

The ecological and welfare implications of rearing, releasing, managing and shooting gamebirds in the UK

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Behaviour and Welfare

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Gamebird Vets



Livestock



Wildlife





Gamebird Vets

Health and Productivity



Gamebird Biologists

Ecology, Behaviour, Ecosystem Effects and Welfare



Gamebird Biologists



Joah Madden



University
of Exeter

A focus on Ecosystem Effects

Some Questions

A person is seen from behind, aiming a shotgun upwards in a grassy field. The background consists of a dense line of trees with autumn foliage and a cloudy sky. Several birds are captured in flight against the sky. A red rectangular box is superimposed over the center of the image, containing text.

How many game birds are released for shooting
in the UK each year?



What are the net ecological effects of gamebird release and management?



What are the health consequences of gamebird releases for populations of other species?



What is the future for gamebird release
and management in the UK?

Some Answers

A person is seen from behind, aiming a shotgun upwards in a grassy field. The background consists of a dense line of trees with some autumn-colored foliage and a cloudy sky with several birds in flight. A red rectangular box is superimposed over the center of the image, containing text.

How many game birds are released for shooting
in the UK each year?



We don't accurately know!

Use this form to register flocks of **50 or more birds**. You must do this within one month of keeping 50 or more birds at your site. You can choose to register flocks with fewer than 50 birds by completing the Voluntary Poultry Registration Form - Keeper of Fewer Than 50 Birds (IRA82).

- 50 or more birds you keep captive for any period of time
- flocks made up of different species, such as chickens, ducks or geese
- birds kept for:
 - the consumption of meat and eggs
 - other commercial purposes
 - restocking game birds, or
 - breeding for the three purposes above

You must complete this form if you are in charge of the day-to-day care of the poultry (**the keeper**). You must complete all fields marked with an * or add 'N/A' as appropriate. Contact the free Poultry Registration Helpline on **0800 634 1112** for help with completing the form.

*Title (tick):	Mr	☐	Mrs	☐	Miss	☐	Ms	☐	Other (specify)	
*Surname:							*Forename:			
*Address:	 									
*Postcode:										
*Telephone No.:							*Mobile No.:			
*Email address:										

*Business activity:

Recorded as “Held for
Release for Shooting”

14.7 million birds

10.4 million pheasants

3.8 million partridges

0.4 million ducks



END SHOOTING OF ANIMALS FOR SPORT

**Up to 146,000
pheasants**

are shot every day in the UK, during
their respective shooting season

**5,300 red
grouse**

are shot every day in the UK during
their shooting season

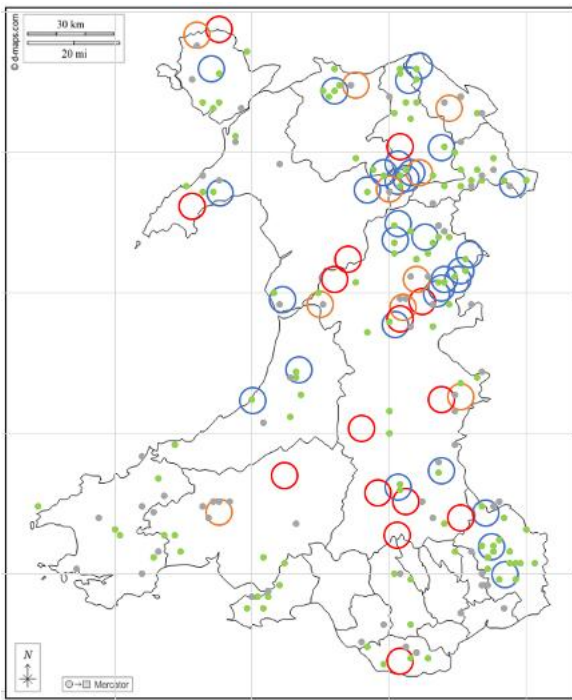
**38,300 red-
legged partridge**

are shot every day in the UK during
their shooting season

**Around 62
million 'game'
birds**

are released in the UK countryside
each year

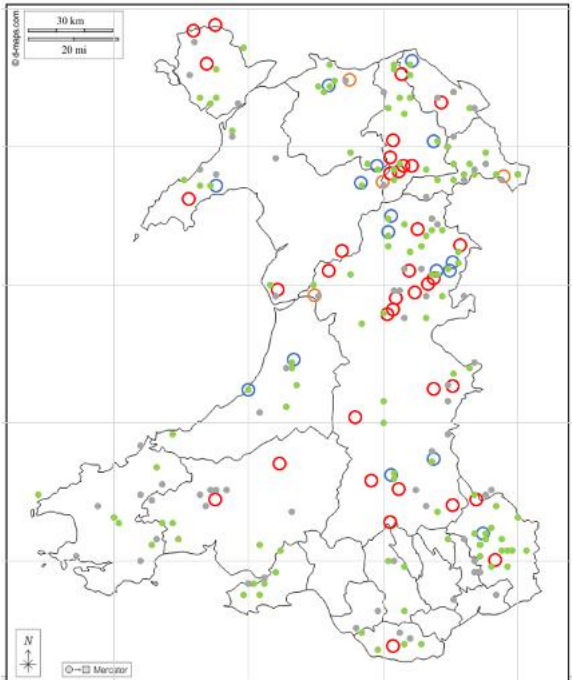
Commonly quoted figures ~4 time higher



4km radius

Likely poor compliance with the Register

- Compliant
- Possibly compliant
- Possibly non-compliant



2km radius

Compliance ranges from **24%-73%**

If so, birds = **20.1-61.2** million/year



How many gamebirds are released in the UK each year?

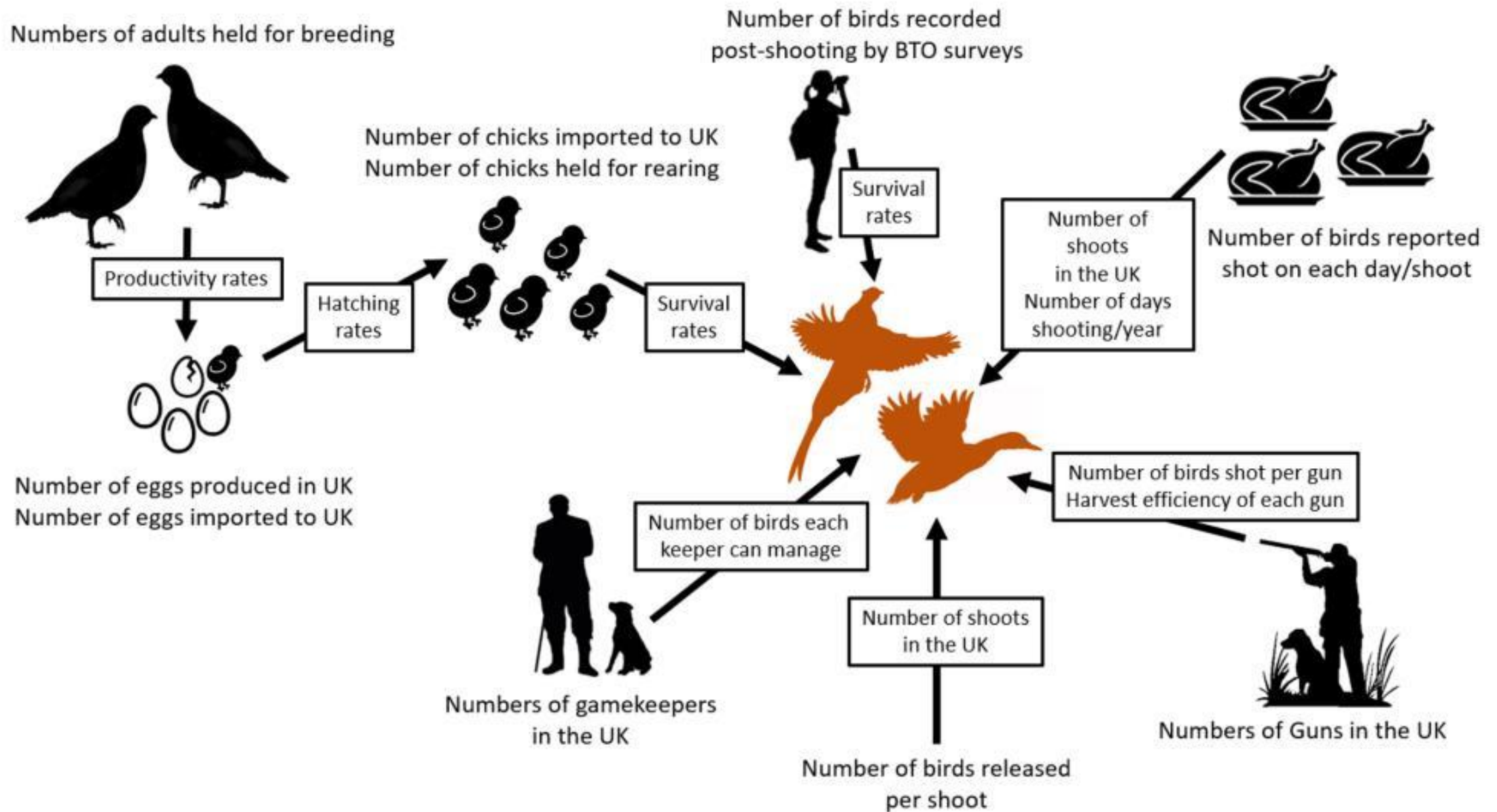
Joah Robert Madden¹ 

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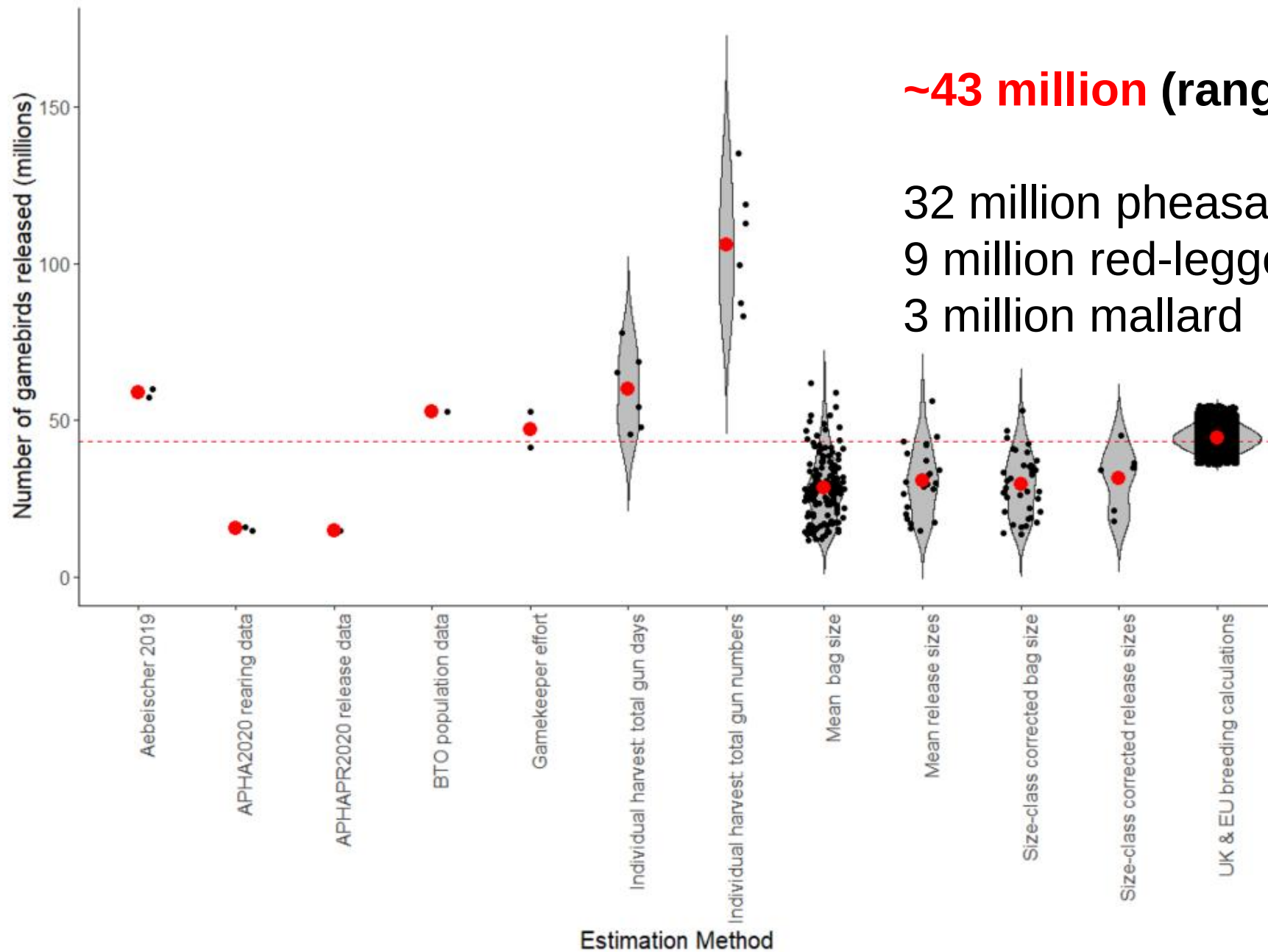
Abstract

Large numbers of gamebirds (pheasants *Phasianus colchicus*, red-legged partridges *Alectoris rufa* and mallard *Anas platyrhynchos*) are released annually in the UK to support recreational shooting. It is important to know how many of these birds are being released because their release and management has ecological effects on the wildlife and habitats of the UK. There is little regulation governing their release, and consequently, an accurate figure for the numbers being released is unknown. I took 12 different approaches, totalling 4329 estimates of the numbers of birds being released annually, based on a series of datasets that described numbers of birds being held for breeding, rearing or release, being released, managed or shot on game shoots, being shot by individual guns or being recorded during breeding bird surveys. These 12 approaches produced estimates ranging from 14.7 to 106.1 million with a mean of 43.2 million (95% CI 29.0–57.3 million). This suggests that 31.5 million pheasants (range 29.8–33.7 million), 9.1 million red-legged partridges (range 5.6–12.5 million) and 2.6 million mallard (range 0.9–6.0 million) are released annually in the UK. These figures differ substantially from both official records of gamebirds and previous published estimates, and I discuss why such differences may occur. I set these figures in the context of the number and behaviour of shoots operating in the UK. Improved estimates of numbers of gamebird being released are critical if we are to better understand the ecological effects occurring in areas where they are released and managed.

Keywords Gamebirds · Hunting · Shooting · Pheasants · Red-legged partridges · Mallard



A triangulation approach



~43 million (range 15-106 million)

32 million pheasants

9 million red-legged partridges

3 million mallard

Numbers released have increase by ~9x since 1960s

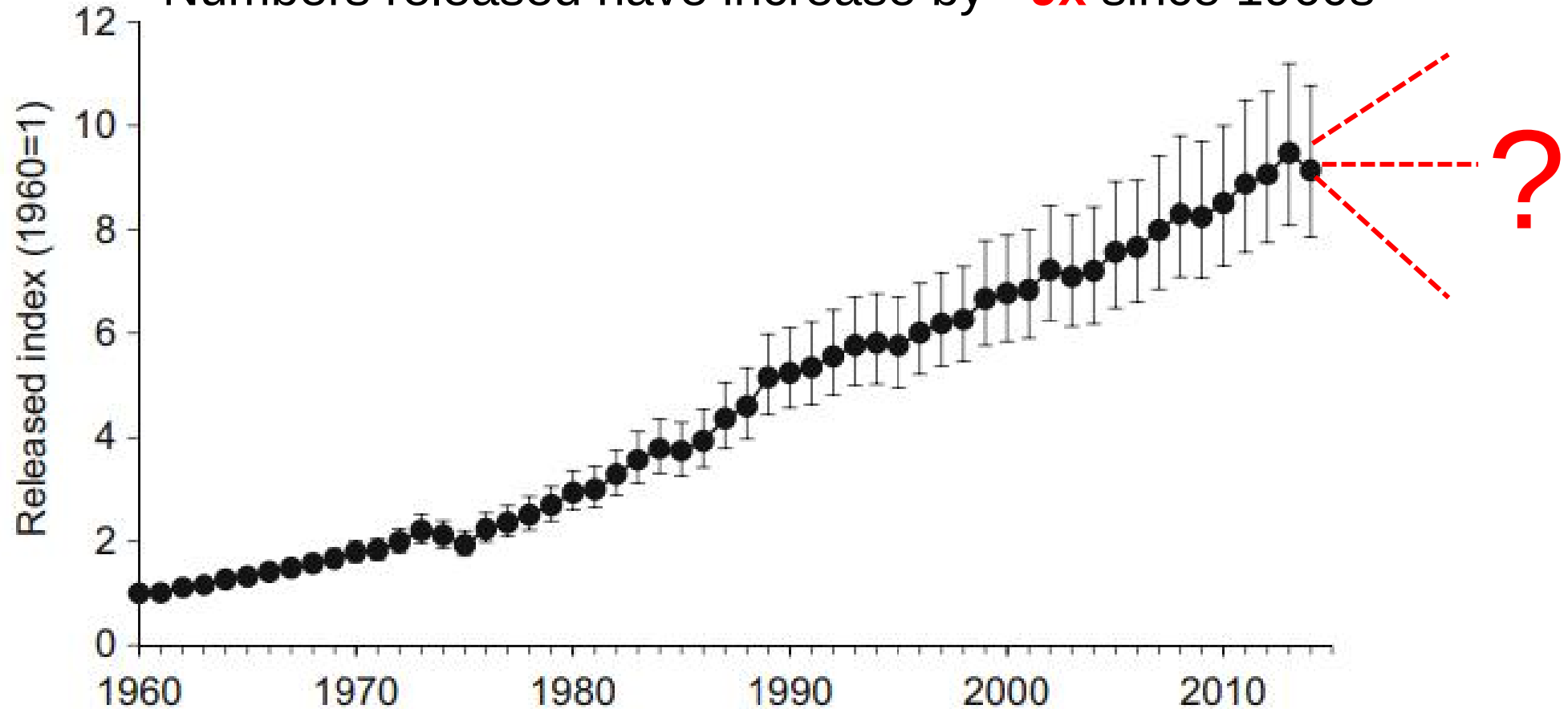
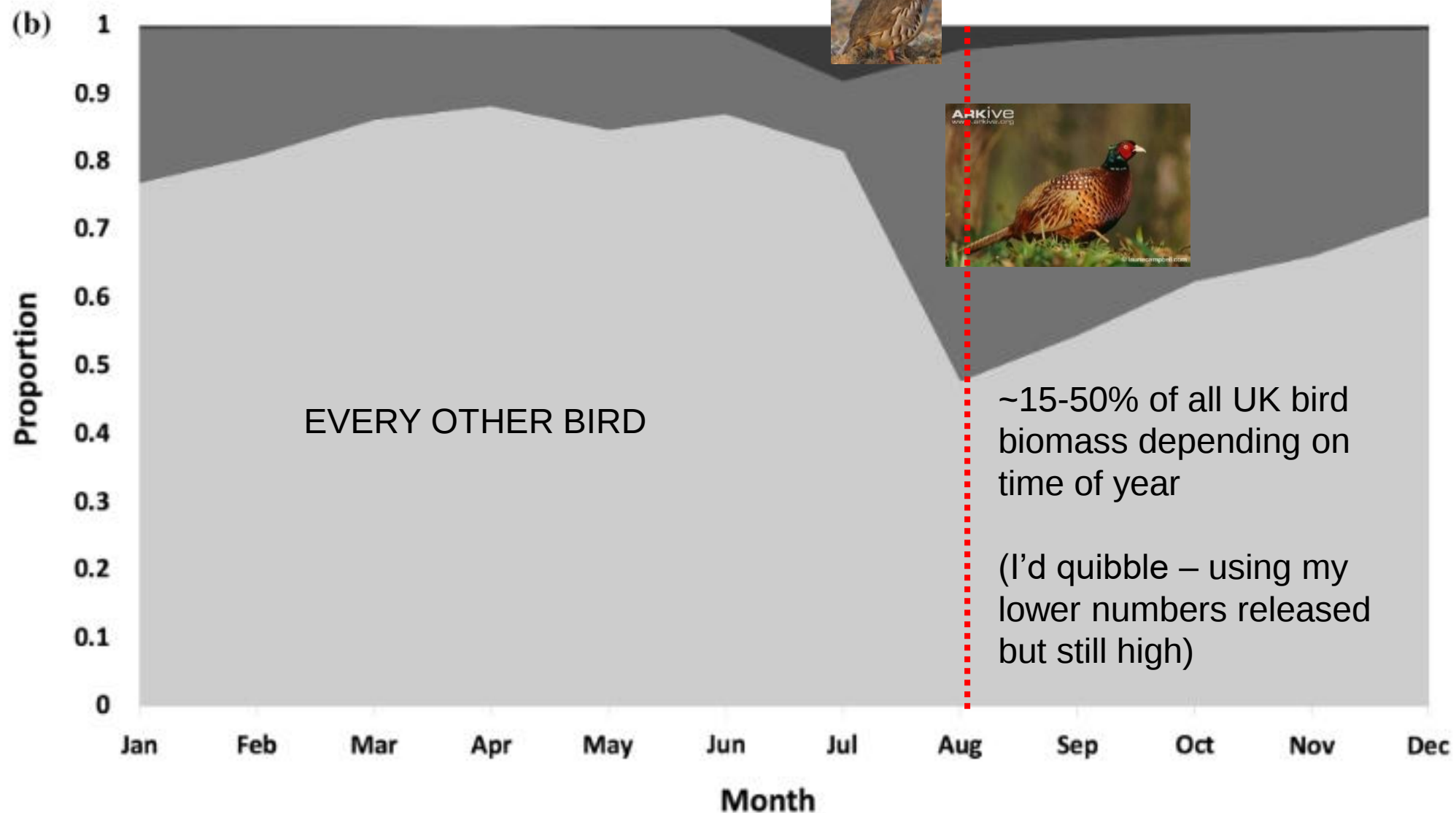


