Countryside Bird Survey

CBS Manual

Guidelines for Countryside Bird Survey participants

Foreword

Knowing what species occur and how many individuals are present in our countryside seems like information that is easy to collect. It is not, and yet such knowledge is critical to protecting our birds and their habitats. Birdwatchers have always been at the forefront of generating knowledge of our birds and their habits. Over a decade ago, BirdWatch Ireland, the National Parks and Wildlife Service and the Heritage Council got together to make perhaps one of the most significant steps for Irish terrestrial biodiversity, when it established the Countryside Bird Survey (CBS).

The survey is straightforward to execute and, critically, is repeatable, year in, year out. The survey requires three visits per annum to areas pre-selected using statistical tools, in order to enable us to make valid comments and generalisations about the bird communities of the countryside.

The data are showing remarkable patterns, with some bird species increasing, others remaining stable, and others declining. Before CBS, we relied on data from outside Ireland to guide our conservation and research strategy. We had no choice. No other data existed. The hidden assumption in this translation of knowledge from our colleagues and friends in Britain was that species are ecologically similar in Ireland and Britain. What CBS (and other) data are now showing is that many species do not behave in the same way ecologically as their populations in Britain, and even less so European populations.

We need to understand the ecology of our species and their patterns. You are filling this gap by participating in this survey. There will be lots of interesting patterns to observe and interrogate in the future. If you are a regular contributor, thank you, and please, do continue. A few short visits, when added to all the other data, will generate new knowledge and guide both our conservation strategies and measures to protect our birds and habitats.

We hope that this new manual will continue to enthuse those who have contributed. We hope it will encourage others to think about participating – and that most of all it will help us generate fun and enjoyment in the data collection process as well as critical data on our rich and unique countryside birds.

John O'Halloran
CBS Chairman
June 2012

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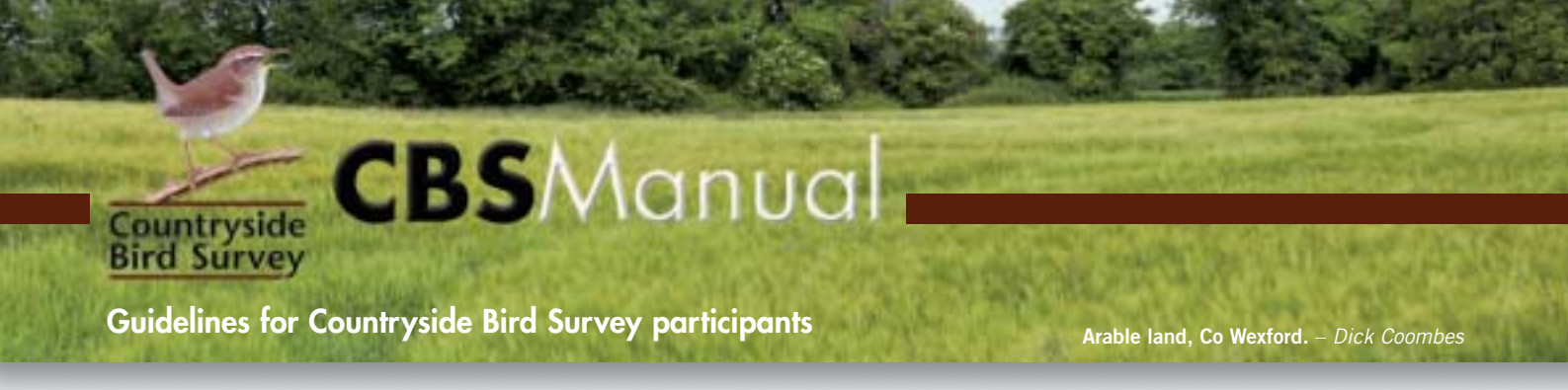
BirdWatch Ireland
protecting birds and biodiversity
An Roinn Ealaíon, Oidhreachta agus Gaeltachta
Department of Arts, Heritage and the Gaeltacht

CBS is a joint project of BirdWatch Ireland and the National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht.

Cover pictures: Blackcap (female) *(John Fox),* Yellowhammer *(Shay Connolly),* volunteer bird surveyor *(Ruth Gaj McKeever),* Stonechat *(Michael Finn).*



Countryside Bird Survey

CBS Manual

Guidelines for Countryside Bird Survey participants

Arable land, Co Wexford. – *Dick Coombes*

Introduction

Breeding bird populations in Ireland have undergone large-scale changes in size and distribution range in recent decades. Farmland bird populations in particular have been affected by the intensification of agricultural practices that have taken place to cater for increased demand for agricultural products, especially since the 1970s. The Countryside Bird Survey (CBS) was initiated in 1998 as an ongoing scheme focused on tracking the fortunes of common and widespread breeding bird populations in the Republic of Ireland. To date, it has been successful in monitoring the trends of more than 50 species. The CBS addresses, in part, Ireland's obligations under the European Birds Directive. It also helps to identify conservation priorities among this large and varied group of birds. Each year, the CBS relies on the efforts of more than 200 observers.

Rationale for ongoing monitoring

The first atlas survey of breeding birds in Britain and Ireland, undertaken between 1968 and 1972, marked the first thorough attempt at examining breeding bird populations. A repeat survey some 20 years later between 1988 and 1991 indicated that alarming population declines (in size and range) had occurred, largely in farmland birds. Thus, there was a clear requirement for a scheme to monitor bird populations in Ireland and to detect any significant declines in time for appropriate action to be taken.

However, complete censusing of common and widespread breeding bird populations in Ireland on a more regular basis is not feasible due to large-scale geographic considerations and highly dispersed bird distributions. An alternative solution is to employ a sampling approach which involves repeated visits to a random and/or stratified sample of sites over time. If the sampling design is robust, we may then assume that the sample surveyed is representative of the national population. It is on this basis that the Countryside Bird Survey (CBS) was designed and initiated in 1998.

Survey design

The CBS is based on a random stratified approach. The Republic of Ireland was divided into eight regions, and 10-km squares (based on the Irish National Grid) were randomly selected within each, and allocated in sequence. A minimum of 20% of 10-km squares are surveyed in each region. For each 10-km square selected, it is the 1-km square at the extreme southwest corner that is surveyed. The survey aims to achieve coverage of the same 1-km squares each year, ideally by the same observer.

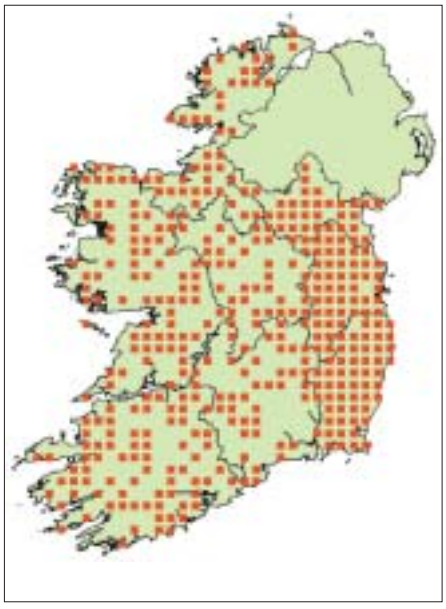
Objectives

The principal objective of the CBS is to monitor the status of a wide range of common and widespread breeding bird populations in Ireland across a variety of habitats. More specifically it aims to:

- Provide information on species trends and distributions;
- Promote a greater understanding of some of the factors responsible for any declines that are occurring, so that appropriate action may be taken;
- Promote the wider use of bird survey data as an indicator of the environmental health of the countryside.

The Birds Directive

The EU Birds Directive is one of the most important pieces of nature legislation that we have, and has created an extensive protection scheme for all of Europe's wild birds. More formally known as Council Directive 79/409/EEC on the conservation of wild birds, the Birds Directive was the very first piece of nature legislation of the European Union, and was adopted by Member States in 1979. The Birds Directive bans activities that directly threaten birds, such as the deliberate killing or capture of birds, the destruction of their nests and taking of their eggs, and associated activities such as trading in live or dead birds.



The 10-km squares of the national grid in which a 1-km square is surveyed by CBS every year. The 1-km squares are located in the southwest corner of each 10-km square. The eight CBS sampling regions are also illustrated.

Birdwatchers enjoy the early morning starts of the CBS when birds are most active.
Photograph: *Dick Coombes.*

Brackish lagoon, Broadlough, Co Wicklow. – *Dick Coombes*

Frequently asked questions

Who can take part in the CBS?

For a survey like the CBS to work properly it needs to be carried out on a grand scale. The more sample sites surveyed across a broad geographical spread, the more robust the results. The only way that such a vast amount of data can be gathered is to have a great many people on the ground, counting all over the country. So, if you are a birdwatcher, you can almost certainly help with this survey.


DICK COOMBES

Proper gear is essential for early morning fieldwork: it can be very cold at dawn, especially in early spring, and the grass can be covered in dew. You will need a coat, hat, waterproof leggings and boots.

What will I have to do?

The actual survey methods are quite straightforward, and further details are presented below. In summary, to take part, you will be required to:

- Undertake two early morning visits between April and June (each visit usually takes no more than 2 hours).
- Walk two parallel transects, each 1 kilometre in length.
- Record the birds that you see and hear, as well as the habitat types, as you walk your transect routes.
- Allocate your recordings to 200-m sections within your transect routes, and within three distance bands.

A reasonable ability to identify our common and widespread birds is required. A good knowledge of bird sounds is also very important – see table on page 10 for list of priority species to know.

How can I get involved?

Anyone interested in taking part in the survey should contact the CBS Coordinator at **cbs@birdwatchireland.ie.** The Coordinator will try to find a suitable square as close as possible to your home address. You can sign up any time. However, most square allocations take place in February and March, just before the season starts on 1st April. Ideally, participants should continue surveying the same squares from year to year.

What will I need?

Before you head out into the field you will need:

- Binoculars (typically 8x or 10x magnification).
- Map of your square showing the transects (supplied).
- Field Recording sheet (supplied).
- Pencil.
- Suitable footwear and clothing.

You will not need a telescope. Most of the birds you record will be relatively close to you and therefore easily identified using binoculars or naked eye.

In open or featureless country such as mountainside or bogland, you may need a compass to find your bearings and to help you find your transects. A tally counter (clicker) can be useful for pacing distances, especially the 200-m sections, in such open country where there are few reference points. If you possess a GPS, this will give you very accurate positions.

Why two counts?

Two counts are important. On the early visit, some of the resident birds are likely to be more vocal and more active and therefore easier to detect, as will freshly arrived Willow Warblers and Chiffchaffs. However, the later visit will pick up more summer migrants and especially the later arrivals like Spotted Flycatcher and Swift. You also need to be careful during later visits to avoid counting juvenile birds. Try to schedule your counts each year on roughly the same dates, for consistency.

The totals for each species will be different on each visit, and for the analysis we take the highest number recorded for each species in the two counts.

Where will I survey?

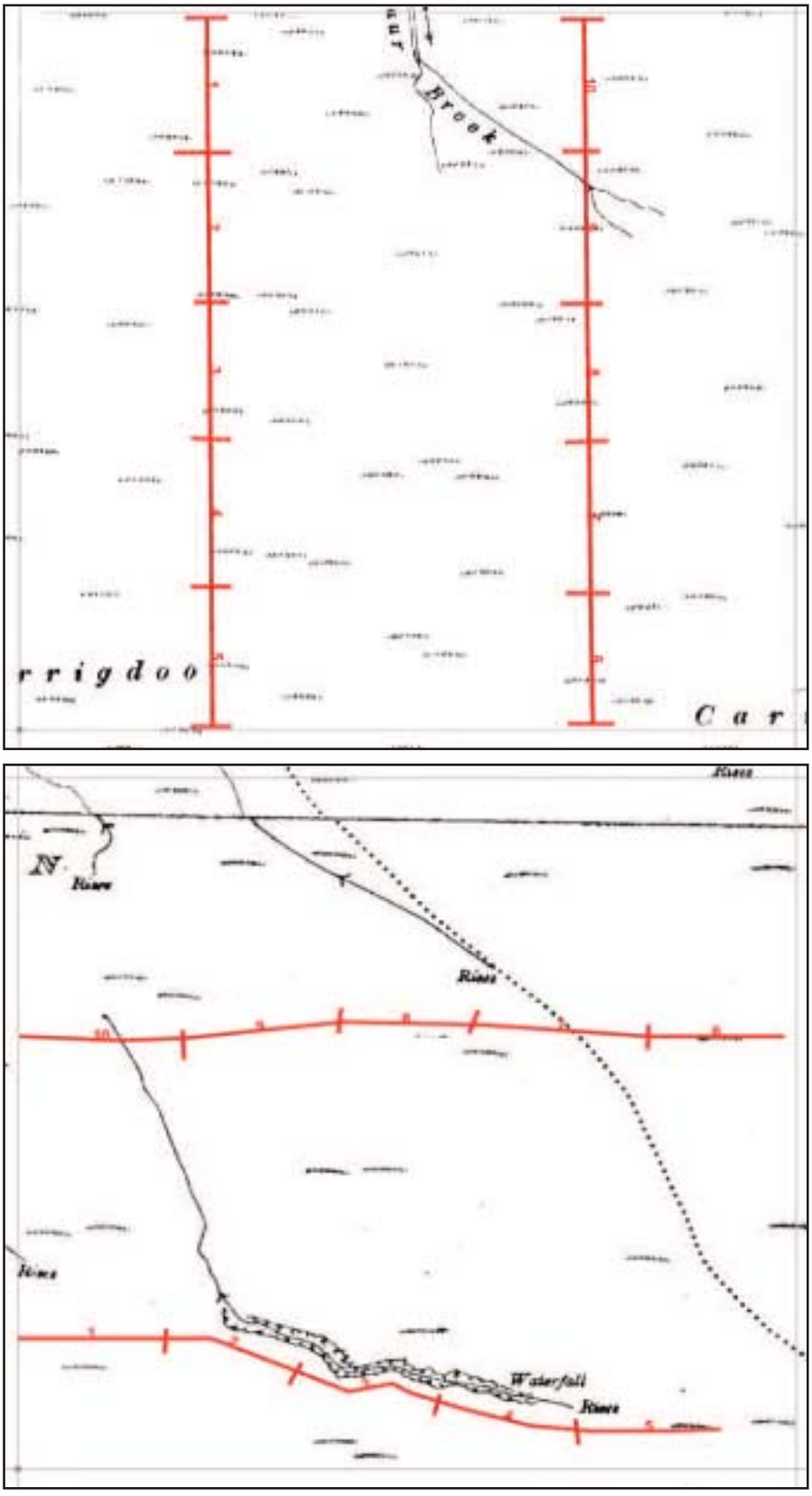
The selection of sample sites

It would be impossible to count every breeding bird in Ireland even once, never mind year after year! So, a network of sample sites (1-km squares) has been selected from around the country, using a randomised selection process. This ensures that a wide range of habitats is covered at well-spaced locations and helps eliminate any bias towards particular habitats or sites. Ideally, the same squares should be counted every year.

