A Wales Action Plan for the Recovery of Curlew

Gylfinir Cymru / Curlew Wales

Gylfinir Cymru
Curlew Wales

PREFACE

This Wales Action Plan for the Recovery of Curlew was prepared by Gylfinir Cymru / Curlew Wales at the recommendation of Welsh Government to promote the conservation of Eurasian curlew in Wales. The goals and objectives of this Action Plan can be achieved only if a long-term commitment is made to support the actions recommended herein. Alignment of these goals and objectives will require the continued cooperation of all four Governments in the UK. Within Wales, the shared resources and cooperative involvement of Welsh Government, Natural Resources Wales, National Park Authorities, industry, academia, environmental non-governmental organisations, farming unions and individuals will be required throughout the recovery period.

Requests for information or comments regarding the recovery programme for curlew in Wales should be directed to the Chair of Gylfinir Cymru:

Patrick Lindley, Senior Ornithologist, Natural Resources Wales

Patrick.lindley@cyfoethnaturiolcymru.gov.uk

Compilers: Ian Danby (BASC), Matt Goodall (GWCT), Mick Green (WOS), Julian Hughes (RSPB Cymru), Patrick Lindley (NRW), Rhun Jones (DCC) and Rachel Taylor (BTO Cymru)

Lifespan of Plan: 2021-2031. This Action Plan will cover ten years (2021-2031) and will be updated periodically. It will be reviewed in 2026 to measure progress and to ensure it aligns with the 2025 review of the AEWA International Single Species Action for Curlew.

Date of adoption: November 2021

This recovery plan should be cited as:

Gylfinir Cymru / Curlew Wales (2021). A Wales Action Plan for the Recovery of Curlew.

This document can be downloaded from www.curlewwales.org

Cover photo: Eurasian curlew (© Ian Francis, rspb-images.com)

FOREWORD

Mark Isherwood

MS / AS Curlew Species Champion

Having accepted the invitation to become Wales Species Champion for the curlew back in 2016, I am delighted to be writing the foreword for this **Wales Action Plan for the Recovery of Curlew**, meticulously prepared by Gylfinir Cymru /Curlew Wales.

I live in and represent North Wales. The moors in this beautiful part of the country hold the largest population of breeding curlews in Wales. Sadly, in recent years the species has seen significant declines and is disappearing from all upland areas. Put in context, since 1993, the population in Wales has fallen by over 90% and is falling by ~6% annually, with country-level extinction threatened by 2033. This species plight is a very sad addition to the nature emergency that we now face in Wales and other parts of the UK.

Curlew is listed as globally Near-Threatened on the International Union for Conservation of Nature's Red List of Threatened Species and is a Red-listed Bird of Conservation Concern in Wales. The 'State of Birds in Wales 2018' report reinforces the chronic decline and indicates there is no hint of this trend levelling out.

Because of the seriousness of the curlew crisis this prompted a ‘call for help’. In January 2018, a Welsh Curlew conference was held in Builth Wells and attended by 120 participants from across conservation, farming, game and rural policy sectors in Wales. This led to regional workshops and the establishment of Gylfinir Cymru / Curlew Wales. In June 2019, I attended the first ever UK Curlew Summit at 10 Downing Street, alongside Lewis Macdonald MSP, Species Champion for the curlew in the Scottish Parliament; Jake Berry MP, Species Champion for the curlew in Westminster; and representatives from Gylfinir Cymru - Patrick Lindley, Senior Ornithologist, Natural Resources Wales and Amanda Perkins, Curlew Country Project. At the Summit we heard that sufficient resource will be required to advise, encourage and assist groups of farmers to come together to deliver, monitor and champion curlew and biodiversity across landscapes, and that there is a need to understand the multiple and multi-species benefits of saving curlew from an ecosystem resilience, cultural and natural heritage perspective.

We also heard that in Wales we are at a critical time for breeding curlew, and perhaps have only 15 years left and that we should all be involved in co-designing a scheme, with tests and trials; requiring a needs-based mechanism for farm payments, a SMART-based approach; and that we need co-ordination of actions, working at scale and together, including statutory agencies and across the UK. I emphasised the critical importance that the Welsh and Scottish Governments be invited to become involved fully at the first moment that DEFRA or any UK agency is brought in to develop a UK approach to safeguard Curlew.

The curlew’s distinct and ethereal song is a familiar sound that is deeply ingrained within our culture. It is essential that through this Action Plan we act together now to stop these beautiful birds from wading into extinction over the next decade.

FOREWORD

Clare Pillman

Chief Executive of Natural Resources Wales

Curlew, known as gylfinir in Welsh, is an iconic bird that is referenced frequently throughout Welsh theology, culture and heritage and with its distinctive bubbling and haunting call is often greeted as the herald of spring by rural communities across upland and lowland Wales. As a child curlew were a regular presence on our farm – something we simply took for granted - but this herald of spring is now in steep decline with the population falling by 6% every year and it is now considered to be Wales' most pressing avian conservation priority. If we do not act now to reverse this decline the curlew is predicted to be on the verge of extinction as a breeding species in Wales in the next decade. Urgent action is needed to save Wales' remaining curlew and enable them to build a sustainable population so that our children and grandchildren are as familiar with these magnificent birds as we once were.

Curlews are one of those iconic conservation challenges, and one which engages people across Wales. One striking feature of the conservation world is its massive dependence on volunteers and 'citizen science' and the more of this we can encourage the better our chances to make a difference. Perhaps the most important and encouraging sign for curlews in Wales is the numbers of people recognising their plight, and the way in which professionals and volunteers are working together to conserve the species and their habitats.

I am especially pleased that since the successful Welsh Curlew Conference, that we jointly organised with the UK Curlew Champion - Mary Colwell, held in Builth Wells in January 2018, Welsh expertise through the partnership of Gylfinir Cymru is now helping to assess and set the priorities and strategic direction for curlew recovery in Wales. I certainly do not think that any single measure or action or organisation is going to succeed in isolation in halting the decline of curlew in Wales when the challenges are many and, in some cases, very complex. Success will require a clear plan of action, collaboration, and significant investment. But there seems to be a large number of committed organisations and individuals that collectively are willing to do as much as possible and as soon as possible to help.

We have ten years to bring back curlew from the edge of extinction. I sincerely hope that this Action Plan will build on the good work to date and encourage people across Wales to get involved and work together to enable this important bird to flourish in our landscape once more. Earlier this year a curlew flew over my car. I was so excited I nearly ended up in the ditch. In the future it would be nice to think that such an occurrence would, once again, be commonplace.

Executive summary

1. In common with much of the UK and many other parts of Europe, all of Wales' grassland breeding waders: Eurasian curlew (*Numenius arquata*), common redshank (*Tringa Totanus*), European golden plover (*Pluvialis apricaria*) and northern lapwing (*Vanellus vanellus*) are in significant decline both numerically and spatially, a result of a **combination of three significant pressures: habitat loss, unfavourable habitat management and nest/chick predation**.

2. The curlew is a highly migratory species in urgent need of coordinated UK and Wales conservation action. In the absence of contemporary survey data, estimates of the curlew breeding population range from 400 (extrapolation from a small sample repeat survey) to no more than 1,700 breeding pairs (extrapolation from BirdAtlas all-Wales resurvey). Breeding Bird Survey (BBS) data indicate that the **breeding population of curlew in Wales is declining at a rate of 6% per yea**r.

3. Curlew is **predicted to be on the brink of extinction** as a viable breeding species in Wales by 2033. Due to the significance of this emergency, **curlew is now considered to be the most pressing bird conservation priority in Wales**.

4. This **Wales Action Plan for the Recovery of Curlew** sets out a framework to conserve breeding curlew over a **ten-year programme of action (2021 – 2031)** and to stabilise the decline in breeding curlew with the aim of **preventing Welsh extinction**.