Fig. 1 Changes in the numbers of pheasants released on contributing NGC sites in Great Britain 1961–2014 ($\pm$ s.e.). This is presented as an index with 1960 set to one



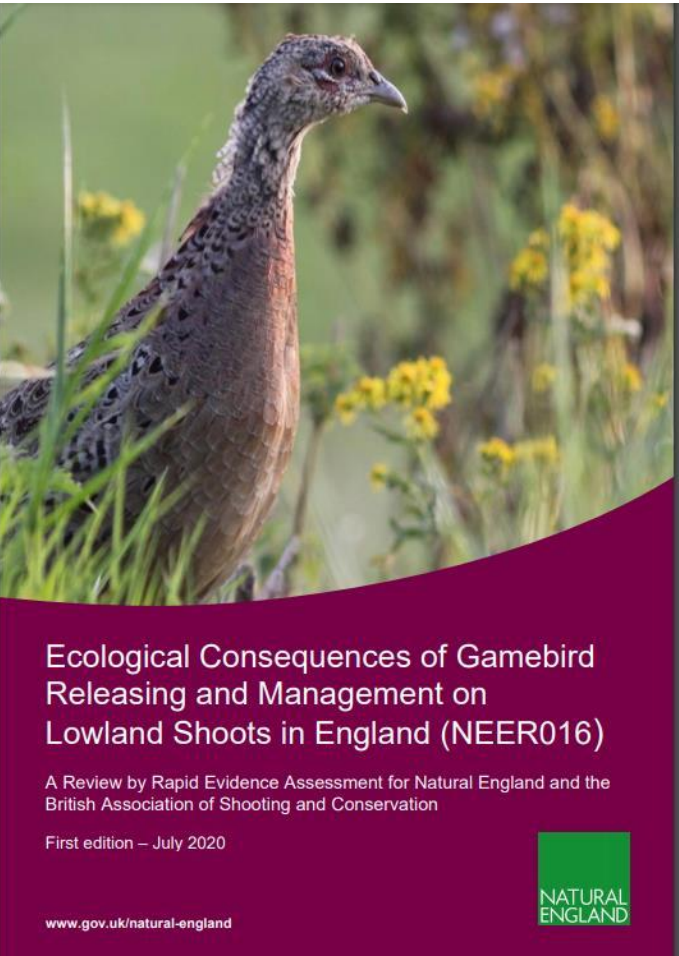
Without accurate data on the scale of releasing or release locations, assessing impacts (+ve or –ve) is difficult



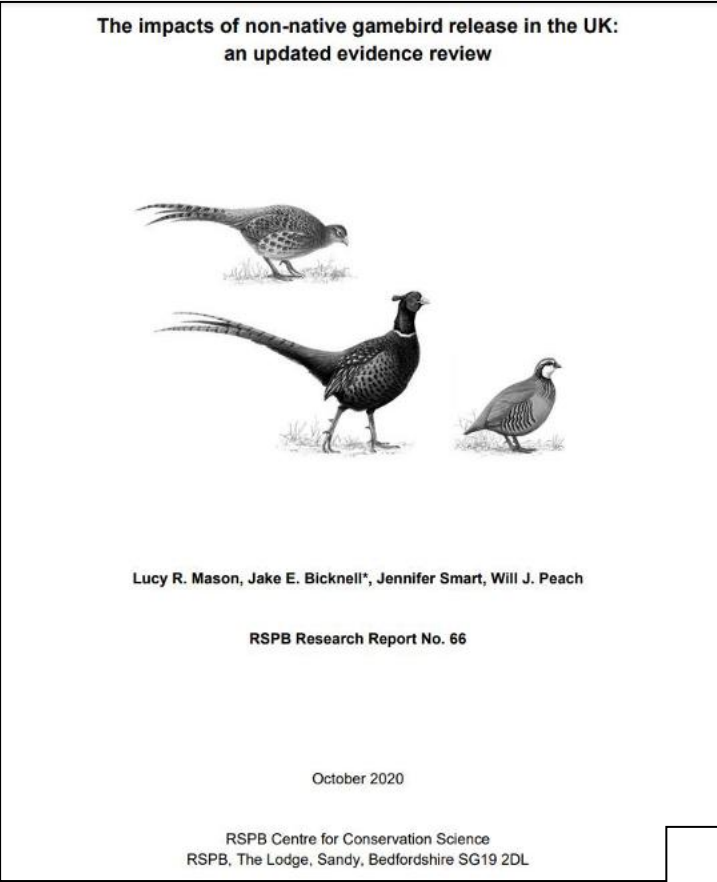
What are the net ecological effects of gamebird release and management?

We don't accurately know!

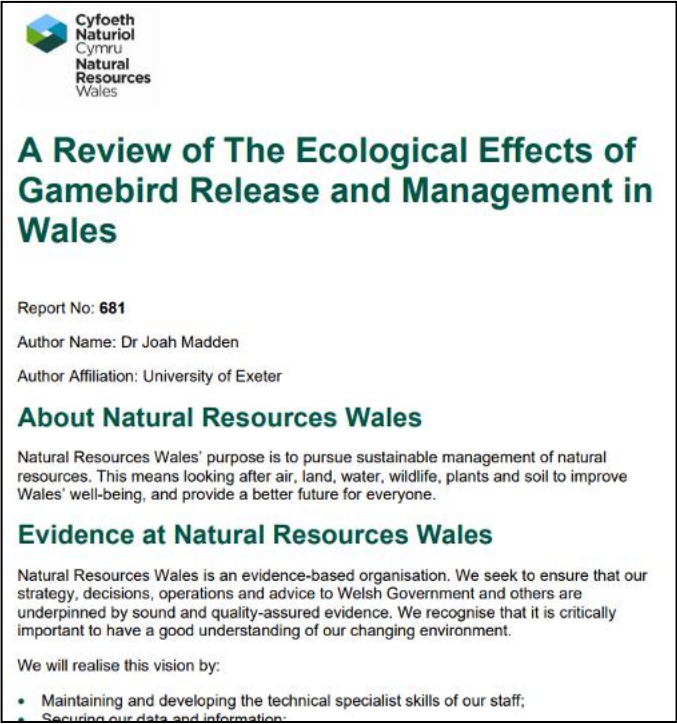




Madden & Sage 2020



Mason et al. 2020



Madden 2023



Sage et al. 2020

Recent Reviews



Currently a particular focus on Protected Areas

Natura 2000 Sites in England

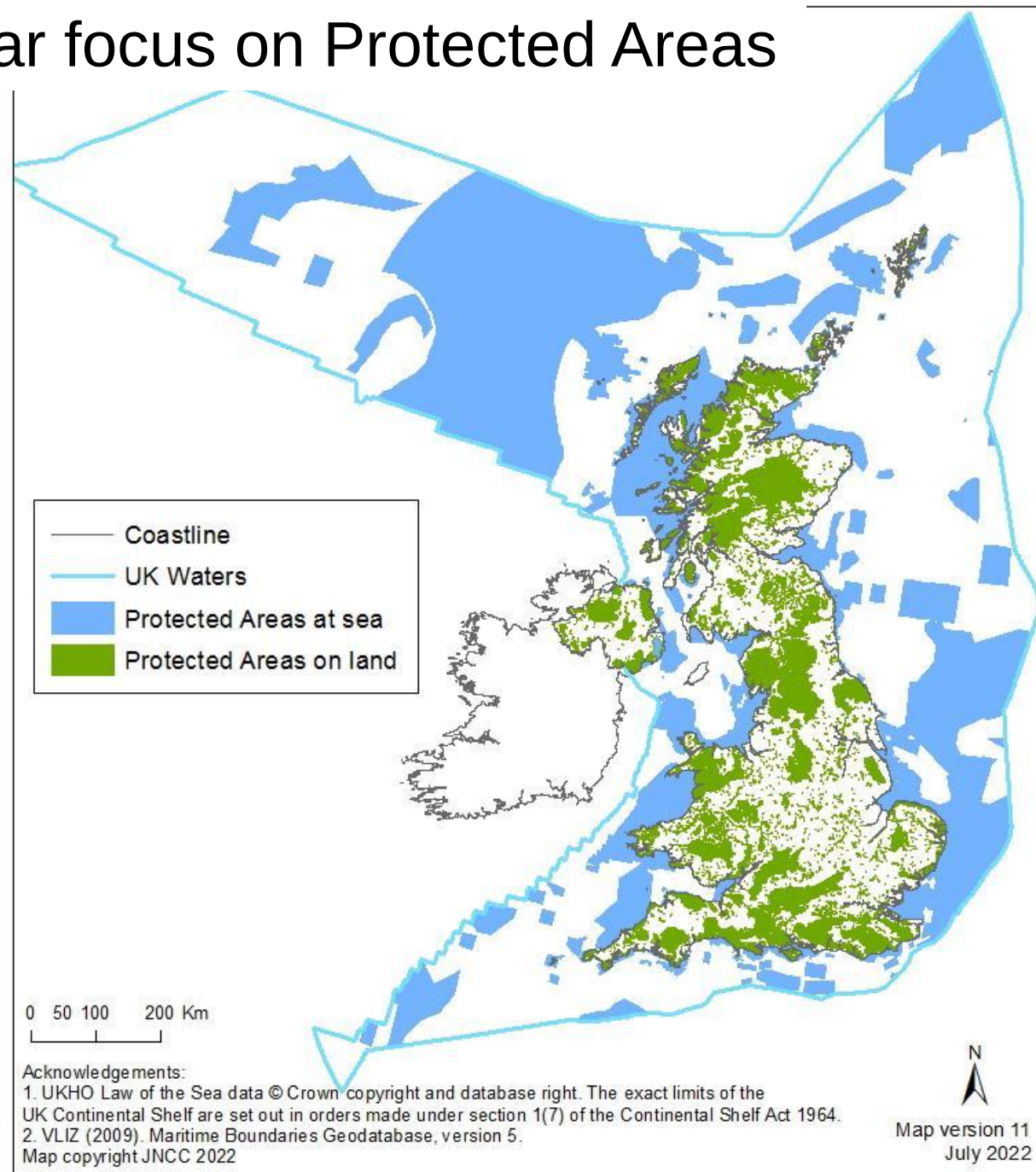
- Special Areas of Conservation (SAC)
- Special Protection Area (SPA)
- Candidate Special Areas of Conservation (cSAC)
- Potential Special Protection Area (pSPA)
- SAC & SPA



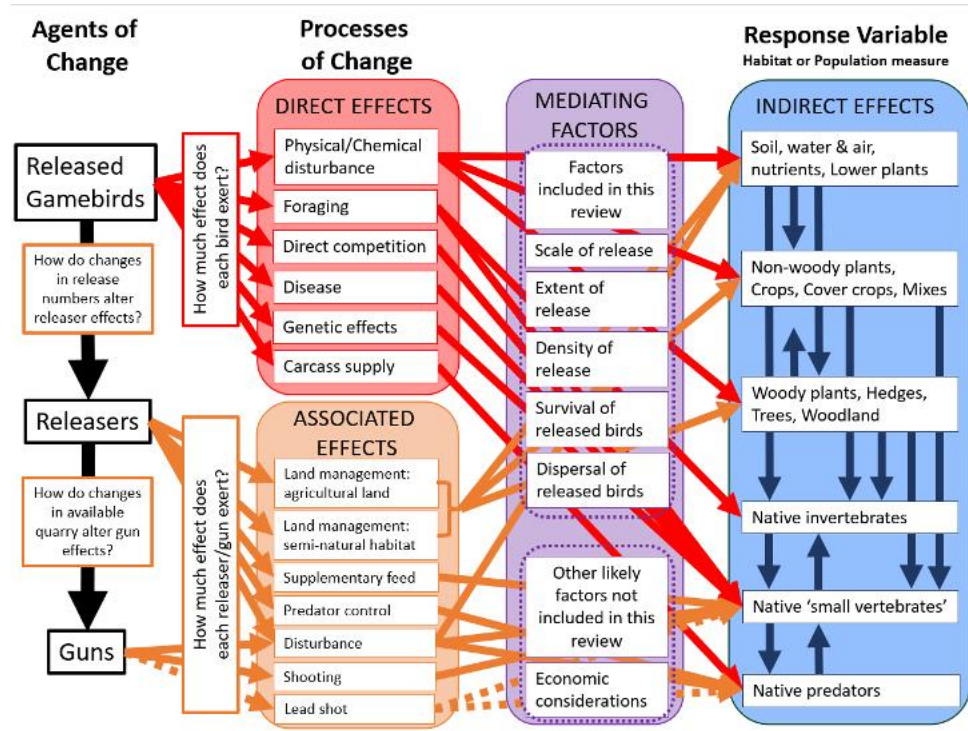
Improvement Programme for England's Natura 2000 Sites (IPENS) Planning for the Future

Map produced by S Haley, IPENS Team, Landscape & Biodiversity May 2013 © Crown copyright and database rights 2013 Ordnance Survey 100022021