More than 400 squares have been randomly selected to date, and most are surveyed in any one year. Our target is to ensure that a minimum of 300 are surveyed each year. This provides us with enough information to adequately monitor between 50 and 55 species.

Your one-kilometre square

Every participant is issued with a map of their square. In almost all cases, the square will have been surveyed before, and the map will clearly show the two transect routes that have been walked.

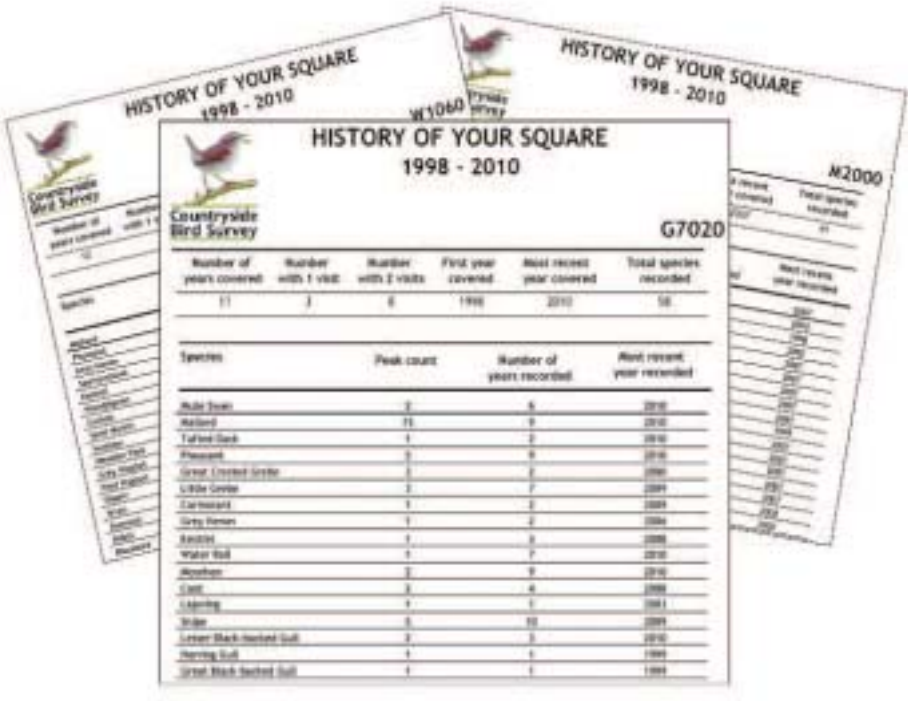


Examples of transect (red lines) routes in two squares, showing the 200-m sections. The top figure shows ideal transect placement with each transect located roughly 500 m apart, while the bottom figure illustrates an example of where direct east-to-west routing was prevented, in this case due to a deep gully. Note that the more southerly transect of the bottom figure does not extend to the edge of the square because of the deviation that was necessary: each transect should not exceed 1 km.

History of your square

Almost all CBS squares that have been selected have been surveyed before at least once and in some cases every year since the survey began.

A summary of square history is issued each year to each counter. This shows all of the species that have been recorded in the square, together with an indication of how often they were recorded and the peak count.



Participants receive a summary of their square's CBS bird records. The square history is updated annually.

The survey maps provided are at quite a large scale. They are based on the 6-inch mapping, most of which was based on images from the early 1900s. While they are in most cases out of date, they do continue to show the main features, even at field boundary level.

If your square has never been surveyed before, then you will have to decide on how best to organise the two transects – this should be done on a date before your count visits, ideally in March. As much as possible, transect routes should be straight east to west or north to south, each roughly 500 m apart (as illustrated in the top map, opposite page). Occasionally deviations are necessary (bottom map, opposite page).

Please ensure that you stick to the same transect routes every year – otherwise your counts are not comparable over time. We understand that deviations to your regular route may be required at times – please make minor deviations only where necessary.

When do I carry out my survey?

What dates and how often?

Each square should be counted twice during the three-month period between April and June. The first visit should be made between 1st April and 15th May, and the second visit between 15th May and 30th June. Visits should be approximately four weeks apart.

What time of day?

Counting should be done in the early morning, ideally commencing between 6 am and 7 am, but no later than 9 am. This is when birds are most active. However, try to avoid the concentrated activity at dawn.

In areas that are difficult to access, such as mountain sites, a slightly later start is acceptable.

For consistency, try to start your transects at roughly the same time each year. Note the start and finish times of each of your two transects, using the 24-hour clock system (e.g. 06:30).

How long will it take?

Walking each 1km transect route should take between 25 and 40 minutes, depending on the terrain, habitat and how busy it is with birds. It may take ten minutes or so to get from the end of the first transect to the start of the second. The total time in the square should take no more than two hours on each visit.

Is weather important?

Birds are most easily detected in good weather, so avoid attempting to survey in heavy rain or strong wind. If there are showers during the count, try to wait it out until conditions improve. On the *Field Recording Sheet,* enter 1, 2 or 3 under each of the headings: Cloud Cover, Rain, Wind, Visibility (see *Field Recording Sheet,* page 7). ***Note –*** please do *not* enter a 'tick' or wind speed or other text in the boxes provided – just 1, 2 or 3.

Contact

For any CBS-related queries, or if you would like to take part, please contact:

CBS Coordinator,
BirdWatch Ireland,
Unit 20, Block D,
Bullford Business Campus,
Kilcoole, Co Wicklow

Email: cbs@birdwatchireland.ie
Web: www.birdwatchireland.ie

Countryside with mosaic of habitats from pasture to roadside hedgerows, broadleaf woodland and human habitations.
Photograph: *Cóilín MacLochlainn.*

Western blanket bog, Co Mayo. – *Dick Coombes*

Recording in the field

When heading out to survey your square, be sure to bring along your *Field Recording Sheet.* This is where you capture the details of all your counts. Before heading off on your transect routes, complete some of the details of your visit, including your personal details, date and weather conditions (see figure, right). During the count, take note of and record the start and end times of your transects and note the weather conditions.

Record your square details, personal details and weather conditions on page 1 of the Field Recording Sheet.The example here shows weather details correctly completed. ***Note:*** for the weather conditions, the codes 1, 2, or 3 only are required.

Countryside Bird Survey
BirdWatchIreland
protecting birds and biodiversity

FIELD RECORDING SHEET **COUNTRYSIDE BIRD SURVEY**

Please do not write in the shaded boxes. PLEASE USE BLOCK CAPITALS

Obs. code	Observer name	JOE BLOGGS	Address:	1 SMITH STREET WEXFORD	
1-km square reference (eg S 00 40)		T 1 0 1 0			
County code (eg ERTP)		W X	Tel. No:	(053) 22222	
Visit date (DD MM YY) (eg 08 04 01)		1 6 0 4 1 2	Mobile:		
Early or late season visit (E/L)	E		E-mail:	JBLOGGS@EIRCOM.NET	
		Weather	Cloud	Rain	Wind	Visibility
			1	1	2	1
First half	Start time (HH MM)	0 6 2 0	Finish time	0 7 0 0		
Second half	Start time (HH MM)	0 7 1 5	Finish time	0 7 4 5		

Distance categories:
1 0-25 metres from the transect line
2 25-100 metres from the transect line
3 More than 100 metres from the transect line whether within the 1-km square boundary or not
F Birds in flight only (at any distance) [record on sheets using an arrow, e.g. →HZ→]

Weather (enter 1, 2 or 3 as defined below):
Cloud: 1 = 0-33% 2 = 33 - 66% 3 = 66 - 100%
Wind: 1 = Calm 2 = Light 3 = Breezy
Rain: 1 = None 2 = Drizzle 3 = Showers
Visibility: 1 = Good 2 = Moderate 3 = Poor

For your convenience, fold the field sheet so that the transect section that you are surveying is exposed. Use species codes for convenience – try to become familiar with these before going out in the field. These are available on the back of your field sheet for reference.

Do *not* count juvenile birds like this young Robin. Only count *adult* birds.

Photographs: DICK COOMBES

Count your transects section by section

Data are gathered in 200-m sections; thus, there are five sections in each transect. Your *Field Recording Sheet* is designed to capture details in each of the ten sections.

When you begin your transect route, do not record the birds that are behind you as you begin. Record all birds you hear or see as you walk at a slow and methodical pace along your transects. Pause briefly at times to listen for song and scan for birds flying overhead. Fill in your bird records as you walk along, carefully allocating each to one of four categories:

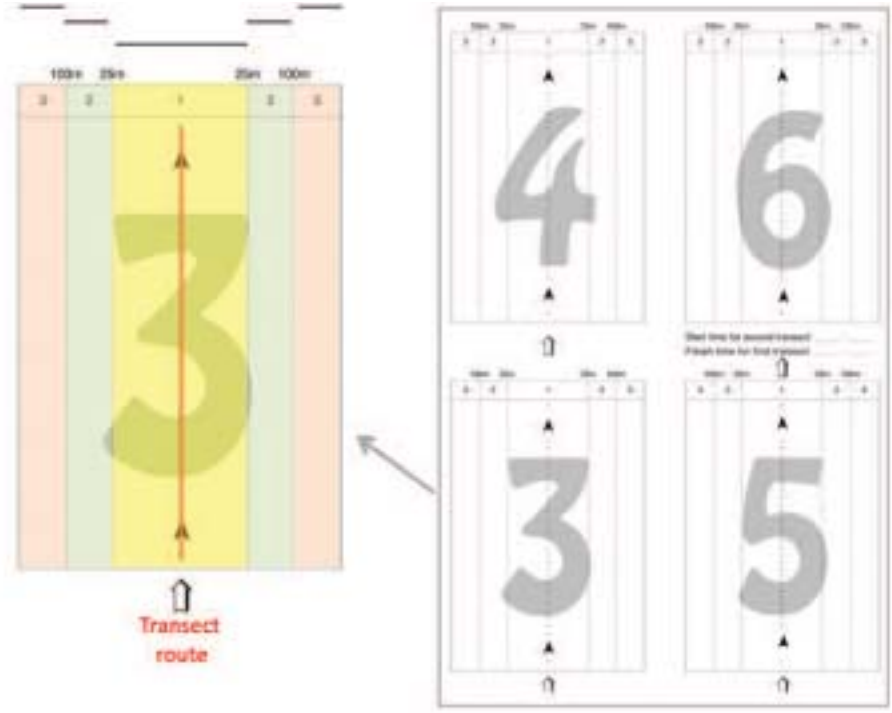
1 Out to 25 m on either side of transect.
2 Between 25 m and 100 m either side of the line.
3 More than 100 m either side of line.
F Birds flying over (but not landing).

There is *no need* to record any other details such as activity or sex of the birds you encounter. Any juvenile birds identified should not be recorded.

At the end of your first transect route, record the time and then break from recording until you reach the beginning of your second transect.

Bring along your Habitat Form

It is useful to bring along a copy of your *Habitat Form* from previous years. You may then make any of the changes that are required directly onto this form – but be sure to complete a new form when you return from your field visit.