5. This Action Plan is **designed to align actions for recovery with the AEWA International Species Action for Curlew** (to be reviewed in 2025). The Wales Action Plan for curlew will be reviewed and evaluated annually by **Gylfinir Cymru / Curlew Wales** (a Welsh curlew action group), with a mid-term appraisal in 2026 to measure progress. Recommended by Welsh Government, this Plan is aimed at preventing the disappearance of breeding curlew from Wales as the foundation of a longer-term vision to restore a sustainable population.

6. The framework for action has been developed to **internationally agreed standards** including the monitoring and evaluation of implementation, identifying threats and measurable intervention/activities.

7. **Focused conservation action will be directed at a network of 12 candidate Important Curlew Areas (ICAs)** in Wales. Each ICA will have a **lead organisation** and **community champion** responsible for the delivery of intervention measures and the assessment, monitoring and reporting against set **performance criteria**.

8. Gylfinir Cymru will seek funding to **appoint an all-Wales Curlew Programme Manager**, initially for three years, to support the network of ICA lead organisations, local champions and communities, be an ambassador for curlew and to maximise favourable habitat management opportunities across Wales.

9. To determine baseline demographic metrics (e.g. population size, hatching success and breeding success) **standardised monitoring** will be undertaken through a volunteer programme of **citizen science**.

10. **An ICA Working Group will be formed to establish or strengthen local networks of farming communities** and other land managers in each ICA to facilitate collaborative working and involvement and to develop a **strong community ethic** across the ICA

network to enable knowledge exchange, the sharing of progress and a **'can do'** approach to curlew conservation.

11. Gylfinir Cymru will **seek appropriate levels of funding to implement the required intervention measures** (habitat management and predator control) within the ICA network and where appropriate outside the ICAs.

12. **A commissioned study,** currently in review, identifies the multiple benefits of curlew conservation, framed in the **context of political thinking,** that demonstrates wider socio-economic and environmental benefits**.**

13. It is critical that **policy and strategy,** such as the proposed Sustainable Farm Scheme, Future Wales (the National Development Framework), NRW Area Statements etc, that are designed to ensure space to live, work and play, food production, and sustainable use of natural resources, enable curlews to flourish.

14. **The ICA Working Group will identify and mitigate pressures and constraints** acting on the ICA network population and use these assessments to identify the scale of management required to secure appropriate and sustainable management through Government policies. For example, it will look to market payments linked to curlew and environmental goods, and/or to non-public monetary funded projects (e.g. LIFE Nature, NLHF) to tackle key constraints.

1. Introduction

1.1 Like much of the rest of the UK and Europe, Wales faces a twin **climate and nature emergency.** According to the *State of Nature 2019*: Wales report[1], of the animal and plant species identified as conservation priorities in Wales, 33% have declined over the past decade, and between one-third and a half of the remainder showed no significant improvement. In Wales, attempts by Welsh Government to address these declines in the wider countryside have largely been directed through agri-environment schemes, such as Tir Gofal and Glastir.

1.2 Against the background of declining biodiversity and threats to vital ecosystem services that sustain our economy and society, Wales has a legal and policy framework that provides a fresh approach for responding to the environmental challenges we face. This is mainly set out in two Acts: **The Well-being of Future Generations (Wales) Act 2015** that aims to further the economic, social, environmental and cultural well-being of the people of Wales; and **The Environment (Wales) Act 2016** designed to promote **Sustainable Management of Natural Resources** (SMNR) to maintain and enhance the resilience of ecosystems.

1.3 Building on this new legal framework, Welsh Government has set out its commitments for biodiversity in the **Nature Recovery Action Plan for Wales** (NRAP). This recognises that a key requirement of the Sustainable Management of Natural Resources (SMNR) is to ensure that, through the underpinning principle of resilient ecosystems, Wales can continue to deliver its key UK, European and international obligations for biodiversity.

1.4 In common with much of the UK and many other parts of Europe, all of Wales' grassland breeding waders: Eurasian curlew (*Numenius arquata*), common redshank (*Tringa Totanus*), European golden plover (*Pluvialis apricaria*) and northern lapwing (*Vanellus vanellus*) are in significant decline both numerically and spatially, a result of a combination of three pressures: habitat loss, unfavourable habitat management and nest/chick predation.

1.5 The Eurasian curlew (hereafter curlew) is a species of urgent conservation concern in the UK (Eaton *et al*. 2015) and Wales (Johnstone and Bladwell 2016) and is now globally Near-Threatened due to widespread declines across the breeding range (BirdLife International 2015). Owing to rapid national declines and the global importance of the UK breeding population, the **curlew is now considered to be the most pressing bird conservation priority** in the UK (Brown *et al.* 2015) and in Wales (Gylfinir Cymru in communication). In Wales, the curlew is in significant decline with extensive range contraction and population losses greater than 50% in the last 20 years.

1.6 The key driver of population change is predation of eggs and chicks resulting in low breeding success and population decline (Grant *et al*. 1999). Though the significance of the level of abundance of generalist predators in Wales is not known, the UK has the second highest densities of foxes in Europe, and the UK and Ireland the highest densities of carrion crows (*Corvus corone*). As lethal and non-lethal interventions for reducing predation are costly, Roos *et al.* (2018) advocate research to identify land-use and landscape configurations that reduce predator numbers and predation rates, highlighted by Brown *et al.* (2015).

[1] The *State of Nature 2019* report presents an overview of how the UK's wildlife is faring and is published on behalf of a consortium of nearly 70 conservation, management and research bodies.

1.7 If we adopt a business-as-usual approach where little/no conservation actions are taken, the curlew is predicted to be on the brink of extinction within the next decade (Taylor *et al.* 2020). The loss of biodiversity is far-reaching, complex and challenging, but it is considered by many that the **loss of breeding curlew from Welsh landscapes will be a loss of biodiversity too far**.

1.8 There is broad agreement that we urgently need a national plan of 'intelligent and realistic' conservation actions to halt and reverse the decline of breeding curlew in Wales. This ten-year curlew action plan meets the challenge of setting the strategic direction of closely aligned actions to deliver tangible gains for Wales' remaining breeding curlews.

2. Background and rationale for the scope of the Action Plan

2.1 Welsh curlew populations are migratory, spending different periods of the year in different regions of Wales, the UK and Europe. The **Wales Action Plan for the Recovery of Curlew** will focus only on implementing conservation measures when curlews are on their Welsh breeding grounds and is aligned with the **African-Eurasian Waterbird Agreement (AEWA) International Action Plan for curlew**. Whilst the scope of this plan does not include the non-breeding season, it is important to understand that habitat loss, fragmentation and degradation of stopover, staging and wintering sites can lead to elevated adult mortality rates, a highly influential demographic parameter. The political scope of this action plan is Wales.

2.2 The **State of Natural Resources Report 2020** (SoNaRR) assessed the extent to which natural resources in Wales are being sustainably used and managed and looked at how pressures on Wales' natural resources are resulting in risks and threats to long-term social, cultural, environmental and economic well-being. It concludes that upland and grassland ecosystems occupied by breeding curlew in Wales are unlikely to have good resilience. Being less resilient means that ecosystems and biodiversity have a reduced ability to survive and adapt to challenges such as climate change, invasive non-native species and pressures such as anthropogenic pressures of hydrological change and habitat fragmentation.

2.3 Curlew conservation needs **a large and coherent network of heath and grassland landscapes that are actively managed to benefit breeding curlew**, which will also provide habitats to benefit other biodiversity priorities and underpin ecosystem resilience. This plan of action for breeding curlew aligns closely with the approach to tackle Wales' nature crisis and, if implemented, is designed to help Welsh Government meet its biodiversity commitments under international and domestic legislation.

2.4 Our recommended approach is to provide the full suite of ecological needs that breeding curlew require at the necessary spatial scale. These also provide a range of public goods e.g. carbon sequestration, water storage and flow management. (Hoodless *et al*. 2021) The conservation of breeding curlew in Wales will not, and probably never will, be achieved predominantly by nature reserve management, but will be delivered largely on owner-occupied or tenanted farmland within and out-with the protected area network (SACs, SPAs, SSSIs and NNRs). In a Welsh context, **High Nature Value (HNV) farming** can mainly be associated with sheep farming in the uplands and marginal farming areas, because of its high reliance on semi-natural vegetation and unimproved

pastures for grazing. HNV farming relies upon the sympathetic land management practices of farmers and has the potential to contribute positively to favourable curlew management by grazing with appropriate stocking rates, management of hay meadows, or undertaking appropriate habitat restoration and legal predator control.

