I-WeBS

CounterManual

Guidelines for Irish Wetland Bird Survey counters

Cover pictures:
Tufted Duck. – *Michael Finn*
Ringed Plover. – *Michael Finn*
Birdwatchers. – *Valerie O'Sullivan*
Knot flock. – *John Fox*
This page:
Lapwings. – *Alyn Walsh*

I-WeBS is a joint project of BirdWatch Ireland and the National Parks and Wildlife Service of the Department of the Environment, Heritage and Local Government.

BirdWatch Ireland

Comhshaol, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government

Contents

Birdwatchers. – *Valerie O'Sullivan*

Coulagh Bay, Co Cork. – *Clare Heardman*

Introduction

Ireland supports over a million migrant waterbirds each winter. Most species which occur in Ireland migrate from the north and northwest (principally Canada, Greenland and Iceland) or from the northeast (northern continental Europe, including Scandinavia, Russia and Siberia), moving south to winter predominantly in west and northwest Europe and west Africa (Wetlands International, 2006, Wernham *et al.,* 2002). Ireland's relatively mild climate and vast array of wetland habitats provide ample feeding throughout the winter period, particularly when many other parts of northwest Europe are frozen over. Both these factors make Ireland particularly attractive for wintering waterbirds. Ireland has both moral and legal obligations to conserve these waterbirds and the wetlands upon which they depend. As well as wishing to protect our natural heritage for future generations, Ireland, as a signatory to a number of international conservation conventions and a Member State of the European Union, is bound by international law to identify and protect areas important for waterbirds. Implicit in these obligations is the need for regular monitoring to identify such sites and monitor their long-term fortunes.


Black-tailed Godwit. – *Clive Timmons*

Waterbird surveys

Waterbird counting is nothing new in Ireland. It began during the late 1940s, but these data were never published. The first national count of Light-bellied Brent Goose was carried out in 1960, and counts of Greenland White-fronted Goose began on the Wexford Slobs in the mid-1960s. Since then, there have been other wetland bird surveys, including the Birds of Estuaries Enquiry which began in 1969/70 in the UK and Northern Ireland. Between 1971/72 and 1974/75, the Wetlands Enquiry was carried out in the Republic of Ireland, providing a baseline for future surveys.

In 1986, Tony Whilde compiled an unpublished report based on counts of over 1,472 sites which indicated that another thorough survey of wetlands was required, and so for three seasons between 1984/85 and 1986/87 the Winter Wetlands Survey was carried out. As a result of these earlier surveys, a large network of important wetland sites was identified, and population estimates for the majority of wintering waterbird species were derived. Following from this, the Irish Wetland Bird Survey (I-WeBS) was initiated in the Republic of Ireland in 1994/95. This survey is ongoing.

Aims and objectives

I-WeBS aims to monitor all non-breeding waterbirds in Ireland to provide the principal data on which the conservation of their populations and wetland habitats is based. To this end, I-WeBS has three main objectives:

- to assess the importance of individual sites for waterbirds;
- to assess the size of non-breeding waterbird populations in Ireland;
- to assess trends in their numbers and distribution.

Why count waterbirds?

Waterbirds act as very good indicators of the quality of wetlands, and wild birds and their habitats are protected through national and European legislation, and international agreements and conventions. In particular, Ireland is required to make special provision for wetlands and wetland birds (EU Birds Directive, Ramsar Convention, African-Eurasian Waterbird Agreement, Wetlands International). Counts are made at all wetland habitats, including lakes/loughs, ponds, reservoirs, gravel pits, rivers, freshwater marshes, canals, turloughs, callows, saltmarshes, open coast and estuaries, and also, in places, adjacent lands where geese, swans, Wigeon, Lapwing and Curlew may be feeding. I-WeBS core counts are the main monthly winter counts carried out by observers; these provide the long-term data used for assessing population sizes and trends and for identifying important sites. Counts are made once per month from September to March annually. Additionally, special surveys of species or habitats poorly covered by the core counts are undertaken periodically.

Additional I-WeBS-related surveys

There are a number of additional surveys that take place annually or periodically to target certain species or habitats that may not receive adequate coverage through normal I-WeBS counts. I-WeBS counters regularly participate in

Waterbird counting in Kilcoole, Co Wicklow. – *Oran O'Sullivan*

these extra surveys, which include: an international swan census every four or five years (I-WeBS, Irish Whooper Swan Study Group, the Wildfowl and Wetlands Trust); a Barnacle Goose Survey every four or five years (NPWS, I-WeBS); annual Greylag Goose census (I-WeBS, the Wildfowl and Wetlands Trust); annual Greenland White-fronted Goose census (NPWS); annual Light-bellied Brent Goose Census (I-WeBS, the Irish Brent Goose Research Group); and the coastal Non-Estuarine Waterbird Survey, taking place approximately every nine years (I-WeBS).

Uses of I-WeBS data

I-WeBS data form the basis for informed decision-making by conservation bodies, planners and developers and contribute to the wise-use and management of wetlands and their dependent waterbirds. As a signatory to a number of international conservation conventions, and bound by European Union directives, Ireland is required to identify important wetland sites for birds and designate them for protection. I-WeBS data are instrumental in identifying and monitoring these sites and are used extensively by the Irish Government in fulfilment of its international conservation obligations. I-WeBS data may also be called upon for environmental assessments of proposed developments on wetland sites and they help to ensure that the planning decisions are based on sound, current data.

I-WeBS data are used extensively by the I-WeBS partners for conservation, research and policy formulation. The data are combined with those from other countries in the International Waterbird Census (IWC) to report on waterbird populations and trends at an international scale (undertaken by Wetlands International).

The International Waterbird Census

The International Waterbird Census (IWC) has been organised by Wetlands International since 1967 and is an international waterbird monitoring scheme. The I-WeBS January data that we gather here in Ireland are forwarded to the international scheme as our contribution to this global census. Each year, over 100 countries participate with the involvement of around 15,000 counters worldwide, mostly volunteers. This makes the IWC the most globally widespread biodiversity monitoring programme in the world.

Details of all of the counts contributed, and information about the sites where they are carried out, are all held at Wetlands International.

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. One requirement is for EU Member States, using fully scientific criteria, to designate Special Protection Areas (SPAs) for the listed Annex 1 species and for migratory bird species. SPAs, together with Special Areas of Conservation (SACs) designated under the Habitats Directive (1992), form an EU-wide network of nature protection areas called Natura 2000. Natura 2000 is the centrepiece for EU nature and biodiversity policy. Under the Directive, EU Member States are required to pay particular attention to the protection of wetlands and particularly to wetlands of international importance.

Structure and organisation of I-WeBS

Priorities and overall direction are provided by a Steering Group comprising members from the National Parks and Wildlife Service of the Department of the Environment, Heritage and Local Government, and from BirdWatch Ireland. The day-to-day organisation and administration of I-WeBS is undertaken by the I-WeBS Office at BirdWatch Ireland.

Thank you for your help

Probably the most significant factor in the success of the Irish Wetland Bird Survey is the efforts of the counters. I-WeBS is dependent on the enthusiasm and dedication of hundreds of skilled volunteer counters and participating NPWS staff throughout Ireland. New counters are always needed to cover sites and to participate in any additional survey work. An I-WeBS counter should be committed to count the waterbirds at an allocated site monthly from September to March and to submit the results of the counts to the I-WeBS Office as soon as possible after the final count is completed on the standard form provided by the organisers, or via the I-WeBS Online data submission system.

CASE STUDY

Golden Plovers. – *Clive Timmons*

How your counts contribute to site designation

Courtmacsherry Bay

Courtmacsherry Bay, situated along the west Cork coastline, includes the estuary of the Argideen River which opens out near Timoleague and follows a long and relatively narrow course to where it meets the sea near the village of Courtmacsherry. The site includes extensive sand and mudflats and has been regularly monitored throughout I-WeBS. It supports a variety of wintering waterbirds and in recent years has been shown to be internationally important for Black-tailed Godwit and nationally important for Golden Plover, the latter a species listed in Annex I of the EU Birds Directive. On this basis, the site has been identified as a candidate site for designation as a Special Protection Area.

Teal. – *Michael Finn*

Contacts

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

The I-WeBS Office
BirdWatch Ireland
P.O. Box 12
Greystones
Co Wicklow

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

Barnacle Geese at Ballyconnell, Co Sligo. – *Ulrike Schwier*

Bull Island I-WeBS site, north Dublin Bay. – *Dick Coombes*

Methodology and Counting Techniques

The distribution of most species of waterbirds (principally swans, geese, ducks and waders) during the non-breeding period is restricted largely to wetland habitats. Many wetland sites represent relatively discrete areas and, with most species readily visible within these areas, regular monitoring of total numbers can be carried out with relative ease. The simple 'look-see' method, whereby all birds present within a pre-defined area are counted, is thus employed for I-WeBS core counts.

The important factors that make I-WeBS counts distinct from, and ultimately more valuable than, casual records are that they are undertaken in a consistent manner, repeated on a regular (once-monthly) basis and at the same sites, and synchronised with counts at other sites. This increases our confidence that the results reflect true changes rather than reflecting different areas being counted or birds being double-counted at different times.


Sanderling. – *Clive Timmons*

Getting involved

Who can take part in I-WeBS?

The network of counters is a hugely valuable asset. Without this network, much of the important work that relies on I-WeBS data could simply not be achieved. Anyone who can identify waterbirds and has an interest in birds and conservation can take part in the Irish Wetland Bird Survey. If you are not confident of your identification skills you can still get involved by going out with more experienced bird counters in your area and learning from them while helping to keep the count records. If you lack confidence in your identification skills you can make a useful contribution by starting with small wetlands supporting a few easily identified species.

Each counter should receive a copy of the newsletter, a copy of any I-WeBS paper or report that is produced, and have a copy of the *I-WeBS Counter Manual* with information about all aspects of I-WeBS. This should give answers to many questions that may arise, and provide good background information for new or potential counters.

How can I get involved?

Anyone interested in taking part in the survey is requested to contact the I-WeBS Office. This will ensure that you receive all necessary instructions and details, including a recording form, a list of priority count dates, any available literature, and a map of the count area that you will be covering. The I-WeBS site you will count could be one in your area that you have requested, or the I-WeBS Office may locate a site for you. In the case that you can take part in an organised count of a large wetland complex, the I-WeBS Office can put you in contact with the relevant I-WeBS Local Organiser of that site.

What do I need?

Equipment

- binoculars (typically 8x or 10x magnification);
- telescope (ideally 30x magnification) and tripod;
- a window mount for your telescope may be useful at sites where birds can be counted from a car, particularly in very poor weather conditions;
- identification guide;
- tally counter (optional); useful at sites with large numbers of birds;
- notebook (for use in the field);
- two(!) pencils/pens;
- map showing boundary of the area to be covered;
- I-WeBS Core Count recording form (to be completed subsequent to the count, and forwarded at the end of the count season to the I-WeBS Office, unless you will use the I-WeBS Online system).

Binoculars

Binoculars are essential. 8x30, 8x40, 10x40 and 10x50 are the most widely used by birdwatchers. The first number specifies the magnification of the binocular (8x or 10x), the second number is the diameter in millimetres of the objective lens, and is a measure of the light-gathering power (and also the size) of the binocular. An 8x pair of binoculars allows you to see things eight times larger than you would with the naked eye. Magnification above 10x is rarely useful because it is difficult to hold more powerful binoculars steady. An objective lens below 30mm in diameter performs less well in poor light conditions, and one above 50mm is too bulky for most

observers. Binoculars with a zoom are best avoided. The robustness and optical superiority of high-quality binoculars makes them well worth the additional expense, if money is available.