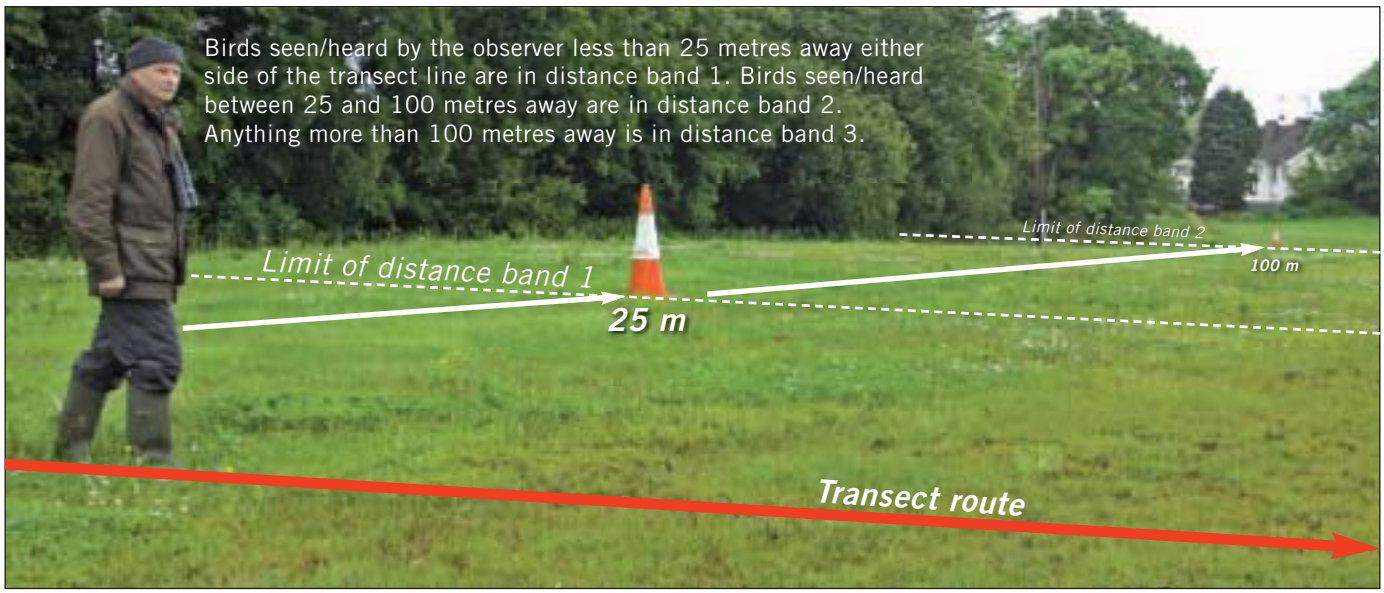


Page 2 of Field Recording Sheet (right), together with a close-up of one section (left) illustrating the facility for reporting bird records in three distance bands and in each of ten 200-m sections.

Become familiar with distances

Be aware of where each 200-m section of the transect finishes. In most cases there will be some landmark nearby (a tree, gate, bend in the path, etc). Ideally, mark such features on your map for easy reference. These distances need only be as accurate as you can gauge them – not down to the last metre!

You may need to pace out your 200-m sections, especially in an open and featureless landscape such as a bog, and if you do not have access to a GPS unit. In this case, a tally counter is useful to keep track of your steps. Measure out 100 metres using a measuring tape. Walk normally between the start and end points and take note of the number of steps you take. Repeat the process a few times to get an idea of variation – take an average. You

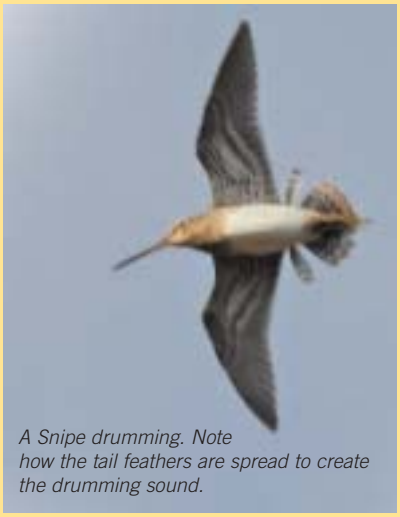


DICK COOMBES

When are birds allocated to the 'Flight' (F) category?

Record any birds that are flying over (and clearly not associating with your square) as being in flight. This category mostly applies to species which have no direct connection with the immediate landscape such as gulls, crows and pigeons high overhead or perhaps a fast-flying Peregrine. For all other birds, try to assign them to a distance band. Examples of where birds should be allocated to a distance band and not in flight include:

- **Swift, Swallow and the martins**
  These species are more often recorded in flight than perched, yet they are associated with the local area and are usually seen when hawking, etc. If you see any of these birds, and they are remaining in an area, then please record them in the distance band that you first see them in.
- **Skylark and Meadow Pipit**
  These are often seen when flushed or when performing their song flight.
- **Hovering Kestrel**
  Hovering indicates that they are foraging over your area.
- **Snipe**
  When in song or displaying.



A Snipe drumming. Note how the tail feathers are spread to create the drumming sound.

ALYN WALSH

Clockwise from top: MICHAEL FINN, FRANK VASSEN, C MACLOCHLAINN, GARY NOON

Use sight and sound to record birds *(clockwise from top):* Wren (usually identified by sound), Goldcrest (mainly sound), Woodpigeon (mainly sight), Pheasant (sight and sound equally).

can double this figure to get an idea of how many steps you need to take to cover each of your 200-m sections. This is usually between 230 and 260 steps. *(Beware:* you will need to adapt this figure when in hilly landscapes to adjust for shorter steps taken.)

To decide which distance bands birds are in, think in terms of close (up to 25 m), middle-distance (25-100 m) and far (beyond 100 m). These are estimated distances at right angles to your transect route (i.e. to either side of it) and they don't need to be precise – just make your best guess.

What species will I record?

Being able to identify what birds you see and hear on a walk in the countryside is a fundamental requirement for anyone taking part in the CBS. You are not likely to see anything particularly rare (although, you never know!).

To date, more than 140 bird species have been recorded overall during the CBS. These are listed in the *Species & Codes* section (pages 31-32) together with their Latin names and species codes.

The maximum number of species recorded in any one square seldom exceeds forty. Most of the birds you will encounter will be land birds. The top thirty most frequently recorded birds are listed in the table *(overleaf).* If you feel confident that you can readily identify all of these by sight and sound, then you will certainly be well suited to this survey.

You only need to be familiar with the more common and widespread species – the ones that turn up again and again in the survey. While it is interesting to record rare or scarce birds during your field visits, they are not what the survey is all about – their numbers will always be too small for the species to be reliably monitored by the CBS.

Practice makes perfect

You don't become skilled at bird identification overnight. It is a constantly evolving process – one that is built upon every time you see or hear a bird. Consultation of a good field guide is obviously important, but the best way to learn how to identify birds is to gain field experience on a regular basis and then refer to your books.

You probably already know most of the birds you will encounter when carrying out your fieldwork, so when you are confronted with a mystery bird, think in terms of "What species does it most look like?" and work from there.

This manual is not intended to be an

Top 30 species

These are the top 30 most widespread bird species recorded during the Countryside Bird Survey. The table also indicates those that are most often recorded by sight and those that are most often recorded by their songs or calls.

Species	Sight	Sound
Wren		✓
Robin		✓
Blackbird	✓	✓
Chaffinch	✓	✓
Woodpigeon	✓	
Swallow	✓	
Song Thrush		✓
Magpie	✓	
Rook	✓	
Blue Tit		✓
Hooded Crow	✓	
Pheasant	✓	✓
Dunnock		✓
Jackdaw	✓	
Starling	✓	
Great Tit		✓
Willow Warbler		✓
Meadow Pipit	✓	
Coal Tit		✓
Greenfinch		✓
Goldcrest		✓
Pied Wagtail	✓	
House Sparrow	✓	
Mistle Thrush		✓
Skylark	✓	
Goldfinch	✓	
Bullfinch		✓
Chiffchaff		✓
Linnet	✓	
House Martin	✓	

DUNCAN BROWN

Sand Martins at a colony in a sand-cliff.

identification guide; rather, it provides some useful guidance on handy identification tips, and how to distinguish some of the trickier species that you might come across during your field visits.

A list of recommended books and audio-visual material that will help you with your identification skills is presented in the *Resources* section (page 33).

Colony counts

The CBS presents an opportunity to gather additional details about the location and size of colonies, i.e. birds that nest in the company of others.

The species of particular interest are Rook, Sand Martin, House Sparrow, Grey Heron, Little Egret and Black-headed Gull – these are now pre-printed on your forms.

If you come across any breeding colonies of these, or of any other colonial-nesting species anywhere within your square, then please count all occupied nests in the colony, or make an estimate.

Most often you will come across colonies while walking your transects, but we will accept colony information from any other time of the breeding season, and also from anywhere within your square (not just along the transect route). If you do come across a colony, then please visit it from year to year so we can monitor its status.

DICK COOMBES

Rookery at dawn in early spring.

Species-rich wet grassland, Co Offaly. – *Brian Caffrey*

Identification challenges

Process of elimination

If you are having difficulty with identifying a particular bird, the key thing is, don't panic! Identification is largely a process of elimination – every time you see a bird, decide what it is not and you will find that you quickly reduce the possibilities to just a few species.

Know what to expect

A helpful tip when learning to identify and count the birds in your Ikm square is to know which species are most likely to occur there. This will shorten the process of elimination when you come across a bird you are unsure of.

Key things to look for

The following are the key characteristics that should be borne in mind when identifying birds:

- Size
- Shape
- Colour (plumage)
- Colour (bill, legs)
- Bill shape
- Location
- Habitat
- Behaviour or jizz
- Call and song

Any one (or a combination of several) of the above may be all you need to correctly identify a species – you don't have to see every detail.

The first impression may well be of size, combined with a quick view of a distinctive colour feature, e.g., a large, crow-sized bird is glimpsed hopping through the branches of a tree showing a striking white rump patch – it can be nothing other than a Jay.

Field experience is best

Birds in the field often don't look much like the pictures in the books! You will learn much more through field experience than looking at books.

A smaller bird with a white rump seen fleetingly in a hedgerow can only be a Bullfinch (see photo, below), while a similar-sized bird on a mountain with a white rump is a Wheatear.

Learn what to expect

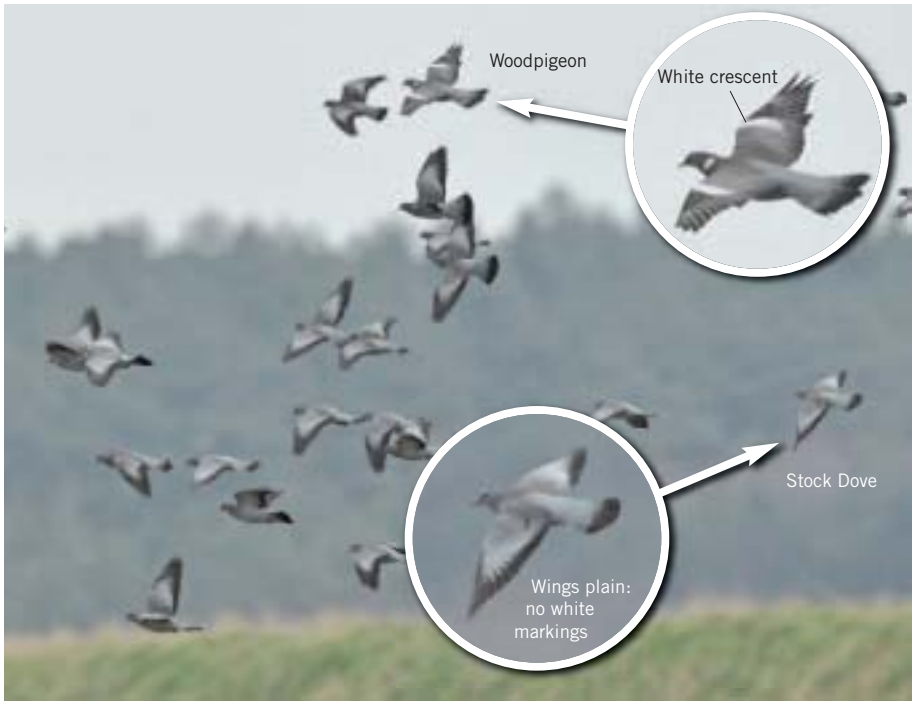
The *context* in which a bird is seen or heard is all-important, before you even start to sort out the finer details. Take three brown birds with dark streaking, all much the same size, but seen in different contexts, be it geographical location, habitat or position in relation to the ground:

- A **Dunnock** creeps along the ground at the base of a hedgerow or sits out low in a bramble.
- A female **Reed Bunting** clings high on a reed stem near wet ground.
- A **Meadow Pipit** is seen on heather or a fence post on open moorland or rough grassland.

None of these birds would readily be found in one of the other situations. So the process of elimination is well underway once you consider the context – you are reducing down the possibilities. Attention to plumage, bill shape, etc, can follow immediately afterwards.

BREFFNI MARTIN

Bullfinch: the only bird to show a white rump in hedgerows in spring.



ALYN WALSH

Flock of Stock Doves with one Woodpigeon. (It would be more usual to see a single Stock Dove in a flock of Woodpigeons.)

Distinctive behaviour

Bird identification becomes second nature after a while, and very often it is the *jizz* or behaviour of the bird that catches your eye and quickly clinches the identification.