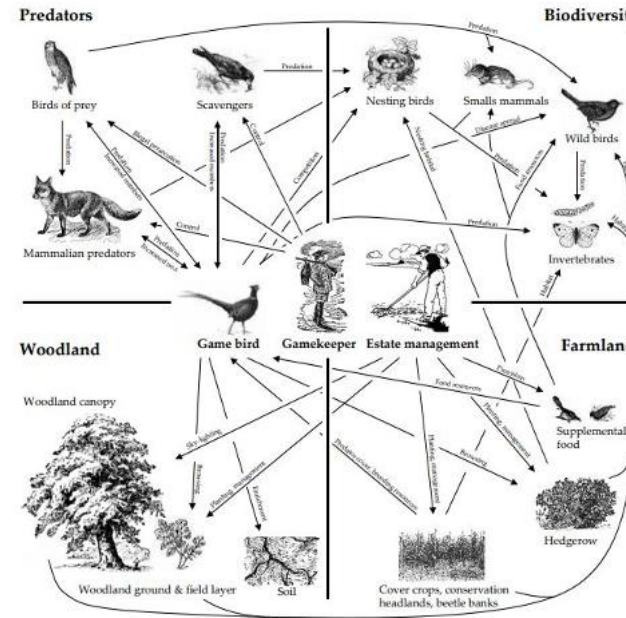
www.naturalengland.org.uk/ipens2000



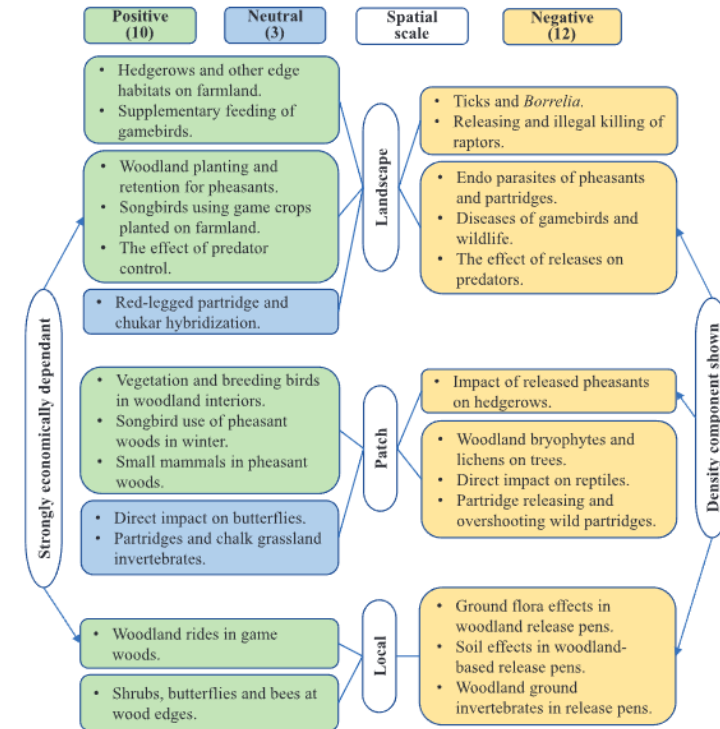
Complex Network of Effects



Madden & Sage 2020



Mason et al. 2020

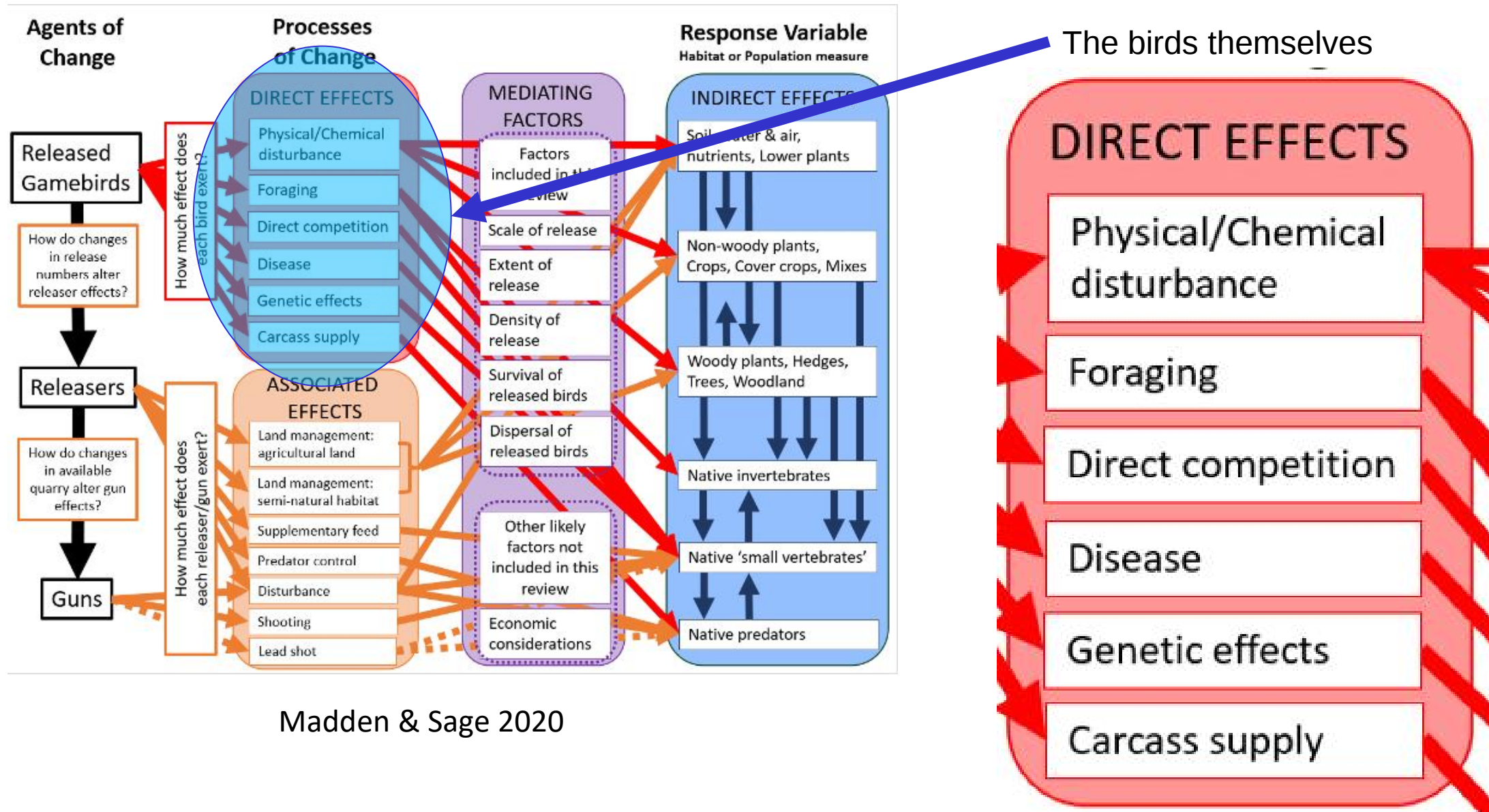


Sage et al. 2020

The effects of the (43 million?) released birds themselves



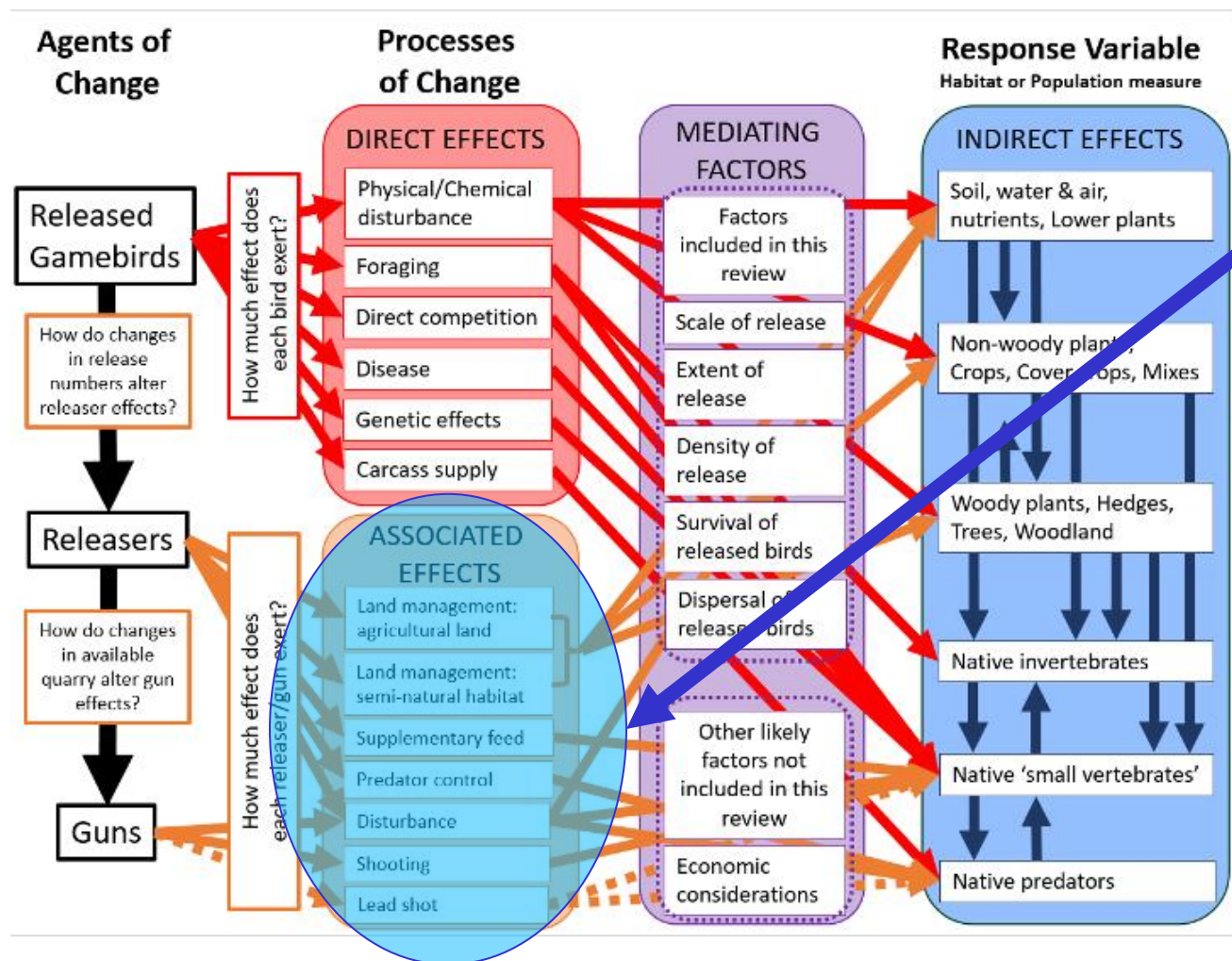
Complex Network of Effects



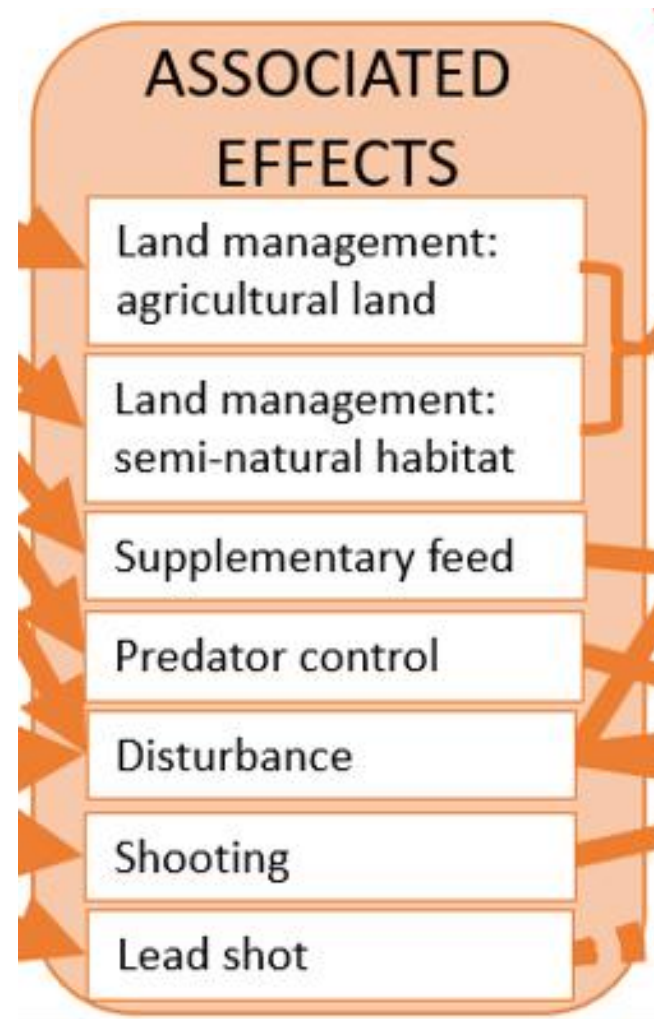
The effects of the keepers/owners on (~8000?) shoots



Complex Network of Effects



The people who manage them and shoot them

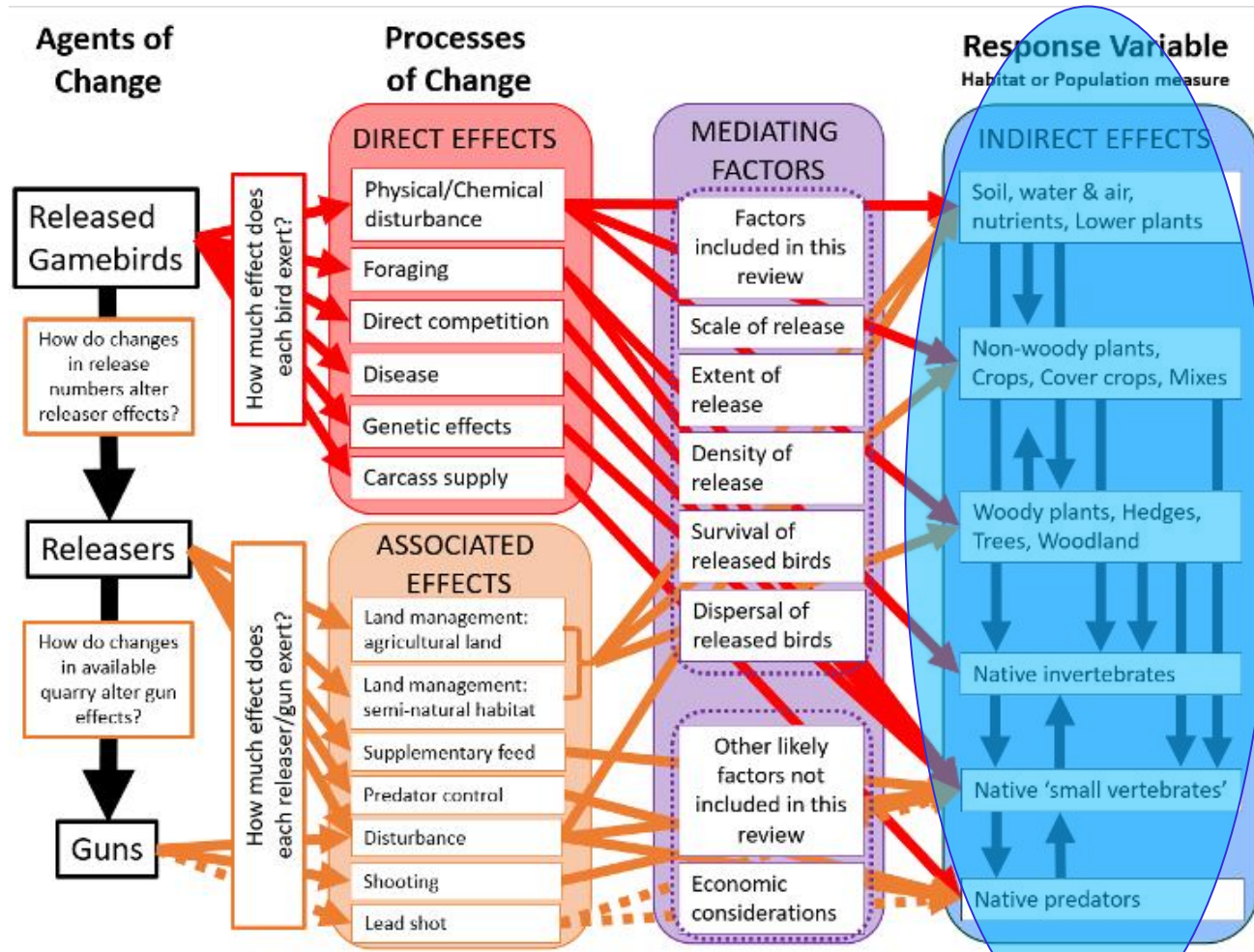


Madden & Sage 2020

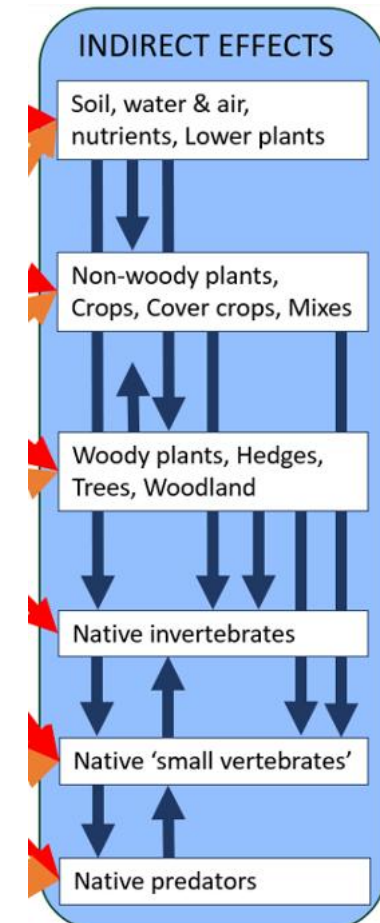
The cumulative, trickle down, unexpected or unintended effects



Complex Network of Effects



The cumulative and complex effects of the birds and people interacting with wildlife



Madden & Sage 2020

A Review of The Ecological Effects of Gamebird Release and Management in Wales

Report No: **681**

Author Name: Dr Joah Madden

Author Affiliation: University of Exeter

About Natural Resources Wales

Natural Resources Wales' purpose is to pursue sustainable management of natural resources. This means looking after air, land, water, wildlife, plants and soil to improve Wales' well-being, and provide a better future for everyone.

Evidence at Natural Resources Wales

Natural Resources Wales is an evidence-based organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff;
- Securing our data and information;

Broad ecological effect	Madden & Sage (2020) Total evidence score	Mason et al. (2020) Amount of evidence x median effect	Sage et al. (2020) Sum of evidence for direction of each effect and net value
Effects of habitat creation, retention and management	206	+63	(17 +ve, 0 ntl, 0 -ve) +17
Effects caused directly by the released gamebirds	144	-42	(0 +ve, 5 ntl, 10 -ve) -10
Effects relating to predators	129	-12	(3 +ve, 3 ntl, 9 -ve) -6
Effects on disease, parasites and genetic integrity	111	-13	(0 +ve, 3 ntl, 7 -ve) -7
Effects related to supplementary feeding	35	+12	(3 +ve, 0 ntl, 0 -ve) +3
Effects caused by guns and keepers during shooting and management	35	-2	(0 +ve, 1 ntl, 1 -ve) -1

Table 2. Summary of the amount of evidence supporting each broad ecological effect and whether it is generally indicative of overall positive, neutral or negative ecological effects. Ecological effects ordered by the amount of evidence supporting them. Green text indicates effects considered to be

Direct effects of birds themselves
Always (?) negative

Associated effects of keepers/guns
Predominantly positive

Broad ecological effect	Madden & Sage (2020) Total evidence score	Mason et al. (2020) Amount of evidence x median effect	Sage et al. (2020) Sum of evidence for direction of each effect and net value
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A photograph of a pheasant standing on a field of raised agricultural ridges, likely created by a plow. The ridges are dark brown and run diagonally across the frame. The pheasant is positioned in the center-right of the frame, facing left. The background is a hazy landscape with some trees and a distant building.

What are the NET effects of the presence and scale of gamebird release and management across non-game fauna?