2.5 Following a Ministerial curlew round table discussion (October 2019) this Wales Action Plan for the conservation of curlew has been developed and agreed by Gylfinir Cymru / Curlew Wales at the recommendation of Welsh Government. The Wales Action Plan for the Recovery of Curlew sets out a framework to scale-up conservation delivery based on the objectives, actions and urgency criteria of the African Eurasian Waterbird Agreement (AEWA) International Single Species Action Plan for curlew.

2.6 This plan identifies priorities for action across a coherent network of breeding curlew sites, termed **Important Curlew Areas (ICAs).** These include land managed as nature reserves, land primarily managed for livestock and crop production, and for game management. Some areas fall within the protected area network or other landscape sites such as National Parks or Areas of Outstanding Natural Beauty (AONB). Though this plan will primarily focus on improving habitats and management conditions within Important Curlew Areas (ICAs) of both upland and lowland farmed habitats, areas of suitable habitat occupied by breeding curlew outside the ICA network may also be included, dependent on curlew importance, capacity and funding.

2.7 To deliver this Action Plan requires major reform of current Welsh agricultural policy, which to date has failed to stem the nature crisis. In December 2020 the Welsh Government published the **Agricultural (Wales) White Paper** that sets out plans for the biggest change in agricultural policy in Wales for decades. A future support system, such as the **Sustainable Farm Scheme**, must include an effective means of using public money to promote and reward sustainable land management, including cooperative action that secures not only curlew-friendly management at a landscape scale but also a range of other environmental objectives to restore biodiversity.

2.8 While public policy has an obvious role to play in securing sustainable land management, and the multiple benefits this provides, it is recognised that reliance on public money is a risk. Thus, every effort should be made to develop value-added markets and premiums that reward both sustainable production and High Nature Value farming, including that which supports breeding curlew. **Nature-based solutions**, including habitat management that benefits curlew, support societal development goals and safeguard human well-being, such as flood management and cultural health.

2.9 The last all-Wales curlew survey in 2006 estimated a breeding population of 1,100 pairs (95% confidence limits of 576-1,755) and represented a significant decline of 81% since 1993 based on the revised estimate of 5,713 pairs (Johnstone *et al.* 2007). Contemporary Breeding Bird Survey (BBS) data indicate that the breeding population of curlew in Wales is declining at a rate of ~6% per year.

2.10 Estimates of population size are particularly challenging in cryptic species occupying vegetation types in which detectability varies over time as a result of behavioural change and structural change in habitat (e.g. seasonal growth of agricultural grasslands) through the breeding season. Population estimates based on established survey methods may not be comparable between sites and are subject to potentially significant and unquantifiable amounts of uncertainty and error (Taylor *et al.* 2020). Estimates of the Welsh curlew breeding population range from 400 (extrapolation from a small sample repeat survey, Johnstone *et al.* 2007) to >1,000 breeding pairs, though not greater than

1,700 breeding pairs (extrapolation from BirdAtlas all-Wales re-survey, Taylor *et al.* 2020).

2.11 Modelling time to curlew extinction as a breeding species is independent from uncertainty in the estimated population size, because it is based on a population change metric of -5% per year (derived from 2019 BBS data for Wales). The relative measure of change is considered more statically robust than population estimates. Modelling produces the same extinction estimate whether the initial population is large (1,000 pairs) or small (400 pairs).

2.12 Assessment of spatial data suggests curlew are not equally distributed across Wales: >88% of the population and **90% of its range occurs in only three NRW Area Statements** (North-East, North-West and Mid-Wales), with 48% in North-West Wales alone (Taylor *et al.* 2020). As elsewhere in the UK, poor breeding productivity is the main driver of population decline in Wales. It averages 0.31 chicks per pair per year, or one chick every three years. For **Welsh population stability, productivity of 0.63 chicks per pair per year is required** (Taylor *et al.* 2020), or **6 chicks within a pair's reproductive lifespan of 10 years.**

2.13 At the **Welsh Curlew Conference** in January 2018, five themes were agreed as the key priorities for curlew conservation action in Wales. These were:

- Establish an All-Wales Curlew Action Group to set the strategic direction of curlew conservation action in Wales.
- Implement a recovery programme of key curlew populations.
- Research and recommend improvements to curlew land management schemes.
- Engage famers and landowners.
- Create public awareness about the decline of breeding curlews.

2.14 Historically, there has been no formalised national working group for curlew. Therefore, **Gylfinir Cymru / Curlew Wales**, a multi-partner forum, was convened by Natural Resources Wales (NRW) shortly after the Welsh Curlew Conference and tasked to set the strategic direction of curlew recovery in Wales. Gylfinir Cymru established seven priorities:

- **Financial support** to reduce the losses of eggs and chicks across the wider landscape to enable an increase in **breeding productivity** to maintain and increase populations.

- **Identify Important Curlew Areas** and undertake standardised baseline monitoring.

- **Advocate** for sufficient resource to be available to advise, encourage and assist farmers to access any proposed **land management schemes for the benefit of curlew**.

- **Funding** to be available for a dedicated **Wales Curlew Programme Manager** and associated land management activities within Important Curlew Areas.

- **Review land management sensitivity maps** in Wales and adopt the principle that future sites for forest expansion and renewable energy should avoid areas that hold >5 pairs.

- **Develop** a large-scale **GPS tagging programme** to understand the movements of breeding curlew in a farmed landscape to inform the design of future agri-environment schemes (AES).

- **Develop** an understanding of the **multiple benefits** of curlew conservation (e.g. natural and cultural heritage, policy frameworks).

2.15 To protect the environment and natural capital upon which we all depend on, it is important that the proposed **Sustainable Farming Scheme** (**SFS**), that is set to replace the current AES arrangements by 2025/26, promotes natural resources and ecosystem resilience and facilitates species recovery as part of the response to the nature emergency. Put in context, 2026 is seven years before the predicted scenario for curlew extinction in Wales (Taylor *et al.* 2020). There is now an urgency to focus on interim recovery measures that can be in place before the launch of a proposed **SFS** and to encourage farm-holdings into effective landscape agreements to aid curlew conversation in Wales.

2.16 This Action Plan, prepared and owned by Gylfinir Cymru, will cover ten years (2021-2031) and will be updated periodically. It will be reviewed in 2026 to measure progress and to ensure it aligns with the 2025 review of the **AEWA International Species Action for Curlew**.

3 Relevant policy and legislation

3.1 In Wales, breeding and non-breeding curlew are fully protected throughout the year. The species is listed as Near Threatened on the IUCN Global Red List based on its adverse global conservation status and as Endangered in Britain by Stanbury *et al*. (2017). In addition, curlew is a red-listed Bird of Conservation Concern in the UK (Eaton *et al.* 2016) and Wales (Johnstone and Bladwell 2016).

Instrument	Descriptor	Theme
International		
Bonn Convention	Appendix II	European protection policy and legislation
Bern Convention	Appendix III	European protection policy and legislation
EU Birds Directive	Annex II/B	European protection policy and legislation
Convention on the Conservation of Migratory Species of Wild Animals	AEWA International Single Species Action Plan	International Action Plan
IUCN Global Red List	Near Threatened	Global conservation status
European Red List (BirdLife, 2015)	Vulnerable	European conservation status
Great Britain/UK		
GB IUCN Assessment	Endangered	GB conservation status
Birds of Conservation Concern (UK)	Red-listed	UK conservation status
Wales		

Environment (Wales) Act 2016	Section 7 species of principal importance	National policy and legislation
Well-being of Future Generations (Wales) Act 2015	Goal 2: Resilient Ecosystems	National policy and legislation
Birds of Conservation Concern (Wales)	Red-listed	National conservation status

4 Framework for Action

4.1 The framework for action has been developed using internationally agreed standards, including the evaluation of implementation, pressures and threats, and measurable intervention/activities.