Even if seen only in silhouette, note the typical behaviour of the following three similarly-sized birds when they land on a post:

- **Robin** – lands, remains still for a second or two, then bobs abruptly, flicking the tail once, and faces a slightly different angle.
- **Chaffinch** – lands and immediately starts pumping the tail gently up and down and looks around.
- **Great Tit** – lands, then immediately jerks head and body in various directions, appearing agitated – it will not stay there long before hopping to another perch.

Birds in flight

Identifying birds in flight can be tricky sometimes, but there are nearly always clues to help you. Finches and buntings, for instance, usually call at some stage when in flight. Some birds fly in a distinctive way. For example:

- **Mistle Thrushes** undulate, flapping as they rise and then drop with momentarily closed wings, often flying quite high.
- **Song Thrushes** are smaller and fly more evenly and at lower levels.
- **Linnets** fly in a series of abrupt bounding movements, compared to the *Chaffinch*, which flies with more measured undulation.

Watch out for unusual songflights:

- **Greenfinch** can look like a martin, zigzagging chaotically.
- **Rooks** fly with slow, upheld beats in spring, reminiscent of a bird of prey.

Some species show distinctive plumage features in flight. For example:

- **Woodpigeon** shows a white panel on the wing, quite different from **Stock Dove,** which has a plain grey upperwing. **Stock Dove,** therefore, is identified by the *lack* of white markings.

Quick ID tips

- *Think logically. What is it most likely to be?*
- *What are the obvious features?* Note size, shape, overall colour, etc, and narrow it down from there.
- *What is the habitat?* This will give a good clue as to what is likely to be there.
- *Know what to expect in advance* (refer to the list of most commonly recorded birds). Also use your "Square History" list to see what has been previously recorded in the square. Your bird has almost certainly been recorded there before.
- *Be patient!* Give a bird a little time to show itself again if it dives into cover, but not too long. It is better to let it go and continue counting other birds than spend too much time on one bird.

Most of the birds you see will be passerines (songbirds) with small wings and rapid flight, so plumage markings can be hard to see. However, some are distinctive:

- **Chaffinch** is about the only bird in a hedgerow that shows large white wingbars in flight.
- **Goldfinch** shows a flash of yellow.
- **Bullfinch** displays a white rump in flight.

Look also at the shape of the bird in flight:

- **Kestrel** has pointed wings and hovers, while a **Sparrowhawk** has more rounded wings and either soars high in circles or dashes rapidly low over hedges and ditches.
- Compare the long scimitar-shaped, bent-back wings of **Swift** (usually flying high) with the zigzagging, smaller-winged darting **Swallow** and **House Martin.**

Left to right: TOM SHEVLIN, MICHAEL FINN

Willow Warbler (left) and Chiffchaff (right) compared.

The importance of sound in identifying birds

Birds are very vocal, which is just as well as we birdwatchers constantly use their sounds to both locate and identify them, especially where there is a lot of cover.

For some species, a large proportion of the total we record on our field sheets will have been detected and identified by sound only. It is likely, for example, that more than 90% of the Wrens you will record, and perhaps closer to 100% of Blackcaps and Grasshopper Warblers, will be heard only and not seen at all. So, being familiar with their songs and calls is vital.

In spring and early summer, males sing to defend their territories, and both sexes regularly make contact calls.

There are some birds that everyone knows already, such as Cuckoo, Pheasant and Woodpigeon. The trick is to keep building on your knowledge, which only comes with practice – so, keep adding new species to your repertoire.

Dawn in spring can be very intimidating. *Remember, you only really need to know the sounds of a relatively small number of species for this survey.* The species whose songs and calls you should be most familiar with are listed in the table on page 9. Some species, heard once, are never forgotten and they don't pose any real challenge.

Bird sound tips

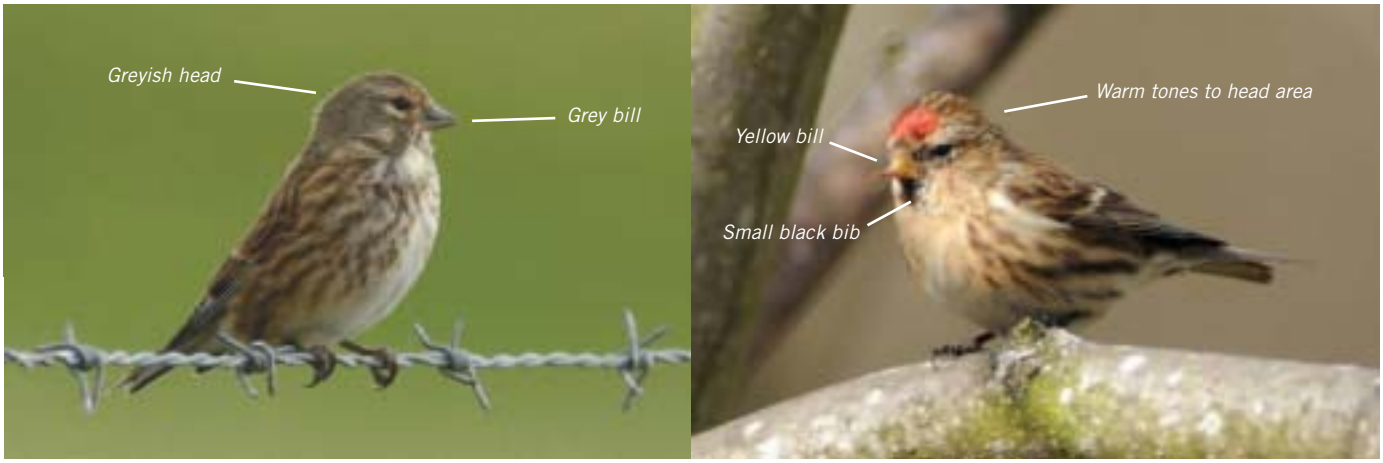
- If you hear something you don't recognise, try to track it down and actually see it. The audiovisual combination will help the sound stick in your head.
- Listen to CDs or tapes as often as you can, but concentrate on the relevant species only.
- Alternate your "homework" with the real thing in the field. Keep doing this in small doses – it's like learning a language. Mornings are always best for birdsong, but evenings are good too in spring.
- Gain confidence by slowly building on what you already know – try to add a new species to your "memory bank" every few days.

Confusion species

Only a few species are likely to present visual identification challenges. The hardest ones to sort out are often those that look similar to another species. Here are some examples:

- **Willow Warbler and Chiffchaff**
  Willow Warbler is by far the more common of the two and therefore the most likely. It has *pale* legs (Chiffchaff has *dark* legs). But beware, there is overlap and leg colour alone is not reliable as a distinguishing feature. The song is completely different and is always the best way to be sure (for males, anyway).

- **Linnet and Redpoll**
  The females are especially difficult to distinguish. However, the habitat should help you decide which species you have. Linnets occur in arable farmland, on rough ground and in coastal areas. They especially like gorse and will often drop to the ground. Redpoll is more likely to be found in coniferous woodland or willow scrub, and it usually perches quite high in trees and shrubs. It is slightly smaller and neater than Linnet. The somewhat similar **Twite** is a very scarce breeder and only likely to be found in the extreme northwest of Mayo and Donegal.



Left to right: DICK COOMBES, MICHAEL FINN

Linnet (left) and Redpoll (right) compared.

- **Rook and Jackdaw**
  In flight, at long range, a flock of crows can cause problems. Besides being bigger and longer-winged, Rooks have longer tails and the head and neck protrudes forward in a more pointed way than in the blunt-headed Jackdaw.

- **Reed Bunting and Yellowhammer**
  The females of both of these species can appear similar if seen in poor light. Both have pale "moustaches" and flick their tails. Habitat can be used to differentiate between these species during the breeding season – Reed Buntings like marshes or damp ground, while Yellowhammers are widespread on tilled farmland.

- **Sedge Warbler and Reed Warbler**
  Reed Warblers are very rare breeders in Ireland, found at a few eastern and southern coastal sites. If you hear a jumbled chattering song emanating from a reedbed or marshy area, it is almost certainly a Sedge Warbler. If you get even a distant view as it works to the top of a reed, note the striking pale stripe above the eye.

- **Garden Warbler and Willow Warbler**
  Garden Warbler is a rare and localised breeder – the name is deceptive! It is secretive and has very plain grey-brown plumage, showing no strong markings around the head, unlike Willow Warbler, which has a dark eye-stripe and a yellowish supercilium (the stripe above the eye).

- **Grey Wagtail and Yellow Wagtail**
  If you see a wagtail showing a lot of yellow on the body, it is sure to be a Grey Wagtail – they are found along rivers and lake shores. Yellow Wagtail is a rare summer breeder in Ireland, found in damp farmland.

- **Kestrel and Sparrowhawk**
  In flight, the best way to tell these apart is the shape of the wing. Kestrel hovers in a stationary position when hunting – the wings are rather pointed. Sparrowhawk has much broader, more rounded wings – it hunts by flying fast after small birds. Sparrowhawks can also be seen soaring in circles at some height, but never hovering.

Left to right: MICHAEL FINN, EDDIE DUNNE

Left to right: Female Reed Bunting (left) and female Yellowhammer (right) compared.

Left to right: SHAY CONNOLLY (both images)

Meadow Pipit (left) and Skylark (right) compared.

- **Woodpigeon and Stock Dove**
  These are both large grey doves. Woodpigeon is a little bigger and by far the more common of the two. In the breeding season, Stock Doves are seen singly or in pairs, while Woodpigeons are often seen in larger numbers, especially later in the season. When perched, the Woodpigeon's white collar on the side of the neck is distinctive (absent on Stock Dove). In flight, Woodpigeon shows a prominent white crescent on the wing, while the upperwing of Stock Dove is plain grey. Beware of confusion with Feral Pigeons – they generally show white rumps or other strong markings.

- **Swallow, House and Sand Martins**
  Swallows are the biggest, with distinctive, long tail streamers and a dark throat. But beware of young Swallows late in the season, which show short tails like martins (remember not to count any juvenile birds). The pure white underside and white rump make House Martins easy to identify, while Sand Martins, though much the same size and proportions, are sandy brown above and show a "dirty" mark on the throat and upper breast.

- **Song Thrush and Mistle Thrush**
  Mistle Thrush is the larger of the two species and is more often out in the open or high in trees. Note the shape of the spots on the breast – on Mistle Thrush they are round, on Song Thrush they are arrow-shaped.

- **Skylark and Meadow Pipit**
  Both of these species often occur together in the same habitat, especially bogs, upland areas and rough grassland. Skylark is bigger and more "wingy" than Meadow Pipit and in songflight it rises vertically for a sustained period. The songflight of the Meadow Pipit is much shorter; it rises to no great height and then parachutes down to the ground.

- **House Sparrow and Tree Sparrow**
  These two species may seem easy to tell apart. Always check through your House Sparrows and you may find one or two Tree Sparrows mixed in. Look for the brown crown, white cheeks and black cheek spot of the Tree Sparrow. They are easily overlooked because they are quite scarce.

Left to right: MICHAEL FINN, DARAGH OWENS, BREFFNI MARTIN

Swallow (left), House Martins (middle) and Sand Martin (right) compared.

Confusion songs and calls

Some songs and calls can sound a little similar and confusing. Here are a few of the common queries. Make sure you become familiar with these calls:

- **Song Thrush, Mistle Thrush and Blackbird**
  The song of all three have a fluty quality. Song Thrush repeats each phrase two or three times; Blackbird does not. Mistle Thrush is rather hurried, monotonous and melancholy.

- **Willow Warbler and Chaffinch**
  Both have a descending song. Chaffinch's is more bubbly, with a flourish at the end.

- **Great Tit and Chaffinch**
  Both make a *"pink pink"* call – best try to see the bird!

- **Goldcrest and Treecreeper**
  Both have high-pitched calls. Treecreeper's is fuller and longer. Goldcrest's call is very thin and high.

- **Blackcap and Garden Warbler**
  The songs of these two species are almost inseparable in the field, unless you are very experienced. However, *Garden Warblers are very scarce breeders* and are mainly confined to the upper Shannon region.

- **Wren and Dunnock**
  The songs are a little similar. Wren's is more shrill and sustained; Dunnock's is a shorter, quieter, tinkling sound.

- **Robin and Wren**
  The "ticking" calls are similar, but Wren's is more rapid, and the Robin's has a metallic quality (like a clock being wound up).

Don't despair! Once you get a good grasp of it and battle through the challenges, bird identification is exciting and very rewarding. If you see or hear a bird you are not sure about, the motto is: ***"If in doubt, leave it out!"***



Left to right: Song Thrush, Mistle Thrush and Blackbird.

Left to right: MICHAEL FINN (all images)


Left to right: Chaffinch and Great Tit.

Left to right: CLIVE TIMMONS, CARL MORROW


Left to right: Blackcap and Garden Warbler.

Left to right: MICHAEL FINN, STEVE GARVIE



Left to right: Wren, Dunnock and Robin.

Left to right: MICHAEL FINN, JOHN FOX, MICHAEL FINN

Improved grassland and wet meadow, Newcastle, Co Wicklow. – *Dick Coombes*

Recording habitats

Why record habitats during the CBS?

