

# **Notes from RASE “Sustainable Intensification & Farmland Birds” Seminar**

**30<sup>th</sup> November 2011, Royal Overseas League, London**

## **Opening remarks by the Chairman, Lord Selborne, GBE, FRS, FIBiol**

Numbers of farmland birds are an indicator of biodiversity

There is a lot of good science but not always coming to the same conclusions. So what further R&D is needed? What is the cause in the decline of farmland birds and how do you stem it? What works and what doesn't?

## **The Joint Challenge of Food Security and Environmental Enhancement**

**Professor Charles Godfray, FRS, University of Oxford**

Professor Godfray chaired the Lead Expert Group of the Foresight Project on the Future of Food and Farming.

World population will begin to plateau at around 9 billion by 2050 but many people will be richer and demand a higher quality diet. There will be increased competition for land, water, energy and other inputs and challenges from climate warming and variability.

There are 1 billion hungry people in the world and about another billion in 'hidden hunger' suffering from micronutrient deficiencies. At the same time there are a billion 'over-nourished'. Some of the causes of hunger are not about shortages of food but due to poverty, lack of physical access or access for social reasons, wars etc. So feeding the world is still a huge challenge.

The food system is not sustainable. It uses around 70% of global water, around 24% of vegetated land suffers soil degradation and about 30% of GHG emissions come directly or indirectly from the food system.

Food price volatility has increased markedly in recent years.

Action is needed throughout the food system. We need to increase food supply, moderate demand, improve efficiency and governance, test against sustainability and look after the needs of the poorest.

There is very limited new land. What there is is mainly rainforest or tropical savannah. And there are major environmental costs to converting this land to food production due to GHG emissions and impacts on biodiversity. Restoration of degraded agricultural lands should be a priority though.

So sustainable intensification is not an argument it's a logical deduction. We need to increase yields, increase input efficiency and reduce negative environmental effects.

## UK Agriculture Policy in a demand-driven world

- Production
  - Less need for direct support
  - Facilitate efficient response to price signals by farmers - now when food prices rise it lessens the incentive to produce more
- Environment
  - Rewards for public goods (internalisation is critical)
  - Treat seriously indirect land use effects - eg using land for growing biofuel crops which could produce food
  - Rewards for carbon-efficient productivity based on efficiency per calorie of human-edible food
  - Concentrate biodiversity payments - should you concentrate funds in major improvement areas or try and improve everywhere?
  - Will we miss the opportunity CAP reform offers?

But “if we fail on food we fail on everything.”

## The Extent & Causes of Declines in Farmland Bird Numbers Professor Ian Newton OBE, FRS

We need to look into the past for lessons.

Trends in bird numbers are better known than for any other group of wildlife but the trends we have recorded for birds are typical of most farmland biodiversity.

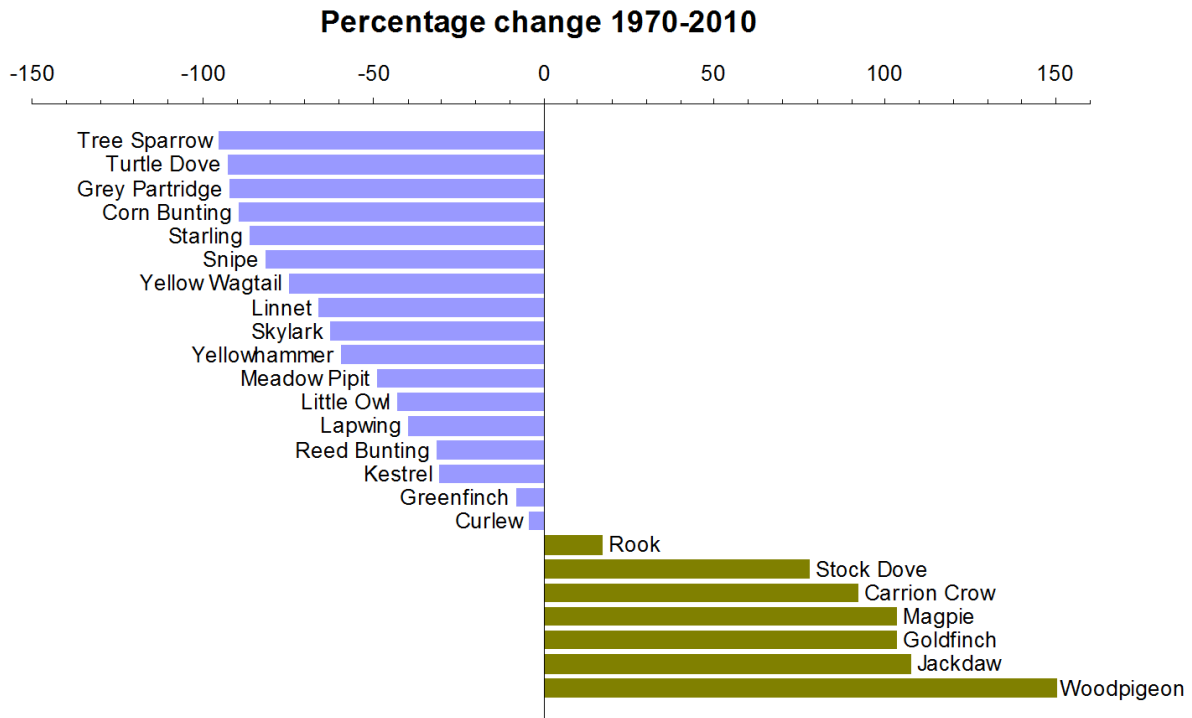
The diagram below shows that there are at least four species which have declined by more than 90%. Half of all species on the list have declined by more than 50%. The species which have increased are a rather odd bunch. They include four species of the crow family which have increased for reasons we don't entirely understand, there are two pigeon species which were declining but which picked up after the widespread introduction of oilseed rape and there is also the goldfinch which was declining but found an alternative food source at garden feeders.