4.2 To increase curlew breeding success and halt population decline, the main threats and issues to address over the next ten years are:

- **The drivers of current low productivity**, which include unsustainable predation rates, mowing and cutting activities, and the loss/degradation of occupied breeding habitat caused by changes in agricultural practices and conversion of open habitats to woodland/forestry.

- **Ensuring a package of support is available to enable farmers and land managers to collaborate** at the landscape scale to deliver the outcomes required by breeding curlew using the best available evidence**.**

- **To support public awareness campaigns and education** to influence consumer's choices and demands for agricultural products that support curlew-friendly management.

4.3 **High level objectives**

The **long-term goal** of this plan (after 2031) is to establish and restore breeding curlew to formerly occupied parts of its range, by strengthening and extending the spatial network of Important Curlew Areas and the protected area network.

In the **short-term** (2031), put in place measures that will address the decline of breeding curlew by achieving sustainable breeding success within the network of Important Curlew Areas, where ICA lead organisations and champions delivering conservation action are supported financially and intellectually and where communities are empowered to act.

4.4 **Recovery outputs and performance criteria**

Actions (see section 7) will need to be implemented to deliver six key outputs.

Output 1. **Establish and activate a recovery team** to implement the action plan.
Priority: Critical

Output 2. **Develop the conservation toolkit and seek funding to initiate appropriate action** to stop the decline of curlew in Wales by increasing breeding success to >0.6 chicks/pair/year.
Priority: Critical

Output 3. **Build the evidence base** by monitoring the number of breeding curlew (baseline) and population response (number of breeding pairs and breeding success) to habitat management measures and predator control.
Priority: Critical

Output 4. Manage or **eliminate significant pressures and threats** to curlew population resilience within the ICAs.
Priority: Critical

Output 5. Co-design initiatives with the **farming and game management** and local communities/wider general public in parallel with developing citizen science initiatives to work together on delivery.
Priority: Critical

Output 6. **Influence policy development of a package of support** to assist land-managers to deliver for breeding curlew and wider environmental/societal benefits supporting the concept of 'public goods' and public services.
Priority: Critical

Wider socio-economic and environmental benefits

4.5 It is increasingly recognised that natural environments are important not only to the plant and animal species that occur in the wild, but because they deliver direct and indirect benefits to people at a range of scales. Modern conservation strategy has evolved to incorporate greater emphasis on understanding and communicating to the public the wider benefits that nature brings to society.

4.6 A commissioned study**,** identifies the multiple benefits of curlew conservation, framed in the context of political thinking, that demonstrates wider socio-economic and environmental benefits (Hoodless *et al*. 2021, in review)**.**

4.7 Cultural services delivered by breeding curlew need to be identified and promoted. These could include the role of curlew in theology and faith (e.g. the link to St Beuno), song, verse, art and education, and the species' contribution to people's well-being and appreciation of farmland biodiversity in the Welsh countryside.

5. Important Curlew Areas (ICA)

5.1 Effective conservation relies on good evidence to inform decision-making at all stages of species recovery, from identifying diagnostic reasons for decline, through devising and deploying solutions, to assessing the effectiveness of the population response. Prioritisation is essential, so that limited resources are targeted and have the greatest conservation impact.

5.2 A **large and coherent network of curlew-friendly breeding landscapes is required across Wales**. To maximise opportunities of success for curlew recovery in Wales this plan will adopt a targeted and focused approach, taking action in 12 candidate **Important Curlew Areas (ICAs)** (Table 2; Figure 1). These lie in **three NRW Area Statements** (North-West, North-East and Mid-Wales) and in combination represent possibly as much as 65% of the Welsh curlew breeding population. Although the identified ICA network will form the focus of recovery efforts, any land with breeding curlew should be eligible to receive land management payments to provide favourable habitat that meet this species ecological needs.

5.3 Despite uncertainties, the 12 ICAs reflect our current understanding of curlew population structure and we consider them to be the appropriate geographical management units to conserve curlew. We consider curlew recovery across the ICA network to be important for achieving geographic and ecological representation of curlew in Wales, and to ensure conservation of genetic variability. If evidence emerges that additional Important Curlew Areas are necessary for the long-term viability of the species, these will be revised.

5.4 An effective curlew conservation strategy in Wales must address the key ecological driver of change: poor breeding success. Although challenging, each ICA will set a productivity target of $\geq$0.6 chicks/pair/year. To achieve this will require **significant capital investment** based around three components:

Component 1: Build the evidence base.

Component 2: Site protection and associated land management payments to deliver favourable breeding habitats (this includes land management payments within or out-with protected sites).

Component 3: Promote and adopt favourable management practices (including legal predator control) seeking sustainable farming/land management scheme agreements with land managers within ICAs that benefit breeding curlew.

5.5 Essentially, this Action Plan for conserving curlew in Wales has three key requirements, plan, implement and review:

- **Plan**: Set performance criteria for each ICA based on metrics of abundance, demography and extent of management, and assess whether these targets are being met. Identify constraints acting across the ICA network to identify the favourable management required to secure appropriate and sustainable management through Government policies (e.g. market payments linked to curlew and environmental goods) and/or non-public monetary funded projects (e.g. LIFE Nature, NLHF) to tackle key constraints.

- **Implement**: Dependent on funding, initiate components 1-3 (as outlined above) across the ICA network, and where appropriate outside the ICA network.

- **Review**: This plan of action will be reviewed in 2026 to measure progress, following the review of the AEWA International Species Action for Curlew in 2025.

The 12 Important Curlew Areas reflect our current understanding of breeding curlew populations, their range and structure in Wales. They have been selected by partners of Gylfinir Cymru and are built around a combination of local knowledge, contemporary surveys and population modelling, and locations where motivated people and organisations are available for the necessary action at sufficient scale to conserve breeding curlew. We consider curlew recovery across the Welsh ICA network to be important for maintaining geographic and ecological representation of breeding curlew, and as a mechanism to safeguard the integrity of curlew genetic variability. If new evidence emerges that additional ICAs or boundary changes are necessary for the long-term viability of the species, the Welsh ICA network will be revised accordingly.

Table 2. Breeding curlew population estimates (number of breeding pairs) for Important Curlew Areas in Wales.