Telescope

At small sites, it is possible to carry out a count using just binoculars, but at larger sites, where the birds are more than 500m away, a telescope will also be required to aid identification and to obtain greater accuracy when counting distant species. It is useful when counting to have a wide angle of view, and a telescope with fixed magnification of 20x or 30x magnification is good for this reason. Zoom lenses generally have a narrow field of view, so can be less useful than a wide-angled lens, but are excellent for confirming the identification of distant birds and for ring-reading. It is important to be able to pan and tilt the telescope smoothly when working through flocks to identify and count the birds, and only a good quality tripod with a pan-head allows this. Most people find telescopes with angled eyepieces more comfortable to use and more user-friendly. Straight-through telescopes are not as popular as the angled versions. However, straight-through telescopes do perform better when used from a vehicle, as they allow the window to be closed more and help brace the scope, particularly in windy conditions.

Also, a good tripod is essential when using any telescope. It is pointless having a good telescope mounted on a shaky or unstable tripod!

Great Black-backed Gulls. – *Michael Finn*

Identification guide

If you are counting a site by yourself you need to be able to identify all the birds that are likely to occur there. However, in the event of any unfamiliar species being seen, it is useful to have an identification guide with you for quick reference to minimise errors. See the list of references at the end of this section.

Notebook

It is recommended that a hardback, pocket-sized notebook be used for recording during counts. The site-name, date, time, weather, visibility and state of the tide (where applicable) should be recorded. Any disturbance by humans and/or their animals, or by birds of prey, should also be recorded if it is thought to have affected the count.

Many large sites are broken into smaller sections, or subsites. If you are counting a site like this, it is vital that each section is clearly labelled in your notebook above the corresponding figures. Always be clear where the next subsite's notes begin. This will eliminate any errors when form-filling, or when entering data online later on.

Each species should be written on a new line with a comma separating the sub-totals to avoid any confusion (e.g. Teal 46, 37, 12, 23 = 118).

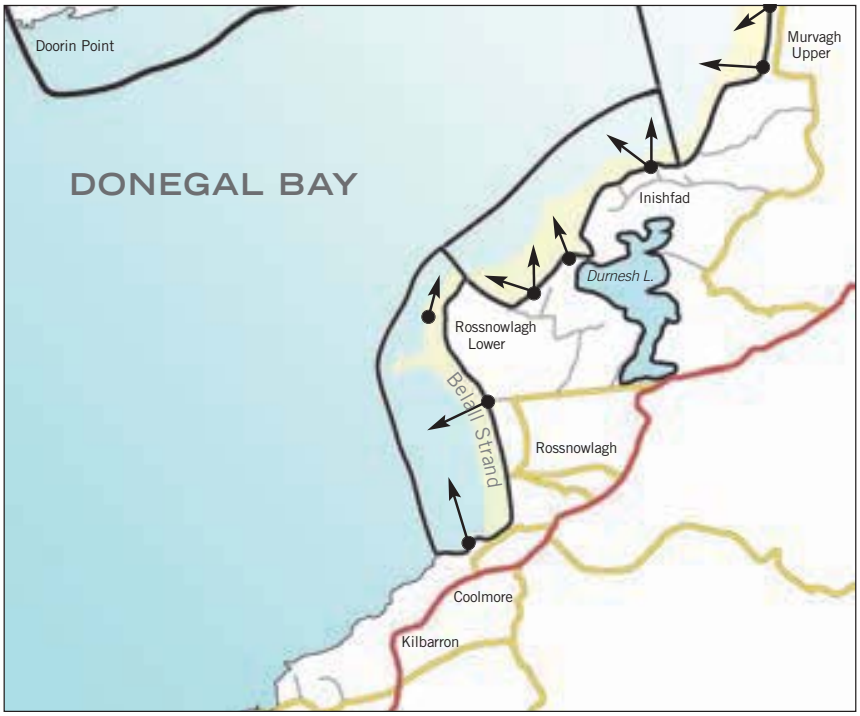
To save time and space, it is useful to use species codes rather than writing the full species name on each line. The species codes (e.g. CU = Curlew) are all found on the standard I-WeBS form.

Map of area to be counted

Standardisation is an important part of the I-WeBS methods and this requires that

the same area is counted at each visit, allowing meaningful comparisons between seasons to be made. This will be easy at sites that have obvious boundaries, such as many lakes, but some I-WeBS sites have less obvious boundaries, or are made up of several count sections or subsites.

You will become very familiar with your site with more frequent visits, but it is wise at first to carry a map with you that has the boundaries of the areas to be counted illustrated on it. It is very useful to mark on the map where the best access points and viewing points are. This means that if another counter takes over from you at a later stage that the best vantage points are already known.



Some of the Donegal Bay I-WeBS subsites (arrows indicate counting vantage points).

Count boundaries

Deciding the count boundary to use

The I-WeBS Office provides maps that show the count boundaries used at I-WeBS sites. However, if a site has never been counted before, getting to know the site first is important as changes to existing boundaries should only be necessary in exceptional circumstances. Many wetland sites have a clearly defined physical boundary in the landscape and the area to be counted is obvious. This applies to a lot of lakes and estuaries. However, sometimes extra areas may need to be incorporated for counting purposes. For example, after a few visits to a lake you may learn that the surrounding fields on one side are often used by geese during the day. You should then include this area in your count as another subsite, rather than extending the existing boundary to incorporate these fields.

Please note that the size of a count unit should not change. If additional adjacent areas are to be counted, then these should be added as subsites with defined boundaries. This ensures that results are comparable from year to year. Please contact the I-WeBS Office should such a situation arise.

Divisions should be logical and readily identifiable in the field so they can be easily used again in the future. If a counter discontinues their involvement in the survey, or if another counter needs to stand in while they are away, defined boundaries are incredibly useful.

Why are large sites subdivided?

For the purposes of I-WeBS, large sites should be split into several smaller sections or 'subsites,' each one being easily countable by one or two counters within a reasonable amount of time. The use of subsites is advantageous in several ways:

- the risk of double-counting is reduced as all subsites are being covered simultaneously;
- a structure to the count is in place, reducing confusion and allowing the site to be covered faster, and more easily, by a team of counters;
- dividing a site into many smaller sections provides very valuable and detailed information that we would not otherwise obtain about patterns of waterbird usage, and about which parts of the site are most important. This is particularly relevant in the event of an apparent threat to a site.

If the site, or part of a site, has been designated a Special Protection Area, then ideally the I-WeBS count boundary should coincide with the SPA. If a larger area is counted than that designated, then the SPA should be an easily definable subsite of its own, or perhaps split into more than one subsite if it is large. Having the SPA boundary correspond with the site, or subsite, boundary is very useful so that we can monitor and compare bird numbers inside and outside designated areas.

By now, most of the largest I-WeBS sites have been subdivided. At new sites, at least a couple of initial visits are required to determine which areas the birds use and to decide on the best count route and vantage points. Only decide upon the count boundary to use when you are sufficiently familiar with the site.

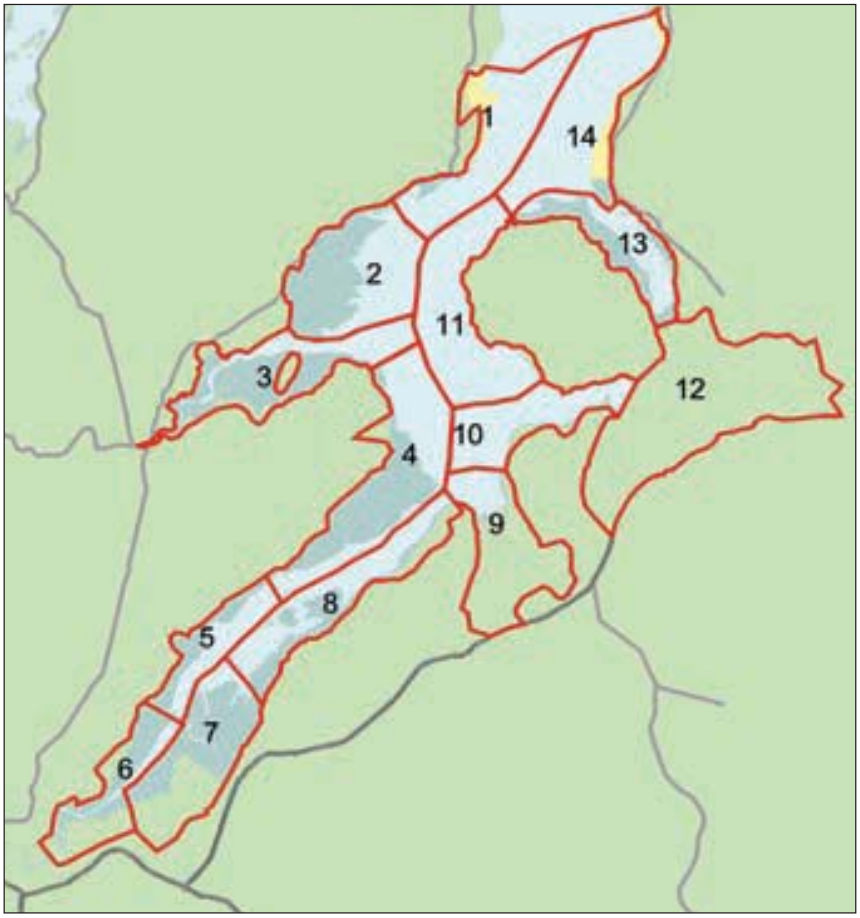
Please consult with the I-WeBS Office before making any changes to existing count boundaries as these may have implications for the interpretation of I-WeBS data and possibly also for areas covered by other counters.

Take the time to get to know your site

Getting to know your site well is very rewarding and allows you to be much more confident that you have counted everything during your I-WeBS count.

Counting the same area each time

Any wetland site can be covered for I-WeBS. Counters should contact the I-WeBS Office for a map if they are counting a particular site for the first time, and use the same count boundary if the site has been covered previously by someone else. One of the most important aspects of counting methodology is standardisation. It is very important that you should count the exact same area using the exact same boundaries at each visit. This repeatability means comparisons between sites and years are then straightforward and valid.



I-WeBS subsite divisions at Lough Swilly, Co Donegal.

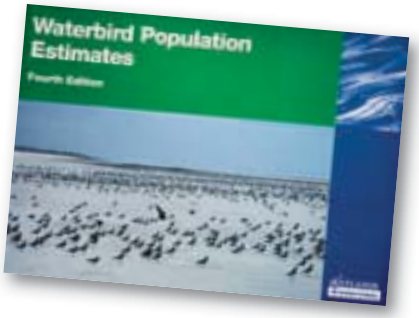
When should I count?

How often should I carry out counts?

For I-WeBS, sites should be counted once every month between September and March. Numbers of birds at any site will vary according to time of year, time of day, weather, disturbance and, on tidal sites or those adjacent to the coast, state of tide. One count per month is required for I-WeBS core counts on, or as near as possible to, the pre-determined, recommended count dates that are set at the start of the season.