Lower populations are due mainly to agricultural effects - fertilisers and pesticides but mostly acting indirectly by reducing food supply, limiting weed seeds etc. Herbicides have had a huge effect by removing the seeds on which some species like the linnet depend and also by removing associated insects (eg for grey partridge chicks).

Removal of hedges has greatly reduced semi-natural habitats. Severe trimming of hedges also reduces shelter and food supply.

Land drainage has lowered water tables and reduced damp grasslands - worsening habitats especially for lapwings and other waders but also other birds that probe in the soil for invertebrate prey like starlings and thrushes.

## Open field species: Population changes in England



Drying of soil in the east of England kills a lot of invertebrate species or causes them to retreat more deeply into the soil. Also birds find it difficult to penetrate hard dry soils for food.

The change to autumn ploughing stubbles has reduced winter seed availability.

Improved grassland management produces long dense swards which birds find difficult to walk through. Increased stocking densities damage nests and tight grazing reduces food plant availability. Also more winter housing of livestock has impacts.

Earlier harvesting of grass and cereals destroys nests and chicks of ground nesting birds.

Increased specialisation of farming reduces the variety of habitats available to birds. This is especially true for birds like skylarks which met their needs through the year by moving from one crop to another.

But the impacts are complex and interactive - different species are affected in different ways and it is not always possible to tie up cause and effect.

Bird mortality from pesticide poisoning has gone down since organo-chlorine pesticides were banned.

Upland bird populations have been affected too. Habitat changes have exposed birds to more predation.

These changes have made farming so efficient that we cannot go back to the old ways. But we have enough ecological understanding of birds and other animals that it should be possible to manage many species in the context of modern agriculture without compromising profits.

Data from RSPB's Hope Farm shows that key farmland species have shown the biggest increases - improvement comes mainly from management of hedgerows, field margins and headlands and winter seed crops. They aim to keep 2% of cropping areas for seed and nectar crops. No predator control is practised. Over this period the farm profits were within the range normally expected by this type of farm. It is unlikely that the improvements were caused by immigration of birds from elsewhere.

**Number of bird pairs at the RSPB's Hope Farm, Cambridgeshire**

	2000	2011
Grey Partridge	0	5
Skylark	10	42
Whitethroat	25	52
Starling	3	22
Linnet	6	26
Yellowhammer	14	33
Reed Bunting	3	16
Corn Bunting	0	2
<b>All species</b>	<b>117</b>	<b>291</b>

If we are to halt the fall in farmland biodiversity and promote some recovery we have a lot of relevant information to help. The challenge is to find ways within the agricultural enterprise to provide more habitat and more food for species at the right times of year.

## Discussion

**Robin Page, Countryside Restoration Trust** - bird numbers are not increasing like they should because of predation especially by crows, magpies, sparrowhawks, and all the birds which the conservation establishment will not recognise as making an impact on farmland bird populations. It is politically incorrect in these bunny hugging days to actually say what nature does to nature.

**John Bingham, retired wheat breeder** - immigration has not been mentioned eg starlings from Scandinavia and linnets from Spain.

**Prof Ian Newton** - predation has increased nationally but the impact on bird populations is difficult to gauge - there is little evidence to link it to the decline in bird numbers except for ground nesting birds. Also there can be relatively high predation without impacting on populations much because birds hatch numbers which are several times higher than the levels needed to keep the population stable.

Immigration is important for some species but there have also been declines in the numbers coming over here.

**Peter Melchett, Soil Association** - if we reduced overeating and obesity we would need less food and so could produce it less intensively.

**Professor Charles Godfray** - it's not just production - we do need to tackle demand as well.

**Dr Humphrey Crick, Natural England** - has any modelling been done on increasing productivity of land sustainably?

**Professor Charles Godfray** - there was no sensitivity analysis done for the Foresight Report but a recent global study from Minnesota on sustainable intensification looked at the cost benefits of increasing yields by using more nitrogen fertiliser and concluded that the environmental cost of the nitrogen was less than that of converting savannah to agriculture to produce the same yield increase.

## **Address by Mr James Paice, MP, Minister of State for Agriculture & Food, Defra**

As a farmer I feel for and care about wildlife and I am concerned about wildlife.

The subject of the meeting could not be more important - we look to our farmers to simultaneously:

- contribute to feeding a world population of 9 billion
- contribute to food security for the UK
- deliver good environmental outcomes

A White Paper on the Natural Environment has been published and Defra is also now working on the Green Food Project by bringing everyone together from organisations such as FDF, CLA, NFU, RSPB to bring a vision of how we produce practical solutions.