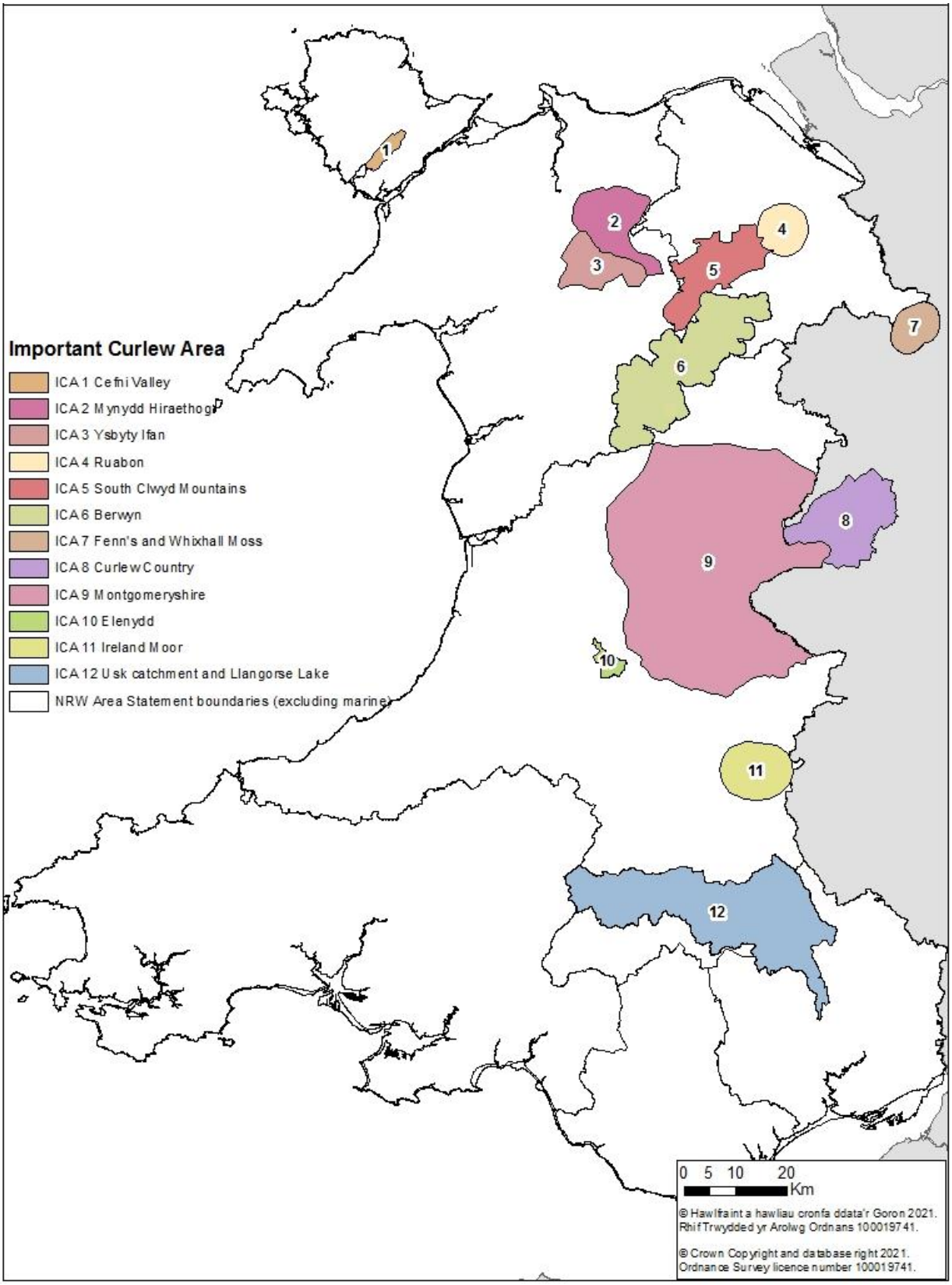
Important Curlew Area	ICA reference	Local Authority	NRW Area Statement	2020 predicted population size (pairs)[1]	Confidence in population estimate[1]
Cefni Valley	ICA 1	Isle of Anglesey	North West Wales	7-8	Good
Mynydd Hiraethog	ICA 2	Conwy	North West Wales	30-35	Good
Ysbyty Ifan	ICA 3	Conwy	North West Wales	20	Medium
Ruabon	ICA 4	Wrexham	North East Wales	35-40	Medium
South Clwyd Mountains[2]	ICA 5	Denbighshire	North East Wales	51	Poor
Berwyn	ICA 6	Gwynedd	North East Wales	35	Poor
Fenn's and Whixall Moss	ICA 7	Wrexham	North East Wales	6	Poor
Curlew Country	ICA 8	Powys	Mid Wales	5	Poor
Montgomeryshire	ICA 9	Powys	Mid Wales	40	Good
Elenydd	ICA 10	Powys	Mid Wales	6-7	Good
Ireland Moor	ICA 11	Powys	Mid Wales	11	Poor
Usk catchment and Llangorse Lake	ICA 12	Breconshire	Mid Wales	9	Poor
Total				**255-267**	**Medium**

Notes

1 These figures and confidence values are based on either contemporary survey data (green shaded cells), modelled estimates (orange shaded cells) or expert judgement (grey shaded cells).

2 South Clwyd Mountains consists of Llantysilio Mountains (survey: 7 pairs), Dee Valley (model: 33 pairs) and Morwyion (model: 11 pairs).

Figure 1. Location of Important Curlew Areas in Wales.



6. Recovery performance criteria

6.1 A prerequisite to achieving the outputs in section 4.4 is to have sufficiently robust baseline and post-intervention monitoring data to determine whether breeding curlews have responded positively to intervention. This data will allow appraisal of recovery actions listed in Section 7.

6.2 Breeding curlew recovery will be assessed against standardised performance criteria that will include specific targets for each ICA (e.g. number of breeding pairs, hatching success and productivity) and are designed around two approaches that:

1) reflect the positive status of breeding curlew and;
2) indicate effective management or elimination of threats.

6.3 Dependent on funding, habitat assessments, using standardised measures, will be undertaken in year 1 to establish a baseline of site quality and capacity to deliver all ecological needs of breeding curlew, and repeated in 2025/2030 to determine level of change.

6.4 Achievement of recovery outputs will be measured against the following performance criteria:

- An **ICA lead organisation** is agreed for each area to drive the required conservation action.
- Successful establishment of **broad community** involvement in monitoring and management to ensure inclusivity and collective responsibility/ownership. Where possible, **local curlew champions will** be identified for each ICA.
- **A standardised monitoring** approach consisting of professional and citizen science shows that numbers of breeding curlew pairs are stable or increasing.
- **Conservation action** bespoke to the individual ICA **is identified and initiated**.
- **Site condition assessments** are reported by the **ICA lead organisation** and **local champions** to an **ICA Working Group** that will assess progress and support setting the direction of conservation action.

6.5 Each ICA will be ranked on population size (number of breeding pairs) and assigned an extinction risk category. This process will aid decision-making on the conservation urgency to recover curlew within each ICA within the network.

6.6 At five and ten-year intervals monitoring will inform the level of reclassifying across the ICA suite when the success criteria have been met for objectives 2, 3, 4 and 5.

Output 1: Establish and activate a recovery team to implement the action plan.

6.7 One of the outcomes of the Welsh Curlew Conference (2018) was to establish a Wales curlew action group. This was achieved in June 2018 with the development of Gylfinir Cymru / Curlew Wales. An ICA Working Group is now required to initiate and oversee curlew conservation delivery across the ICA network.

Success criteria:

- **Operational ICA Working Group**, consisting of ICA lead organisations and local curlew champions that is initiating and delivering curlew recovery across the network of ICAs in Wales.
- **Clear communication and governance** pathway for the ICA Working Group to report progress to Gylfinir Cymru.

Output 2*:* Develop the conservation toolkit and seek funding to initiate appropriate action to stop the decline of curlew in Wales by increasing breeding success to >0.6 chicks/pair/year.

Success criteria:

- Funding is secured to finance a three-year **Wales Curlew Programme Manager.**
- **Programmes of work and applications for funding are submitted** to appropriate funding schemes to deliver the required measures to benefit curlew within the ICA network.
- **Substantial capital investment is made to safeguard breeding curlew** throughout the lifespan of this plan.

Output 3: Build the evidence base by monitoring the number of breeding curlew (baseline) and population response (number of breeding pairs and breeding success) to habitat management measures and predator control.

6.8 Trends in breeding pairs and breeding success are important demographic measures of a population's viability. These criteria would be met for breeding curlew where monitoring/analysis demonstrates that the breeding population is stable or increasing. The specific ten-year period may differ by Important Curlew Area depending on when surveys or analyses have been conducted.

Success criteria:

- **Increased breeding success**.
- **Increased number of breeding pairs**.

Output 4: Manage or eliminate significant pressures and threats to curlew population resilience within the ICAs**.**

6.9 Understanding, effectively managing and monitoring the patterns of human use within the network of ICAs is crucial for meeting the conservation objectives.

Success criteria:

- **Identified pressures** (e.g. predation, silage cutting) **and threats** (e.g. onshore renewable energy and stocking rates that result in unsuitable sward structure) within each ICA are demonstrably minimised.

Output 5: Co-design initiatives with the farming and game management and local communities/wider general public in parallel with developing citizen science initiatives to work together on delivery.

6.10 It will be essential to engage farmers and other land managers across each ICA if we are to have the desired large-scale impact on curlew populations. Therefore, it will be crucial to deliver good working relationships with clusters of farmers in all ICAs and to deliver a range of activities to promote participation.