The priority period for counts is September to March as this encompasses the main months when peak numbers of most species occur in Ireland. However, we are very keen to receive counts made during the spring and autumn passage periods as these provide valuable information on the passage of many species, especially waders and gulls.

Above all, the January count is particularly important since these data are included in the International Waterbird Census and are used by Wetlands International for assessing the sizes and trends of waterbird populations at flyway level. If it transpires that you can only carry out a few counts in a particular season, then try to prioritise January.



Any number of additional full counts can be undertaken to assess site importance. Intuitively, the greater the frequency of counts, the higher the measured importance of the site, and all such data provided to the I-WeBS Office will be incorporated into the database.

Supplementary counts and casual counts

Counts of selected species can prove useful when assessing the importance of sites. Such counts should be made using the same boundaries and methodology as above. This may include, for example, roost counts of geese which were absent from the count unit at the time of the core count, or counts of sea-ducks made during more suitable weather or sea conditions. There is a special recording form, a Supplementary Count Form, for this type of count.

Grey Plover in flock of Golden Plovers. – *John Fox*

Casual counts can also be very valuable. For example, if you see a flock of 6,000 Golden Plover whilst driving across the Curragh in Kildare, you could put this on a recording form with a grid reference and/or a description of the location and send it to the I-WeBS Office. These birds may not have been recorded by anyone else.

What time of day?

In general, monthly core counts should be made during the morning, when possible, as this is when light conditions are optimal. Poor light may limit the accuracy and usefulness of the data. However, do bear in mind the position of the sun at the time of your count so that you can avoid glare, which often results in having to identify birds simply by silhouette, making the count more challenging. Timing of counts is most significant at estuarine sites, or at those close to the coast where bird numbers are influenced by the state of the tide.

Counts at any site, inland or coastal, should be completed within three hours to minimise duplication of counts. Sites requiring more time should ideally be divided into sections and two or more counters deployed to cover the site synchronously.

When to count tidal sites

I-WeBS is traditionally a high-tide survey and at large, complex estuarine sites with extensive intertidal areas that require some time to cover, counts should typically be made within three hours either side of the high tide.

Many coastal sites require a few hours and several counters to complete the count. It is preferable to begin counts of such large areas when the tide is rising, beginning a few hours before the high tide, depending on how long it will take to complete the count. As the tide gradually rises, the intertidal area that you are counting gets smaller in size as the count progresses. It means the birds come closer to you, making counting and identification easier. The birds will also generally be gathered in more distinct flocks that are easier to count. At low tide, or on a falling tide, birds are often scattered and far away.

It can be difficult to identify and count birds feeding at extreme distance. The behaviour of birds at low tide can be very different to that at a high or rising tide. Counting on a falling or very low tide can be like counting a different site altogether! However you do it, it is best that each count, as much as is possible, is made at the same stage of the tidal cycle to ensure consistency.

Example: *Each count of Dublin Bay begins approximately four hours before the high-tide time and usually takes up to three hours to complete. This allows for the count to be completed at an almost full tide and yet allows all birds to be counted before they disappear out of sight into the saltmarsh in their high-tide roosts.*

Count when the site is least disturbed

Try to identify periods when there is minimum disturbance at the site. Disturbance may cause the birds to move, which increases the chances of some birds either being missed during the count or of being double-counted.

Recommended count dates and synchronisation

Synchronisation of counts between different sites located within a relatively short distance of each other is important if there is a likelihood of birds being double-counted or missed. This ensures the data you collect can be confidently used to help produce national population estimates and monitor trends. This is why specific dates are recommended for the once-monthly I-WeBS core counts.

Recommended dates are published for each month, corresponding to a weekend when tidal conditions are suitable for as many coastal sites as possible. The high-tide time that is listed for the recommended weekend corresponds to that of the Sunday, so adjustments should be made if counting on days either side. Because of differences in tidal regimes around the coast of Ireland, the I-WeBS dates for west and south coast counties are one week later than those for east coast and inland counties. Counts should ideally take place as near as possible to the recommended weekend.

Coot. – *Clive Timmons*

However, there is of course flexibility, as these dates will not suit everyone all of the time and it is better to have a count on another date than no count at all. If tidal conditions or counter availability are not optimal for the priority date, local co-ordination should take precedence over national co-ordination. If it is not possible to count on the recommended weekend then choose the next closest date, while keeping a three-week gap between monthly counts.

If substantial numbers of birds are known to move regularly between nearby wetlands, perhaps in response to disturbance or tidal state, then co-ordination of counts will help reduce the risk of double-counting. This kind of count synchronisation between two adjacent sites can be important. However, within-site count synchronisation is even more important. At large or complex sites that are divided into several sections or subsites, and which require a team of counters to cover the whole site, local, within-site movements of birds may affect count totals if each counter does not begin at the same time. There is usually one person that takes responsibility for organising such counts, and it is this organiser that should ensure co-ordination and synchronisation.

How to carry out a count – techniques & recording

What needs to be recorded at each count?

Each time a count is carried out the following is the most basic information that is required:

- a total count of individuals of all waterbird species present on a predefined area of wetland habitat;
- the date and time of the count;
- a measure of the accuracy of the count;
- disturbance that may have affected the accuracy of the count;
- tidal state, where applicable.

What species should I record for I-WeBS?

I-WeBS Core Counts record all waterbird species, as defined by Wetlands International (Wetlands International, 2006). Waterbirds have been defined as "species of bird that are ecologically dependent on wetlands." In Ireland, counts of swans, geese, ducks, divers, grebes, Cormorant, Shag, herons, rails, crakes, waders and Kingfisher are required. Vagrants, introductions and escapes of all species in these families are also included. Counts of gull and tern species are optional. However, counts of gulls, in particular, are very much encouraged and are greatly appreciated. As well as providing very useful information, the inclusion of gulls at some sites can push the bird total above the 20,000 threshold figure which is one of the ways, if it occurs on a regular basis, in which a site qualifies as internationally important, thereby also qualifying it for designation as an SPA under the EU Birds Directive. See *Species and Codes* for full list of species.

A site is internationally important if:

- it regularly holds more than 1% of a flyway population of a species, or
- it regularly holds more than 20,000 waterbirds, or
- it holds more than 1% of the national population of an Annex 1 species.

The European Union adopted this 1% criterion to identify SPAs under the Birds Directive. If a site qualifies under any of these headings it is worthy of designation as a Special Protection Area.

Beginning your count

Firstly, make an initial scan of the entire site with binoculars so you can get an idea of:

- what species are there,
- where they are mainly located,
- and in what concentrations.

Birds should then be counted one at a time where time allows, particularly if it is a small site and birds are present in

relatively small numbers or are dispersed widely. However, if during the initial scan large flocks of birds are observed, it is best to count these birds first. This is particularly relevant at coastal sites where large flocks of waders may suddenly move out of sight due to the tide or disturbance.

Total counts of all waterbird species are conducted on a 'look-see' basis (Bibby *et al.,* 2000) which involves counting all birds visible in a pre-defined area.

Efforts should be made to ensure all areas are searched, as birds may be hidden in channels. Do make a special effort to check water edges and the edges of reedbeds or saltmarsh. Only counts of birds seen should be recorded on the form; estimates of birds thought to be hidden should not be recorded. If a species is heard but not visible, it may be recorded as 'present but not counted' (NC) on the recording form. If large numbers of birds are known to be out of sight, e.g. a flock of waders seen to fly into a channel that could not be viewed, the count of the species should be noted as an undercount (see *Count Accuracy*). Counts suspected to be gross underestimates of the true number of individuals of a species present are specifically noted, e.g. a large flock of Redshank only partially counted before being flushed by a predator, or a distant flock of Common Scoter in heavy swell. These counts may then be highlighted by the I-WeBS Office when interpreting site totals and species trends.

Counts of naturally secretive or cryptic species, e.g. Snipe, should not be automatically recorded as undercounts; it is accepted as part of the methodology that these species are under-recorded. Counts of gulls and terns for I-WeBS core counts are optional. However, as mentioned before, counts of gulls are encouraged and greatly appreciated.

Any extra information or helpful tips relating to the coverage of a site (e.g. a particular route to avoid disturbance) should be documented to enable future counts to be made in exactly the same way. The route should be designed to ensure that the whole count area is viewed, especially if species are in mixed flocks. The reliable range of most binoculars is around 500m; and with a telescope, if topography and weather conditions allow, experienced observers can identify birds up to 3-4km away. The best vantage points should be determined before the count begins, and the same vantage points can be used at each count.

Black-headed Gull: please count the gulls! – *Michael Finn*

Make sure the light is behind you

When planning your count, please note that visibility is much better when the light is behind you, making the birds easier to distinguish. Trying to count a mixed flock of small waders at a distance with only a silhouette to aid identification can be a tricky task, even for a very experienced observer!

Co-ordinated counting

Remember, at large sites that are divided into sections, and which require more than one counter, 'within-site' co-ordination takes higher priority than synchronisation with recommended count dates.

It is accepted that Snipe are under-recorded in I-WeBS counts. – *John Fox*

Observers cannot expect to predict where winter flocks will occur from year to year. Some flocks are highly mobile, and observers should be prepared to search their areas thoroughly. Only record birds that are actually using the site, e.g. do not record all of the gulls over-flying the area. Do not separate between males and females; simply provide a total count per species per site/subsite.

Use a notebook in the field; fill out the I-WeBS Recording Form as soon after the count as possible. Keep your notebook safe in case recording forms are lost or damaged in the post.

Counting tip

Remember, flocks of waterbirds are more dense towards the centre than at the edges.

Counting a large flock

It is possible to estimate the number of birds in a large flock by initially counting two, five or ten individuals. The flock can then be divided mentally into 'blocks' of the same size, and the number of blocks are then counted. On some occasions, very large flocks may be estimated by counting groups of 50, or even 100, if there is a definite threat that they may move. In these cases, allowance should be made for varying densities of birds in the flock, making the block-size larger or smaller as appropriate. It is preferable, however, to use smaller units, e.g. blocks of 2 or 5, when counting a big flock. Tally counters are particularly useful for this approach. Accuracy improves with experience, so plenty of practice is advised in estimating the size of flocks, and in counting blocks of five or more birds, particularly in relation to birds in flight.

If large numbers of birds are moving, or are thought likely to leave (e.g. because of disturbance), the following should allow at least an approximate count:

- make a quick total count. If it is a mixed-species flock, don't initially separate the species; estimate an overall number of individuals;
- then make a quick assessment of proportions of species;
- start with the most common species; if all birds leave, you can probably make a reasonable guess at the others (e.g. recording that Pochard are twice as numerous as Tufted Duck is better than nothing), remembering to mark these counts as estimates on the form. See *Count Accuracy;*
- having made an initial estimate, you can now carry out a detailed and accurate count of the birds, assuming the birds have remained in view;
- repeated scans will improve the precision of the count.

It is best to use binoculars to count any flocks of birds that are relatively close to you, and to use a telescope for anything more distant. Many counters, with practice, count two species at the same time using a tally counter to enhance the speed of the count. One species can be recorded mentally and another can be recorded on the counter. Each click of the button can represent a single bird or a block of birds, e.g. 12 clicks of blocks of 10 birds = 120 birds. These instruments are particularly helpful at large, complex sites that hold many birds.

Repeat scans

Flocks should be scanned several times where time permits to achieve maximum accuracy. Repeated scans will also improve your chances of locating rare or more inconspicuous species that may be present in smaller numbers.

