Field monitoring instructions for Lesser White-fronted Goose

These instructions are made for Lesser White-fronted Goose (Anser erythropus, LWfG) surveys in staging and wintering areas. In these areas the LWfG are often mixed with large numbers of other goose species, usually with the (Greater) Whitefronted Goose (A. albifrons).

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Recent observations of LWfG:
www.piskulka.net

Further information:
wwf.fi/lwfg

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The most important data to be collected during LWfG field monitoring is:

- Count (or estimate) of the number of LWfG (and other geese) present
- Age structure
- Colour rings or neck bands
- Locations of the feeding and roosting sites as well as habitat types and conservation status of these sites – relevant mainly for new sites for which this data is not yet available
- Hunting pressure

Results of the field work should be reported using these titles (2-6).

1. General instructions

The identification of LWfG (i.e. separating it reliably from the White-fronted Goose) is very difficult, and requires good observation conditions and very good field identification skills. Keep this in mind and report as LWfG only individuals that are definitely identified by a skillful observer. Uncertainly identified white-fronted geese are always reported separately as Anser albifrons/erythropus.

Always use a note book, and note everything down in the same note book in order not to loose data. Use abbreviations for making faster notes:

English name	Scientific name	Abbreviation
Lesser White-fronted Goose	Anser erythropus	Aery
White-fronted Goose	A. albifrons	Aalb
unidentified white-fronted goose	A albifrons/erythropus	Aa/e
Greylag Goose	A. anser	Aans
unidentified Anser goose	Anser sp.	Ans
Red-breasted Goose	Branta ruficollis	Bruf
unidentified goose	Anser sp. / Branta sp.	AB

Age	Abbreviation
adult bird	ad
juvenile bird	juv
2nd calendar year bird	2cy

Directions	Abbreviation
north, east, south, west	N, E, S, W
north-east, south-east, south-west, etc.	NE, SE, SW, etc.
north-north-east, east-north-east, etc.	NNE, ENE, etc.

- When working in areas not already identified as permanent staging / wintering sites of LWfG, always locate your observati on point — if possible, using a GPS – and mark it on a map. When using GPS, don't rely on the GPS's memo ry, but always also write down the co-ordinates in your note book.
- For each observation of LWfG, note down exact date and time. For flying flocks, always note down the exact time (in the accuracy of minute) and the direction, using a compass.
- For every field day, note down all the sites checked / the route of the survey (also including sites checked to be empty of geese). When marking observa tions on working copies of maps, note down the same symbol (number) of the observation on the map ad in your note book.

2. Number of LWfG and other accompanying geese

2.1 Direct counts

This method is preferred, and should be used always when possible.

When observing pure flocks of LWfG or LWfG in relatively small mixed flocks of geese, accurately count the number of individuals. Even when mixed in a flock of White-fronted or other geese, the LWfG tend to flock in an own group.

Try to identify all individuals by species and the LWfG by age at the same time. Scan the whole flock systematically from one end to the other individual by individual. Carefully wait until each individual turns its head up, to be positively identified (and aged). However, keep in mind that:

- LWfG are much lower than White-fronted Geese and surprisingly easily hidden in the vegetation / behind other geese even when the White-fronted Geese appear to be easily visible
- also juveniles need to be individually and definitely identified by species

Therefore, counting a flock of geese and identifying all individuals requires time and patience. Finding a LWfG in a flock of hundreds of White-fronted Geese may require several repeated careful "scans" of the whole flock by telescope even in good observation conditions, and this may easily take more than half an hour.

In areas where LWfG are already known to occur only as vagrants or in single individuals (e.g. sites with large concentrations of White-fronted Geese on the Black Sea coast in Bulgaria and Romania, and on the North Sea coast), it is more efficient to concentrate in scanning the flocks in order to find the LWfG and not to spend time in sampling as described below in 2.2.