Success criteria:

- **Established or strengthened local networks of farmers** and other land managers in each ICA to facilitate collaborative working.
- **Identified and supported 'Curlew Champions'** who facilitate community engagement in each ICA.
- **Community engagement in each ICA bring about a step-change in community awareness and appreciation of curlew** (e.g. demonstration days, guided walks).
- **Strong community ethic** across the ICA network enables knowledge exchange, the sharing of progress and a 'can do' approach to curlew conservation.

Output 6: Influence policy development of a package of support to assist land-managers to deliver for breeding curlew and wider environmental/societal benefits supporting the concept of 'public goods and public services'.

6.11. Curlew conservation in Wales is delivered/aided by Welsh Government, Natural Resources Wales, eNGOs, businesses, landowners, farmers and private individuals, often working in partnership. There are some successes, but our appraisal demonstrates these have been insufficient to stem or reverse the loss of curlew in Wales.

6.12. Human impact is pervasive on the landscapes on which breeding curlew depend – the impact of climate change is felt everywhere, and the majority of land is affected directly by farming policies.

Success criteria

- **Policy and strategy development,** such as the Sustainable Farm Scheme, Future Wales (the National Development Framework), NRW Area Statements etc that are designed to ensure space to live, work and play, food production, and sustainable use of natural resources, enable curlews to flourish.

- Following legislative obligations, **ICA curlew populations are given protected site status**, where the site meets qualifying criteria.

- **Commission a study** to identify the multiple benefits of curlew conservation, which:

    - Identifies the **legal responsibilities and frameworks** to conserve breeding curlew in Wales.
    - Evaluates the rationale for, and feasibility of, applying **ecosystem services/natural capital** approaches to curlew conservation.
    - Identify **all** potential benefits associated with breeding curlew and their habitats.
    - Provides examples of previous breeding wader initiatives that demonstrate wider benefits.
    - **Provides recommendations** for future work, e.g. a rapid assessment of ecosystem services at selected curlew breeding areas, surveys of local stakeholders to improve understanding of curlew conservation benefits to people etc.

6.14 Ultimately, our ability to conserve breeding curlew in Wales will be determined by resources. An **emergency meeting** between Welsh Government, Natural Resources Wales and Gylfinir Cymru will be convened in the event of one or more of the following '**alert thresholds'** being met:

i. If overall ICA network population falls below 100 breeding pairs.
ii. If overall ICA network population size otherwise falls by more than 25% in a period of three consecutive years.
iii. If ICA mean productivity falls below 0.3 chicks/pair/year for three consecutive breeding years.
iv. Other unexpected events occur that are likely to affect the population significantly.

7 Results and Actions

This section of the Action Plan lists the key actions that will drive forward curlew conservation in Wales. Our framework for action adopts the same format as outlined in the AEWA Single Species Action for curlew (see Brown 2015) and identifies actions from the AEWA plan that will be delivered in Wales (highlighted in bold and reference with the relevant action number). For each action, an assessment of its urgency and importance (as identified in the column 'Priority') as well as the timescale under which it should be achieved.

Priority ratings	
Critical	Actions delivering towards results that will help prevent a **rapid population decline of >30% over 10 years** (i.e. to address 'critical threats').
High	Actions delivering towards results that will help prevent a **rapid population decline of 20-30% over 10 years** (i.e. to address 'high threats').
Medium	Actions delivering towards results that will help prevent **relatively slow, but significant declines of 10-20% over 10 years** (i.e. to address 'high' threats).
Low	Actions delivering towards results that will help prevent local population declines or that are likely to have only a small impact on the population across the ICA network.
Other	A result that is not possible to categorise with the above priority ratings.

Timescales	
Continuous	An ongoing or annual action.
Short-term	Completed within the next 1-2 years.
Medium-term	Completed within the next 1-5 years.
Long-term	Completed within the next 1-10 years.

Output 1. Establish and activate a recovery team to implement the action plan. **Threat** No strategic direction Insufficient collaboration				
Result	**Action and scope**	**Priority**	**Timescale**	**Responsibility**
1.1 An ICA Working Group is operational and oversees curlew conservation delivery across the ICA network	**Identify and agree** ICA lead organisations and local champions that will develop 12 ICA management plans and take responsibility for actions and delivery. Each ICA lead organisation will provide an annual report on progress to the ICA Working Group.	**Critical**	**Short-term**	**Gylfinir Cymru**
	Establish an ICA Working Group to advise, guide and provide knowledge transfer to aid curlew recovery across the network of ICAs in Wales.	**Critical**	**Short-term**	**Gylfinir Cymru**
	Establish a clear communication and governance pathway for the ICA Working Group to report progress to Gylfinir Cymru.	**High**	**Short-term**	**Gylfinir Cymru**
Output 2. Develop the conservation toolkit and **seek funding to initiate appropriate action** to stop the decline of curlew in Wales by increasing curlew breeding success to >0.6 chicks/pair/year. **Threat** Continued habitat loss and degradation within the ICA network Continued population decline Poor breeding success main driver of decline Predation limiting recovery				
Result	**Action and scope**	**Priority**	**Timescale**	**Responsibility**
2.1 Identify 12 most Important Curlew Areas for conserving curlew in Wales	**Undertake** surveys to establish contemporary population status of breeding curlew (number of breeding pairs) using standardised methods. When identifying ICAs, evaluation will take account of population viability and criteria for success.	**Critical**	**Short-term**	**Gylfinir Cymru**

2.2 Recruit a Wales Curlew Programme Manager, for a minimum of three years	**Develop** the job specification for a Wales Curlew Programme Manager and seek funding for a minimum of three years. This post will support the network of ICA lead organisations, local champions and communities, share knowledge between leads and champions and will be a focal point and ambassador for Curlew conservation in Wales. **Dependent on secured funding.**	**Critical**	**Short-term**	**Gylfinir Cymru**
2.3 Land management projects are identified, and funding secured	**Identify** a costed programme of intervention measures required to benefit curlew within the ICA network. **Submit** funding applications to appropriate UK, WG and NRW funding schemes. **Implement** conservation intervention measures (habitat enhancement and predator control). **Dependent on secured funding.**	**Critical** **Critical** **Critical**	**Short-term** **Short-term** **Short-term**	**ICA leads** **ICA leads** **ICA leads**
Output 3: **Build the evidence base** by monitoring the number of breeding curlew (baseline) and population response (number of breeding pairs and breeding success) to habitat management measures and predator control.				
Result	**Action and scope**	**Priority**	**Timescale**	**Responsibility**
3.1 Confirm Important Curlew Areas	**Identify** and confirm ICAs. **Determine** ICA level of productivity and population viability (see 1.1).	**Medium** **Critical**	**Short-term** **Short-term**	**Gylfinir Cymru** **Gylfinir Cymru**
3.2 Monitor ICAs in response to habitat and predator control interventions	**Develop** a standardised, comparable monitoring programme to provide necessary data and information concerning the current conservation status of curlew in each ICA.	**Critical**	**Short-term**	**Gylfinir Cymru**
	Consider the benefits and feasibility of a marking, re-sighting and monitoring programme in Wales to allow sustained resighting effort and to enhance knowledge on wintering areas.	**Medium**	**Short-term**	**Gylfinir Cymru**

	Develop a pressures and threats matrix for each ICA and regularly review management plans to ensure they include appropriate measures to conserve curlew populations and the ecological requirements they require. (**AEWA: 1.3.1)**	**Critical**	**Short-term**	**Gylfinir Cymru**
3.3 Assess curlew translocation proposals	**Assess** any proposals for ICA head starting proposal(s) – see Annex 1 - that require appropriate licensing as set out by NRW's translocation policy and IUCN guidelines.	**Medium**	**Medium-term**	**NRW**
Output 4: Manage or eliminate significant pressures and threats to curlew population resilience within the ICAs. **Threat** Continued habitat loss and degradation within the ICA network Continued population decline Inappropriate land management schemes				
Result	**Action and scope**	**Priority**	**Timescale**	**Responsibility**
4.1 Identify site designation opportunities	**Advocate** any ICA that qualifies as a site of international or national importance for breeding curlew are protected under the Conservation and Habitat and Species (Amendment) (EU Exit) Regulations 2019 and/or Wildlife & Countryside Act 1981, as appropriate. (**AEWA: 1.1.1, 1.2.1**)	**Critical**	**Medium-term**	**NRW**
4.2 The impact of farming operations on breeding success is minimised	Within the ICA network: • **Raise awareness** amongst farming communities of the importance of the area for breeding curlew and highlight the critical role of farming in conserving the species. • **Proactively work** with farming communities to encourage uptake of beneficial management practices such as delayed mowing of grassland, appropriate grazing regimes, and minimising other detrimental field operations (e.g. rolling, spraying etc) and disturbance during the breeding season. (**AEWA 2.1.1**)	**Critical** **Critical**	**Continuous** **Continuous**	**ICA leads, ICA champions and ICA Working Group** **Farming unions, ICA leads, ICA champions and ICA Working Group**

4.3. Beneficial farming practices are supported and encouraged	• **Investigate** whether appropriate options and other conservation support schemes (e.g. s16 agreements) are (1) available and adequately funded to support farmers and other land managers in carrying out conservation management and (2) targeted to where they will deliver the greatest benefit. **(AEWA 2.1.2)**	**Critical**	**Short-term**	**ICA leads, ICA champions and ICA Working Group, NRW**
	• **Ensure** wider agricultural policy support mechanisms are available to maintain agricultural activity at important breeding sites **at risk from land abandonment** **(AEWA 2.1.3**)	**High**	**Medium-term**	**Welsh Government**
	• **Promote** encouragement for farmers to work together in clusters to provide for the ecological needs of curlew.	**High**	**Medium-term**	**Welsh Government**
4.4. Land management techniques that reduce levels of nest and chick predation within all ICAs	• **Promote** uptake of, and where possible monitor the effectiveness of, land management techniques designed to reduce predation through non-lethal means (e.g. manipulation of landscape features such as small woodlands, scrub, corvid perches etc).	**Medium**	**Long-term**	**ICA leads, ICA champions and ICA Working Group**
	• **Promote** and undertake targeted and legal predator control as a conservation tool in tandem with habitat management, **identify** the funding and public policy[2] pathways. **(AEWA 2.2.1)**	**Critical**	**Short-term**	**ICA leads, ICA champions and ICA Working Group**

[2] Public policy making is characterised as a dynamic, complex and interactive process through which public problems are identified and resolved by creating new public policy or by reforming existing public policy

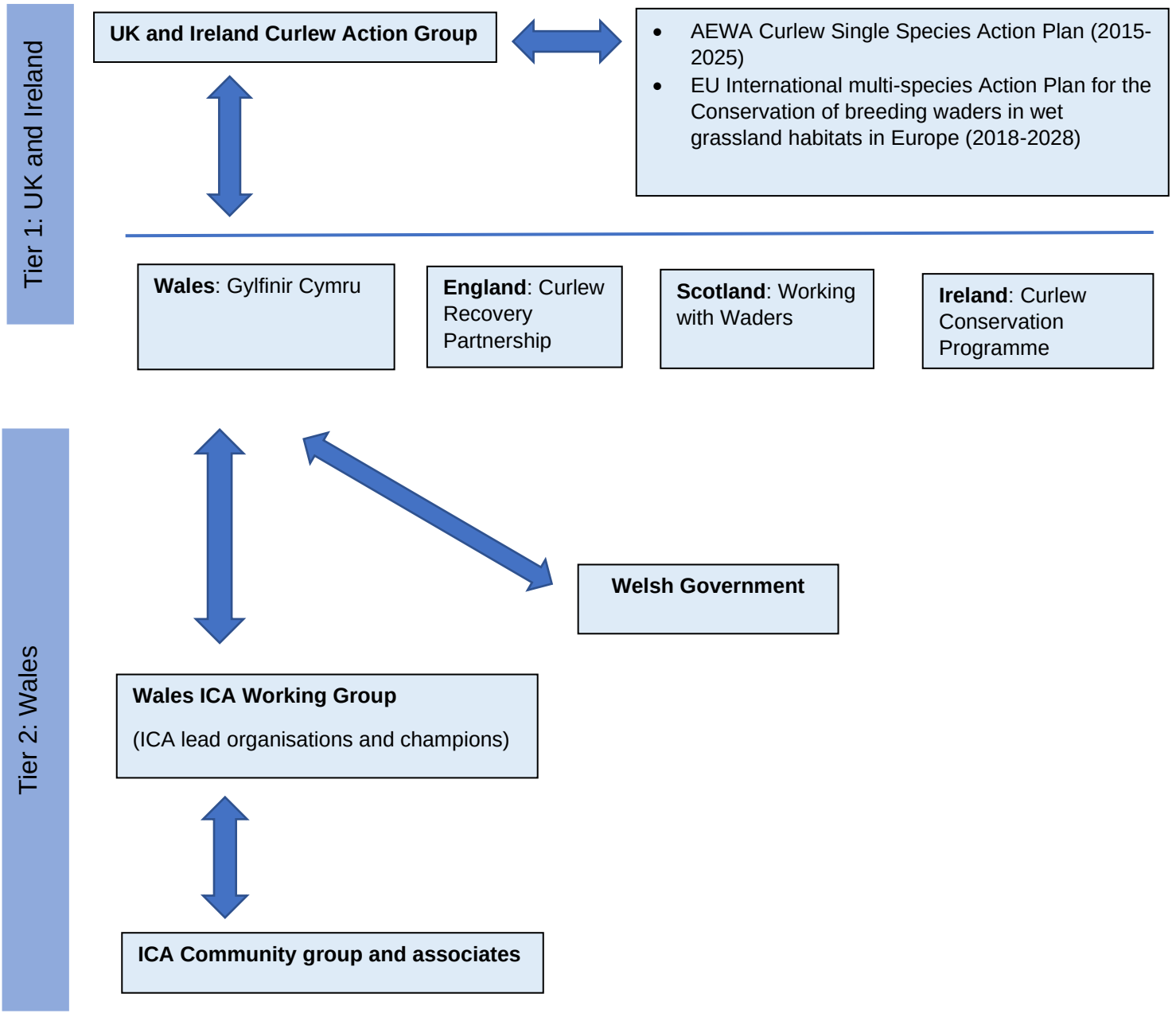
4.5 Protected Area Network	For ICAs within the existing protected sites network: • **Respond** to potential negative impacts from proposed developments of national significance. (**AEWA: 1.4.1**)	**Critical**	**Continuous**	**NRW**
4.6 Ensure adequate protection for breeding curlew (>5 pairs) from development pressures (onshore renewable energy, woodland recreation)	**Increase** awareness of the presence and needs of breeding curlew amongst renewable energy developers, planning authorities and land management planners by **producing**: • a curlew Development Guidance Note to compliment Future Wales: The National Development Framework to aid decision-making on land management planning, particularly onshore wind developments and woodland creation. • Guidance Note on standardised survey methods. • Curlew training and guidance for ecological consultants. **(AEWA 1.2.4)**	**Critical** **High** **High** **High**	**Immediate/continuous** **Short-term** **Short-term** **Short-term**	 **Gylfinir Cymru** **To be commissioned (funding dependent)** **To be commissioned (funding dependent)**
Output 5. Co-design initiatives with the farming and game management and local communities/wider general public in parallel with developing citizen science initiatives to work together on delivery **Threat:** Continued habitat loss and degradation within the ICA network Disinterest from farming communities and wider public				
Result	**Action and scope**	**Priority**	**Timescale**	**Responsibility**
5.1. Promote curlew friendly management on farmed and game managed land	**Support** farm managers, owner/occupiers and game estates to promote positive management for all ICAs.	**Critical** **Critical**	**Short-term** **Short-term**	**Farming unions, ICA leads and ICA champions** (all three actions in 5.1)

	Engage landowners, farmers and game managers to gain cross-sector support for the objectives and provisions of this plan. **Work with** local farming communities to maintain or establish ICA management strategies for favourable curlew management.	**Critical**	**Medium-term**	
5.2. Communications, public awareness/education	**Develop** and **implement** a national communications plan to support conservation actions. **Encourage** and **promote** educational and public awareness programmes amongst communities (especially in schools close to ICAs). **Ensure** appropriate MSs and Welsh Government Senior Advisors are updated on the delivery of the Action Plan for curlew in Wales. **Develop broad partnerships** with farmers, the wider food industry and local communities to work together to implement the relevant actions within this Action Plan. **Inspire decision-makers** by showcasing successful conservation projects and the actions required to achieve them e.g. successful deployment of agri-environment schemes, nature compensation/mitigation in response to developments, the rewetting of peatlands for the multiple purposes of curlew conservation, carbon sequestration and flood alleviation.	**Medium** **Medium** **Medium** **Critical** **High**	**Short-term** **Short-term** **Long-term** **Short-term** **Medium-term**	**Gylfinir Cymru** **ICA leads and ICA champions** **NRW and Gylfinir Cymru** **ICA Working Group** **Gylfinir Cymru & ICA Working Group**
Output 6. Influence the development of a package of financial support to assist land managers deliver for breeding curlew and wider environmental/societal benefits supporting the concept of 'public goods and public services'. **Threat:** Habitat loss and degradation on the ICA				

Result	Action and scope	Priority	Timescale	Responsibility
6.1 Articulate to decision-makers how curlew conservation provides multiple societal and environmental benefits	**Commission** a review, and promote its results, that identifies the potential wider benefits to society and to the wider environment associated with the conservation of breeding curlew and their habitats.	**Critical**	**Short-term (COMPLETED)**	**NRW**
6.2 Policy and strategy development**,** such as the Sustainable Farm Scheme, Future Wales (the National Development Framework), NRW Area Statements etc that are designed to ensure space to live, work and play, food production, and sustainable use of natural resources, enable curlews to flourish.	**Advocate** that the Sustainable Farm Scheme and associated land management policies enable farmers to deliver all the ecological needs of breeding curlews, at the required spatial scale and is based on robust evidence.	**Critical**	**Medium-term**	**All**

8 Governance and responsibility for implementation

A key recommendation that emerged from consultation with stakeholders and Gylfinir Cymru during development of this Wales Action Plan for curlew recovery was the need for a balanced and inclusive governance structure. To enable this, a two-tiered approach will be adopted. The UK governance will follow the model agreed by the UK and Ireland Curlew Action Group. Coordinated implementation of this Action Plan in Wales will be a critical factor for successful delivery and realisation. To ensure this, Gylfinir Cymru will establish and convene the Wales ICA Working Group (consisting of Gylfinir Cymru lead experts, ICA lead sponsor organisations and ICA champions). The strategic direction of this work will be steered by Gylfinir Cymru / Curlew Wales. The governance model outlined below provides a bottom-up and top-down approach of knowledge transfer, engagement and support.



9 Costings

The approach presented in this Action Plan recommends that a spatial approach is adopted for the recovery of breeding curlew in Wales. The framework of ICAs will be used to develop and implement site-specific action plans. Costings will be formalised for each ICA when standardised assessments have been undertaken by ICA lead organisations. Such assessments will support funding bids to a range of national, Welsh Government and Natural Resources Wales funding schemes for either a single ICA or a suite of ICAs.

Gylfinir Cymru will seek financial support from Welsh Government and/or Natural Resources Wales for a Curlew Programme Manager (for a minimum of three years), to oversee the ICA framework and to build on the existing informal network of projects and individuals working at a local level to help drive forward positive conservation action for breeding curlew.

10 References

BirdLife International. 2015. European Red List of Birds. Luxembourg: Office for Official Publications of the European Communities.

Brown, D.J. 2015. International Single Species Action Plan for the Conservation of the Eurasian Curlew *Numenius arquata arquata*, *N. a. orientalis* and *N. a. suschkini*. AEWA Technical Series No. 58. Bonn, Germany.

Brown, D.J. *et al*. 2015. The Eurasian Curlew – the most pressing bird conservation priority in the UK? *British Birds* **108**: 660–668.

Eaton, M. *et al*. 2015. Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds* **108**, 708–746.

Grant, M.C., Orsman, C., Easton, J., Lodge, C., Smith, M., Thompson, G., Rodwell, S. and Moore, N. 1999. Breeding success and causes of breeding failure of Curlew *Numenius arquata* in Northern Ireland. *J. App. Ecol*. **36**:59-74.

IUCN/SSC. 2013. *Guidelines for Reintroductions and Other Conservation Translocations. Version 1.0.* Gland, Switzerland.

Johnstone, I., Dyda, J & Lindley, P.J. 2007. The population status and hatching success of curlews *Numenius arquata* in Wales in 2006. *Birds in Wales*, **5**: 78-87.

Johnstone, I and Bladwell, S. 2016. Birds of Conservation Concern in Wales 3: the population status of birds in Wales. *Birds in Wales* **13**(1): 3-31.

Lee, R., Cranswick, P.A., Cromie, R.L., Hilton, G.M., Jarrett, N.S., Hughes, B. 2012. *AEWA Guidelines for the Translocation of Waterbirds for Conservation Purposes: Complementing the IUCN Guidelines. AEWA Conservation Guidelines No. 13, AEWA Technical Series No. 49*

National Species Reintroduction Forum 2014. *Best Practice Guidelines for Conservation Translocations in Scotland Version 1.1.* Edinburgh.

Roos, S., Smart, J., Gibbons, D.W. & Wilson, J.D. 2018. A review of predation as a limiting factor for bird populations in mesopredator-rich landscapes: a case study of the UK. *Biological Reviews* **93**: 1915-1937.

Stanbury, A., Brown, A., Eaton, M., Aebischer, N., Gillings, S., Hearn, R., Noble, D., Stroud, D. and Gregory, R. 2017. The risk of extinction for birds in Great Britain. *British Birds*. **110**: 502-517.

Taylor, R., Bowgen, K., Burton, N., and Franks, S. 2020. Understanding Welsh breeding Curlew: from local landscape movements through to population estimations and predictions. Natural Resources Wales, NRW Evidence Report 485.

Annex 1 Reinforcement by headstarting

There is widespread interest in the potential for headstarting, and related techniques, to contribute to curlew recovery in the UK and Ireland. Avian headstarting is the hatching, rearing and release into the wild of birds that have been harvested from the wild at the egg stage. It aims to increase productivity – and hence population growth rate - by rearing birds in captivity to increase survival during the egg and chick phase, when mortality in the wild is high. Technically, headstarting returns captive-reared birds to the population from which they were taken. Currently, we do not consider the option of breeding adult curlews in captivity with the aim of releasing their offspring into the wild a suitable intervention policy for any ICA.

Headstarting is complex and risky, and therefore requires detailed planning. Pilot trials are currently being undertaken in England under the governance of the UK and Ireland Curlew Action Group and a scientific working group. Considering such interventions in Wales will require a 'justification assessment' and a 'feasibility assessment' with associated 'disease risk assessment'. Given this background, any curlew headstarting proposal in Wales will initially be screened by Gylfinir Cymru following the strategic guidance of the UK and Ireland Curlew Action Group and the scientific working group and will be considered only within the suite of ICAs. After this step, proposals will then be formally assessed against best practice for translocation as set out by NRWs translocation policy and IUCN guidelines (Lee *et al.* 2012; IUCN/SSC 2013; National Species Reintroduction Forum 2014). In addition, the following questions will be addressed:

1. Whether, and in what circumstances can, the increased productivity of head started pairs translate into increases in productivity and trend of the population?
2. How does the increase in productivity achievable through headstarting compare, in terms of cost and benefit, to other management options?
3. What are the risks associated with headstarting?
4. Are there significant unknowns associated with headstarting?
5. When and where should headstarting be attempted?

We believe that careful application of these guidelines by the proposed governance structure coupled with enforcement by the competent licensing authority, should result in effective headstarting.

Organisations participating in the development of this plan