Monitoring habitats as part of the CBS is important for appropriate interpretation of bird data. Most bird communities are influenced more by structure and management than by floristic species composition. By recording your habitats on an annual basis, we can relate bird data to habitat composition, and for some we can examine whether the trends differ between habitats. We can also compare differences between years, which may help explain some of the bird trends.

CÓILÍN MACLOCHLAINN

Recording your habitats

This habitat recording scheme was designed for birdwatchers, so it doesn't require specialist botanical knowledge. It includes aspects of land management and human activities and is based on the structural aspects of bird habitats.

Habitat data are recorded annually for each square. For each of the ten sections surveyed we ask for a main primary, or dominant, habitat as well as for a second habitat.

In many cases, a second habitat is not necessary, but it is useful to help us identify why a species that is not typical of the main habitat has been recorded. For example, telling us about the small pond that occurs in a 200-m section that is predominantly broadleaf woodland clarifies the presence of Moorhen and Mallard in that section.

Please record what you feel to be the most appropriate codes for each 200-m section. Describe what you feel are the predominant habitats along your route. Your decision will be most influenced by the habitats that are closest to your transect, i.e. out to 25 m on either side of you.

The coding scheme is hierarchical, so we ask which is the most prevalent habitat from a selection of nine main habitat types which form Level 1 of the habitat coding scheme (see 'Habitat categories' box). Further details about these habitats form Level 2 of the coding scheme.

Habitat characteristics from Levels 1 and 2 are the most important and they do not tend to change greatly between visits or between years.

Habitat characteristics from the lower levels, Levels 3 and 4, may be expected to change on a more regular basis. They reflect management types (such as grazing regimes, etc) and habitat structure (hedgerow with trees, dense shrub layer, etc).

Habitat categories

The main habitats, together with their codes (A-I), are as follows:

- **A** Woodland
- **B** Scrubland (or young woodland that is <5m tall)
- **C** Semi-Natural Grassland/Marsh
- **D** Heathland and Bogs
- **E** Farmland
- **F** Human Sites
- **G** Water Bodies (Freshwater)
- **H** Coastal
- **I** Inland Rock

Each of these habitats is explained in the following pages, with some examples provided.

Broadleaf woodland.

Conifer forest.

Mixed woodland (more than 10% conifer in broadleaf woodland).

Left to right: DICK COOMBES, BIRDWATCH IRELAND, DICK COOMBES

A. Woodland

Woodland is described here as being dominated by trees greater than 5 m tall. Most will be either *broadleaf* or *coniferous*. However, you may select the *'mixed'* category where there is more than 10% of conifer in a predominantly broadleaf woodland, or vice versa. Some woodland may be waterlogged; for example:

- *Swamp woodland* on permanently waterlogged land.
- Woodland dominated by *alder or willow.*
- *Pine woodland* on edge of bogs.

Other woodland definitions include: *parkland* (large, mature trees spaced widely across grassland). Woodland may include a *shrub layer* (plants less than 5 m tall) and/or a *field layer* (non-woody plants, i.e. grass, forbs, nettles, bramble).

A WOODLAND (dominated by trees >5m tall)			
	1 Broadleaved	1 Mixed-aged or semi-natural	1 Dense shrub layer*
	2 Coniferous	4 Mature plantation, (taller than 10m, with closed canopy)	3 Sparse shrub layer*
	3 Mixed**	5 Young plantation (5-10m, open canopy)	4 Dense field layer**
	4 Broadleaved (water-logged)	6 Parkland (scattered trees and grassy areas)	6 Sparse field layer**
	5 Coniferous (water-logged)	7 High-medium disturbance from people	7 Grazed (moderate to heavy)
	6 Mixed (water-logged)	8 Low disturbance	8 Lightly grazed
		9 Near road (within 50m)	9 Dead wood present
			10 Dead wood absent

** >10% conifer in predominantly broadleaf or vice versa

B. Scrubland

Scrubland is described here as being dominated by young woodland less than 5 m tall. It includes habitats dominated by gorse.

B SCRUBLAND (or young woodland <5m tall)			
	1 Regenerating natural or semi-natural woodland	1 Broadleaved	1 Predominantly tall (3-5m)
	3 Heath scrub*	2 Coniferous	2 Predominantly low (1-3m)
	5 New plantation	3 Mixed (10% of each)	3 Dense shrub layer*
	6 Clear-felled woodland with or without new saplings	4 Broadleaved swamp scrub	5 Sparse shrub layer*
	7 Other*	5 Coniferous swamp scrub	6 Extensive bracken
		6 Mixed swamp scrub	7 Dense field layer**
		7 High-medium disturbance from people	9 Sparse field layer**
		8 Low disturbance	10 Grazed (moderate to heavy)
		9 Near road (within 50m)	

Willow scrub woodland.

Clearfelled plantation with regenerating scrub.

Heath scrub with gorse and birch.

Left to right: ORAN O'SULLIVAN, C MACLOCHLAINN, DICK COOMBES

Clockwise from top left (page 19): CÓILÍN MACLOCHLAINN, DAVE SUDDABY, ANGELA MASON, DICK COOMBES

1. Swamp woodland habitat.

2. Water meadow/grazing marsh.

3. Farmland and forestry habitats.

4. Woodland habitat showing shrub layer (woody plants less than 5 m tall) and field layer (non-woody plants).

Note: The habitat codes for the above habitats are presented in the *Habitat Form* shown on page 24.

Grass moor (in foreground).

Machair: species-rich dry grassland.

Water-meadow or grazing marsh.

Left to right: BIRDWATCH IRELAND, DAVE SUDDABY, BIRDWATCH IRELAND

C. Semi-natural Grassland/Marsh

Dominated by grasses, or wet communities dominated by rushes, sedges or reeds. Not managed intensively for farming – probably no herbicides or direct inputs (fertilisers). Types include:

- *Grass moor (unenclosed)* – typically upland, hill grazing land on peaty acidic soils, not enclosed (often confused with *E: Farmland).*
- *Machair* – flat, sandy, grass-covered plain, usually on landward side of sand dunes; restricted distribution in Ireland.
- *Water-meadow/grazing marsh* – periodically flooded (freshwater), usually grazed by livestock.
- *Reedswamp* – dense beds of tall semi-aquatic vegetation.
- *Other open marsh* – waterlogged marsh/fen, not grazed.
- *Saltmarsh* – periodically flooded with saltwater.

C SEMI-NATURAL GRASSLAND /MARSH[F]			
2 Upland grass moor (unenclosed)	1 Hedgerow with trees	1 Ungrazed
3 Upland grass moor mixed with heather (unenclosed)	2 Hedgerow without trees	2 Cattle
4 Machair	3 Tree-line without hedge	3 Sheep
6 Water-meadow/ grazing marsh	4 Other field boundary (wall, ditch, etc.)	4 Horses
7 Reed swamp	5 Isolated group of 1-10 trees	5 Rabbits
8 Other open marsh[*]	6 No field boundary	6 Deer
9 Saltmarsh	7 Montane***	7 Other grazers
	8 High-medium disturbance from people	8 Extensive bracken
	9 Low disturbance	9 Hay
	10 Near road (within 50m)	

[F] Not apparently managed, probably no herbicides or fertilisers, dominated by grasses, rushes, sedges, reeds

[*] Other open marsh: water-logged marsh/ fen, not grazed

D. Heathland and Bogs

Heaths are dominated by heather and heaths, and include upland heather moors and lowland heaths. Bogs are waterlogged peaty areas often covered with spongy moss. They are usually either:

- *Raised bog* – plains where drainage is limited, usually with gently undulating surface. Can contain hummocks of vegetation dominated by heather and separated by larger areas of bog mosses.
- *Blanket bog* – large continuous areas of bog covering entire landscapes on flat or gently sloping land subject to wet climate.
- *Bare peat* – this refers to harvested peatlands.

D HEATHLAND AND BOGS			
1 Heath (shallow peat depth <50cm)	1 Montane***	1 Ungrazed
4 Bog	2 Raised bog	2 Cattle
7 Bare peat (harvested)	3 Valley/ basin bog	3 Sheep
	4 Blanket bog	4 Horses
	5 Heath mixed with rough grass	5 Rabbits
	6 Heath without grass	6 Deer
	7 Heath with extensive bracken	7 Other grazers
	8 Undetermined bog	8 Ploughed
	9 Isolated group of 1-10 trees	9 Burned
	10 High-medium disturbance from people	10 Planted with saplings less than 0.5m tall
	11 Low disturbance	
	12 Near road (within 50m)	

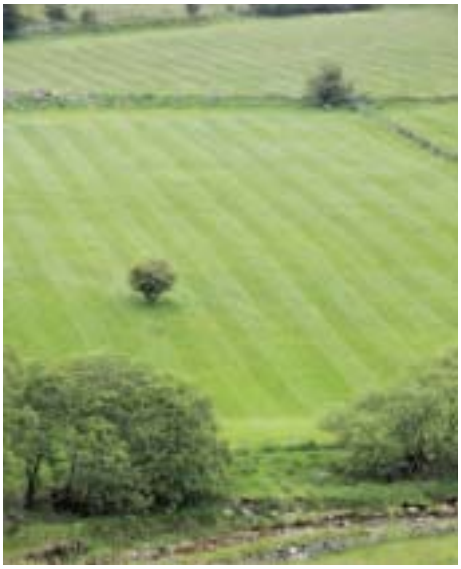
Heather moor.

Mountain blanket bog.

Bare peat (harvested peatland).

Left to right: SINÉAD CUMMINS, CAMERON CLOTWORTHY, OLIVIA CROWE

Unimproved grassland (sheep pasture).



Improved grassland.

Ungrazed (managed for silage).

Left to right: DICK COOMBES, CÒILÌN MACLOCHLAINN, BRIAN CAFFREY

E. Farmland

Farmland is defined by fields that are enclosed by hedges, walls, fences, etc. They can be:

- *Improved* – the grass is regularly treated with fertiliser. Bright colour, lush growth. Includes tilled land that has been reseeded within five years.
- *Unimproved grassland* – has not been treated with fertilisers but is grazed or mown regularly. May be rank and neglected.
- *Mixed grass/tilled land* – areas containing adjoining fields of each.
- *Tilled land* – land ploughed, planted with crops.

Other farmland definitions:

- *Ungrazed* – includes land managed for hay/silage.
- *Bare earth* – includes furrowed or flat earth.
- *Autumn or spring cereal* – by April, autumn cereals will be taller, bushier, darker than spring cereals, which will only be starting to emerge; may be at single-leaf stage.

E FARMLAND (fields that are enclosed by hedges, walls, fences etc.)			
	1 Improved grassland[a]	1 Hedgerow with trees	1 Ungrazed
	2 Unimproved grassland (unfertilised, regularly mown/ grazed)	2 Hedgerow without trees	2 Cattle
	3 Mixed grass/ tilled land[b]	3 Tree-line without hedges	3 Sheep
	4 Tilled land	4 Other field boundary (wall, ditch, etc.)	4 Horses
	5 Orchard	5 Isolated group of trees	5 Other stock
	6 Other farming	6 Farmyard (active)	6 Bare earth/plough
		7 Near road (within 50m)	7 Autumn cereal[c]
		8 No field boundary	8 Spring cereal[c]
			9 Root crops (specify)
			10 Other crops (specify)
			11 Oil-seed rape
			12 Other brassicas (specify)
			13 Stubble
			15 Unsown (fallow)
			16 Recently-cut grass

[a] Treated regularly with fertiliser, distinguished by bright colour, lush growth
[b] Adjoining fields of tilled/ grassland
[c] By April, autumn cereals tall, bushy, dark green, spring cereals begin emerging, may be at single leaf stage

Tilled land.

Cereal (barley).

Active farmyard.

Left to right: DICK COOMBES, DICK COOMBES, CÒILÌN MACLOCHLAINN

F. Human Sites

Areas of human habitation, described as:

- *Urban* – densely built-up area
- *Suburban* – inhabited area surrounded by rural land or containing large gardens, parks, recreational areas.
- *Rural* – Without buildings, or containing a few scattered houses or other buildings.

Other 'Human Site' types:

- *Municipal parks/recreational areas* – public areas with regularly mown lawns, playing fields, golf courses, etc.
- Gardens – areas containing lawns and beds of flowers, ornamental shrubs, etc.

F HUMAN SITES (areas of human habitation)	1 Urban 2 Suburban 3 Rural	1 Building 2 Gardens 3 Municipal parks/ mown grass/ golf courses/ recreational areas 4 Sewage works "urban" 5 Near road (within 50m) 6 Near active railway line (within 50m) 7 Other 8 Rubbish tip	1 Industrial 2 Residential 3 Well-wooded 4 Not well-wooded 5 Area of large gardens 6 Area of medium gardens 7 Area of small gardens 8 Many shrubs 9 Few shrubs 10 Disused

G. Water Bodies

Areas with significant coverage of water of a variety of types, defined mostly by size:

- *Water bodies* – includes ponds, small water bodies, lake/unlined reservoirs, lined reservoirs.
- *Gravel pit, sand pit,* etc.
- *Waterways* – ditches, streams, rivers.
- *Canals* – small or large.

