Carpobrotus spp. distribution on Alderney

Surveying and practical management report 2021

Report compiled by: Ellen Smith

Reviewed by: Roland Gauvain and Lindsay Pyne

December 2021

Alderney Wildlife Trust
48 Victoria Street
Alderney, GY9 3TA
Channel Islands
conservation@alderneywildlife.org
www.alderneywildlife.org

Executive Summary

Sour Fig, *carpobrotus* spp, poses a significant threat to the ecological, social and economic health of the coastal areas of Alderney. It rapidly forms dense, impenetrable mats across many habitats, including the coastal grasslands and cliffs unique to Alderney. This growth excludes nearly all other native plants, leading to widespread loss of local plant species such as Thrift and Sea Beet. Sour Fig growth can also lead to enhanced coastal erosion due to dune and cliff collapse which can occur once the plant is well established. In the context of increased extreme weather and rising sea levels as a result of climate change (GOVUK, 2021), and due to the low-lying areas found along Alderney's coastline, the negative impacts of Sour Fig growth leave the island vulnerable to extreme flooding events.

To enhance our understanding of this invasive plant, and increase our resilience to these threats, the Alderney Wildlife Trust (AWT) has undertaken an island-wide survey of Sour Fig. Results show significant expansion of the plant since the previous survey conducted in 2012, and can now be found across large areas of the coast, specifically the eastern beaches and southern cliffs. Also included in the scope of this report is the practical management which has been conducted up to date, as well as recommendations for future priority sites and public engagement with the issue. A large number of organisations and individuals have already participated in the removal of Sour Fig, bringing multidimensional benefits to the island. This has received positive media coverage on local and national platforms.

Through responding to this threat in a way which considers the social, economic and environmental impacts, as well as developing community engagement, this project has the potential to showcase Alderney's responsiveness to environmental issues.

Contents

Introduction

Sour Fig is a highly invasive species which is now widely distributed across the coastal areas of Alderney. First reported by Ounsted in 1954, it was introduced as an ornamental plant, but changing climatic conditions have meant it has established itself across many habitats and environments. It is able to spread easily and new patches can form from small pieces of stem moved by rabbits, birds and the wind. Many people are also attracted to the plant, and so take cuttings, further distributing the plant around the island. It's spread poses ecological, social and economic threats to Alderney. Many areas, such as Guernsey, are already undertaking significant action to control the spread of Sour Fig.

Ecological

It's ability to thrive in a wide variety of habitats (including dunes, rocky cliffs and grassland) allows the plant to quickly outcompete other ecologically important plant species, such as marram grass and many wildflower species. Through physical dominance and as a result of its ability to modify soil properties, Sour Fig can significantly alter the islands coastal ecology, threatening numerous native species. This includes specialities of the southern cliffs such as Prostrate Broom and Greater Broomrape.

N.B. For the purpose of the report, we refer to all sub-species of *carpobrotus* as Sour Fig, C*arpobrotus edulis,* as this is the most commonly used term. This includes Sally-my-handsome, C*arpobrotus acinaciformis* which has smaller leaves and flowers and Angular Sea Fig, C*arpobrotus glaucescens* which can be distinguished by a white or yellow base to the pink petals. Both of these species have been recorded around Alderney, and have similar ecological impacts to Sour Fig.

Social/ economic

Many of the island's visitors and local people come to see the rich wildlife which can be found on Alderney. Sour Fig encroachment poses a threat to this industry as a result of the negative ecological impacts. The tourism sector is highly reliant on the unique coastal areas to Alderney, especially during the spring and summer months. Many wildflower species, such as Sheep's-bit and Thrift which are characteristic of Alderney's coastal grasslands, and are an important natural resource for the island, are at risk from encroaching Sour Fig.

Its tendency to outcompete Marram grass could also lead to significant social impacts. Marram grass stabilises dunes, whereas Sour Fig is prone to collapse, leaving the dunes vulnerable to erosion. Areas of the island such as Saye bay and campsite are reliant on the dunes for protection from flooding (ARUP, 2016) and so their loss would leave many areas vulnerable to extreme weather and rising sea levels. This is likely to have a detrimental impact on the economy of the island in the short and long-term.

The AWT has invested significant effort into enhancing our understanding of its current distribution and through practical management, which is included in the scope of this report.

