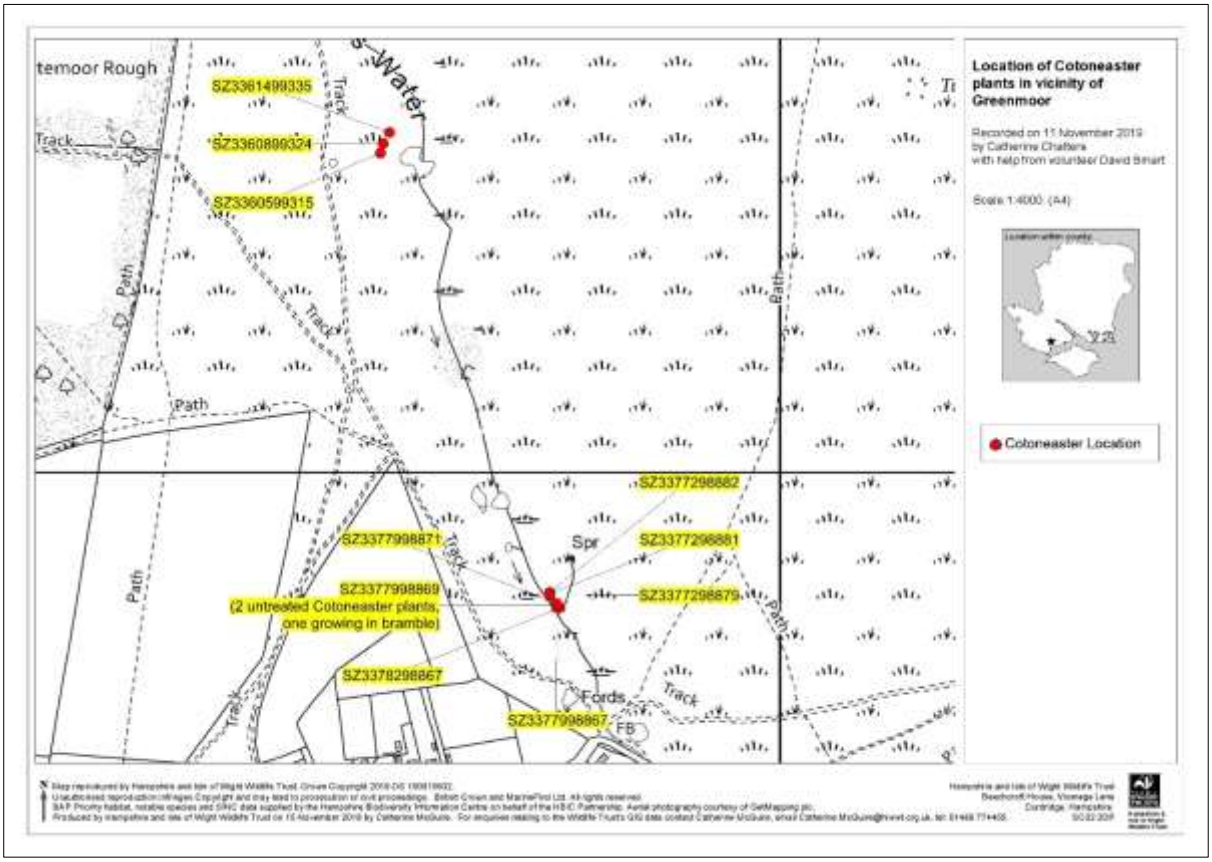


Figure 52: Cotoneaster recorded at Greenmoor during November 2019

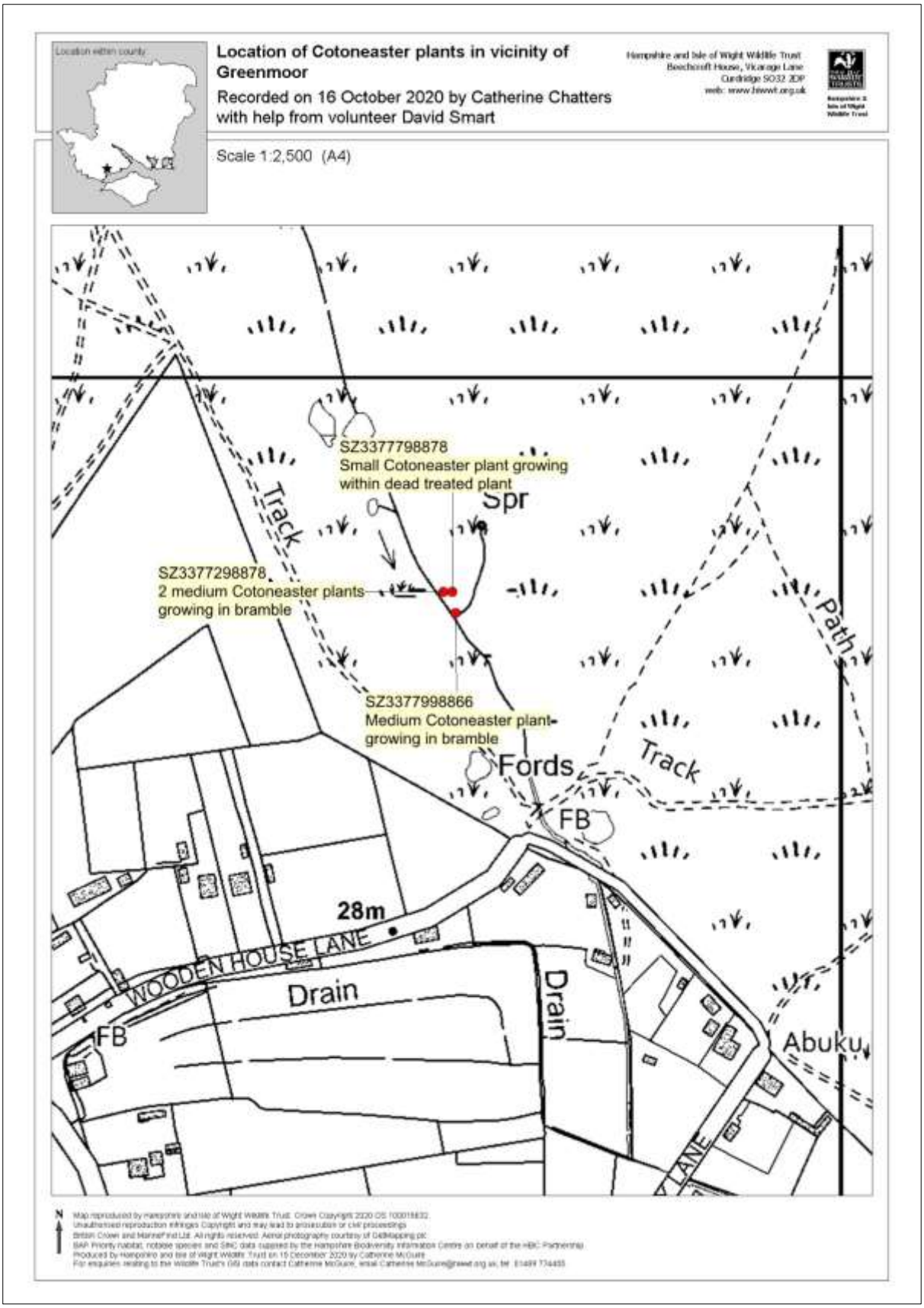


Figure 53: Cotoneaster recorded at Greenmoor during October 2020

Figure 54: Photograph taken at SZ 33780 98865 on 16 October 2020 showing a Cotoneaster plant which has been treated with herbicide

Figure 55: Photograph taken at SZ 33779 98866 on 16 October 2020 showing a Cotoneaster plant which has not been treated with herbicide

Figure 56: Volunteer David Smart recording Cotoneaster at Greenmoor on 11 November 2019

8. CONTROL OF COTONEASTER AT CROCKFORD

8.1. Cotoneaster at Crockford

The Project Officer was alerted to the presence of Cotoneaster at Crockford by Alison Bolton who helped to survey this site on 21 December 2016. Cotoneaster was recorded growing in the vicinity of the marl pit (ie an exposure of naturally occurring base-rich clay) near Crockford Bridge and within an isolated patch of scrub further west along the Crockford Stream. The results of the survey are shown on the map at Figure 57.

8.2. Work undertaken between 2018 and 2020

The NFNNPP commissioned a contractor to undertake herbicide treatment in 2018; the site was monitored by the Project Officer with help from a volunteer in October 2018 and the results are shown on the map at Figure 58.

Further herbicide treatment was undertaken during 2019 and 2020. The results of monitoring visits during November 2019 and October 2020 are shown on the maps at Figure 59 and Figure 60.

8.3. Observations relating to control of Cotoneaster at Crockford

The herbicide treatment has substantially reduced the Cotoneaster population at Crockford. The tall Cotoneaster plants which were growing in the isolated patch of scrub along the Crockford Stream during 2016 have been successfully controlled. During October 2020 only small or medium sized plants were recorded. However, the monitoring undertaken in October 2020 revealed the presence of some Cotoneaster plants that still require treatment and two examples are shown in the photographs at Figure 61 and Figure 62.