You should be able to count these Redshanks in ones or twos, as they are not tightly packed or in very big numbers. – *John Fox*

Counting large and complex sites

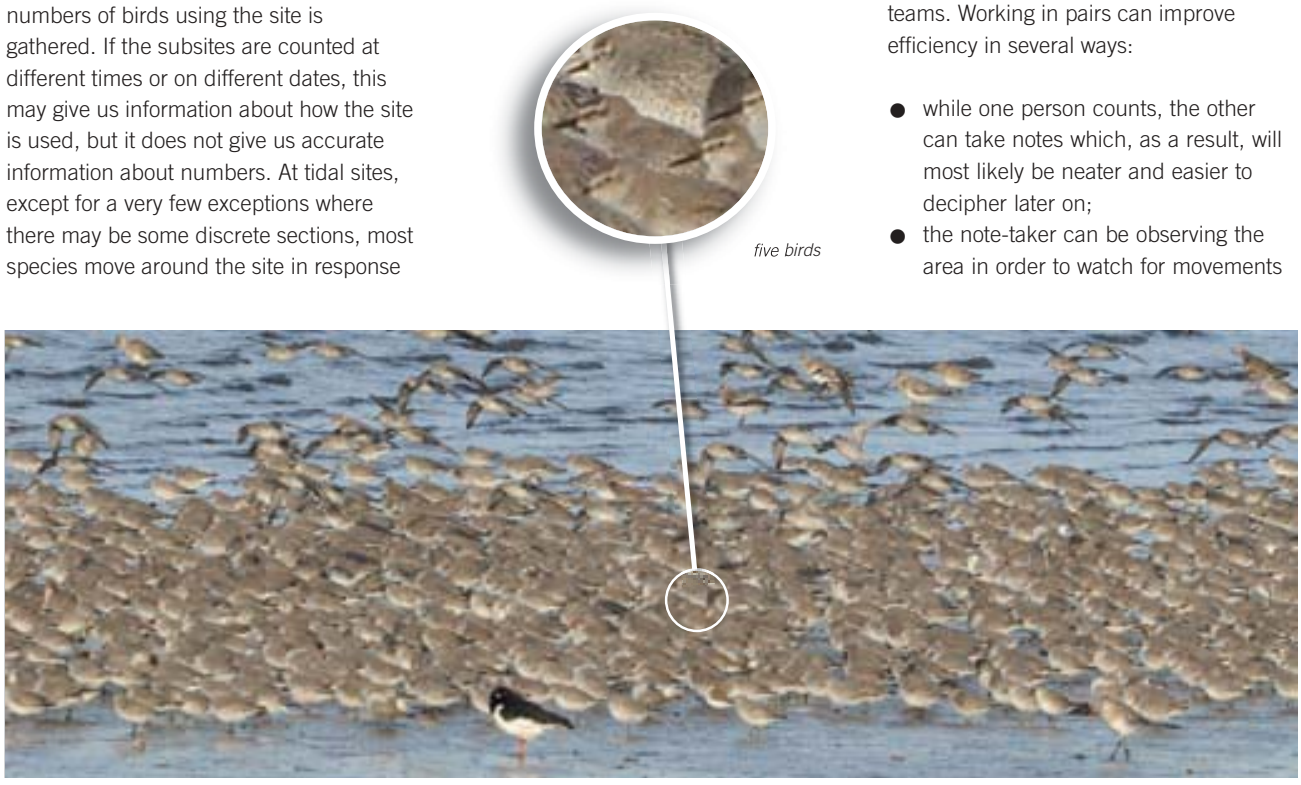
Large, complex sites are generally broken down into several smaller sections or subsites with one or more counters assigned to each section. There is usually one person, a Local Organiser, who takes responsibility for co-ordinating such a count. Doing a fully co-ordinated count means that valuable information about numbers of birds using the site is gathered. If the subsites are counted at different times or on different dates, this may give us information about how the site is used, but it does not give us accurate information about numbers. At tidal sites, except for a very few exceptions where there may be some discrete sections, most species move around the site in response to the tide or to disturbance, and flocks may be counted twice or missed.

It is vital that the counters of the various subsites communicate with each other via the Local Organiser so that a date and start-time are set. Also, good communication is needed beforehand to confirm which subsite is being counted by which counter, and to make sure that each counter is clear about what specific area he is expected to cover, and that areas do not overlap. The Local Organiser can co-ordinate this aspect of the count.

Benefits of counting with others

It may be possible to count a site or subsite on your own, but it is often easier and more fun to work in pairs, or even teams. Working in pairs can improve efficiency in several ways:

- while one person counts, the other can take notes which, as a result, will most likely be neater and easier to decipher later on;
- the note-taker can be observing the area in order to watch for movements



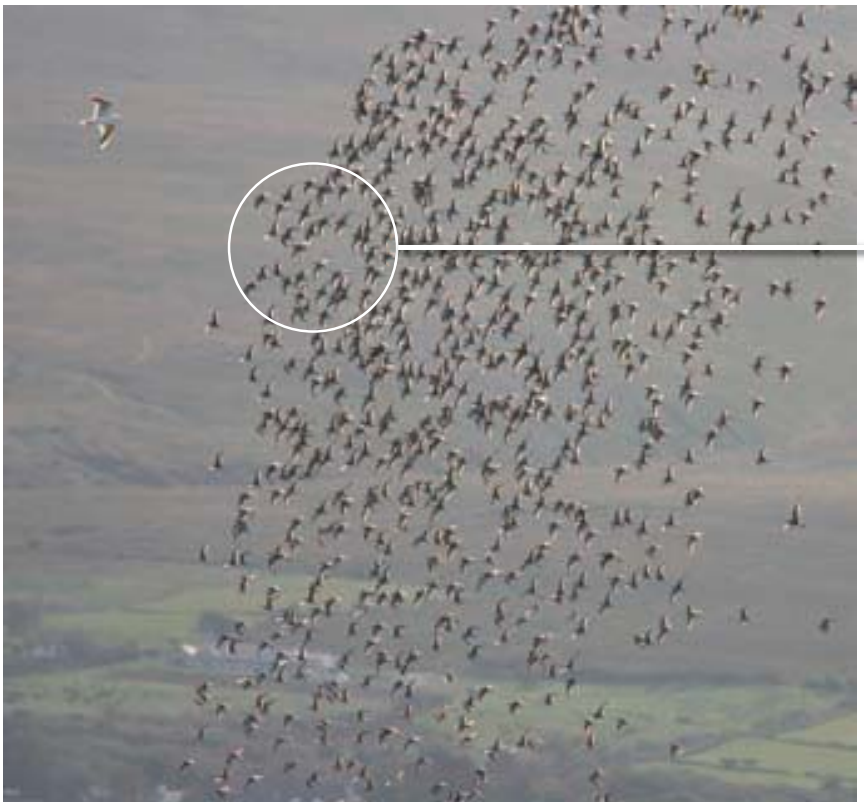
Count Knot in blocks of five. Try to get a more detailed count afterwards. – *John Fox*

At first glance, this is just a big flock of Wigeon and Whooper Swans on the Wexford Slobs. But careful scanning will reveal that it includes Light-bellied Brent Geese, Greenland White-fronted Goose, Coot, Scaup, Pochard, Tufted Duck, Mallard and even a flock of waders. – *Alyn Walsh*

of flocks, or can scan for species at sea if at a coastal site;
- time is saved, thereby reducing the risk of bird movements between subsites;
- mixed-species flocks or sites with large numbers of birds can be counted by dividing the species between you, e.g. one person can count ducks while the other counts waders;
- confirmation is at hand in the event of an identification uncertainty.

At large sites, great care should be taken when counting flocks that are moving in response to the tidal cycle, or that have moved into or out of your section since you began your count. It is worthwhile for counters of a large, complex site to meet after the count to compare notes and to clarify that moving flocks had not already been counted in another subsite by another observer.

Flock of Knot and Bar-tailed Godwits. Note the much smaller Dunlin among them. – *John Fox*



Black-tailed Godwits in flight: don't panic! Make a quick initial estimate of fast-flying birds, then count them again more carefully if time allows. – *John Carey*

fifty birds

Count estimates

When estimating numbers of birds in a flock, it is best to estimate in small units to ensure greatest accuracy. Estimating larger numbers of birds, e.g. 100, will usually only be for birds in flight, where there is a threat of disturbance or where time is very limited.

Can you see the Teal flying amongst these Black-tailed Godwits? – *Alyn Walsh*

Dunlin and Ringed Plover at high-tide roost. – *Oran O'Sullivan*

Counting high-tide roosts at large tidal sites

At large estuarine sites, many species can form large and, at times, dense roosts at or close to high tide and can be missed if the roost sites are not known. The roost site is generally close to the intertidal area and it is worth finding out where it is located. If birds roost in tall, saltmarsh vegetation where it is difficult or impossible to distinguish individuals or smaller groups, then it is best to count the site on a rising tide, before the birds go to roost.

Birds will often be densely packed in a roost, e.g. Knot tend to pack very tightly together and it can be difficult to separate them, particularly those at the back of the flock or in a mixed-species flock. As described before, make an initial estimation. Then, using a telescope, take the time, where possible, to systematically work through the flock and get a more detailed count.

Plan and communicate

Good planning and good communication between counters are needed when counting large and complex sites.

Count accuracy

It is important to record the accuracy of the counts. For I-WeBS, count accuracy is either described as 'OK' or 'LOW.' Under certain conditions, the accuracy of your entire count may be affected, e.g. poor visibility due to fog or heavy rain, high disturbance levels, or when access to all of the usual count area was not possible. In this case you should mark the count as 'LOW' in the 'Coverage' section of your recording form or select that option on the I-WeBS Online system. This helps us to interpret the data correctly.

However, if a count of just one or two individual species is adversely affected, these should be flagged accordingly on the recording form by bracketing the count, while the overall count accuracy remains 'OK.'

If very poor weather or other factors reduce the quality of your count, a repeat could be made on another date. This should be made as close to the recommended date as possible, though consideration should be given to co-ordination with adjacent sites. If monthly counts are made throughout the winter period, the absence of one count is unlikely to have a significant impact on the results of the survey.

If it is not possible to positively identify the species, record birds as 'unidentified' or within a given category, e.g. unidentified gull sp. Remember, if you cannot be accurate, be honest!

See *Species & Codes* for a list of unidentified species categories used by I-WeBS.

Avoid double-counting

If a flock of birds moves into or out of your area during your count, keep note of the direction they came from or moved to, and the time it occurred, so that you can check with other counters whether these birds have already been recorded.

Disturbance

Care should be taken to avoid disturbing the birds when undertaking I-WeBS counts. This is especially true of high-tide roosts on tidal sites, since there may be few or no alternative safe roost locations. Disturbance may cause the birds to change location, thereby reducing the accuracy of the count.

Cold weather causes additional stress for birds, when simply finding enough food to meet the increased energy demands of staying warm can be literally a matter of life and death. At such times, it is worth being extra cautious to avoid disturbance during counts.

Access

Always ensure you have permission for access to a site if it is on private land. Often an initial approach and explanation of the work being undertaken is sufficient to gain access. An explanatory letter of introduction is available from the I-WeBS Office, if required. Unlike Scotland, which has the Scottish Outdoor Access Code, and England and Wales that have the Countryside Code, the Republic of Ireland does not, to date, have any similar legislation. However, in 2004, a number of organisations formed a committee and decided that the 'Leave No Trace' message was the most relevant to the Irish context. Leave No Trace Ireland has set

Raven Nature Reserve and Wexford Slobs, Co Wexford. – *Alyn Walsh*

out a number of principles which should be followed when engaged in outdoor activities, many of which are relevant to I-WeBS fieldwork activities (see www.leavenotraceireland.org).