Figure 1: Volunteers pulling Sour Fig from the dunes on Saye bay which has experienced rapid Sour Fig growth in the last decade (AWT, 2019).

Figure 2: Map to show areas of Alderney susceptible to flooding from sea level rise. Areas along the eastern beaches such as Saye are also concentrations of Sour Fig. Source: ARUP, 2017.

Current distribution

A major push was made in 2021 to map the entire island for Sour Fig. Using the field-based GIS software *ARCGIS Fieldmaps*, the distribution of the plant could be mapped accurately using the geolocated technology to outline distribution. This was cross-referenced with satellite data on the GIS desktop system. Sour Fig has a distinctive green/brown tone which can be identified from this imagery. This was particularly useful in areas which were difficult to access, such as steep cliff and rocky habitats. Several areas which were mapped using satellite data were also ground-truthed to establish the accuracy of this method of mapping. It was established that this was a valid method of identifying areas where Sour Fig was present, but not as accurate for absence data. This was likely due to the satellite data being from 2019; many areas will have spread further over the last two years. There are also several expanses where Sour Fig is growing underneath other vegetation such as Marram grass and bramble which were not possible to identify on satellite imagery. To overcome this issue and for complete accuracy, the whole island could be ground-truthed in detail, however given time constraints and access difficulties, this was not possible. Lastly, the areas on sloping land and near vertical cliff faces were not accounted for accurately. For these reasons, we suggest that this data is likely an underestimation of the true figure by up to 20%.

Figure 3: A map to show the overall distribution of Sour Fig on Alderney (shown in pink). It is evident that the plant can be found widely across the coastal areas.

Figure 4: Areas of high density growth (70-100% coverage of total area) are shown in red and areas of lower density (40-70%) are shown in green. This survey method was selected to allow for representation of areas which comprised patches of high density growth too small to map individually.

Comparison with 2012 survey

The only study of Sour Fig distribution on Alderney was conducted in 2012 by a university student. Results from this survey showed a total of 206 patches of Sour Fig present, with high concentrations along the south cliffs and at the eastern end of the island (Cox, 2012). Whilst this was a time limited survey, the results of the 2021 surveys are significantly higher; over 831 patches were found. High concentrations could also be found on the western ends of the island and is seen to be extending around the entire coast of the island. The accuracy of the 2012 survey was time and resource limited, however it can still be concluded that there is now a far larger area where Sour Fig is present.

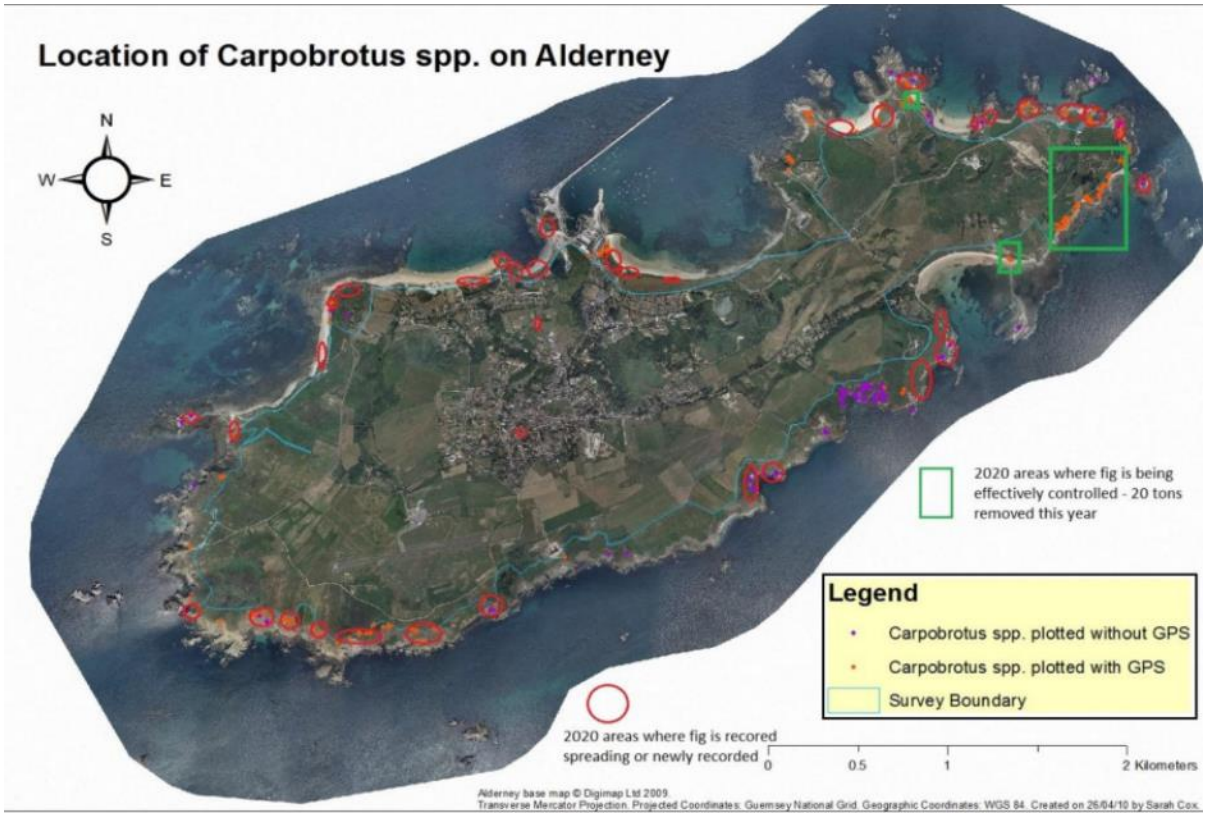

Figure 5: Results from the 2012 survey of carpobrotus on Alderney, with anecdotal evidence from 2020 circled in red. Source: Cox, 2012

Future study

The data collected in 2021 will act as a baseline from which further surveys in future years can be compared. This will allow an understanding of the spread of Sour Fig, as well as the success of removal efforts.

Practical management

Once an invasive species is detected, the most efficient method of dealing with it is through immediate eradication, preventing further spread. It is also worth noting that the longer the plant is left to establish, the greater the cost in time and resources required to clear. Up to date, Sour Fig has predominantly been removed by volunteer groups, through 'pulling', ensuring as much of the root system as possible is removed. It is vital to clear the entire plant, otherwise the ground underneath will take far longer to recover, if at all. Once removed, the plant is bagged up and placed in a skip, and taken to the impot for drying and burning. This is also the same method employed by the Guernsey based environmental organisation La Société Guernesiaise, which has made a major push for removal of the plant in recent years (La Société, 2017). Currently this is the most viable option, however investigation into alternative methods should be made.

In the last year (December 2020- December 2021), 1268 bags on Sour Fig has been pulled from across Alderney. This equates to 8203kg of the plant, which has been dried and burnt in the impot. The success of pulling Sour Fig is widely documented, and sites on the island which have been cleared in previous years have been predominantly kept clear. Recovery of many native species (Figure 5) is also evident in many areas.

Figure 6: Before (right) and after (left) Sour Fig removal. Saye Bay, 2021.

Figure 7: Evidence of recolonization of native plants after removal of Sour Fig; Sea Beet (left) and Rock Samphire (right). Source: Cox, 2012.

Priority Locations for Removal

Priority locations were determined using the following factors:

Accessibility

Much of Alderney's coastline is comprised of steep cliff edges and rocky outcrops. As the work is done by volunteers, it was vital that only areas which passed Risk Assessment were selected.

Potential ecological impacts

Areas of ecological importance which were threatened by Sour Fig encroachment were prioritised. This includes species-rich areas and Marram grass dunes.

Highest impact potential

Areas with pioneering plants which are encroaching into new habitats and could be easily removed and prevent spread should be targeted.

Time scale

Given the time pressures due to the rapid expansion of Sour Fig, as well as limited resources, it is recommended that only areas which meet the above criteria are targeted. Figures 5 and 6 map potential target sites for removal efforts in 2022.

Figure 8: Areas around Saye are easily accessible and Sour Fig poses significant ecological and social threat.

Figure 9: Large areas of species-rich grassland are threatened by Sour Fig around Fort Albert

Public engagement

Collaborating with other organisations and individuals has been a vital element of Sour Fig control on Alderney. For example, a large group of the Guernsey Conservation Volunteers came across for a removal day in 2021. Local school children have also assisted with the project as part of their Duke of Edinburgh awards. These events have received positive coverage from many media outlets including the BBC and local press. In this way, Sour Fig has acted as a flagship species and raised awareness of invasive species across the island.