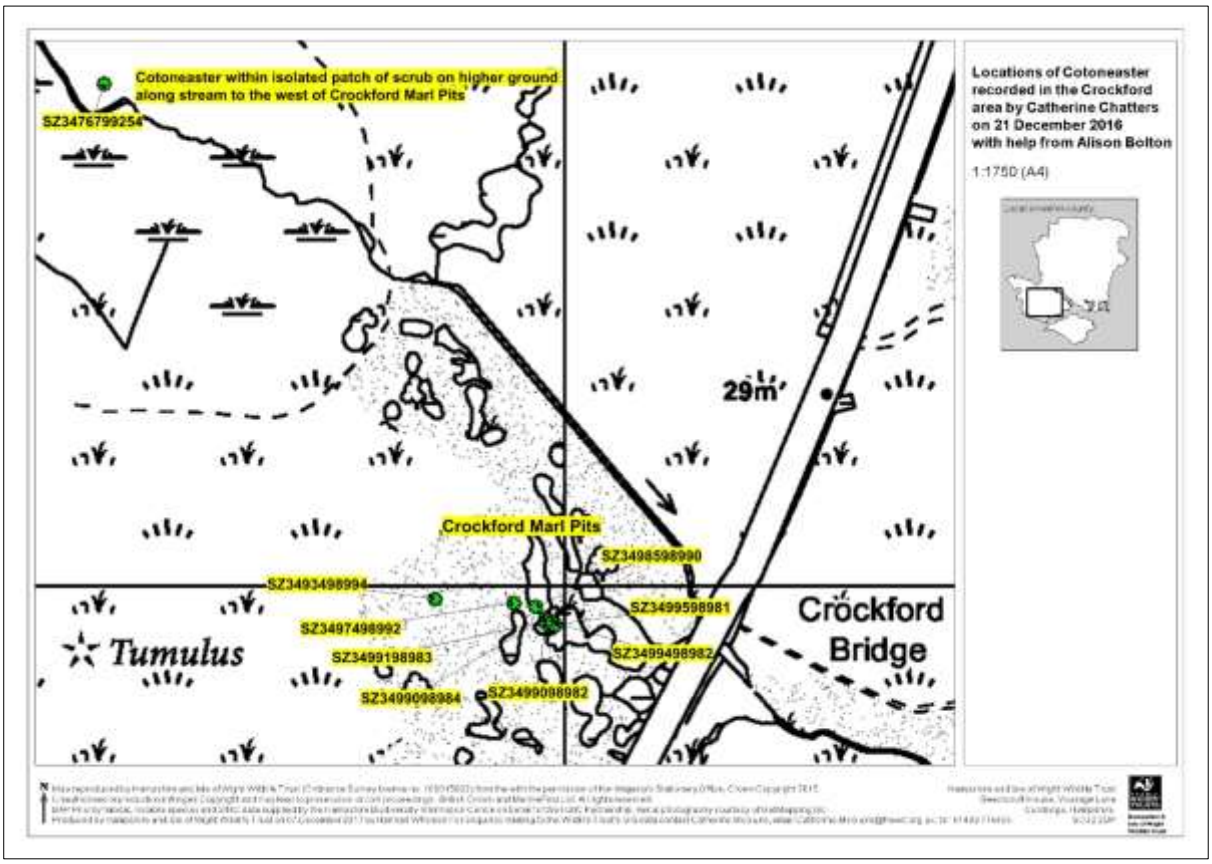


Figure 57: Cotoneaster recorded at Crockford in December 2016

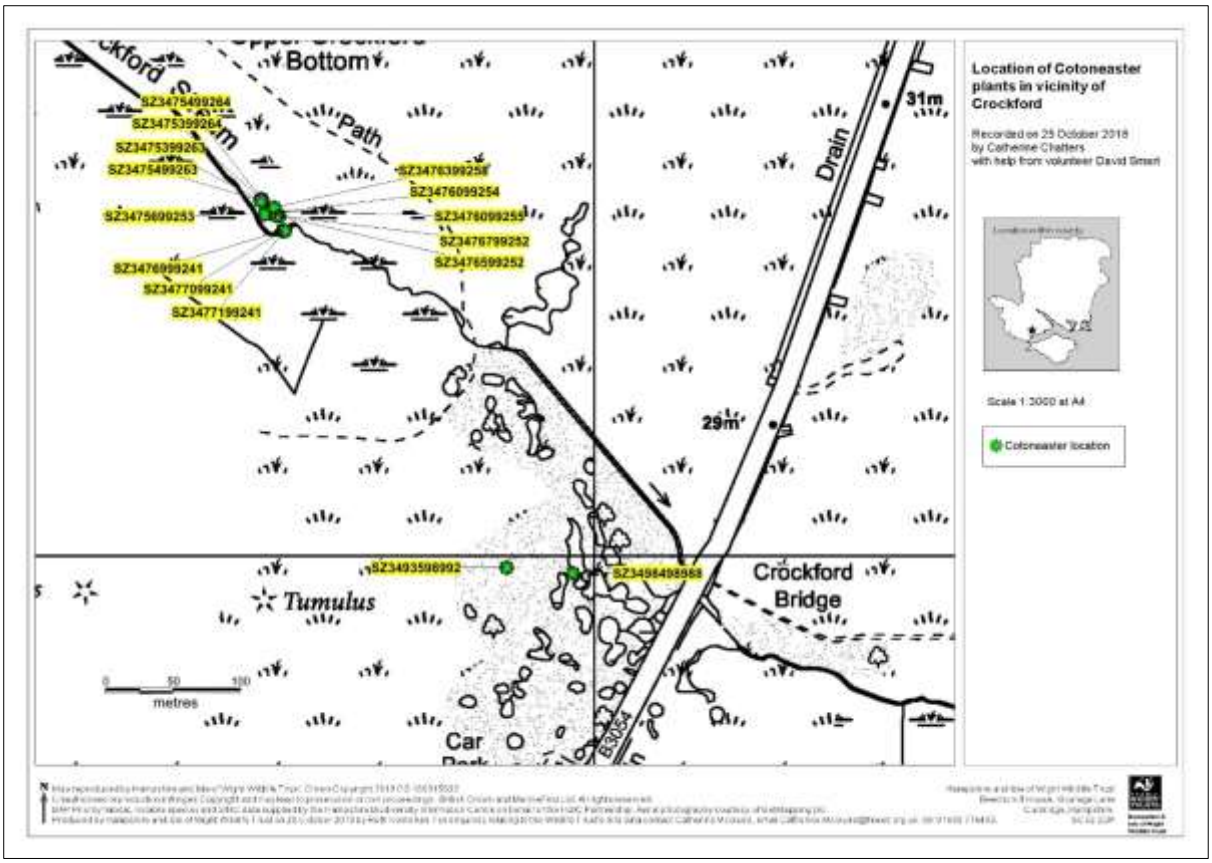


Figure 58: Cotoneaster recorded at Crockford in October 2018

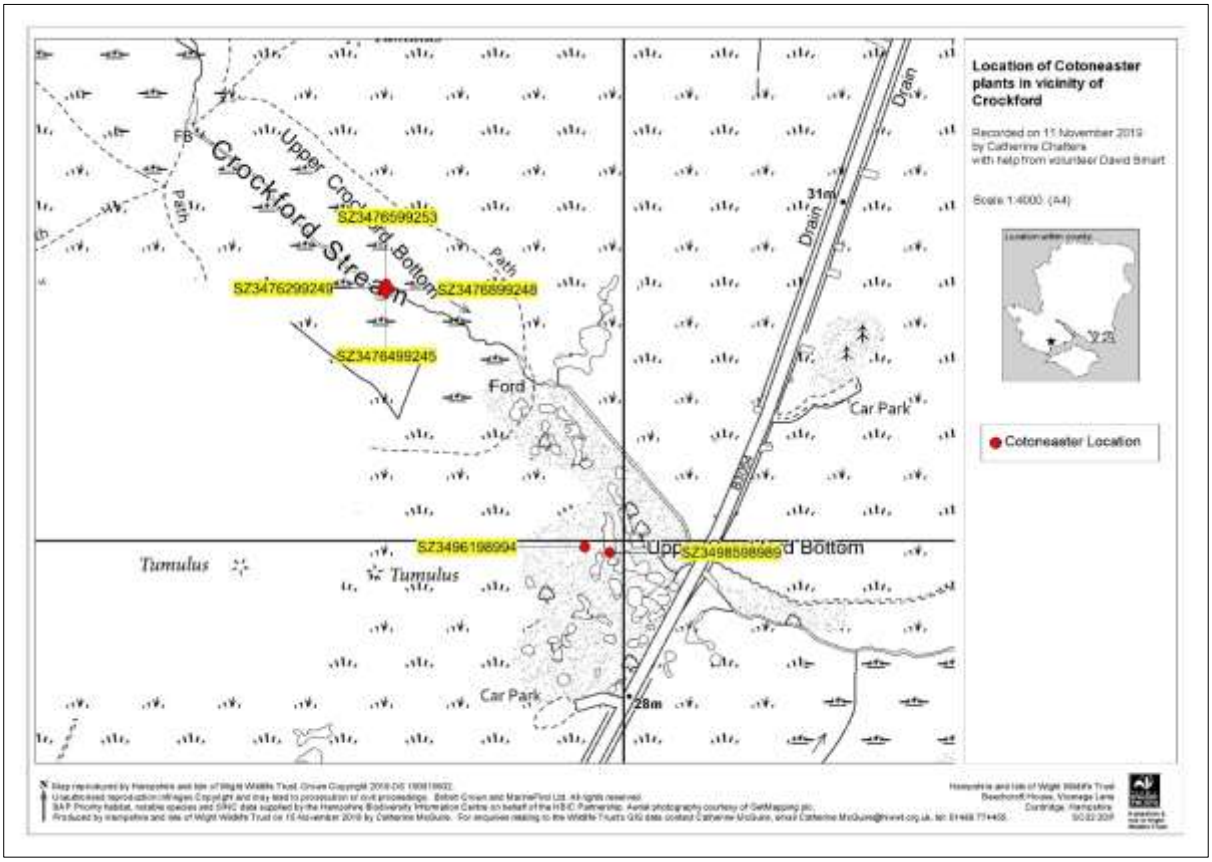
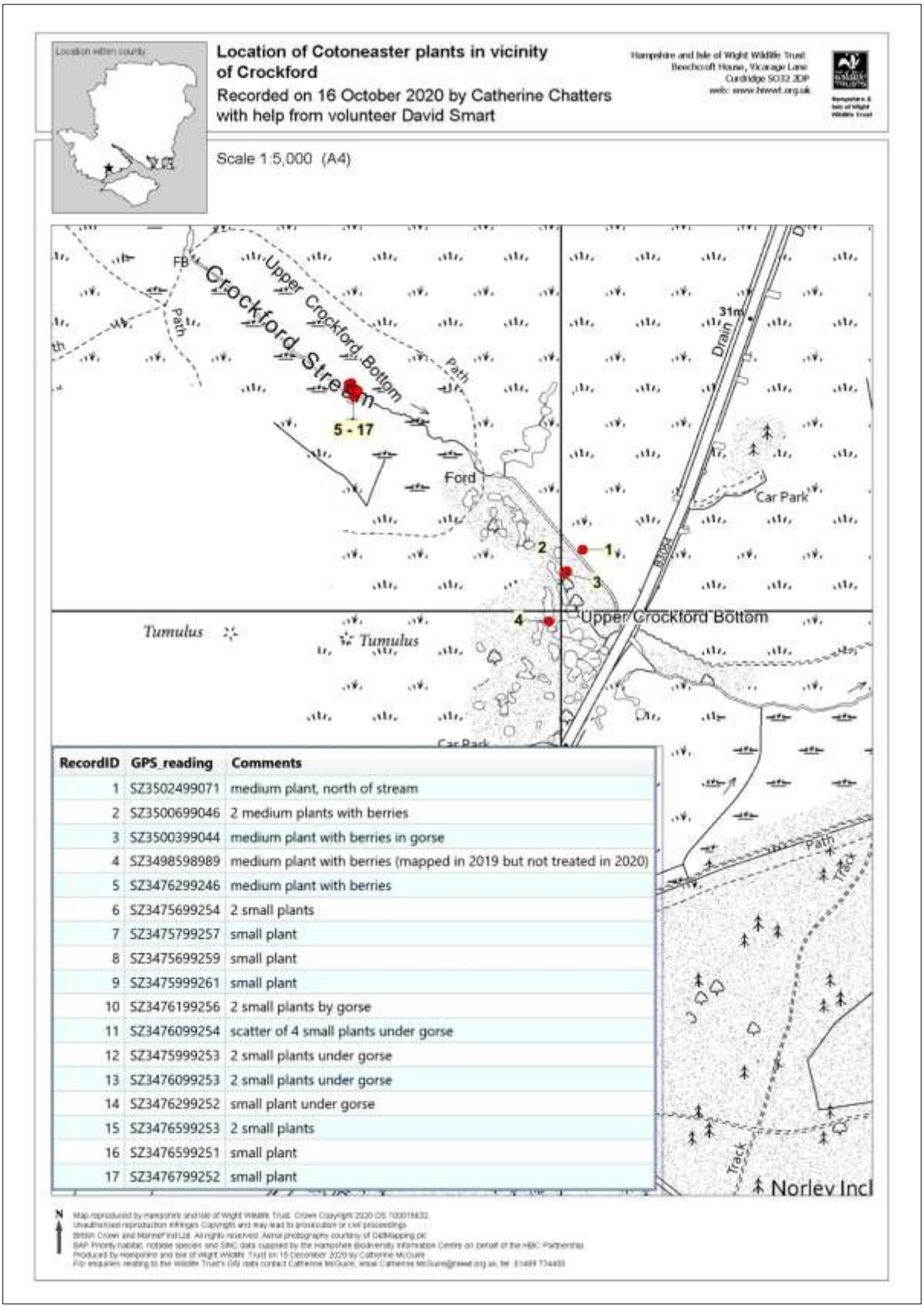


Figure 59: Cotoneaster recorded at Crockford in November 2019



RecordID	GPS_reading	Comments
1	SZ3502499071	medium plant, north of stream
2	SZ3500699046	2 medium plants with berries
3	SZ3500399044	medium plant with berries in gorse
4	SZ3498598989	medium plant with berries (mapped in 2019 but not treated in 2020)
5	SZ3476299246	medium plant with berries
6	SZ3475699254	2 small plants
7	SZ3475799257	small plant
8	SZ3475699259	small plant
9	SZ3475999261	small plant
10	SZ3476199256	2 small plants by gorse
11	SZ3476099254	scatter of 4 small plants under gorse
12	SZ3475999253	2 small plants under gorse
13	SZ3476099253	2 small plants under gorse
14	SZ3476299252	small plant under gorse
15	SZ3476599253	2 small plants
16	SZ3476599251	small plant
17	SZ3476799252	small plant

Figure 60: Cotoneaster recorded at Crockford in October 2020

Figure 61: Photograph taken on 16 October 2020 showing untreated Cotoneaster at SZ 34985 98989

Figure 62: Photograph taken on 16 October 2020 showing untreated Cotoneaster at SZ 35024 99071

9. CONTROL OF COTONEASTER AT BURLEY

9.1. Cotoneaster at Burley

The Project Officer recorded a single Cotoneaster bush, approximately 2 metres tall, on 2 November 2016 growing at SU 22028 04241 along the fence on the edge of a forestry Inclosure at Burley as shown in the photographs as Figure 63 and Figure 64.

9.2. Work undertaken between 2017 and 2018

The NFNNPP commissioned a contractor to control the Cotoneaster at this location during 2017 and 2018.

9.3. Observations relating to control of Cotoneaster at Burley

This single Cotoneaster plant was controlled successfully and no further treatment work was required.

Figure 63: Cotoneaster photographed on 2 November 2016 along Inclosure fence at Burley

Figure 64: Close-up photograph of Cotoneaster growing along Inclosure fence at Burley

10. CONTROL OF COTONEASTER NORTH OF THE A35

10.1. Cotoneaster to the north of the A35

The Project Officer discovered Cotoneaster growing along the north of the A35 road between Ashurst and Lyndhurst on 6 October 2016, including:

- one tall 'tree'-sized, large-leaved Cotoneaster plant growing on the Open Forest at SU 31309 08927
- *Cotoneaster horizontalis* plants growing along the fence between SU 31408 08996 and SU 31405 08994.

These plants are shown in the photographs at Figure 65 and Figure 66.

10.2. Work undertaken between 2017 and 2019

The NFNNPP commissioned a contractor to control the Cotoneaster at these locations during 2017 and to treat any re-growth during 2018 and 2019.

When the Project Officer monitored these locations on 8 October 2019 no re-growth could be found. The photograph at Figure 67 demonstrates the effective herbicide treatment of the plants growing along the fence.

10.3. Observations relating to control of Cotoneaster north of the A35

The treatment of the Cotoneaster at these locations has been very successful and no further treatment is required.

Figure 65: Tall, 'tree'-sized, large-leaved Cotoneaster at SU 31309 08927 on the Open Forest to the north of the A35 between Ashurst and Lyndhurst, photographed on 6 October 2016

Figure 66: An example of the *Cotoneaster horizontalis* growing along the fence to the north of the A35 between SU 31408 08996 and SU 31405 08994, photographed on 6 October 2016

Figure 67: Photograph taken on 8 October 2019 showing successful herbicide treatment of the *Cotoneaster horizontalis* along fence to north of the A35 at SU 31405 08999

11. CONTROL OF COTONEASTER NEAR SLUFTERS

11.1. Cotoneaster near Slufters

During 2016 Bob Chapman of HIWWT alerted the Project Officer to Cotoneaster growing on the road-side banks of the underpass which had been constructed on the Open Forest during the late twentieth century and which is located between Slufters Inclosure and Bratley View car park as shown in the photograph at Figure 68. The Project Officer recorded the Cotoneaster at this location on 14 September 2016 and the results are summarised in the file note at Appendix 2 of this report.

Figure 68: Photograph taken on 14 September 2016 at SU 23449 09815 showing some of the Cotoneaster growing on the bank to the east of the road

11.2. Work undertaken between 2017 and 2020

The NFNNPP commissioned a contractor to undertake herbicide treatment to control the Cotoneaster on the roadside banks during 2017 and 2018. The Project Officer monitored the results on 20 September 2018 and recorded Cotoneaster growing at the following GPS readings:

- SU 23434 09817
- SU 23456 09809
- SU 23486 09797
- SU 23492 09795
- SU 23485 09788
- SU 23484 09788
- SU 23485 09788

Further herbicide treatment was undertaken on behalf of the NFNNPP during 2019. The site was monitored by the Project Officer on 8 October 2019. Some of the Cotoneaster plants showed evidence of having been treated with herbicide, as shown in the photograph at Figure 69. Some of the

Cotoneaster plants were still green and did not appear to have been treated; these plants were all in the vicinity of the crash barrier and were growing at the following locations:

- SU 23489 09795 by crash barrier.
- SU 23490 09793 in brambles by crash barrier.
- SU 23494 09790 by crash barrier.
- SU 23491 09795 crash barrier on east side of road

Examples of Cotoneaster plants which required treatment are shown in the photographs at Figure 70 and Figure 71.

Figure 69: Photograph taken on 8 October 2019 at SU 23451 09815 showing evidence of herbicide treatment

Figure 70: Photograph taken on 8 October 2019 showing Cotoneaster growing near crash barrier at SU 23490 09793

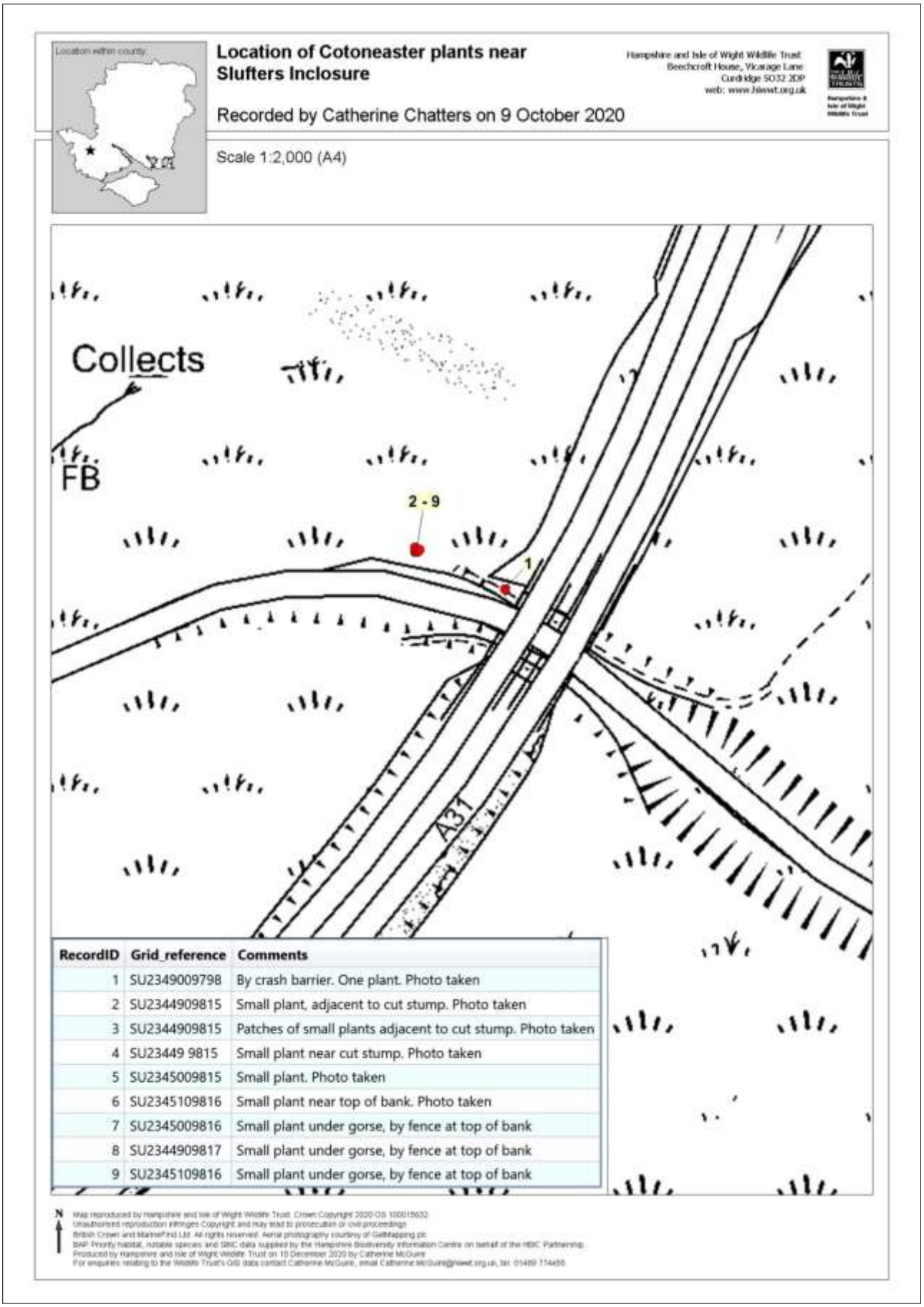
Figure 71: Photograph taken on 8 October 2019 showing Cotoneaster at SU 23494 09790

Further treatment work was commissioned in 2020 and the results of the monitoring visit on 9 October 2020 are shown on the map at Figure 72.

This site is referred to as 'Road-side banks near Bratley View' on the maps at Figure 84, Figure 85 and Figure 86.

11.3. Observations relating to control of Cotoneaster near Slufters

The work undertaken between 2017 and 2020 has substantially reduced the population of Cotoneaster at this location. The monitoring in October 2020 revealed a few plants which require further treatment. They are all located at the top of the bank to the east of the road.



RecordID	Grid_reference	Comments
1	SU2349009798	By crash barrier. One plant. Photo taken
2	SU2344909815	Small plant, adjacent to cut stump. Photo taken
3	SU2344909815	Patches of small plants adjacent to cut stump. Photo taken
4	SU23449 9815	Small plant near cut stump. Photo taken
5	SU2345009815	Small plant. Photo taken
6	SU2345109816	Small plant near top of bank. Photo taken
7	SU2345009816	Small plant under gorse, by fence at top of bank
8	SU2344909817	Small plant under gorse, by fence at top of bank
9	SU2345109816	Small plant under gorse, by fence at top of bank

Figure 72: Map showing results of monitoring visit on 9 October 2020

12. CONTROL OF COTONEASTER NEAR BRAMBLE HILL

12.1. Cotoneaster near Bramble Hill

During 2018 Lucy Andrews of Forestry England alerted the NFNNPP to Cotoneaster growing on the Open Forest near Bramble Hill Hotel.

12.2. Work undertaken between 2018 and 2020

The Project Officer undertook a survey on 20 September 2018 and recorded Cotoneaster growing on the Open Forest along the track and amongst the brambles and bracken in the vicinity of the overhead wires. Cotoneaster was recorded at the following GPS readings:

- SU 26204 15809 beneath the overhead wires
- SU 26204 15806 to SU 26198 15812 along track and under bracken and bramble
- SU 26199 15809
- SU 26200 15810
- SU 26200 15809
- SU 26202 15808
- SU 26202 15807
- SU 26203 15807
- SU 26203 15808
- SU 26206 15799 (5 plants in the vicinity of this GPS reading)
- SU 26235 15790 (numerous Cotoneaster plants in vicinity of Holly trees)
- SU 26233 15787 (growing amongst bracken)
- SU 26234 15786 (growing amongst bracken)
- SU 26234 15776 (growing amongst bracken)
- SU 26247 15775 (growing amongst bracken)
- SU 26250 15773 (growing amongst bracken)
- SU 26262 15766 (tall Cotoneaster, plus small Cotoneaster plants)
- SU 26271 15756
- SU 26284 15748

Examples of the Cotoneaster plants recorded in September 2018 are shown in the photographs at Figure 73 and Figure 74.

The NFNNPP commissioned a contractor to control the Cotoneaster during 2019. The Project Officer monitored the site with the help of a volunteer on 22 September 2019. The results of the monitoring visit are shown on the map at Figure 75.

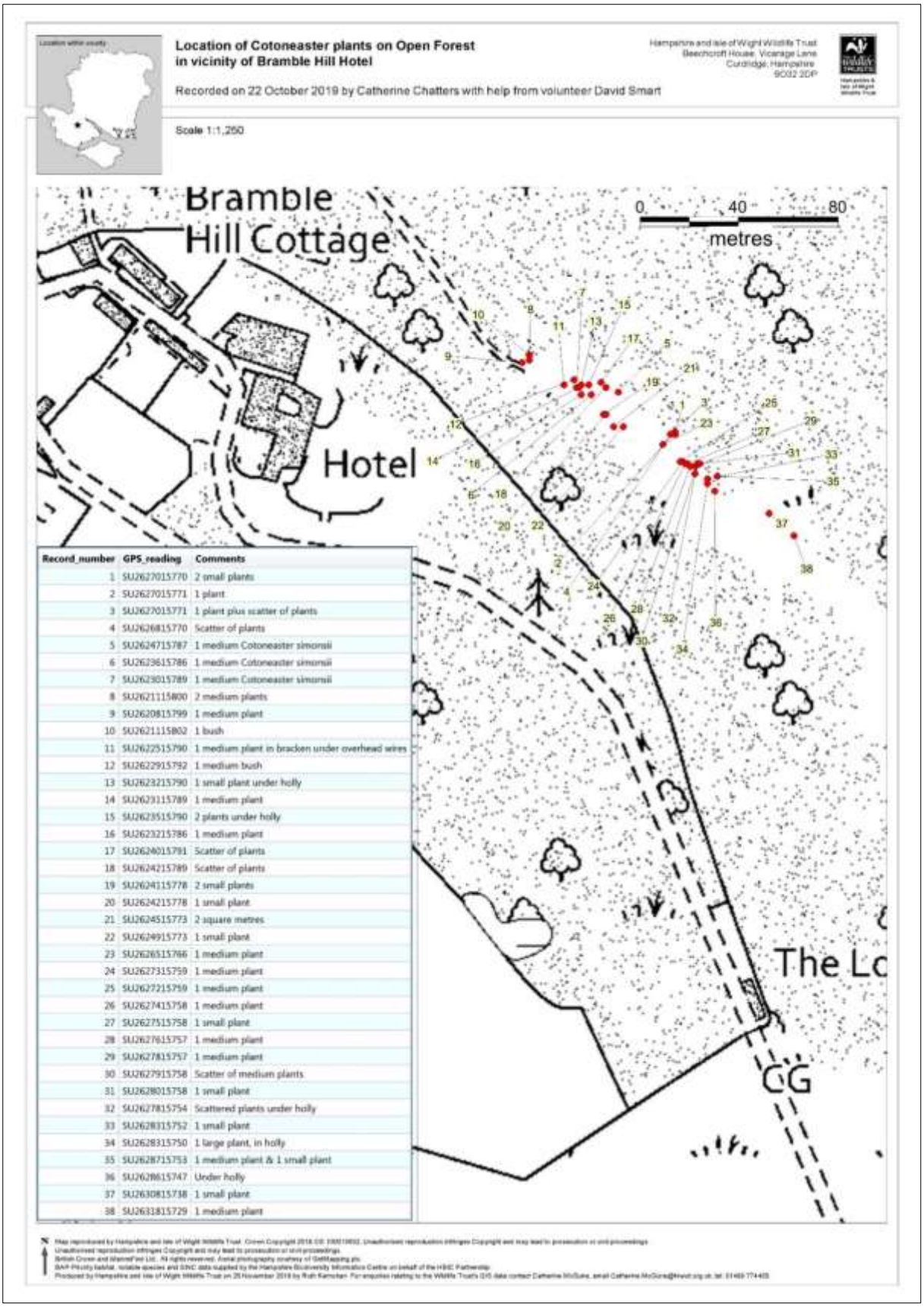
The contractor was commissioned to undertake further control work during 2020 and the results of the monitoring undertaken by the Project Officer on 9 October 2020 are shown on the map at Figure 76.

12.3. Observations relating to control of Cotoneaster near Bramble Hill

The monitoring undertaken in October 2020 revealed that the herbicide treatment has had an impact on the Cotoneaster at this location. The Project Officer identified a previously un-recorded area where Cotoneaster was growing, to the south east of the populations which had been recorded in 2018 and 2019. Further treatment work is required in 2021.

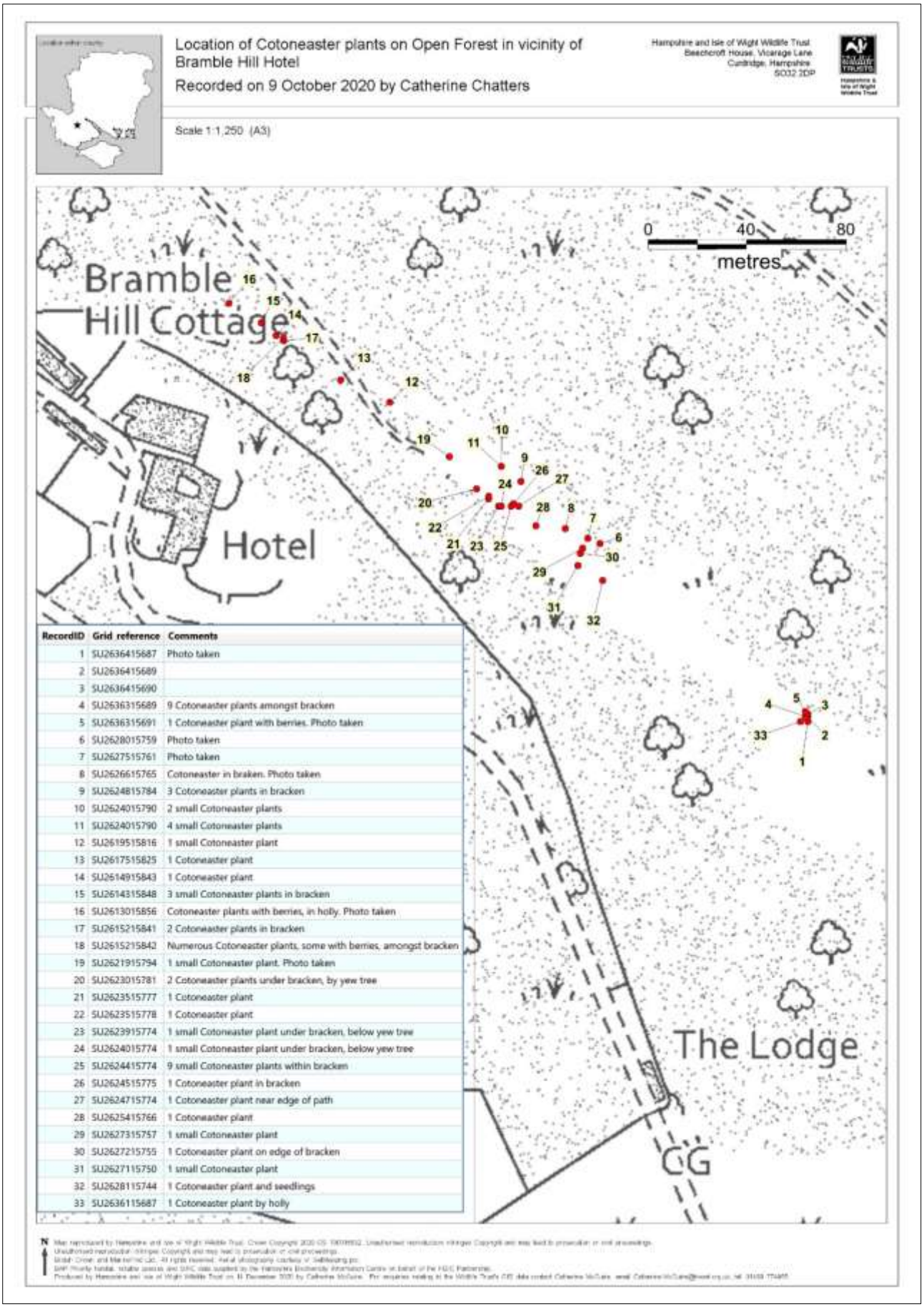
Figure 73: Photograph taken on 20 September 2018 of Cotoneaster growing at SU 26204 15808

Figure 74: Photograph taken on 20 September 2018 of Cotoneaster recorded at SU 26204 15809



Record_number	GPS_reading	Comments
1	SU26270157770	2 small plants
2	SU26270157771	1 plant
3	SU26270157771	1 plant plus scatter of plants
4	SU26268157770	Scatter of plants
5	SU26247157787	1 medium Cotoneaster simonsii
6	SU26236157786	1 medium Cotoneaster simonsii
7	SU26238157789	1 medium Cotoneaster simonsii
8	SU26211158800	2 medium plants
9	SU26208157799	1 medium plant
10	SU26211158802	1 bush
11	SU26225157790	1 medium plant in bracken under overhead wires
12	SU26229157792	1 medium bush
13	SU26232157790	1 small plant under holly
14	SU26231157789	1 medium plant
15	SU26235157790	2 plants under holly
16	SU26232157786	1 medium plant
17	SU26240157791	Scatter of plants
18	SU26242157789	Scatter of plants
19	SU26241157778	2 small plants
20	SU26242157778	1 small plant
21	SU26245157773	2 square metres
22	SU26249157773	1 small plant
23	SU26265157766	1 medium plant
24	SU26273157759	1 medium plant
25	SU26272157759	1 medium plant
26	SU26274157758	1 medium plant
27	SU26275157758	1 small plant
28	SU26276157757	1 medium plant
29	SU26278157757	1 medium plant
30	SU26279157758	Scatter of medium plants
31	SU26280157758	1 small plant
32	SU26278157754	Scattered plants under holly
33	SU26283157752	1 small plant
34	SU26283157750	1 large plant, in holly
35	SU26287157753	1 medium plant & 1 small plant
36	SU26286157747	Under holly
37	SU26308157738	1 small plant
38	SU26318157729	1 medium plant

Figure 75: Map showing Cotoneaster recorded on 22 September 2019 near Bramble Hill Hotel



RecordID	Grid reference	Comments
1	SU2636415687	Photo taken
2	SU2636415689	
3	SU2636415690	
4	SU2636315689	9 Cotoneaster plants amongst bracken
5	SU2636315691	1 Cotoneaster plant with berries. Photo taken
6	SU2628015759	Photo taken
7	SU2627515761	Photo taken
8	SU2626615765	Cotoneaster in braken. Photo taken
9	SU2624815784	3 Cotoneaster plants in bracken
10	SU2624015790	2 small Cotoneaster plants
11	SU2624015790	4 small Cotoneaster plants
12	SU2619515816	1 small Cotoneaster plant
13	SU2617515825	1 Cotoneaster plant
14	SU2614915843	1 Cotoneaster plant
15	SU2614315848	3 small Cotoneaster plants in bracken
16	SU2613015856	Cotoneaster plants with berries, in holly. Photo taken
17	SU2615215841	2 Cotoneaster plants in bracken
18	SU2615215842	Numerous Cotoneaster plants, some with berries, amongst bracken
19	SU2621915794	1 small Cotoneaster plant. Photo taken
20	SU2623015781	2 Cotoneaster plants under bracken, by yew tree
21	SU2623515777	1 Cotoneaster plant
22	SU2623515778	1 Cotoneaster plant
23	SU2623915774	1 small Cotoneaster plant under bracken, below yew tree
24	SU2624015774	1 small Cotoneaster plant under bracken, below yew tree
25	SU2624415774	9 small Cotoneaster plants within bracken
26	SU2624515775	1 Cotoneaster plant in bracken
27	SU2624715774	1 Cotoneaster plant near edge of path
28	SU2625415766	1 Cotoneaster plant
29	SU2627315757	1 small Cotoneaster plant
30	SU2627215755	1 Cotoneaster plant on edge of bracken
31	SU2627115750	1 small Cotoneaster plant
32	SU2628115744	1 Cotoneaster plant and seedlings
33	SU2636115687	1 Cotoneaster plant by holly

Figure 76: Map showing Cotoneaster recorded on 9 October 2020 near Bramble Hill Hotel

13. CONTROL OF COTONEASTER IN HIGHLAND WATER INCLOSURE

13.1. Cotoneaster in Highland Water Inclosure

During 2018 Julie Melin-Stubbs, Manager of the New Forest Land Advice Service, alerted the Project Officer to a Cotoneaster plant in the Highland Water Inclosure, a forestry plantation which has been thrown-open to Commoners' grazing animals. The site is close to Acres Down and is referred to as 'Thrown-open Inclosure near Acres Down' on the map at Figure 86.

13.2. Work undertaken between 2018 and 2019

The Project Officer visited the Highland Water Inclosure on 18 May 2018 and took a GPS reading of the Cotoneaster at SU 26314 09740. It was a prostrate *Cotoneaster horizontalis* plant, approximately 2 metres x 1 metre, to the west of the gravel track. Julie Melin-Stubbs sent the Project Officer a photograph she had taken of the Cotoneaster on 31 May 2018; this is shown at Figure 77.

The NFNNPP commissioned a contractor to treat the Cotoneaster plant with herbicide during 2019. The Project Officer monitored the site on 8 October 2019 and observed small, living Cotoneaster plants close to the treated plant. Photographs of the treated plant are shown at Figure 78 and Figure 79.

Photographs of some of the small, living Cotoneaster plants are shown at Figure 80 and Figure 81.

The Project Officer decided that it would be appropriate for the small Cotoneaster plants to be dug up manually so arranged to return to the site with a volunteer on 22 October 2019 to dig them up with a trowel. One of the small Cotoneaster plants dug up on 22 October 2019 is shown in the photograph at Figure 82.

13.3. Observations relating to control of Cotoneaster in Highland Water Inclosure

The herbicide treatment undertaken in 2019 successfully controlled the Cotoneaster plant which had been recorded by the Project Officer during 2018. The discovery of small Cotoneaster plants growing close to the treated plant in October 2019 highlights the importance of monitoring and the need to control small plants growing in the vicinity of plants which have received herbicide treatment.

Figure 77: Photograph taken by Julie Melin-Stubbs on 31 May 2018 of the Cotoneaster plant growing at SU 26314 09740

Figure 78: Photograph taken on 8 October 2019 showing the Cotoneaster plant following herbicide treatment during 2019

Figure 79: Photograph taken on 8 October 2019 showing the Cotoneaster plant at SU 26314 09740 following herbicide treatment

Figure 80: Photograph taken on 8 October 2019 showing small Cotoneaster plants at SU 26312 09738

Figure 81: Photograph taken on 8 October 2019 showing small Cotoneaster plants at SU 26315 09740

Figure 82: Photograph taken by David Smart on 22 October 2019 showing one of the small Cotoneaster plants dug up in the vicinity of the plant which had been treated with herbicide during 2019

14. OVERVIEW MAPS OF COTONEASTER CONTROL

14.1. Overview maps of control work undertaken each year between 2016 and 2020

The following maps indicate where the NFNNPP has arranged for control of Cotoneaster each year from 2016 to 2020 (Figure 83, Figure 84, Figure 85, Figure 67, Figure 87).

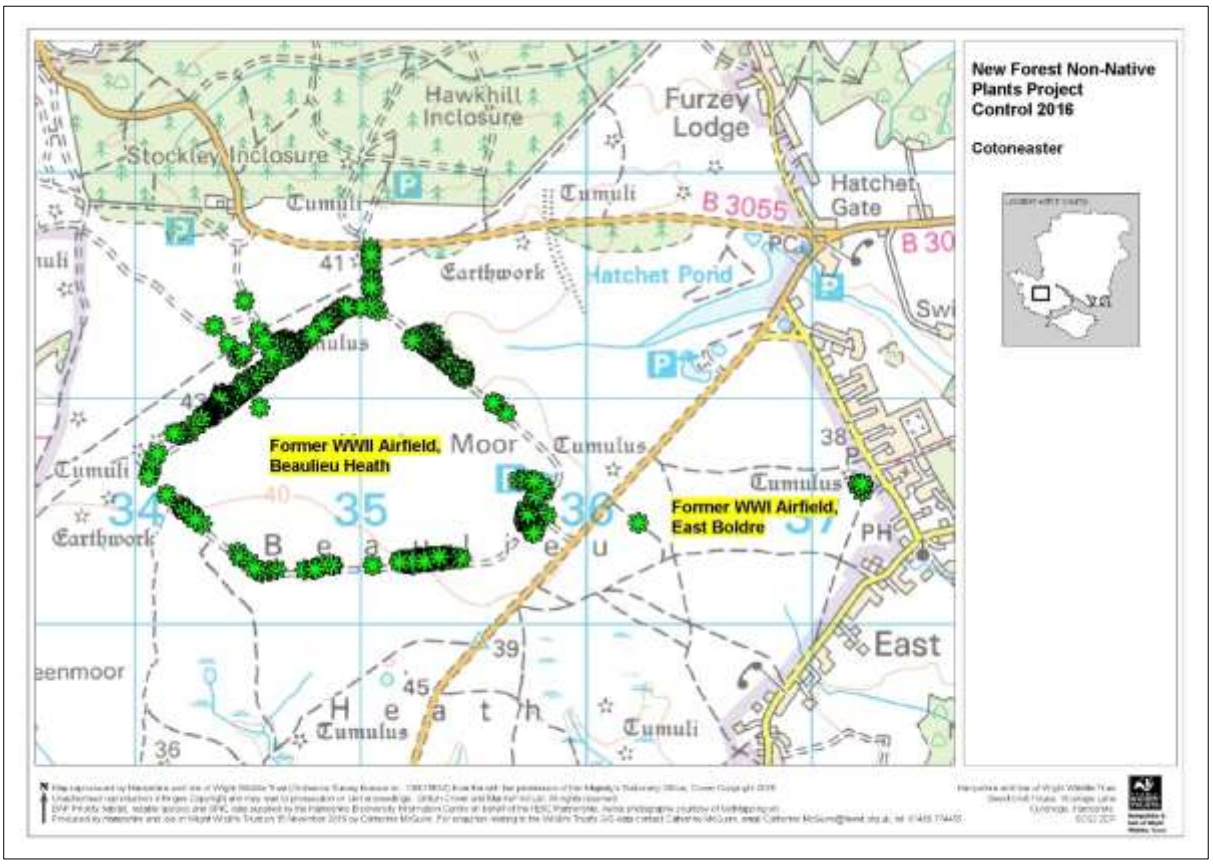


Figure 83: Locations of work commissioned by NFNNPP to control Cotoneaster during 2016

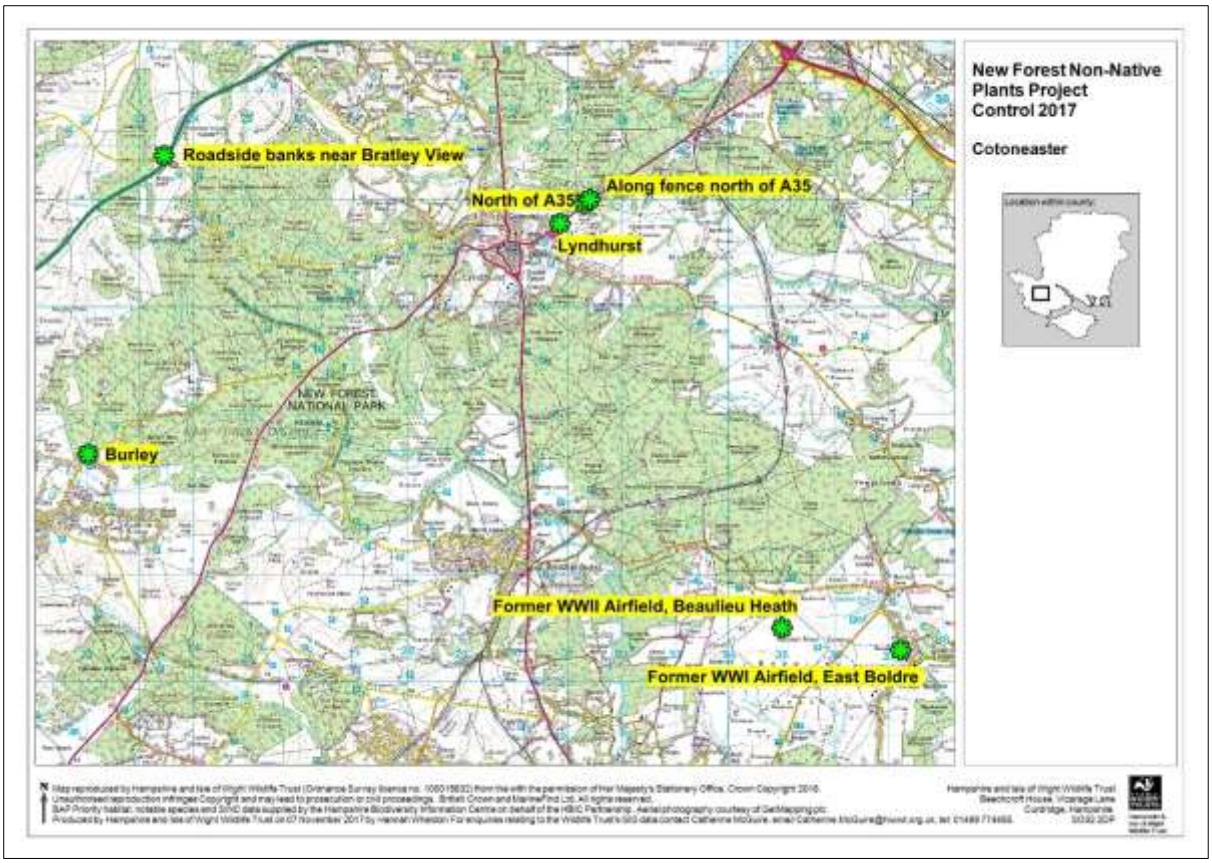


Figure 84: Locations of work commissioned by NFNNPP to control Cotoneaster during 2017

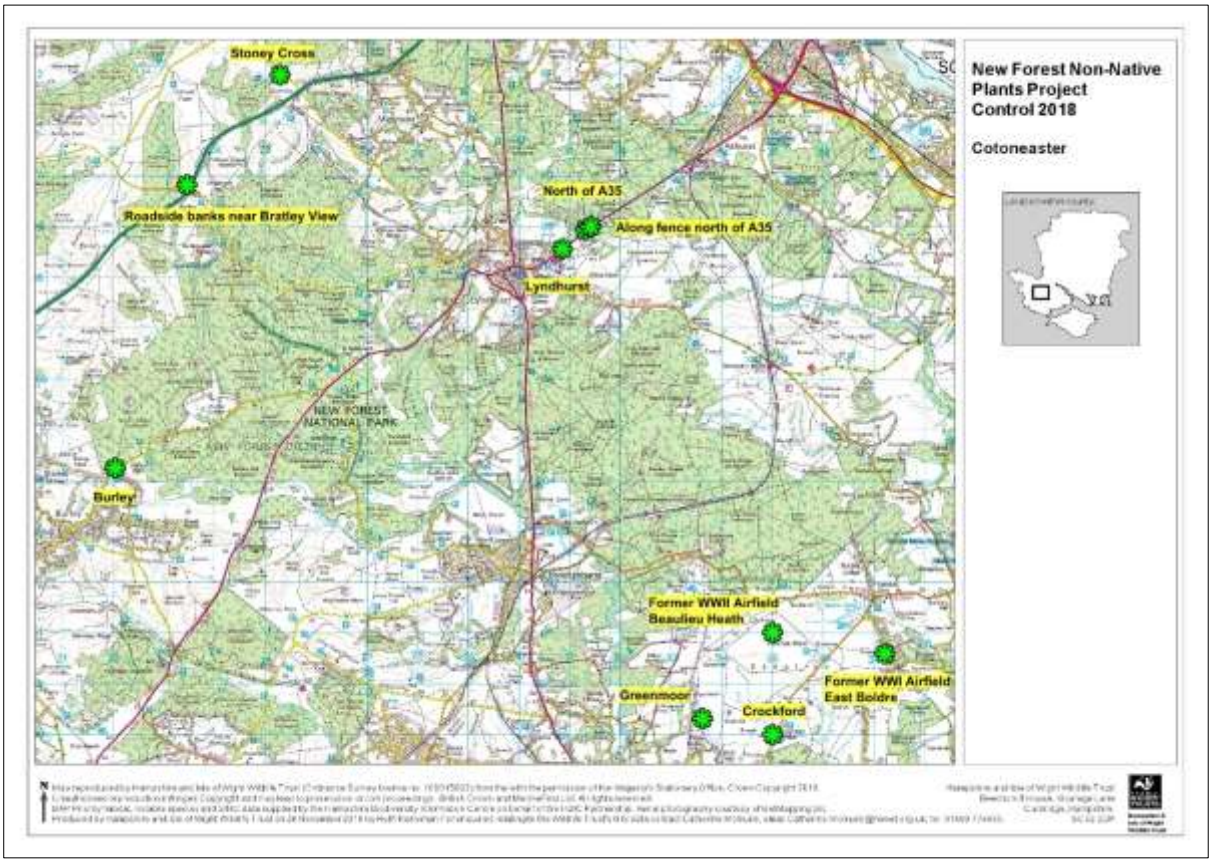


Figure 85: Locations of work commissioned by NFNNPP to control Cotoneaster during 2018

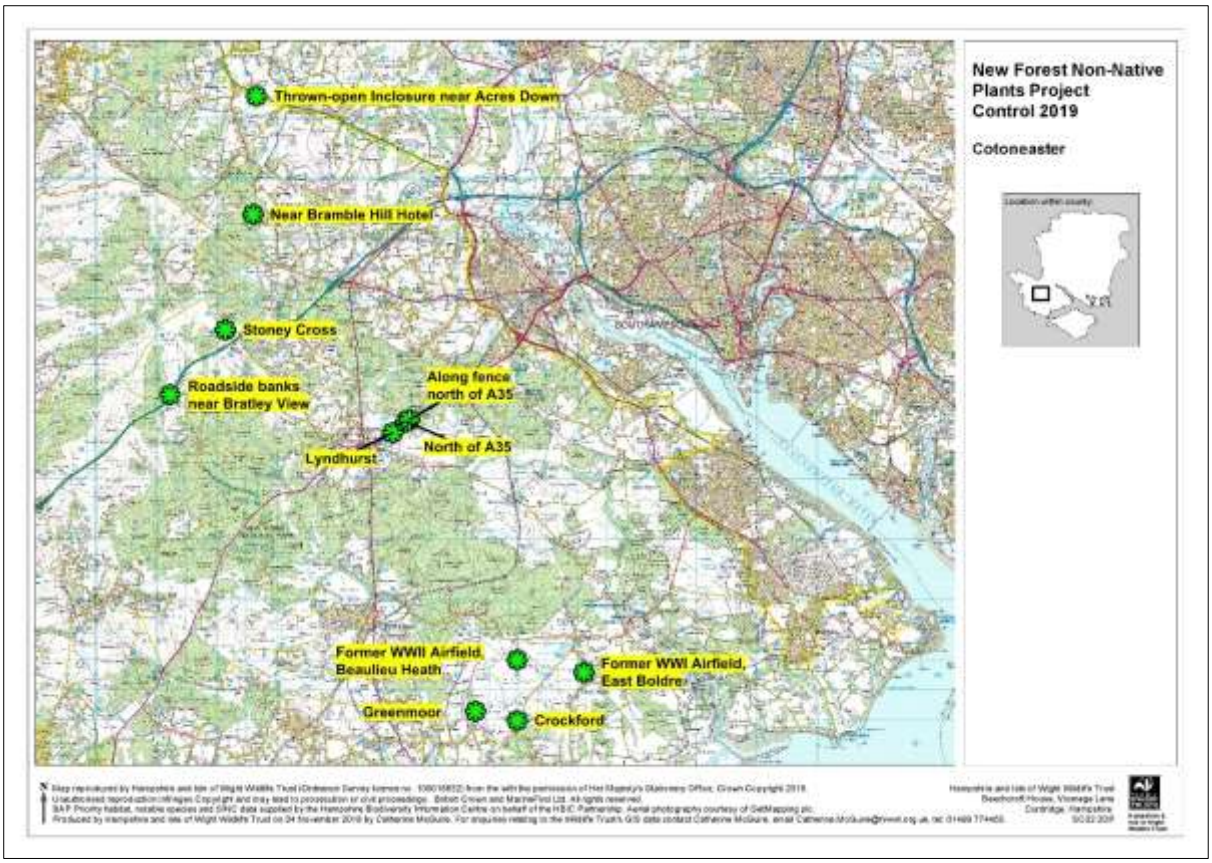


Figure 86: Locations of work commissioned by NFNNPP to control Cotoneaster during 2019

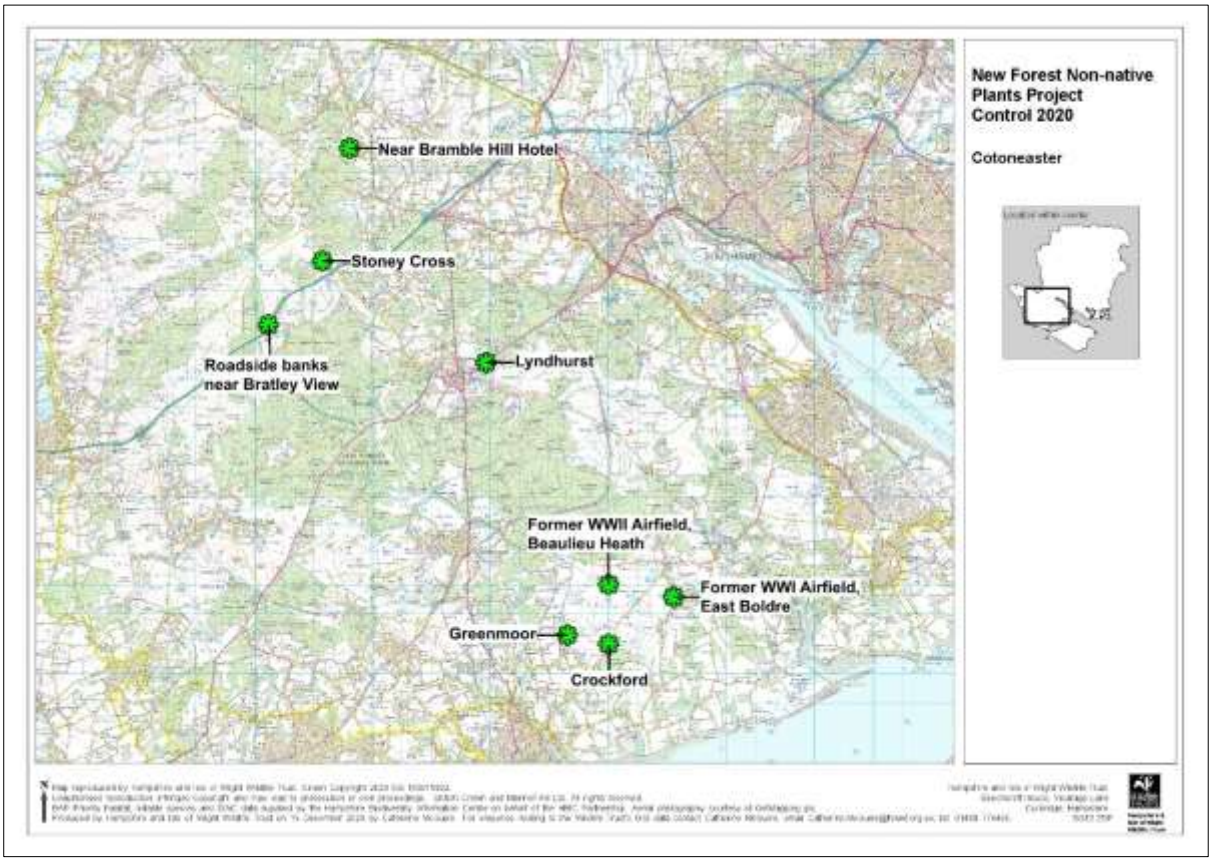


Figure 87: Locations of work commissioned by NFNNPP to control Cotoneaster during 2020

15. ADDITIONAL SITES MAPPED IN 2020

15.1. Cotoneaster in vicinity of Beaulieu Road, Lyndhurst (SU 310 080)

On 27 October 2019 the Project Officer received an email from Tony Robinson, a volunteer with the National Trust who had attended an awareness-raising session hosted by the NFNNPP at Testwood Lakes Education Centre. Tony alerted the Project Officer to a 'small Cotoneaster plant' with 'lots of closely packed small red berries' in the vicinity of Bolton's Bench at Lyndhurst, approximately 100 metres south of the Parc Pale car park and 8 metres to the east of the road to Beaulieu Road Station. He suspected there might be more Cotoneaster plants growing in the bracken and returned to the site on 28 October 2020. The following day he emailed the Project Officer to say:

"I revisited the location today and I feel sure it, or rather they, are (Himalayan) Cotoneaster. I have attached an example photo.

The plants range a great deal in size from old six footers through to small low plants, some of which are hard to spot. I would estimate I found between 50 and 100 plants.

Now the location. Starting in the Parc Pale car park (CP) south of Bolton's Bench, I found no plants to the north of the access track to the CP; they are all to the south along the road to Beaulieu Road Station starting right by the CP almost entirely in a 20 metre strip along the road for about 300 metres to where there is a crossing gravel track and barrier and a street light on the other side of the road. There is a section where the bracken (and everything else) has been cleared, so it's possible there were some there - (will they survive?). Beyond the track is a section of burnt gorse and there are none there or beyond.

There are a few on the other (Lyndhurst) side of the road - these are mostly in light woodland and are not doing well, so fairly bare and small. However, on that side of the road they can be found beyond the crossing gravel track, for about 80 metres until the woodland ends.

I checked further up the slope on the Forest side and only found one or two. There is a large plant hiding by a large Hawthorn about 80 paces to the south of the trig point.(N 50'52'13.09 W 1'33'41.79).I don't have a GPS (so no grid refs) but can provide a Lat and Long if you can convert".

The photograph provided by Tony Robinson is shown at Figure 88.

Figure 88: Cotoneaster photographed by Tony Robinson on 28 October 2019

The Project Officer surveyed this area with volunteer David Smart on 16 October 2020 and recorded numerous Cotoneaster plants, examples of which are shown in the photographs at Figure 89 and Figure 90. The locations of plants recorded on 16 October 2020 are shown on the map at Figure 91.

Figure 89: example of Cotoneaster growing in vicinity of Beaulieu Road at Lyndhurst, photographed on 16 October 2020

Figure 90: Volunteer David Smart surveying Cotoneaster in vicinity of Beaulieu Road, Lyndhurst on 16 October 2020

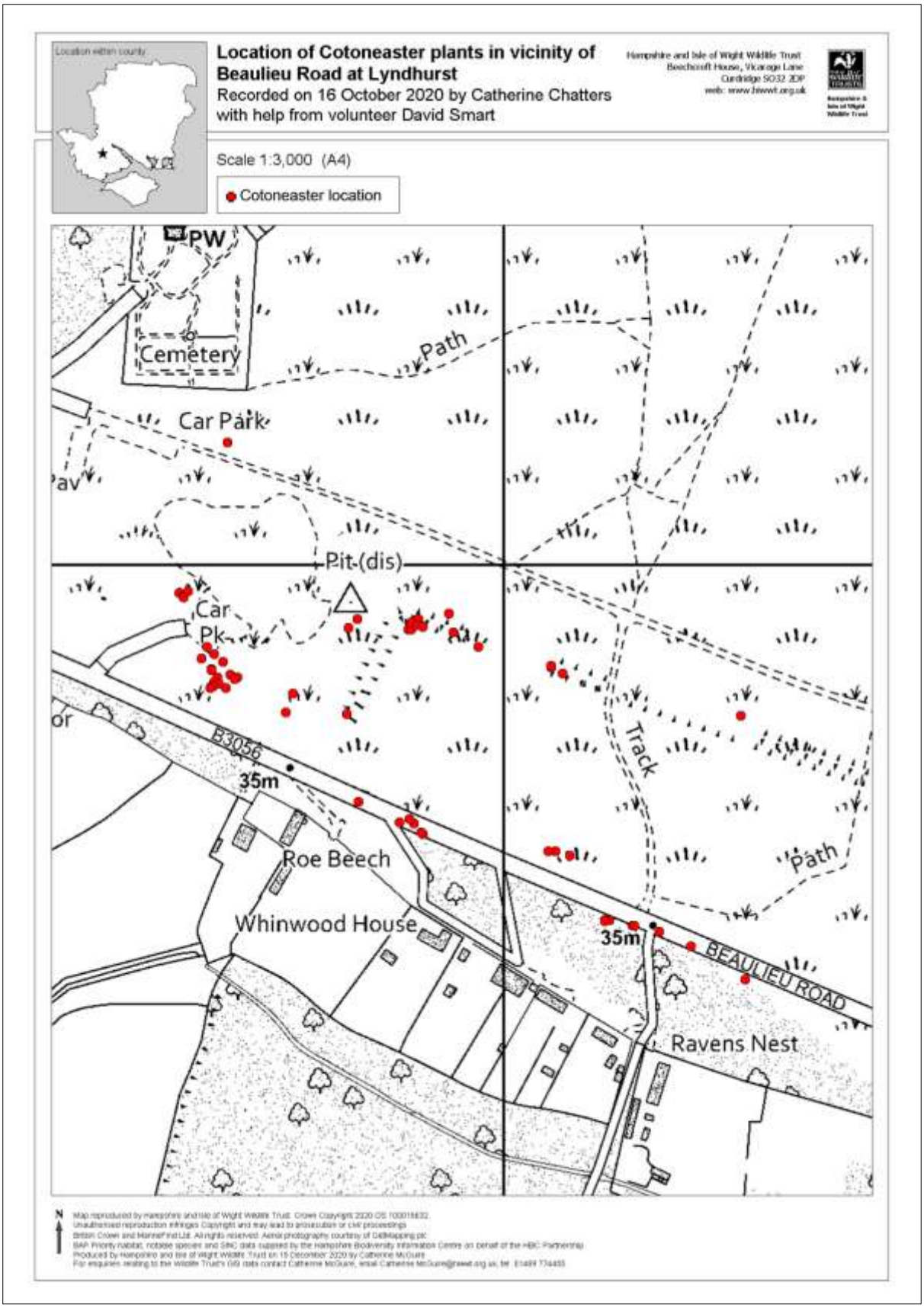


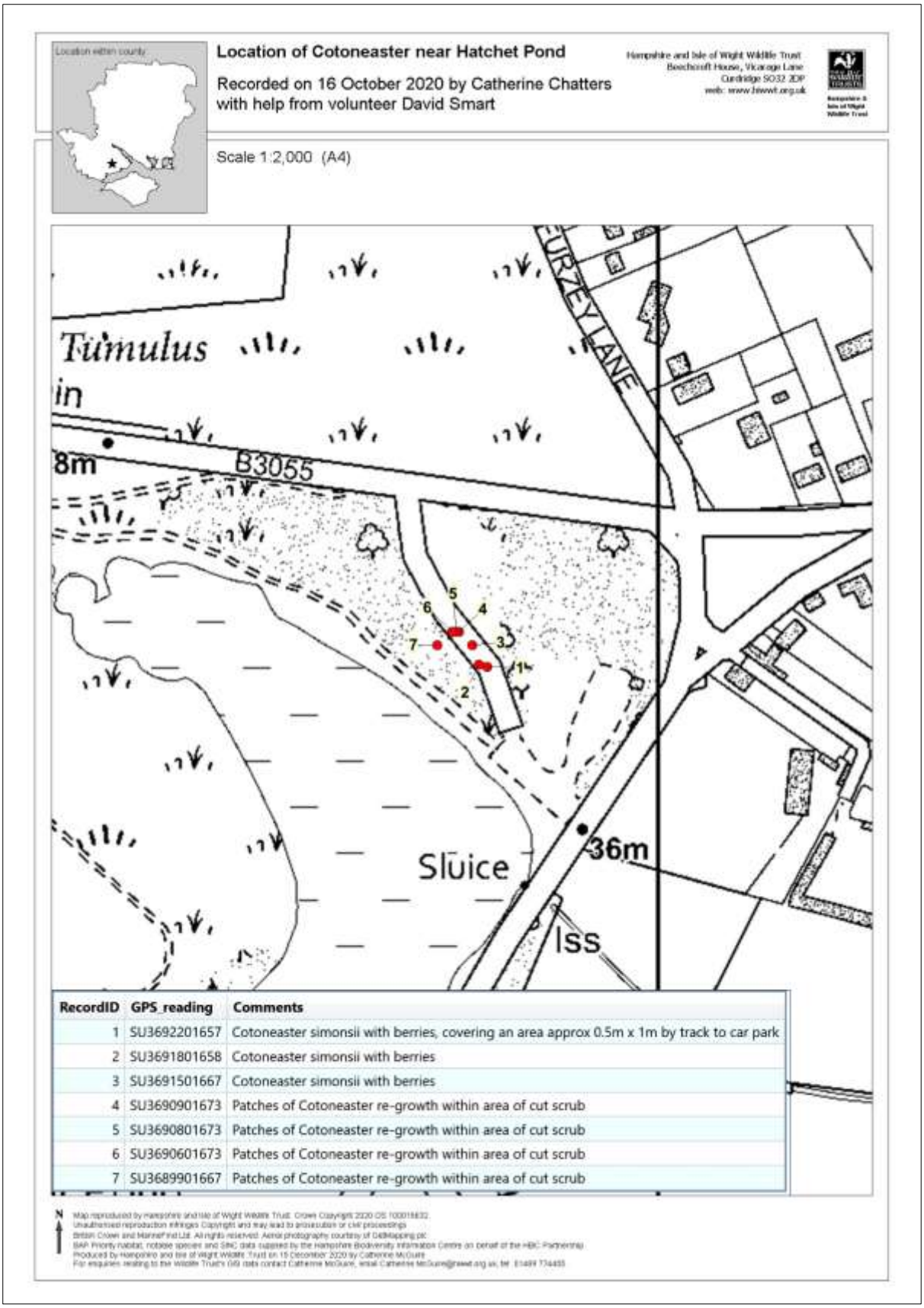
Figure 91: Map showing location of Cotoneaster plants recorded on 16 October 2020

15.2. Cotoneaster near Hatchet Pond car park (SU 369 016)

Alison Bolton had alerted the Project Officer to Cotoneaster growing near the car park at Hatchet Pond. The Project Officer surveyed the area on 16 October 2020 with volunteer David Smart and recorded Cotoneaster mainly growing amongst cut scrub as shown in the photographs at Figure 92 and Figure 93 and on the map at Figure 94.

Figure 92: Photograph taken on 16 October 2020 of Cotoneaster at SU 36922 01657

Figure 93: David Smart by Cotoneaster near Hatchet Pond car park on 16 Oct 2020



RecordID	GPS_reading	Comments
1	SU3692201657	Cotoneaster simonsii with berries, covering an area approx 0.5m x 1m by track to car park
2	SU3691801658	Cotoneaster simonsii with berries
3	SU3691501667	Cotoneaster simonsii with berries
4	SU3690901673	Patches of Cotoneaster re-growth within area of cut scrub
5	SU3690801673	Patches of Cotoneaster re-growth within area of cut scrub
6	SU3690601673	Patches of Cotoneaster re-growth within area of cut scrub
7	SU3689901667	Patches of Cotoneaster re-growth within area of cut scrub

Figure 94: Map showing Cotoneaster recorded near Hatchet Pond car park on 16 October 2020

15.3. Cotoneaster to south east of Beaulieu Road Station (SU 350 058)

On 16 October 2020 the Project Officer and volunteer David Smart recorded Cotoneaster growing on the Open Forest to the south east of Beaulieu Road Station.

A large plant of *Cotoneaster horizontalis* was recorded at SU 35056 05828 as shown in the photograph at Figure 95.

A 'tree'-sized Cotoneaster plant approximately 5 metres tall was recorded at SU 35086 05883 as shown in the photographs at Figure 96, Figure 97, Figure 98 and Figure 99

These Cotoneaster plants are shown on the map at Figure 100.

Figure 95: *Cotoneaster horizontalis* recorded at SU 35056 05828 on 16 October 2020

Figure 96: Leaves and berries of Cotoneaster recorded at SU 35086 05883 on 16 October 2020

Figure 97: Pale underside of leaves of Cotoneaster recorded at SU 35086 05883 on 16 Oct 2020

Figure 98: Pale underside of red leaves of Cotoneaster recorded at SU 35086 05883 on 16 Oct 2020

Figure 99: Volunteer David Smart standing by Cotoneaster at SU 35086 05883 on 16 October 202

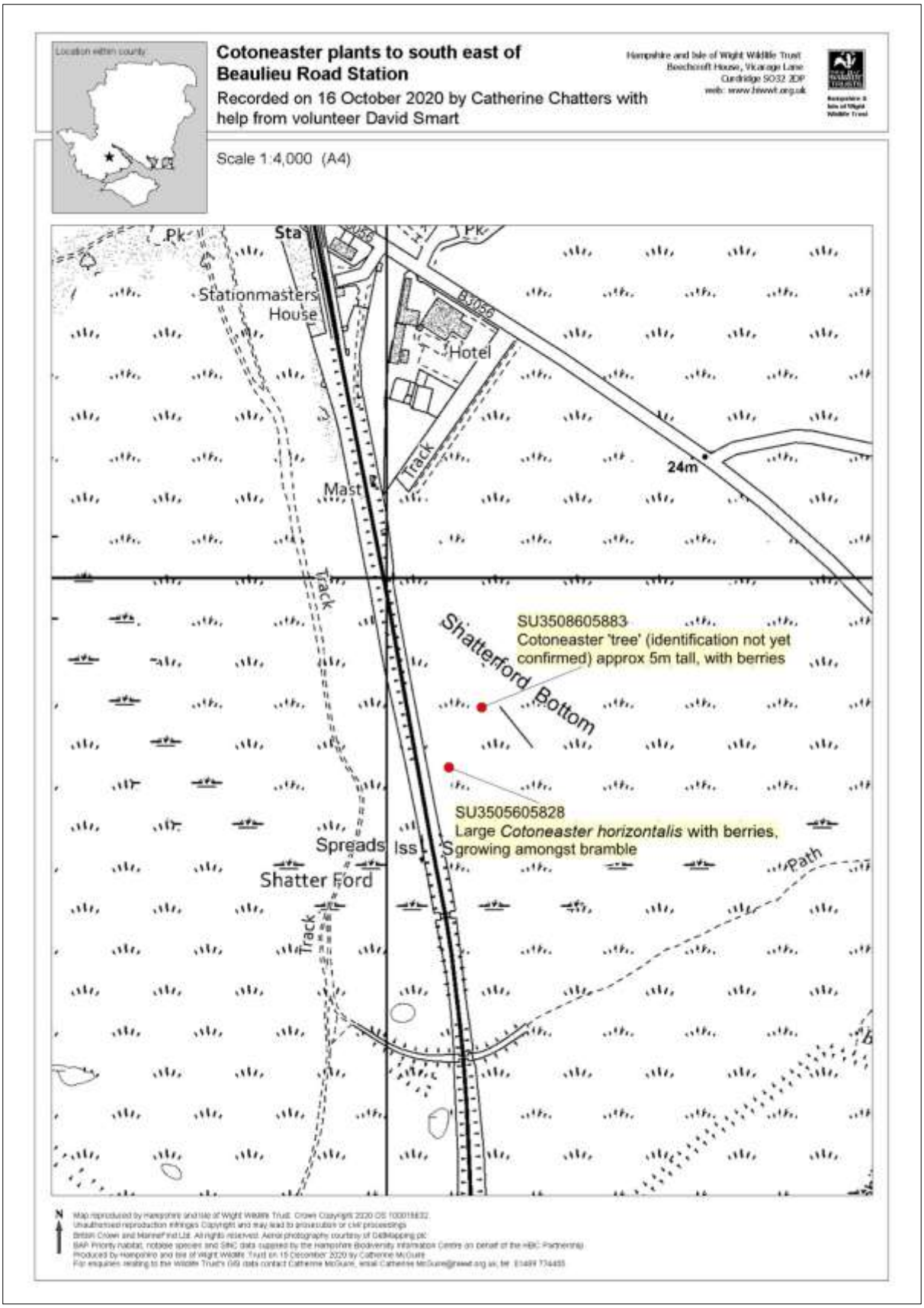


Figure 100: Map showing location of Cotoneaster plants recorded on 16 October 2020

15.4. Cotoneaster in vicinity track west of Latchmoor Pond (SU 289 002 / SU 286 003)

Alison Bolton had alerted the Project Officer to Cotoneaster growing in the vicinity of the track to the west of Latchmoor Pond, south of Brockenhurst. The Project Officer surveyed the area on 19 October 2020. A patch of *Cotoneaster horizontalis*, approximately 1 metre x 2 metres was recorded at SU 28998 00292 as shown in the photograph at Figure 101 and one bush of *Cotoneaster horizontalis* was recorded at SU 28651 00354. These plants are indicated on the map at Figure 102.

Figure 101: The patch of Cotoneaster recorded at SU 28778 00292 on 19 October 2020

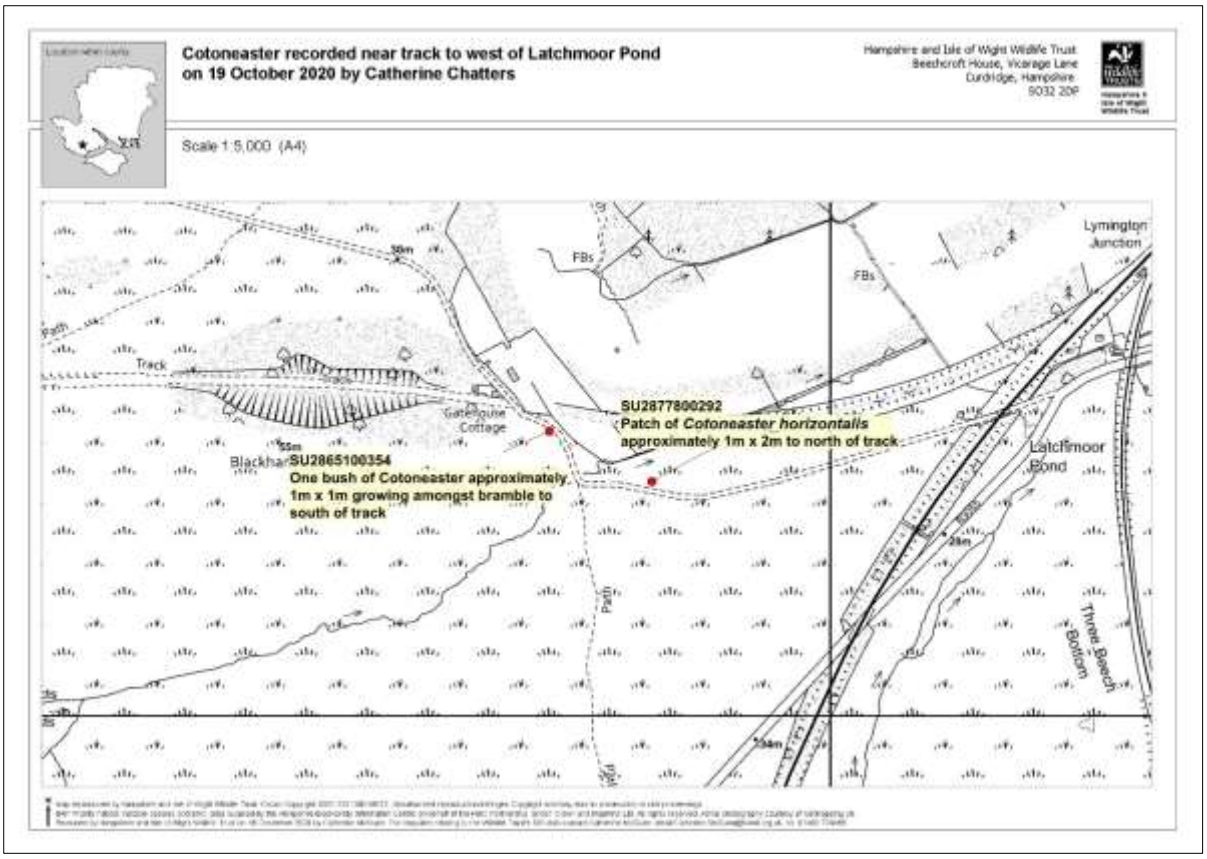


Figure 102: Cotoneaster recorded on 19 October 2020

15.5. Cotoneaster at Setley Pond (SZ 302 992)

Alison Bolton alerted the Project Officer to Cotoneaster growing in the vicinity of Setley Pond south of Brockenhurst. The Project Officer surveyed this area with volunteer David Smart on 5 November 2020 as shown in the photograph at Figure 103. The results of the survey are shown at Figure 104.

Figure 103: Volunteer David Smart surveying Cotoneaster near Setley Pond on 5 November 2020

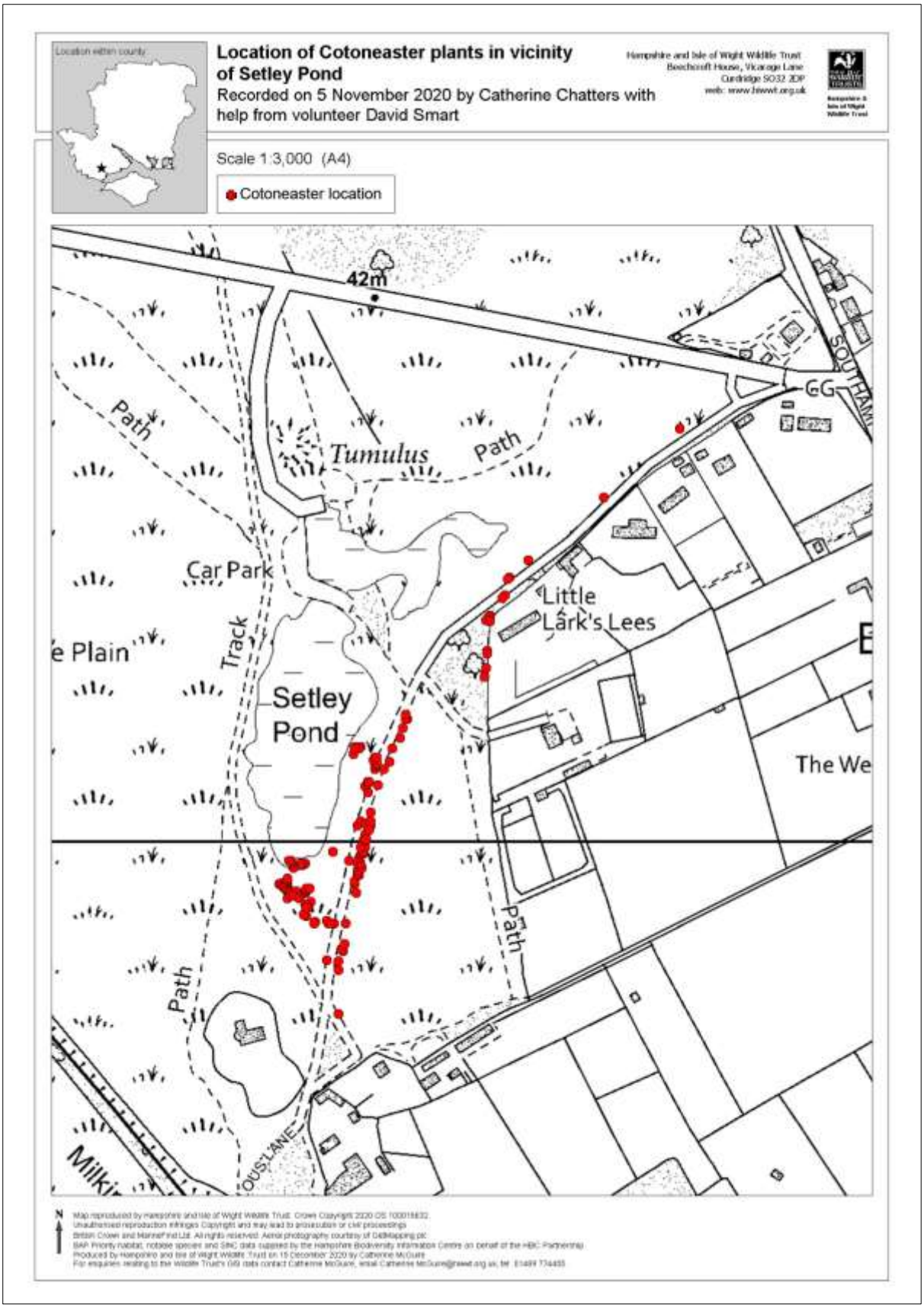


Figure 104: Map showing Cotoneaster surveyed on 5 November 2010 in vicinity of Setley Pond

15.6. Cotoneaster on Setley Plain (SZ 301 994)

Alison Bolton alerted the Project Officer to Cotoneaster growing at Setley Plain south of Brockenhurst. The Project Officer surveyed this area with volunteer David Smart on 5 November 2020 as shown in the photograph at Figure 105. The results of the survey are shown at Figure 106.

Figure 105: Volunteer David Smart surveying Cotoneaster at Setley Plain on 5 November 2020

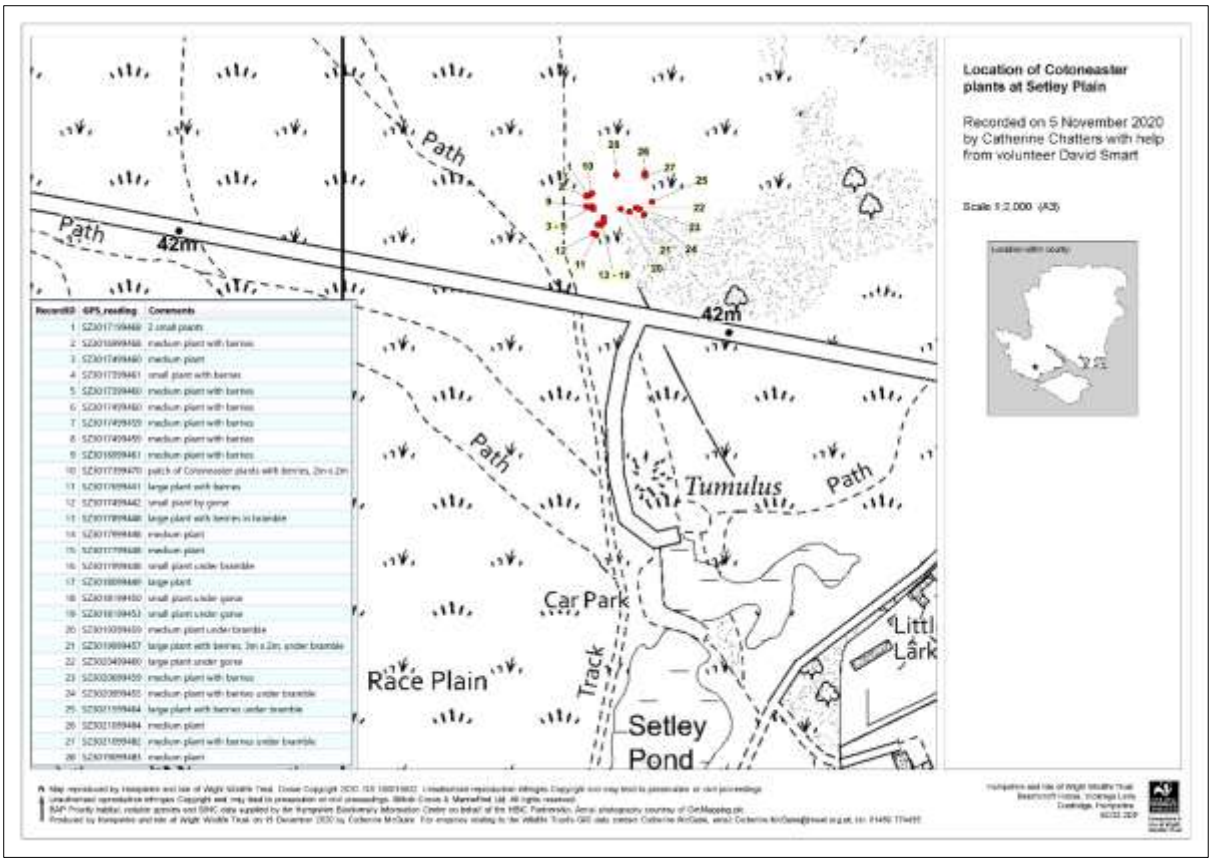


Figure 106: Map showing Cotoneaster surveyed on 5 November 2010 at Setley Plain

15.7. Cotoneaster to the west of Marlpit Oak (SZ 279 998)

Alison Bolton alerted the Project Officer to Cotoneaster growing along the road to the west of Marlpit Oak. The Project Officer surveyed the Open Forest on both sides of the road with volunteer David Smart on 5 November 2020 as shown in the photograph at Figure 107. The results of the survey are shown at Figure 108.

Figure 107: Volunteer David Smart surveying Cotoneaster west of Marlpit Oak on 5 November 2020

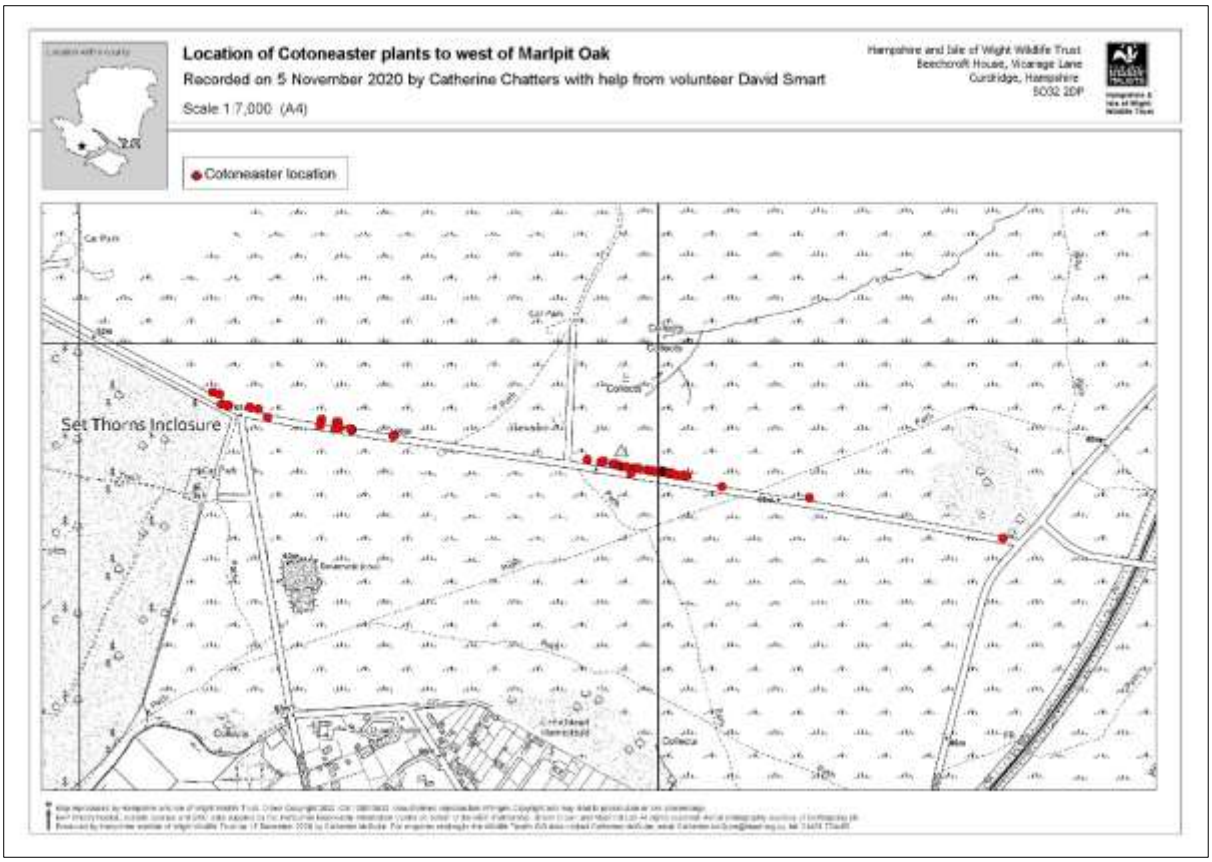


Figure 108: Map showing Cotoneaster surveyed on 5 November 2010 to north and south of the road to the west of Marlpit Oak

15.8. Cotoneaster to the west of Burley Street (SU 198 042)

Alison Bolton alerted the Project Officer to Cotoneaster growing on the Open Forest to the west of Burley Street.

The Project Officer surveyed the area on 21 October 2020 and recorded Cotoneaster:

- at Vereley Hill car park (location 1 on map at Figure 109)
- west of Castle Hill Lane (location 2 on map at Figure 109)
- in vicinity of road junction (locations 3, 4 and 5 on map at Figure 109)
- east of the road, to the north of Picket Post car park (location 6 on map at Figure 109)

The Cotoneaster at Vereley Hill car park is illustrated in the photographs at Figure 110 and Figure 111.

The Cotoneaster west of Castle Hill Lane is illustrated in the photograph at Figure 112.

The Cotoneaster in the vicinity of the road junction is illustrated in the photographs at Figure 113, Figure 114 and Figure 115.

The Cotoneaster north of Picket Post car park is illustrated in the photographs at Figure 116 and Figure 117.

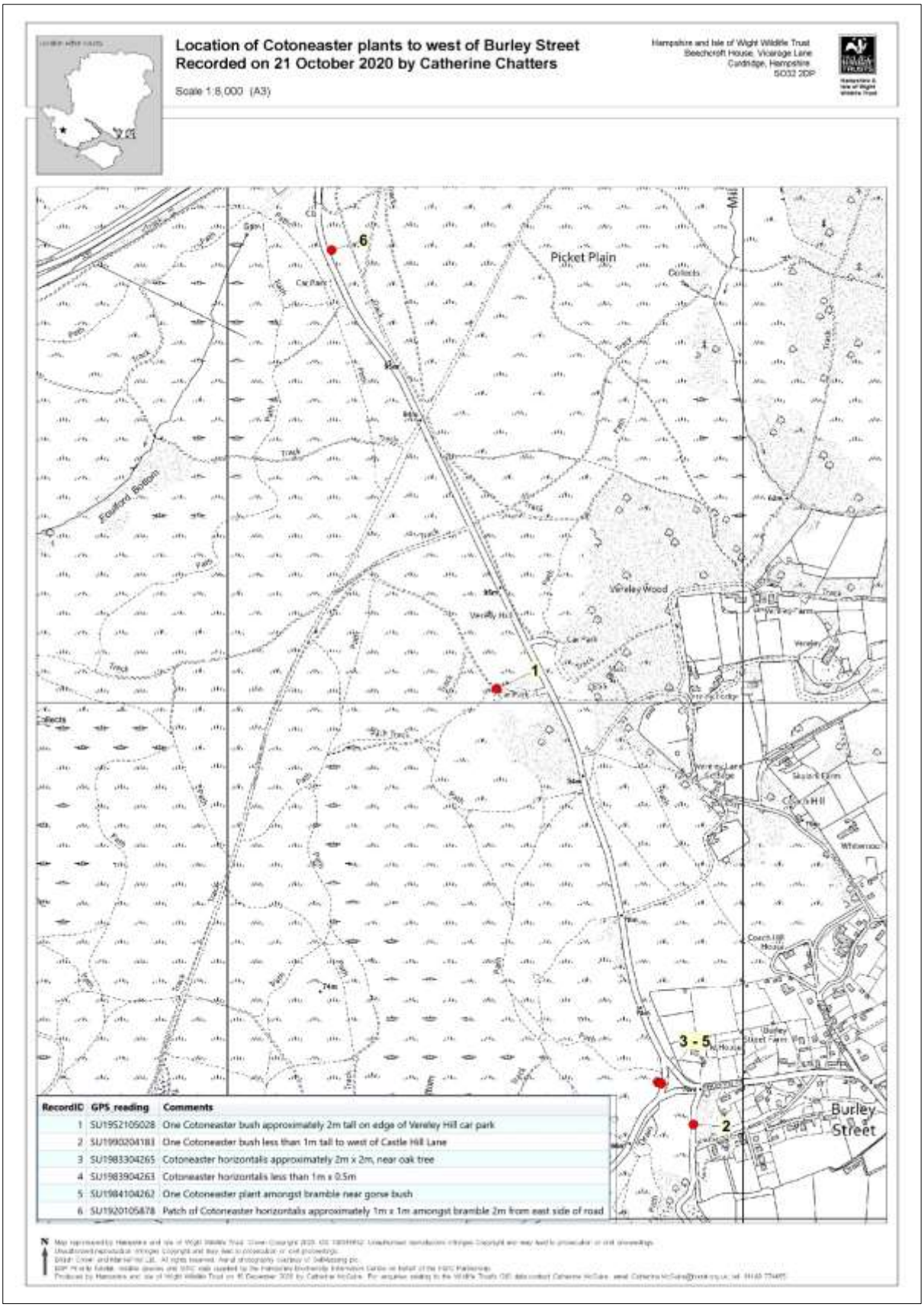


Figure 109: Cotoneaster recorded to the west of Burley Street on 21 October 2020

Figure 110: Cotoneaster recorded at SU 19521 05028 at Vereley Hill car park

Figure 111: Cotoneaster recorded at SU 19521 05028 at Vereley Hill car park

Figure 112: Cotoneaster recorded at SU 19902 04183 to the west of Castle Hill Lane on 21 Oct 2020

Figure 113: Cotoneaster recorded at SU 19833 04265 in vicinity of road junction

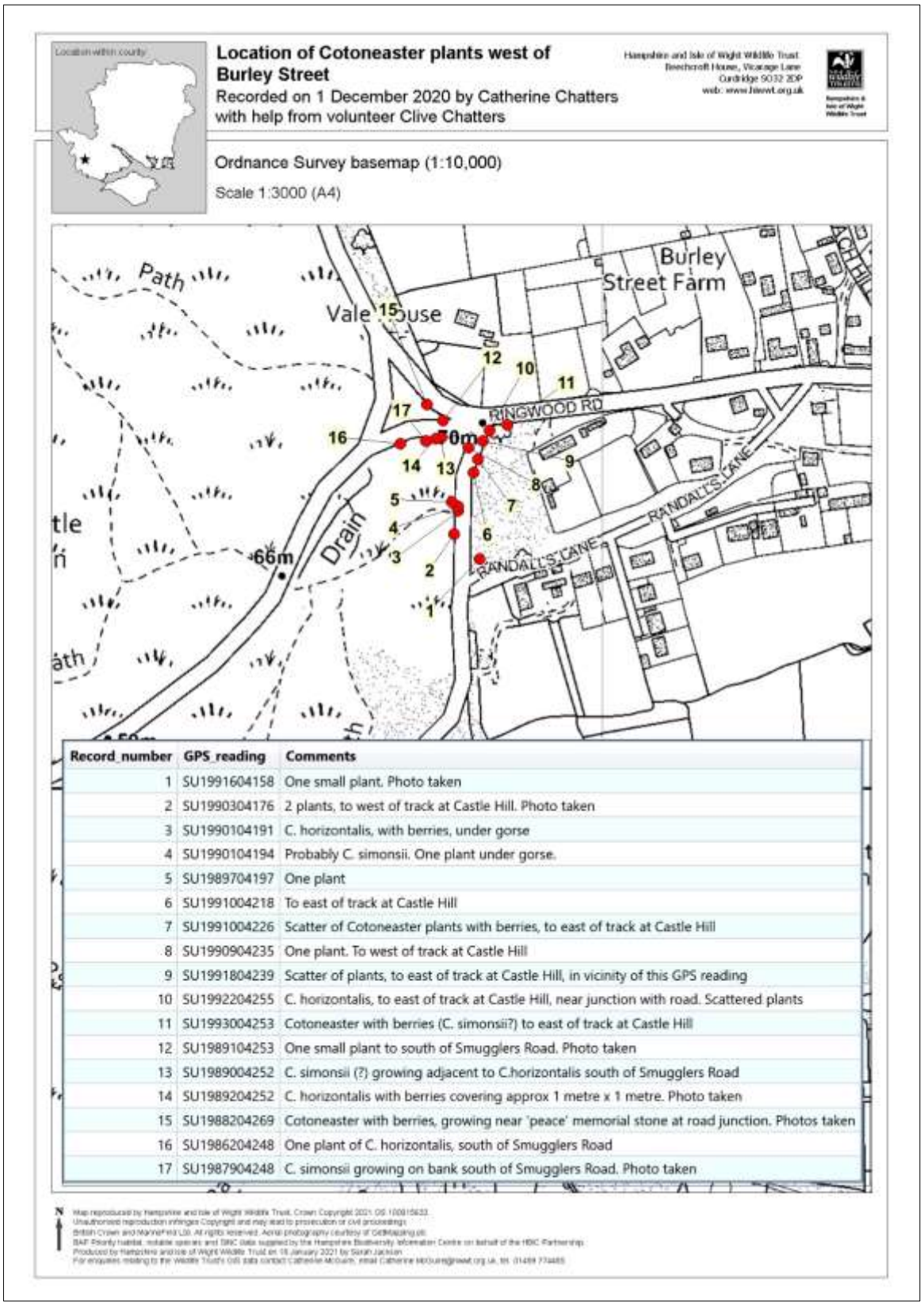
Figure 114: Cotoneaster recorded at SU 19839 04263 in vicinity of road junction

Figure 115: Cotoneaster recorded at SU 19841 04262 in vicinity of road junction

Figure 116: Cotoneaster recorded at SU 19201 05878

Figure 117: Cotoneaster recorded at SU 19201 05878

Joanne Gore alerted the Project Officer to further Cotoneaster plants growing to the west of Burley Street. The Project Officer returned to the area with volunteer Clive Chatters on 1 December 2020 and recorded Cotoneaster at the locations shown on the map at Figure 118. Examples of the Cotoneaster recorded on 1 December 2020 are shown at Figure 119 and Figure 120.



Record_number	GPS_reading	Comments
1	SU1991604158	One small plant. Photo taken
2	SU1990304176	2 plants, to west of track at Castle Hill. Photo taken
3	SU1990104191	C. horizontalis, with berries, under gorse
4	SU1990104194	Probably C. simonsii. One plant under gorse.
5	SU1989704197	One plant
6	SU1991004218	To east of track at Castle Hill
7	SU1991004226	Scatter of Cotoneaster plants with berries, to east of track at Castle Hill
8	SU1990904235	One plant. To west of track at Castle Hill
9	SU1991804239	Scatter of plants, to east of track at Castle Hill, in vicinity of this GPS reading
10	SU1992204255	C. horizontalis, to east of track at Castle Hill, near junction with road. Scattered plants
11	SU1993004253	Cotoneaster with berries (C. simonsii?) to east of track at Castle Hill
12	SU1989104253	One small plant to south of Smugglers Road. Photo taken
13	SU1989004252	C. simonsii (?) growing adjacent to C.horizontalis south of Smugglers Road
14	SU1989204252	C. horizontalis with berries covering approx 1 metre x 1 metre. Photo taken
15	SU1988204269	Cotoneaster with berries, growing near 'peace' memorial stone at road junction. Photos taken
16	SU1986204248	One plant of C. horizontalis, south of Smugglers Road
17	SU1987904248	C. simonsii growing on bank south of Smugglers Road. Photo taken

Figure 118: Cotoneaster recorded west of Burley Street on 1 December 2020

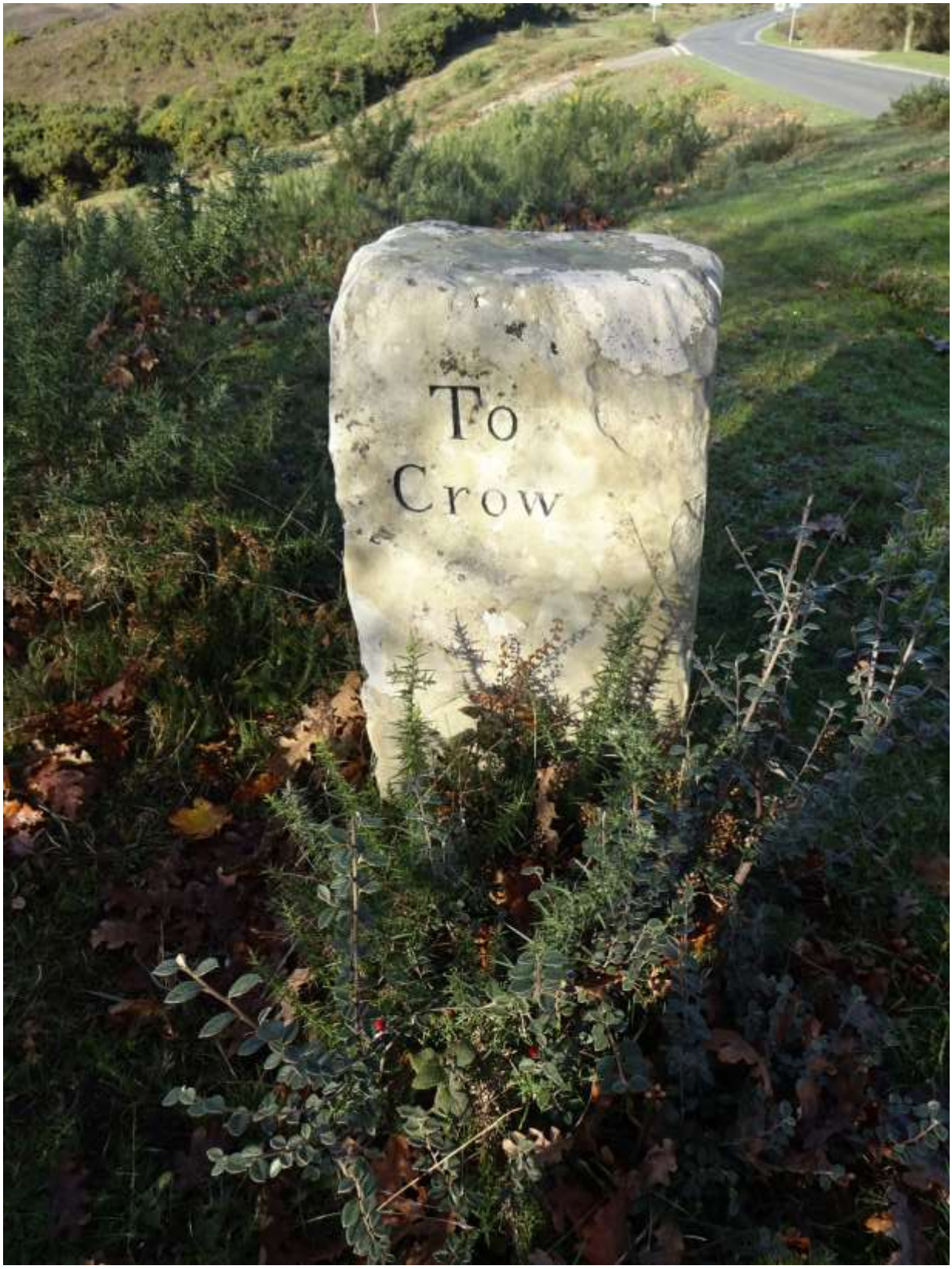


Figure 119: Cotoneaster recorded by stone at SU 19882 04269 on 1 December 2020

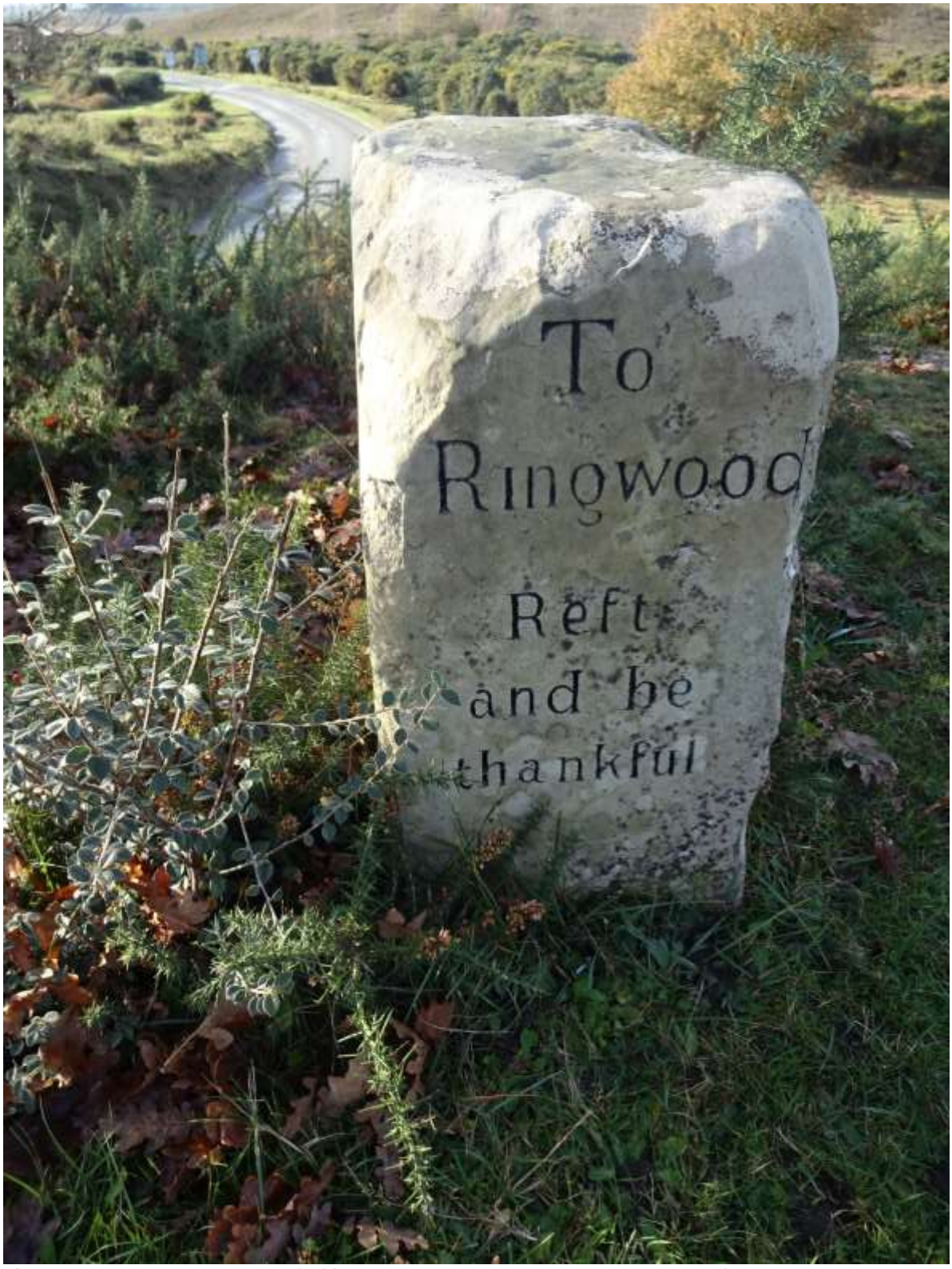


Figure 120: Cotoneaster recorded by stone at SU 19882 04269 on 1 December 2020

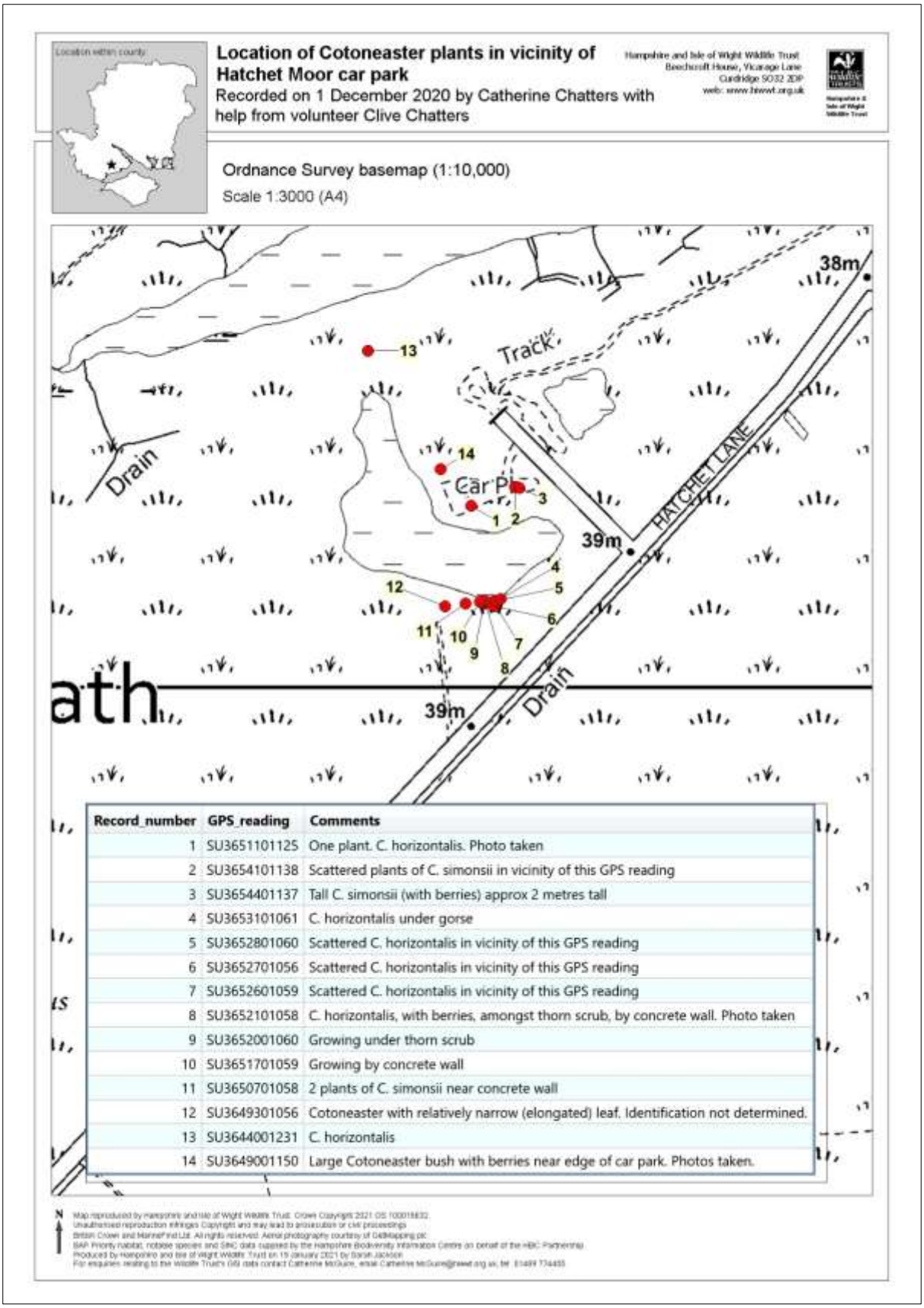
15.9. Cotoneaster in vicinity of Hatchet Moor car park (SU 264 011)

The Project Officer was alerted by her colleague Joanne Gore to a large Cotoneaster bush growing in the vicinity of Hatchet Moor car park. The Project Officer surveyed the area on 1 December 2020 with volunteer Clive Chatters and located the plant at SU 26490 01150 as shown in the photograph at Figure 121.

Other Cotoneaster plants, mainly *Cotoneaster horizontalis* and *Cotoneaster simonsii*, were recorded in the vicinity of the pond.

The plants recorded at this location are shown on the map at Figure 122.

Figure 121: The Project Officer standing by Cotoneaster bush at SU 26490 01150, photographed by Clive Chatters on 1 December 2020.



Record_number	GPS_reading	Comments
1	SU3651101125	One plant. C. horizontalis. Photo taken
2	SU3654101138	Scattered plants of C. simonsii in vicinity of this GPS reading
3	SU3654401137	Tall C. simonsii (with berries) approx 2 metres tall
4	SU3653101061	C. horizontalis under gorse
5	SU3652801060	Scattered C. horizontalis in vicinity of this GPS reading
6	SU3652701056	Scattered C. horizontalis in vicinity of this GPS reading
7	SU3652601059	Scattered C. horizontalis in vicinity of this GPS reading
8	SU3652101058	C. horizontalis, with berries, amongst thorn scrub, by concrete wall. Photo taken
9	SU3652001060	Growing under thorn scrub
10	SU3651701059	Growing by concrete wall
11	SU3650701058	2 plants of C. simonsii near concrete wall
12	SU3649301056	Cotoneaster with relatively narrow (elongated) leaf. Identification not determined.
13	SU3644001231	C. horizontalis
14	SU3649001150	Large Cotoneaster bush with berries near edge of car park. Photos taken.

Figure 122: Map showing Cotoneaster recorded on 1 December 2020

15.10. Cotoneaster recorded at Sway (SZ 283 987)

The Project Officer was alerted by her colleague Joanne Gore to Cotoneaster growing at Sway and located the plant on 16 December 2020 at SZ 28390 98793 growing near the road on the Open Forest in the vicinity of the playing field as shown in the photographs at Figure 123, Figure 124 and Figure 125.

Figure 123: Cotoneaster recorded at Sway at SZ 28390 98792 on 16 December

Figure 124: Cotoneaster recorded at Sway at SZ 28390 98792 on 16 December

Figure 125: Cotoneaster recorded at Sway at SZ 28390 98792 on 16 December

15.11. Cotoneaster recorded in vicinity of Woodlands Road (SU 320 113 / SU 326 109)

Whilst walking along Woodlands Road on 20 December 2020 the Project Officer recorded Cotoneaster growing at three locations as shown on the map at Figure 126.

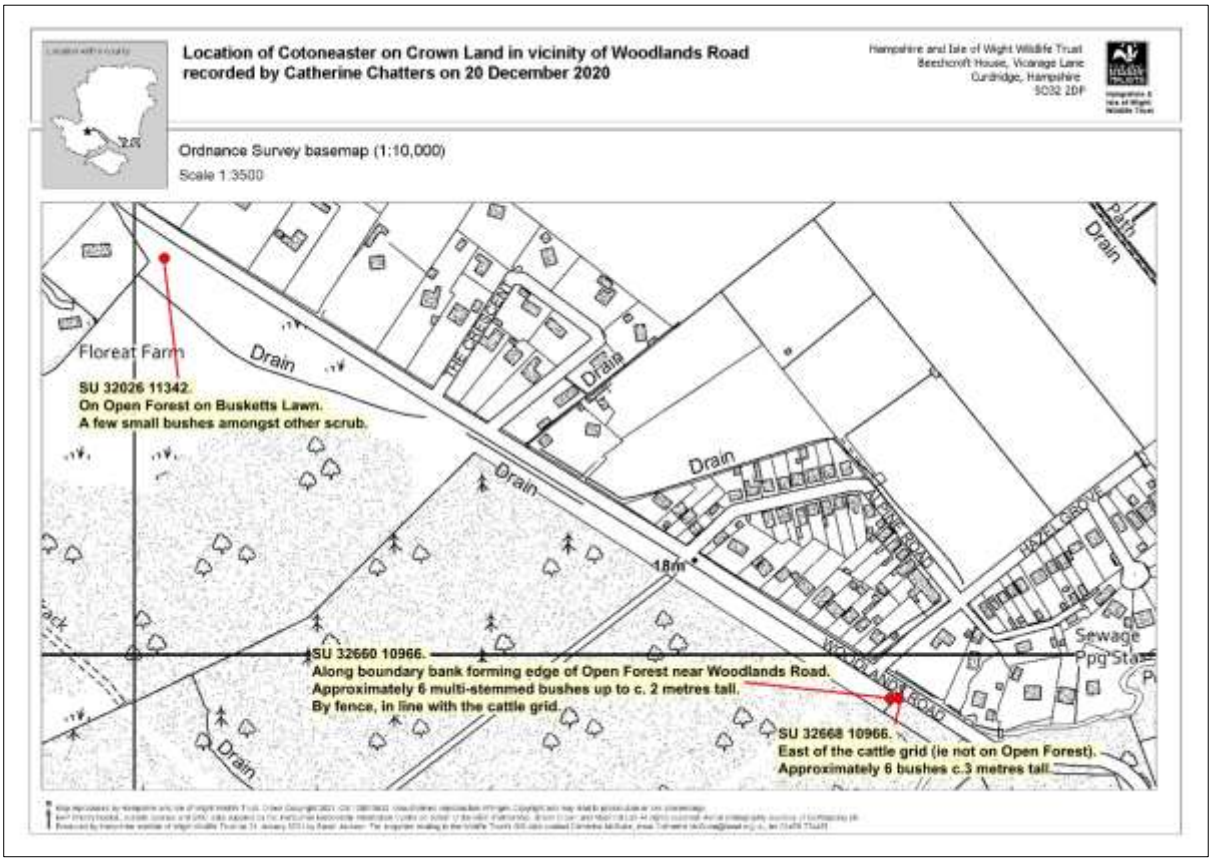


Figure 126: Cotoneaster recorded in vicinity of Woodlands Road on 20 December 2020

A few small Cotoneaster bushes were recorded on the Open Forest at SU 32026 11342 growing amongst scrub, as shown on the photographs at Figure 127 and Figure 128.

At SU 32660 10966, near the cattle grid, approximately 6 multi-stemmed Cotoneaster plants up to approximately 2 metres tall were recorded growing by the fence along the earth bank which forms the boundary of the Open Forest. A photograph taken at this location is shown at Figure 129.

East of the cattle grid (not on the Open Forest) approximately 6 Cotoneaster bushes approximately 3 metres tall were recorded at SU 32668 10966. A photograph taken at this location is shown at Figure 130.

Figure 127: Cotoneaster recorded on the Open Forest at SU 32026 11342 on 20 December 2020

Figure 128: Cotoneaster recorded on the Open Forest at SU 32026 11342 on 20 December 2020

Figure 129: Cotoneaster recorded on boundary bank at SU 32660 10966 on 20 December 2020

Figure 130: Cotoneaster recorded east of the cattle grid at SU 32668 10966 on 20 December 2020

16. WORK TO BE UNDERTAKEN IN 2021

16.1. Sites where work is to be undertaken to control Cotoneaster in 2021

The NFNNPP will commission contractors to undertake work to control Cotoneaster at the following locations during 2021:

- East Boldre
- Beaulieu Heath
- Stoney Cross
- Lyndhurst (in vicinity of the A35)
- Greenmoor
- Crockford
- road-side banks near Slufters
- Open Forest near Bramble Hill Hotel
- along track to west of Latchmoor Pond
- locations west of Burley Street surveyed on 21 October 2021
- car park at Hatchet Pond

16.2. Sites to be surveyed in Autumn 2021

Local resident and commoner Lyndsey Stride alerted the Project Officer to Cotoneaster growing on Pilmore Gate Heath and at Acres Down. The Project Officer intends to survey the Cotoneaster at these locations during Autumn 2021.

16.3. Sites to be monitored in Autumn / Winter 2021

The NFNNPP intends to monitor the following sites where work is due to be undertaken in 2021:

- East Boldre
- Beaulieu Heath
- Stoney Cross
- Lyndhurst (in vicinity of the A35)
- Greenmoor
- Crockford
- road-side banks near Slufters
- Open Forest near Bramble Hill Hotel
- along track to west of Latchmoor Pond
- locations west of Burley Street surveyed on 21 October 2021
- car park at Hatchet Pond

17. THE FUTURE

17.1. Sites where work is required to control Cotoneaster beyond 2021

The NFNNPP recommends that funding be secured to commission further control of Cotoneaster, as required, at those sites where control work is due to be undertaken during 2021.

The NFNNPP also recommends that funding be secured to commission control of Cotoneaster at the following sites:

- Lyndhurst, in vicinity of Beaulieu Road, surveyed by NFNNPP on 16 October 2020;
- land to the south east of Beaulieu Road Station, surveyed by NFNNPP on 16 October 2020;
- in vicinity of Setley Pond, surveyed by NFNNPP on 5 November 2020;
- Setley Plain, surveyed by NFNNPP on 5 November 2020;
- in vicinity of the road to the west of Marlpit Oak, surveyed by NFNNPP on 5 November 2020;
- locations west of Burley Street, surveyed by NFNNPP on 1 December 2020;
- in vicinity of Hatchet Moor car park, surveyed by NFNNPP on 1 December 2020;
- location at Sway, surveyed by NFNNPP on 16 December 2020;
- three locations in vicinity of Woodlands Road, surveyed by NFNNPP on 20 December 2020.

18. ACKNOWLEDGEMENTS

Hampshire and Isle of Wight Wildlife Trust is very grateful for support from the following organisations involved with the control of Cotoneaster in the New Forest

The New Forest Non-Native Plants Project wishes to acknowledge the co-operation of Natural England and the Forestry Commission / Forestry England.

The New Forest Non-Native Plants Officer acknowledges the help given by the volunteers who have generously given their time to enthusiastically survey and monitor Cotoneaster on behalf of The New Forest Non-Native Plants Project:

- Clive Chatters
- Dr Richard Hughes
- Lisa Malter
- Dr David Smart
- Dr Cynthia Swann
- Megan Woolley

The Project Officer is grateful to Alison Bolton for alerting the NFNNPP to the presence of Cotoneaster at a number of sites in the New Forest and for helping with surveys at Greenmoor and Crockford. Thank you to Lyndsey Stride for alerting the Project Officer to Cotoneaster at Pilmore Gate Heath and at Acres Down.

Grateful thanks to Eric Clement, John Norton, Martin Rand and Mike Rowe for help with identifying the Cotoneaster species at Beaulieu Heath and East Boldre on 14 December 2015.

Thanks to Chris Woodall, Assistant Country Park Warden, Environment, Roads & Facilities, Conwy County Borough Council for providing detailed information relating to control of Cotoneaster at Great Orme Country Park by Conwy Council.

Thank you to Matthew Cheetham and his colleagues at Southern Counties Forestry Ltd for undertaking control of Cotoneaster on behalf of the NFNNPP.

Thanks to Alan Martin of Nature Conservation Services and Lucy Andrews of the Forestry Commission (now Forestry England) for their involvement in the Tree Popper trial on 18 November 2016.

Thanks to those people who have agreed to their photographs being reproduced in this report. The name of the relevant photographer or the source of the photograph is acknowledged beneath each picture. All other photographs have been taken by Catherine Chatters (New Forest Non-Native Plants Officer).

The NFNNPP is grateful to Lawrence Shaw of the New Forest National Park Authority for providing the LiDAR image of Beaulieu Heath.

Thanks to Clive Chatters (Hampshire and Isle of Wight Wildlife Trust) for proof-reading this report and thanks to Catherine McGuire and her colleagues (Hampshire & Isle of Wight Wildlife Trust) for preparing the maps used in this report.

19. REFERENCES

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APPENDICES

Appendix 1

NEW FOREST NON-NATIVE PLANTS PROJECT
TREE POPPER TRIAL TO PULL UP COTONEASTER PLANTS
AT STONEY CROSS, IN THE NEW FOREST, ON FRIDAY 18 NOVEMBER 2016

During the Great Britain Non-Native Species Secretariat (GBNNSS) workshop at Preston Montford in January 2016 Catherine Chatters, New Forest Non-Native Plants Officer, gave a presentation on Cotoneaster species which are invading former airfields in the New Forest. Alan Martin of Nature Conservation Services attended the workshop and kindly offered to come to the New Forest to trial the use of Tree Poppers on Wall Cotoneaster *Cotoneaster horizontalis* which is listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended); it is therefore unlawful to plant it in the wild or otherwise cause it to grow in the wild.

On 9 November 2016 Catherine held a site visit with representatives of the Forestry Commission (Sonia Lorenzo-Martin, Andy Page, Lucy Andrews and Sandy Shore) to select a suitable site for the trial. A site near the entrance to Ocknell campsite was chosen as this contained a number of *Cotoneaster horizontalis* plants of different sizes and was easily accessible.

It was originally agreed that the pulled-up plants would be burnt on concrete nearby, to avoid the risk of spreading the Cotoneaster if berries fell off the plants whilst being transported to a disposal site. However, after careful consideration, Catherine took the decision not to have a fire but to cut up the pulled-up plants and put them in large sacks, for removal in a vehicle, to avoid the risk of spreading the Cotoneaster.

Alan Martin, Nature Conservation Services, with a range of different sized Tree Poppers at Stoney Cross on 18 November 2016

Information from Tree Popper promotional leaflet

Tree Poppers are described as ‘a robust, uncomplicated tool that can be handled by one person. **Attach** to base of stem, lever, **pop** and **drop** unwanted vegetation, **roots and all**’.

Tree Poppers are available in different sizes:-

Large	1440 x 350 x 100mm (+/- 9kg) Removes stem diameters from 5mm – 50mm
Small	1100 x 250 x 100mm (+/- 7kg) Removes stem diameters from 5mm – 30mm
Mini	950 x 150 x 100mm (+/- 3kg) Removes stem diameters from 5mm – 20mm

Cotoneaster stem gripped by the Tree Popper

Base of the Tree Popper showing the part which grips the stem

Alan demonstrated the Tree Poppers on a variety of different-sized plants of *Cotoneaster horizontalis*. In the majority of cases the largest Tree Popper was required; this was because a) the main stem was relatively large or b) the bushes were formed of a number of relatively small stems which needed to be pulled out of the ground as a 'bunch' of stems.

Alan Martin pulling up an isolated, relatively small Cotoneaster plant

Cotoneaster plant pulled-up using a Tree Popper

Alan Martin with Lucy Andrews (FC) using the largest Tree Popper

Lucy Andrews using large Tree Popper

Tree Popper attached to base of stem

Tree Popper pulling out the Cotoneaster bush

Alan using a mattock to release the roots after the plant had been loosened by the Tree Popper. A saw was also used to remove some of the roots.

Many of the Cotoneaster plants at the trial site were growing amongst gorse. This is typical of Cotoneaster in the New Forest where many plants grow amongst prickly scrub such as brambles and roses.

Using the large Tree Popper on a small Cotoneaster bush

Disturbance of the ground resulted in bare soil being exposed which could exacerbate the problem by encouraging germination of Cotoneaster seeds.

Cotoneaster plants were removed from a number of locations within the trial site. GPS readings were taken at the following locations:

Grid reference	**Notes**
SU 25278 12002	Mattock used to loosen the roots
SU 25278 12001	Large Tree Popper used
SU 25281 11997	Large Tree Popper and saw used
SU 25280 11992	
SU 25282 11992	
SU 25286 11991	Cotoneaster growing amongst gorse
SU 25286 11989	Large root removed
SU 25270 11983	Cotoneaster removed from bank / ditch, resulting in exposure of bare soil

General view of the trial site at Stoney Cross

After using the Tree Popper on a number of Cotoneaster bushes, the relative merits of Tree Poppers and herbicide treatment were considered.

- An advantage of using a Tree Popper is that work can be undertaken in the autumn/winter when the berries and red foliage enable the Cotoneaster plants to be easily seen. It is much more difficult to recognise and locate Cotoneaster plants during the summer when herbicide treatment is undertaken and this can result in a significant number of plants being missed.

- Tree Poppers can be used by volunteers, although it was recognised that the large Tree Popper would be heavy to carry long distances.

- Although the Tree Popper did not cause much ground disturbance when removing relatively small Cotoneaster plants (and the turf could easily be stamped back into place), significant ground disturbance was caused when the Tree Popper was used to remove larger Cotoneaster bushes. The resulting bare ground would presumably provide ideal conditions for Cotoneaster seeds to germinate.

- Some of the Cotoneaster plants were very small and it would not be possible to remove these using a Tree Popper.

- A disadvantage of using Tree Poppers is that consideration needs to be given to disposal of the pulled-up plants. These would need to be burnt on site or removed from site for disposal. Care would need to be taken to ensure berries were not distributed during transport.

- A significant advantage of herbicide treatment is the relative speed of application, compared to the use of Tree Poppers.

It was agreed that herbicide treatment would be more appropriate than Tree Poppers to control Cotoneaster in the New Forest.

It was noted that care would need to be taken, if using herbicide, to minimise impact on surrounding non-target vegetation.

Alan demonstrated the stem boring and injection technique to apply herbicide to Cotoneaster.

During 2016 herbicide treatment using a knapsack sprayer had been used to control Cotoneaster in the vicinity of the former airfields. The NFNNPP are satisfied that this has not resulted in harm to the surrounding vegetation and it was agreed that this technique should continue to be used to control Cotoneaster in the New Forest.

Tree Popper	Advantage	Disadvantage
	Can be used in autumn / winter when plants have berries / red foliage and are easily located	Pulled-up plants need to be disposed of
	Can be used by volunteers	Large Tree Popper is heavy and difficult to carry over long distances
		Removal of large patches of Cotoneaster can result in exposure of bare soil, thus encouraging seed germination
		Not possible to remove very small plants with Tree Popper
		Use of Tree Poppers on Cotoneasters at the trial site was a slow process due to a) plants being prostrate, b) plants being multi-stemmed and c) plants growing amongst prickly vegetation eg gorse, brambles, roses
Herbicide	Relatively quick to apply	Needs to be undertaken at a time of year when Cotoneaster plants are more difficult to recognise (due to lack of berries and red foliage)
	No need to dispose of vegetation; treated plants are left to die *in situ*	

Alan demonstrated the stem boring and injection technique to apply herbicide to the Cotoneaster stem, as an alternative to foliar herbicide application

The New Forest Non-Native Plants Project (NFNNPP) is very grateful to Alan Martin of Nature Conservation Services for coming to the New Forest, free of charge, to demonstrate the Tree Poppers on Cotoneaster.

The NFNNPP is grateful to the Forestry Commission for allowing the trial to be undertaken.

The NFNNPP is grateful to Cynthia Swann, who volunteered with the Project Officer during autumn 2016 to record the distribution of Cotoneaster at Stoney Cross in the vicinity of the former World War II airfield.

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The New Forest Non-Native Plants Project is a partnership project hosted by Hampshire & Isle of Wight Wildlife Trust.

This Tree Popper trial has been undertaken on the Crown Land of the Open Forest through the New Forest Higher Level Stewardship scheme.

Appendix 2

Note for File **15.35.140**

Site visit on 14 September 2016 to locate Cotoneaster growing near Slufters where the road passes under the A31

Bob Chapman had alerted me to the presence of Cotoneaster growing near the road where it passes under the A31 near Slufters. I visited on 14 September 2016 and parked in Bratley View car park.

The majority of the Cotoneaster plants are growing on the east side of the road; one plant is growing on the west side of the road.

I took GPS readings as follows:-

<u>Cotoneaster growing on west side of the road</u>

- One bush growing near the crash barrier at SU 23486 09786

<u>Cotoneaster growing on east side of the road</u>

- Large, tall bush at SU 23449 09816, at centre of a patch of Cotoneaster extending from SU 23452 09815 to SE 23444 09825 for a distance of approximately 12 paces
- Isolated plant at SU 23444 09813
- Isolated plant at SU 23445 09811

- To the east of the crash barrier, a large patch of Cotoneaster at SU 23481 09800 approximately 3 paces x 2 paces
- Isolated plant higher up the slope at SU 23479 09804
- Isolated plants higher up the slope at SU 23478 09803, for a distance of approximately 3 paces, partly under gorse, brambles and bracken.

- Isolated plant at SU 23486 09801
- Isolated plant at SU 23484 09801

- Plant by crash barrier at SU 23486 09796 covering an area approximately 2 paces long

- Plant by crash barrier at SU 23489 09796 covering a distance of approximately 4 paces to SU 23490 09793

I took two photographs – these are shown on the following page.

/Cont….

Cotoneaster growing on the east side of the road at SU 23449 09816
(looking south towards the A31)

Close-up of Cotoneaster growing on the east side of the road at SU 23449 09816

Catherine Chatters
New Forest Non-Native Plants Officer
HIWWT
14 September 2016

Appendix 3

Photographs of volunteers who have kindly helped the Project Officer to survey and monitor Cotoneaster in the New Forest since 2015

Photograph i: Cynthia Swann at Beaulieu Heath on 28 October 2019

Photograph ii: Richard Hughes and Megan Woolley at Beaulieu Heath on 24 November 2016

Photograph iii: Lisa Malter monitoring Cotoneaster at Beaulieu Heath on 18 December 2017

Photograph iv: David Smart monitoring treated Cotoneaster at Stoney Cross on 22 October 2018

Photograph v: David Smart monitoring Cotoneaster at Stoney Cross on 22 October 2020

Photograph vi: Clive Chatters monitoring Cotoneaster at Stoney Cross on 27 October 2019