2.2 Estimation of total numbers for each goose species in large flocks

However, sometimes - especially along the migration route of the main populations of LWfG, when a very large number (thousands or tens of thousands) of geese and possibly hundreds or even thousands of LWfG are present - counting and identifying each individual is simply not possible. In this kind of conditions the method to estimate the number of each species is:

1. to count the total number of geese present
2. to estimate species composition by random sampling

Always clarify in the report, which method has been used!

2.2.1 Counting the total number of geese

The best way to count the total number of geese is to count them using spotting scopes and binoculars when taking off from a roost. Departure from the roost normally starts much before sunrise, so you already need to be ready and in position for the count in the dark before the dawn. Counting a large roost requires at least three people, one of them keeping book. When counting the total number of geese during the morning flight it is normally useless even to try to estimate the species composition due to the poor light conditions and the large number of geese.

The general method of counting large flocks of birds is to first count 10 individuals accurately, then use this "measuring flock" to estimate a bigger "measuring flock" of 100 individuals (= 10 x 10), and then estimate the size of the whole flock in groups of hundreds. Take into account, that some parts of the flocks are more dense. Reliable estimation of flocks of thousands of geese requires experience, and repeated "calibration of the measuring flock".

2.2.2 Estimating the species composition by random sampling

Flocks on the ground: When observing large goose flocks on the ground (and there's not enough time to identify all individuals), take random samples of a fixed size (e.g. 30 individuals) of the flock evenly covering the whole flock. Note, that LWfG can be concentrated in some (often marginal) parts of the flock. When counting a sample, patiently identify all the (e.g. 30) individuals next to each other, don't just pick the most easily visible birds! Sample at least ca. 10% of each flock.

Flying flocks: Especially along the migration route of the main populations of LWfG (e.g. in Kazakhstan in autumn) the easiest way to estimate the proportion of each species (and at the same time the age structure) is to take random samples of flying flocks when the geese are returning from feeding sites to the roosting site to drink (and often again departing to the feeding areas) during mid-day and the afternoon. Again, the samples have to be randomly selected, of a fixed size (e.g. 30 individuals) and evenly covering the whole goose population present.

Practical advice for sampling:

- Try to find find the most frequently used flyway from the feeding grounds to the roost (or from the roost to the feeding grounds), and choose an observati on point next to the flyway.
- Always use a telescope when taking samples.
- Take samples of 30 individuals next to each other (this has proven to be the most useful sample size, more than 30 individuals is too much to hold in mind)
- Randomly choose the flock and the part of the flock that you are sampling (e.g. when finished with one sample, decide in advance to take the next sample after 2 minutes on the left side, the first flock in sight at that moment, 30 birds at the end of that flock). For large flocks, take more than one sample per flock.
- Include only individuals that you have seen properly in the samples; if you can't identify all of the individuals next to each other for sure in the sample, reject the whole sample.
- Remember that separating juvenile Lesser White-fronts / White-fronts is tricky!
- Record samples in 30 min (or shorter) periods, and keep the original samples separate to calculate statistics from the data.
- It is important to take samples evenly during the whole return (or departure) flight to get non-biased data.
- Save all the original sample data to count the statistical precision of the estimate (standard deviation and variance) later.

Processing the sample data: The number of LWfG can be calculated from the total number of geese in the following way:

Aerytot= (Aerysam / ABsam) * ABtot
where:

Aerytot = the estimated total number of LWfG	Aerysam = number of LWfG in the samples
ABsam= number of all geese (incl. LWfG) in the samples	ABtot= number of all geese in the area (see 2.2.1)

3. Estimating age structure

When it is possible to count and identify all the LWfG in the flock individually (see 2.1), ageing is done at the same time. Try to identify the different broods of LWfG and note down the broods separately.

When the estimating the number of each species by sampling (see 2.2), the age ratio of LWfG can be derived from the sample data: note down the age of the LWfG in the samples.

The age classes of LWfG that can safely be identified in the field are:

Autumn (until end of December)	**Spring** (from beginning of January)
• ad (=+1cy =, older than first calendar-year)	• ad (=+2cy, older than second calendar-year),
• 1cy (= "juvenile"; without belly patches and blaze)	• 2cy (juvenile coverts, weak or no belly patches, usually incomplete blaze)

Sexing of (adult) LWfG is usually possible only when comparing paired birds. In direct comparison the forehead of the female is not as steep as the male's and the blaze is usually smaller than in the male.

4. Recording colour rings, neck bands and satellite transmitters

Colour rings provide very valuable data on the population and life history of the LWfG. Therefore special attention has to be paid to looking for and reading the codes of the possible colour rings.

LWfG may have:

- ordinary metal leg ring
- coloured plastic neck collars with a code
- colour leg rings (one, two or three colours)
- satellite transmitters

The colours of the rings may bleach over the years, and some of the colour rings may also be lost.

Of each ringed LWfG observed, always check both legs, read carefully the colour codes (recorded from the top down) and note down in the following way:

- metal ring on the right leg, white + orange colour ring on the left leg: MR, WOL
- red + uncertain colour (e.g. because of mud) ring on the right leg, metal ring on the left leg: R?R, ML
- metal ring on the right leg, definitely no ring on the right leg: MR, –L
- note also down for each individual LWfG, if it definitely has no rings (often this is not possible, because the legs are hidden in the vegetation)

Use the following codes (international standard, http://www.btoipmr.f9.co.uk/cm/cm_codes.htm)

R = Red W = White O = Orange Y = Yellow G = Dark Green N = Black
P = Pale Blue ? = uncertain colour
M = Scheme metal ring – = no rings
R (in the end) = right L (in the end) = left

The colour rings can be documented by photographing and/or recording them on video. However, never rely on the photographic documents only, but always note down the authentic sightings of the colour rings in your note book. When observing the same ringed individual again in the following days, remember to note it down every day. Report always also incompletely read codes, or individuals that certainly are wearing rings (even if you can not read the colour code).

Photo on cover page. Adult (male) LWfG with metal ring on the right leg and orange-red colour ring on the left leg (MR, ORL). © János Tar.

5. Mapping the feeding and roosting sites of LWfG

Collecting these data is relevant mainly for new sites for which this no data is yet available. The roosting places are practically always in water or on the shoreline.

5.1 Description of roosts

- Draw the roost on a map, and if possible locate the site with a GPS.
- Determine roost type (fresh water lake / salt lake /coastal lagoon /bay of the sea /fishpond etc.)
- Describe vegetation types surrounding the roost
- Take photos
- Describe potential theats for the geese at the site, and potential threats for the natural conditions of the site
- Describe the conservation status and hunting regulations of the site
- Describe the distance from the roost to the nearest settlement

5.2 Description of feeding sites

- Draw the feeding site on a map, and if possible locate the site with a GPS.
- Determine the habitat type: agricultural field (winter wheat / maize etc), natural grassline, coastal meadow etc.
- If possible determine the vegetation in more detail by taking samples of / photographing the most abundant plant species.
- Take photos
- If possible (without disturbing the geese) collect droppings of LWfG for later diet studies.
- Determine the distance between the feeding site and the roost
- Describe potential theats for the geese at the site, and potential threats for the natural conditions of the site
- Describe the conservation status and hunting regulations of the site
- Describe the distance from the feeding site to the nearest settlement

6. Estimating hunting pressure

Hunting and poaching is the main theat for the LWfG. Therefore it is essential to estimate the hunting pressure on geese at the staging and wintering sites.

- When in the field, count the frequency of gunshots (note the number of shots heard / 15 minutes) and, if possible, estimate at least roughly the locations of the hunters.
- Interviews authorities responsible for hunting and hunters. Also make your own estimate of the number of geese shot during a day in the area based on your own observations.
- Study the birds shot by hunters (if possible), and note down the number of geese by species and age. Keep each hunter's bag separate in your notes.
- Photograph all the shot LWfG, especially the heads and bellies.
- Mark hunters on a map. Especially study their position in relation to borders of nature reserves and in relation to the goose flocks.