RESEARCH ARTICLE

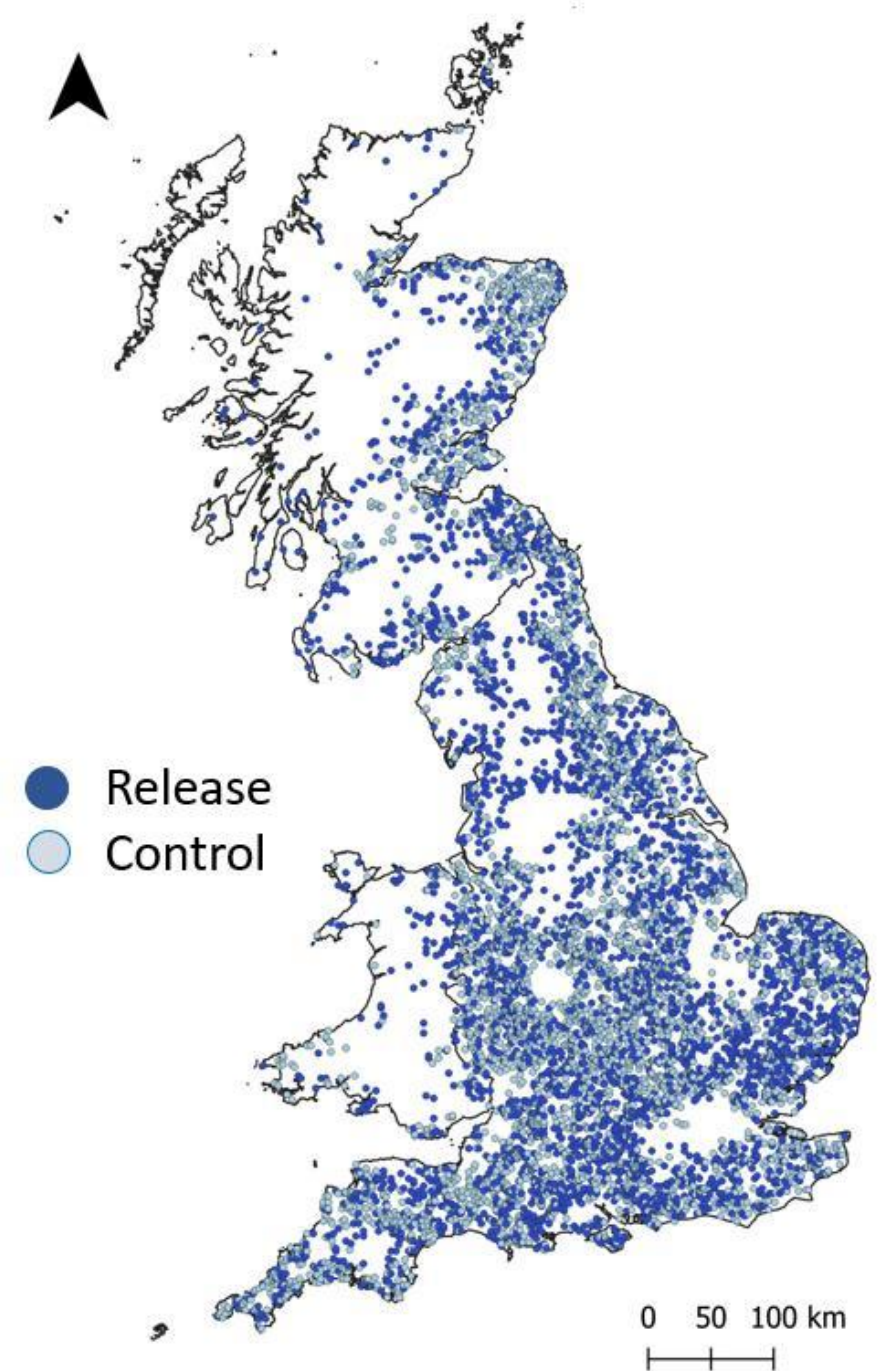
Large-scale correlations between gamebird release and management and animal biodiversity metrics in lowland Great Britain

Joah Robert Madden¹  | Rosie Buckley¹ | Sophia Ratcliffe² 

Large (national) scale study based on data collected without interests in the question. No selection of study sites. Broad range of taxa of interest

3,284 Release Tetrads
1km²
+

3,284 Control Tetrads
1km²



Generalist predators

(Beja et al. 2009, Swan 2017, Pringle et al. 2019, Porteus et al. 2019)



Rodents

(Davey 2008, Sanchez-Garcia et al. 2015)



Invertebrates

(Woodburn & Sage 2005, Robertson et al. 1988, Pressland 2009, Callegari et al. 2014, Neumann et al. 2015, Hall et al. 2021)

Farmland and woodland birds

(e.g. Robertson et al. 1988, Sage et al. 2005, Hoodless et al. 2006, Davey 2008, Sage et al. 2009, Bicknell et al. 2010, Tompkins et al. 2000, Gethings et al. 2016)

Overall...

32.5% more records reported from **Release** tetrads (X = 436) compared to **Control** tetrads (X = 329) (Welch 2 sample on logged data: $t_{6590.9} = -4.74$, $P < 0.0001$)

Overall...

32.5% more records reported from **Release** tetrads ($X = 436$) compared to **Control** tetrads ($X = 329$) (Welch 2 sample on logged data: $t_{6590.9} = -4.74$, $P < 0.0001$)

Assuming equal sampling effort, then there is genuinely more biodiversity at release sites



(but see Cox et al. 1996)

		Presence vs absence of releases		Scale of releases	
		Absolute	Proportion	Absolute	Proportion
Fox					
Buzzard					
Carrion Crow					
Raven					
Magpie					
Jay					
Rodents					
Grey Squirrel					
Reptiles					
Butterflies					
Orthoptera					
Beetles					
Carabids					
Farmland bird abundance					
Farmland bird richness					
Farmland bird diversity					
Woodland bird abundance					
Woodland bird richness					
Woodland bird diversity					

		Presence vs absence of releases		Scale of releases	
		Absolute	Proportion	Absolute	Proportion
Fox		42%	39%	-0.042	-0.041
Buzzard		48%	1%		
Carrion Crow		18%	4%		
Raven					
Magpie					
Jay					
Rodents		25%	6%		
Grey Squirrel		13%	65%		
Reptiles					
Butterflies		34%	12%		
Orthoptera					
Beetles		4%	11%		
Carabids					
Farmland bird abundance		16%			
Farmland bird richness		10%			
Farmland bird diversity		8%			
Woodland bird abundance		14%	9%		
Woodland bird richness		14%	13%		
Woodland bird diversity		12%			

Foxes Fewer where shoots occur

Avian generalist predators Mixed picture

Other terrestrial vertebrates More where shoots occur

Invertebrates Mixed picture

Indicator bird species (Generally) More where shoots occur

Without a clear understanding of how
gamebird release and management
affects wider ecology, prescribing best
practice advice, legislation or ensuring net
benefits is difficult



What are the health consequences of gamebird releases for populations of other species?



We don't
accurately know

AMR

AMR

Evidence of AMR in pheasants

UK: Bain et al. 2023, Chintoan-Uta & Seguíno 2018

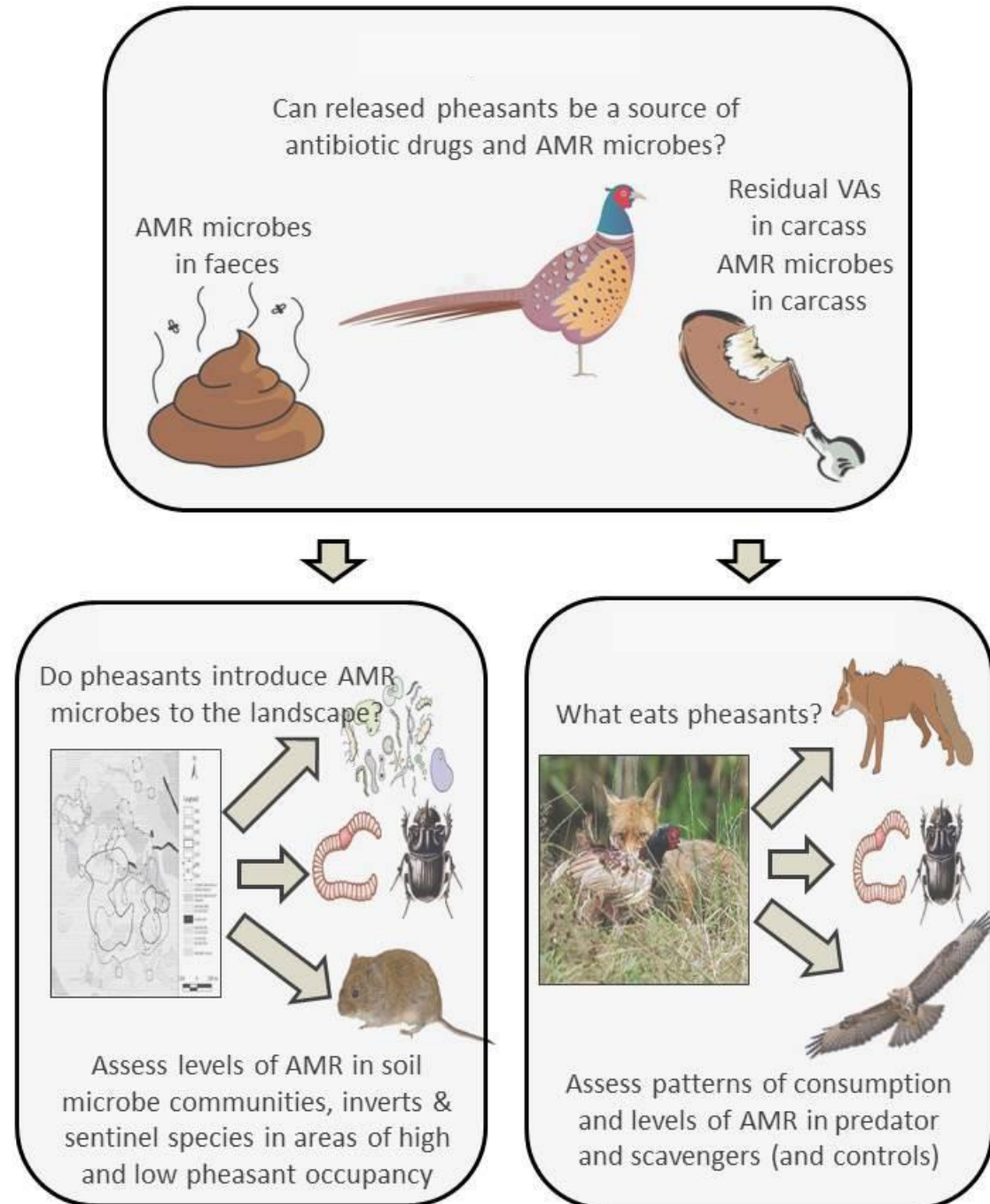
Italy: Regecová et al. 2014, Holko et al. 2019

Spain: Guerrero-Ramos et al. 2016

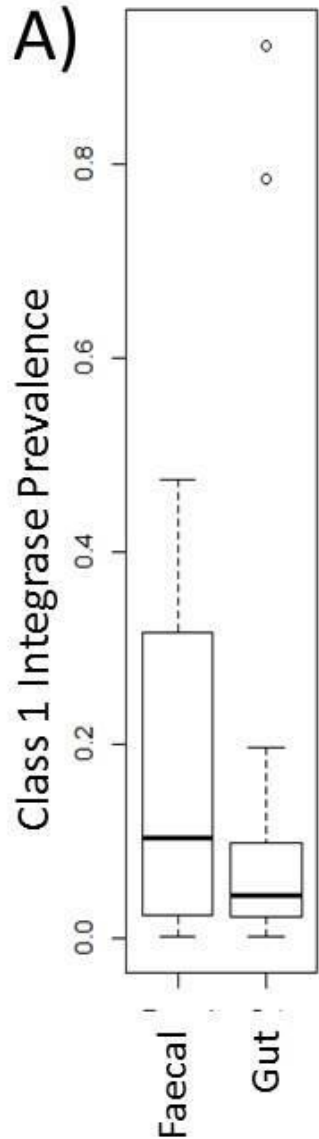
Slovakia/Austria: Martonova et al. 2008

Poland: Sulikowska et al. 2022

Differ from domestic species
because they roam and so can
make AMR available to other, free-
ranging, wild species



AMR



B)

	Faecal	Gut	Gamebird VA
aminoglycoside	0.003	0.007	(Broadfoot et al. 2017)
bacitracin	0.023	0.013	
beta-lactam	0.035	0.020	6%
bleomycin	0.000	0.000	
carbomycin	0.000	0.000	
chloramphenicol	0.001	0.000	
fospomycin	0.001	0.000	
fosmidomycin	0.014	0.004	
fusaric-acid	0.000	0.000	
fusidic-acid	0.000	0.000	
kasugamycin	0.015	0.005	
MLS	0.034	0.047	30%
polymyxin	0.012	0.004	
puromycin	0.000	0.000	
quinolone	0.000	0.000	
rifamycin	0.002	0.000	
spectinomycin	0.000	0.000	
sulfonamide	0.000	0.000	
tetracenomycin	0.000	0.000	
tetracycline	0.100	0.186	63%
trimethoprim	0.000	0.000	
unclassified	0.073	0.027	
vancomycin	0.012	0.010	

Faecal & Gut samples from 40 pheasants reared and raised at two sites (2017-18)

1) Analysed for class 1 integrase prevalence (a common, non-specific marker of AMR).

Mean levels of 0.13-0.16% prevalence (Fig A) Max values comparable to untreated human sewage and indicate high levels of AMR.

2) Metagenomic analysis

Resistance genes to a suite of common VAs used in gamebird rearing (Fig B).

With Will Gaze

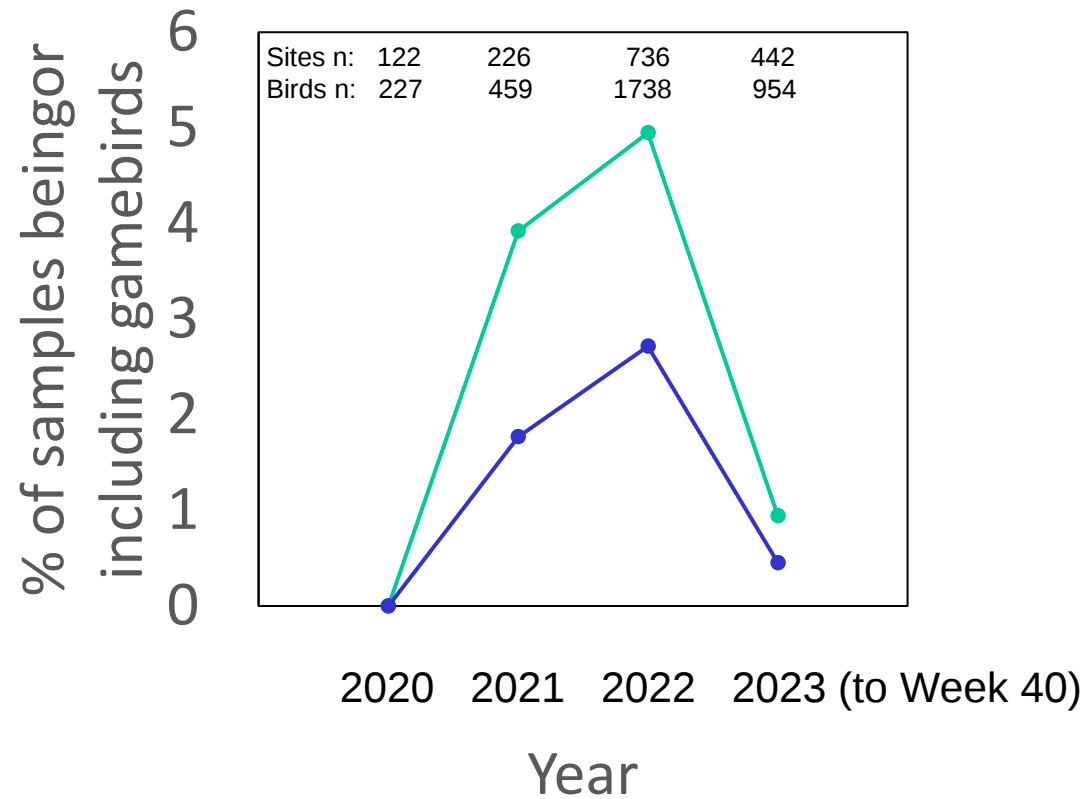


HPAI

HPAI

Records of **wild** birds reported to APHA and confirmed infected with HPAI – proportion being pheasants or partridges

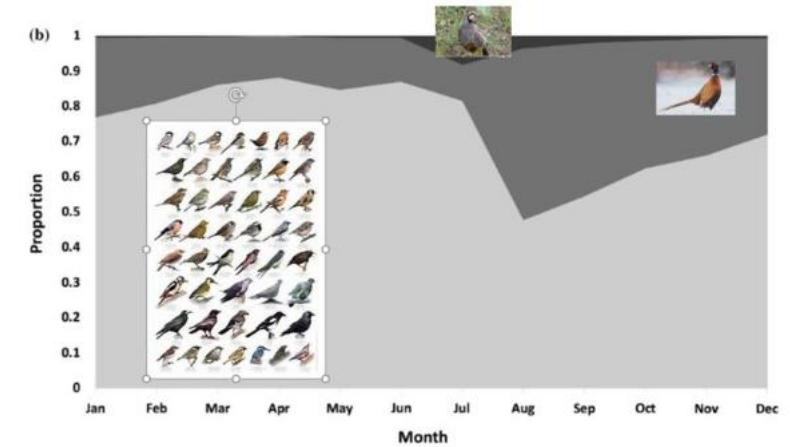
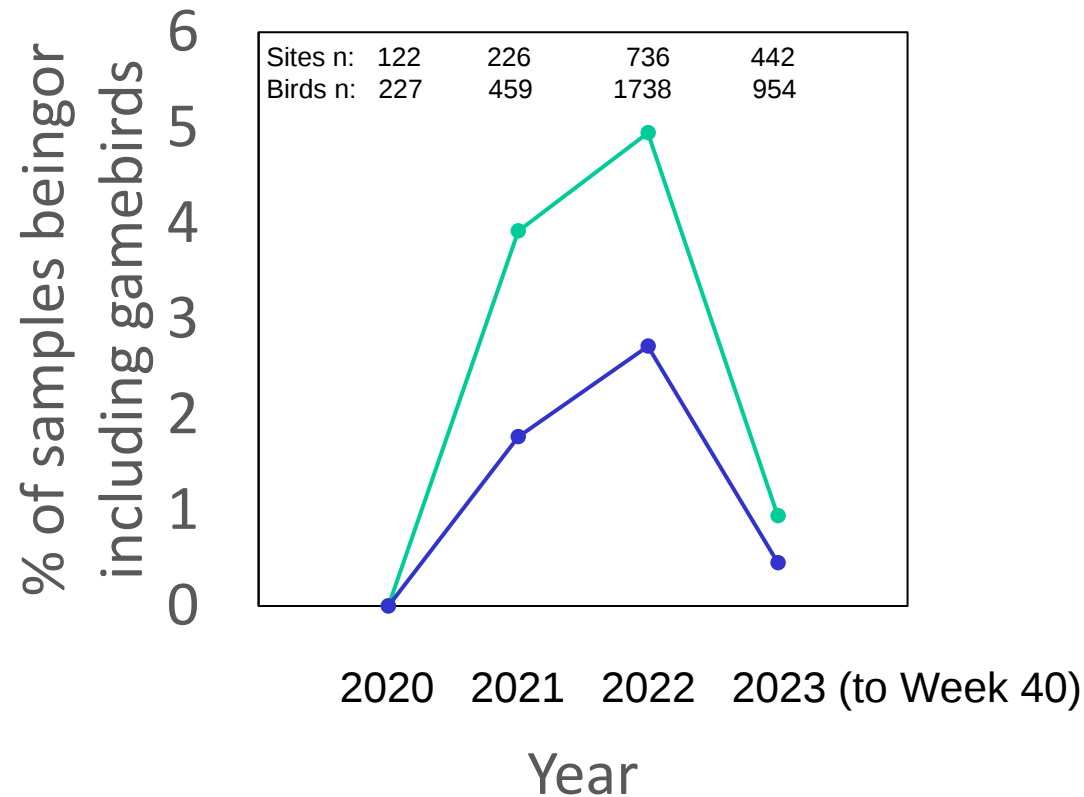
— Individual birds — Locations



HPAI

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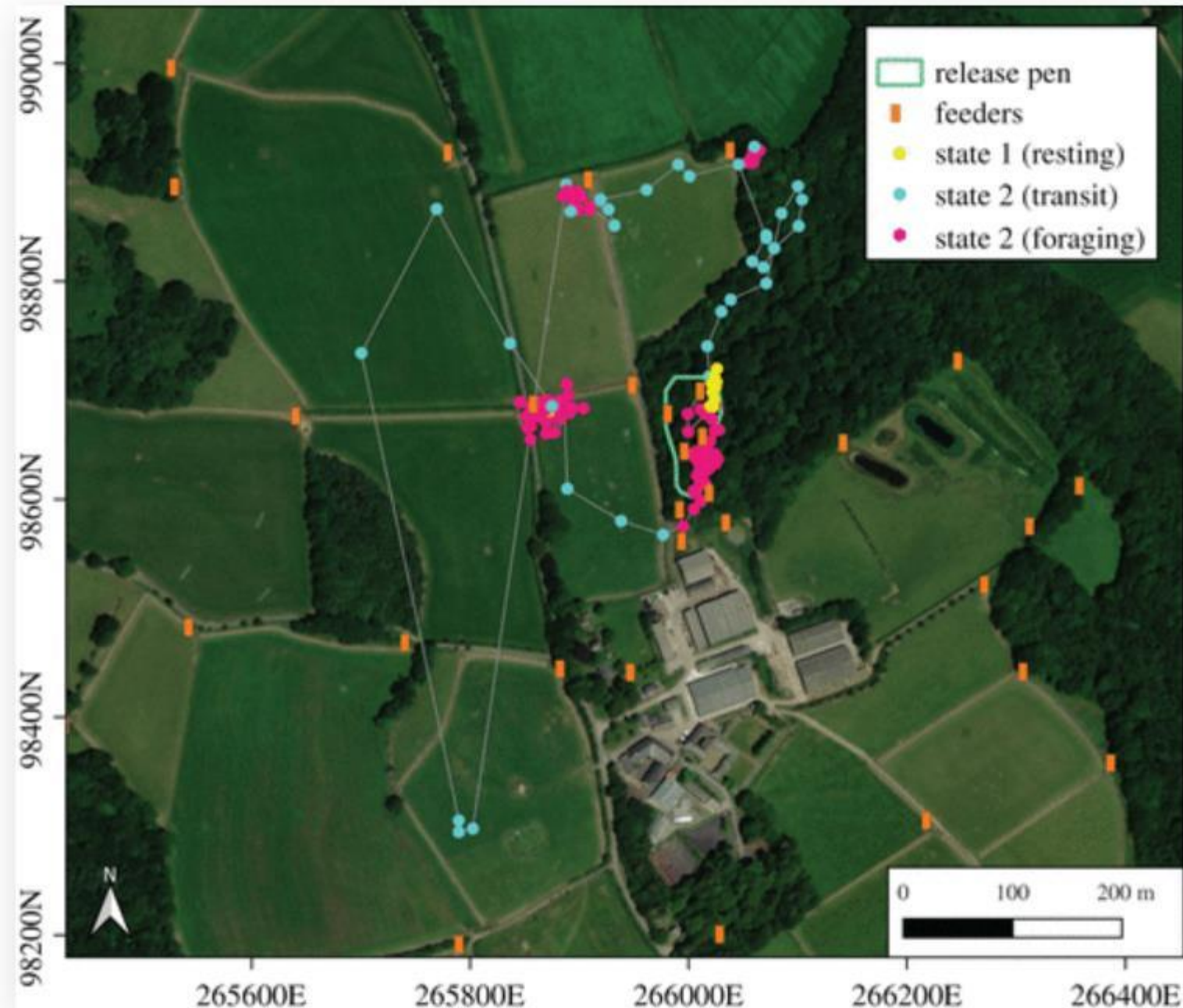
— Individual birds — Locations



From: Blackburn, T. M., & Gaston, K. J. (2021). *Biological Invasions*, 23, 1549-1562.

~5% (max) of instances compared with ~15-50% of UK bird biomass

Why the decline in 2023?



Linking disease(HPAI/AMR) characteristics to behavioural and ecological processes

- Where do birds go?
- What do they do?
- What other species do they contact?
- How infectious are they?
- How do other species respond?

From: Beardsworth, C. E., Whiteside, M. A., Capstick, L. A., Laker, P. R., Langley, E. J., Nathan, R., ... & Madden, J. R. (2021). Spatial cognitive ability is associated with transitory movement speed but not straightness during the early stages of exploration. *Royal Society Open Science*, 8(3), 201758.

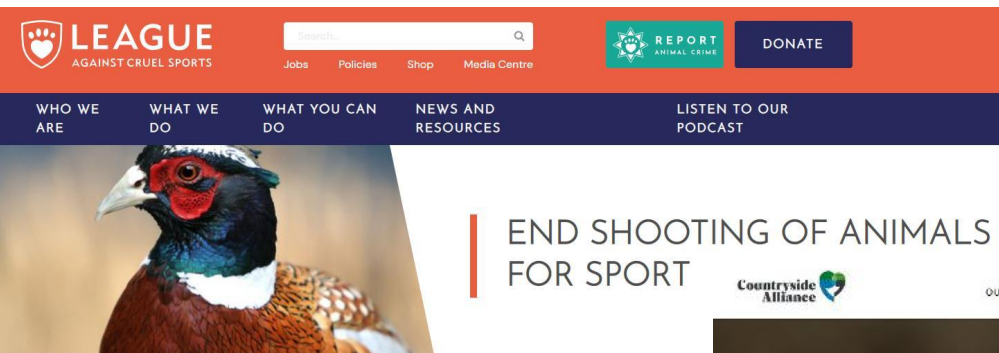
Without an integration of knowledge about epidemiology, behaviour and ecology in wild and captive gamebirds, tackling emerging One Health and disease challenges is difficult



What is the future for gamebird release
and management in the UK?



We don't accurately know!



END SHOOTING OF ANIMALS FOR SPORT



OUR CAUSE ▼ CAMPAIGNS ▼ SUPPORT US ▼ RESOURCES ▼ SHOP

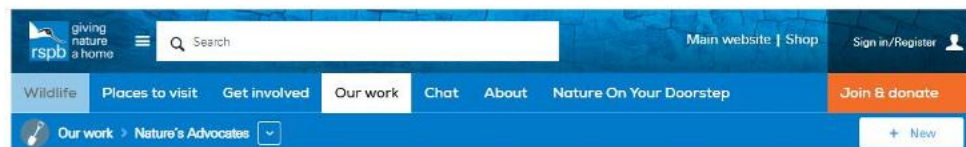
Q Login

Join us

Home > News > Shooting

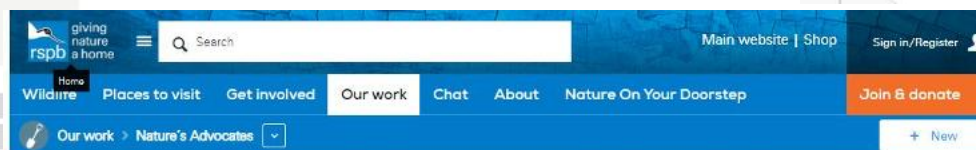
Defra updates its Gamebird Licensing Frequently Asked Questions Document

Published by: [Adrian Blackmore](#) on 21st August, 2023



RSPB calls for the release of non-native gamebirds to be licensed

Lucybjork 14 Oct 2023



RSPB calls for moratorium on gamebird releases as Avian Influenza outbreak continues

Jet Woodward 15 May 2023



Wild Justice @WildJustice.org · Oct 9

Calling whistleblowers! Do you have information about gamebird releases near SPAs in England? We'd love to hear from you. Read our latest blog about it: wildjustice.org.uk/gamebird-relea...

@MarkAvery @RuthTingay @ChrisGPackham



Shoots wanting to release gamebirds near an SPA must now apply for a Defra licence via Natural England.



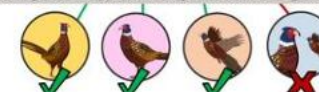
Natural England take these applications (we suspect hundreds) and send them to a secret committee in Defra, along with a suggestion of approval or rejection...

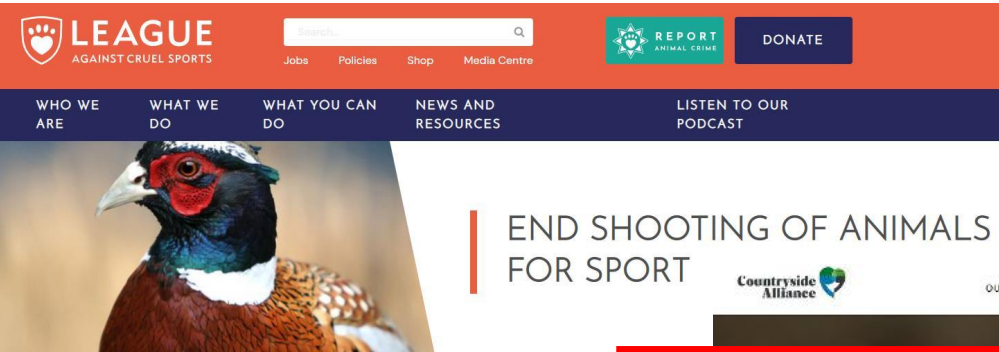


Defra's mystery committee (we don't know who they are) review Natural England's advice, sometimes change it, and then send this new advice to ministers, including Theresa Coffey.



Ministers then make the final decision, and we suspect they're approving a lot of applications against Natural England's advice...





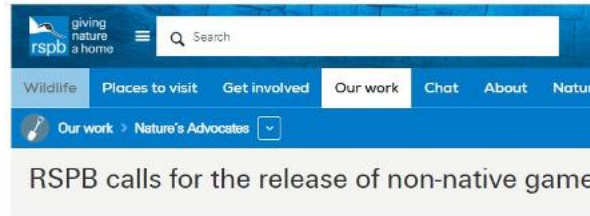
END SHOOTING OF ANIMALS
FOR SPORT



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Q Login

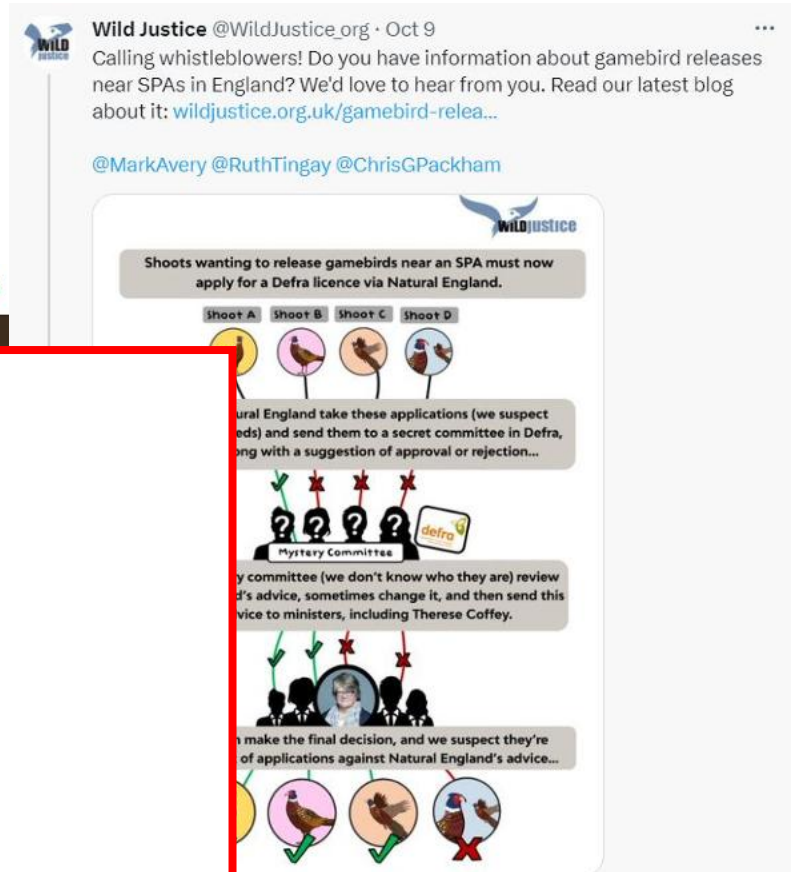
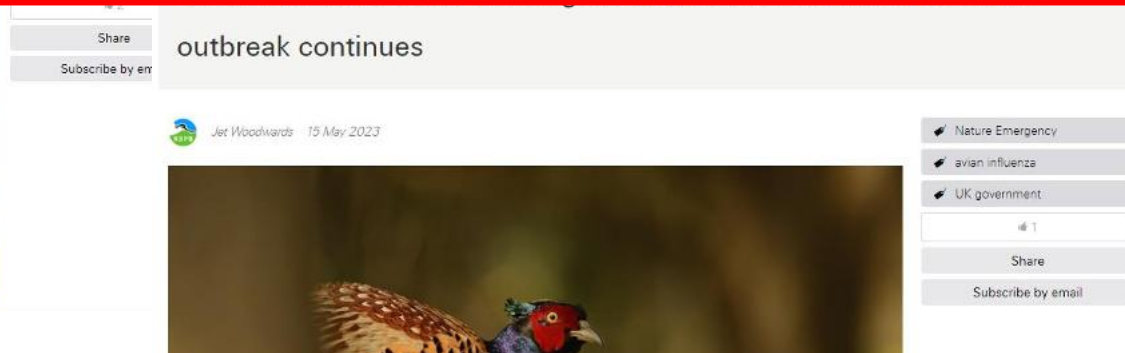
Join us



lucybjorck 14 Oct 2023



Sparse data,
Inaccurate data,
Ignorance,
Partiality,
Lack of trust,
“Silo” mentality



Without input from informed sources encompassing the range of facets comprising gamebird release and management, making wise decisions about its future is difficult

Gamebird Biologists + Gamebird Vets = Progress

- 1) The release, management and shooting of gamebirds in the UK is a very large-scale enterprise

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- 6) These effects (+ve and –ve) impact a wide range of non-game taxa
- 7) Shooting is a long established and pervasive shaper of the UK countryside and dramatically changing the activity (boosting release intensity OR banning releases) risks unexpected and unintended negative consequences

Gamebird Biologists + Gamebird Vets = Progress



Joah Madden



University
of Exeter

Ecosystem Effects Synergies:

Movement and Fate

Trophic interactions

Accurate data

Liaison between scientists and shoots

Gamebird Biologists + Gamebird Vets = Progress



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Mark Whiteside



UNIVERSITY OF
PLYMOUTH



Over to Mark...

The welfare of game birds destined for release into the wild: a balance between early life care and preparation for future natural hazard

Dr Mark Whiteside



**UNIVERSITY OF
PLYMOUTH**
School of Biological and
Marine Sciences

What is welfare?

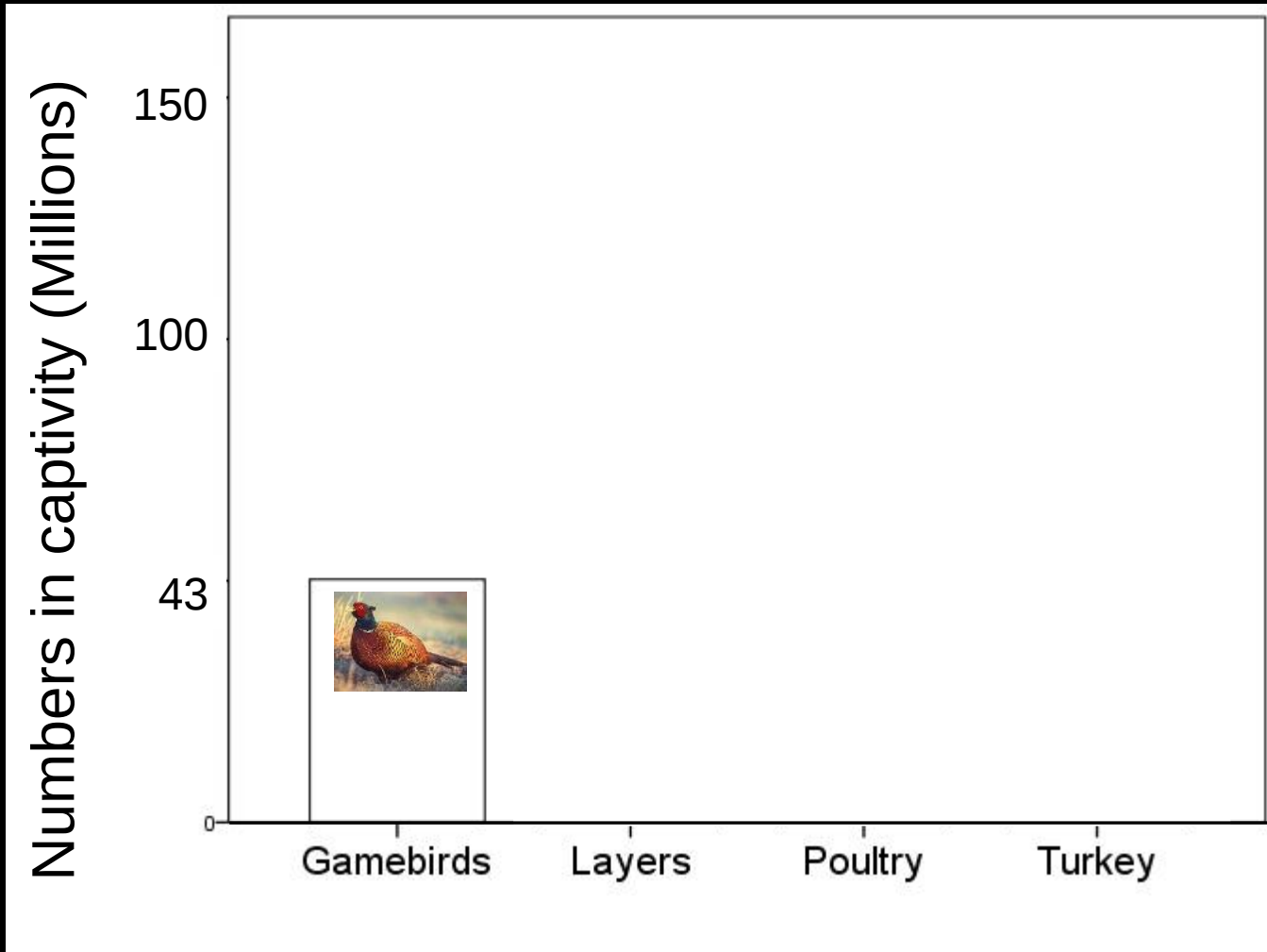
Five freedoms:

- freedom from hunger and thirst
- freedom from discomfort
- freedom from pain, injury and disease
- freedom to express normal behaviours
- freedom from fear and distress

(Farm Animal Welfare Council, 1992)

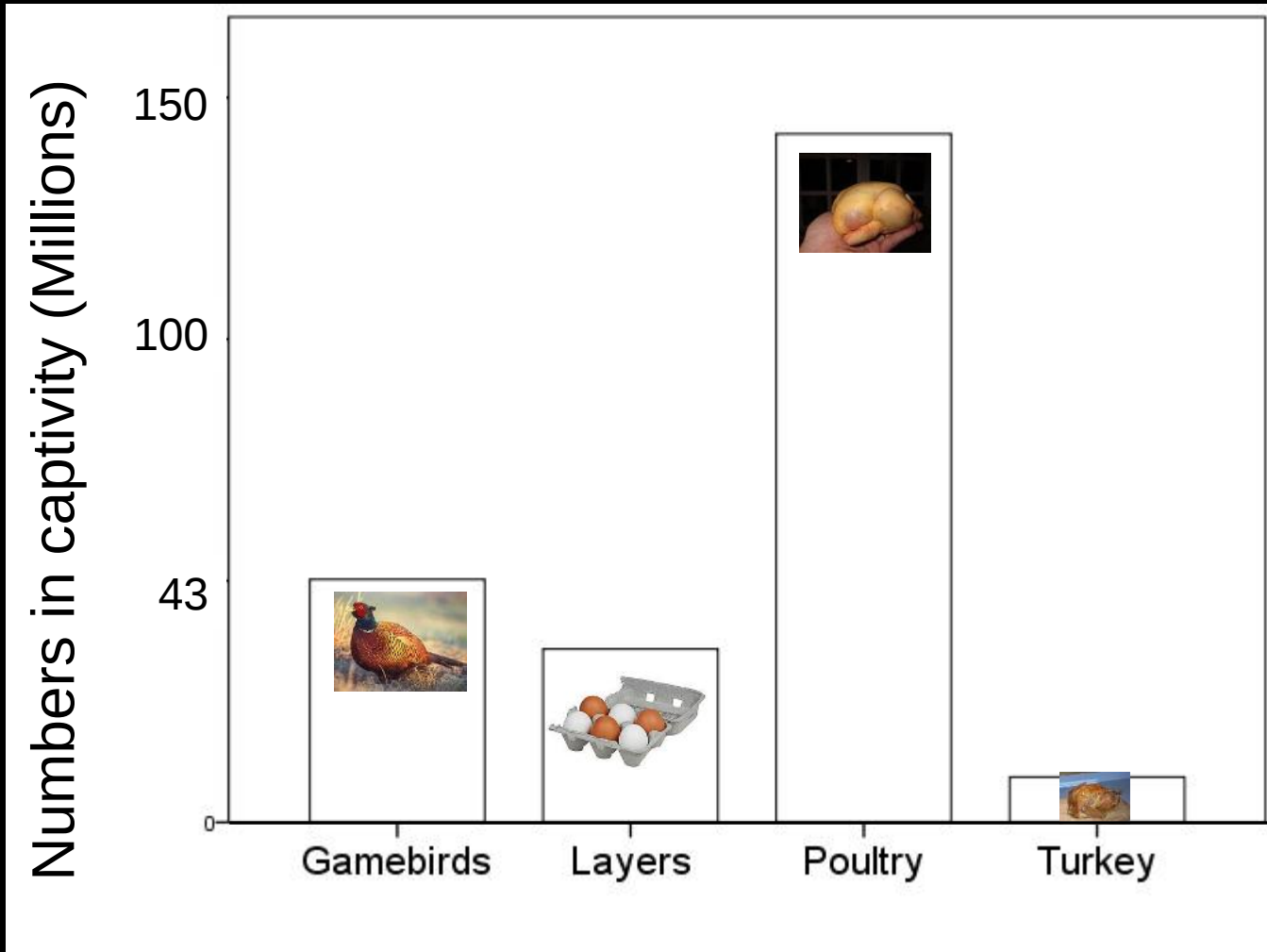


How many game birds are reared in the UK?

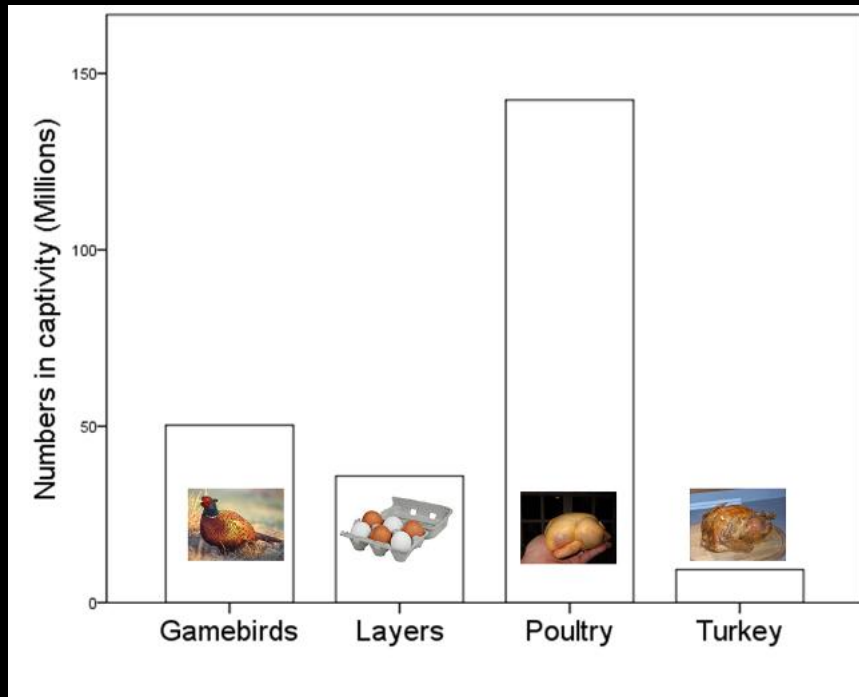


Great Britain Poultry Register (GBPR) Statistics: 2013

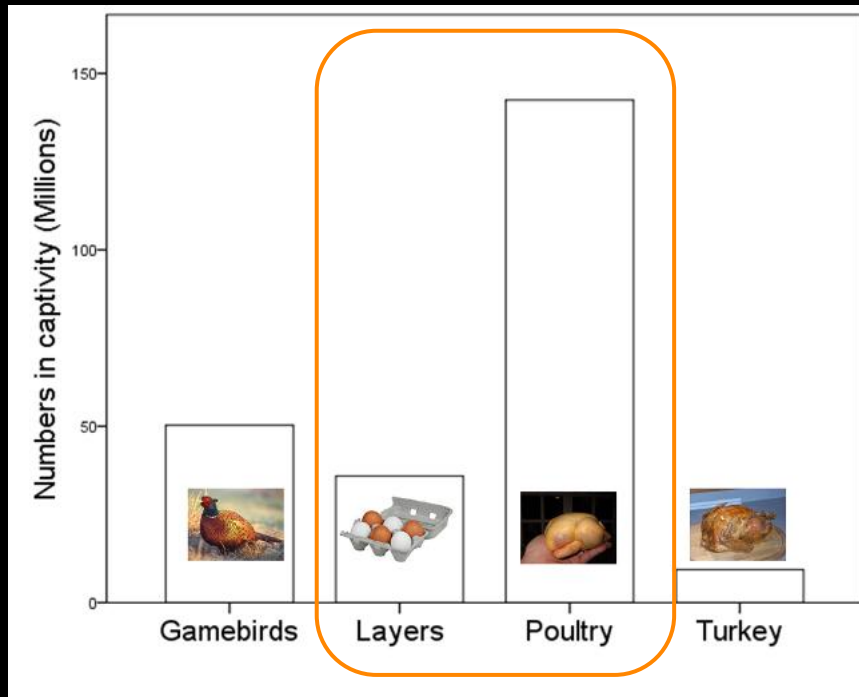
How many game birds are reared in the UK?



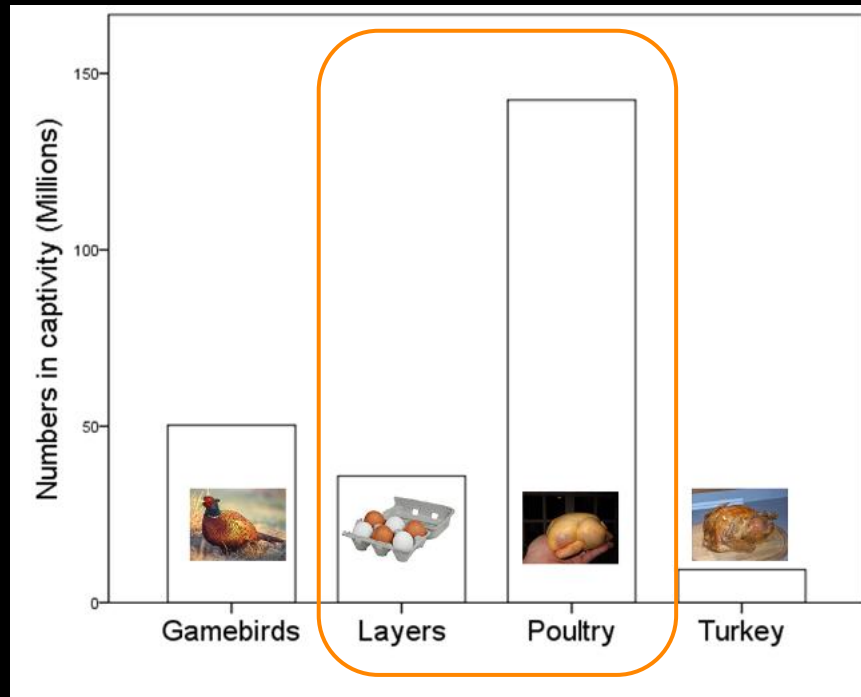
What do we know about the welfare of farmed birds?



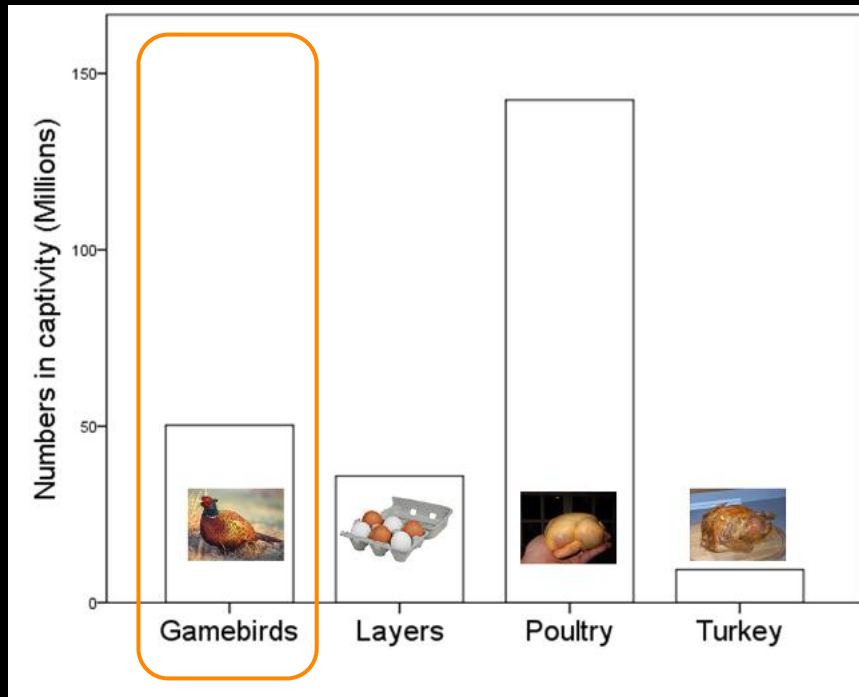
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What do we know about the welfare of farmed birds?



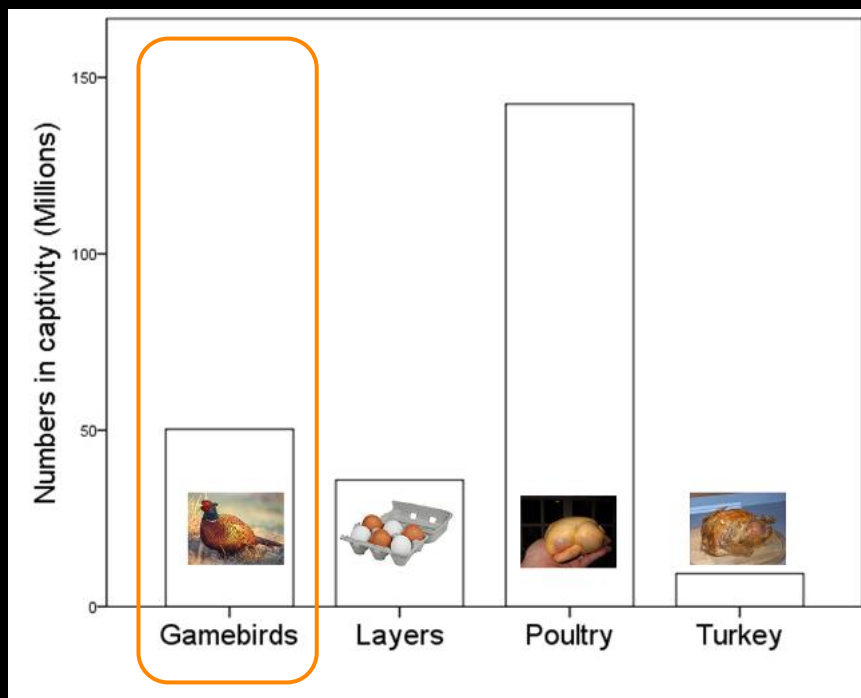
What do we know about the welfare of farmed birds?



Captivity: **13** research articles

Post-release: **0** research articles

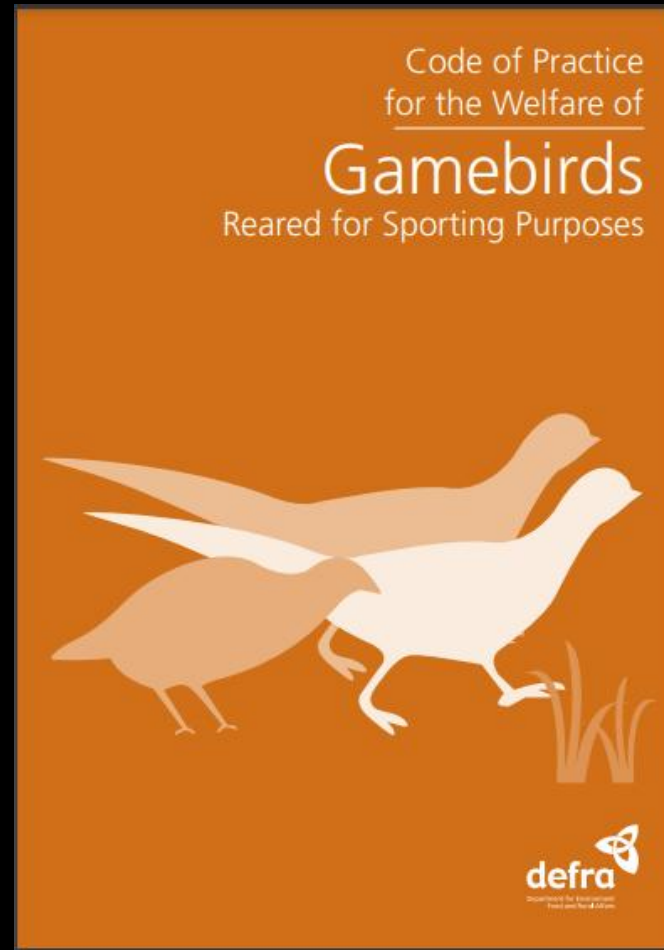
What do we know about the welfare of farmed birds?



Welfare considerations gleaned from poultry industry

Welfare considerations gleaned from poultry industry

Pheasant
Welfare
Project



PHEASANT
ECOLOGY AND
COGNITION





Rearing conducted at an 'industrial' scale

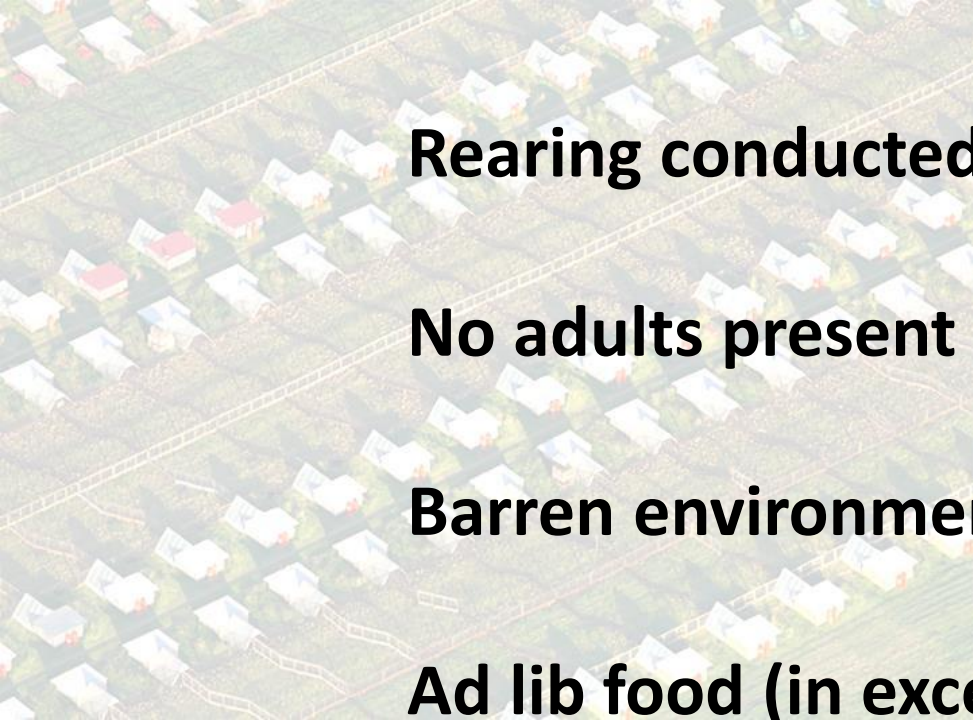
No adults present during rearing

Barren environment

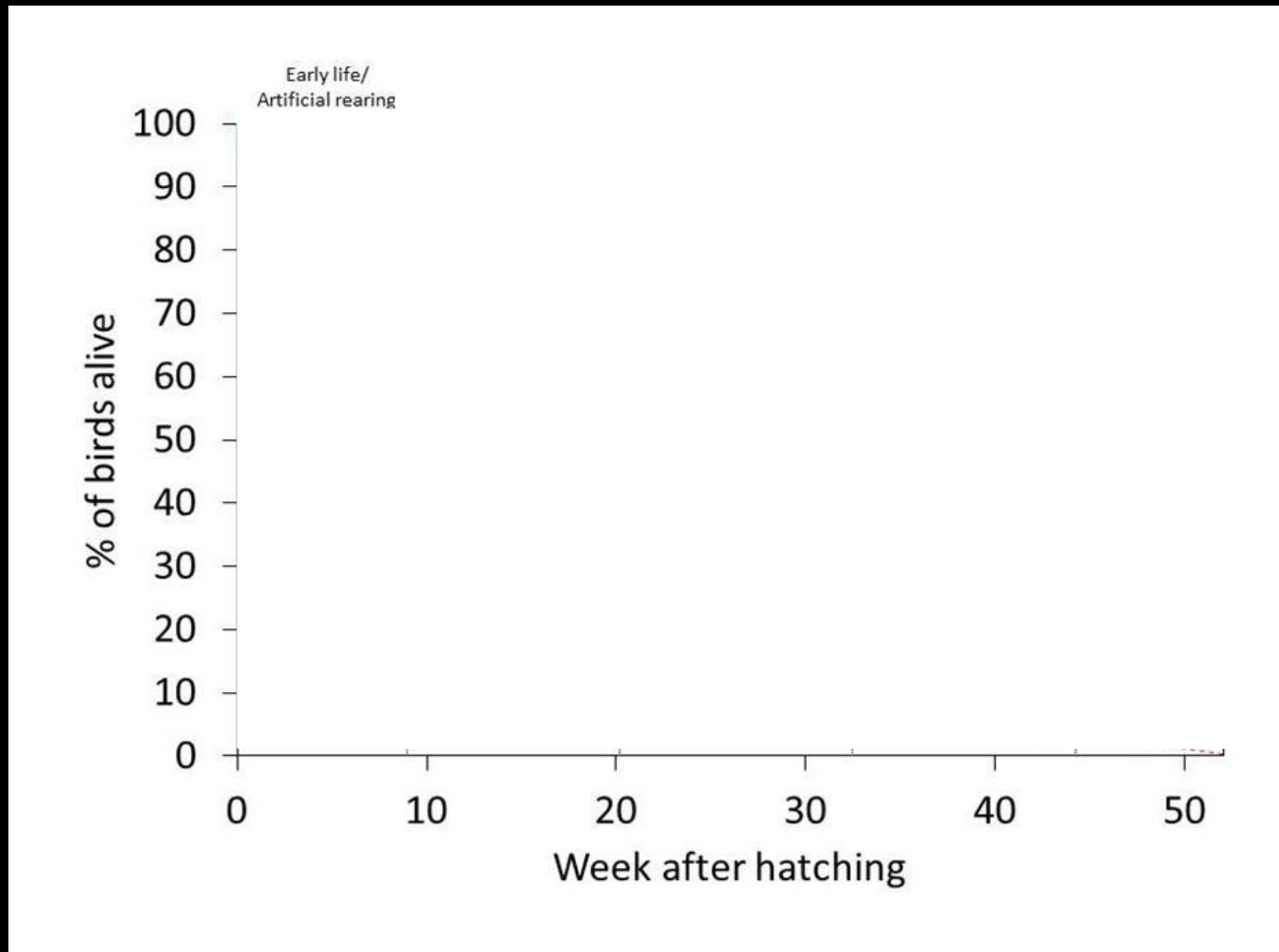
Ad lib food (in excess)

High density

Bits to reduce aggression



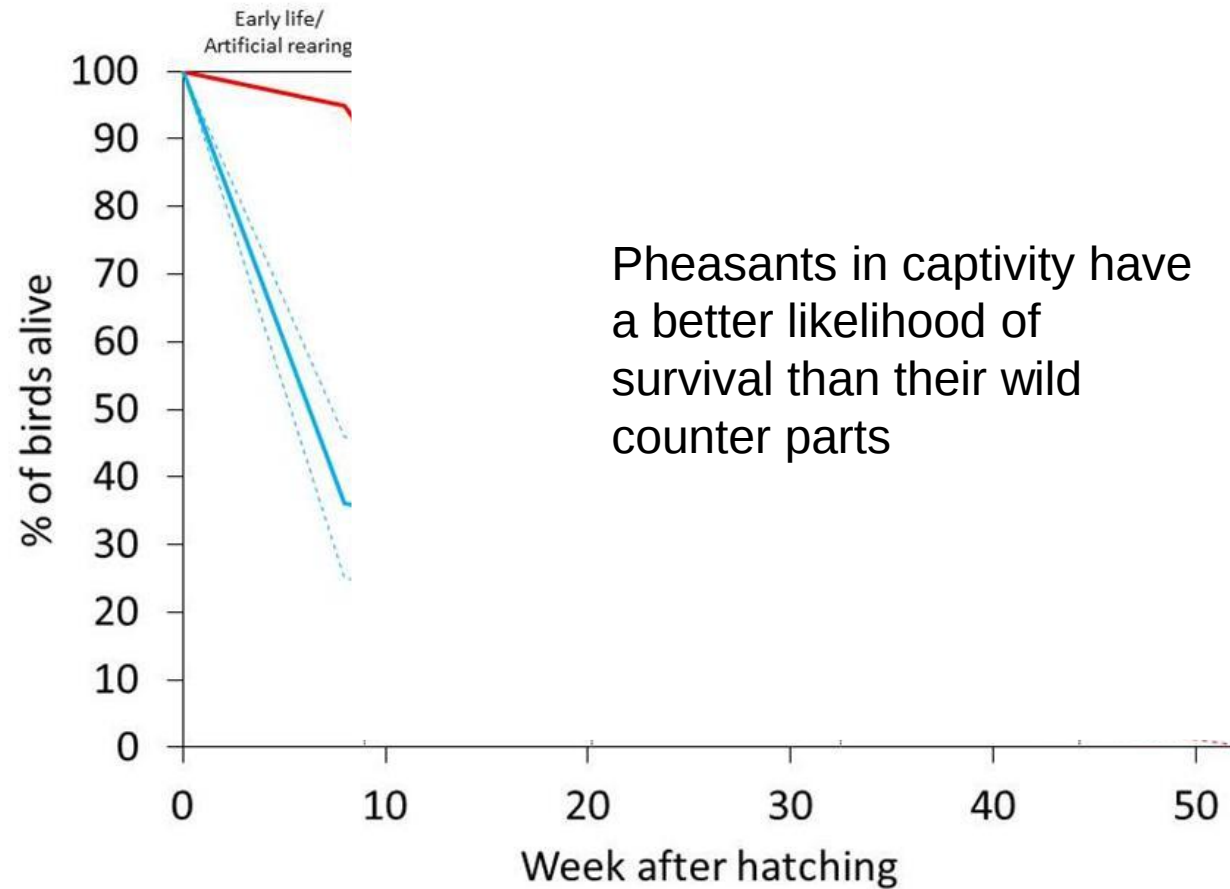
Current system: how successful is it?



Madden, Hall
and Whiteside.
2018



Current system: how successful is it?



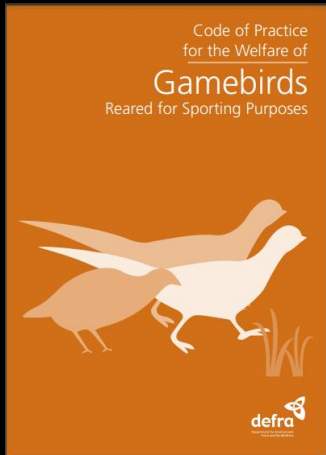
Madden, Hall
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2018

Current system: how successful is it?



43 million 'healthy' game birds are reared in captivity

- Reduced effects of aggression
- Good body condition
- Low mortality



9. Preparation for release

9.1 At the time of sale for release purposes, all gamebirds should be in a healthy condition and must be fit for transport, well adapted and appropriately hardened off in respect of feather development, weather tolerance, diet and method of feeding. All birds ready for transport to release pens should have a final inspection to ensure that they are fit for release before being moved.

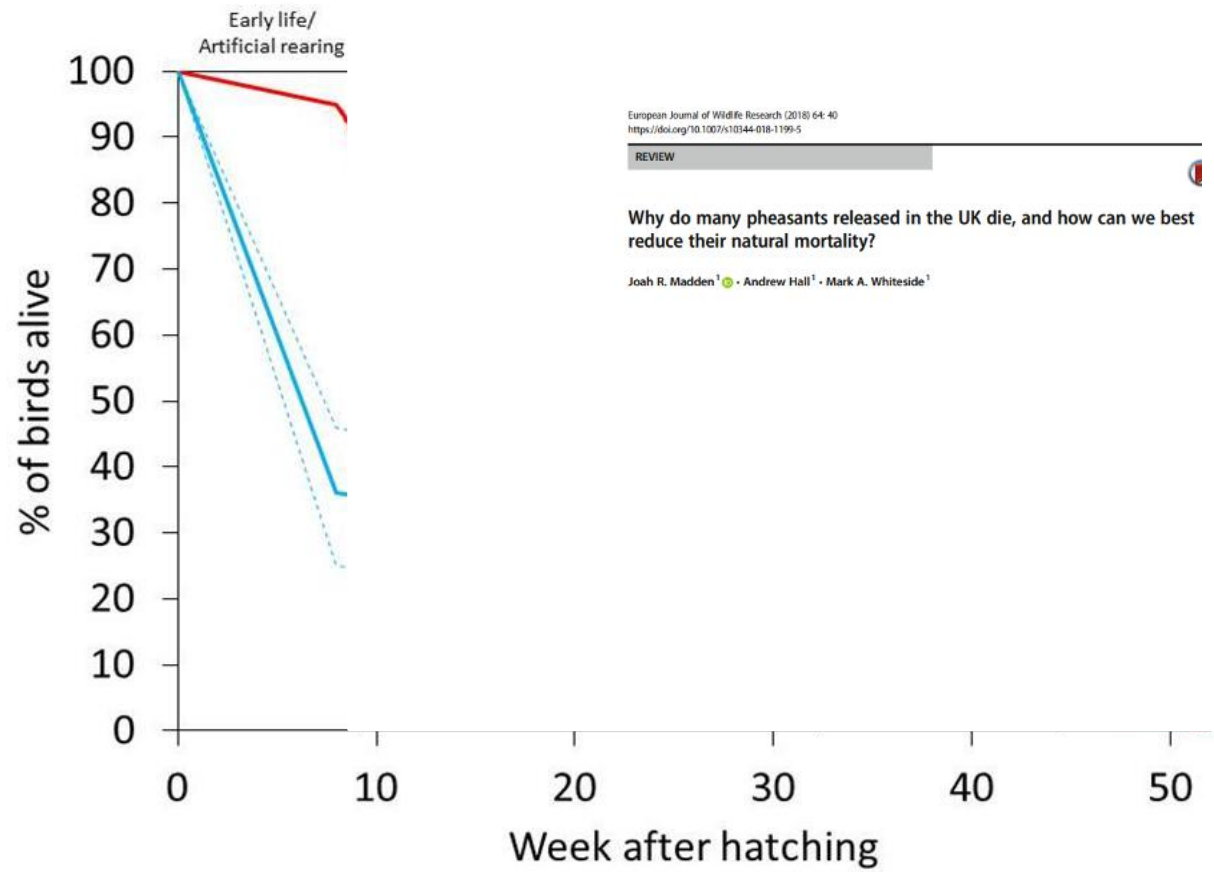


Game and poultry start to differ

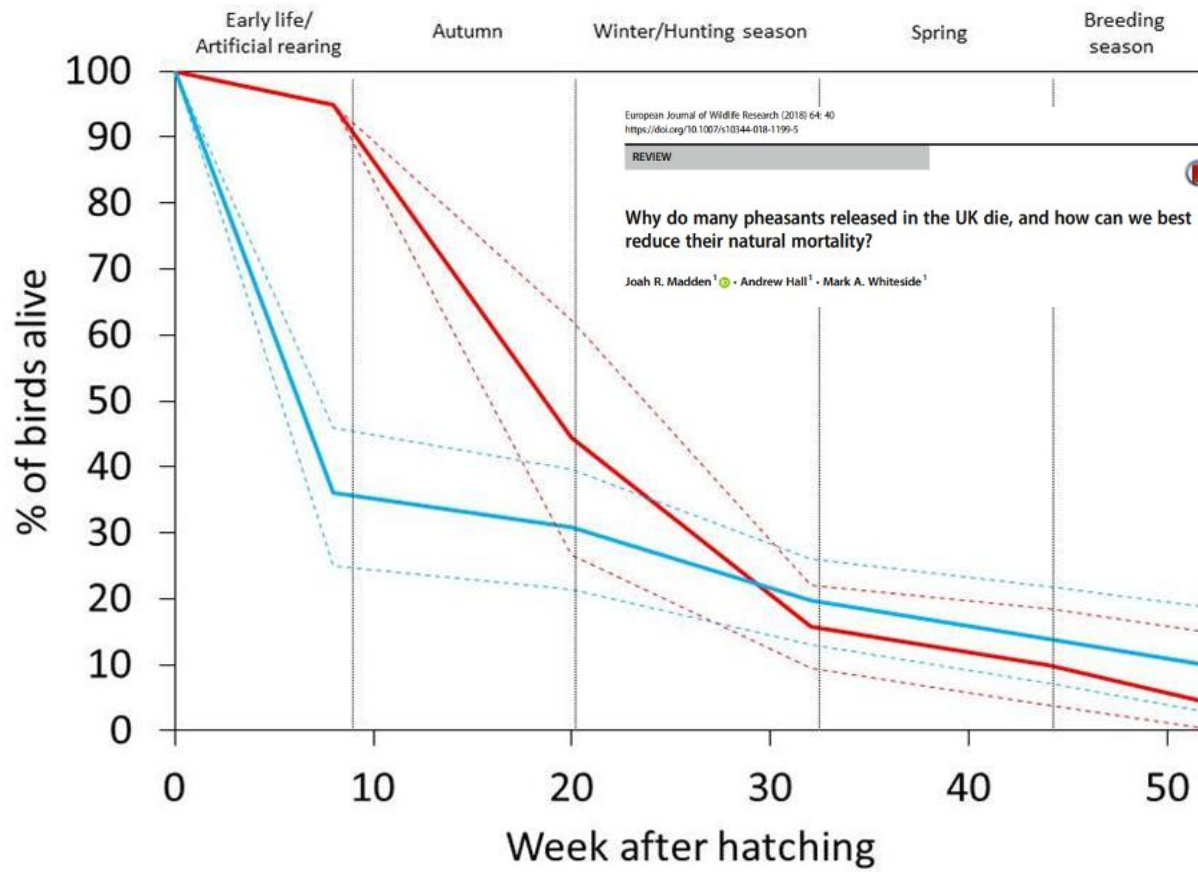
At 7 weeks (pheasants) and 10 weeks (partridge) the birds are then removed from their artificial housing and given to a game-keeper.



Current system: Post release welfare mortality



Current system: Why are they dying?



Predation
Starvation
Disease



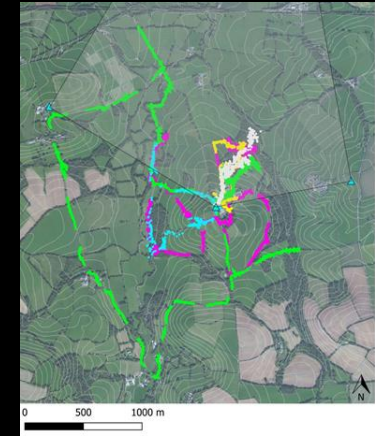
Why are these “healthy” birds dying?

Comparisons made between artificially-reared game birds and their wild-reared conspecifics



Behavioural deficiencies

- Anti predator behaviour (vigilance, roosting)
- Foraging behaviour (unable to maintain condition, reliance on supplementary feed)
- Dispersal



Physiological deficiencies

- Organ development (larger body but smaller heart)
- Gut physiology (gut sizes, digestibility)
- Fight characteristics (flight response, angle and climbing rate)



Consequences for post-release welfare

Not having the behavioural, cognitive and morphological developments to survive may invoke stress and discomfort

- Starvation
- Not knowing where refuges are
- Unable to compete with wild conspecifics for resources

Mortality is seldom swift and therefore has welfare implications



Consequences for post-release welfare



Not having the behavioural, cognitive and morphological developments to survive may invoke stress and discomfort

- Starvation
- Not knowing where refuges are
- Unable to compete with wild conspecifics for resources



Mortality is seldom swift and therefore has welfare implications

Excessive birds are released to maintain the harvest



Current system: Lifetime welfare of game birds

Pre-release welfare



- Adheres to the poultry industry
- Adheres to the five freedoms
- Low mortality



Post-release welfare



- Behavioural and morphological deficiencies
- Not being able to perform necessary behaviours will be stressful
- High mortality rates



What can we do to improve post-release welfare?



Conservation Programmes: Make the rearing environment more naturalistic and it improves post release survival (Armstrong and Seddon 2007)



3 brief case studies

Study 1: Predators



In the wild:

- Significant predator numbers
- High likelihood of seeing a predation event
- Mother provide calls

In captivity:

- No learned conspecifics
- Predator exclusion

Manipulation: Predator: vs no-predator

Study 1: Anti-predator learning

Fly wooden goshawks (*Accipiter gentilis*) over partridges, coupled with whistles and alarm calls (Guadoso et al., 2011 in *Poultry Science*)



1902

GAUDIOSO ET AL.



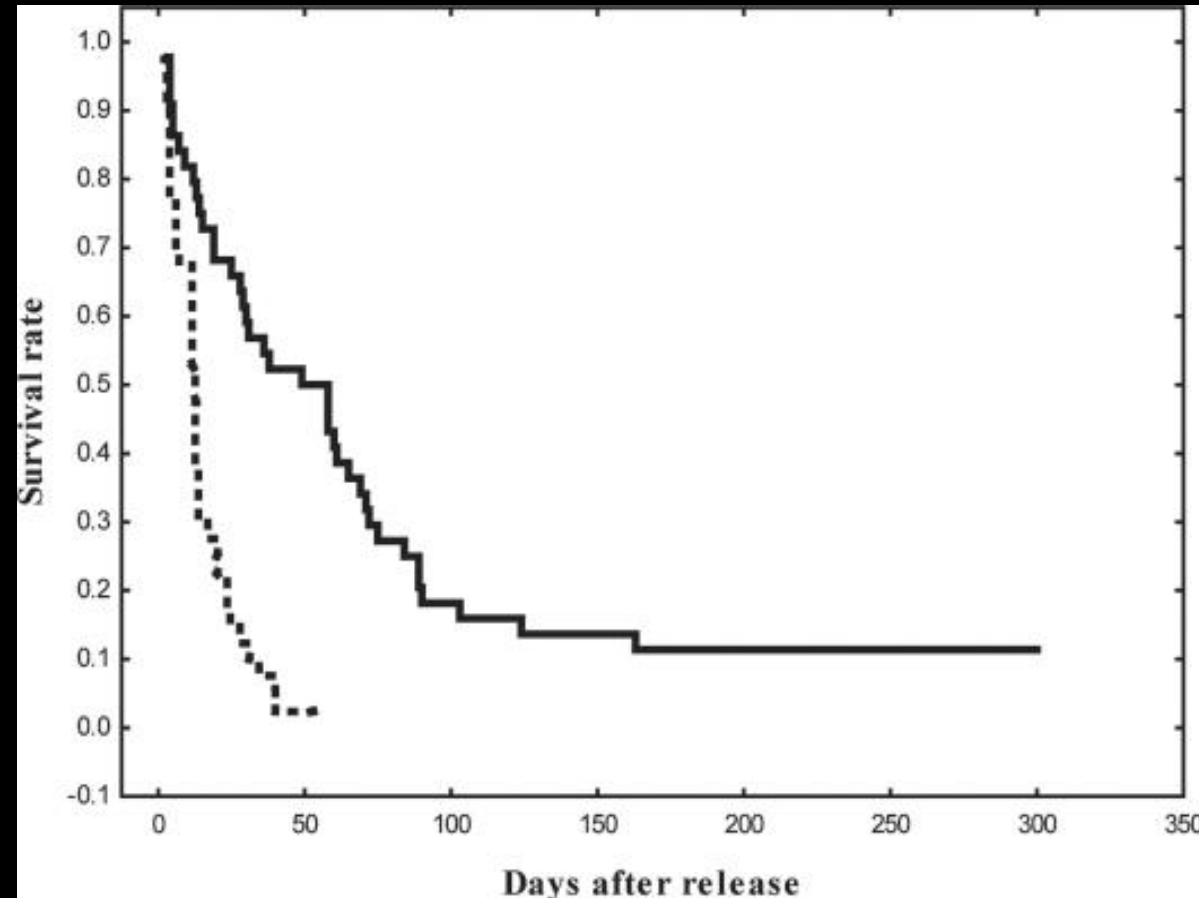
Figure 1. Sketch of the brooder house, the specific metal cage for tutors, and the aerial predator test used in this study.

Study 1: Anti-predator learning; post-release welfare



Trained birds had more natural:

- Dispersion
- Home range
- Survival



Study 2: Diet



In the wild

- First 3 weeks insectivores
- Then more of a plant forage
- Unpredictable

Current rearing regime

- Age specific chick crumb provided *ad lib* and in excess
- Predictable

Study 2: Diet complexity

Manipulation

- Mealworms (1% of diet)
- Mixed Seed and Fruit (5% of diet)
- Control: Chick crumb

Journal of Animal Ecology



Journal of Animal Ecology 2015, **84**, 1480–1489

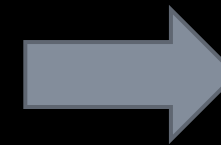
doi: 10.1111/1365-2656.12401

Diet complexity in early life affects survival in released pheasants by altering foraging efficiency, food choice, handling skills and gut morphology

Mark A. Whiteside^{1,2}, Rufus Sage² and Joah R. Madden^{1*}

¹Centre for Research in Animal Behaviour, Psychology, University of Exeter, Exeter, EX4 4QG, UK; and ²Game and Wildlife Conservation Trust, Burgate Manor, Fordingbridge, Hampshire, SP6 1EF, UK

**Pheasant
Welfare
Project**



Note: most of the diet is commercial chick crumb. Supplemented food to act as an experience and not a nutritional advantage

Study 2: Diet complexity – post-release welfare

Pheasant
Welfare
Project



Journal of Animal Ecology

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- Quicker at handling live prey
- More efficient foragers
- Spent more time vigilant
- Broader diet
- A gut system to cope with wild diet
- Better able to survive



Study 3: Habitat complexity



In the wild:

- Big home ranges
- Large dispersal
- Likelihood to experience a range of habitats
- Follows mother up to roost at night



Current rearing regime:

- Barren
- Spatially simple
- Does not promote roosting or flying

Manipulation: Perches vs no Perches

Study 3: Habitat complexity— post-release welfare

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Cite this article: Whiteside MA, Sage R, Madden JR. 2016 Multiple behavioural, morphological and cognitive developmental changes arise from a single alteration to early life spatial environment, resulting in fitness consequences for released pheasants. *R. Soc. open sci.* **3**: 160008.
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Study 3: Habitat complexity– post-release welfare

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The image shows the logo for the Pheasant Welfare Project. It consists of two main parts. The top part features the text 'Pheasant Welfare Project' in a bold, sans-serif font, with a small illustration of a brown and white speckled chick to the right. The bottom part features a stylized, colorful illustration of a pheasant's head in shades of red, orange, and blue. Below this illustration, the text 'PHEASANT ECOLOGY AND COGNITION' is written in a smaller, all-caps, sans-serif font.

Study 3: Habitat complexity— post-release welfare

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Multiple behavioural, morphological and cognitive developmental changes arise from a single alteration to early life spatial environment, resulting in fitness consequences for released pheasants

- Roost at night upon release

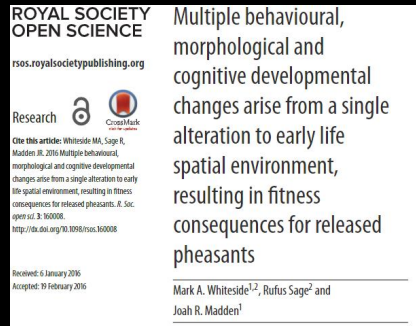
A photograph showing two pheasants perched on a horizontal wooden branch inside a wire-mesh cage. The bird in the foreground is facing right, while the one behind it is facing left. A bright light source is visible through the cage bars in the background.

A photograph of a pheasant perched on a branch in a natural, wooded environment. The bird is facing left, and the background is filled with green foliage and tree trunks.

The logo for the Pheasant Welfare Project, featuring the text "Pheasant Welfare Project" in a serif font next to a small illustration of a young pheasant chick.

The logo for Pheasant Ecology and Cognition, featuring the text "PHEASANT ECOLOGY AND COGNITION" in a sans-serif font next to a stylized, colorful illustration of a pheasant's head.

Study 3: Habitat complexity— post-release welfare



- Roost at night upon release
- Have the morphology to cope with prolonged bouts of roosting



Study 3: Habitat complexity— post-release welfare



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Mark A. Whiteside^{1,2}, Rufus Sage² and Joah R. Madden¹

- Roost at night upon release
- Have the morphology to cope with prolonged bouts of roosting
- Are better able to remember locations



Study 3: Habitat complexity— post-release welfare



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Multiple behavioural, morphological and cognitive developmental changes arise from a single alteration to early life spatial environment, resulting in fitness consequences for released pheasants

- Roost at night upon release
- Have the morphology to cope with prolonged bouts of roosting
- Are better able to remember locations
- Are less likely to get predated



What is best for post-release welfare?



Naturalistic
Environment

What is best for post-release welfare?

Predators



Naturalistic
Environment

Natural diet



Natural complexity



Pheasant
Welfare
Project



How does this affect pre-release welfare?



Naturalistic
Environment

How does this affect pre-release welfare?



Five Freedoms

How does this affect pre-release welfare?

Predators



Five Freedoms



How does this affect pre-release welfare?

Fear



Five Freedoms

How does this affect pre-release welfare?



Five Freedoms

Natural diet



How does this affect pre-release welfare?



Five Freedoms

Competition/Stress



How does this affect pre-release welfare?



Natural complexity

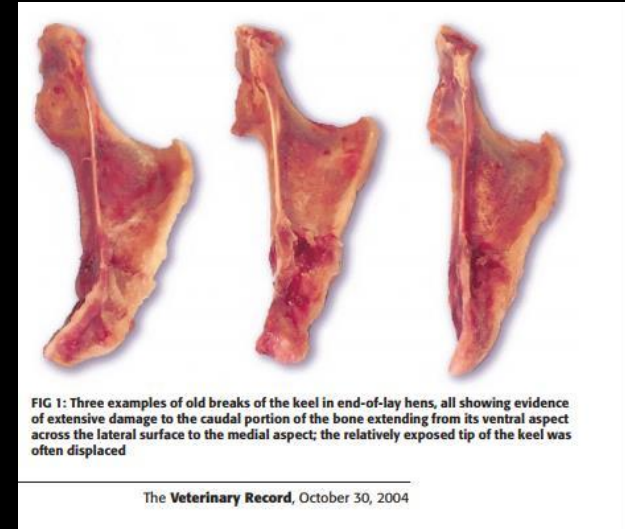
Five Freedoms



How does this affect pre-release welfare?

Discomfort/Injury

Five Freedoms



Naturalistic vs Five Freedoms

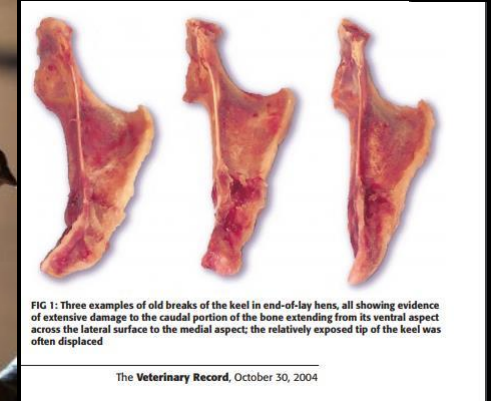


Anti-predation
or
Fear



Naturalistic
Or
Five Freedoms

Roosting/Navigation
or
Discomfort



Appropriate forage
or
Competition/Stress



?

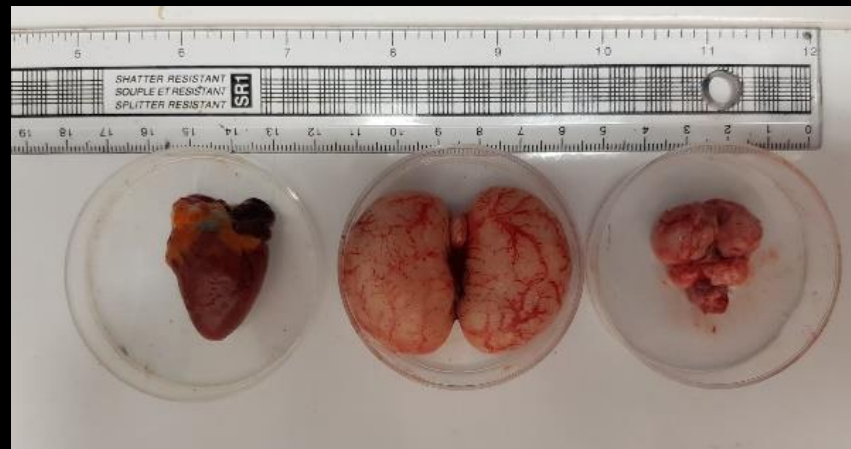
Welfare Conclusion

- Adhering to the welfare considerations for poultry may be detrimental to the **life time welfare** of game birds for release into the wild
- Determining **the balance** between pre-release welfare and post-release welfare requires more attention
- Improving life time welfare may mean we **compromise** pre-release welfare.



What is next for the welfare of game birds?

- We need develop **species specific** indicators of welfare
- We need to use these to assess pre- and post-release welfare of game birds
- We can then understand the relationship between pre- and post- release welfare
- We can then maximise the **life time welfare** of game birds



What is next for game birds?



- We need to think about how game birds fit within the wider agricultural community
 - Should they be treated the same as chickens?
- Should we rethink about how we prepare our birds for release?
 - Can we compromise welfare?
 - **Is this breaking the law?**
 - What is required to add more to the code of practice?



9. Preparation for release

9.1 At the time of sale for release purposes, all gamebirds should be in a healthy condition and must be fit for transport, well adapted and appropriately hardened off in respect of feather development, weather tolerance, diet and method of feeding. All birds ready for transport to release pens should have a final inspection to ensure that they are fit for release before being moved.

- Birds that are **better prepared for life** in the wild means **fewer birds released** for the same number being harvested:



Back to Joah...

Livestock



Wildlife



Livestock  Wildlife



Direct control  Carryover effects

Welfare & Production  Ecological impacts

Gamebird Biologists + Gamebird Vets = Progress

Fewer, better birds → Same harvest

Ethical benefits
Economic benefits
Environmental benefits



Gamebird Vets

Health and Productivity



Gamebird Biologists

Ecology, Behaviour, Ecosystem Effects and Welfare



Acknowledgements



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Jess Isden
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Middleton Estate

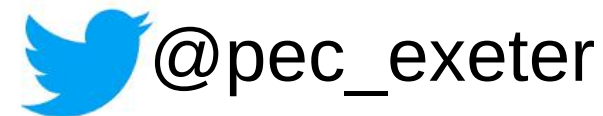
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University of Pisa

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GWCT

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Ellie Brown
Hollie Narey
Niamh McHugh





Thanks, and Questions

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**Pheasant
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Middleton Estate

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Steve Ridge

Questions?

Pheasant
Welfare
Project



PHEASANT
ECOLOGY AND
COGNITION



@MarkAWhiteside

Life time welfare of game birds: its in the balance



Pre-release welfare



Home > Journals > Animal Welfare > Volume 29 Issue 1 > The welfare of game birds destined for release into the wild: a balance between early life care and preparation for future natural hazards

The welfare of game birds destined for release into the wild: a balance between early life care and preparation for future natural hazards

Published online by Cambridge University Press: 01 January 2023

JR Madden, F Santilli and MA Whiteside [Show author details](#)

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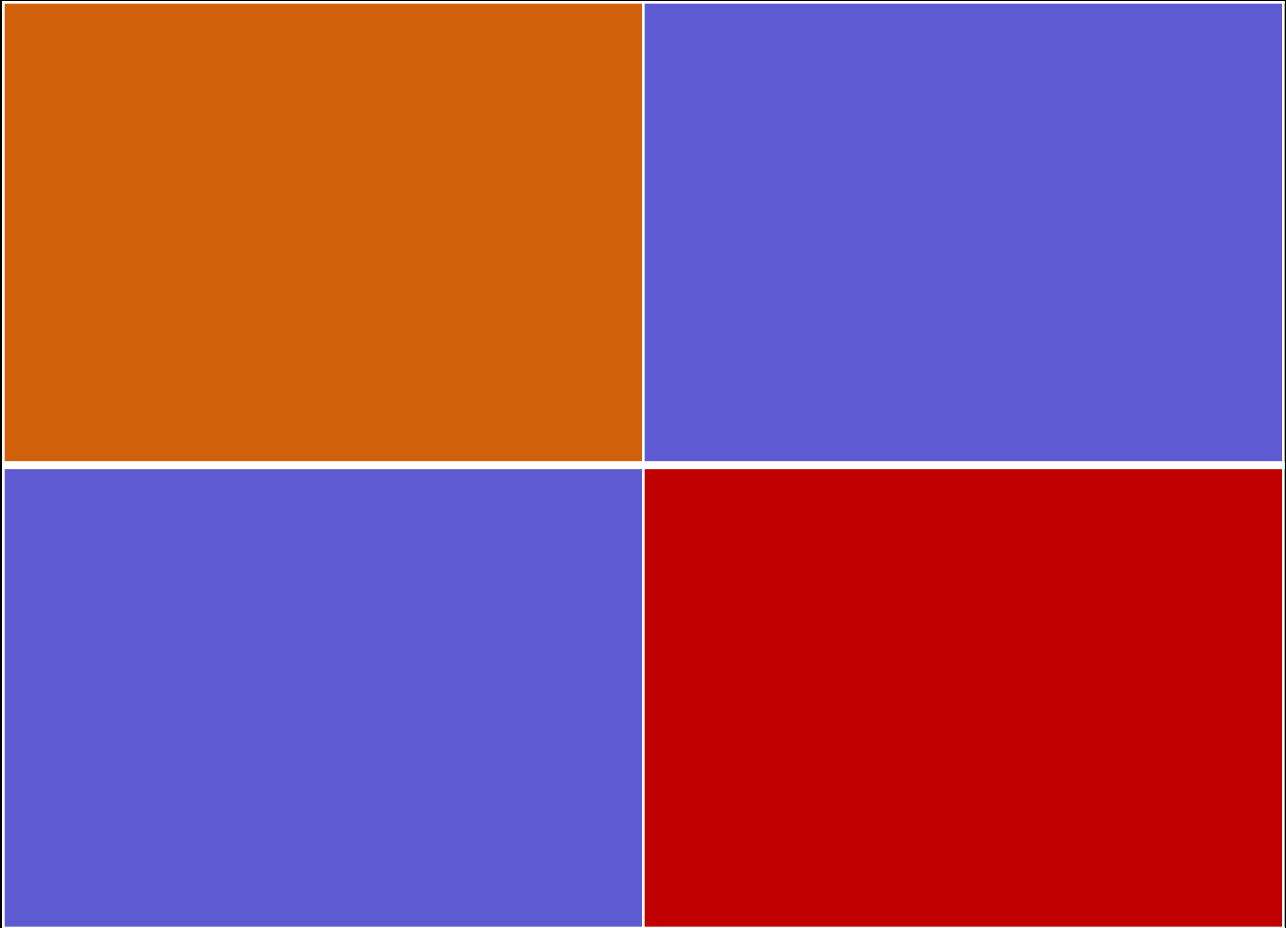
Abstract

Globally, over 110 million game birds are reared annually and released for recreational hunting. Game birds differ from other reared livestock because they experience two very distinct environments during their lives. Chicks are first reared in captivity for 6-12 weeks under managed, stable conditions and then released into the wild. A limited set of 13 studies have examined how the rearing conditions experienced by chicks influence their subsequent welfare.



Post-release
welfare

Madden, J., Santilli, F., & Whiteside, M. (2020). The welfare of game birds destined for release into the wild: A balance between early life care and preparation for future natural hazards. *Animal Welfare*, 29(1), 1-18. doi:10.7120/09627286.29.1.001



Life time welfare of game birds: its in the balance



Pre-release welfare



Post-release welfare

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	Conflict of interest Improve the development of essential survival skills that may not adhere to the five freedom frame work e.g. Anti-predatory training Introducing disease/parasites Food unpredictability

Life time welfare of game birds: its in the balance



Pre-release welfare



Post-release
welfare

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Conflict of interest	
Maximising pre-release welfare by adhering to the five freedoms but not develop the essential survival skills resulting in poor post-release welfare and high mortality	
E.g. Current rearing system	

Life time welfare of game birds: its in the balance



Pre-release welfare



Post-release
welfare

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Coincidence of interest (positive) Improves the pre-release welfare whilst adhere to the five freedom frame work/ affordances to poultry which also improve development of survival skills e.g. Natural Diet Access to Perches	

Life time welfare of game birds: its in the balance



Pre-release welfare



Post-release
welfare

Madden, J., Santilli, F., & Whiteside, M. (2020). The welfare of game birds destined for release into the wild: A balance between early life care and preparation for future natural hazards. *Animal Welfare*, 29(1), 1-18. doi:10.7120/09627286.29.1.001



	Coincidence of interest (negative) Poor pre-release welfare that does not adhere to the five freedom frame work whilst not preparing the birds for life in the wild resulting in poor post-release welfare and high mortality e.g. Current rearing system??

Life time welfare of game birds: its in the balance



Pre-release welfare



Post-release welfare



Madden, J., Santilli, F., & Whiteside, M. (2020). The welfare of game birds destined for release into the wild: A balance between early life care and preparation for future natural hazards. *Animal Welfare*, 29(1), 1-18. doi:10.7120/09627286.29.1.001

Coincidence of interest (positive) Improves the pre-release welfare whilst adhere to the five freedom frame work/ affordances to poultry which also improve development of survival skills e.g. Natural Diet Access to Perches	Conflict of interest Improve the development of essential survival skills that may not adhere to the five freedom frame work e.g. Anti-predatory training Introducing disease/parasites Food unpredictability
Conflict of interest Maximising pre-release welfare by adhering to the five freedoms but not develop the essential survival skills resulting in poor post-release welfare and high mortality E.g. Current rearing system	Coincidence of interest (negative) Poor pre-release welfare that does not adhere to the five freedom frame work whilst not preparing the birds for life in the wild resulting in poor post-release welfare and high mortality e.g. Current rearing system??