Aerial surveys

Aerial surveys are a good method for counting extensive areas of limited access from the ground. There are five I-WeBS sites that are regularly covered by aerial survey, usually in November and January of each season. These sites are the Shannon and Fergus Estuary, Lough Derg, Shannon Callows, Brosna Callows and River Suck Callows. Large sites can be covered in a short space of time. However, the counts are less accurate, as observers must make rapid estimates, and some smaller, less conspicuous and more dispersed species, such as Purple Sandpiper, can be significantly undercounted.

Counting offshore birds

At coastal sites, please take the time to look for divers and sea ducks that may be offshore. Divers can be spread out over a large area so it is wise to scan the sea very carefully, time permitting.

Data submission

I-WeBS counts can be submitted in two ways: on an I-WeBS recording form posted to the I-WeBS Office, or by entering the data through the I-WeBS Online system (see below).

Completed I-WeBS recording forms should be returned to the I-WeBS Office at the end of each season, preferably soon after your last count. Please check you have filled in all details and counts correctly before submitting them. In some areas there is a Local Organiser to whom forms can be sent.

When most forms from a season have been returned to the I-WeBS Office, the forms are checked for errors and are prepared for computerisation. Data that are submitted through the I-WeBS Online system can be done so, ideally, directly after each count.

Everyone who submits an I-WeBS count, or participates in a group I-WeBS count, is allocated a unique 'counter code.' This comprises five numbers and up to five letters, e.g. 54321-BLOGG. Once allocated, counters need only write their counter code on the recording forms rather than filling in their full name and address. However, if you do not know your counter code or don't have it to hand, simply writing your name and address is also sufficient.

Forms that are returned late will take more time to be incorporated into the I-WeBS database and may therefore be excluded from some of the analyses. However, rest assured that all data we receive, no matter how late or early, do get absorbed into the I-WeBS database.

Data are captured by a professional data input company and are keyed twice by different people so that inconsistencies can be identified. Any particularly unusual

Would you need to mark the accuracy of your count of these Knot as 'LOW'?! They may be easier to count if they land and settle. – *John Fox*

Redshank. – *Ken Kinsella*

counts are checked by the I-WeBS Office and are confirmed with the counters, if necessary.

Upon receipt of the inputted data, the I-WeBS Office carries out several other validation checks. For example, we search for the presence of Grey Plover and Bar-tailed Godwit at inland sites. Both these species are coastal, but sometimes counts are filled in on the wrong line on the data form by mistake, thereby being recorded as Golden Plover and Black-tailed Godwits, which do occur at inland sites.

I-WeBS Online

The I-WeBS Online data submission system has been developed with the support of the National Parks and Wildlife Service of the Department of the Environment, and the Department of Agriculture, Fisheries and Food, and can be accessed through the BirdWatch Ireland homepage, www.birdwatchireland.ie, in 'Online Surveys'. All I-WeBS sites and subsites that have been previously counted are listed on the system.

Before entering counts for the first time, you will need to contact the I-WeBS Office so you can be issued with a username and password.

Other useful information

Safety reminders

A document entitled *General Health & Safety Information to Volunteer Fieldworkers* is available from the I-WeBS Office or through the BirdWatch Ireland website, and this provides detailed and useful guidelines for anyone undertaking fieldwork activities. Ensure that someone else knows of your whereabouts and when you will return. Always be aware of the tide, and check that you are not liable to be cut off by an incoming tide. Beware of any uneven ground and holes which can be hidden by vegetation in marsh or bog areas with soft sediments. Do not forget that standing still for long periods of time can make you feel much colder than if you were walking; when you are miserable and shivering you are more prone to losing your footing, especially on wet shores. Carry a mobile phone so you can call for assistance if you find yourself in difficulty.

Avian influenza

Avian influenza is an infection caused by avian (bird) influenza ('flu) viruses, which occur naturally among birds. The "H5N1 virus" is an influenza A virus subtype that is highly contagious among birds, and can be deadly to them. It originated in poultry, but H5N1 has also caused deaths among wild waterbirds in Asia and most recently in the Middle East and Europe. Waterbirds are considered a risk because they travel the farthest, regularly gather in large numbers, and mix with other waterbird species. However, most of the outbreaks outside Europe have not been consistent with the direction and timing of wild bird migration, but have been linked to movements of poultry and poultry products. Live animal markets appear to have played a major part in spreading the virus in southeast Asia.

Hundreds of wild birds found dead in Ireland have been tested for H5N1. So far, none has tested positive. If you do find a dead waterbird, please do not handle it. Contact the Department of Agriculture, Fisheries and Food on 1890 252 283.

Keeping in touch

We keep a record of your contact details on computer for the purpose of co-ordinating the survey. Please let us know if any of these details change, as we often need to contact counters with queries about the counts or for information regarding special surveys. Personal contact details will not be forwarded to any other party without prior authorisation from you.

Data and their uses

All counts submitted to I-WeBS will be used to satisfy the aims and objectives of the scheme. In addition to the key conservation aims of I-WeBS, the data collected may also be passed to third parties to use, for example, in research projects, management plans and environmental impact assessments.

On very rare occasions, you may be approached by external parties requesting data from your I-WeBS counts or for the names and addresses of individual counters. We would be grateful if you would refer all such data requests to the I-WeBS Office. Whilst this saves you time and effort, it also ensures that standard data request procedures are applied and

that standard outputs are provided, so that the same data, with guidance on how to interpret it, are available to all concerned.

Additionally, by this process, the I-WeBS partners are kept aware of potential site threats and can be alerted to any data mis-use by third parties. Importantly, it also respects the confidence in which personal details are given, since names and addresses of I-WeBS counters will not be passed on to third parties without the express permission of the counter(s) concerned.

Colour-marked birds

The colour-marking of birds is a valuable research technique as it allows markings to be read, and the movement of birds to be tracked, without having to recapture the bird. There are a number of different ways in which birds can be colour-marked, including the use of one or several rings and/or flags on a bird's legs, a neck-collar, a back- or wing-tag, and also by dyeing some of the feathers. The method you are most likely to see evidence of in Ireland's wintering waterbirds is colour rings and flags on the legs of birds, particularly waders and geese, and also neckbands on geese. The number of resightings, or controls, are much higher with colour-rings than with metal rings and it is easier to gather information about an individual colour-ringed bird as it can easily be resighted many times throughout its flyway. With conventional ringing, a numbered metal ring is used which can be impossible, or at least very difficult, to read unless the bird has been captured.

Reading and reporting a colour-ringed bird

If you see a colour-ringed bird you will need to gather as much information as possible and be sure of what you are looking at. What to record:

- species;
- exact location, grid reference if possible;
- date;
- precise description of colour, as more than one shade of a colour may be in use, e.g. dark green and lime green. If there is more than one ring, noting the combination of colours used is important;
- position of each ring(s), e.g. left or right leg, above 'knee' on tibia, or below the 'knee' on tarsus;
- inscriptions, if any, e.g. letter(s) and/or number(s);
- other marks, if any, e.g. horizontal or vertical lines.

Light-bellied Brent Goose with colour rings and a metal ring. – *Shay Connolly*


Lapwings. – *Michael Finn*

If you are not sure who to send your sighting to, you can send it to the British Trust for Ornithology through this ringing address: www.ring.ac.

Alternatively, you can simply forward the details to the I-WeBS Office, who will happily direct it to the correct scheme. Please include your own name and contact details so that we can provide it to the co-ordinator of the particular scheme. Colour-ring reading is a very rewarding activity as the feedback provided to you about the life-history of the bird can be really fascinating. The following website has some very useful information about colour-ringing and it lists many of the different schemes: www.cr-birding.be/.

Light-bellied Brent Goose ring resightings can be forwarded to the Irish Brent Goose Research Group through their website, www.irishbrentgoose.org.

References

Regular I-WeBS publications

Boland, H., Crowe, O. & Walsh, A. 2008. Irish Wetland Bird Survey: Results of waterbird monitoring in Ireland in 2006/07. *Irish Birds* 8: 341-350.

Boland, H. & Crowe, O. 2007. Irish Wetland Bird Survey: Results of waterbird monitoring in Ireland in 2005/06. *Irish Birds* 8: 167-178.

Boland, H. & Crowe, O. 2006. Results of waterbird monitoring in Ireland in 2003/04 and 2004/05. *Irish Birds* 8: 21-34.

Boland H. & Crowe, O. 2005. Results of waterbird monitoring in Ireland in 2002/03. *Irish Birds* 7: 529-538.

Crowe, O. & Boland, H. 2004. Irish Wetland Bird Survey: Results of waterbird monitoring in Ireland in 2001/02. *Irish Birds* 7: 313-326.

Colhoun, K. 2003. Waterbird monitoring in Ireland 2000/01: Results of the seventh year of the Irish Wetland Bird Survey (I-WeBS). *Irish Birds* 7: 43-52.

Colhoun, K. 2001b. Irish Wetland Bird Survey, 1999-00. Summary of the sixth I-WeBS season. *I-WeBS News* 6: 2-14.

Colhoun, K. 2001a. Irish Wetland Bird Survey, 1998-99. Results from the fifth winter of the Irish Wetland Bird Survey. BirdWatch Ireland, Dublin.

Colhoun, K. 2000. Irish Wetland Bird Survey, 1997-98. Results from the fourth winter of the Irish Wetland Bird Survey. BirdWatch Ireland, Dublin.

Colhoun, K. 1999. Irish Wetland Bird Survey, 1996-97. Results from the third winter of the Irish Wetland Bird Survey. BirdWatch Ireland, Dublin.

***I-WeBS News* is produced in August of every year to mark the start of each I-WeBS season.**

Other I-WeBS, and I-WeBS-related, publications

Colhoun, K. & Newton, S. 2000. Winter waterbird populations on non-estuarine coasts in the Republic of Ireland: results of the 1997-98 Non-Estuarine Coastal Waterfowl Survey (NEWS). *Irish Birds* 6: 527-542.

Colhoun K., McElwaine, J.G., Cranswick, P.A., Enlander, I. & Merne, O.J. 2000. Numbers and distribution of Whooper *Cygnus cygnus* and Bewick's *C. columbianus bewickii* Swans in Ireland: results of the International Swan Census, January 2000. *Irish Birds* 6: 485-494.

Crowe, O., Austin, G.E., Colhoun, K., Cranswick, P., Kershaw, M. & Musgrove, A.J. 2008. Estimates and trends of waterbird numbers wintering in Ireland, 1994/95-2003/04. *Bird Study* 55: 66-77.

Crowe, O, 2005. Ireland's Wetlands and their Waterbirds: Status and Distribution. BirdWatch Ireland, Newcastle, Co Wicklow.

Crowe, O., McElwaine, J.G., Worden, J., Watson, G.A., Walsh, A. & Boland, H. 2005. Whooper *Cygnus cygnus* and Bewick's *C. columbianus bewickii* Swans in Ireland: results of the international census, January 2005. *Irish Birds* 7: 483-488.

Sheppard, R. 1993. Ireland's Wetland Wealth. Irish Wildbird Conservancy, Dublin.

Wetlands International, 2006. Waterbird Population Estimates – Fourth Edition. Wetlands International, Wageningen, The Netherlands.

Worden, J., Cranswick, P.A., Crowe, O., McElwaine, G. & Rees, E.C. In press. Numbers and distribution of Bewick's Swan *Cygnus columbianus bewickii* wintering in Britain and Ireland: results of the International Censuses, January 1995, 2000 and 2005. *Wildfowl.*

Worden, J., Crowe, O., Einarsson, O., Gardarsson, A., McElwaine, G. & Rees, E.C. In press. Population size and breeding success of the Icelandic Whooper Swan *Cygnus cygnus:* results of the January 2005 International Census. *Bird Study.*

Sanderlings much prefer sandy substrates. They are full of movement and energy at the shoreline. – *John Carey*

Other useful references

Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S. 2000. *Bird Census Techniques.* 2nd Edition. Academic Press, London.

Couzens, D. 2005. *Identifying Birds by Behaviour.* Collins. London.

Gilbert, G., Gibbons, D.W. & Evans, J. 1998. *Bird Monitoring Methods.* RSPB, Sandy.

Harris, H., Tucker, L. & Vinicombe, K. 1989. *The Macmillan Field Guide to Bird Identification.* Macmillan, London.

Mullarney, K., Svensson, L., Zetterstrom, D., Grant, P.J. 1999. *Bird Guide.* HarperCollins. London.

Ordnance Survey Discovery Series 1:50,000 maps. Ordnance Survey of Ireland.

Google Earth: http://earth.google.com.

Wernham, C.V., Toms, M.P., Marchant, J.H., Clark, J.A., Siriwardena, G.M. & Baillie, S.R. (eds.). 2002. *The Migration Atlas: Movements of the Birds of Britain and Ireland.* T & AD Poyser, London.

Barnacle Geese at Ballyconnell, Co Sligo. – *Ulrike Schweir*

Species and codes

For I-WeBS, the term 'waterbird' includes all species in the families Anatidae, (swans, geese and ducks), Gaviidae (divers), Podicipedidae (grebes), Rallidae (Water Rail, Moorhen and Coot), Haematopodidae (oystercatchers), Charadriidae (plovers, lapwings), Scolopacidae (sandpipers, curlews, woodcocks, phalaropes) and Laridae (gulls and terns, excluding Kittiwake). It also includes Cormorant, Shag, Little Egret, Grey Heron and Kingfisher. Kittiwakes are excluded due to their dependence on strictly marine habitats, as are Auks (Razorbill, Guillemot, Black Guillemot, Puffin).

Traditionally, 'wildfowl' is defined as the Anatidae only (swans, geese and ducks). However, for I-WeBS (and WeBS), their 'allies,' which include divers, grebes, Water Rail, Moorhen and Coot as well as Cormorant, Grey Heron and Little Egret, are also included under wildfowl. Waders include Oystercatcher, plovers, Lapwing, sandpipers, Curlew, Woodcock and phalaropes.

Vagrants, introductions and free-flying escapes of all species in the families listed by Wetlands International are included also.

I-WeBS has adopted the two-letter coding system used by the British Trust for Ornithology for the Common Bird Census. A list of species and codes is produced below. The list includes all species that have been recorded during I-WeBS to date, and many of those listed here are species that will not be regularly seen during your I-WeBS counts.

Different populations of certain species are assigned separate codes. Counters may assist this process by flagging counts of known naturalised birds by writing '(naturalised)' after the appropriate species name on the recording form. Counters may also encounter hybrids and 'domestic' or feral birds. Codes for these are listed below as well.

There are occasions when it may be impossible to identify birds to species level. At such times, please use one of the 'unidentified' categories listed below – if you can't be accurate, be honest! Such information is still useful in assessing the total number of waterbirds using a site.

I-WeBS COMMON SPECIES

Code	*Common name*	*Latin name*
MS	Mute Swan	*Cygnus olor*
BS	Bewick's Swan	*Cygnus columbianus*
WS	Whooper Swan	*Cygnus cygnus*
NW	Greenland White-fronted Goose	*Anser albifrons flavirostris*
GJ	Greylag Goose	*Anser anser*
CG	Canada Goose	*Branta canadensis*
BY	Barnacle Goose	*Branta leucopsis*
PB	Brent Goose (light-bellied)	*Branta bernicla hrota*
SU	Shelduck	*Tadorna tadorna*
WN	Wigeon	*Anas penelope*
GA	Gadwall	*Anas strepera*
T.	Teal	*Anas crecca*
MA	Mallard	*Anas platyrhynchos*
PT	Pintail	*Anas acuta*
SV	Shoveler	*Anas clypeata*
PO	Pochard	*Aythya ferina*
TU	Tufted Duck	*Aythya fuligula*
SP	Scaup	*Aythya marila*
LN	Long-tailed Duck	*Clangula hyemalis*
E.	Eider	*Somateria mollissima*
CX	Common Scoter	*Melanitta nigra*
GN	Goldeneye	*Bucephala clangula*
SY	Smew	*Mergellus albellus*
RM	Red-breasted Merganser	*Mergus serrator*
RH	Red-throated Diver	*Gavia stellata*
BV	Black-throated Diver	*Gavia arctica*
ND	Great Northern Diver	*Gavia immer*
LG	Little Grebe	*Tachybaptus ruficollis*
GG	Great Crested Grebe	*Podiceps cristatus*
CA	Cormorant	*Phalacrocorax carbo*
SA	Shag	*Phalacrocorax aristotelis*
ET	Little Egret	*Egretta garzetta*
H.	Grey Heron	*Ardea cinerea*
WA	Water Rail	*Rallus aquaticus*
MH	Moorhen	*Gallinula chloropus*
CO	Coot	*Fulica atra*
OC	Oystercatcher	*Haematopus ostralegus*
RP	Ringed Plover	*Charadrius hiaticula*

Continued next page....

Code	Common name	Latin name
GP	Golden Plover	*Pluvialis apricaria*
GV	Grey Plover	*Pluvialis squatarola*
L.	Lapwing	*Vanellus vanellus*
KN	Knot	*Calidris canutus*
SS	Sanderling	*Calidris alba*
PS	Purple Sandpiper	*Calidris maritima*
DN	Dunlin	*Calidris alpina*
RU	Ruff	*Philomachus pugnax*
JS	Jack Snipe	*Lymnocryptes minimus*
SN	Snipe	*Gallinago gallinago*
WK	Woodcock	*Scolopax rusticola*
BW	Black-tailed Godwit	*Limosa limosa*
BA	Bar-tailed Godwit	*Limosa lapponica*
WM	Whimbrel	*Numenius phaeopus*
CU	Curlew	*Numenius arquata*
GK	Greenshank	*Tringa nebularia*
RK	Redshank	*Tringa totanus*
TT	Turnstone	*Arenaria interpres*
BH	Black-headed Gull	*Chroicocephalus ridibundus*
MU	Mediterranean Gull	*Larus melanocephalus*
CM	Common Gull	*Larus canus*
LB	Lesser Black-backed Gull	*Larus fuscus*
HG	Herring Gull	*Larus argentatus*
GB	Great Black-backed Gull	*Larus marinus*
TE	Sandwich Tern	*Sterna sandvicensis*
RS	Roseate Tern	*Sterna dougallii*
CN	Common Tern	*Sterna hirundo*
AE	Arctic Tern	*Sterna paradisaea*
AF	Little Tern	*Sterna albifrons*
KF	Kingfisher	*Alcedo atthis*

UNIDENTIFIED AND HYBRID SPECIES

Code	Common name	Latin name
UL	Unident. diver	*Gavia sp.*
UV	Unident. grebe	*Podiceps sp.*
XU	Unident. Cormorant/Shag	*Phalacrocorax sp.*
UF	Unident. yellow-billed swan	*Cygnus sp.*
UO	Unident. *Anser sp.*	*Anser sp.*
ZF	Feral/hybrid Mallard type	–
ZD	Tufted/Pochard hybrid	*Aythya sp.*
UX	Unident. scoter sp.	*Melanitta sp.*
UM	Unident. duck	*Anas sp.*
U.	Unident. wader sp.	–
ZU	Hybrid Glaucous/Herring Gull	–
UU	Unident. gull	*Larus sp.*
UT	Unident. tern	*Sterna sp.*
ZL	Feral/hybrid goose	*Anser sp.*

LESS FREQUENTLY RECORDED SPECIES

Code	Common name	Latin name
AS	Black Swan	*Cygnus atratus*
BE	Bean Goose	*Anser fabalis*
PG	Pink-footed Goose	*Anser brachyrhynchus*
EW	European White-fronted Goose	*Anser a. albifrons*
SJ	Snow Goose	*Anser caerulescens*
DB	Brent Goose (dark-bellied)	*Branta bernicla bernicla*
BB	Black Brant	*Branta bernicla nigricans*
AW	American Wigeon	*Anas americana*
TA	Green-winged Teal	*Anas carolinensis*
NG	Ring-necked Duck	*Aythya collaris*
FS	Surf Scoter	*Melanitta perspicillata*
VS	Velvet Scoter	*Melanitta fusca*
GD	Goosander	*Mergus merganser*
RY	Ruddy Duck	*Oxyura jamaicensis*
RX	Red-necked Grebe	*Podiceps grisegena*
SZ	Slavonian Grebe	*Podiceps auritus*
BN	Black-necked Grebe	*Podiceps nigricollis*
SA	Shag	*Phalacrocorax aristotelis*
BI	Bittern	*Botaurus stellaris*
EC	Cattle Egret	*Bubulcus ibis*
HW	Great White Egret	*Ardea alba*
NB	Spoonbill	*Platalea leucorodia*
AV	Avocet	*Recurvirostra avosetta*
LP	Little Ringed Plover	*Charadrius dubius*
ID	American Golden Plover	*Pluvialis dominica*
LX	Little Stint	*Calidris minuta*
PP	Pectoral Sandpiper	*Calidris melanotos*
CV	Curlew Sandpiper	*Calidris ferruginea*
BQ	Buff-breasted Sandpiper	*Tryngites subruficollis*
LD	Long-billed Dowitcher	*Limnodromus scolopaceus*
CS	Common Sandpiper	*Actitis hypoleucos*
GE	Green Sandpiper	*Tringa ochropus*
DR	Spotted Redshank	*Tringa erythropus*
OD	Wood Sandpiper	*Tringa glareola*
PL	Grey Phalarope	*Phalaropus fulicarius*
NX	Great Skua	*Catharacta skua*
LU	Little Gull	*Hydrocoloeus minutus*
AB	Sabine's Gull	*Larus sabini*
IN	Ring-billed Gull	*Larus delawarensis*
YG	Yellow-legged Gull	*Larus arg. Cachinnans michahellis*
IG	Iceland Gull	*Larus glaucoides*
GZ	Glaucous Gull	*Larus hyperboreus*
FO	Forster's Tern	*Sterna forsteri*
BJ	Black Tern	*Chlidonias niger*
WJ	White-winged Black Tern	*Chlidonias leucopterus*

Curlews. – *Ronnie Martin*

Tips for identifying waterbirds

The ability to correctly identify waterbirds is the first and most basic requirement for taking part in the Irish Wetland Bird Survey. This manual, however, is not an identification guide. Getting field experience is the best way to learn, along with consultation of a good guide. Bird identification takes time to perfect and even the most skilled birdwatcher learns new things all the time. If you are new to counting waterbirds, or are unsure of your identification skills, carrying out counts with a more experienced observer is a good way to improve your skills. Begin by just counting the species you are most comfortable with, leaving the trickier ones to your counting partner. You should firstly concentrate on becoming confident of your ability to identify all the regular species in your area.