Other 'water body' definitions relate to water quality, which is often difficult to define. If unsure, please do not feel compelled to provide a code. These quality categories include:

- *Eutrophic* – usually in or near lowland farmland with high nutrient inputs, often with green algae or water weeds, with substrate often muddy.
- *Oligotrophic* – clear water, low productivity (few plants or algae), with substrate usually stony.
- *Dystrophic* – black water, stained by peat, found in areas of bogs.
- *Marl* – clear water containing large waterweeds, in limestone areas.

G WATER BODIES (freshwater)	1 Pond (less than 50m²) 2 Small water-body (50-450m²) 3 Lake/unlined reservoir 4 Lined reservoir 5 Gravel pit, sand pit, etc. 6 Stream (less than 3m wide) 7 River (more than 3m wide) 8 Ditch with water (less than 2m wide) 9 Small canal (2-5m wide) 10 Large canal (more than 5m wide)	1 Undisturbed/ disused 2 Water sports (sailing, etc.) 3 Angling (coarse or game) 4 Coarse angling 5 Game fishing 6 Industrial activity 7 Sewage processing "runoff" 8 Other 9 Small island	1 Eutrophic (green water) 2 Oligotrophic (clear water, few weeds) 3 Dystrophic (black water) 4 Marl (clear water, large water-weeds) 5 Slow-medium running 6 Fast-running 7 Dredged 8 Undredged 9 Banks cleared 10 Banks vegetated

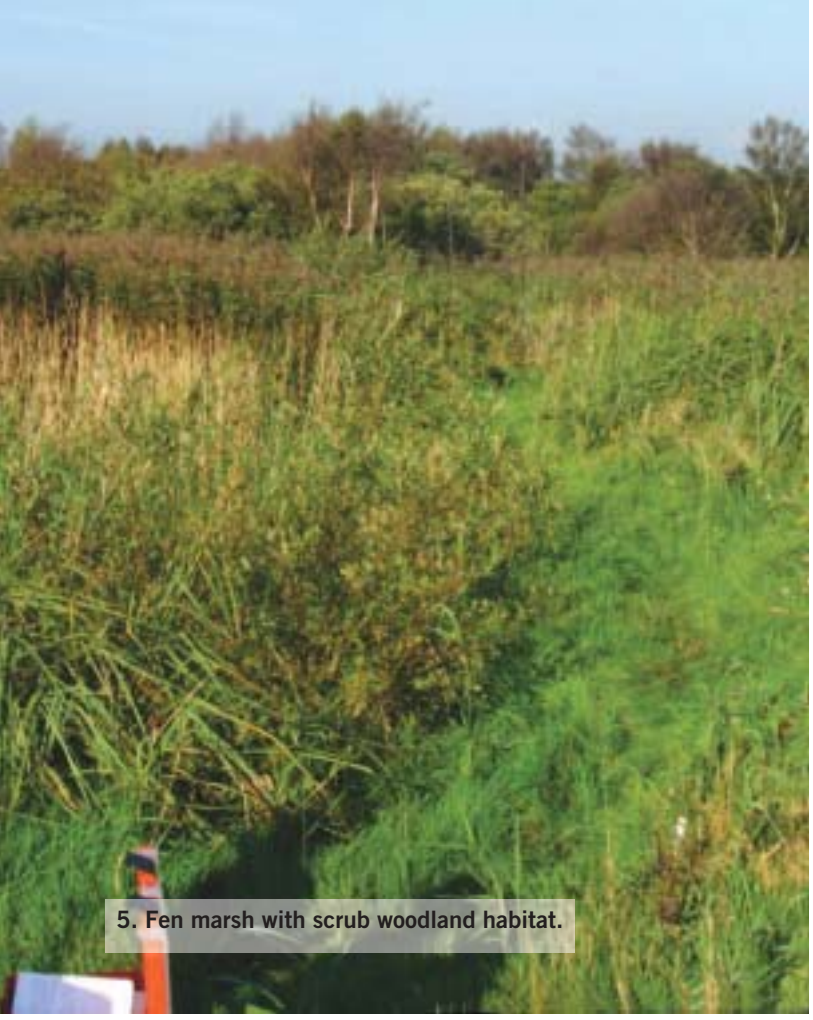
Suburban human site.

Woodland and parkland (with river as secondary habitat).

Public gardens.

Photographs: CÓILÍN MACLOCHLAINN, CÓILÍN MACLOCHLAINN, OLIVIA CROWE

Clockwise from top left (page 23): BIRDWATCH IRELAND, LAURA NUTTALL, DICK COOMBES, DICK COOMBES



5. Fen marsh with scrub woodland habitat.

6. Improved pasture with stream habitat.

7. Coastal sand dune habitat.

8. Mountain-top heath habitat.

Note: The habitat codes for the above habitats are presented in the *Habitat Form* shown on page 24.

H. Coastal Sites

Habitats bordering the coast. They are broken into: marine open shore, inlet/cove/loch, estuarine, brackish lagoon, open sea.

Other 'coastal site' definitions:

- *Dune slack* – wet area with marshy vegetation within a dune system.
- Note that *Saltmarsh* is described under 'C: Semi-natural Grassland' as it is more similar in structure and avifauna to grassland than to rocky shores.

H COASTAL			
	1 Marine - open shore	1 Mud or silt	1 Cliff vertical/ steeply sloping
	2 Marine shore - inlet/cove/loch	2 Sand	2 Dune
	3 Estuarine	3 Shingle	3 Flat/gently sloping
	4 Brackish lagoon	4 Rocky	4 Small island
	5 Open sea	5 Fully vegetated	5 Spit
		6 Sparse/medium vegetation	6 Dune slack
		7 Inter-tidal	7 Sloping ground
		8 Below low-water mark	8 Undisturbed
			9 Disturbed

I. Inland Rock

Areas of significant inland rock, including: cliffs, scree/boulder slopes, limestone pavement, quarries, mine/spoil/slag heaps, caves.

I INLAND ROCK			
	1 Cliff	1 Active	1 Bare rock
	2 Scree/boulder slope	2 Disused	2 Low vegetation present (mosses, liverworts, etc.)
	3 Limestone pavement	3 Montane ***	3 Grassland present
	4 Other rock	4 Non-montane	4 Scrub present
	5 Quarry	5 High disturbance from climbers	
	6 Mine/spoil/ slag heap	6 Medium disturbance	
	7 Cave	7 Low disturbance	

Marine open shore.

Limestone karst (inland rock).

Photographs: CÓILÍN MACLOCHLAINN

Habitat Form illustrating the completed habitat codes for the habitats shown in images 1-4 (page 19) and 5-8 (page 23):

Image	First (dominant) habitat						Second habitat					
	1	2	3		4		1	2	3		4	
1	B	1	4									
2	C	6	6		2							
3	E	1	1	7	1		A	2	1			
4	A	1			3	4						
5	B	1	6		3		C	7			1	
6	E	1	1		2		G	7			5	7
7	H	1	2	6	2							
8	D	1	1									

Dawn. – *Cóilín MacLochlainn*

Submitting your data

Try to complete the details on the *Count Summary Sheet* or enter your records online soon after your count is completed while the details are still fresh in your mind – especially if you can't read your writing very well! That way, you will quickly identify any unusual records that might have been due to an error when recording the data on your field sheet (such as the use of an incorrect code, etc). Ideally, you should complete and submit your data by the end of July each year.

Entering data online

We welcome your records online – it's the quickest and easiest way to get your data to us! Just register for online surveys on the BirdWatch Ireland website and you will then be set up for entering your data.

Online entry is a helpful way to speed up the validation process, and it means analyses can be processed much more efficiently.

If you submit your records online, then you won't need to return the *Count Summary Sheets* or the *Habitat Forms* to us. But please *do* return your *Field Recording Sheets* as they are handy for us when we are checking the data. Please also return your map, especially if you have had to make any changes to your route.

Submitting paper forms

If completing a hard-copy *Count Summary Sheet,* then please complete the form carefully.

Please also return your *Field Recording Sheets* as they are handy for us when checking the data.

Also return your map, especially if you have had to make any changes to your route.

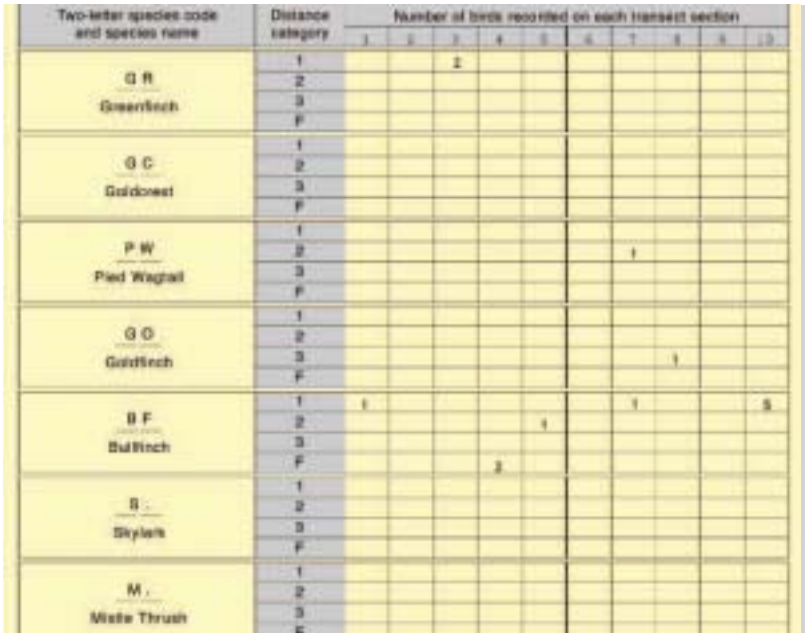
If you are still uncertain about any part of the form-filling, then please study the examples of completed forms shown here and on the following page.

COUNT SUMMARY SHEET COUNTRYSIDE BIRD SURVEY

PLEASE USE BLOCK CAPITALS

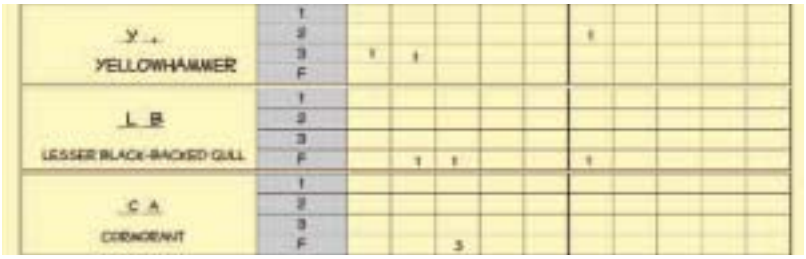
Obs. code / Observer name		JOE BLOGGS	Address:	1 SMITH STREET WEXFORD	
1-km square reference (eg S 00 40)		T 1 0 1 0			
County code (eg ERTP)		E R W X	Tel. No:	(053) 22222	
Visit date (DD:MM:YY) (eg 08:04:01)		1 6 : 0 4 : 1 2	Mobile:		
Early or late season visit (E/L)	E	Weather:	Cloud: 1	Rain: 1	Wind: 2 Visibility: 1
First half	Start time (HH:MM)	0 6 2 0	Finish time	0 7 0 0	
Second half	Start time (HH:MM)	0 7 1 5	Finish time	0 7 4 5	

Count Summary Sheet. Your personal details and information on the conditions of your count.



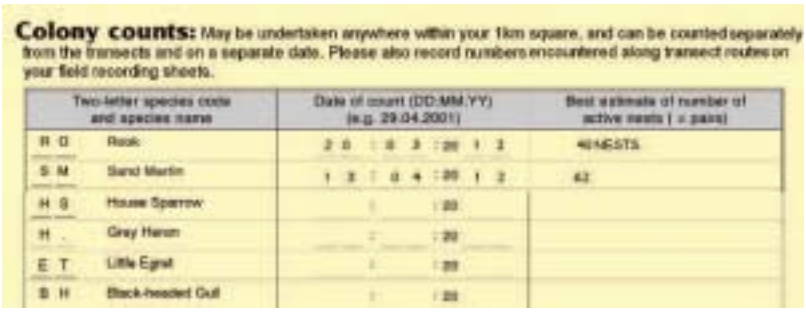
Two-letter species code and species name	Distance category	Number of birds recorded on each transect section
G R Greenfinch	1	1
	2	
	3	
	F	
G C Goldcrest	1	
	2	
	3	
	F	
P W Pied Wagtail	1	
	2	1
	3	
	F	
G O Goldfinch	1	
	2	
	3	1
	F	
B F Bullfinch	1	1 1 5
	2	1
	3	
	F	2
S . Skylark	1	
	2	
	3	
	F	
M . Mistle Thrush	1	
	2	
	3	

Bird counts. Take care to ensure that the bird counts are entered in the relevant sections and distance bands. Please provide total counts only, with no other text in the count cells (i.e. don't use *c.*, or +, or any other text).