That's quite a task list. To succeed it requires us, amongst other things:

- to pool knowledge and expertise so that there are no false divides, for example between those who produce and those who conserve
- to be as clear as we can about what the evidence is actually telling us : a point to which I shall return a number of times
- to be frank in evaluating what is and isn't working

### **The Problem**

Everyone is familiar with the overall picture. Between 1970 and 2009, populations of farmland birds fell by over 50%. The main period of decline between 1970 and the mid 90s coincided with a period of agricultural intensification. From the late 1990s to 2005 there was a period of relative overall stability, although there have been further declines since 2006. The 2010 breeding season results just published suggest a further modest decline of about 1% between 2009 and 2010.

There is no use adopting the blame game. If farmers and land managers feel they are being picked upon they are going to be a lot less interested in helping to solve the problem. Farmers are not helping when they slag off the environmentalists either.

### **Why then are we seeing these statistics?**

One possibility is that the statistics are reflecting something in the make-up of the index itself, rather than an underlying issue. The current index originated in the 1993 "Atlas of Breeding Birds" which put 28 species into the farmland category. Seven of those are scarce or fly mainly at night, and two are non-native. So the Government accepted the remaining 19 as representative of the farmland category. Is that still correct? Are there

other species that should be included, or some that should be left out? That's a rather detailed technical issue. But at a more fundamental level, do the statistics chime with what you experience as you go around the countryside? And are there any alternative measures that would give us a better picture?

### **Government's general approach to environment**

At the global level, Caroline Spelman played a major role in reaching agreement on the new framework for combating biodiversity loss at Nagoya last autumn. Within that framework, we have published a new Natural Environment White Paper - the first of its kind for 20 years - which sets out our vision for the natural environment for the next 50 years. Shortly afterwards we published 'Biodiversity 2020' - our new strategy for England's wildlife and ecosystem services. Our proposals pick up the principles in Sir John Lawton's report 'Making Space for Nature'. We are aiming for: more areas for wildlife, which are bigger, better managed, and better joined up.

How then, will our general approach help farmland birds, and other environmental issues for which they are an indicator?

### **First policy response - Campaign for the Farmed Environment**

Much good work has been achieved in the two years of the Campaign's existence and we will be evaluating the impact of the Campaign on environmental outcomes, including on farmland birds, over the next few months.

### **Second policy response - agri-environment schemes**

Roughly 67% of available farmland in England is covered by all agri-environment schemes, with ES coverage of 61%. Within this coverage, more than 60% of available farmland is in Entry Level Stewardship (ELS) and 9% of this land is in Higher Level Stewardship (HLS).

Work so far undertaken to improve ES effectiveness (the Making Environmental Stewardship More Effective (MESME) project) includes:

- improving targeting
- encouraging greater collaborative working
- improved option uptake in ELS, and
- streamlining HLS administrative procedures

We think that the agri-environment schemes are a real success and that the changes we have in hand will make them even better. But the fact remains that they have not, or not yet anyway, reversed the declines in farmland birds. So why is that? Why, even with this degree of coverage, do we still see disappointing figures for farmland birds?

First, there is a significant time lag from deciding to change the grant scheme, to people taking up the new option, to it having a real impact on bird populations, and finally to those changes then being picked up in the monitoring. From the advice I have received we think the total lag from all those elements could be 5 years. Or, put another way, the figures we are seeing today reflect the agri-environment regime as it was in 2005, not the present-day version.

Secondly, although the overall take-up is good, we are asking ourselves whether there is a sufficient take-up of the in-field options which are of most value to birds. Certainly some modelling work by Reading University has suggested that low uptake of in-field options is limiting success. And Natural England has projected that if we could secure an additional

65,000 hectares of arable field margin combined with additional in-field options then that should produce an increase in farmland bird populations of 1% per annum.

Thirdly, we think there may still be issues about the quality of some schemes. That applies especially to those which are technically difficult to deliver such as wild bird seed mixes.

Fourthly, is the issue of predation, where I think it is fair to say that the jury is still out. Those of us who live and / or work in the countryside know it to be a factor - the question is whether it is a significant factor or not. The conclusion of Defra-funded research in 2009 was that predation was indeed having an impact in some areas but that localised predation doesn't necessarily equate to national population impacts and that there is an interaction with changes in land use - in other words, predation becomes more significant as habitats become degraded. However, where new research becomes available regarding the role of predation we will need to look carefully at this. Pretending that predation doesn't happen at all alienates lots of informed and well-meaning people in the countryside.

Finally we wonder whether there are other pressures which are cancelling out the benefits from agri-environment schemes. For example, cold winters, or changes to the wintering grounds outside the UK used by long-distance migratory species. And we also need to probe the north-south divide - why is it that declines should be greater in the south of England?

### **Third policy response - Nature Improvement Areas**

Nature Improvement Areas (NIAs) are local partnership-led initiatives that will:

- tackle the fragmentation of our network of wildlife sites;
- increase their size, quality and connectivity;
- deliver a range of ecosystem service benefits including for biodiversity, such as farmland birds.

Farmers and landowners are members of several partnerships that have applied for Defra funding through a competition to create an initial 12 NIAs. We hope to be able to announce the successful partnerships around February 2012.

### **Conclusion**

We live in a crowded country, so the implication is that more food needs to be produced, the feeling that we can import food is irresponsible because of factors such as climate change. We need to be in harmony with Nature and move on from the blame game. And we need to recognise the role of mankind in Nature. Having destroyed the totally natural environment we have a responsibility for our role now to manage and maintain our wildlife as best we possibly can. And that will mean sometimes controlling some species where they become a threat to other species.

### **Questions for the Minister**

**Charles Nodder, National Gamekeepers Association** - The increases in grey partridges at RSPB's Hope Farm is modest compared with projects run by gamekeepers elsewhere. Would there be any funding available from MESME to help gamekeepers to manage wildlife?

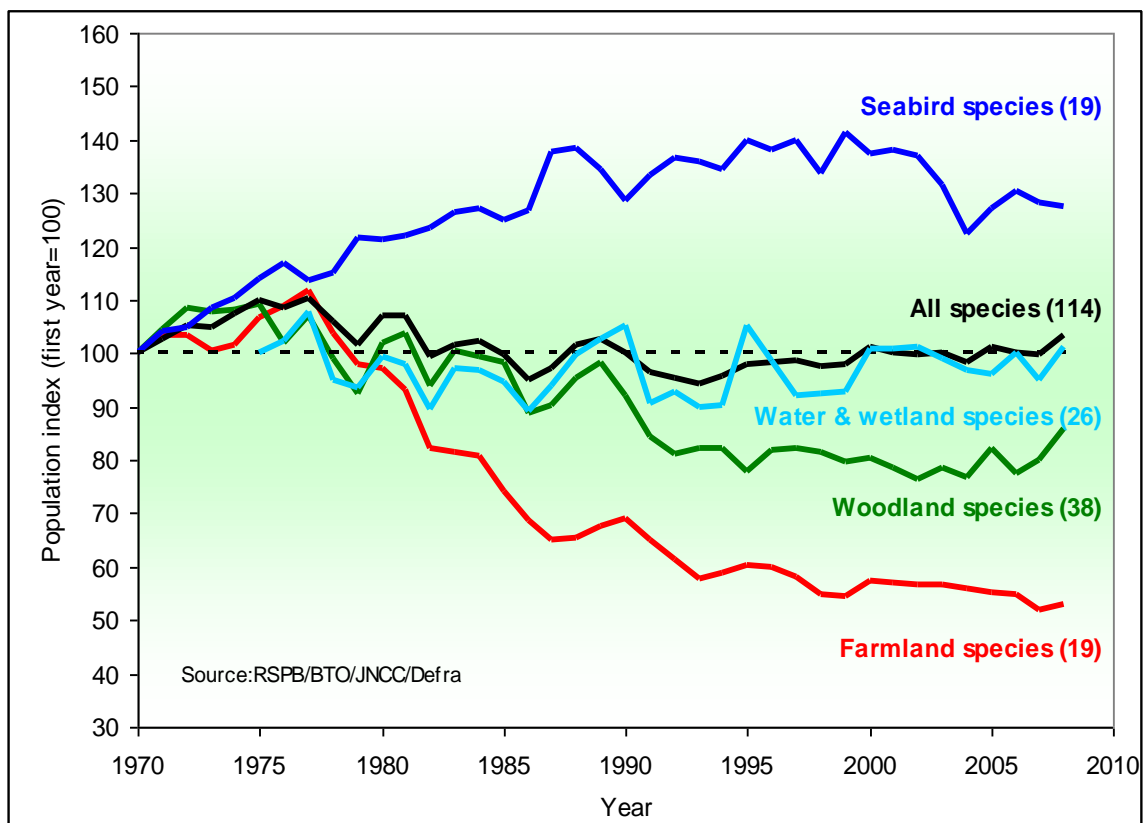
**Jim Paice** - there is no funding available from MESME. But controlling predation is important. However we mustn't say every crow and magpie is bad - we need balance.

**Mark Tufnell, conservation grade farmer, Gloucestershire** - in the forthcoming CAP can the Higher Level Scheme be used to fulfil the 7% environmental set-aside requirement?

**Jim Paice** -There is little support in Europe for the 7% approach when food production is so important.

## **Agri-Environment Schemes & Farmland Bird Recovery, Professor Ken Norris, University of Reading**

At a time when we think we understand the problems and have measures out there to fix them, farmland birds are at their lowest level ever.



### **Why are farmland bird populations failing to recover?**

There is good evidence that farmland bird populations can increase in individual case study situations.

Ken's team has produced a risk assessment system which can be used for the 60 odd species of birds which use farmland. It enables bird species to be characterised according to their ecological needs - the food they eat, the habitats they live in and the nest sites they occupy. The model does the same for agricultural changes - which of those factors does changing agriculture impact on? Then it looks for points of coincidence between the two.

For example the linnet is an obligate seed eater summer and winter, it tends to feed in different habitats around the margins of cropped areas of fields and it has quite broad-based nesting requirements. For agriculture the shift from spring to autumn sowing has

reduced seed supplies in winter and changed the kinds of habitats which have produced food supplies through the year.

Then they developed a method of scoring and went through all the changes over the past decades to develop a risk score for each species which indicates what needs to be done to improve its habitat.

Ken Norris believes we could have broadly identified winners and losers years ago using this technique.

Analysis of the scores shows that most of the risk score is attributed to changes in the cropped areas of fields. Looking at environmental stewardship options in this respect the options available are aligned with the risks but the options taken up by farmers are not - only a quarter of the uptake is in main cropped areas. So options need to be more targeted to the main cropped areas.

This work cannot tell us how far away from turning populations round we are. But work in progress looks at whether we have enough of the right stuff in the right places to make the difference needed. They translate the information from surveys into the scoring framework to ask how the land use matches the ecological requirement of different bird species ie the species' "functional space".

We need to work out the amount of functional space which will lead to stable populations for each species. Then make changes to the habitat accordingly and then measure their impact.

The models show that the ELS is not having the impact that we want it to have. The reasons are that not all the right options are being taken up in the right places and we don't know if this can be achieved without changing the stewardship schemes themselves. Secondly options in schemes do not have the same impact everywhere so they need to be targeted more effectively. Thirdly some options have the opposite effect to that intended - likely to be due to competition and predation.

We need to deploy agri-environment management as risk mitigation measures - and ask farmers how their management impacts on farmland birds and therefore what we would need to do to mitigate that risk. Perhaps farmers could be paid for the amount of risk they mitigate rather than for specific measures.

## Discussion

**Sir John Lawton, 'Making Space for Nature' Report, introduced the discussion session -** The entry level environmental stewardship scheme is better than nothing but is not fit for purpose. It needs to be more targeted, with more co-ordinated action from groups of farmers.

He was 'gobsmacked' by the emphasis on predation in today's discussions. Predation is not 'one kind of organism' - it is complicated and variable. The RSPB does control predators and are open about it. You can larsson-trap corvids. Get on with it, it is not illegal!

**Professor Les Firbank, Leeds University -** The greatest risk factors are the middle of fields. Farmers have adopted their practices to reduce weeds and other competition for crops. So we know these practices are consistent with sustainable intensification. In the middle of fields there is inevitable competition between cropping and farmland birds. But what do we do with this information?

**Professor Ken Norris** - there will be other ways of providing those resources through agri-environment schemes, eg many of these species will use wild bird seed mixes.

**Rob Yorke, land agent** - do we need to look at the uplands more carefully to get a more holistic view?

**Ken Norris** - certainly - most of this research refers only to lowlands

**Will Peach, RSPB** - HLS experience shows that carefully targeted in-field options work.

**John Stanley, RASE Council** - all that ELS has done for him is produce more badgers, rabbits and raptors - 12 years of taxpayers' money and his own wasted! How do we get today's information into practice? We need advice going on to every farm.

**Vince Lea, Countryside Restoration Trust** - farmers should use available volunteers more to count birds and let them know if their work is working or not.

**Ken Norris** - Greenhouse Gas models are being used on farms - we could do similar with birds. Now farmers need to get involved in showing what kind of way they would like that bird information presented so that they can access it.

**Gill Smith, farmer** - in-field options and margins are difficult on small farms because of small fields and so they are penalised when they cannot do them in stewardship schemes. On the other hand they often have more hedgerows and good rotations of crops and grass which provide a variety of habitats and may not get paid for these.

**Ken Norris** - it's important that we think about the principles of what we are doing before we think about the practical issues - often it's the other way round.

**Gavin Siriwardena, British Trust for Ornithology** - latest unpublished results from ELS show that there has been some positive impact especially from winter seed resources.

The BTO are involved in work funded by Syngenta on a programme for an on-line automated advice system for farmers which would get information across without the expense of a farm visit.

**John Bingham** - Hedges - we have lost them but what are left are better habitats. Stubbles used to be knotgrass but now are better because they have groundsel. Many margins have not been effective because they are just grass sown - they need to be floral.

Crop plant breeders are helping - wheat blossom midge-resistant wheat will reduce the need for pesticides and so increase biodiversity. The Rothamsted programme for genetically modified resistance to aphids could work similarly.

**Robin Page** - Disagrees about RSPB - they are not open about their predator control. There is nothing about predator control in literature. We need honesty.

**Sir John Lawton** - A challenge is to find win wins - things we have to do anyway but also have conservation benefits. There are upland win wins eg steps to improve water quality improves habitats. But it is less clear where there are win wins in the lowlands.

**Lord Selborne** - the number of species have not changed - just the number of birds.

## Chairman's Introduction to Case Study Session

The previous sessions indicate that ELS has been ineffective and that we need a more targeted approach underpinned by science.

### Environment Schemes - How to Achieve Better Outcomes

Richard Macdonald CBE - Chair Farming Regulation Task Force

Key issues from the task force report: - how to establish the right culture and principles which engage farmers more and get their commitment. All against a backdrop of volatile prices for commodities, the need for UK farmers to be competitive and CAP reform leading to less money for farmers - the latter unlikely to be simplified despite what politicians say.

Key is to focus on the outcomes of what the regulation is trying to achieve, the framework for the regulation should come afterwards.

Conclusions of the task force were:

- The “culture” must be right: Government, its agencies and its staff must have some understanding of farming and its problems/pressures; too often those developing regulation have a limited or even no understanding of the industry. But the industry itself must also help to address this problem;
- Regulation must be evidence-based: farmers are most likely to do something if they believe in it;
- Full partnership between regulators and farmers must be achieved, and farmers must be prepared to contribute to this process;
- The Government should accept the premise that the vast majority of farmers can be trusted to “do the right thing”. Therefore, develop a “reward the good, nail the bad” system;
- Regulation must be outcome-based. For example on soils: farmers are confronted with a long form to fill in, but it is not clear why they should do this, or what it will achieve.

Environment Schemes should be designed to deliver clear outcomes. It should be possible to tailor these more for particular localities (landscape and farming in North Yorkshire is very different to Lincolnshire flatlands for example). Again, they must be evidence-based.

Different Agencies should all get together first and co-ordinate between a common line. Some regulatory projects can be very good, eg diffuse pollution - here farmers can see why they are being regulated and therefore they are engaged in what is achieved. Farmer feedback is needed in designing schemes and writing guidance. This approach may mean more work for agencies but not for the farmers involved.

We need to ‘use all of the levers’. Schemes sit in silos - we should consider them together more. Good farming performers could be rewarded with less paperwork and fewer inspections. The flip side of this is that when a problem is found, there is rarely a significant punishment. This needs to change.

A plea to those negotiating CAP reform: keep it simple, it is important not to throw out the good in CAP. Build flexibility into ELS/HLS. Avoid blunt tools like NVZs. Have less

paper work. Build on the good work done by others such as Game & Wildlife Conservation Trust, LEAF and the Soil Association.

Think also about perverse implications. For example there is a general thought that we must reduce and limit pesticides. But if you keep the products you can have more tools and be more precise about what you do with them to the betterment of the environment.

Trust farmers more, provide them both with better evidence and better advice. It is key to influence farmer behaviour.

## **The South West Farmland Birds Initiative**

### **James Phillips (Natural England)**

The Initiative is a Natural England-led partnership which started in April 2008 using Environmental Stewardship to reverse the decline of birds across Wessex.

Generalists like wood pigeons, jackdaws and rooks are doing well but specialists are in trouble, especially those reliant on in-field habitats. Problems are due to loss of nesting habitats, adult food and food for chicks and result from:

- Increased specialisation of farming
- Loss of spring-sown crops & weedy stubbles
- Increase in the use of pesticides & fertilizers
- Intensification of grassland management
- Loss of hedges, margins and other non-farmed habitats

So farmland birds have fewer places to nest, produce fewer offspring & survive the winter less well.

Partnership is key to the success of the South West Farmland Birds approach which brings together the best knowledge and expertise available to make the same ask of the farming community.

They have used a species assemblage approach to identify key areas by matching suites of species with their habitats. In particular they have focussed on specialist species associated with arable farmland and identified six species - 'the arable six' - to underpin and define the target areas for the project's activity. They are working especially where 3 or more of these species occur. The 'arable six' are the tree sparrow, turtle dove, partridge, lapwing, corn bunting and yellow wagtail - all range-restricted arable specialists. These are the species pulling the farmland bird index down.

Other wildlife will also benefit including plants, animals, like the brown hare and other farmland bird species like linnets, skylarks and reed buntings.

The target area is recognised as nationally important for the arable six. There are four sister projects led by different partners: Cotswolds Farmland Bird Project (Natural England), North Wessex Farmland Bird Project (RSPB), South Wiltshire Farmland Bird Project (Cranborne Chase AONB) and the Dorset Arable Project (FWAG).

- Farmers are enthused by the approach but asked '*what did the organisations actually want farmers to do for farmland birds?*'

- In response they have developed an evidence based ES package (in-field options) that delivers the most important habitats - winter seed food, spring/summer invertebrate food and places to nest in-field;
- The package is based on the best research, evidence and experience to date from RSPB/GWCT/BTO/NE. It suggests that 4-7% of a 1 km square in suitable management (in-field habitat) will deliver enough key habitat to help reverse the decline of farmland birds.

### ELS and HLS farmland bird packages

Resource ('Big 3')	ES options	ELS (minimum per 100 ha)	HLS (minimum per 100 ha)
Winter seed food	Wild bird seed mixture	2 ha	2 ha
	<u>or</u> Weed-rich stubble (or a combination)	<u>or</u> 5-10 ha	<u>or</u> 5-10 ha
Spring-summer invertebrate food	Conservation headlands, low input spring cereals, field corners, beetle banks, blocks/strips of nectar mix/flower-rich margins	1 ha	2-3 ha
Places to nest in-field	Skylark plots	20	20
	Fallow plots	<u>or</u> 1 ha	<i>plus</i> 2 ha  (if appropriate)

Anecdotal evidence suggests that it is going well and they are monitoring 35 farms to see how birds are responding.

This approach is now 'mainstreamed' throughout England as a way of delivering farmland birds using HLS farmland bird package nationwide.

The approach is also being used in a simple ELS based scheme through the Campaign for the Farmed Environment

### Peter Richards, farmer Gloucestershire

Peter and his father farm 656 acres, 434 acres of which are owned. The farm grows arable and a 700 ewe flock. They joined stewardship in 2006 because:

1. It provides a reliable and guaranteed income - about 10% of total income
2. HLS is a new dimension - farming is now even more enjoyable

The options taken up involve targetting key species via:

- Over 30ha of weedy overwintered stubbles;
- Conservation headlands;
- Field margins - every field has a 2m or 6m wide margin. The 6m margins have been planted with wild flowers and tussocky grasses;
- Pollen and seed mixes including clover and birdsfoot trefoil in a 1.5 ha field (it is near a main road and visible to the public and shows them a rich attractive environment);
- Fallow plots in the centre of arable fields provide an ideal nesting opportunity for lapwings;
- 98 skylark plots - became full of charlock this year so got permission to spray with herbicide in the spring to produce bare areas - a good example of how the scheme can be flexible;
- Low input spring cereals;
- 3 areas of field corner management near to woodland and other environmental areas to enhance their effectiveness;
- 1ha of wild birdseed mix planted with kale, barley, quinoa and fodder radish;
- 2.5 ha of corn bunting mix - a year round source of food and a safe habitat - it includes barley, mustard, triticale and millet;
- Brassica fodder crops - planted in the spring but not used by the sheep until October so they provide an important habitat for small seed-eating birds and other wildlife;
- Also grow stubble turnips which provide winter cover;
- Species-rich grassland - fenced off.

A recent survey by one of the county bird recorders noted 300 corn buntings (beating the previous record of 225 for the area), 500 skylark, 250 yellowhammer, 100 chaffinch and 1000 linnet in the vicinity of the farm. There are now around 60 bird species on the farm including new species such as redstarts, woodpeckers and yellow hammers.

## **Farmland Bird Trials at the Allerton Project, Loddington, Leicestershire**

**Dr Alastair Leake, Game & Wildlife Conservation Trust**

The Allerton Project farms a total area of 333ha which is made up of arable crops (248ha), pasture (42ha), woodland (19ha) and 'other' (24ha).

### **Management programme**

1992 was the baseline year - they measured everything they had to start with. From 1993 to 2001 a full game management programme was followed with predator control, winter feeding, habitat creation and management. Since then, to work out the impact of each

item of control, firstly predator control was withdrawn (2001-2006), then winter feeding (2006-2011) and since 2011 a modified programme of game management has been re-instated.

National statistics show that since 1966, songbird abundance has reduced almost as a mirror image of national wheat yields and continues to decline in spite of most of England's farmland being in Environmental Stewardship. However the increase in the number of songbirds at the Allerton Project over the initial full game management programme shows that it is possible to reverse these declines.

Predator control and winter feeding produces pretty instant results - habitat measures may take longer. In the first phase with the full suite of measures populations increased rapidly - a 30 year decline was reversed in just three years.

All the things which Prof Ian Newton listed earlier about why farmland birds had gone into decline are practised at Allerton - spraying and fertilising, autumn cropping, no winter stubbles - and despite this they can deliver increases in bird populations using their comprehensive regime. And whilst this was going on the farm's wheat yield increase exceeded the national average.

How to maximise success:

- Need to intensify the management of both crops and wildlife;
- Provision of suitable nesting habitat - and especially insects available for chicks in their first seven days;
- Feed through the winter, early and late spring - winter feeding of pheasants helps to feed other birds;
- Targeted and limited control of antagonists.

Habitat improvement includes

- 2m field margins - good tussocky perennial grasses may not be as good as floral mixes but they are easy to manage;
- Beetle banks take very little land out of production and offer multiple benefits to field mice, harvest mice and the raptors which feed on them. At Loddington a summer insecticide has not been used on wheats for the last 18 years so the beetle banks are effective;
- Wildlife seed mixtures - they have grown individual species separately and recorded which species of bird fed on which seed to enable mixes to be put together to suit the target birds;
- Fertilisers are needed for seed production crops - 60kg of nitrogen per hectare increased yields of seed about tenfold;
- Rotate environmental crops eg pollen and nectar mixes with clovers with wildlife seed mix crops. Initial stewardship prescriptions insisted they stayed in the same place;
- Cropped mixes do not provide sufficient feed for right through the winter - feed hoppers are used for late winter early spring.

Nesting success of blackbirds, song thrush, chaffinch and yellowhammer was doubled or more by this management and there has been a progressive fall in songbird breeding abundance through the dismantling of the two following phases of wildlife management.

Grey partridge numbers increased from almost zero to up to 20 pairs per 100 hectares under management.

Predator control - immediately keeper control was stopped half of the magpies came back and within five years they were back up to the levels seen before control. Also there were falls in nesting success without predator control.

Nest sites tend to be concentrated in certain areas so you can concentrate predator control in those areas.

### **Conclusions**

To preserve wildlife in an intensively managed farm landscape we need to intensify its management too.

Biodiversity by design delivers better outcomes than biodiversity by accident.

Better targeting of agri-environment stewardship options and advice both on-farm and at landscape scale are needed.

Intensifying the management and adopting the full suite of measures produces an additive effect.

## **Research from Elmley National Nature Reserve, Philip Merricks, MBE**

Elmley Estate extends to 2,500 acres of lowland wet grassland, 700 acres is leased to the RSPB and 1,800 acres makes up the only farm in the country with the status of National Nature Reserve. Its statutory functions include nature conservation, public access, education and research.

“Farmland bird decline is horrendous”

Elmley has researched one species, the lapwing, closely. Nationally its numbers have halved since 1970.

Grassland management is via 900 suckler cows and their calves.

The research has shown that there are two important factors which determine farmland bird population - adult mortality and breeding success. For lapwings adult mortality has remained broadly the same so we need to look at breeding success. Measurement should be of fledging success not just nesting success. Each adult pair of lapwing need about 0.7 of a chick fledged per year to maintain a stable population.

- Large study of fledging on four identical sites - factors necessary: Grassland management needed to be heterogeneous, tightly grazed, no fertiliser, only suckler cows not calves or sheep during nesting to reduce trampling risk and nothing used as a wormer which will damage soil microflora.
- Water - rills filled with water about March when the lapwing come in and levels kept up during breeding season - especially to provide wet, squidgy mud for chicks to forage.

- Topography - lack of flatness - keeps water in and gives wind protection.
- Reducing the impact of predators - predator fencing, removal of perching posts can both help. Foxes are taken out by lamping and crows by Larson traps. Also use individual nest protectors for birds nesting in exposed positions.

Do need 0.7 chicks per adult pair - numbers of fledged chicks per hectare were best at Elmley.

### Conclusion

A lot of different interacting factors are involved in success. It is bonkers that HLS prescriptions ignore chick productivity - the scheme should be looking at outcomes not process.

### Discussion

**Richard Bramley, Farmer, Yorkshire** - the Campaign for the Farmed Environment (CFE) has raised awareness among farmers. Its important benefit is from all stakeholders working together. Farmers feel under the cosh a lot of the time - you are expected to do so many things at the same time as running a business so it is encouraging to feel involved.

It is very pleasing that the RSPB seem to be less antagonistic to farmers recently.

He is recording large increases in birds numbers and species on his farm.

**Humphrey Crick, Natural England** - we need to know more about the sociology of farmers - how farmers make decisions - to work out, for example why farmers don't take up in-field options more.

**James Phillips (Natural England)** - a specific 'ask' is important and that it is supported by evidence.

**Tracy Adams (SW Farmland Birds/Cranborne Chase AONB)** - because in-field options are so difficult for farmers, more expert advice is needed.

**Peter Richards, farmer, Gloucestershire** - we need encouragement as well as advice.

**Philip Merricks** - "conservation relies on the hands and minds of farmers".

**Nick Forde, Songbird Survival** - predator control needs to be integrated into environmental schemes.

**Rob Yorke, Land Agent** - we have not talked about the use of biotechnology to reduce pesticide use.

**Peter Richards** - the general public is not behind genetic modification - we need to educate them. GM could have a significant impact.

**Richard Macdonald** - public attitudes to GM are changing.

**Alastair Leake** - we need to target outputs to become more prescriptive and to put options together which complement each other.

**Graham Hartwell, BASF** - asked speakers what take away messages they had.

**Philip Merricks** - focus on outcomes not process and put the onus on farmers to deliver.

**Richard Macdonald** - link evidence to outcomes, engagement, partnerships and advice.

**Peter Richards** - advice, enthusiasm and encouragement for farmers' work.

**Gareth Morgan, RSPB** - RSPB needs to talk more about food production and everyone will need to sell outcomes to farmers better. ELS is in the last chance saloon as far as the Treasury is concerned.

**Philip Merricks** - we shouldn't have outcome based payments though - they would be too difficult to audit - just have more of an outcome focus.

**Guy Trehane, farmer, Dorset** - congratulated RASE for exposing 'tick box environmental programmes' and asked what are the chances of reform?

**Richard Macdonald** - if there is a collective will to make it happen it needs to be communicated to Ministers. Jim Paice is committed to a different approach.

**James Phillips** - we are in a position to influence what schemes look like.

**Sir John Lawton** - a debate which is not happening is whether we try to improve wildlife everywhere or go where we can get 'the biggest bang for our conservation buck'. He suspects it will be the latter because improvement everywhere is not feasible.

**Peter Richards** - favours specialisation eg concentrate on biodiversity in areas like the Cotswolds where farmers struggle to make cereal production profitable.

**Richard Macdonald** - we need to see the regulatory approach as a fall-back but not expect it to change behaviour.

**Phillip Merricks** - it will all be decided by Politics and the Treasury!

## **Chairman's Closing Remarks - Lord Selborne, GBE, FRS, FIBiol**

It has been a fascinating discussion and I have come away with a feeling of optimism. The evidence is not encouraging - entry level environmental schemes are failing to improve farmland bird populations. But there are examples of best practice which have clear objectives and an eye for detail and careful management. The main success factors are habitat, food supply and predation. We have made a lamentable attempt till now to understand the detailed requirements of specialist birds. Also we need to think more on a landscape scale with farmers working together to the same ends. We have an excellent science base now Defra needs to persuade the Treasury with effective schemes which give value for money. "We know how to do it."

Congratulations to RASE for arranging this very timely meeting. I think it will be enormously influential in developing stewardship schemes.

Alan Spedding, 04 December 2011