Process of elimination

Identifying birds is largely about a process of elimination. It very often helps to begin by figuring out what it isn't. This process generally boils down to a few key things:

- Size
- Shape
- Behaviour
- Location
- Plumage

Size and shape: Size can often be very difficult to estimate in the field unless you can directly compare one bird with another. Ask yourself what the overall shape and 'structure' of the bird is, and decide the approximate size. If it is a small duck then eliminate larger, bulkier ducks like Mallard from your list of possibilities.

Behaviour: The general behaviour of a waterbird, including its movement and how it forages, gives vital clues as to its identity. If you observe a 'head-bobbing' action in a distant wader during your I-WeBS count, there is a strong likelihood that it is a Redshank.

Location: Knowing the preferred winter habitat of a bird, and where it likes to forage, can greatly help your identification puzzle. A mystery duck too distant to see in great detail, except that it is feeding on land, will tell you that it is not likely to be a diving species but might be Wigeon or Mallard. It would be unusual to find Sanderling on a muddy substrate, so you can most likely remove Sanderling from consideration when counting small waders on a muddy estuary.

Plumage: For identifying wintering waterbirds, plumage and colour are features that in many cases are not as important as they might be in the breeding season. However, they could still help to clinch an identification challenge.

There are other things, too, like bill length, leg length and leg colour, depending on what family of birds you want to identify, but start off with the above and begin to narrow your options.

Know what to expect

A helpful tip when learning to identify and count waterbirds at a site 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.

Redshanks (left) often bob their heads. Greenshanks (right) sometimes do, but not as frequently. – *John Fox*

Practice makes perfect

When learning to identify birds, you should allow plenty of time to study each species and its plumage patterns, field characteristics, behaviour and preferred habitats. Careful note-taking in the field can be an excellent way to reinforce in your mind many characteristics, and will strengthen your observation skills. For example, when you are trying to identify a bird, don't reach straight for your identification guide, but instead ask yourself what is the first thing you notice about the bird, and what are the most distinctive characteristics, and note these

Greenland White-fronted Goose (top) and Greylag Goose. – *Illustration by Killian Mullarney, courtesy of the Collins' Bird Guide.*

down. These are often the very things that will be described in your field guide, and having first noted them yourself will help your learning curve. However, during an I-WeBS count, time will not allow for all of this, so get out there and practice!

There is no value in recording something that has been incorrectly identified. I-WeBS data need to be reliable. If you are unsure of what you are looking at, just ask; it is the best way to learn. If you can't be accurate, be honest!

Once again, this manual is not designed to be an identification guide, but here are a few tips.

Swans and geese

Swans and geese are easy! There are not very many species you need to know The main species of geese you need to know are:

- Light-bellied Brent Goose
- Barnacle Goose
- Greenland White-fronted Goose
- Greylag Goose

Learn about the distribution and traditional wintering areas of these species in Ireland, which will help enormously in knowing what to expect at various sites.

Light-bellied Brent Geese and Barnacle Geese, the 'black' geese, are coastal in their distribution. Be aware that Barnacle Geese are more or less confined to the west coast, particularly on islands.

The 'grey' geese are the Greenland White-fronted Goose and the Greylag, both of which are highly faithful to their wintering areas, and will be seen grazing on fields, usually close to water. They roost on water for safety. Look out for the black barring on the belly of adult Greenland White-fronts, and the white forehead. Greenland White-fronts are smaller than Greylags.

The three species of swan recorded for I-WeBS are:

- Mute Swan
- Whooper Swan
- Bewick's Swan

Structure and silhouette

At a distance, structure and silhouette are useful guides to identification, especially of female or immature ducks.

These are easily told from one another by structure, bill colour and shape, and habitat. While Bewick's Swans do occur in Ireland, they are extremely localised at a few sites in Wexford, and rare elsewhere. Any swan flocks you see feeding on grassland will most likely be Whoopers.

Ducks

Ducks, by and large, will be easier to identify in winter than waders. They are bigger and in many cases more colourful, especially the males of some species. However, if you are only getting a distant view or a view in poor light or bad weather conditions, the most basic but very important thing to establish is whether or not the duck is a diving species.

Please also familiarise yourself with the shape or 'silhouette' of ducks. The overall structure, and particularly the head-shape, of a duck is very often the feature that will give away its identity. This will help greatly if you cannot get a closer view.

Tufted Duck has a steep forehead. – *Ken Kinsella*

Pochard has a sloping forehead. – *Michael Finn*

Goldeneye have an almost triangular head. – *John Carey*

Pintail have a particularly long neck and long tail in silhouette. – *John Fox*

Diving or dabbling? If you do see the duck diving you can eliminate all dabbling duck species from consideration, i.e. Mallard, Gadwall, Pintail, Shoveler, Wigeon and Teal. Then you need to decipher what species of diving duck it is from the following: Pochard, Scaup, Tufted Duck, Eider, Common Scoter, Long-tailed Duck, Goldeneye or Red-breasted Merganser. Bear in mind that Scaup, Eider, Common Scoter and Long-tailed Duck will almost exclusively be found on the sea.

Silhouettes: Tufted Duck and Pochard, two diving species, frequently occur together on lakes. They do look quite different, but when they are far away and in a big mixed flock they can be tricky to separate. Tufted Duck have a steep forehead and a flat crown, and have a crest at the back of the head, whereas Pochard have a sloping forehead that comes to a peak at the top of the head. This difference may help you when you are counting a mixed flock of these two species. Goldeneye have a large, triangular head which is quite distinctive in silhouette. Pintail have a very long appearance, with a long neck and long tail. Being familiar with structure and silhouette of ducks will also help when identifying the females of dabbling duck species.

Ducks in take-off

If you do not see a duck diving but observe it having to run across the surface of the water in order to take off, then this is likely to be a diving species. Diving ducks have their legs far back on their body to help them swim under water. As a result, they need a runway to take off. Dabbling ducks can usually just lift straight out of the water.

Wing patterns: Tufted ducks have obvious white wingbars, whereas Goldeneye and Wigeon have large wing patches.

Tufted Duck. – *Colum Clarke*

Goldeneye. – *John Fox*

Mallard have an obvious dark blue speculum on their wing, while Teal have a green speculum, and they often form fast-flying flocks.

Mallard: bright, glossy speculum obvious in flight on both male and female. – *Michael Finn*

Teal (female, left, male, right). – *Illustration by Killarney Mullarney, courtesy of the Collins' Bird Guide.*

Divers

Divers are usually well spread out over the sea. Take the time to get to know their characteristics so you can distingush them from other species like Great Crested Grebe or Cormorant or Shag. The overall impression, including bill shape, and the diver's size and structure will help you.

Red-throated Divers are the most common and widespread diver in Irish waters, and are also the smallest. They usually hold their head and bill pointing upwards which is a key characteristic and quite obvious in the field. Their bill looks more delicate, and the neck seems slimmer and straighter than those of the Great Northern Diver.

You are more likely to see a Great Northern Diver on the north or west coast of Ireland than elsewhere. They are a very bulky bird with a thick, dagger-shaped bill, held horizontally, and a steep forehead.

Waders

Waders can cause confusion in winter as they are, in many cases, of similar colour and size. Ask yourself a few initial questions when presented with a wader you are not certain of. As you answer the questions you can be eliminating certain species from consideration:

- what size and shape is it?
- what shape and size is its bill?
- where is it?
- what is it doing?

What size is it? Deciding whether it is a small, Dunlin-sized wader, or larger, like a Godwit or a Curlew, will set you on your way. Try to get to know Dunlin very well as they act as a good yardstick for comparison with other waders. The structure of the bird can be very telling also. Does it look a little dumpy and plump like a Knot, or slender and elegant like a Greenshank?

What shape and size is its bill? Once you have decided its size class, you can further your clarification. Is the bill long, like a Godwit's bill, or is it short, like that of a Grey Plover? If it is a long bill, then ask yourself if it is clearly upturned, like a Greenshank's, or straighter, like that of a Black-tailed Godwit. If it is a short bill you

Red-throated Diver: up-pointing head and bill. – *Eddie Dunne*

Great Northern Diver: bulky, with straight, thick bill. – *John Murphy*

Knot: unusual to come across a single bird. They usually occur in dense flocks. – *Jerry Cassidy*

Purple Sandpipers are found on rocky shores, usually with seaweed, and often with Turnstones. – *Ken Kinsella*

can immediately exclude both of these latter species from consideration!

Where is it? If you see that the bird has a shortish bill, you are still left with several possibilities. However, if it is dashing along the sandy shoreline, chasing the waves, you can be nearly sure that it is a Sanderling, even if you are only getting a distant view. Whereas if it is feeding amongst rocks and seaweed it is likely to be a Turnstone. Don't forget to check if there are any Purple Sandpipers with the Turnstones.

If you are having any trouble identifying a wader at an inland freshwater site, you can start by excluding the coastal species from your list of possibilities. For example, you are not likely to find Grey Plover, Sanderling, Bar-tailed Godwit, Ringed Plover, Knot, or Turnstone at an inland lake.

What is it doing? Being familiar with the behaviour of different waders is important. Knowing that you are unlikely to come across a large, dense flock of Grey Plovers will help you when you do come across a big flock of grey waders of a similar size and colour to Grey Plover.

Grey Plovers tend to be quite widely spaced out, rather than in tight groups comprising many individuals like Golden Plovers and Knot. And Grey Plover feed in a start-stop motion, as do Ringed Plover, whereas Knot have a continuous feeding action, like Dunlin.

Black-tailed Godwits often feed in deeper water than Bar-tailed Godwits, which may be something that will help you if you are not getting a good view of other characteristics. Black-tailed Godwits are more elegant and upright, with longer legs. The length of their tibiae, i.e. the distance from their 'knee' to their belly, is

Separating the godwits

The two species of godwit (Black-tailed and Bar-tailed Godwits) that winter in Ireland can cause some confusion if you are not sufficiently familiar with their characteristics. They are easy to identify once you know what you are looking for!

Black-tailed Godwit

Bar-tailed Godwit

Compare these Black-tailed Godwits (top) and Bar-tailed Godwits (bottom). Note the Black-tailed Godwit's longer legs and striking wing pattern. In winter, it also has a 'cleaner,' more uniform grey-brown back than the Bar-tailed's. – *Illustration by Killarney Mullarney, courtesy of the Collins' Bird Guide*

Dunlin hardly ever look up. They almost always have their head down feeding! – *Clive Timmons*

particularly long compared with Bar-tailed, and is something to watch out for. And their bill is usually straighter. Bar-tailed Godwits look top-heavy in comparison. They both have very different winter plumages to one another. Bar-tailed Godwits have a boldly streaked back, whereas Black-tailed are of a uniform grey colour. Black-tailed Godwits are unmistakeable in flight. Their toes stick out beyond their tails and they have very distinctive black and white wingbars – Bar-tailed Godwits have plain wings.