Y H YELLOWHAMMER	1													
	2								1					
	3	1		1										
	F													
L B LESSER BLACK-BACKED GULL	1													
	2													
	3													
	F			1	1				1					
C A CORMORANT	1													
	2													
	3													
	F				3									

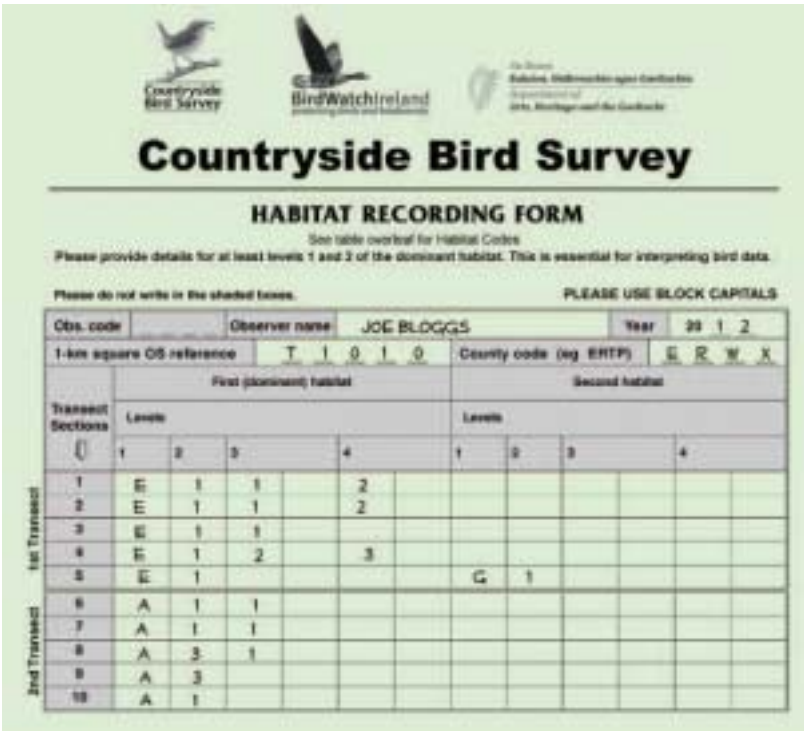
Adding species. When adding other species that are not pre-printed on the form, please ensure that you provide the correct species code and the full species name.



Colony counts: May be undertaken anywhere within your 1km square, and can be counted separately from the transects and on a separate date. Please also record numbers encountered along transect routes on your field recording sheets.

Two-letter species code and species name		Date of count (DD:MM:YY) (e.g. 29.04.2001)	Best estimate of number of active nests (= pairs)
R O	Rook	2 0 : 0 3 : 2 0 1 2	46 NESTS
S M	Sand Martin	1 2 : 0 4 : 2 0 1 2	62
H S	House Sparrow	: : 20	
H .	Grey Heron	: : 20	
E T	Little Egret	: : 20	
B H	Black-headed Gull	: : 20	

Colony counts. Please enter the details of any colonies you are aware of that are in your 1-km square. These details can be collected at any time of the breeding season.



Countryside Bird Survey

BirdWatch Ireland

Countryside Bird Survey

HABITAT RECORDING FORM

See table overleaf for Habitat Codes

Please provide details for at least levels 1 and 2 of the dominant habitat. This is essential for interpreting bird data.

Please do not write in the shaded boxes. PLEASE USE BLOCK CAPITALS

Obs. code | Observer name: JOE BLOGGS | Year: 2012

1-km square OS reference: T 1 0 1 0 | County code (eg ERTP): E R W X

	Transect Sections	First (dominant) habitat Levels				Second habitat Levels			
		1	2	3	4	1	2	3	4
1st Transect	1	E	1	1	2				
	2	E	1	1	2				
	3	E	1	1					
	4	E	1	2	3				
	5	E	1			G	1		
2nd Transect	6	A	1	1					
	7	A	1	1					
	8	A	3	1					
	9	A	3						
	10	A	1						

Habitat Recording Form. Refer to the coding scheme on the reverse side of the form. Ensure that individual digits are entered in each cell.

FOR **RECORDING HABITAT CHANGE** (IF IT OCCURS)

BETWEEN EARLY AND LATE VISITS IN THE SAME YEAR

If there was major habitat change between your early and late survey visits, please record these changes in the box below. Enter the number of the transect section and the new habitat codes. **Note:** Only by recording the habitats available to birds, and how these habitats change from year to year, can we begin to understand why bird populations are changing. This is a vital part of the CBS.

Transect Section	First habitat Levels				Second habitat Levels			
	1	2	3	4	1	2	3	4
1				1				
2				3				

Habitat change. Please identify any changes that occurred to the habitats between visits in the 'Recording Habitat Change' section.

Mullaghmore, Burren, Co Clare. – *Cóilín MacLochlainn*

Ten steps to good CBS practice

1 Check your forms and maps when they arrive in the post. Make sure you have been provided with the relevant material for covering your square, including (for each square covered):

- **2 Field Recording Sheets**
- **1 Habitat Recording Sheet (green)**
- **2 Maps of your square**
- **1 Permission Letter signed by the CBS Coordinator**
- **2 Count Summary Forms (yellow)**

2 Complete your first visit before 15th May and your second visit by 30th June.

3 Let the CBS Coordinator know in advance if you cannot survey your square.

4 When carrying out your first field visit, make sure to complete your habitat details.

5 Become familiar with the species codes provided at the back of the *Field Recording Sheets* before undertaking your field visits.

6 During your field visits, allocate sightings of birds to distance bands where species were associating with the section. ***Note:*** This includes Swift, Swallow, House Martin, Sand Martin, Meadow Pipit, Skylark and hovering Kestrel which may be in flight but which are associating with a particular area. If you see a bird fly out of a bush, allocate it to a distance band (where the bush was located) rather than to the 'Flight' category.

7 Take care not to record the same bird on more than one occasion. Be especially wary of vocal species such as Wren, Robin, Blackbird and Song Thrush.

8 When recording your bird records onto the field recording sheets, take care to carefully record your bird counts in:

- The correct 200-m section
- The correct distance band

9 Complete your *Count Summary Sheet or* enter your records online soon after each visit. When transferring the data, please take special care to ensure that records are allocated to the correct distance band and 200-m section.

10 Submit your data either online or by post to the CBS Coordinator as soon as possible, preferably before the end of the summer.

DICK COOMBES

Some items you'll need for your CBS fieldwork. A pen is generally easier to write with than a pencil, but do bring a pencil in case it rains and your pen doesn't work.

SHAY CONNOLLY

Kestrel. If hovering (as in this case), it is hunting and should be allocated to distance band 1, 2 or 3 and not to F (flying over).

CBS deadlines

March	April	May	June	July
Receive newsletter, forms and maps in the post from the CBS Coordinator.	**CBS first/early visit:** **1st April - 15th May** Contact CBS Coordinator in advance if not likely to complete early visit.		**CBS second/late visit:** **16th May - 30th June** Contact CBS Coordinator in advance if not likely to complete late visit.	**Compile data:** Enter records online or enter onto Count Summary Sheet and Habitat Form and post to CBS Coordinator.

Health & Safety

Observers are asked to take great care to avoid any situations which could place themselves or others in danger. Landowners' cooperation is vital to our work.

Farmland (where much of the fieldwork takes place) is a working environment, with its own attendant hazards. The 1995 Occupiers' Liability Act puts the onus on "recreational users" (that includes voluntary surveyors) to take all necessary precautions to ensure their own safety. The 1995 statute leaves the landowner with a relatively minimal duty of care towards recreational users; i.e. simply not to intentionally (or with "reckless disregard") injure them or damage their property.

This updating of the law in 1995 was fully supported by the farming and conservation organisations. It was seen as a necessary step to dispel previously widespread fears that landowners might be open to huge compensation claims in the event of accidents involving people entering their lands (despite the fact that no such claim had ever actually succeeded in the courts).

BirdWatch Ireland maintains appropriate public liability and personal accident insurance cover in relation to its legal obligations. However, much as we value the work of our volunteers (participating National Parks and Wildlife Service personnel will be operating according to their statutory functions), the organisation obviously cannot provide them with total immunity from the consequences of any lapse of care, consideration or common sense in the course of fieldwork activity.

Use gates, stiles or other recognised access points.

Accordingly, in your own interest and for the sake of your family or dependants, please be conscious of your own safety and that of others at all times.

Respect for private property and the rights of its owners is fundamental to our continued access to farmland for this and other surveys.

Access

Your square will almost certainly be on privately-owned land. This survey depends heavily on the goodwill of landowners and it is important that the same sites can be counted again and again for years to come. So please ask permission from landowners before you enter onto their land. They are almost always helpful and accommodating and, indeed, often enjoy a chat about birds that you record.

You will be provided with a letter from BirdWatch Ireland that indicates the purpose of your visit and that you are covered by BirdWatch Ireland public liability and personal accident insurance. Please carry this letter with you when undertaking CBS fieldwork.

The following basic rules are particularly important:

- Obtain prior permission for entry on land.
- Leave all farm gates just as you find them.
- Do not obstruct farm entrances when parking.
- Do not disturb livestock or damage crops.
- Guard against fire risks and avoid causing litter.
- Avoid damage to fence walls – use gates, stiles or other recognised access.
- Take heed of any warning signs – they are there for your protection.

Let someone know

As you will be out and about early in the morning and may be climbing gates, jumping ditches or walking over mountain bogs, depending on where your square is, it is a good idea to pre-arrange with someone that you will phone when you are finished safely or back in your car.

Also, set in place a procedure that, in the unlikely event of your having an incident, will let them know how to locate you (maybe leave a copy of your map with them).

Unimproved grassland, Co Galway. – *Dick Coombes*

Some terms explained

Listed below are descriptions of some terms related to bird monitoring and in particular the Countryside Bird Survey.

200-m section – Observers are asked to subdivide their CBS transects and record their bird and habitat details in 200-m sections.

Base year – The CBS commenced in 1998, so all population trends generated from data gathered in succeeding years are calculated in relation to the start or base year, 1998.

Breeding Bird Survey (BBS) – The UK Breeding Bird Survey has been running in Northern Ireland and Great Britain since 1994 and is co-ordinated by the British Trust for Ornithology. The Countryside Bird Survey uses the same methodology as the BBS and with only a few minor modifications. Thus, BBS data from Northern Ireland can be easily merged with CBS data to generate trends at an all-Ireland scale.

Birds Directive – The informal name of the European Directive on the Conservation of Wild Birds (79/409/EEC). The directive provides for the protection, management and control of naturally occurring wild birds within the European Union. One of the key mechanisms is the establishment of a network of Special Protection Areas (see Natura 2000) for birds. See ***http://europa.eu/scadplus/leg/en/lvb/l28046.htm.***

BirdWatch Ireland – BirdWatch Ireland (BWI) is the largest independent conservation organisation in Ireland, with over 14,000 members and supporters and a local network of over 20 branches nationwide. The aim of the organisation is the conservation of Ireland's wild birds and their habitats. BirdWatch Ireland was established in1968 as the Irish Wildbird Conservancy (IWC) and was re-named BirdWatch Ireland in 1993.

British Trust for Ornithology (BTO) – The BTO is a scientific organisation, combining the skills of professional scientists and volunteer birdwatchers to carry out research on birds in all habitats and throughout the year in the UK. Data collected by the various BTO surveys form the basis of extensive and unique databases which enable the BTO to objectively advise conservation bodies, government agencies, planners and scientists on a diverse range of issues involving birds. The Breeding Bird Survey (BBS) in the UK is jointly run by the British Trust for Ornithology, the Joint Nature Conservation Committee and the Royal Society for the Protection of Birds. See ***www.bto.org.***

CBS News – The annual newsletter of the CBS, produced every spring and circulated to all survey participants. Contents usually include an update on progress so far, some results of the survey and anecdotal accounts from participants.

CBS report – Updated and summarised results are presented in a report that has been produced every three years since the start of the survey in 1998.

Distance band – All birds seen or heard are allocated to one of three distance bands: out to 25 metres, 25-100 metres and more than 100 metres away. Birds in flight are recorded separately.

Grid reference – The 1-km squares that were selected for survey are based on the Irish National Grid. The squares selected for survey are located at the southwest corner of the 10-km squares which have been randomly selected. Every square has a letter and four numbers: e.g., M2010. The first two numbers reflect the easting coordinate while the latter two are the northing.

Continued next page....

Some CBS outputs: Countryside Bird Survey Report (1998-2010) and some recent issues of *CBS News*.

Habitat recording – Habitat data are required for each 200-m section and for each year surveyed to help with the interpretation of the bird data and trends.

Heritage Council – The Heritage Council is a statutorily independent body in Ireland funded by the Department of Environment, Community and Local Government. The Council's statutory functions include proposing policies and priorities for the identification, protection, preservation and enhancement of the national heritage, both natural and built, and promoting education, knowledge and pride in, and facilitating appreciation and enjoyment of, our heritage.

Indices – Population change is usually displayed as an index, where the results from one season are set at some arbitrary figure, usually 1 or 100, and index values are calculated for all other seasons according to how each relates to the base season. Index values are thus measures of relative abundance for a species.

Local Organiser – In some areas, Local Organisers are asked to help co-ordinate survey participants.