Moving into 2022, we aim to upscale our efforts to engage local people in this cause. We will continue to work with the Guernsey Conservation Volunteers and St. Anne's School, but will also look to make connections with Alderney Mind and Guernsey Public Health. We simultaneously aim to beat our clearance level in 2021, bringing in multi-level benefits to the island community and environment.

Recommendations for Sour Fig control in 2022

Due to the severity of the threat posed by this invasive plant, we are upscaling our efforts to deal with it's spread through collaboration with various organisations. The following recommendations for successful delivery are made:

Recommendation 1: Engagement with the Agricultural Department for the States of Alderney to discuss opportunities for collaboration to address the issue. This has already been started in late 2021, but should be further progressed in the coming months.

Recommendation 2: As an invasive plant which poses a major threat to the ecology of Alderney, we recommend that the SoA formally recognise it as a pest species.

Recommendation 3: That the GSc within the invasive non-native species (INNS) Policy, identify Sour Fig as a species which should not be transplanted or propagated in the island in order to prevent further spread. The policy should also be publicised by the SoA to ensure wide-scale engagement with the issue.

Recommendation 4: To support these proposals, we propose a joint media campaign to raise the issue on local and national platforms.

States of Alderney and AWT Objectives

Removal of Sour Fig can assist in achieving many of the SoA Alderney Objectives which underpin the Island Plan and can support the Green and Blue economies which promote sustainability and climate change issues (Blue Island Charter, 2021; States of Alderney Island Plan 2021; AWT Business Plan, 2021).

SoA Objectives	***AWT Objectives***	**Sour Fig removal project**
We strive to help and improve the environment and community where we work and live. Put in place a relevant manageable biodiversity conservation strategy.	*For the benefit of the public, to advance, promote and further the conservation* *maintenance and protection of:* *i) terrestrial and marine wildlife and associated habitats;* *ii) places of natural beauty;* *iii) places of zoological, botanical, geographical, archaeological or scientific interest;* *iv) features of landscape with geological, physiographical, or amenity value, in particular* *but not exclusively in ways that further biodiversity.*	Controlling the spread of Sour Fig ensures the diverse species which live in coastal habitats, such as Oxeye Daisy and Thrift are able to survive. These species are of ecological, natural beauty and scientific interest.
Develop on-island strategies and practices related to the island's resources to support the transferred services in Health and Social Care.	*To advance the education of the public, especially the young, to the importance of* *Alderney's wildlife, within both a local and an international context.*	Large numbers of volunteers have engaged with Sour Fig control, including Duke of Edinburgh Groups. During these sessions, they were also able to learn more about the wider wildlife found on Alderney. Practical conservation work is reported to have many positive effects on mental and physical health (GOVUK, 2020).
Develop the Clean and Green economies. (Green refers to a world in which natural resources, including oceans, land, and forests, are sustainably managed and conserved to	*To advance the education of the public, especially the young, to:* *i) the principles and practice of sustainable development* *ii) the principles and practice of biodiversity conservation*	Using our social media platforms, we have been able to share the work we have done on Sour Fig with the wider community. It has also received a significant amount of positive media coverage including BBC reports.

improve livelihoods and ensure food security.		
Develop Alderney as a test bed for 'Clean/Green' based initiatives whilst conserving its unique character.	*To promote research in all branches of nature study and to publish the useful results thereof.*	Little is known about the spread of Sour Fig on Alderney and across the UK. This report aims to contribute towards the wider understanding of this invasive plant.

Reference List

Alderney Wildlife Trust Business Plan, 2020. https://www.alderneywildlife.org/sites/default/files/2020-11/AWT%20Business%20Plan%202020.pdf

Blue Island Charter, 2019. http://www.alderney.gov.gg/article/176960/Blue-Island-Charter

Cox, S. 2012. Study of Carpobrotus. Spp on Alderney.

GOVUK, 2021. Government response to Climate Change Committee

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026631/gov-response-ccc-progress-report.pdf

La Société, 2017. Funding Request- Hottentot Fig Removal Proposal.

Ounsted, J. 1954. Notes on the flora of Alderney. In: proceedings of the Botanical Society of the British Isles, November 1954. BSBI.

States of Alderney Island Plan, 2021. http://www.alderney.gov.gg/article/185928/Press-Release---Alderney-Island-Plan-04102021