Roosting waders Waders at roost may not display some of the key characteristics necessary for identification, and will often roost with their bills unhelpfully tucked away out of view. Again, ask yourself a few questions. How long are their legs? Are there other waders beside them to help you estimate size? Noting how close the birds are to each other in a flock can give a hint to what species they are. Knots pack very tightly together in dense flocks. Some of the larger waders, like Curlew, leave more space between each other. Dunlin, Sanderling and Ringed Plover leave roosts early and arrive late, maximising their feeding time. You will often notice Dunlin running around the feet of other, larger, roosting wader flocks.

Waders in flight You should become familiar with identification of birds in flight. Sometimes this is the best view you might get before they fly away and are hidden behind something. Additionally, a wader in flight can reveal key features that may not be visible when roosting on the ground.

Grey Plover have distinctive black axillaries, or armpits. Golden Plover fly in tightly packed fast-flying flocks, one moment flashing white underwings and the next, in unison, revealing the golden brown of the upper wings. They are very wary and tend to circle the area repeatedly before landing. In fact, sometimes Golden Plover will fly in large flocks extremely high up in the sky for long periods of time, so it is often worth carefully examining the sky! Knot also fly in tight flocks and perform incredible swirling, acrobatic displays in the air. Curlews are more strung-out in flight. Oystercatchers often fly in lines.

Gulls

Gulls can be notoriously confusing to identify at times due to their different age plumages. Take the time to study this aspect of gull identification in the field. Size and structure of the bill are key clues to identification of gulls. Keep in mind that there are just five regular species of gull that you are more likely to encounter during I-WeBS counts in Ireland. Anything else is a bonus!

- Black-headed Gull
- Common Gull
- Herring Gull
- Lesser Black-backed Gull
- Great Black-backed Gull

Get to know these five species well and you will find it easier to figure out other gulls if you happen across them. Great Black-backed Gulls really are quite obvious, as they are huge! And their bills are also enormous. Even the younger birds can be told by sheer size and bulk.

Black-headed Gulls are amongst the smallest of the gulls occurring in Ireland, and in winter will have lost their black head except for a dark smudge behind their eye. Look out for an obvious white leading edge on the wings in flight.

Then you are left with Herring Gulls and Common Gulls, both with a grey back. Common Gulls are like miniature Herring Gulls except they are much less fierce-looking.

You may also encounter Lesser Black-backed Gulls but a lot less frequently in winter, and in smaller numbers (unless perhaps you are in parts of the southern half of Ireland). Like Great Black-backed Gulls, Lesser Black-backed appear to have a black back and wings but are really closer to a slate-grey colour. They are more elegant, and less dangerous-looking. Leg colour is a feature to check, too. If you are having trouble deciding whether you are looking at a Lesser or Great Black-back, and you notice it has yellow legs, then you know it is the former.

Lesser Black-backed Gull: note the colour of the legs. – *John Kenny*

Field practice

This i.d. section provides just brief hints and tips. There is no substitute for spending time in the field!

Greenland White-fronted Geese. – *Alyn Walsh*

Some terms explained

Listed below are descriptions of some terms related to waterbird monitoring that are commonly used in I-WeBS publications. Many of the terms are widely used (e.g. Natura 2000) whilst others are specific to I-WeBS (e.g. count unit).

1% criterion – First used in the Ramsar Convention, the 1% criterion is used widely in assessment of site importance. It is one of the criteria that must be met for a site to qualify as internationally important. This criterion identifies a site as being of importance if at least 1% of the waterbirds of a particular flyway population regularly make use of the site during their annual cycle. A site qualifies as being nationally important if it regularly supports more than 1% of a national population of a species. If a site regularly holds 1% of the national population of an Annex 1 species, then it is deemed internationally important.

1% threshold – This logically derives from the 1% criterion and relates to the number of birds that are used as the nominal 1% of the population for the purposes of site selection. For example, a flyway population of 390,000 Redshank has a derived 1% threshold of 3,900. So if a site regularly holds 3,900 Redshank, it is deemed internationally important.

African Eurasian Migratory Waterbird Agreement (AEWA) – An independent international treaty developed under the Convention on the Conservation of Migratory Species of Wild Animals ('Bonn' Convention). Ireland is a party to this agreement and parties are called upon to engage in a wide range of conservation actions addressing key issues such as species and habitat conservation, management of human activities, research and monitoring, education and information, and implementation.
www.wcmc.org.uk/aewa

All-Ireland – Comprises the whole island of Ireland (Northern Ireland and the Republic of Ireland).

Annex I species – These are threatened or vulnerable species that are listed in Annex I of the EU Birds Directive for which, together with migratory species, EU Member States are required to undertake special conservation measures, including the designation of Special Protection Areas.

Birds Directive – The informal name of the EU 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).
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 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 Wetland Bird Survey (WeBS) in the UK is jointly run by the British Trust for Ornithology, the Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
www.bto.org

Complex site – A site that consists of two or more count units, ideally all of which are counted at or near the same time.

Core counts – The monthly I-WeBS counts that are carried out on, or as near as possible to, pre-selected priority dates, and are used to monitor wetlands throughout Ireland. They form the basis for determining population estimates and trends and to identify important sites.

Count unit – The area/boundary within which a count is made. The generic term for subsites.

Flyway – The migration route and areas used by distinct bird populations for breeding, wintering and stopover during migration.

Heritage Council – The Heritage Council is a statutorily independent body in Ireland funded by the Department of Environment, Heritage 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.

IBA (Important Bird Area) – IBAs are key sites for conservation. They do one (or more) of three things: hold significant numbers of one or more globally threatened species; are one of a set of sites that together hold a suite of restricted-range species or biome-restricted species; have exceptionally large numbers of migratory or congregatory species.

Incomplete count – When presenting a count of an individual species and a large proportion of the number of birds was suspected to have been missed, e.g. due to partial coverage of the site or poor counting conditions, the count is put on record as an incomplete count.

Internationally important site – A site that either regularly holds 1% or more of an entire flyway population of one or more species or subspecies of waterbird; a site that regularly holds more than 20,000 waterbirds; or a site that regularly holds 1% or more of the national population of an Annex I species under the EU Birds Directive.

International Waterbird Census (IWC) – Co-ordinated by Wetlands International, the IWC is an international, long-term, site-based monitoring scheme for non-breeding waterbirds. The IWC uses mid-winter data from national waterbird monitoring schemes, including January I-WeBS counts, to provide a basis for estimating sizes and trends of waterbird populations. Waterbird Population Estimates are revised and published on a periodic basis, usually every three years.

I-WeBS News – The annual newsletter of the Irish Wetland Bird Survey, distributed to all who participate in the survey.

I-WeBS Office – The office at BirdWatch Ireland where the day-to-day organisation and administration of I-WeBS takes place. Postal address: BirdWatch Ireland, P.O. Box 12, Greystones, Co Wicklow. E-mail address: iwebs@birdwatchireland.ie.

I-WeBS Partner – National Parks and Wildlife Service of the Department of the Environment, Heritage and Local Government.

Local Organiser – Person responsible for co-ordinating counters and counts at a local level, normally a county or a large estuary or inland lake.

National Parks and Wildlife Service (NPWS) – The NPWS is part of the Department of the Environment, Heritage and Local Government and is responsible for the conservation of a range of habitats and species in Ireland. The NPWS funds the Irish Wetland Bird Survey.
www.npws.ie

Nationally important site – A site that regularly holds 1% or more of the national population of one or more waterbird species. National population estimates are all-Ireland, i.e. they include Northern Ireland.

Natura 2000 – An EU-wide network of nature protection areas comprising Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and Special Protection Areas (SPAs) which they designate under the 1979 Birds Directive.
http://ec.europa.eu/environment/nature/natura2000/index_en.htm

NEWS – The coastal Non-Estuarine Waterbird Survey (NEWS) is a survey of sandy, shingle or rocky shore substrates that do not get regularly covered during normal I-WeBS counts. Data from this are used to generate more accurate all-Ireland population estimates for many species.

Passage – The movement of birds on migration.

Population – Biogeographic populations are more or less discrete groups of birds which live in a particular area or group of areas, and which breed freely within the group and rarely breed or exchange individuals with other groups. Standard 1% thresholds derived from biogeographic population estimates are used for site assessment purposes.

Population estimates – National population estimates are all-Ireland assessments of individual species' populations derived from I-WeBS and WeBS core counts, and which are revised every three to five years. Five-year periods are used to dampen annual fluctuations. International population estimates are derived by Wetlands International through the International Waterbird Census, and are revised approximately every three years.

Priority date(s) – These are published to aid co-ordination of monthly I-WeBS counts. Counters are asked to count on, or as near as possible to, priority dates to minimise the risk of missing birds or double-counting. The recommended dates for east and west coasts are one week apart due to differences in the tidal regime.

Ramsar Convention – The informal name of the Convention on Wetlands of International Importance, a voluntary inter-governmental treaty adopted in the Iranian city of Ramsar in 1971. As a contracting party, the Irish Government is required to designate suitable wetlands in the Republic of Ireland for inclusion in the Ramsar List of Wetlands of International Importance. These are selected on account of their international significance in terms of ecology, botany, zoology, limnology or hydrology.
www.ramsar.org

Ramsar Site – An area designated under the Ramsar Convention.

Recording year – For I-WeBS, this runs from July to June. The official I-WeBS recording months are September to March, though counts from other months are very welcome and are useful.

Site – A geographical area that is relatively discrete in terms of habitat type(s) and waterbird usage. The highest level at which I-WeBS count data are stored.

Special Protection Area (SPA) – An area classified under Article 4 of the Birds Directive. Within SPAs, Member States are obliged to take necessary steps to avoid pollution or deterioration of habitats, or any disturbances affecting the birds, where this would be significant having regard to the objectives of the Directive.

Special surveys – A programme of additional special surveys is carried out by I-WeBS partners to provide further information on species or habitats not adequately monitored by Core Counts. These have included the International Swan Census, the Golden Plover Survey, the Greenland White-fronted Goose Survey, the Greylag Goose Survey, the Barnacle Goose Survey, the Light-bellied Brent Goose Census and the coastal Non-Estuarine Waterbird Survey.

Species code – This is a two-letter coding system that has been adopted from the BTO's Common Bird Census and is used by both WeBS and I-WeBS.

Subsite – The smallest units into which a site is divided to facilitate co-ordination.

Waterbirds – I-WeBS follows the definition adopted by Wetlands International. This includes a large number of families, those occurring regularly in Ireland being divers, grebes, cormorants, herons, geese, ducks, rails, waders, gulls and terns.

WeBS – An independent but complementary scheme operating in the UK and Northern Ireland to monitor non-breeding waterbirds, organised by the British Trust for Ornithology.

Wetlands International – A leading global, non-profit organisation whose mission is to sustain and restore wetlands, their resources and biodiversity for future generations through research, information exchange and conservation activities, worldwide. Details of all counts from the International Waterbird Census, and information about the sites where they are carried out, are held at Wetlands International.
www.wetlands.org

The Wildfowl & Wetlands Trust (WWT) – Founded by Sir Peter Scott in 1946, WWT is the largest international wetland conservation charity in the UK. WWT works to conserve wetlands and their biodiversity, focusing particularly on waterbirds and their habitats, and seeks to raise awareness of the value of wetlands, the threats they face and the actions needed to save them. WWT has nine visitor centres across the UK.
www.wwt.org.uk

I-WeBS is a joint project of BirdWatch Ireland and the National Parks and Wildlife Service of the Department of the Environment, Heritage and Local Government.