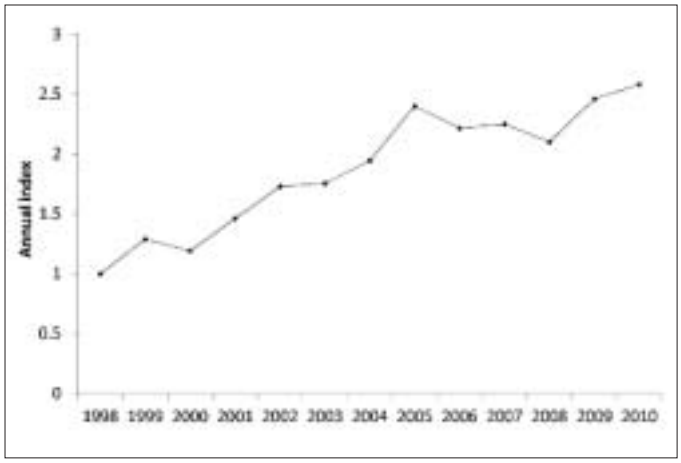
National Parks and Wildlife Service (NPWS) – The NPWS is part of the Department of Arts, Heritage and the Gaeltacht and is responsible for the conservation of a range of habitats and species in Ireland. NPWS funds the Countryside Bird Survey. See ***www.npws.ie.***

Pan-European Common Bird Monitoring Scheme (PECBMS) – Every year, bird monitoring data from countries throughout Europe are compiled as part of the Pan-European Common Bird Monitoring Scheme to provide an assessment of the status of birds in Europe. Further details and results can be found at ***www.ebcc.info.***

Random selection – In order to ensure that the sampling system is unbiased and not influenced by observer choice, squares have been randomly selected within each of eight sampling regions and then allocated in sequence.

Recording period – This runs from 1st April to 30th June, with the first visit between 1st April and 15th May and the second visit between 16th May and 30th June.

Region (sampling region) – When the CBS was initiated, the Republic of Ireland was divided into eight regions based on the National Parks and Wildlife Service administrative regions at that time. Within each region, 10km squares were randomly selected and allocated in sequence.



Trend graph for Goldfinch (1998-2010), showing the species' dramatic increase over the course of the survey.

Significant trend – The 95% confidence interval of a trend estimate is computed by multiplying the standard error by 1.96. If this interval does not include the value 1, then the trend is statistically significant at the P = 0.05 level. The 99% confidence interval of a trend estimate is computed by multiplying the standard error by 2.58. If this interval does not include the value 1, then the trend is statistically significant at the P = 0.01 level.

Species code – This is a two-character coding system that has been adopted from the BTO's Common Bird Census. Most species codes have two letters; e.g., **RO** = Rook. Others have a letter and a full stop; e.g., **B.** = Blackbird.

Square – The CBS sample sites are 1-km squares. At present, only the square at the southwest corner of each 10-km square that has been randomly selected are surveyed.

Tally counter (clicker) – Small mechanical device used for repetitive counting and tallying.

Transect – The route that is walked while recording birds. Each transect should be as straight as possible, but may have to deviate to avoid obstacles or features in the landscape. The length of the transect should not exceed 1 km.

Trend – Pattern of bird population change over a particular time period, classified as *increasing, declining* or *stable*. Trend is presently measured as the slope (gradient) of the line of best fit through the annual indices: a positive slope reflects an increasing trend, while a negative slope is a negative trend.

Brackish lagoon, Kilcoole Marsh, Co Wicklow. – *Dick Coombes*

Species and codes

Below is presented a full list of species recorded on the Countryside Bird Survey, together with their Latin names and species codes.

SPECIES MONITORED BY THE CBS

Code	*Common name*	*Latin name*
MA	Mallard	*Anas platyrhynchos*
PH	Pheasant	*Phasianus colchicus*
H.	Grey Heron	*Ardea cinerea*
SH	Sparrowhawk	*Accipiter nisus*
K.	Kestrel	*Falco tinnunculus*
MH	Moorhen	*Gallinula chloropus*
FP	Feral Pigeon	*Columba livia*
SD	Stock Dove	*Columba oenas*
WP	Woodpigeon	*Columba palumbus*
CD	Collared Dove	*Streptopelia decaocto*
CK	Cuckoo	*Cuculus canorus*
SI	Swift	*Apus apus*
S.	Skylark	*Alauda arvensis*
SM	Sand Martin	*Riparia riparia*
SL	Swallow	*Hirundo rustica*
HM	House Martin	*Delichon urbica*
MP	Meadow Pipit	*Anthus pratensis*
GL	Grey Wagtail	*Motacilla cinerea*
PW	Pied Wagtail	*Motacilla alba*
WR	Wren	*Troglodytes troglodytes*
D.	Dunnock	*Prunella modularis*
R.	Robin	*Erithacus rubecula*
SC	Stonechat	*Saxicola torquata*
W.	Wheatear	*Oenanthe oenanthe*
B.	Blackbird	*Turdus merula*
ST	Song Thrush	*Turdus philomelos*
M.	Mistle Thrush	*Turdus viscivorus*
GH	Grasshopper Warbler	*Locustella naevia*
SW	Sedge Warbler	*Acrocephalus schoenobaenus*
BC	Blackcap	*Sylvia atricapilla*
WH	Whitethroat	*Sylvia communis*
CC	Chiffchaff	*Phylloscopus collybita*
WW	Willow Warbler	*Phylloscopus trochilus*
GC	Goldcrest	*Regulus regulus*
SF	Spotted Flycatcher	*Muscicapa striata*
LT	Long-tailed Tit	*Aegithalos caudatus*
BT	Blue Tit	*Cyanistes caeruleus*
GT	Great Tit	*Parus major*
CT	Coal Tit	*Periparus ater*
TC	Treecreeper	*Certhia familiaris*
MG	Magpie	*Pica pica*
JD	Jackdaw	*Corvus monedula*
RO	Rook	*Corvus frugilegus*
HC	Hooded Crow	*Corvus corone cornix*
RN	Raven	*Corvus corax*
SG	Starling	*Sturna vulgaris*
HS	House Sparrow	*Passer domesticus*
CH	Chaffinch	*Fringilla coelebs*
GR	Greenfinch	*Carduelis chloris*
GO	Goldfinch	*Carduelis carduelis*
LI	Linnet	*Carduelis cannabina*
LR	Redpoll	*Carduelis flammea*
BF	Bullfinch	*Pyrrhula pyrrhula*
Y.	Yellowhammer	*Emberiza citrinella*
RB	Reed Bunting	*Emberiza schoeniclus*

WATERBIRD SPECIES NOT ADEQUATELY MONITORED BY THE CBS

Code	*Common name*	*Latin name*
CA	Cormorant	*Phalacrocorax carbo*
SN	Snipe	*Gallinago gallinago*
CU	Curlew	*Numenius arquata*
BH	Black-headed Gull	*Larus ridibundus*
CM	Common Gull	*Larus canus*
LB	Lesser Black-backed Gull	*Larus fuscus*
HG	Herring Gull	*Larus argentatus*
GB	Great Black-backed Gull	*Larus marinus*

Continued next page....

LESS FREQUENTLY RECORDED SPECIES

Code	Common name	Latin name
MS	Mute Swan	*Cygnus olor*
WS	Whooper Swan	*Cygnus cygnus*
NW	Greenland White-fronted Goose	*Anser albifrons flavirostris*
GJ	Greylag Goose	*Anser anser*
CG	Canada Goose	*Branta canadensis*
SU	Shelduck	*Tadorna tadorna*
WN	Wigeon	*Anas penelope*
T.	Teal	*Anas crecca*
PT	Pintail	*Anas acuta*
SV	Shoveler	*Anas clypeata*
TU	Tufted Duck	*Aythya fuligula*
CX	Common Scoter	*Melanitta nigra*
RM	Red-breasted Merganser	*Mergus serrator*
GD	Goosander	*Mergus Merganser*
RG	Red Grouse	*Lagopus lagopus scoticus*
RL	Red-legged Partridge	*Alectoris rufa*
P.	Grey Partridge	*Perdix perdix*
Q.	Quail	*Coturnix coturnix*
RH	Red-throated Diver	*Gavia stellata*
ND	Great Northern Diver	*Gavia immer*
GG	Great Crested Grebe	*Podiceps cristatus*
LG	Little Grebe	*Tachybaptus ruficollis*
F.	Fulmar	*Fulmarus glacialis*
MX	Manx Shearwater	*Puffinus puffinus*
GX	Gannet	*Sula bassana*
SA	Shag	*Phalacrocorax aristotelis*
ET	Little Egret	*Egretta garzetta*
HZ	Honey Buzzard	*Pernis apivorus*
MR	Marsh Harrier	*Circus aeruginosus*
HH	Hen Harrier	*Circus cyaneus*
GI	Goshawk	*Accipiter gentilis*
BZ	Buzzard	*Buteo buteo*
ML	Merlin	*Falco columbarius*
PE	Peregrine	*Falco peregrinus*
WA	Water Rail	*Rallus aquaticus*
CE	Corncrake	*Crex crex*
CO	Coot	*Fulica atra*
OC	Oystercatcher	*Haematopus ostralegus*
RP	Ringed Plover	*Charadrius hiaticula*
GP	Golden Plover	*Pluvialis apricaria*
L.	Lapwing	*Vanellus vanellus*
SS	Sanderling	*Calidris alba*
KN	Knot	*Calidris canutus*
DN	Dunlin	*Calidris alpina*
JS	Jack Snipe	*Lymnocryptes minimus*
WK	Woodcock	*Scolopax rusticola*
BW	Black-tailed Godwit	*Limosa limosa*
BA	Bar-tailed Godwit	*Limosa lapponica*
WM	Whimbrel	*Numenius phaeopus*
RK	Redshank	*Tringa totanus*
GK	Greenshank	*Tringa nebularia*
CS	Common Sandpiper	*Actitis hypoleucos*
TT	Turnstone	*Arenaria interpres*
NX	Great Skua	*Stercorarius skua*
MU	Mediterranean Gull	*Larus melanocephalus*
KI	Kittiwake	*Rissa tridactyla*
TE	Sandwich Tern	*Sterna sandvicensis*
CN	Common Tern	*Sterna hirundo*
AE	Arctic Tern	*Sterna paradisaea*
AF	Little Tern	*Sterna albifrons*
GU	Guillemot	*Uria aalge*
RA	Razorbill	*Alca torda*
TY	Black Guillemot	*Cepphus grylle*
DV	Rock Dove	*Columba livia*
TD	Turtle Dove	*Streptopelia turtur*
BO	Barn Owl	*Tyto alba*
LE	Long-eared Owl	*Asio otus*
SE	Short-eared Owl	*Asio flammeus*
KF	Kingfisher	*Alcedo atthis*
RC	Rock Pipit	*Anthus spinoletta littoralis*
DI	Dipper	*Cinclus cinclus*
WC	Whinchat	*Saxicola rubetra*
RZ	Ring Ouzel	*Turdus torquatus*
FF	Fieldfare	*Turdus pilaris*
RE	Redwing	*Turdus iliacus*
RW	Reed Warbler	*Acrocephalus scirpaceus*
GW	Garden Warbler	*Sylvia borin*
WO	Wood Warbler	*Phylloscopus sibilatrix*
J.	Jay	*Garrulus glandarius*
CF	Chough	*Pyrrhocorax pyrrhocorax*
TS	Tree Sparrow	*Passer montanus*
BL	Brambling	*Fringilla montifringilla*
SK	Siskin	*Carduelis spinus*
TW	Twite	*Carduelis flavirostris*
CR	Crossbill	*Loxia curvirostra*

RESOURCES

CBS outputs

Crowe, O. & Coombes, R.H. 2005. Monitoring breeding bird populations in the Republic of Ireland. *Bird Census News* **18:** 42-51.

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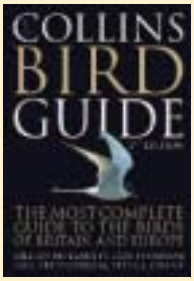
Websites

BirdWatch Ireland: www.birdwatchireland.ie (see Countryside Bird Survey in Volunteer Surveys in Our Work)
British Trust for Ornithology (BTO): www.bto.org (see Breeding Bird Survey in Volunteer Surveys in Our Work, on www.birdwatchireland.ie)
European Bird Census Council: www.ebcc.info
Heritage Council: www.heritagecouncil.ie
National Biodiversity Data Centre: www.nbdc.ie
National Parks & Wildlife Service: www.npws.ie/researchprojects/animalspecies/birds/

Recommended books and audio-visual material

Field guide
The Complete Field Guide to Ireland's Birds
By Eric Dempsey & Michael O'Clery
Gill & Macmillan (2010)



Field guide
Collins Bird Guide
By Killian Mullarney, Lars Svenssion, Dan Zetterström and Peter Grant
Collins (2010)

CD
Garden Bird Sounds
(Covers 70 bird species)
By Geoff Sample
WildSounds

DVD
DVD Guide to Common & Garden Birds
By Paul Doherty
Bird Images Video Guides

CD & book
Common Garden Bird Calls
(Covers more than 60 bird species)
By Hannu Jännes and Owen Roberts
New Holland Publishers (2009)

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Ealaíon, Oidhreachta agus Gaeltachta
Department of
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CBS is a joint project of BirdWatch Ireland and the National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht.