

**Ministry for Sustainable Development, the Environment and
Climate Change**

**Report on a survey of the influx of migratory finches, Golden Plover
and Song Thrush over the Maltese Islands, made between October
and December 2015**

Prepared by



12, Sir Arthur Borton Street
Mosta, MST1881
MALTA

Telephone: (+356) 2143 1900

Fax: (+356) 21424 137

e-mail: info@ecoserv.com.mt

www.ecoserv.com.mt

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The present report has been compiled by:

JOSEPH A. BORG

BSc MSc PhD (Plymouth) CBiol MRSB MMBA FIBMS

and

JULIAN EVANS

BSc (Hons) MSc PhD (Plymouth) MMBA

Coordinator of study logistics:

SARAH DEBONO

BSc (Hons) MSc



Report checked by:

Julian Evans BSc (Hons) MSc PhD
MMBA



Report approved by:

Joseph A Borg BSc MSc PhD CBiol MRSB
MMBA FIBMS

1. Introduction

1.1 Preamble

The Ministry for Sustainable Development, the Environment and Climate Change (hereafter 'MSDEC') issued a call for tenders (reference: MSDEC Tender 87-2015) on the 19th June 2015 titled "*Service tender for an independent scientific study on the influx or passage of migratory finches, Golden Plover and Song Thrush in Malta during the 2015 Autumn/Winter season*". The Terms of Reference (ToR) specified in the tender document are as follows:

8.1 Contract Objectives and Expected Results

8.1.1 Overall Objectives

The overall objective of the contract is:

- *To provide an independent study on the influx or passage of the following nine species: Linnet (Carduelis cannabina), Chaffinch (Fringilla coelebs), Serin (Serinus Serinus), Goldfinch (Carduelis carduelis), Greenfinch (Carduelis chloris), Hawfinch (Coccothraustes coccothraustes), Siskin (Carduelis spinus), Golden Plover (Pluvialis apricaria) and Song Thrush (Turdus philomelos) during the Autumn/Winter 2015 migration period.*

8.2.2 Specific Objectives

The objectives of this contract are as follows:

- *To survey and scientifically monitor the daily influx of seven species of finches, Golden Plover and Song Thrush;*
- *To estimate the overall presence (influx) of these nine species per day and for the whole study period, subject to scientifically justified assumptions;*

Should the government decide to apply finch live-capturing derogation in Autumn 2015, the findings of the study will assist the Contracting authority in providing additional verification mechanism for assessing the numbers of birds reported trapped via the telephonic game reporting data.

8.2.3 Results to be Achieved by the Consultant

The tender results are the following:

Daily datasheets with raw counts for each of the nine bird species: (Linnet Carduelis cannabina, Chaffinch Fringilla coelebs, Serin Serinus Serinus, Goldfinch Carduelis carduelis, Greenfinch Carduelis chloris, Hawfinch Coccothraustes coccothraustes and Siskin Carduelis spinus, Golden Plover (Pluvialis apricaria) and Song Thrush (Turdus philomelos)

1. *A monitoring report for Autumn/Winter 2015 finch migration season which must include:*
 - a) *List of monitoring stations which recorded high/low counts*
 - b) *Dates which showed high/low peaks in the migration of each of the 9 bird species*
 - c) *A daily estimate of the influx of the 9 bird species for the whole of the Maltese Islands*

- d) *The estimated total influx for these species for the whole of the study period, subject to scientifically justified assumptions*
- e) *A comparative analysis of the results obtained with the bag data extracted from live-capturers' telephonic reports for 2014 and, should there be further live capturing derogations involving finches and Golden Plover and Song Thrush in 2015, also for 2015.*

8.3. Assumptions and Risks

8.3.1 Assumptions Underlying the Project Intervention

For the purposes of this bird migration study, it will be assumed that the consultant shall use the daily counts obtained from the monitoring stations to extrapolate the approximate estimate of the total influx of each of the nine bird species (Linnet Carduelis cannabina, Chaffinch Fringilla coelebs, Serin Serinus Serinus, Goldfinch Carduelis carduelis, Greenfinch Carduelis chloris, Hawfinch Coccothraustes coccothraustes, Siskin Carduelis spinus, Golden Plover Pluvialis apricaria and Song Thrush Turdus philomelos) over the Maltese Islands during the period stipulated in Clause 8.4.1.1.

Moreover, it shall also be assumed that the passage of birds at different localities is extremely variable and may be subject to local topographic, anthropogenic, climatic and other conditions which are to be taken into account in the appropriate extrapolation methods that shall be used to estimate the total influx of the species concerned.

8.3.2 Risks

Execution of the bird migration study is dependent on an adequate enrolment of the ornithologists/ field assistants who shall be manning the monitoring stations (at least 24 in number). It shall be the responsibility of the consultant to ensure that the active monitoring stations are manned by a sufficient number of ornithologists and/or field assistants. The numbers and location of the monitoring stations, as well as the level of personnel deployed in each station should be consistent with the corresponding parameters deployed in past studies of this nature in Malta.

The consultants shall propose strategies to address the identified risks. These proposals shall be included in the tenderer's technical offer in Part 9 Section 9.2.

The award of this tender and hence the undertaking of this bird migration study is dependent on a decision by the Government of Malta to apply a derogation for the live-capturing of Finches, Golden Plover and Song Thrush in Autumn 2015. The award of the tender may be cancelled if no such derogation is applied. Provided that this tender shall in no way be construed or perceived as obliging the Government or any other relevant authority to take a decision applying a derogation for the Autumn 2015 live-capturing season.

8.4 Scope of the Work

8.4.1 General

8.4.1.1 Project Description

The monitoring of the influx or passage of nine bird species (Linnet Carduelis cannabina, Chaffinch Fringilla coelebs, Serin Serinus Serinus, Goldfinch Carduelis carduelis, Greenfinch Carduelis chloris, Hawfinch Coccothraustes coccothraustes, Siskin Carduelis spinus, Golden Plover (Pluvialis apricaria and Song Thrush Turdus philomelos) shall take place during the period between the 20th October 2015 and the 31st December 2015 both dates included. The consultant shall mobilise all staff and equipment by the end of September 2015, in preparation for the execution of Autumn/Winter 2015 finch migration study.

The bird migration study should comprise the on-field surveying and scientific monitoring of the daily influx of migration of all 7 species concerned. This would provide an independent verification of the level of presence of the seven species in Autumn/Winter and the timing of their migration. This shall be achieved by generating a "Migration Count," that is a count of migrant birds of each species in question in the stipulated time span when monitoring is undertaken.

The collection of scientific data to elucidate general population trends for both species is beyond the scope of this bird migration study. The consultant must submit the daily datasheets with raw counts to the Contracting Authority at the end of each week. The draft monitoring report and analysis is to be submitted by the 15th of January 2016.

Once the draft Autumn/Winter 2015 Finch, Golden Plover and Song Thrush Migration monitoring report has been certified for quality assurance by the Contracting Authority, the final Autumn/Winter 2015 Finch, Golden Plover and Song Thrush Migration monitoring report is to be submitted within 10 working days from such a review.

8.4.1.2 Geographical Area to be covered

The three inhabited islands of the Maltese archipelago, namely Malta, Gozo and Comino.

8.4.1.3 Target Groups

Not applicable

8.4.2 Specific Activities

The bird migration study shall monitor the influx of migratory specimens of Linnet Carduelis cannabina, Chaffinch Fringilla coelebs, Serin Serinus Serinus, Goldfinch Carduelis carduelis, Greenfinch Carduelis chloris, Hawfinch Coccothraustes coccothraustes, Siskin Carduelis spinus, Golden Plover Pluvialis apricaria and Song Thrush Turdus philomelos, bearing in mind any methodological and physical limitations in the monitoring of these species, such as ability to identify or differentiate species of finches on the basis of their call rather than appearance. A field protocol of standard operating procedures, which will be used in the same manner from day to day should be designed by the commissioned experts on the basis of best practice procedures. There might be a need to take into consideration however, the flexibility of the techniques used to meet the constraints imposed by local geographical conditions.

A network of monitoring stations will need to be set up throughout the three inhabited islands of the Maltese archipelago for the study period. Such a network would need to comprise at least 24 monitoring stations. Each of these monitoring stations shall be operated on at least once weekly and manned by at least two ornithologists and/or field assistants. The number of active stations on any given day shall be at least 6. Monitoring in Malta, Gozo and Comino shall be carried out on a daily basis, however this requirement shall be waived with respect to Comino on those days when access to the Island would not be possible due to adverse weather conditions. The ornithologists and/or field assistants shall be persons with relevant experience in bird identification and shall have the capacity to identify all of the 9 bird species visually but most importantly being able to recognise their call in flight. In view of the likely (albeit not exclusive) occurrence of finches being during daylight hours, daily monitoring at each station shall be conducted from 10:00hrs to 15:00hrs during the first six days of the study (20 October–25 October) and from 08:00hrs to 13:00hrs during the 26 October–31 December study period to factor in the Daylight Saving Time, which ends on 26th October.

For each day during the bird monitoring phase, at least 6 monitoring stations must be fully manned. The exact number, location and area of the monitoring stations will be determined in consultation with scientific experts who are commissioned to undertake this bird migration study. Given that the survey is aimed at quantifying the influx or passage of migrating specimens, all monitoring stations shall be placed in strategic locations depending on the species being surveyed and the expected geographical occurrence of the species depending on the timing of the migration and prevailing weather conditions. The location of the monitoring stations shall be selected with care and shall not include areas where the settlement or sighting of the finches under study cannot in practice occur.

Each, monitoring station should include or encompass a defined ‘count area’ that has features that are compatible with the chosen count procedures. Moreover, no matter the type of method, the experts should also define the total daily ‘count period’, as well as the standard daily time periods during which the various component activities of bird counting procedures occur.

Surveys should focus on observations made, and should be coordinated by the Project co-ordinator or/and scientist/s, so as to enable an appropriate scientific determination with ecological statistics and/or models leading to population estimates (possibly through the extrapolation of results, with standard errors being indicated) and should cover, at least, the three main inhabited islands of the Maltese archipelago. The migration count can include birds counted at a site, observed flying past a fixed point in diurnal migration or alighting onto the ground or trees. For monitoring small landbirds, particular attention should be drawn to birds observed at short-term stopover sites immediately following a migratory flight. There are several options for producing a useful migration count of small landbirds; these options include: visible migration count; area search or route census counts; incidental observations; and daily estimated totals. The commissioned experts should define in the final monitoring report what they will consider as a migration count and what standardised methods will be used.

Nonetheless, in view that the finch species under study have a preference for migrating during particular times of day, observations should focus on such peak times. In this respect the monitoring is to be carried out from 10:00hrs to 15:00hrs during the first six days of the study (20 October–25 October) and from 08:00hrs to 13:00hrs during the 26 October–31 December study period to factor in the Daylight Saving Time, which ends on 26th October.

The consultant may also propose a variation to such methodology, but this shall not take effect unless previously agreed with and confirmed in writing by the Contracting Authority and shall in any case not involve any trapping or any taking of any bird, whether alive or dead, nor any part of any bird. It is imperative that the observers, or persons deployed by the consultant to man the stations and/or conduct counts or observations for the purpose of this study shall not be directly or indirectly be involved with the practice of live-capturing or hunting.

Standardisation of counting methods can make a major contribution to removing extraneous variation derived from variable observer effort and sampling procedures. Nevertheless, migration counts will still be subject to uncontrollable variation from weather, observer differences, and unavoidable changes in the level of effort. Such problems should be addressed by the use of appropriate analytical procedures.

Daily datasheets with raw counts need to be drawn for each of the monitoring stations in use, such that the prevalent meteorological conditions, namely wind direction and speed, the degree of cloud cover; the habitat type; bird counts; the times and locations; and the names of the field assistants, are all recorded.

The count data collected for a pre-defined area and the count period at each study site shall be used to establish the average counts (per day) recorded in a typical monitoring station for each of the 9 bird species. The calculations for such counts also need to include the standard deviation errors. Such mean counts shall then be extrapolated so as to cover the total area where the species may settle / which serves as short-term stopover sites, in order to estimate the total number of birds migrating daily over the Maltese Islands.

The appropriate methodology for extrapolation shall be determined by the scientific experts taking into account the possibility of repeat counting of observed birds; the patchiness of each species' distribution and frequency depending on available appropriate habitat; the seasonal geographical variation in the frequency of sightings dependent on the expected migration flow direction and any assumptions taken for such calculations need to be clearly stated in the monitoring report.

Relevant seasonal, local topographic (e.g. configuration of the coast), climatic and anthropogenic factors (such as degree of local urbanization) shall be duly taken into account in the extrapolation methodology, subject to scientifically justified assumptions.

The methodology shall not involve trapping or any taking of any bird, whether alive or dead, nor any part of any bird.

The field study shall cover 73 days during the Autumn/Winter migration period, between the 20th October 2014 and the 31st December 2015. The collection of scientific data to elucidate population trends for each finch species is beyond the scope of this bird migration study. The consultant must submit the daily datasheets with raw counts to the Contracting Authority at the end of each week of each of the bird monitoring periods. The Autumn/Winter 2015 Finches, Golden Plover and Song Thrush Migration monitoring report and analysis is to be submitted by the 15th January 2016. Once such draft report has been certified for quality assurance by the Contracting Authority, the Finches, Golden Plover and Song Thrush Migration 2015 monitoring report is to be submitted within 10 working days from such a review. All Autumn/Winter 2015 project activities must be completed to the Contracting

Authority's satisfaction by five weeks from the termination of the Autumn/Winter finch monitoring phase.

These activities will result in:

- 1. Daily datasheets with raw counts for each of the above mentioned bird species.*
- 2. A monitoring report for the season, including comparative analysis.*

8.4.3 Project Management

8.4.3.1 Responsible Body

The overall responsibility of the implementation of this contract lies with the Contracting Authority. An official will be appointed to oversee the implementation of the contract.

8.4.3.2 Management Structure

The Head of the Wild Birds Regulation Unit within the Ministry for Sustainable Development, the Environment and Climate Change is the official responsible for this contract. The Head may delegate various tasks to other officials within the Wild Birds Regulation Unit and may appoint an official to act as a project manager and to monitor the progress of this project.

8.5. Logistics and Timing

8.5.1 Location

The Republic of Malta. The monitoring stations shall be set up at appropriate locations within the three inhabited Maltese Islands, namely in Malta, Gozo and Comino.

The contractor, moreover, is expected to compile reports, prepare scientific analysis, and prepare the setup of the administrative framework from his own premises. The contractor should be available during office hours via e-mail and telephone.

8.5.2 Commencement Date & Period of Execution

The intended commencement date is the date of signature of the contract and the period of execution of the contract will be 2 months from this date.

8.6. Requirements

8.6.1 Personnel

8.6.1.1 Other Experts

CVs for experts other than the key experts are not examined prior to the signature of the contract.

The Consultant shall select and hire other experts as required according to the profiles identified in the Organisation & Methodology and these Terms of Reference. For the purposes of this contract, international experts are considered to be those whose permanent residence is outside the beneficiary country while local experts are considered to be those whose permanent residence is in the beneficiary country.

The Consultant should pay attention to the need to ensure the active participation of local professional skills where available, and a suitable mix of international and local staff in the project teams. All experts must be independent and free from conflicts of interest in the responsibilities accorded to them.

The selection procedures used by the Consultant to select these other experts shall be transparent, and shall be based on pre-defined criteria, including professional qualifications, language skills and work experience. The findings of the selection panel shall be recorded. The selection of experts shall be subject to approval by the Contracting Authority.

Note that civil servants and other staff of the Public Service of the beneficiary country cannot be recruited as experts. See sub-article 9.5 of the General Conditions.

8.6.1.2 Support Staff and Backstopping

- *The bird migration study is to be supported by ornithologists or field assistants with relevant experience in bird identification.*
- *Other support staff should be capable in carrying out statistical analysis, report writing and/or other relevant administration work.*

8.6.2 Accommodation

Office accommodation of a reasonable standard and of approximately 10 square metres for each expert working on the contract is to be provided by the Consultant.

8.6.3 Facilities to be provided by the Consultant

The Consultant shall ensure that experts are adequately supported and equipped. In particular it shall ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities. It must also transfer funds as necessary to support its activities under the contract and to ensure that its employees are paid regularly and in a timely fashion.

The contractor shall provide the equipment, software and hardware needed for carrying out surveys, data gathering, storage, analysis and evaluation.

If the Consultant is a consortium, the arrangements should allow for the maximum flexibility in project implementation. Arrangements offering each consortium partner a fixed percentage of the work to be undertaken under the contract should be avoided.

8.6.4 Equipment

No equipment is to be purchased on behalf of the Contracting Authority as part of this service contract or transferred to the Contracting Authority at the end of this contract. Any

equipment related to this contract which is to be acquired by the beneficiary country must be purchased by means of a separate supply tender procedure.

The contractor shall be responsible for establishing his own sources for goods, equipment, materials and software to perform the necessary activities and tasks, which may include:

- *Field Monitoring equipment, as appropriate e.g. binoculars, compass (to measure wind direction), radar equipment etc.*
- *Research equipment*

8.7. Reports

8.7.1 Reporting Requirements

(Please refer/peg to Article 26 of the Special/General Conditions)

Daily data sheets with raw counts need to be drawn for each of the monitoring stations in use, such that the prevalent meteorological conditions, namely wind direction and speed, the degree of cloud cover, the habitat type, bird counts, the times and locations, the names of the field assistants all need to be recorded.

Following the survey/study period a detailed analysis shall be carried out on the data collated which are to be presented in a Report. Such a report is to indicate:

- *the raw counts*
- *sampling methodology used*
- *the time schedule for the monitoring taken place*
- *the locations where monitoring was carried out and the estimated area of each site of observation*
- *the peak and low counts for each of the species under study*
- *the locations/monitoring stations which had peak/low counts*
- *an extrapolation indicating the total influx of each of the 9 bird species migrating over the Maltese Islands for each day*
- *an estimated total influx of each of the 9 bird species for the whole study period*
- *assumptions taken for such estimates*

This report should only concern information/data on the influx of the migratory birds and should not include personal opinions of the consultant.

The consultant must submit the daily datasheets with raw counts to the Contracting Authority at the end of each week during the finch monitoring phase. The draft Autumn/Winter 2015 Finch, Golden Plover and Song Thrush Migration monitoring report and analysis is to be submitted by the 15th January 2016.

Once such draft report has been certified for quality assurance by the Contracting Authority, the final Autumn/Winter 2015 Finch, Golden Plover and Song Thrush Migration monitoring report is to be submitted within ten working days from such a review. All Autumn/Winter 2015 finch monitoring activities must be completed to the Contracting Authority's satisfaction within five weeks from the termination of the bird monitoring phase.

All reports and other forms of written communication must be presented in an editable format using commonly available software. All reports must be approved by the Contracting Authority before these can be considered finalised. All reports will be property of the Contracting Authority and it will have sole copyright.

8.7.2 Submission & approval of progress reports

The daily data sheets with raw counts and 2 hard copies and a soft copy of each of the monitoring reports referred to above must be submitted to the Project Manager identified in the contract. The raw datasheets and the report must be written in English. The Project Manager is responsible for approving the draft monitoring report.

8.8 Monitoring and Evaluation

8.8.1 Definition of Indicators

Results	Objectively verifiable indicators	Sources of verifications
<i>Daily datasheets with raw counts of Linnet Carduelis cannabina, Chaffinch Fringilla coelebs, Serin Serinus serinus, Goldfinch Carduelis carduelis, Greenfinch Carduelis chloris, Hawfinch Coccothraustes coccothraustes, Siskin Carduelis spinus, Golden Plover Pluvialis apricaria and Song Thrush Turdus philomelos</i>	<i>The original raw datasheets which are to be completed on site during the monitoring process to be submitted by the end of each week of the monitoring phase.</i>	<i>The original datasheets submitted to the Contracting Authority.</i>
<i>Autumn/Winter 2015 Finch, Golden Plover and Song Thrush Migration monitoring report which presents a clear analyses of the monitoring carried out</i>	<i>The draft monitoring report shall be completed within the 15th January 2016. The monitoring report will be finalised by the consultant and approved by the Contracting Authority within five weeks from the termination of the finch monitoring phase.</i>	<i>The actual monitoring report presented by the contractor.</i>

8.8.2 Special Requirements

Not applicable

Ecoserv Ltd (hereafter 'Ecoserv') made a submission and was subsequently informed by the MSDEC that its bid was successful and, as a result, was awarded the tender.

The present submission constitutes Ecoserv's report of the independent scientific study on the influx of migratory finches (Linnet *Carduelis cannabina*, Chaffinch *Fringilla coelebs*, Serin *Serinus serinus*, Goldfinch *Carduelis carduelis*, Greenfinch *Carduelis chloris*, Hawfinch *Coccothraustes coccothraustes* and Siskin *Carduelis spinus*), Golden Plover (*Pluvialis apricaria*) and Song Thrush (*Turdus philomelos*) in Malta, undertaken by the company during the period 20 October to 31 December 2015, which coincides with the 2015 autumn/winter live-capturing season, and is based on the ToR stated above.

An overview of the migratory behaviour and records for the seven finch species around the Maltese Islands has already been presented in Ecoserv (2014b) and will not be repeated here. However, given that the present study includes two additional bird species - Golden Plover (*Pluvialis apricaria*) and Song Thrush (*Turdus philomelos*) – which have not been considered in the previous autumn 2014 survey, a brief overview of migratory behaviour of the Golden Plover and Song Thrush is presented hereunder. Except for finch migration monitoring study conducted in the autumn of 2014, no similar studies on the 7 finch species have been previously undertaken locally. Moreover, no surveys of the migratory influx of Golden Plover and Song Thrush have been conducted previously. However, records of the number of finch individuals caught by live-capturers between 2002 and 2008 are available in the *Carnet de Chasse* reports for the respective years, and from the Malta Environment and Planning Authority (see <http://www.mepa.org.mt/biodiversity-reporting>), while the records of finch catches made during the 2014 derogation are available from the website of the Wild Birds Regulation Unit (<http://environment.gov.mt/en/Pages/WBRU/livecapturingder.aspx>). *Carnet de Chasse* statistics for Golden Plover and Song Thrush catches is available at the Wild Birds Regulation Unit's website (<http://environment.gov.mt/en/Pages/WBRU/livecapturingder.aspx>; <http://environment.gov.mt/en/Pages/WBRU/Reports-and-Statistics.aspx>).

1.2 Migratory behaviour of Golden Plover (*Pluvialis apricaria*) and Song Thrush (*Turdus philomelos*)

Golden Plover

Pluvialis apricaria is a Palearctic wader which breeds in areas between northern Europe and Siberia, but during the winter it migrates to western Europe, the Mediterranean and the Persian Gulf (Fenech, 2010).

In Malta, the Golden Plover is a common migrant, mainly between October and March. Occasionally, this species is also recorded locally during spring (April and May), and in the latter half of August and in September (Fenech, 2010).

The preferred habitat of Golden Plover for breeding is wetland grass meadows, heathlands and moors, tundra, open bogs, and peatland, particularly where mosses and lichens are abundant. During the migratory period, the species frequents freshwater wetlands, moist grasslands, pastures, agricultural land (mainly ploughed and fallow fields), highland steppe, tidal shores, coastal rocky outcrops, intertidal flats and saltmarshes (Urban *et al.* 1986). It mainly feeds on invertebrates and more rarely on berries, seeds and grass.

Song Thrush

Turdus philomelos is native to most of Europe, a large part of Eurasia and parts of the Middle East. It breeds in most of Europe, with populations from the extreme northern parts of the continent migrating to the Mediterranean region, where they spend the winter.

In Malta, the Song Thrush is a common autumn migrant and is mainly recorded during October and November, at times occurring in large influxes. However, this species is also recorded in September and between December and March, and occasionally in April (Fenech, 2010).

The Song Thrush occurs in wooded habitats and vegetated valleys. It feeds on invertebrates, berries and fruit.

2. Methodology

Field procedure

The survey design used by Ecoserv during the present autumn/winter 2015 survey was aimed at assessing changes in migratory influx, which entails trend analysis based on data from monitoring carried out regularly over a sufficiently long period comprising subsequent years, and using a similar methodology to that used previously by Ecoserv to monitor the migratory influx of finches (Ecoserv, 2014b) and other species (Ecoserv, 2011; 2012; 2013; 2014a; 2015). During the survey, two individuals - a field assistant capable of identifying Finch species, Golden Plover and Song Thrush and an observer who was responsible for recording of data in the field - were stationed at a total of 21 sites (= count stations) distributed over Malta, Comino and Gozo. Prior to enrolment for the survey, the field assistants would have been assessed by Ecoserv's environmental scientists and ecologists to ensure that they are capable of identifying the bird species concerned. The observers were given briefings by Ecoserv's consultants on identification of the seven species of finches as well as of Golden Plover and Song Thrush, and received further training in the field on same by the field assistants. Throughout the survey, Ecoserv's environmental scientists and ecologists ensured close monitoring of the activities of the field personnel to ensure that collection of data proceeded as per designated protocol by carrying out field visits (most of which were 'surprise visits') on a regular basis.

The survey was undertaken over an 11-week period between 20 October and 31 December, 2015. During the survey, counts of individuals of the nine species (Linnet *Carduelis cannabina*, Chaffinch *Fringilla coelebs*, Serin *Serinus serinus*, Goldfinch *Carduelis carduelis*, Greenfinch *Carduelis chloris*, Hawfinch *Coccothraustes coccothraustes*, Siskin *Carduelis spinus*, Golden Plover *Pluvialis apricaria* and Song Thrush *Turdus philomelos*) were made at each of 6 different sites on each day during the monitoring period. Each group of 6 sites was surveyed once every 4 days, such that a total of 21 sites were surveyed in total over each period of 4 days, as agreed with the Contracting Authority. The study site at Comino was included in the 6 sites surveyed on any one day, such that every attempt was made to survey this site on a daily basis; when weather conditions precluded count surveys at the Comino site due to unavailability of sea transport services, counts were taken at alternative sites (in Ramla tal-Bir or Qala) located at the northern most tip of Malta (close to Comino) instead. The sampling sites are represented by the grid cell reference numbers listed in Table 1, while their locations are shown in Figure 1.

Since the survey was mainly aimed at quantifying the influx of migrating individuals, field sites were sited at strategic locations behind the coast. For each species, the number of individuals observed flying within each study site was recorded, while the count area was estimated as the area within the observer's field of view when observing horizontally (c. 250m on each side of the observer) and vertically upwards (as far as the birds were detected by sight). Finches, Golden Plover and Song Thrush are small birds that are difficult to identify when they are flying at a distance, even if binoculars are used. Nonetheless, every effort was made in the present study to identify the species as accurately as possible; to aid the observers detect the birds, field personnel used a pair of binoculars (magnification: 8 x 21). The different species were identified on the basis of their flight pattern and call. When the field personnel had doubt as to the specific identity of a species, a '?' was placed next to the record on the field data sheet to indicate the uncertainty. Afterwards, during data analysis (see below), comparison was made of records marked with a '?' from a particular site with records from other sites for the same day as corroboration procedure. Uncertain records were allotted to the species which the field personnel determined as most probable with respect to species identity and which showed agreement with appreciable records from other sites on the same day for that species.

Monitoring of finches, Golden Plover and Song Thrush was made between 10:00 and 15:00 during the first six days of the study (i.e. up to the date when the daylight saving hour was removed) and between 08:00 and 13:00 during the rest of the study period. The count data collected for the pre-defined area and count period at each study site was used to establish the mean number of birds recorded for each day of the survey.

At each study site, the observers also recorded the prevalent weather conditions, namely wind direction and strength, and degree of cloud cover. This information is available on the raw data sheets, copies of which have been submitted to the Wild Birds Regulation Unit of the MSDEC. Although it would be interesting to explore potential relationships between weather conditions and migratory influx of the bird species surveyed, this would entail in-depth statistical analyses, while assessment of the influence of local climatic factors on the migratory influx of birds was beyond the scope of the present study. Nevertheless, the weather data collected during the present survey is useful as it will be available for such potential study.

Table 1

List of grid locations where monitoring of influx of migratory birds was carried out.

Location	Day 1	Day 2	Day 3	Day 4
Gozo	3690	3292	2888	3286
Comino	4085	4085	4085	4085
Malta	3881	4079	4077	4073
Malta	4070	4268	4666	5064
Malta	5663	6067	6069	5872
Malta	5277	4878	4480	4283

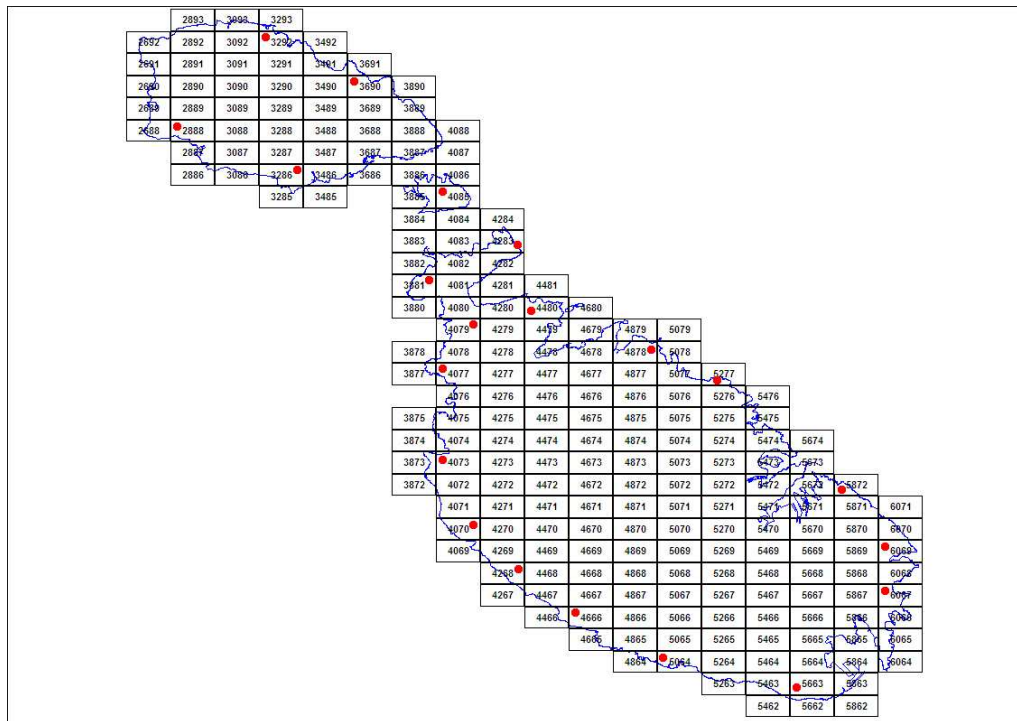


Figure 1. Map of the Maltese Islands showing the localities (grid cells indicated by the red filled circle) where the bird counts were made; see also Table 1.

Data analysis

Using the recorded raw data for each of the nine bird species, estimates were made of the mean daily count and total count for the study period (20 October to 31 December 2015). Values of standard deviation for the respective mean daily counts were also estimated; standard deviation is a measure of variability among counts recorded from the different sites, that is, a low standard deviation implies that very similar counts were recorded at all six sites surveyed during a particular day, whereas dissimilar values would lead to a high standard deviation. Standard deviation is influenced by sample size (i.e. number of study sites); it tends to increase with a decreased sample size.

An estimate of total influx of the respective bird species was made using the daily counts. Extrapolations were then made to obtain the total number of individuals of each species that migrated over the Maltese Islands on a particular date. However, such an estimate must be treated with utmost caution, given that: (a) migration of finches, Golden Plover and Song Thrush is not necessarily restricted to that time of the year covered by the present study; (b) the relatively small number of sites used; (c) the counts were not made daily at each site; and (d) bird counts were made while the live-capturing season for finches, Golden Plover and Song Thrush was open, hence individuals may have been caught before the field personnel could record them. Being small birds, finches, Golden Plover and Song Thrush are easy to miss or present difficulty to identify if they pass beyond a certain distance from the observer, and especially if they do not call while in flight. Furthermore, passage of birds at different localities is extremely variable, with potential large differences in birds passing at two different localities, even if these are separated only by a very small distance.

As already stated, another notable limiting factor was that the field survey was stopped in the early afternoon and did not start again before the following morning, hence potentially missing birds that arrive during that time of the day not covered by the present survey, as these would not have been recorded by the field observers. For example, most of the finch species, and in particular the Golden Plover and Song Thrush, are known to also migrate between dusk and dawn; hence individuals migrating during this time would not be detected during the survey. One should also mention that finch and Song Thrush migration starts before the period which was surveyed, given that they start migrating from mid-September onwards and hence such birds would not have been included in the present survey. On the other hand, the estimates given in the present report will be useful when making comparisons of data collected from the present study period (autumn 2015) and that collected from future studies held in autumn in subsequent years, assuming that a similar survey design is adopted, to assess whether the trend in influx is increasing or decreasing with time. Since the coastal length surveyed at each site during the present survey is approximately 0.5 km, the mean daily count represents the mean influx of the respective species per 0.5 km coastline. The estimated daily influx was obtained by extrapolating the mean daily values obtained (per 0.5 km) to the total coastline length for the Maltese Islands, which have a perimeter of 271.22 km (Mallia *et al*, 2002)¹; that is the estimated daily influx equals the mean daily count multiplied by an extrapolation factor of 271.22/0.5. The values of estimated daily influx were then summed to obtain an estimate of the total influx of the nine bird species (Linnet, Chaffinch, Serin, Goldfinch, Greenfinch, Hawfinch, Siskin, Golden Plover and Song Thrush).

3. Results

Ecoserv's laboratory report reference for the present survey is **003-16**. The sample reference codes for the bird count data are **B-116-15** to **B-305-15**.

Where indicated in the following results, a mean count value of '0' recorded for a bird species on a particular day during the survey period, which would also have been extrapolated to a total influx value for that specific data, is highly unlikely to correspond to actual total absence of migration of the particular species over the Maltese Islands, and should be attributed to an artefact of sampling, resulting from the small sample size.

Linnet

Raw daily counts for Linnet recorded from the 21 sites during the present study varied between 0 and a maximum of 23 (see Appendix I), while the mean daily counts ranged between 0 and 3.8 (Table 2). During the present (2015) autumn migration, relatively high counts for this species were recorded on some days between 26th October and 10th November 2015. The total counts, i.e. the total number of Linnet, recorded from a given grid location (= study site) during the whole study period (73 days), varied appreciably between the different sites: at the lower end, no individuals were recorded from the site at grid location 4268 and only a single individual was recorded throughout the survey period from each of the sites at grid locations 4077, 6069, 5872 and 5663 (see Figure 1), while at the higher end, 72 Linnet individuals were recorded from the site at grid location 4085, followed by 28 individuals recorded from the sites at grid locations 3292 and 3268. Counts of Linnet recorded from the present survey, along with those made during the autumn 2014 survey, are shown graphically in

¹ Note, however, that this estimate includes the perimeter of minor islets and rocks.

Figure 2. Overall, count values for Linnet from the present (autumn 2015) survey are appreciably lower than those recorded from the previous autumn 2014 survey. However, a similar pattern of higher count values made during the period late October to mid-November is noted for both 2014 and 2015 (Figure 2).

Values of mean daily counts and total counts of Linnet recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 2. Values of standard deviation associated with the mean daily counts are also provided (Table 2).

An estimate of total influx of Linnet over the Maltese Islands is given in Table 2. Based on the mean daily counts (Table 2), extrapolation translates to an estimated daily influx ranging between 0 and 2,079 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 24,771 individuals, i.e. some 339 birds per day; see Table 2.

Table 2
Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Linnet.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.33	0.82	2	181
21-Oct-15	0.00	0.00	0	0
22-Oct-15	0.33	0.82	2	181
23-Oct-15	0.00	0.00	0	0
24-Oct-15	1.33	1.63	8	723
25-Oct-15	3.00	3.69	18	1627
26-Oct-15	1.67	3.61	10	904
27-Oct-15	1.83	1.83	11	994
28-Oct-15	0.83	1.60	5	452
29-Oct-15	2.33	3.39	14	1266
30-Oct-15	2.17	1.83	13	1175
31-Oct-15	1.83	2.56	11	994
1-Nov-15	2.00	3.16	12	1085
2-Nov-15	1.83	2.40	11	994
3-Nov-15	3.83	4.49	23	2079
4-Nov-15	1.67	2.07	10	904
5-Nov-15	1.17	1.60	7	633
6-Nov-15	0.83	1.33	5	452
7-Nov-15	1.33	2.34	8	723
8-Nov-15	1.17	1.33	7	633
9-Nov-15	1.17	2.04	7	633
10-Nov-15	3.50	5.72	21	1899
11-Nov-15	0.50	1.22	3	271
12-Nov-15	0.50	0.84	3	271
13-Nov-15	0.83	1.33	5	452
14-Nov-15	0.67	1.03	4	362
15-Nov-15	0.33	0.82	2	181
16-Nov-15	0.67	1.03	4	362
17-Nov-15	0.33	0.82	2	181
18-Nov-15	0.33	0.82	2	181
19-Nov-15	0.17	0.41	1	90
20-Nov-15	0.33	0.82	2	181

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
21-Nov-15	0.33	0.82	2	181
22-Nov-15	0.00	0.00	0	0
23-Nov-15	0.17	0.41	1	90
24-Nov-15	0.83	1.33	5	452
25-Nov-15	0.00	0.00	0	0
26-Nov-15	0.00	0.00	0	0
27-Nov-15	0.00	0.00	0	0
28-Nov-15	0.50	1.22	3	271
29-Nov-15	1.00	1.26	6	542
30-Nov-15	0.83	2.04	5	452
1-Dec-15	0.17	0.41	1	90
2-Dec-15	0.17	0.41	1	90
3-Dec-15	0.17	0.41	1	90
4-Dec-15	0.00	0.00	0	0
5-Dec-15	1.00	1.55	6	542
6-Dec-15	0.00	0.00	0	0
7-Dec-15	0.00	0.00	0	0
8-Dec-15	0.00	0.00	0	0
9-Dec-15	0.50	1.22	3	271
10-Dec-15	0.17	0.41	1	90
11-Dec-15	0.00	0.00	0	0
12-Dec-15	0.00	0.00	0	0
13-Dec-15	0.00	0.00	0	0
14-Dec-15	0.00	0.00	0	0
15-Dec-15	0.50	1.22	3	271
16-Dec-15	0.00	0.00	0	0
17-Dec-15	0.00	0.00	0	0
18-Dec-15	0.00	0.00	0	0
19-Dec-15	0.00	0.00	0	0
20-Dec-15	0.00	0.00	0	0
21-Dec-15	0.00	0.00	0	0
22-Dec-15	0.33	0.82	2	181
23-Dec-15	0.00	0.00	0	0
24-Dec-15	0.17	0.41	1	90
25-Dec-15	0.00	0.00	0	0
26-Dec-15	0.00	0.00	0	0
27-Dec-15	0.00	0.00	0	0
28-Dec-15	0.00	0.00	0	0
29-Dec-15	0.00	0.00	0	0
30-Dec-15	0.00	0.00	0	0
31-Dec-15	0.00	0.00	0	0
Estimated Total Influx				24,771

Mean count values for Linnet recorded from each of the 21 sites are indicated on the map shown in Figure 3. The highest mean count was recorded from Ta' Cenc (Grid 3286) located in southwestern Gozo, while overall high counts were recorded from the other study sites located in Gozo, the study site in Comino and the study sites in northern Malta and Fawwara (Grid 4666) in western Malta. The lowest mean counts were recorded from the northeastern parts of Malta, particularly from study sites located in the stretch between Salina Bay and Marsascala.

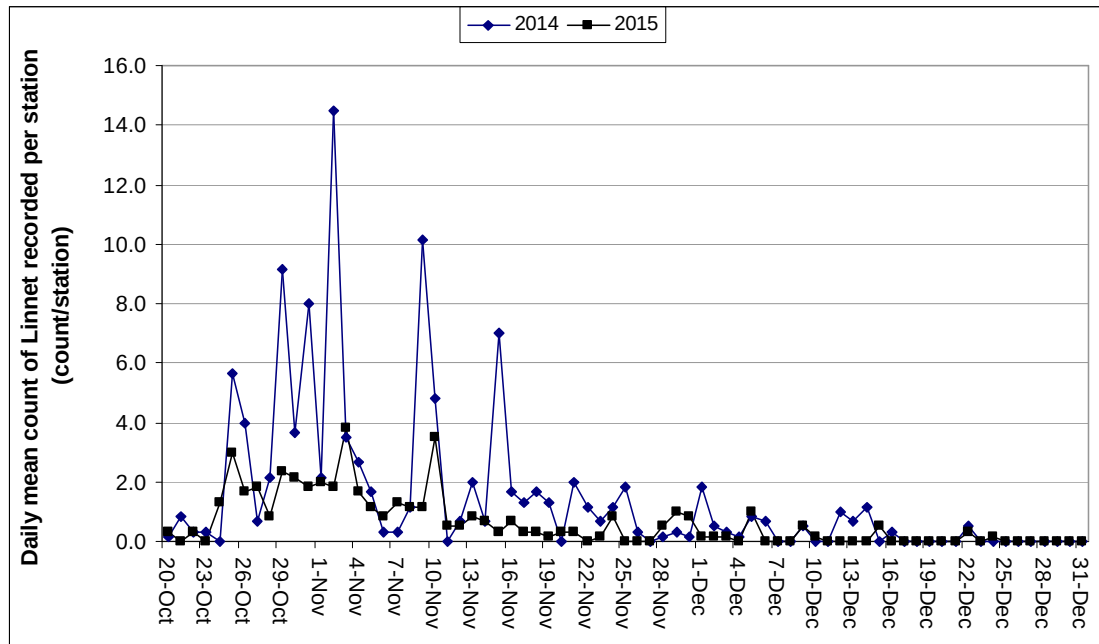


Figure 2. Daily mean counts of Linnet per station (= site) recorded between 20 October and 31 December 2015 during the present (2015) and previous (2014) surveys.

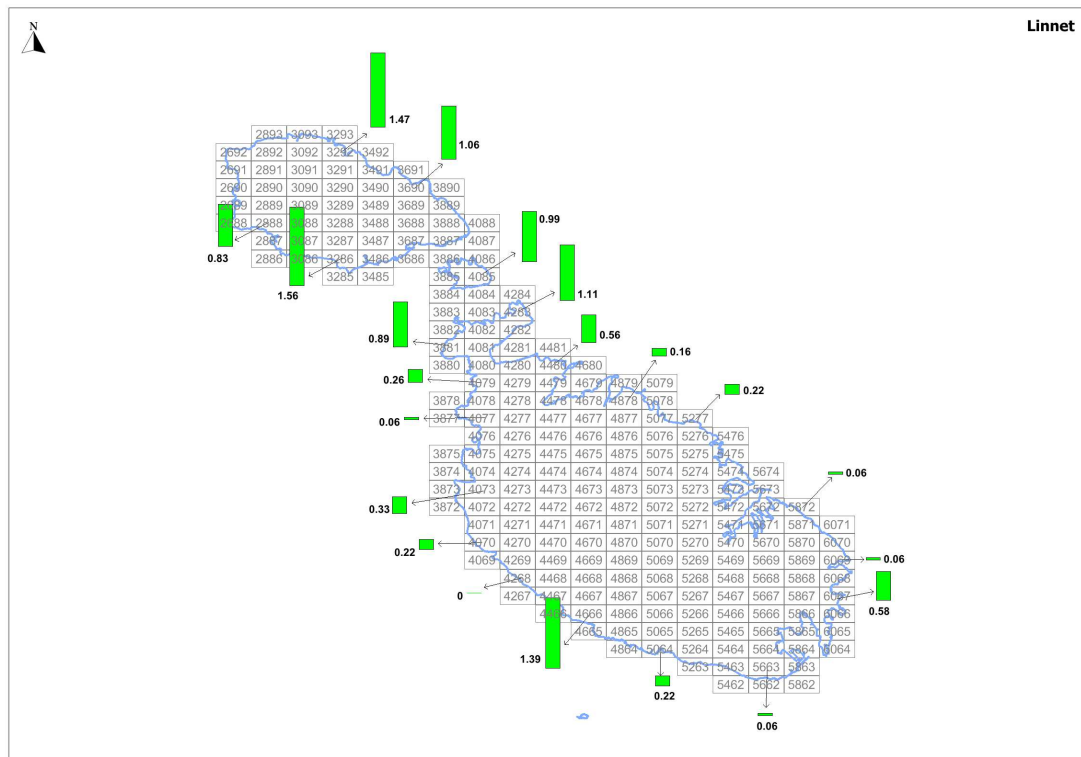


Figure 3. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Linnet recorded from study sites in the respective cells.

Chaffinch

Raw daily counts for Chaffinch recorded from the 21 sites during the present study varied between 0 and a maximum of 17 (see Appendix I), while the mean daily counts ranged between 0 and 2.8 (Table 3). Relatively high counts for this species were recorded on some days towards the end of October and beginning of November (25 October, 3 and 7 November), while a relatively high count was also recorded on 30 November 2015. The total counts, i.e. the total number of Chaffinch, recorded from a given grid location (= study site) during the whole study period (73 days), varied appreciably between the different sites: at the lower end, no individuals were recorded throughout the survey period from each of the sites at grid locations 4077, 4073 and 4283, while at the higher end, 30 Chaffinch individuals were recorded from the site at grid location 2888.

Values of mean daily counts and total counts of Chaffinch recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 3. Values of standard deviation associated with the mean daily counts are also provided in Table 3. Counts of Chaffinch recorded from the present survey, along with those made during the autumn 2014 survey, are shown graphically in Figure 4. Overall, count values for Chaffinch from the present (autumn 2015) survey are appreciably lower than those recorded from the previous autumn 2014 survey. Furthermore, although an overall similar pattern of higher count values is evident during the period 21 October to mid-November for both 2014 and 2015, no peak counts for this species were recorded towards the end of October 2015 and the start of November 2015 (present survey; see Figure 4).

Table 3

Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Chaffinch.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.00	0.00	0	0
21-Oct-15	0.50	1.22	3	271
22-Oct-15	1.17	2.04	7	633
23-Oct-15	0.33	0.82	2	181
24-Oct-15	1.00	1.67	6	542
25-Oct-15	2.83	5.98	17	1537
26-Oct-15	1.67	3.20	10	904
27-Oct-15	0.83	1.17	5	452
28-Oct-15	0.83	2.04	5	452
29-Oct-15	0.00	0.00	0	0
30-Oct-15	0.83	2.04	5	452
31-Oct-15	0.17	0.41	1	90
1-Nov-15	0.00	0.00	0	0
2-Nov-15	0.50	0.84	3	271
3-Nov-15	2.00	4.43	12	1085
4-Nov-15	1.67	2.73	10	904
5-Nov-15	1.33	1.03	8	723
6-Nov-15	1.17	2.04	7	633
7-Nov-15	1.67	2.34	10	904
8-Nov-15	0.00	0.00	0	0
9-Nov-15	1.00	1.26	6	542
10-Nov-15	0.33	0.82	2	181
11-Nov-15	0.50	1.22	3	271
12-Nov-15	0.17	0.41	1	90

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
13-Nov-15	0.83	1.33	5	452
14-Nov-15	0.17	0.41	1	90
15-Nov-15	0.00	0.00	0	0
16-Nov-15	0.00	0.00	0	0
17-Nov-15	0.17	0.41	1	90
18-Nov-15	0.83	0.98	5	452
19-Nov-15	0.00	0.00	0	0
20-Nov-15	0.00	0.00	0	0
21-Nov-15	0.17	0.41	1	90
22-Nov-15	0.00	0.00	0	0
23-Nov-15	0.00	0.00	0	0
24-Nov-15	0.33	0.52	2	181
25-Nov-15	0.00	0.00	0	0
26-Nov-15	0.00	0.00	0	0
27-Nov-15	0.00	0.00	0	0
28-Nov-15	0.00	0.00	0	0
29-Nov-15	0.33	0.82	2	181
30-Nov-15	2.17	4.02	13	1175
1-Dec-15	0.00	0.00	0	0
2-Dec-15	0.00	0.00	0	0
3-Dec-15	0.33	0.82	2	181
4-Dec-15	0.33	0.82	2	181
5-Dec-15	0.00	0.00	0	0
6-Dec-15	0.67	1.21	4	362
7-Dec-15	0.00	0.00	0	0
8-Dec-15	0.00	0.00	0	0
9-Dec-15	0.00	0.00	0	0
10-Dec-15	0.00	0.00	0	0
11-Dec-15	0.00	0.00	0	0
12-Dec-15	0.00	0.00	0	0
13-Dec-15	0.00	0.00	0	0
14-Dec-15	0.00	0.00	0	0
15-Dec-15	0.17	0.41	1	90
16-Dec-15	0.00	0.00	0	0
17-Dec-15	0.00	0.00	0	0
18-Dec-15	0.00	0.00	0	0
19-Dec-15	0.17	0.41	1	90
20-Dec-15	0.00	0.00	0	0
21-Dec-15	0.00	0.00	0	0
22-Dec-15	0.00	0.00	0	0
23-Dec-15	0.00	0.00	0	0
24-Dec-15	0.00	0.00	0	0
25-Dec-15	0.00	0.00	0	0
26-Dec-15	0.00	0.00	0	0
27-Dec-15	0.00	0.00	0	0
28-Dec-15	0.00	0.00	0	0
29-Dec-15	0.00	0.00	0	0
30-Dec-15	0.00	0.00	0	0
31-Dec-15	0.00	0.00	0	0
Estimated Total Influx				14,763

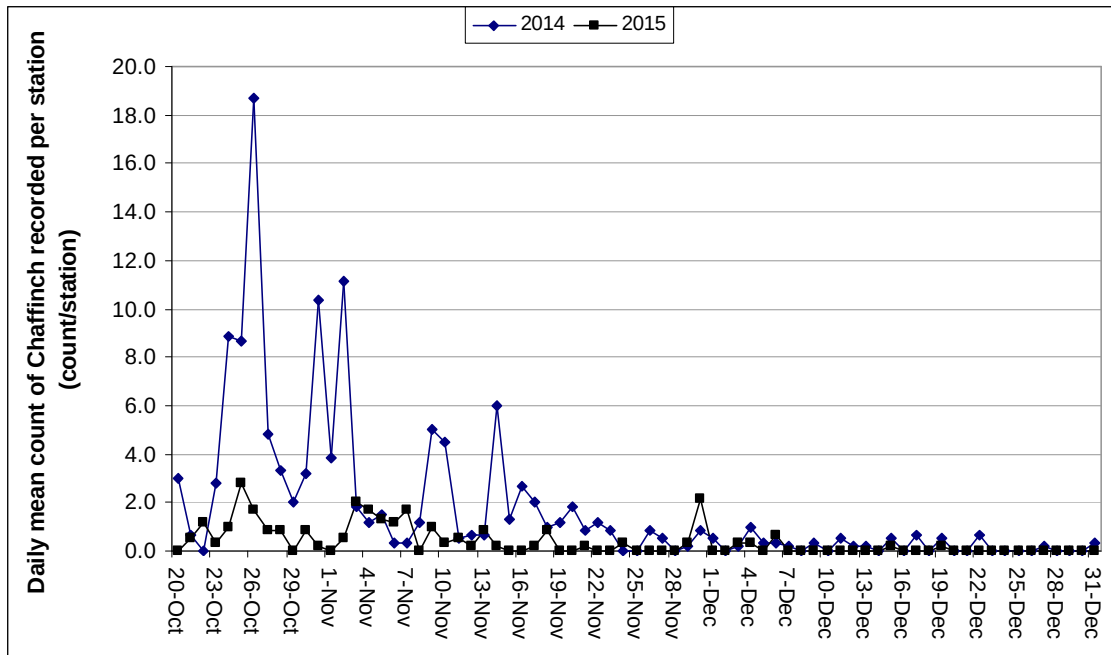


Figure 4. Daily mean counts of Chaffinch per station (= site) recorded between 20 October and 31 December 2015 during the present (2015) and previous (2014) surveys.

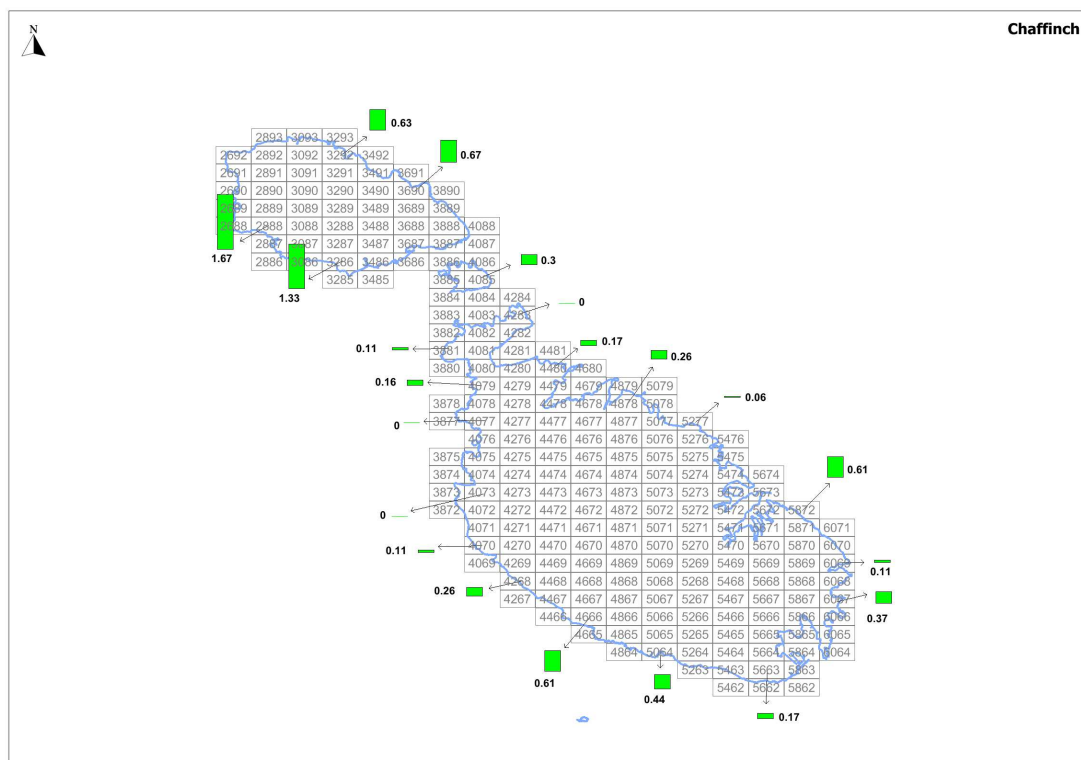


Figure 5. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Chaffinch recorded from study sites in the respective cells.

An estimate of total influx of Chaffinch over the Maltese Islands is given in Table 3. Based on the mean daily counts (Table 3), extrapolation translates to an estimated daily influx ranging between 0 and 1,537 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 14,736 individuals, i.e. some 202 birds per day; see Table 3.

Mean count values for Chaffinch recorded from each of the 21 sites are indicated on the map shown in Figure 5. The highest mean count was recorded from Kercem (Grid 2888) located in western Gozo, while overall high counts were recorded from the other study sites located in Gozo and three study sites located in the southeastern half of Malta: Fawwara (Grid 4666), Rinella/Xghajra (Grid 5872), Lapsi (Grid 5064) and San Thumas (Grid 6067). The lowest/zero mean counts were recorded from the northwestern half of Malta.

Greenfinch

Raw daily counts for Greenfinch recorded from the 21 sites during the present study varied between 0 and a maximum of 3 (see Appendix I), while the mean daily counts ranged between 0 and 0.5 (Table 4). Counts for this species were therefore very low overall. Throughout the survey period, a total of 3 individuals were recorded from the site at grid location 5277, while a single individual was recorded from each of the sites at grid locations 4079, 6067, 4666, 4480, 3268, 4073 and 3690; no individuals were recorded throughout the survey period from any of the other sites.

Values of mean daily counts and total counts of Greenfinch recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 4. Values of standard deviation associated with the mean daily counts are also provided in Table 4. Counts of Greenfinch recorded from the present survey, along with ones made during the autumn 2014 survey, are shown graphically in Figure 6. Overall, count values for Greenfinch from the present (autumn 2015) survey are appreciably lower than those recorded from the previous autumn 2014 survey. For both 2014 and 2015, higher count values were recorded during November and the first 20 days of December. However, higher counts for this species were also recorded in late October 2014 compared to 'zero' counts made during the same period in 2015 (present survey; see Figure 6).

The estimated total influx of Greenfinch over the Maltese Islands is given in Table 4. Based on the mean daily counts (Table 4), extrapolation translates to an estimated daily influx ranging between 0 and 271 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 904 individuals, i.e. some 12 birds per day; see Table 4.

Table 4

Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Greenfinch.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.00	0.00	0	0
21-Oct-15	0.00	0.00	0	0
22-Oct-15	0.00	0.00	0	0
23-Oct-15	0.00	0.00	0	0
24-Oct-15	0.00	0.00	0	0
25-Oct-15	0.00	0.00	0	0
26-Oct-15	0.00	0.00	0	0

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
27-Oct-15	0.00	0.00	0	0
28-Oct-15	0.00	0.00	0	0
29-Oct-15	0.00	0.00	0	0
30-Oct-15	0.00	0.00	0	0
31-Oct-15	0.00	0.00	0	0
1-Nov-15	0.00	0.00	0	0
2-Nov-15	0.00	0.00	0	0
3-Nov-15	0.00	0.00	0	0
4-Nov-15	0.50	1.22	3	271
5-Nov-15	0.00	0.00	0	0
6-Nov-15	0.00	0.00	0	0
7-Nov-15	0.00	0.00	0	0
8-Nov-15	0.00	0.00	0	0
9-Nov-15	0.00	0.00	0	0
10-Nov-15	0.17	0.41	1	90
11-Nov-15	0.00	0.00	0	0
12-Nov-15	0.00	0.00	0	0
13-Nov-15	0.17	0.41	1	90
14-Nov-15	0.00	0.00	0	0
15-Nov-15	0.00	0.00	0	0
16-Nov-15	0.00	0.00	0	0
17-Nov-15	0.17	0.41	1	90
18-Nov-15	0.00	0.00	0	0
19-Nov-15	0.00	0.00	0	0
20-Nov-15	0.00	0.00	0	0
21-Nov-15	0.00	0.00	0	0
22-Nov-15	0.00	0.00	0	0
23-Nov-15	0.17	0.41	1	90
24-Nov-15	0.00	0.00	0	0
25-Nov-15	0.00	0.00	0	0
26-Nov-15	0.00	0.00	0	0
27-Nov-15	0.00	0.00	0	0
28-Nov-15	0.00	0.00	0	0
29-Nov-15	0.00	0.00	0	0
30-Nov-15	0.00	0.00	0	0
1-Dec-15	0.00	0.00	0	0
2-Dec-15	0.00	0.00	0	0
3-Dec-15	0.00	0.00	0	0
4-Dec-15	0.00	0.00	0	0
5-Dec-15	0.00	0.00	0	0
6-Dec-15	0.00	0.00	0	0
7-Dec-15	0.00	0.00	0	0
8-Dec-15	0.17	0.41	1	90
9-Dec-15	0.00	0.00	0	0
10-Dec-15	0.00	0.00	0	0
11-Dec-15	0.00	0.00	0	0
12-Dec-15	0.00	0.00	0	0
13-Dec-15	0.00	0.00	0	0
14-Dec-15	0.00	0.00	0	0
15-Dec-15	0.00	0.00	0	0
16-Dec-15	0.00	0.00	0	0

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
17-Dec-15	0.17	0.41	1	90
18-Dec-15	0.17	0.41	1	90
19-Dec-15	0.00	0.00	0	0
20-Dec-15	0.00	0.00	0	0
21-Dec-15	0.00	0.00	0	0
22-Dec-15	0.00	0.00	0	0
23-Dec-15	0.00	0.00	0	0
24-Dec-15	0.00	0.00	0	0
25-Dec-15	0.00	0.00	0	0
26-Dec-15	0.00	0.00	0	0
27-Dec-15	0.00	0.00	0	0
28-Dec-15	0.00	0.00	0	0
29-Dec-15	0.00	0.00	0	0
30-Dec-15	0.00	0.00	0	0
31-Dec-15	0.00	0.00	0	0
Estimated Total Influx				904

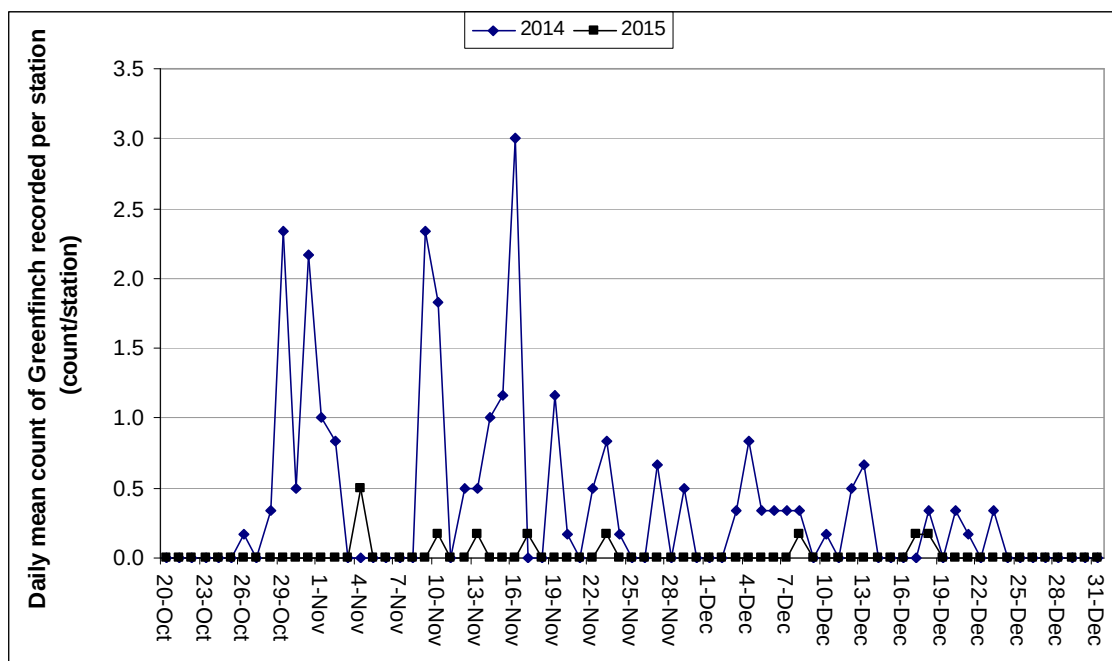


Figure 6. Daily mean counts of Greenfinch per station (= site) recorded between 20 October and 31 December 2015 during the present (2015) and previous (2014) surveys.

Mean count values for Greenfinch recorded from each of the 21 sites are indicated on the map shown in Figure 7. Overall, mean counts for this species were low or zero over the Maltese Islands. The highest mean count was recorded from White Rocks (Grid 5277) located on the northeastern coast of Malta.

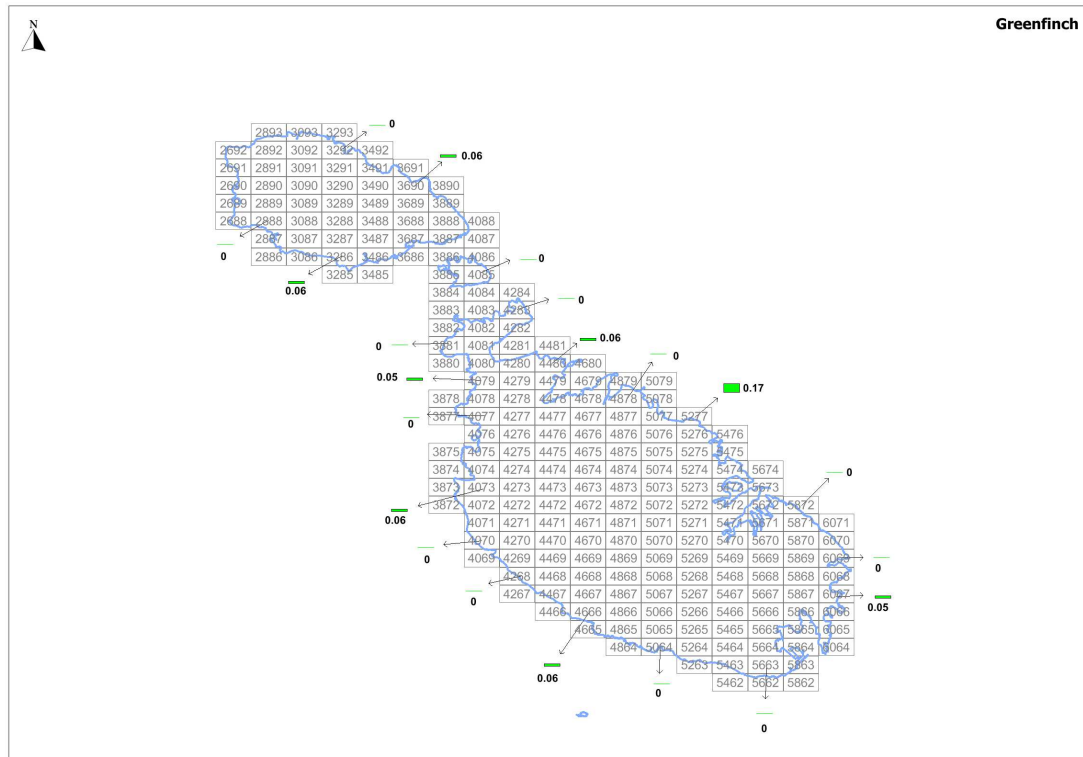


Figure 7. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Greenfinch recorded from study sites in the respective cells.

Siskin

Raw daily counts for Siskin recorded from the 21 sites during the present study varied between 0 and a maximum of 15 (see Appendix I), while the mean daily counts ranged between 0 and 2.5 (Table 5). Relatively high counts for this species were recorded on 10 and 17 November 2014, when a total of 15 Siskin individuals were observed. The total counts, i.e. the total number of Siskin, recorded from a given grid location (= study site) during the whole study period (73 days), varied appreciably between the different sites: at the lower end, no individuals were recorded throughout the survey period from the sites at grid locations 6069 and 5064, while at the higher end, 51 Siskin individuals were recorded from the site at grid location 4085 (see Figure 1).

Values of mean daily counts and total counts of Siskin recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 5. Values of standard deviation associated with the mean daily counts are also provided in Table 5. Counts of Siskin recorded from the present survey, along with ones made during the autumn 2014 survey, are shown graphically in Figure 8. Overall, count values for Siskin from the present (autumn 2015) survey are higher than those recorded from the previous autumn 2014 survey. A similar pattern of highest count values made during the period 24 October to 6 December is noted for both 2014 and 2015. However, while counts for this species are noted during the period 7 to 31 December 2015, no counts were recorded during the same period in 2014 (Figure 8).

Table 5

Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Siskin.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.00	0.00	0	0
21-Oct-15	0.00	0.00	0	0
22-Oct-15	0.17	0.41	1	90
23-Oct-15	0.83	1.17	5	452
24-Oct-15	1.00	1.26	6	542
25-Oct-15	0.83	1.60	5	452
26-Oct-15	0.33	0.52	2	181
27-Oct-15	0.00	0.00	0	0
28-Oct-15	0.33	0.82	2	181
29-Oct-15	0.00	0.00	0	0
30-Oct-15	0.00	0.00	0	0
31-Oct-15	0.17	0.41	1	90
1-Nov-15	0.00	0.00	0	0
2-Nov-15	0.17	0.41	1	90
3-Nov-15	0.67	1.21	4	362
4-Nov-15	0.67	1.21	4	362
5-Nov-15	0.33	0.52	2	181
6-Nov-15	0.50	0.84	3	271
7-Nov-15	0.67	1.21	4	362
8-Nov-15	1.17	1.60	7	633
9-Nov-15	0.50	0.84	3	271
10-Nov-15	2.50	2.59	15	1356
11-Nov-15	0.67	0.82	4	362
12-Nov-15	1.33	2.42	8	723
13-Nov-15	0.67	1.21	4	362
14-Nov-15	1.17	0.98	7	633
15-Nov-15	0.00	0.00	0	0
16-Nov-15	0.50	1.22	3	271
17-Nov-15	2.50	2.95	15	1356
18-Nov-15	1.00	2.00	6	542
19-Nov-15	0.67	1.21	4	362
20-Nov-15	0.33	0.82	2	181
21-Nov-15	0.00	0.00	0	0
22-Nov-15	0.00	0.00	0	0
23-Nov-15	0.17	0.41	1	90
24-Nov-15	1.00	1.67	6	542
25-Nov-15	0.00	0.00	0	0
26-Nov-15	0.33	0.82	2	181
27-Nov-15	0.50	1.22	3	271
28-Nov-15	0.67	0.82	4	362
29-Nov-15	0.17	0.41	1	90
30-Nov-15	0.00	0.00	0	0
1-Dec-15	0.33	0.82	2	181
2-Dec-15	0.00	0.00	0	0
3-Dec-15	0.00	0.00	0	0
4-Dec-15	0.67	1.03	4	362
5-Dec-15	0.00	0.00	0	0

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
6-Dec-15	0.00	0.00	0	0
7-Dec-15	1.17	1.83	7	633
8-Dec-15	0.50	1.22	3	271
9-Dec-15	0.00	0.00	0	0
10-Dec-15	0.00	0.00	0	0
11-Dec-15	0.00	0.00	0	0
12-Dec-15	0.00	0.00	0	0
13-Dec-15	0.17	0.41	1	90
14-Dec-15	1.00	1.26	6	542
15-Dec-15	0.00	0.00	0	0
16-Dec-15	1.17	2.86	7	633
17-Dec-15	0.00	0.00	0	0
18-Dec-15	0.67	1.03	4	362
19-Dec-15	0.00	0.00	0	0
20-Dec-15	0.00	0.00	0	0
21-Dec-15	0.33	0.82	2	181
22-Dec-15	0.00	0.00	0	0
23-Dec-15	0.00	0.00	0	0
24-Dec-15	0.00	0.00	0	0
25-Dec-15	0.00	0.00	0	0
26-Dec-15	0.00	0.00	0	0
27-Dec-15	0.17	0.41	1	90
28-Dec-15	0.67	1.63	4	362
29-Dec-15	0.00	0.00	0	0
30-Dec-15	0.17	0.41	1	90
31-Dec-15	0.00	0.00	0	0
Estimated Total Influx				16,002

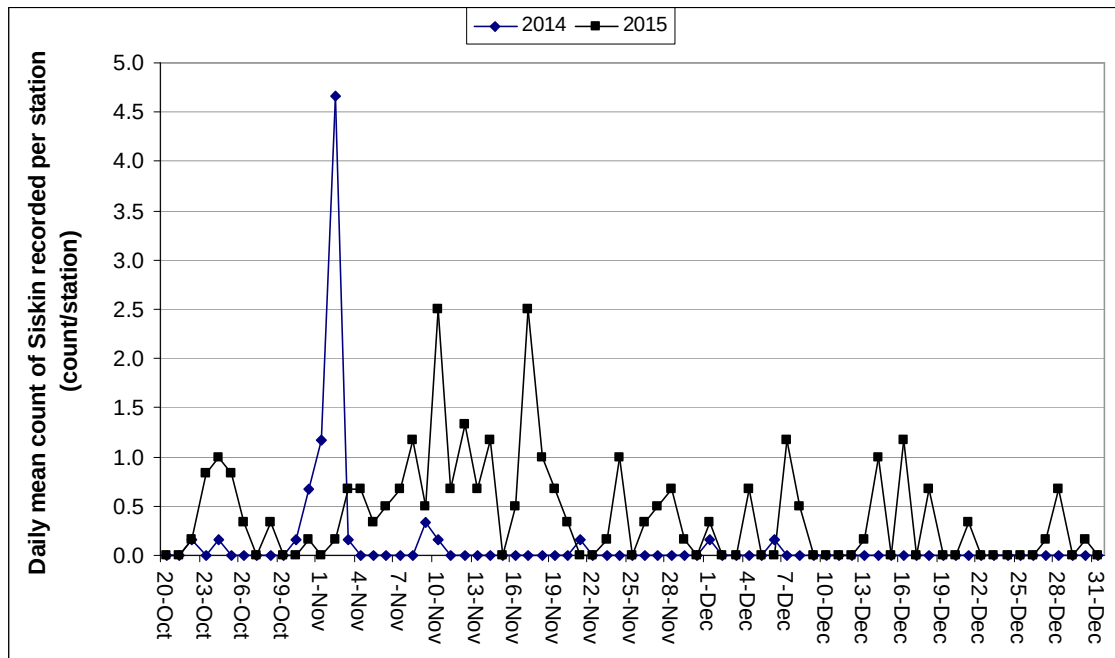


Figure 8. Daily mean counts of Siskin per station (= site) recorded between 20 October and 31 December 2015 during the present (2015) and previous (2014) surveys.

The estimated total influx of Siskin over the Maltese Islands is given in Table 5. Based on the mean daily counts (Table 5), extrapolation translates to an estimated daily influx ranging between 0 and 1,356 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 16,002 individuals, i.e. some 219 birds per day; see Table 5.

Mean count values for Siskin recorded from each of the 21 sites are indicated on the map shown in Figure 9. The highest mean count was recorded from Marsalforn (Grid 3292) located on the northern coast of Gozo, while overall high counts were recorded from the other study sites located in Gozo, the study site in Comino, the two study sites located in the northernmost part of Malta, and Fawwara (Grid 4666) located in southwest Malta. A mean count of zero was recorded from the study site at Zonqor Point (Grid 6069) and at Lapsi (Grid 5064), both located in the southeastern Malta.

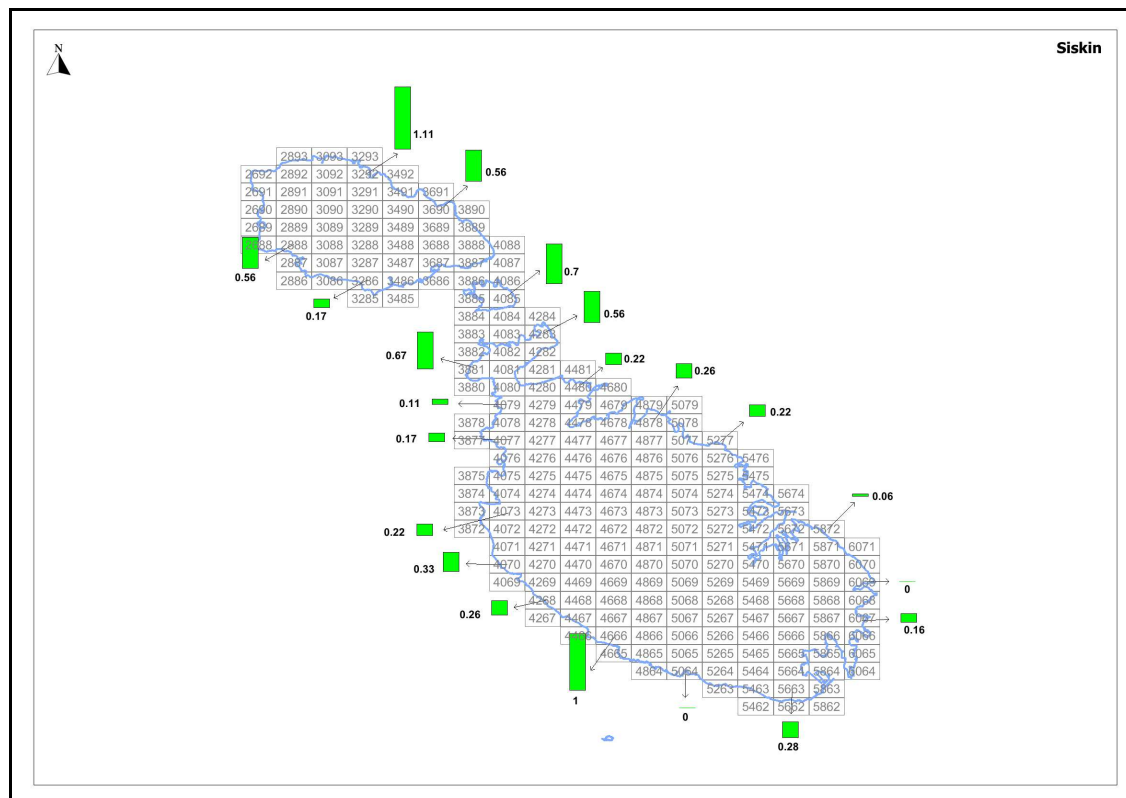


Figure 9. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Siskin recorded from study sites in the respective cells.

Goldfinch

Raw daily counts for Goldfinch recorded from the 21 sites during the present study varied between 0 and a maximum of 1 (see Appendix I), while the mean daily counts ranged between 0 and 0.17 (Table 6). Counts for this species were therefore very low overall: a single Goldfinch individual was recorded from the site at grid location 4085 (see Figure 1), while no individuals were recorded throughout the survey period from any of the other sites.

Values of mean daily counts and total counts of Goldfinch recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 6. Values of standard deviation associated with the mean daily counts are also provided in Table 6. Counts of Goldfinch recorded from the present survey, along with ones made during the autumn 2014 survey, are shown graphically in Figure 10. Overall, count values for Goldfinch from both the present (autumn 2015) and previous (autumn 2014) surveys are low and sporadic, albeit recorded during the period 1 November to 1 December. No temporal trend in migratory influx over the survey period in both 2014 and 2015 is discernible (Figure 10).

Table 6

Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Goldfinch.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.00	0.00	0	0
21-Oct-15	0.00	0.00	0	0
22-Oct-15	0.00	0.00	0	0
23-Oct-15	0.00	0.00	0	0
24-Oct-15	0.00	0.00	0	0
25-Oct-15	0.00	0.00	0	0
26-Oct-15	0.00	0.00	0	0
27-Oct-15	0.00	0.00	0	0
28-Oct-15	0.00	0.00	0	0
29-Oct-15	0.00	0.00	0	0
30-Oct-15	0.00	0.00	0	0
31-Oct-15	0.00	0.00	0	0
1-Nov-15	0.00	0.00	0	0
2-Nov-15	0.00	0.00	0	0
3-Nov-15	0.00	0.00	0	0
4-Nov-15	0.00	0.00	0	0
5-Nov-15	0.00	0.00	0	0
6-Nov-15	0.00	0.00	0	0
7-Nov-15	0.00	0.00	0	0
8-Nov-15	0.00	0.00	0	0
9-Nov-15	0.00	0.00	0	0
10-Nov-15	0.00	0.00	0	0
11-Nov-15	0.00	0.00	0	0
12-Nov-15	0.00	0.00	0	0
13-Nov-15	0.00	0.00	0	0
14-Nov-15	0.00	0.00	0	0
15-Nov-15	0.00	0.00	0	0
16-Nov-15	0.00	0.00	0	0
17-Nov-15	0.00	0.00	0	0
18-Nov-15	0.00	0.00	0	0
19-Nov-15	0.00	0.00	0	0
20-Nov-15	0.00	0.00	0	0
21-Nov-15	0.00	0.00	0	0
22-Nov-15	0.00	0.00	0	0
23-Nov-15	0.00	0.00	0	0
24-Nov-15	0.17	0.41	1	90
25-Nov-15	0.00	0.00	0	0
26-Nov-15	0.00	0.00	0	0

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
27-Nov-15	0.00	0.00	0	0
28-Nov-15	0.00	0.00	0	0
29-Nov-15	0.00	0.00	0	0
30-Nov-15	0.00	0.00	0	0
1-Dec-15	0.00	0.00	0	0
2-Dec-15	0.00	0.00	0	0
3-Dec-15	0.00	0.00	0	0
4-Dec-15	0.00	0.00	0	0
5-Dec-15	0.00	0.00	0	0
6-Dec-15	0.00	0.00	0	0
7-Dec-15	0.00	0.00	0	0
8-Dec-15	0.00	0.00	0	0
9-Dec-15	0.00	0.00	0	0
10-Dec-15	0.00	0.00	0	0
11-Dec-15	0.00	0.00	0	0
12-Dec-15	0.00	0.00	0	0
13-Dec-15	0.00	0.00	0	0
14-Dec-15	0.00	0.00	0	0
15-Dec-15	0.00	0.00	0	0
16-Dec-15	0.00	0.00	0	0
17-Dec-15	0.00	0.00	0	0
18-Dec-15	0.00	0.00	0	0
19-Dec-15	0.00	0.00	0	0
20-Dec-15	0.00	0.00	0	0
21-Dec-15	0.00	0.00	0	0
22-Dec-15	0.00	0.00	0	0
23-Dec-15	0.00	0.00	0	0
24-Dec-15	0.00	0.00	0	0
25-Dec-15	0.00	0.00	0	0
26-Dec-15	0.00	0.00	0	0
27-Dec-15	0.00	0.00	0	0
28-Dec-15	0.00	0.00	0	0
29-Dec-15	0.00	0.00	0	0
30-Dec-15	0.00	0.00	0	0
31-Dec-15	0.00	0.00	0	0
Estimated Total Influx				90

The estimated total influx of Goldfinch over the Maltese Islands is given in Table 6. Based on the mean daily counts (Table 6), extrapolation translates to an estimated daily influx ranging between 0 and 90 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 90 individuals; see Table 6.

Mean count values recorded for Goldfinch from each of the 21 sites are indicated on the map shown in Figure 11. Only a single count was recorded; this was made at the study site in Comino (Grid 4085).

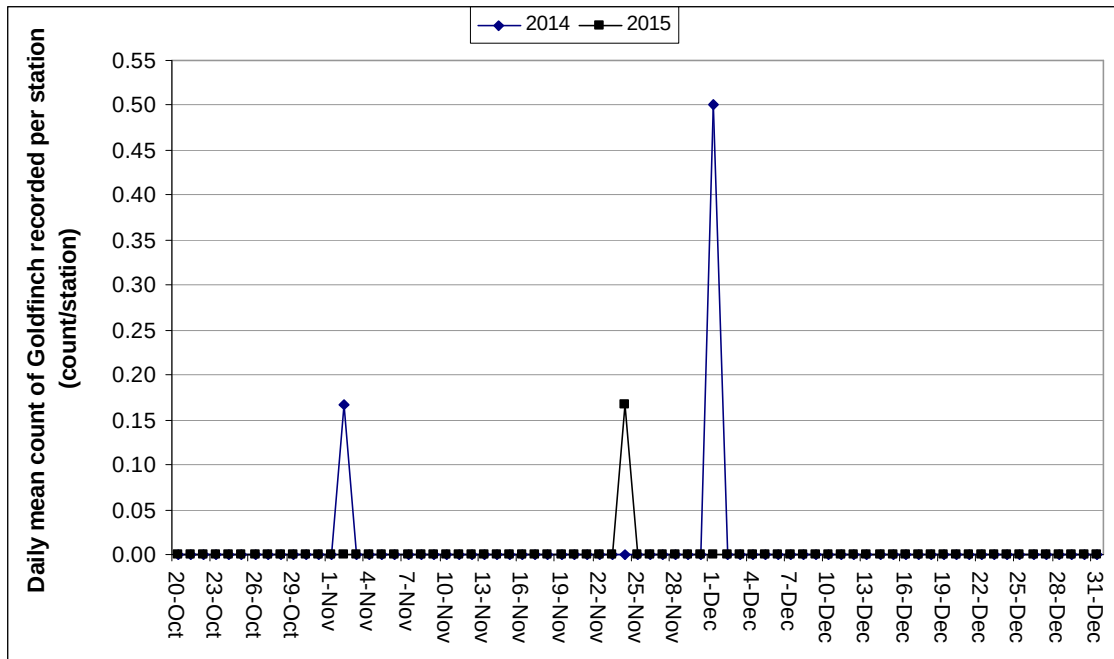


Figure 10. Daily mean counts of Goldfinch per station (= site) recorded between 20 October and 31 December 2015 during the present (2015) and previous (2014) surveys.

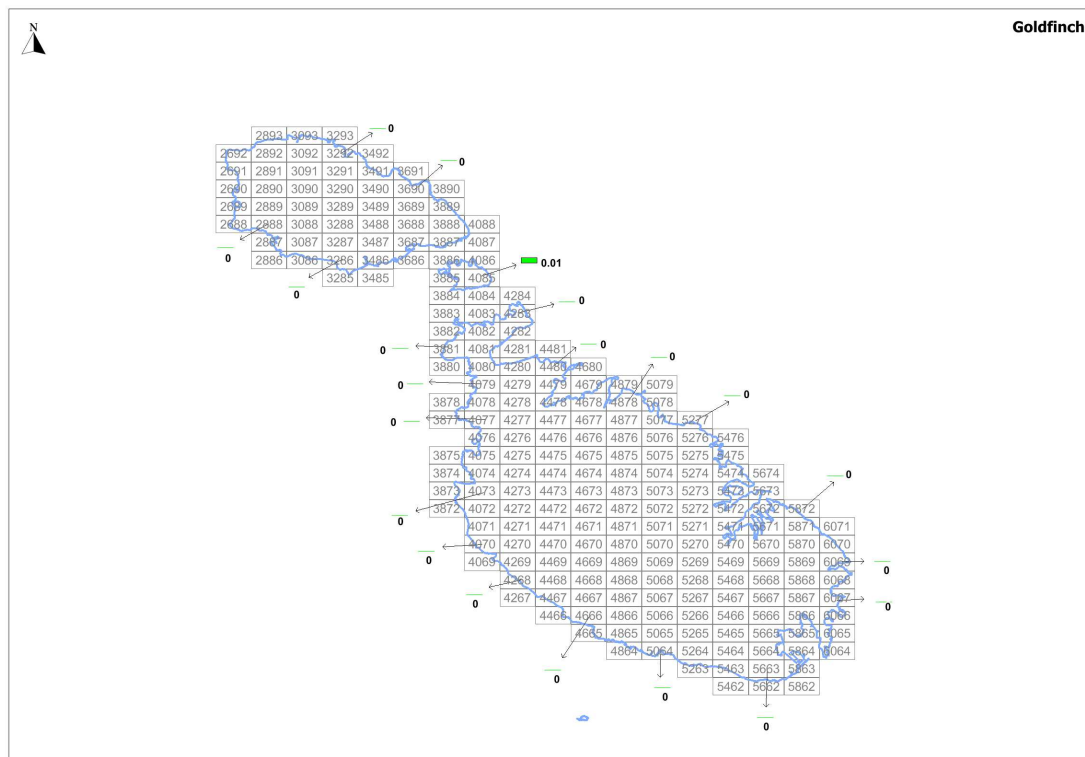


Figure 11. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Goldfinch recorded from study sites in the respective cells.

Serin

Raw daily counts for Serin recorded from the 21 sites during the present study varied between 0 and a maximum of 13 (see Appendix I), while the mean daily counts ranged between 0 and 2.17 (Table 7). Relatively high counts for this species was recorded on 16 November 2015. The total counts, i.e. the total number of Serin, recorded from a given grid location (= study site) during the whole study period (73 days), varied appreciably between the different sites: at the lower end, no individuals were recorded throughout the survey period from each of the sites at grid locations 4268, 4077, 4666, 6069, 4073, 5872 and 4070 (see Figure 1), while at the higher end, 29 and 22 Serin individuals were recorded from the sites at grid locations 4085 and 3292 respectively.

Values of mean daily counts and total counts of Serin recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 7. Values of standard deviation associated with the mean daily counts are also provided in Table 7. Counts of Serin recorded from the present survey, along with ones made during the autumn 2014 survey, are shown graphically in Figure 12. Overall, count values for Siskin from the present (autumn 2015) survey are lower than those recorded from the previous autumn 2014 survey. A similar pattern of highest count values made during the period 8 November to 24 December is noted for both 2014 and 2015. However, while counts for this species are noted during the period 30 October to 7 November 2014, no counts were recorded during the same period in 2015 (Figure 12).

Table 7

Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Serin.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.00	0.00	0	0
21-Oct-15	0.00	0.00	0	0
22-Oct-15	0.00	0.00	0	0
23-Oct-15	0.00	0.00	0	0
24-Oct-15	0.00	0.00	0	0
25-Oct-15	0.00	0.00	0	0
26-Oct-15	0.00	0.00	0	0
27-Oct-15	0.00	0.00	0	0
28-Oct-15	0.00	0.00	0	0
29-Oct-15	0.00	0.00	0	0
30-Oct-15	0.00	0.00	0	0
31-Oct-15	0.00	0.00	0	0
1-Nov-15	0.00	0.00	0	0
2-Nov-15	0.00	0.00	0	0
3-Nov-15	0.00	0.00	0	0
4-Nov-15	0.00	0.00	0	0
5-Nov-15	0.00	0.00	0	0
6-Nov-15	0.00	0.00	0	0
7-Nov-15	0.00	0.00	0	0
8-Nov-15	0.17	0.41	1	90
9-Nov-15	0.50	1.22	3	271
10-Nov-15	0.33	0.82	2	181
11-Nov-15	0.33	0.82	2	181
12-Nov-15	0.00	0.00	0	0
13-Nov-15	0.50	1.22	3	271

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
14-Nov-15	0.00	0.00	0	0
15-Nov-15	0.67	1.63	4	362
16-Nov-15	2.17	3.13	13	1175
17-Nov-15	0.83	1.33	5	452
18-Nov-15	0.50	1.22	3	271
19-Nov-15	0.00	0.00	0	0
20-Nov-15	0.33	0.82	2	181
21-Nov-15	0.17	0.41	1	90
22-Nov-15	0.00	0.00	0	0
23-Nov-15	0.00	0.00	0	0
24-Nov-15	0.33	0.82	2	181
25-Nov-15	0.00	0.00	0	0
26-Nov-15	0.00	0.00	0	0
27-Nov-15	0.00	0.00	0	0
28-Nov-15	0.33	0.82	2	181
29-Nov-15	0.33	0.82	2	181
30-Nov-15	0.33	0.82	2	181
1-Dec-15	0.00	0.00	0	0
2-Dec-15	0.33	0.82	2	181
3-Dec-15	0.67	1.03	4	362
4-Dec-15	0.00	0.00	0	0
5-Dec-15	0.00	0.00	0	0
6-Dec-15	0.83	1.33	5	452
7-Dec-15	0.83	0.98	5	452
8-Dec-15	0.00	0.00	0	0
9-Dec-15	0.00	0.00	0	0
10-Dec-15	0.50	1.22	3	271
11-Dec-15	0.33	0.82	2	181
12-Dec-15	0.00	0.00	0	0
13-Dec-15	1.17	2.04	7	633
14-Dec-15	0.33	0.82	2	181
15-Dec-15	0.33	0.82	2	181
16-Dec-15	0.33	0.82	2	181
17-Dec-15	0.00	0.00	0	0
18-Dec-15	0.33	0.82	2	181
19-Dec-15	0.33	0.82	2	181
20-Dec-15	0.00	0.00	0	0
21-Dec-15	0.50	1.22	3	271
22-Dec-15	0.00	0.00	0	0
23-Dec-15	0.67	1.03	4	362
24-Dec-15	0.00	0.00	0	0
25-Dec-15	1.00	1.67	6	542
26-Dec-15	0.83	1.33	5	452
27-Dec-15	0.17	0.41	1	90
28-Dec-15	0.00	0.00	0	0
29-Dec-15	0.50	1.22	3	271
30-Dec-15	0.17	0.41	1	90
31-Dec-15	0.00	0.00	0	0
Estimated Total Influx				9,764

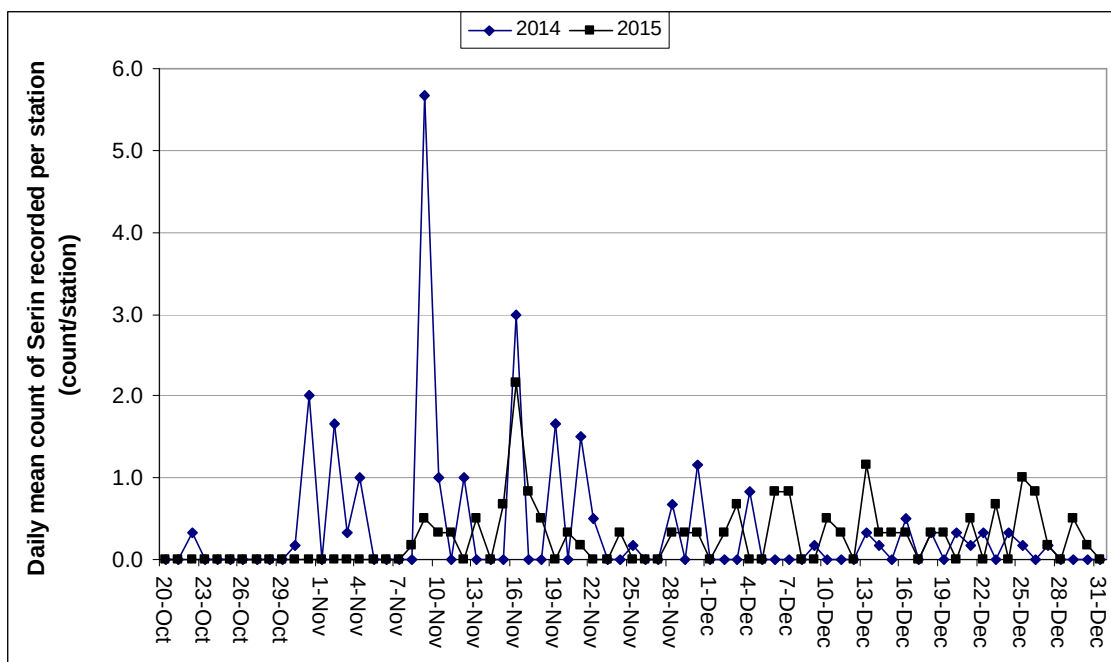


Figure 12. Daily mean counts of Serin per station (= site) recorded between 20 October and 31 December 2015 during the present (2015) and previous (2014) surveys.

The estimated total influx of Serin over the Maltese Islands is given in Table 7. Based on the mean daily counts (Table 7), extrapolation translates to an estimated daily influx ranging between 0 and 1,175 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 9,764 individuals, i.e. some 134 birds per day; see Table 7.

Mean count values for Serin recorded from each of the 21 sites are indicated on the map shown in Figure 13. The highest mean count was recorded from Marsalforn (Grid 3292) located on the northern coast of Gozo, while overall elevated counts were recorded from the other study sites located in Gozo, the study site in Comino, and study sites located in northwest and southwest Malta. Zero counts were recorded from study sites located in western Malta and in Rinella/Xghajra (Grid 5872) and Zonqor Point/M'Scala (Grid 6069).

Hawfinch

Raw daily counts for Hawfinch recorded from the 21 sites during the present study varied between 0 and a maximum of 1 (see Appendix I), while the mean daily counts ranged between 0 and 0.17 (Table 8). Counts for this species were therefore very low overall: a single Hawfinch individual was recorded from the site at grid location 4480 (see Figure 1), while no individuals were recorded throughout the survey period from any of the other sites. However, this result should be interpreted with caution, particularly in the light that 500 individuals were reported caught during autumn 2015 (see Section 4 of the present report). The Hawfinch is a shy, elusive bird that seeks the cover of vegetation, particularly thick shrubs and trees, and is particularly difficult to detect while in flight. The present record of a single individual of this species may therefore have resulted from under-sampling, and should not be taken as an indication of the actual migratory influx for this species.

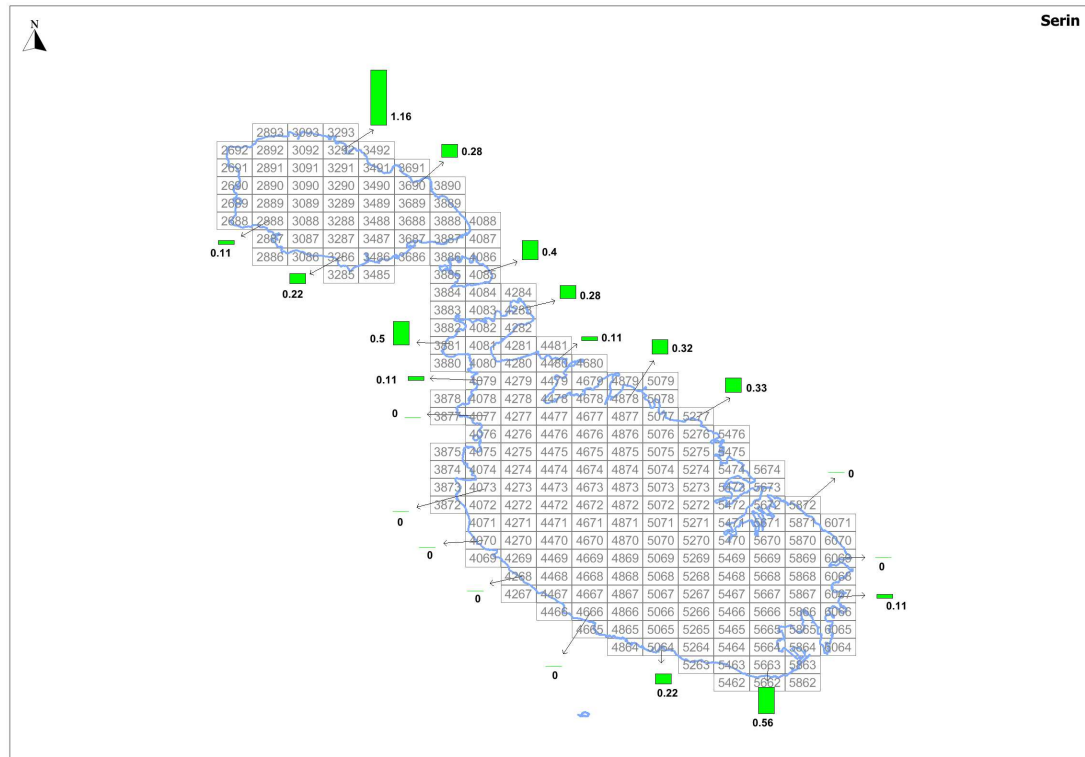


Figure 13. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Serin recorded from study sites in the respective cells.

Values of mean daily counts and total counts of Hawfinch recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 8. Values of standard deviation associated with the mean daily counts are also provided in Table 8. Counts of Hawfinch recorded from the present survey, along with ones made during the autumn 2014 survey, are shown graphically in Figure 14. Overall, count values for Hawfinch recorded during the present (autumn 2015) are much lower than those made during the previous (autumn 2014) survey; only a single individual of this species was recorded during the present survey. In 2014, elevated counts were recorded between 20 October and 4 November. The single count noted during the present (2015) survey was recorded on 2 November.

Table 8

Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Hawfinch.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.00	0.00	0	0
21-Oct-15	0.00	0.00	0	0
22-Oct-15	0.00	0.00	0	0
23-Oct-15	0.00	0.00	0	0

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
24-Oct-15	0.00	0.00	0	0
25-Oct-15	0.00	0.00	0	0
26-Oct-15	0.00	0.00	0	0
27-Oct-15	0.00	0.00	0	0
28-Oct-15	0.00	0.00	0	0
29-Oct-15	0.00	0.00	0	0
30-Oct-15	0.00	0.00	0	0
31-Oct-15	0.00	0.00	0	0
1-Nov-15	0.00	0.00	0	0
2-Nov-15	0.17	0.41	1	90
3-Nov-15	0.00	0.00	0	0
4-Nov-15	0.00	0.00	0	0
5-Nov-15	0.00	0.00	0	0
6-Nov-15	0.00	0.00	0	0
7-Nov-15	0.00	0.00	0	0
8-Nov-15	0.00	0.00	0	0
9-Nov-15	0.00	0.00	0	0
10-Nov-15	0.00	0.00	0	0
11-Nov-15	0.00	0.00	0	0
12-Nov-15	0.00	0.00	0	0
13-Nov-15	0.00	0.00	0	0
14-Nov-15	0.00	0.00	0	0
15-Nov-15	0.00	0.00	0	0
16-Nov-15	0.00	0.00	0	0
17-Nov-15	0.00	0.00	0	0
18-Nov-15	0.00	0.00	0	0
19-Nov-15	0.00	0.00	0	0
20-Nov-15	0.00	0.00	0	0
21-Nov-15	0.00	0.00	0	0
22-Nov-15	0.00	0.00	0	0
23-Nov-15	0.00	0.00	0	0
24-Nov-15	0.00	0.00	0	0
25-Nov-15	0.00	0.00	0	0
26-Nov-15	0.00	0.00	0	0
27-Nov-15	0.00	0.00	0	0
28-Nov-15	0.00	0.00	0	0
29-Nov-15	0.00	0.00	0	0
30-Nov-15	0.00	0.00	0	0
1-Dec-15	0.00	0.00	0	0
2-Dec-15	0.00	0.00	0	0
3-Dec-15	0.00	0.00	0	0
4-Dec-15	0.00	0.00	0	0
5-Dec-15	0.00	0.00	0	0
6-Dec-15	0.00	0.00	0	0
7-Dec-15	0.00	0.00	0	0
8-Dec-15	0.00	0.00	0	0
9-Dec-15	0.00	0.00	0	0
10-Dec-15	0.00	0.00	0	0
11-Dec-15	0.00	0.00	0	0
12-Dec-15	0.00	0.00	0	0
13-Dec-15	0.00	0.00	0	0

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
14-Dec-15	0.00	0.00	0	0
15-Dec-15	0.00	0.00	0	0
16-Dec-15	0.00	0.00	0	0
17-Dec-15	0.00	0.00	0	0
18-Dec-15	0.00	0.00	0	0
19-Dec-15	0.00	0.00	0	0
20-Dec-15	0.00	0.00	0	0
21-Dec-15	0.00	0.00	0	0
22-Dec-15	0.00	0.00	0	0
23-Dec-15	0.00	0.00	0	0
24-Dec-15	0.00	0.00	0	0
25-Dec-15	0.00	0.00	0	0
26-Dec-15	0.00	0.00	0	0
27-Dec-15	0.00	0.00	0	0
28-Dec-15	0.00	0.00	0	0
29-Dec-15	0.00	0.00	0	0
30-Dec-15	0.00	0.00	0	0
31-Dec-15	0.00	0.00	0	0
Estimated Total Influx				90

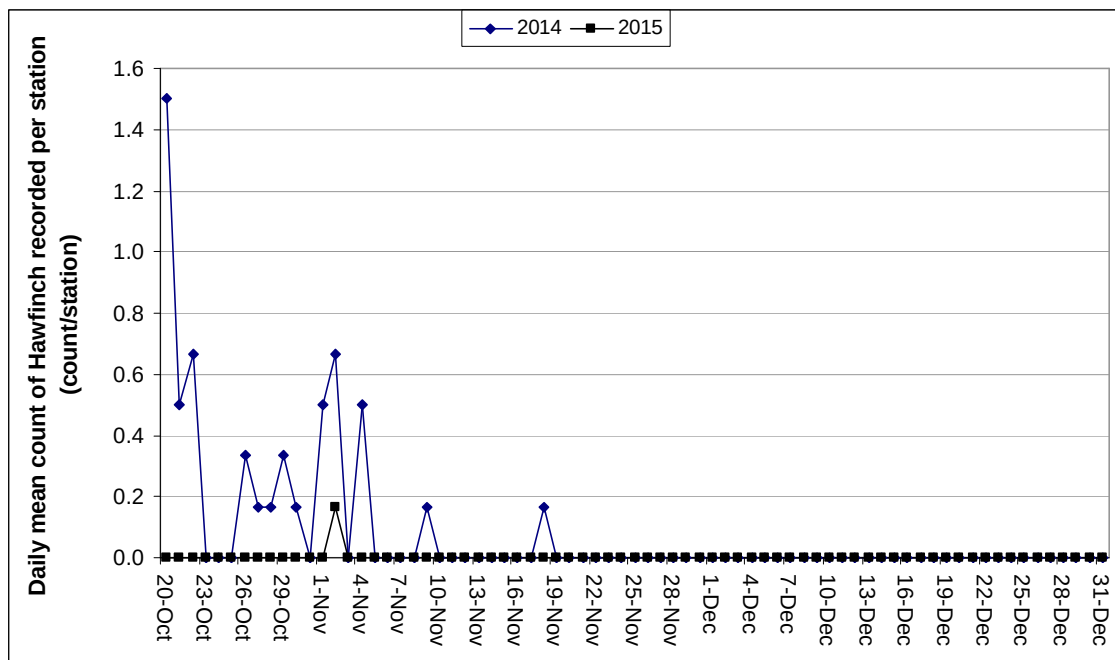


Figure 14. Daily mean counts of Hawfinch per station (= site) recorded between 20 October and 31 December 2015 during the present (2015) and previous (2014) surveys.

The estimated total influx of Hawfinch over the Maltese Islands is given in Table 8. Based on the mean daily counts (Table 2), extrapolation translates to an estimated daily influx ranging between 0 and 90 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 90 individuals; see Table 8. Mean count values recorded from each of the 21 sites are indicated on the map shown in Figure 15. Only a single count of Hawfinch was recorded, and this was made in Mgiebah (Grid 4480) located on the northeastern coast of Malta.

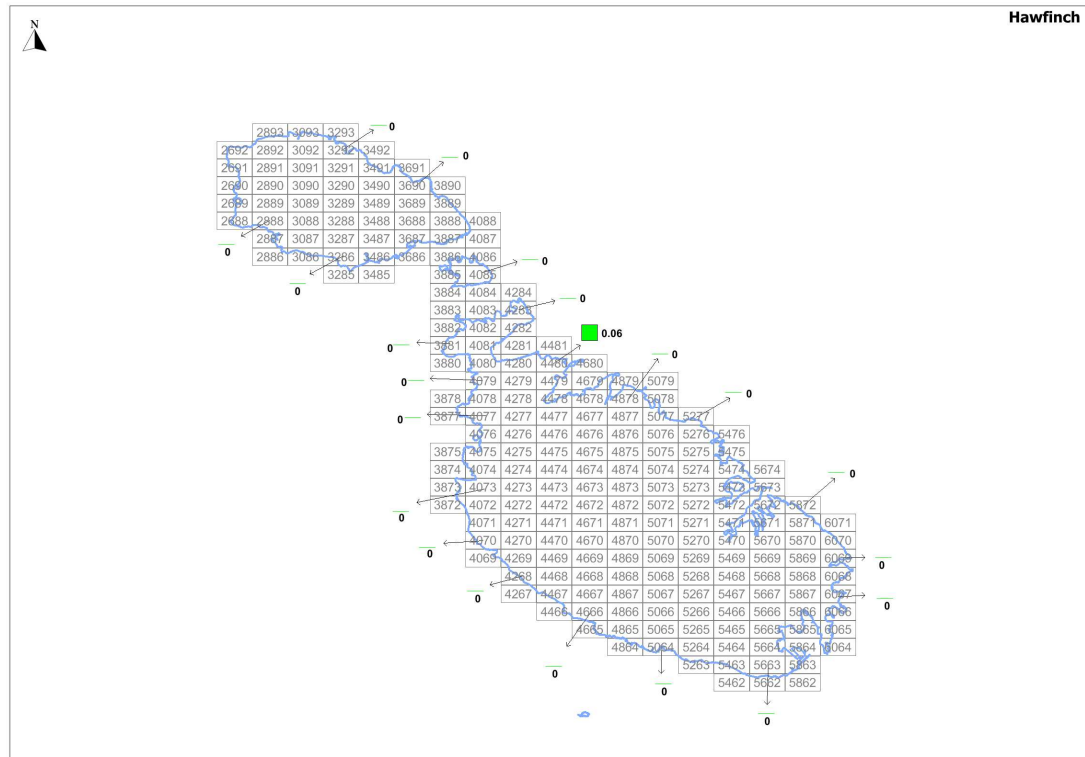


Figure 15. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Hawfinch recorded from study sites in the respective cells.

Golden Plover

Raw daily counts for Golden Plover recorded from the 21 sites during the present study varied between 0 and a maximum of 9 (see Appendix I), while the mean daily counts ranged between 0 and 1.5 (Table 9). Relatively high counts for this species were recorded on some days towards the beginning of December (3 and 4 December). The total counts, i.e. the total number of Golden Plover, recorded from a given grid location (= study site) during the whole study period (73 days), varied appreciably between the different sites: at the lower end, no individuals were recorded throughout the survey period from each of the sites at grid locations 4079, 4268, 4878, 4666, 6069, 5872 and 5663, while at the higher end, 25 Golden Plover individuals were recorded from the site at grid location 4085.

Values of mean daily counts and total counts of Golden Plover recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 9. Values of standard deviation associated with the mean daily counts are also provided in Table 9. The general trend noted from the count data is a main migratory influx between late November and mid-December (Figure 16). No comparison between counts recorded during the present (2015) survey and those from previous surveys was possible since this is the first time that monitoring of this species survey using the present methodology was implemented.

Table 9

Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Golden Plover.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.00	0.00	0	0
21-Oct-15	0.00	0.00	0	0
22-Oct-15	0.00	0.00	0	0
23-Oct-15	0.00	0.00	0	0
24-Oct-15	0.00	0.00	0	0
25-Oct-15	0.00	0.00	0	0
26-Oct-15	0.00	0.00	0	0
27-Oct-15	0.17	0.41	1	90
28-Oct-15	0.00	0.00	0	0
29-Oct-15	0.00	0.00	0	0
30-Oct-15	0.00	0.00	0	0
31-Oct-15	0.00	0.00	0	0
1-Nov-15	0.00	0.00	0	0
2-Nov-15	0.67	0.82	4	362
3-Nov-15	0.00	0.00	0	0
4-Nov-15	0.00	0.00	0	0
5-Nov-15	0.00	0.00	0	0
6-Nov-15	0.33	0.82	2	181
7-Nov-15	0.00	0.00	0	0
8-Nov-15	0.00	0.00	0	0
9-Nov-15	0.00	0.00	0	0
10-Nov-15	0.00	0.00	0	0
11-Nov-15	0.00	0.00	0	0
12-Nov-15	0.00	0.00	0	0
13-Nov-15	0.00	0.00	0	0
14-Nov-15	0.00	0.00	0	0
15-Nov-15	0.00	0.00	0	0
16-Nov-15	0.00	0.00	0	0
17-Nov-15	0.00	0.00	0	0
18-Nov-15	0.00	0.00	0	0
19-Nov-15	0.00	0.00	0	0
20-Nov-15	0.33	0.82	2	181
21-Nov-15	0.00	0.00	0	0
22-Nov-15	0.17	0.41	1	90
23-Nov-15	0.17	0.41	1	90
24-Nov-15	0.00	0.00	0	0
25-Nov-15	0.50	0.84	3	271
26-Nov-15	0.00	0.00	0	0
27-Nov-15	0.00	0.00	0	0
28-Nov-15	0.33	0.52	2	181
29-Nov-15	0.17	0.41	1	90
30-Nov-15	0.67	1.03	4	362
1-Dec-15	0.17	0.41	1	90
2-Dec-15	0.83	1.17	5	452
3-Dec-15	1.33	3.27	8	723
4-Dec-15	1.50	1.97	9	814
5-Dec-15	0.50	1.22	3	271
6-Dec-15	1.00	1.55	6	542

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
7-Dec-15	0.33	0.52	2	181
8-Dec-15	0.00	0.00	0	0
9-Dec-15	0.17	0.41	1	90
10-Dec-15	0.00	0.00	0	0
11-Dec-15	0.00	0.00	0	0
12-Dec-15	0.50	0.84	3	271
13-Dec-15	0.17	0.41	1	90
14-Dec-15	0.33	0.82	2	181
15-Dec-15	0.00	0.00	0	0
16-Dec-15	0.00	0.00	0	0
17-Dec-15	0.67	1.63	4	362
18-Dec-15	0.33	0.82	2	181
19-Dec-15	0.00	0.00	0	0
20-Dec-15	0.33	0.82	2	181
21-Dec-15	0.17	0.41	1	90
22-Dec-15	0.00	0.00	0	0
23-Dec-15	0.00	0.00	0	0
24-Dec-15	0.00	0.00	0	0
25-Dec-15	0.00	0.00	0	0
26-Dec-15	0.00	0.00	0	0
27-Dec-15	0.00	0.00	0	0
28-Dec-15	0.00	0.00	0	0
29-Dec-15	0.17	0.41	1	90
30-Dec-15	0.33	0.82	2	181
31-Dec-15	1.00	2.45	6	542
Estimated Total Influx				7,233

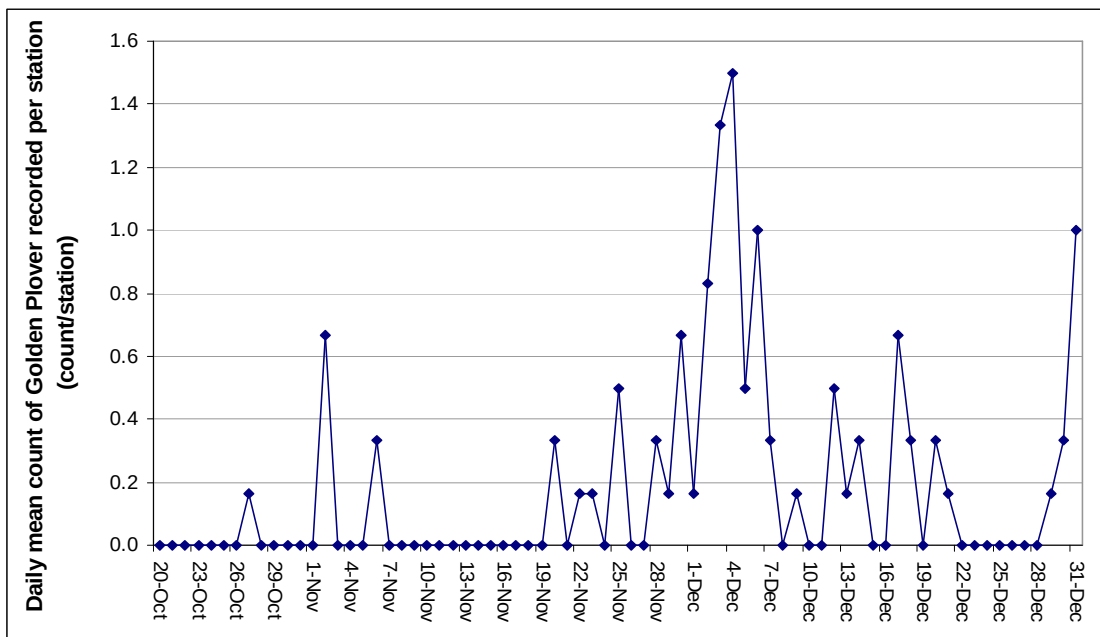


Figure 16. Daily mean counts of Golden Plover per station (= site) recorded during the present survey made between 20 October and 31 December 2015.

An estimate of total influx of Golden Plover over the Maltese Islands is given in Table 9. Based on the mean daily counts (Table 9), extrapolation translates to an estimated daily influx ranging between 0 and 814 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 7,233 individuals, i.e. some 99 birds per day; see Table 9.

Mean count values for Golden Plover recorded from each of the 21 sites are indicated on the map shown in Figure 17. The highest mean count was recorded from San Tumas (Grid 6067) located on the eastern tip of Malta. Other high counts were recorded from the study sites in Gozo, and the study site in Comino. The lowest/zero counts for this species were recorded from the northeastern and southern study sites in Malta.

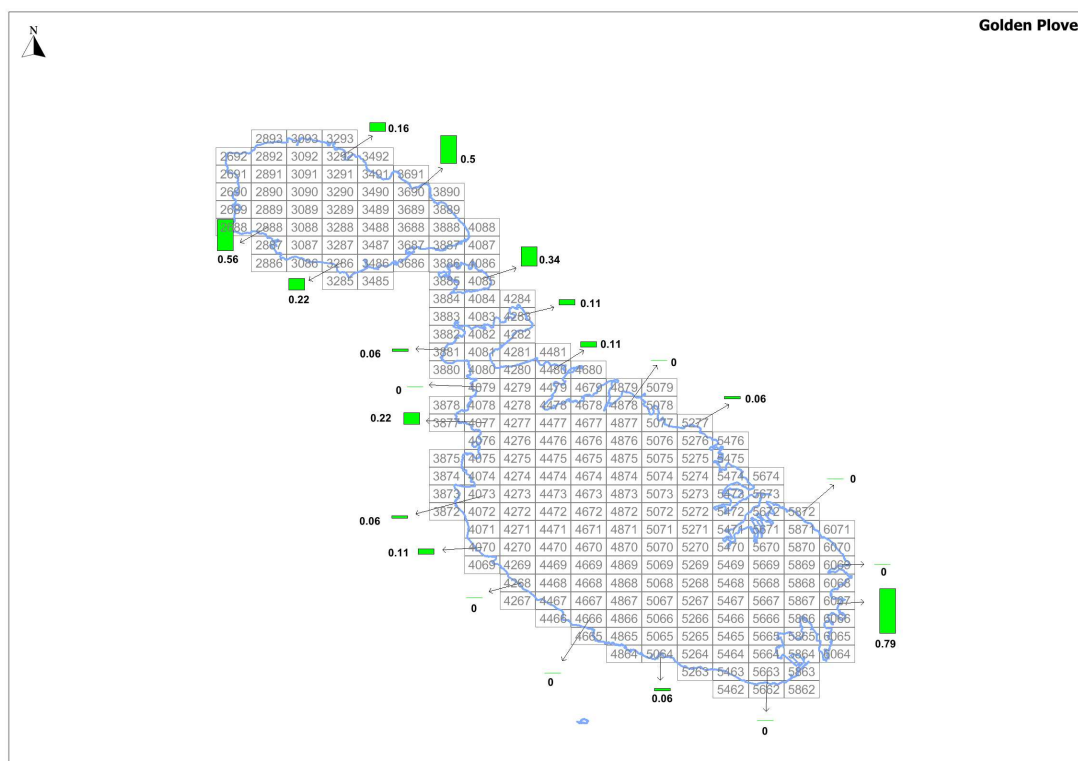


Figure 17. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Golden Plover recorded from study sites in the respective cells.

Song Thrush

Raw daily counts for Song Thrush recorded from the 21 sites during the present study varied between 0 and a maximum of 124 (see Appendix I), while the mean daily counts ranged between 0 and 20.7 (Table 10). Relatively high counts for this species were recorded on 25 October and 3 November 2015. The total counts, i.e. the total number of Song Thrush, recorded from a given grid location (= study site) during the whole study period (73 days), varied appreciably between the different sites: at the lower end, only one individual was recorded throughout the survey period from site at grid location 4878, while at the higher end, 123 Song Thrush individuals were recorded from the site at grid location 4085.

Values of mean daily counts and total counts of Song Thrush recorded during the period 20 October to 31 December 2015 from the present survey are summarised in Table 10. Values of standard deviation associated with the mean daily counts are also provided in Table 10. The general trend noted from the count data is a main migratory influx between late October and early November (Figure 18). No comparison between counts recorded during the present (2015) survey and those from previous surveys was possible since this is the first time that monitoring of this species survey using the present methodology was implemented.

Table 10

Values of mean ($\pm$ SD) daily count and daily total count recorded from the six study sites, together with total influx of migratory Song Thrush.

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
20-Oct-15	0.00	0.00	0	0
21-Oct-15	0.17	0.41	1	90
22-Oct-15	0.50	0.55	3	271
23-Oct-15	0.00	0.00	0	0
24-Oct-15	3.83	5.53	23	2079
25-Oct-15	20.67	27.92	124	11210
26-Oct-15	6.83	4.45	41	3707
27-Oct-15	4.33	3.56	26	2351
28-Oct-15	4.33	4.63	26	2351
29-Oct-15	2.33	2.34	14	1266
30-Oct-15	1.50	1.76	9	814
31-Oct-15	2.17	2.40	13	1175
1-Nov-15	0.33	0.82	2	181
2-Nov-15	1.50	1.64	9	814
3-Nov-15	10.00	9.06	60	5424
4-Nov-15	3.00	4.10	18	1627
5-Nov-15	4.83	4.75	29	2622
6-Nov-15	1.67	1.51	10	904
7-Nov-15	2.33	1.51	14	1266
8-Nov-15	2.50	1.87	15	1356
9-Nov-15	1.00	1.26	6	542
10-Nov-15	1.50	1.22	9	814
11-Nov-15	0.67	0.82	4	362
12-Nov-15	0.50	0.55	3	271
13-Nov-15	0.67	1.03	4	362
14-Nov-15	1.33	1.21	8	723
15-Nov-15	0.50	0.84	3	271
16-Nov-15	0.17	0.41	1	90
17-Nov-15	0.83	1.60	5	452
18-Nov-15	0.50	0.84	3	271
19-Nov-15	0.17	0.41	1	90
20-Nov-15	1.17	2.04	7	633
21-Nov-15	0.50	0.84	3	271
22-Nov-15	0.83	0.98	5	452
23-Nov-15	0.00	0.00	0	0
24-Nov-15	0.17	0.41	1	90

Date	Mean Count $\pm$ SD		Total count	Estimated Daily Influx
25-Nov-15	0.00	0.00	0	0
26-Nov-15	0.17	0.41	1	90
27-Nov-15	0.00	0.00	0	0
28-Nov-15	0.00	0.00	0	0
29-Nov-15	0.00	0.00	0	0
30-Nov-15	0.33	0.52	2	181
1-Dec-15	0.17	0.41	1	90
2-Dec-15	0.00	0.00	0	0
3-Dec-15	0.33	0.82	2	181
4-Dec-15	0.67	1.63	4	362
5-Dec-15	0.50	0.84	3	271
6-Dec-15	0.17	0.41	1	90
7-Dec-15	0.33	0.82	2	181
8-Dec-15	0.17	0.41	1	90
9-Dec-15	0.00	0.00	0	0
10-Dec-15	0.00	0.00	0	0
11-Dec-15	0.17	0.41	1	90
12-Dec-15	0.67	0.82	4	362
13-Dec-15	0.00	0.00	0	0
14-Dec-15	0.17	0.41	1	90
15-Dec-15	0.00	0.00	0	0
16-Dec-15	0.17	0.41	1	90
17-Dec-15	0.33	0.82	2	181
18-Dec-15	0.00	0.00	0	0
19-Dec-15	0.00	0.00	0	0
20-Dec-15	0.00	0.00	0	0
21-Dec-15	0.00	0.00	0	0
22-Dec-15	0.50	1.22	3	271
23-Dec-15	0.00	0.00	0	0
24-Dec-15	0.33	0.82	2	181
25-Dec-15	0.00	0.00	0	0
26-Dec-15	0.00	0.00	0	0
27-Dec-15	0.00	0.00	0	0
28-Dec-15	0.17	0.41	1	90
29-Dec-15	0.17	0.41	1	90
30-Dec-15	0.00	0.00	0	0
31-Dec-15	0.00	0.00	0	0
Estimated Total Influx				48,187

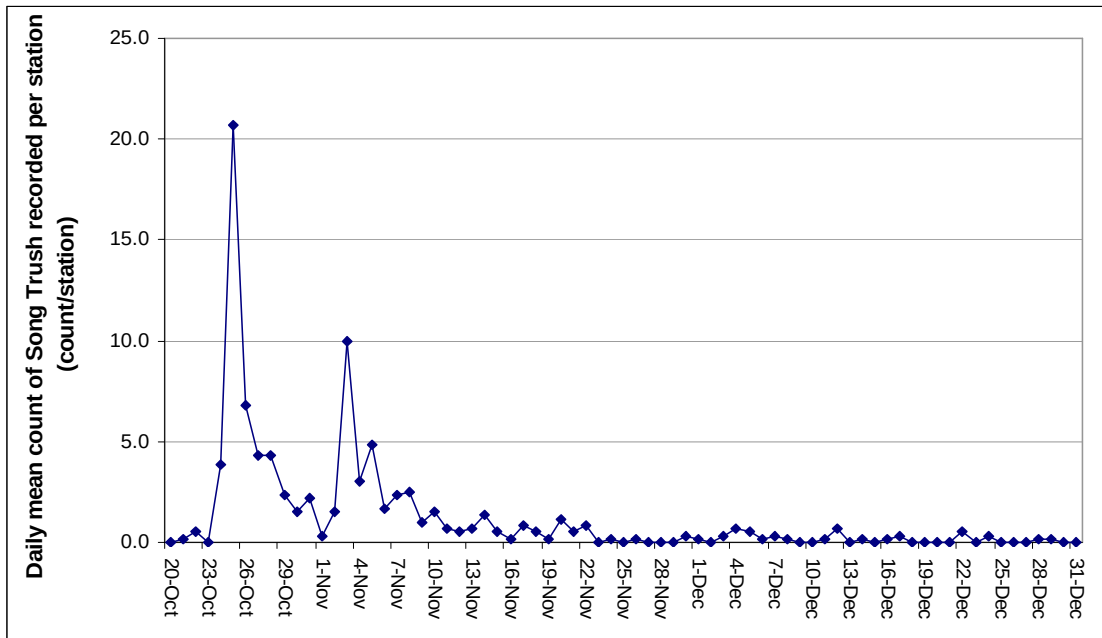


Figure 18. Daily mean counts of Song Thrush per station (= site) recorded during the present survey made between 20 October and 31 December 2015.

An estimate of total influx of Song Thrush over the Maltese Islands is given in Table 10. Based on the mean daily counts (Table 10), extrapolation translates to an estimated daily influx ranging between 0 and 11,210 individuals, with a total influx over the survey period (20 October – 31 December; i.e. 73 days) of 48,187 individuals, i.e. some 660 birds per day; see Table 10.

Mean count values for Song Thrush recorded from each of the 21 sites are indicated on the map shown in Figure 19. The highest mean count was recorded from Fawwara (Grid 4666) located on the western coast of Malta. Other high counts were recorded from the study sites in Gozo, and the study site in Comino, and study sites in northeast Malta. The lowest counts for this species were recorded from study sites in the southeastern half of Malta.

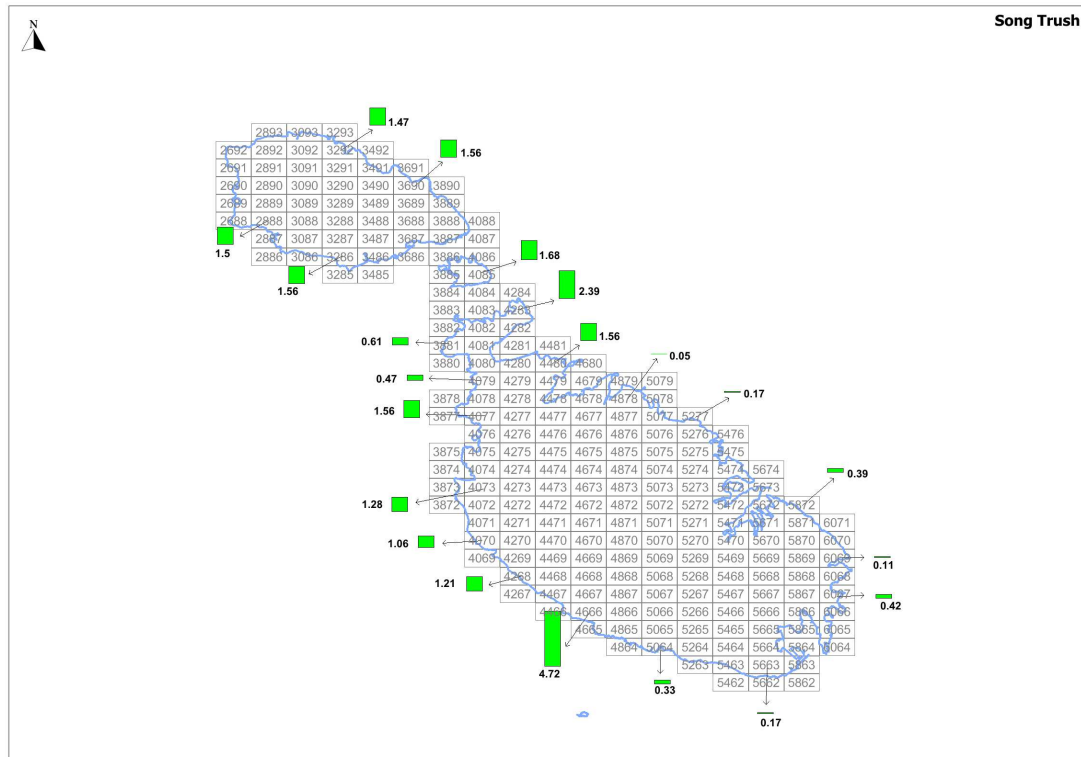


Figure 19. Map of the Maltese Islands showing the standard grid and respective codes, including ones used in the present study. The green bars indicate mean counts of Song Thrush recorded from study sites in the respective cells.

4. Comparison with bag data

A comparative analysis of the results obtained during this study with bag data provided by the Wild Birds Regulation Unit (WBRU) of the MSDEC was undertaken. It should be stated from the outset that the two sets of data were collected for different purposes, using very different methodologies, and therefore the magnitudes of the values are not directly comparable. However, the temporal trends can be expected to follow similar patterns, that is periods when higher mean daily counts were recorded during the present survey should broadly follow the days when higher numbers of birds were captured (and reported in the bag data) in the same year (2015). Whether the influx of the bird species follows the same temporal trend from year to year can only be confirmed through a longitudinal study of influx of the different bird species over a period of several years.

The data set provided by the WBRU for this comparison comprises the daily bag count of the nine bird species (as reported by live-capturers through a telephonic reporting scheme) for the period 20 October to 31 December 2015.

Graphical representations of the mean daily counts made during the present (2015) survey and the daily bag counts for the same time period (20 October – 31 December) in 2015 (MSDEC unpublished

data) for each of the nine bird species were prepared to compare temporal trends among the two different data sets. In a graphical plot showing daily counts, a high variation in counts from day to day may overshadow temporal trends over the two-month period. To aid visual interpretation, a second set of analyses was undertaken by computing a moving average using a rolling 5-day period for the time series count data. This has the effect of smoothening out the day to day fluctuations and hence making longer-term trends in mean daily counts or daily bag counts more apparent, thus facilitating visual interpretation of temporal trends. Note that the analyses based on a moving average do not replace those based on the raw daily counts. Rather, the graphical representations showing a 5-day moving average should be seen in conjunction with those based on daily counts, which are also presented.

Linnet

The daily bag counts indicating the number of Linnet caught during the 2015 live-capturing seasons and the mean daily counts of Linnet made during the present (2015) survey are shown in Figure 20, while Figure 21 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 20–21, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Overall, the highest daily counts made during the 2015 survey occurred in late October and early November, with counts declining thereafter apart from a slight increase in counts in late November to early December, while the 2015 bag data included a peak between the end of October and mid-November and a second peak in late November. Thus, the general trend observed in the bag counts for 2015 and the daily counts recorded during the 2015 survey is of higher counts in the earlier part of the live-capturing season, up to around end November. Both the number of Linnet observed per day during the 2015 survey and the number Linnet caught declined thereafter, apart from a marginal increase in the bag counts recorded towards the end of December.

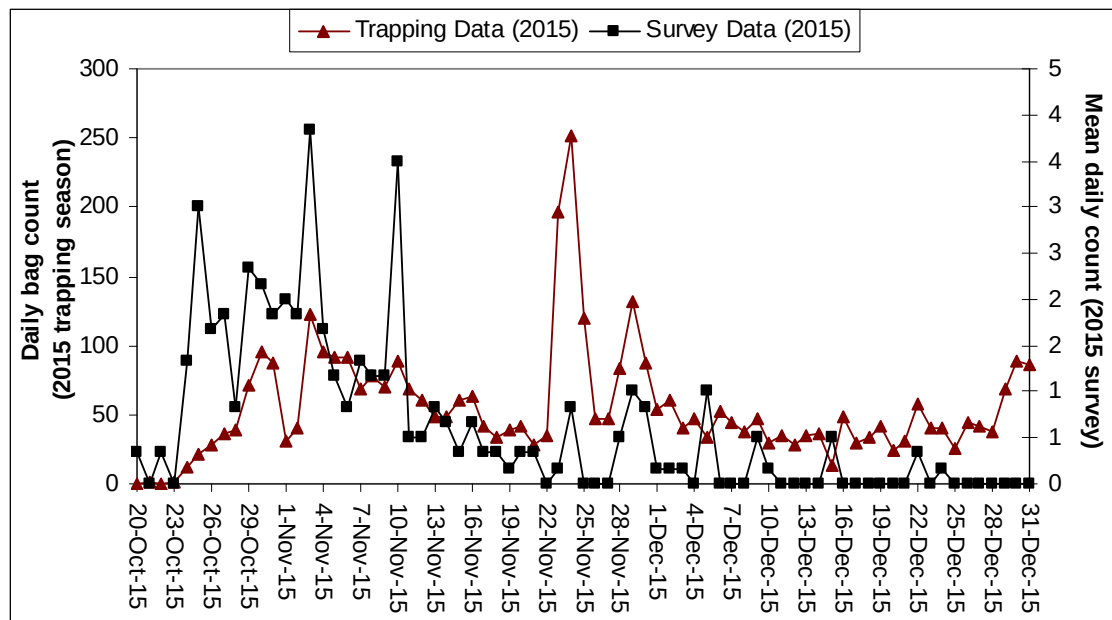


Figure 20. Daily bag count of Linnet during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

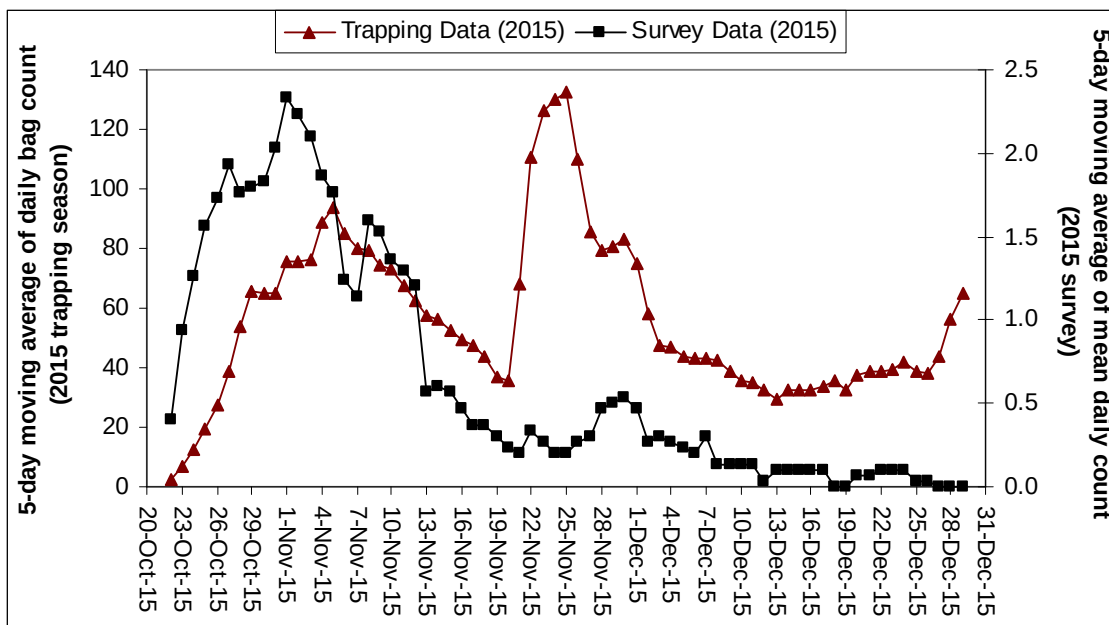


Figure 21. Moving average based on a 5-day rolling time period for the daily bag counts of Linnet during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

Chaffinch

The daily bag counts indicating the number of Chaffinch caught during the 2015 live-capturing seasons and the mean daily counts of Chaffinch made during the present (2015) survey are shown in Figure 22, while Figure 23 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 22–23, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Overall, the highest daily counts recorded during the 2015 survey were made in late October and early November, but a small peak in migratory counts was also recorded between end November and early December. The highest bag counts for the 2015 season were reported towards the end of November, while bag counts were also high during early to mid-November. Thus, the general trend observed in the bag counts for 2015 and daily counts recorded during the 2015 survey is of slightly higher counts in the early part of the live-capturing season, up to around end November. Both the number of Chaffinch observed per day during the 2015 survey and the number of Chaffinch caught declined thereafter.

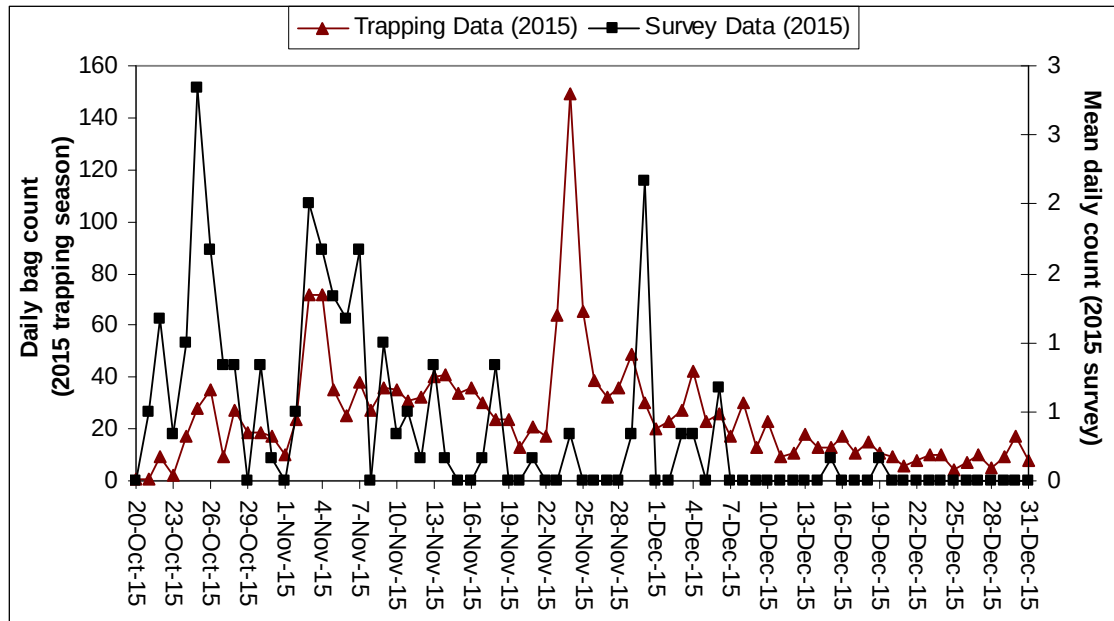


Figure 22. Daily bag count of Chaffinch during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

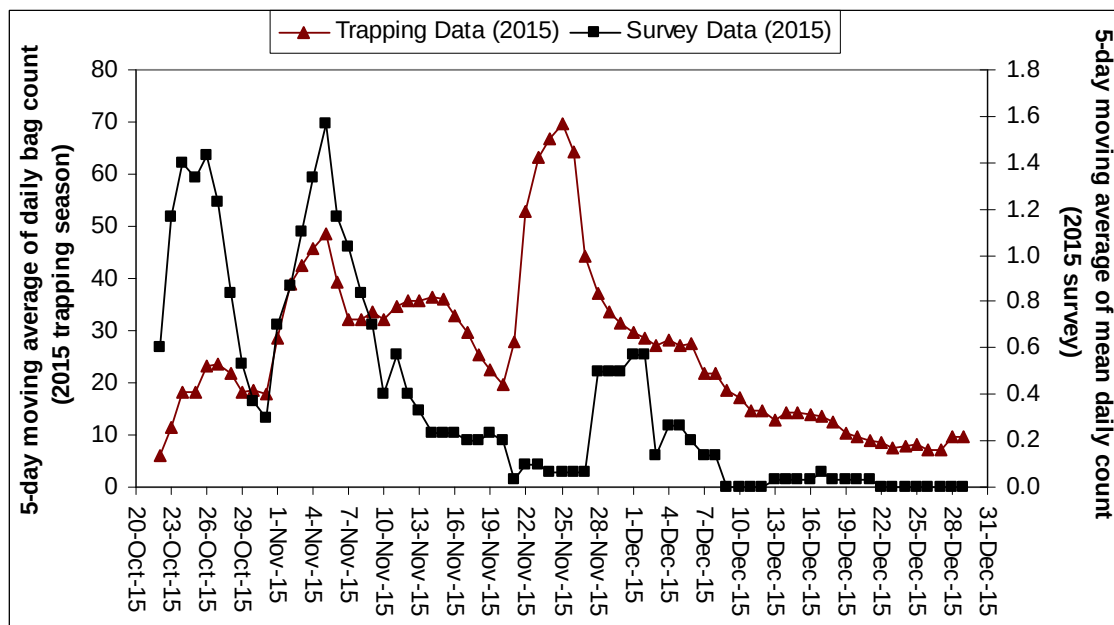


Figure 23. Moving average based on a 5-day rolling time period for the daily bag counts of Chaffinch during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

Greenfinch

The daily bag counts indicating the number of Greenfinch caught during the 2015 live-capturing seasons and the mean daily counts of Greenfinch made during the present (2015) survey are shown in Figure 24, while Figure 25 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean/total counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 24–25, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Very low counts of Greenfinch were made during the 2015 survey, with no Greenfinch individuals recorded on most days. Thus inferences on temporal trends in migration rates cannot be drawn based on this data. During the 2015 season the highest bag counts were recorded between late November and end December, with a small decline in counts in mid-December.

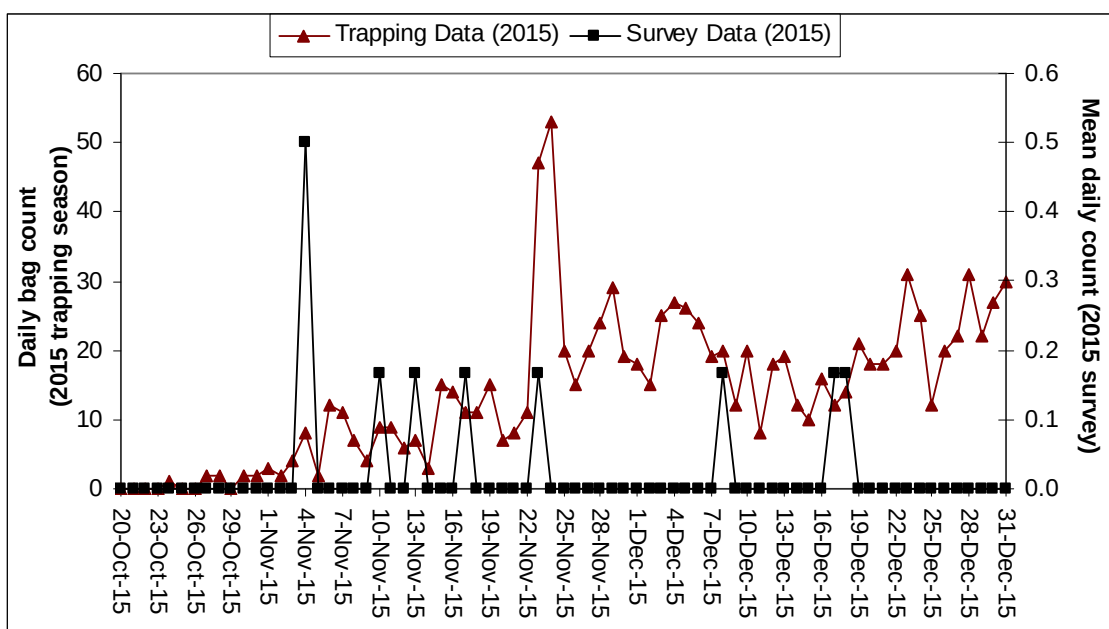


Figure 24. Daily bag count of Greenfinch during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

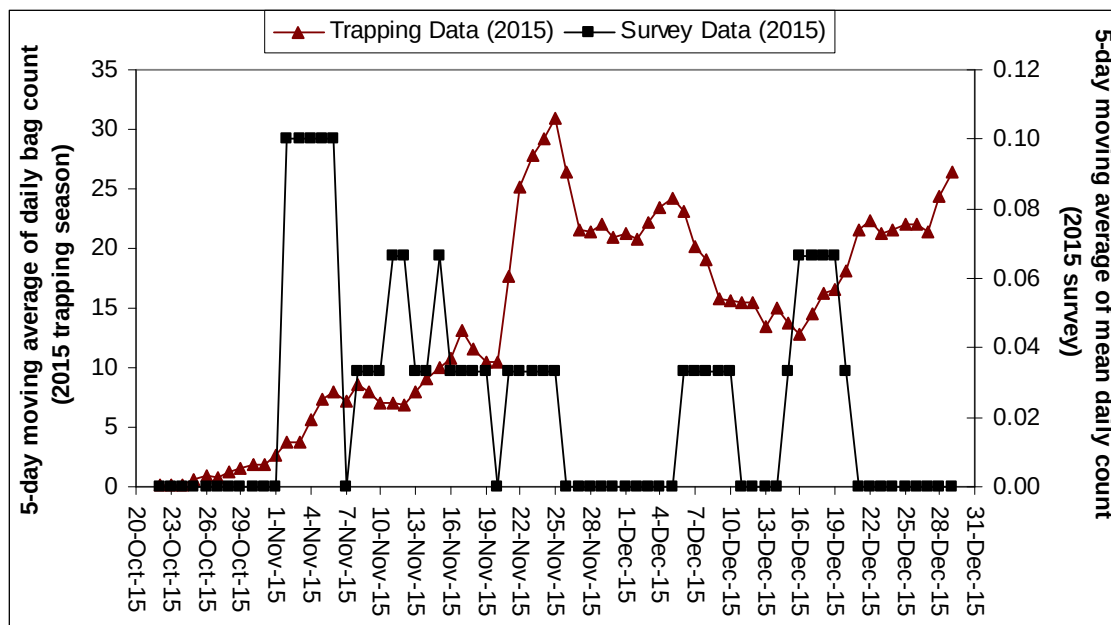


Figure 25. Moving average based on a 5-day rolling time period for the daily bag counts of Greenfinch during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

Siskin

The daily bag counts indicating the number of Siskin caught during the 2015 live-capturing seasons and the mean daily counts of Siskin made during the present (2015) survey are shown in Figure 26, while Figure 27 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 26–27, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Overall, the highest daily counts recorded during the 2015 survey were made in mid-November, while the highest bag counts for 2015 were reported during early and late November. Thus, the general trend observed in the bag counts for 2015 and daily counts recorded during the 2015 survey is of slightly higher counts in the early part of the live-capturing season, particularly during the month of November. During the 2015 season, the bag counts during early December were slightly lower than in November but increased again towards the end of December, whereas the daily counts from the 2015 survey made in December remained low until the end of the survey period.

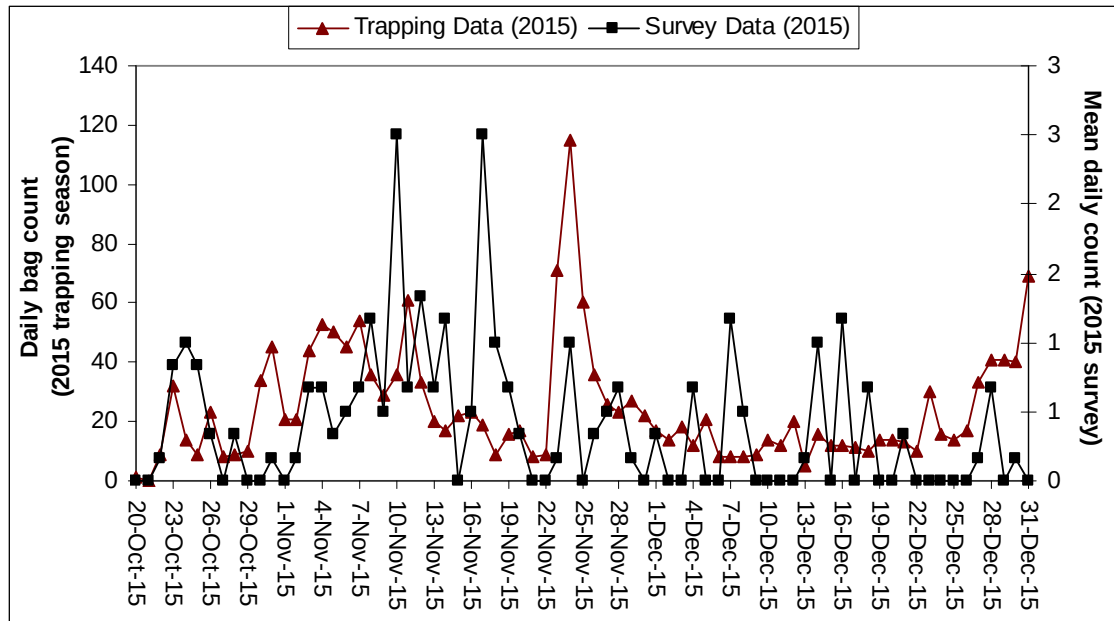


Figure 26. Daily bag count of Siskin during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

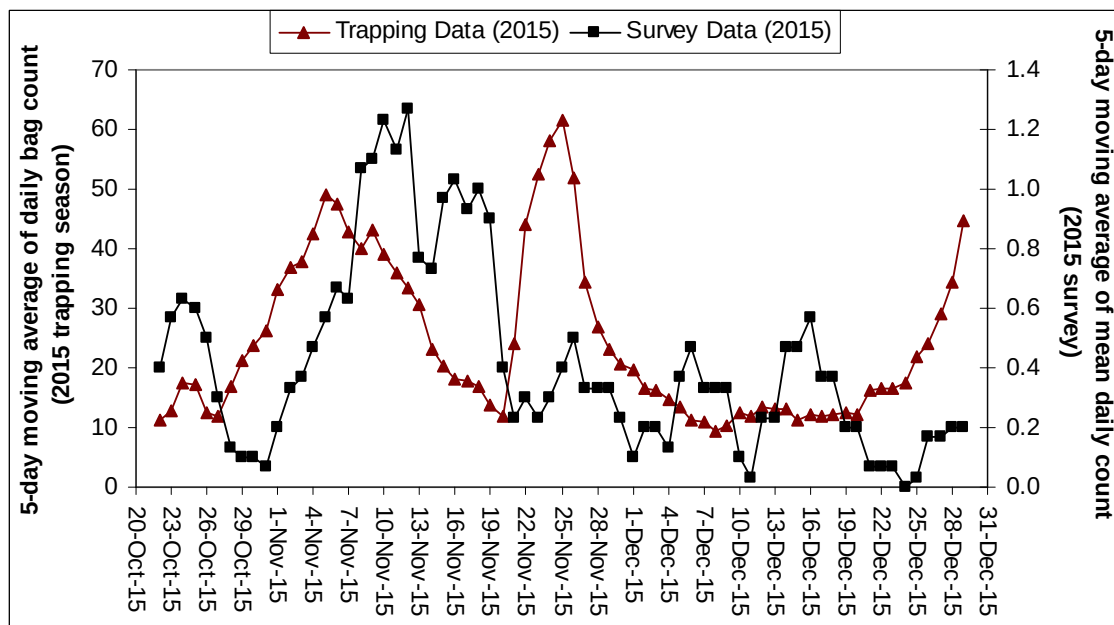


Figure 27. Moving average based on a 5-day rolling time period for the daily bag counts of Siskin during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

Goldfinch

The daily bag counts indicating the number of Goldfinch caught during the 2015 live-capturing seasons and the mean daily counts of Goldfinch made during the present (2015) survey are shown in Figure 28, while Figure 29 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 28–29, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Only a single count for Goldfinch was recorded during the 2015 survey. Thus inferences on temporal trends in migration rates cannot be drawn based on this data. In the 2015 season, bag counts were very low between October and mid-November, and increased slightly from late November onwards.

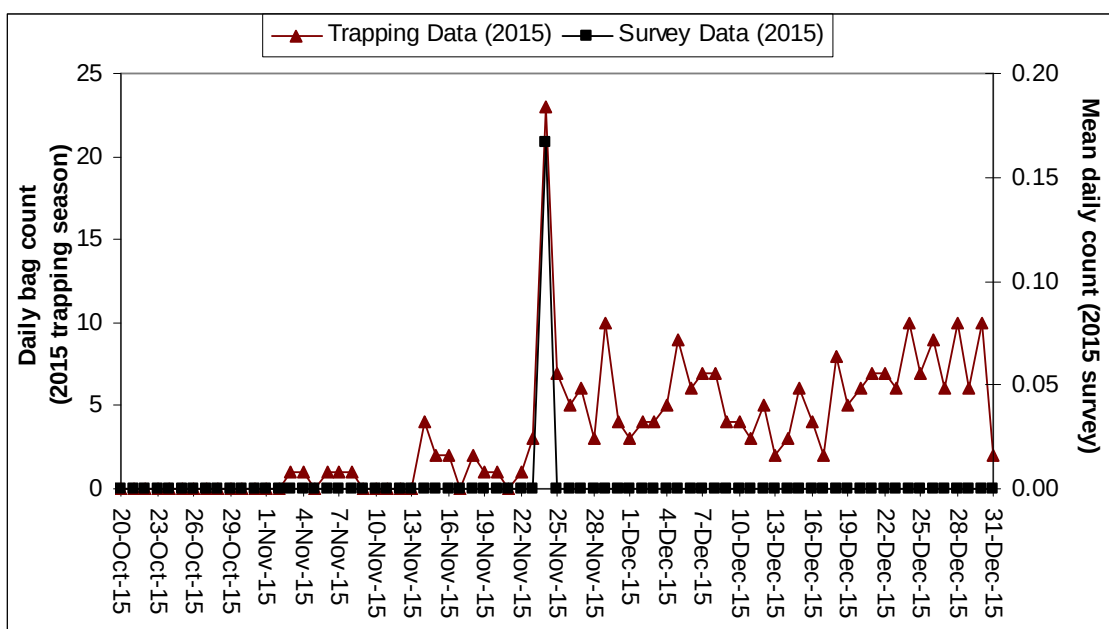


Figure 28. Daily bag count of Goldfinch during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

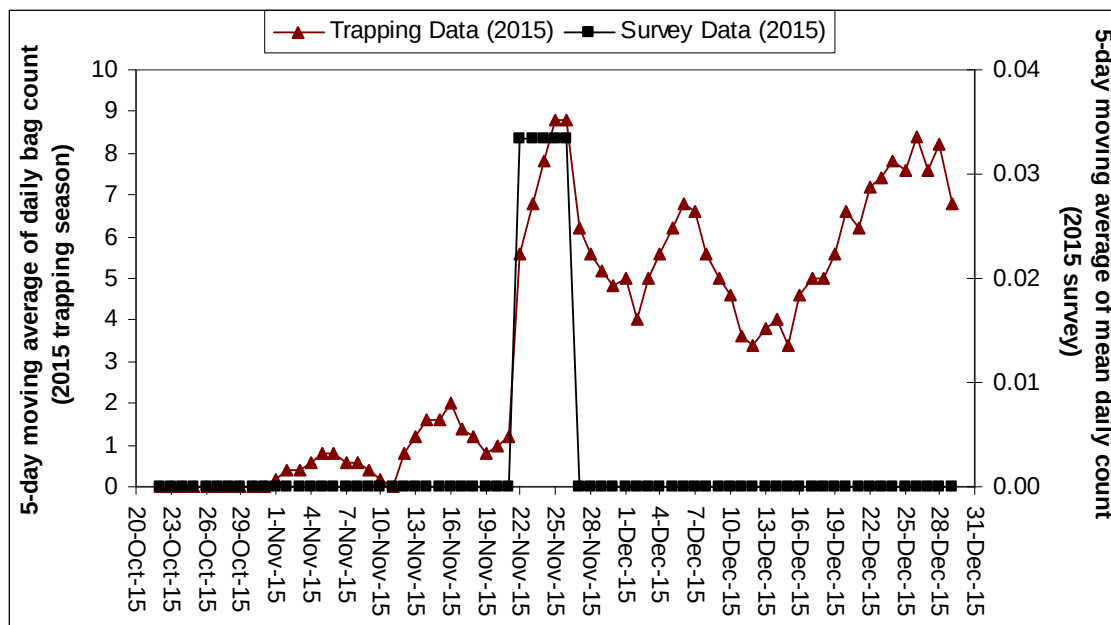


Figure 29. Moving average based on a 5-day rolling time period for the daily bag counts of Goldfinch during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

Serin

The daily bag counts indicating the number of Serin caught during the 2015 live-capturing seasons and the mean daily counts of Serin made during the present (2015) survey are shown in Figure 30, while Figure 31 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean/total counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 30–31, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Overall, the highest daily counts recorded during the 2015 survey were made in mid-November, with relatively high counts continuing until late December. The 2015 bag count data coincided with the daily counts recorded during the 2015 survey, with counts increasing in November and remaining relatively steady throughout most of December. Thus, the general trend observed in the bag counts for 2015 and daily counts recorded during the 2015 survey is of slightly higher counts in the later part of the live-capturing season, from mid-November onwards. Live-capturing reports for 2015 indicated an increase in the number of Serin caught during the last week of December, especially between 28–31 December; the daily counts from the 2015 survey were relatively high between 23–27 December but did not increase substantially in the last 3 days of the survey period.

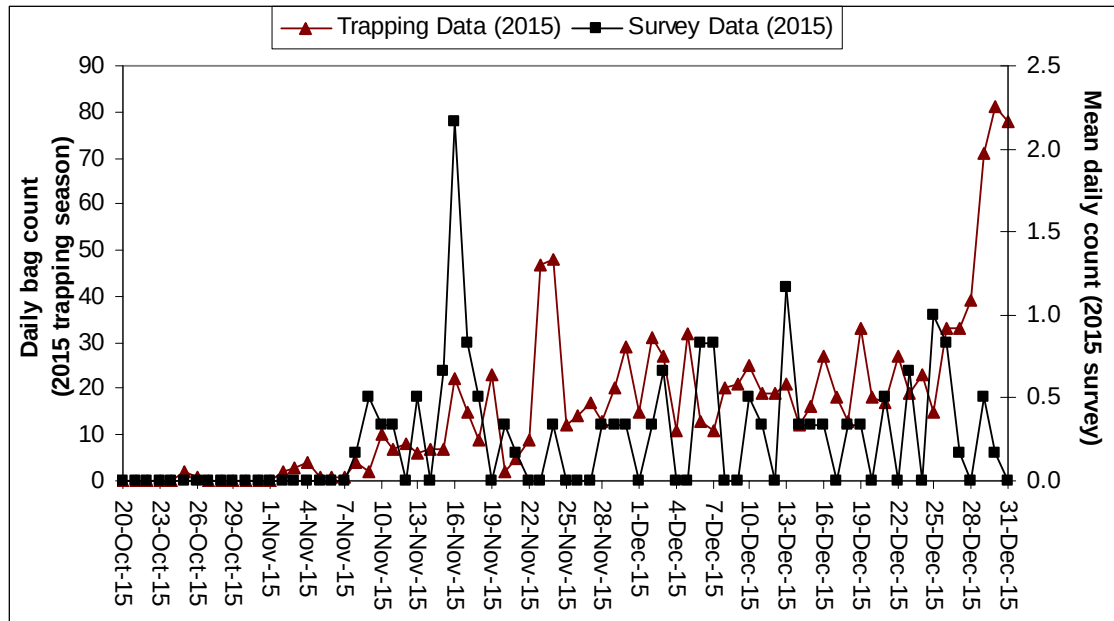


Figure 30. Daily bag count of Serin during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

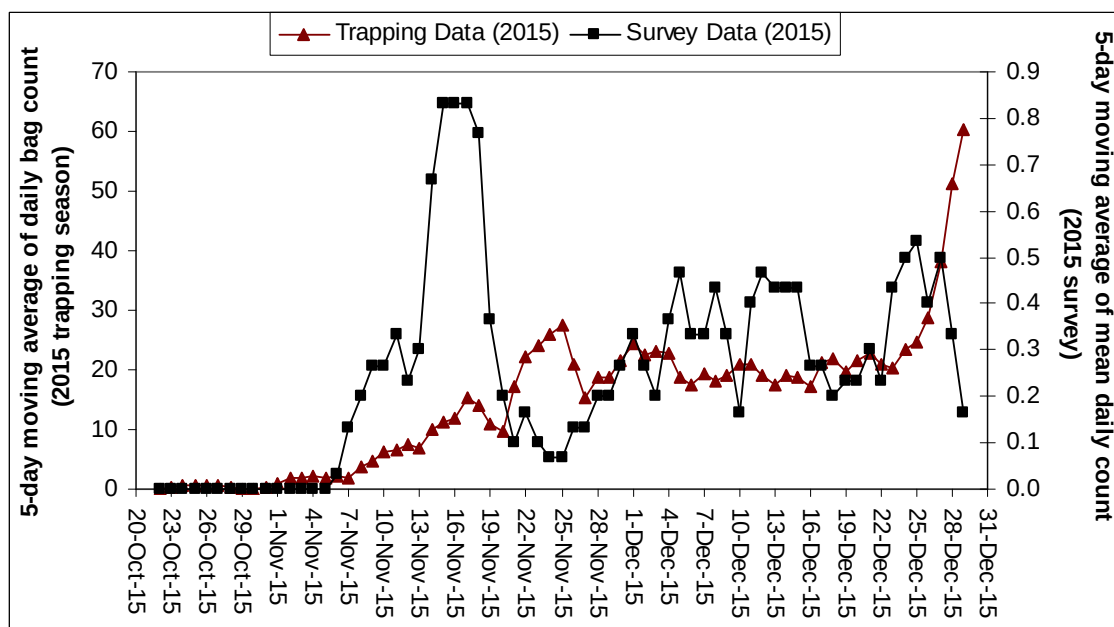


Figure 31. Moving average based on a 5-day rolling time period for the daily bag counts of Serin during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

Hawfinch

The daily bag counts indicating the number of Hawfinch caught during the 2015 live-capturing seasons and the mean daily counts of Hawfinch made during the present (2015) survey are shown in Figure 32, while Figure 33 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 32–33, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Only a single count for Hawfinch was recorded during the 2015 survey. Thus inferences on temporal trends in migration rates cannot be drawn based on this data. The 2015 bag counts were highest in early November and between end November and early December, with no Hawfinch being caught after 3 December 2015.

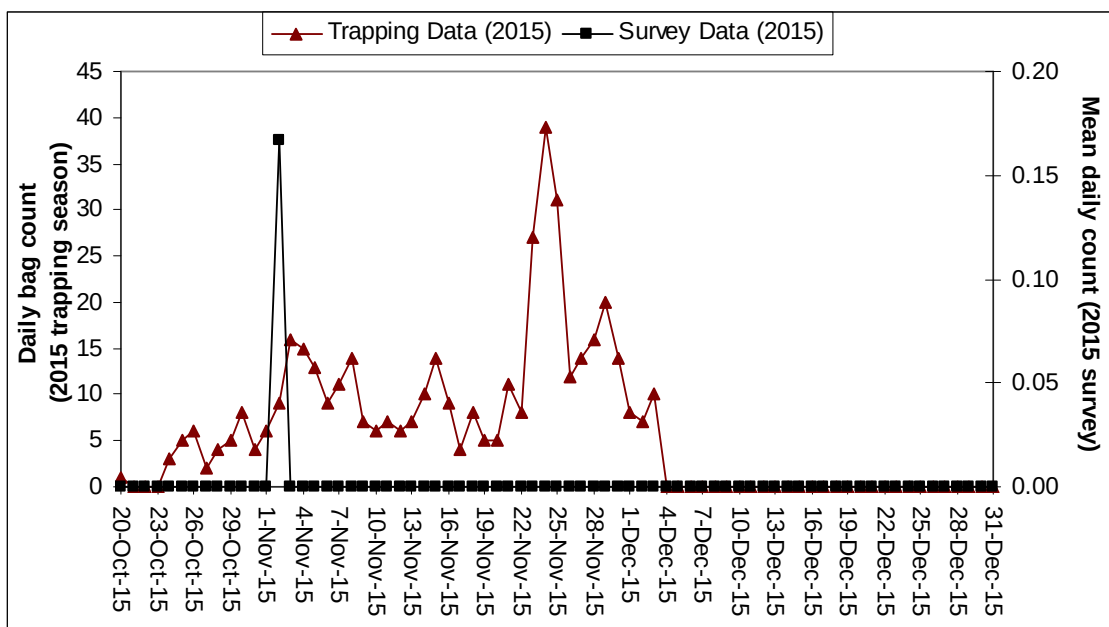


Figure 32. Daily bag count of Hawfinch during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

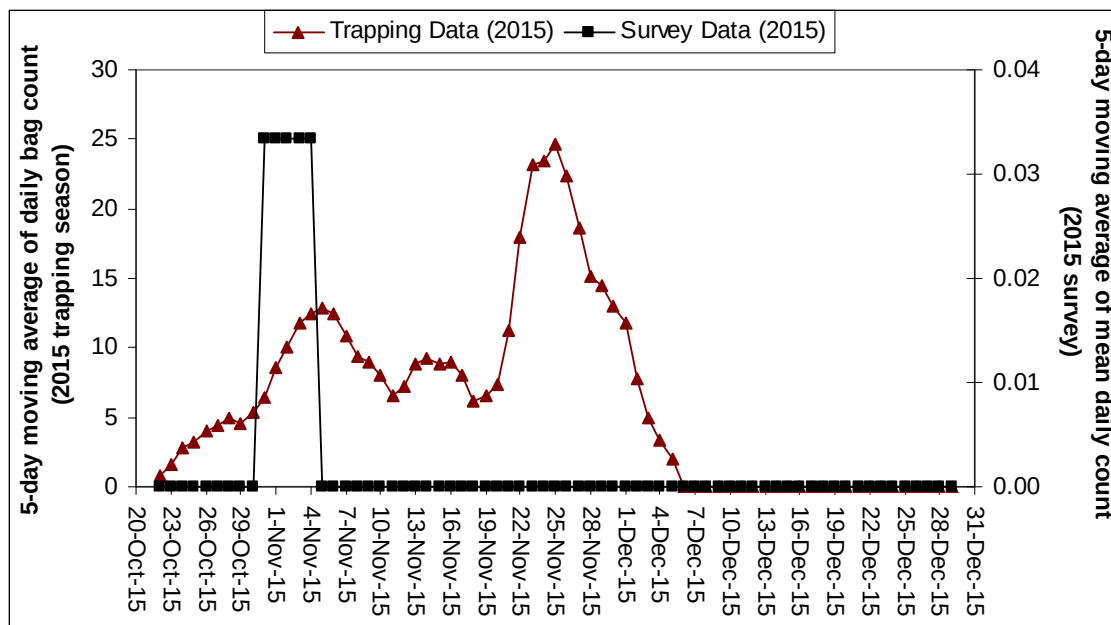


Figure 33. Moving average based on a 5-day rolling time period for the daily bag counts of Hawfinch during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

Golden Plover

The daily bag counts indicating the number of Golden Plover caught during the 2015 live-capturing seasons and the mean daily counts of Golden Plover made during the present (2015) survey are shown in Figure 34, while Figure 35 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 34–35, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Overall, the highest daily counts made during the 2015 survey occurred between end November and early December, with lower counts recorded thereafter apart from a slight increase in counts in the last few days of December. Bag counts in 2015 were very low throughout October and most of November, but increased in December, with a peak at the end of the month in both years. Thus, the general trend observed in the bag counts for 2015 and the daily counts recorded during the 2015 survey is of higher counts in the later part of the live-capturing season, from end November onwards.

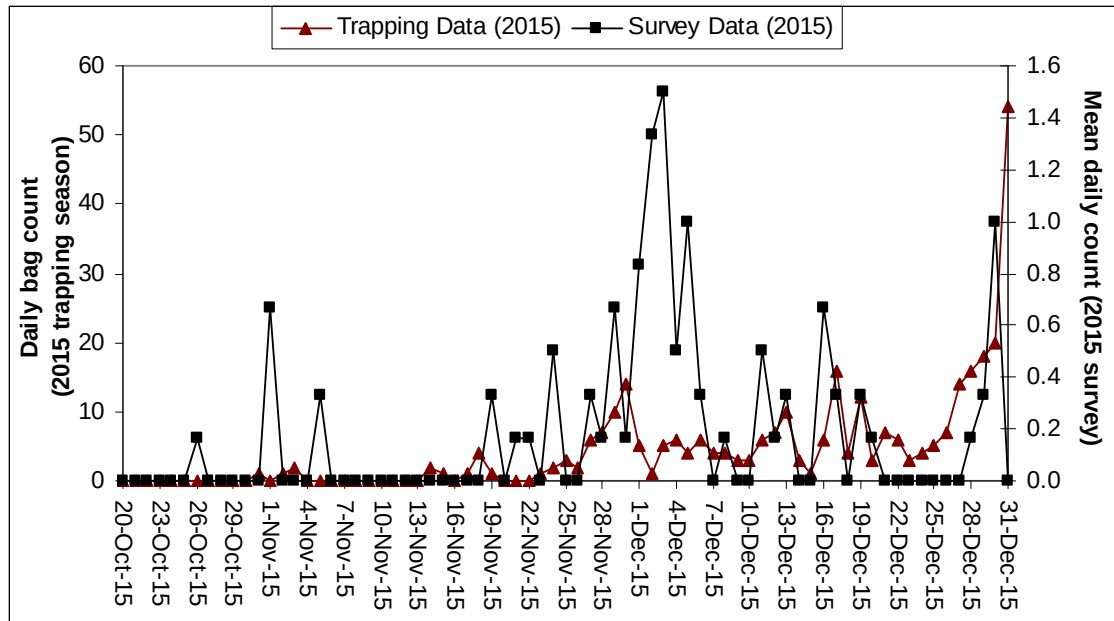


Figure 34. Daily bag count of Golden Plover during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

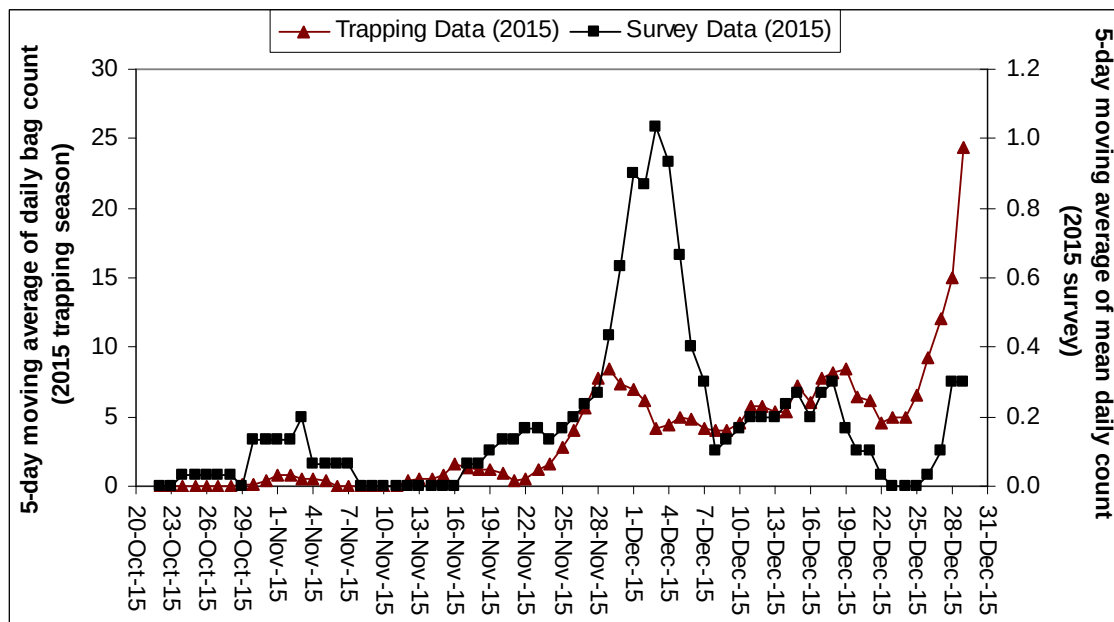


Figure 35. Moving average based on a 5-day rolling time period for the daily bag counts of Golden Plover during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

Song Thrush

The daily bag counts indicating the number of Song Thrush caught during and 2015 live-capturing seasons and the mean daily counts of Song Thrush made during the present (2015) survey are shown in Figure 36, while Figure 37 presents the 5-day moving average computed from these data. As already noted, the magnitude of the bag counts and those of the mean counts made in the 2015 survey are not directly comparable. In fact, the two sets of values are on different scales. Therefore, in Figures 36–37, two separate y-axes are used: the bag count data are plotted on the left-side y-axis, whereas the counts from the 2015 survey are plotted on the right-side y-axis.

Overall, the highest daily counts made during the 2015 survey occurred in late October and early November, with counts declining thereafter. The highest bag counts in 2015 also occurred in late October and early to mid-November, but the 2015 bag data included an additional peak in late November. Thus, the general trend observed in the bag counts for 2015 and the daily counts recorded during the 2015 survey is of higher counts in the earlier part of the live-capturing season, up to around mid to end November.

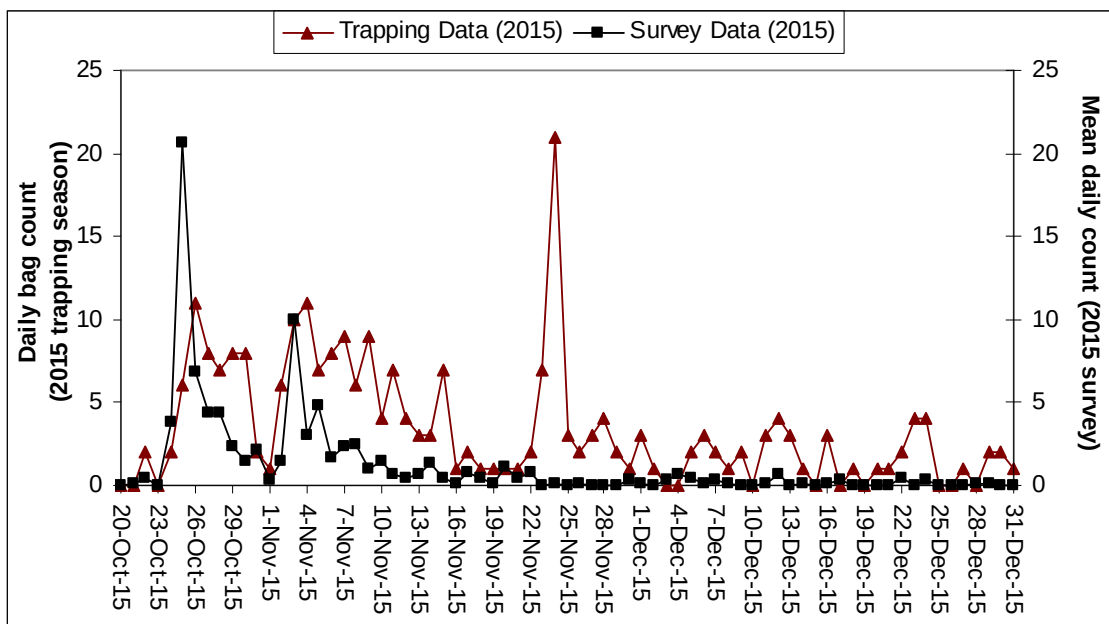


Figure 52. Daily bag count of Song Thrush during 2015 (red line; values on left-side y-axis), together with the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

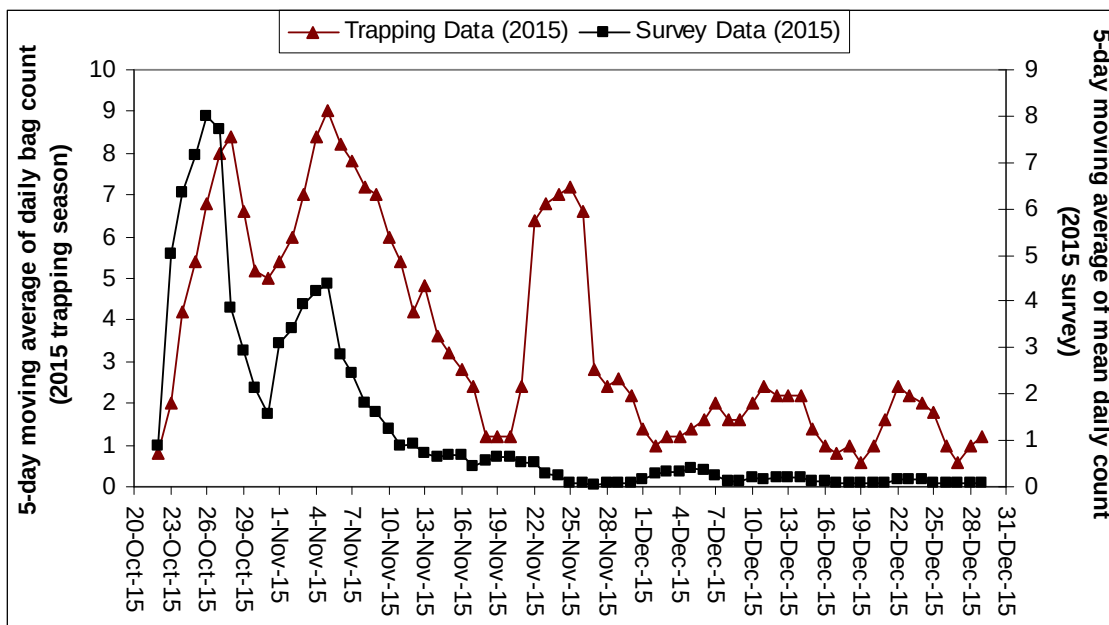


Figure 53. Moving average based on a 5-day rolling time period for the daily bag counts of Song Thrush during 2015 (red line; values on left-side y-axis), and for the mean daily counts recorded during the 2015 survey (black line; values on right-side y-axis), for the period 20 October to 31 December.

5. Appraisal

The present survey provides data on mean daily counts of seven Finch species (**Linnet** *Carduelis cannabina*, **Chaffinch** *Fringilla coelebs*, **Serin** *Serinus serinus*, **Goldfinch** *Carduelis carduelis*, **Greenfinch** *Carduelis chloris*, **Hawfinch** *Coccothraustes coccothraustes* and **Siskin** *Carduelis spinus*), and of **Golden Plover** (*Pluvialis apricaria*) and **Song Thrush** (*Turdus philomelos*) recorded during the study period held between 20 October and 31 December 2015, together with estimates of the migratory influx of the nine species. Government had established the autumn/winter live-capturing season during the same period of the study.

The mean daily counts did not indicate any large migratory peaks for any of the nine species, but higher values recorded in certain periods suggest a general trend of migratory influx during the following periods: Linnet, late October to mid-November; Chaffinch, late October to mid-November; Siskin, early to mid-November; Serin, November to December; Golden Plover, late November to mid-December; Song Thrush, late October to early November. However, no discernible trend was noted in the case of Greenfinch, Goldfinch and Hawfinch due to the low number of counts of individuals recorded for these species. The raw counts for most of the species varied appreciably among the different stations. Such variation is to be expected in studies such as the present, given that birds may have a strong influx at one site and a potentially much lower one at a different site, even if the two sites are separated by a very small distance of even a few hundred metres. Considerations of habitat and land cover apply only to a degree, since migratory birds also fly over urban and other built-up areas. Another consideration worthy of mention is the fact that some birds may also pass

overhead, maintaining high altitude and avoid alighting on land. The usefulness of the values provided in the present report therefore lies primarily in providing data for future comparison, rather than using the counts *per se*, which in any study of this type can only be a rough estimate.

The total influx of finch individuals for the present survey period (20 October – 31 December 2015) was estimated at 24,771 for Linnet; 14,736 for Chaffinch; 904 for Greenfinch; 16,002 for Siskin; 90 for Goldfinch; 9,764 for Serin; 90 for Hawfinch; 7,233 for Golden Plover; and 48,187 for Song Thrush. When comparing the present results with those from the autumn 2014 finch survey (Ecoserv, 2014b), the following overall observations are noted:

- The migratory influx of finches recorded from the present autumn 2015 survey is much lower for Linnet (see Figure 2), Chaffinch (see Figure 4), Greenfinch (see Figure 6), Goldfinch (see Figure 10), Serin (see Figure 12) and Hawfinch (see Figure 14), compared to the influx of these same species recorded during the previous autumn 2014 survey. The influx of these six species recorded during the present (autumn 2015) survey is respectively around: 42%, 22%, 7%, 35%, 57% and 3% of that recorded during the previous autumn 2014 survey. When comparing data from 2014 with those from 2015, within the context of the specific period during which a higher influx of these species was recorded, no discernible pattern of differences is evident since overall in both 2014 and 2015, higher counts for the respective species were recorded during the same period. However, finches were recorded more regularly (i.e. on more days) during the 2014 survey period.
- For Siskin, a higher influx (by a factor of 4) was recorded during the present (2015) autumn survey compared to that recorded during the previous autumn 2014 survey (see Figure 8). For this species, only a single relatively high count was recorded during the 2014 survey (on 2 November 2014), while very low or zero counts were made on all of the other days of the 2014 survey. On the other hand, relatively high counts were recorded on 10 and 17 November 2015, while lower counts for this species were made on several days during the present (2015) survey. It would therefore seem that the present recorded influx of this species was 'spread' over the monitoring period, while that recorded from the previous 2014 survey was restricted to a specific part of the monitoring period.
- In the case of Golden Plover and Song Thrush, no such comparison can be made since no estimates made using the same survey methodology are available from previous years.

It is reiterated that such estimates must be treated with utmost caution, given the relatively small number of field sites used in the survey, that counts were not made daily at each site, and since the extrapolation procedure used is likely to result in a rough estimate. Influx of birds at different localities is extremely variable, with potential large differences in number of birds passing at two different localities, even if these are separated by a very small distance, as indicated above. Furthermore, the total length of coastline surveyed per day (3 km) amounts to less than 1.5% of the total coastline. Other limitations are (i) bird migration starts in September, and therefore birds that would have migrated before the start of the present study (i.e. before 20 October 2015) would not have been recorded; and (ii) counts were recorded over a five hour survey period, hence any individuals migrating at other times of the day were not included, leading to a potential underestimate of the total influx if significant migratory influx occurred outside the survey time on any day. Nevertheless, the stated estimate is useful when making comparison between different years, assuming data from surveys based on a similar design are available, to assess whether influx of any of the nine bird species is increasing or decreasing with time.

The design of the present survey included counts made over a 73 day period between 20 October and 31 December 2015, which covers the period when peak autumn migration of the seven finch species, and of Golden Plover and Song Thrush normally occurs.

Robust and rigorous assessment of migratory influx requires trend analysis based on data from monitoring carried out regularly over a sufficiently long period comprising subsequent years, and using the same methodology. For each year, the data should ideally be collected over the whole migratory season and using a larger sampling effort, for example by making counts daily at all of a minimum 21 sites. However, it should be noted that such higher sampling effort will entail very high costs, which may render the study prohibitively expensive, while it would be very difficult if not impossible to implement a survey involving daily counts at a large number of sites, given the large number of field personnel that would be required.

Nevertheless, the data from the present study provides a useful indication of the autumn influx of the nine bird species, provided that results are interpreted in the context of these limitations.

6. References

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APPENDIX I - Raw counts

Table A. Daily counts of Linnet recorded per site.

[illegible]

Ecoserv Sample Reference Code	B-116-15	B-117-15	B-118-15	B-119-15	B-120-15	B-121-15	B-122-15	B-123-15	B-124-15	B-125-15	B-126-15
16-Nov-15	2										
17-Nov-15	0	2	0	0	0	0					
18-Nov-15	0						2	0	0	0	0
19-Nov-15	0										
20-Nov-15	2										
21-Nov-15	0	2	0	0	0	0					
22-Nov-15	0						0	0	0	0	0
23-Nov-15	0										
24-Nov-15	3										
25-Nov-15	0	0	0	0	0	0					
26-Nov-15	0						0	0	0	0	0
27-Nov-15	0										
28-Nov-15	0										
29-Nov-15	2	3	0	0	1	0					
30-Nov-15	5						0	0	0	0	0
1-Dec-15	1										
2-Dec-15	0										
3-Dec-15	0	0	0	0	1	0					
4-Dec-15	0						0	0	0	0	0
5-Dec-15	1										
6-Dec-15	0										
7-Dec-15	0	0	0	0	0	0					
8-Dec-15	0						0	0	0	0	0
9-Dec-15	0										
10-Dec-15	1										
11-Dec-15	0	0	0	0	0	0					
12-Dec-15	0						0	0	0	0	0
13-Dec-15	0										
15-Dec-15	0										
15-Dec-15	3	0	0	0	0	0					
16-Dec-15	0						0	0	0	0	0
17-Dec-15	0										

Ecoserv Sample Reference Code	B-116-15	B-117-15	B-118-15	B-119-15	B-120-15	B-121-15	B-122-15	B-123-15	B-124-15	B-125-15	B-126-15
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	0					
20-Dec-15	0						0	0	0	0	0
21-Dec-15	0										
22-Dec-15	2										
23-Dec-15	0	0	0	0	0	0					
24-Dec-15	1						0	0	0	0	0
25-Dec-15	0										
26-Dec-15	0										
27-Dec-15	0	0	0	0	0	0					
28-Dec-15	0						0	0	0	0	0
29-Dec-15	0										
30-Dec-15	0										
31-Dec-15	0	0	0	0	0	0					

Table A continued. Daily counts of Linnet recorded per site.

Ecoserv Sample Reference Code	B-127-15	B-128-15	B-129-15	B-130-15	B-131-15	B-132-15	B-133-15	B-134-15	B-135-15	B-136-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	0	0	0	0	0					
23-Oct-15						0	0	0	0	0
24-Oct-15										
25-Oct-15										
26-Oct-15	9	0	0	0	1					
27-Oct-15						4	4	0	1	0
28-Oct-15										
29-Oct-15										
30-Oct-15	4	4	0	0	3					

Ecoserv Sample Reference Code	B-127-15	B-128-15	B-129-15	B-130-15	B-131-15	B-132-15	B-133-15	B-134-15	B-135-15	B-136-15
31-Oct-15						1	6	4	0	0
1-Nov-15										
2-Nov-15										
3-Nov-15	10	0	0	0	8					
4-Nov-15						5	3	0	0	0
5-Nov-15										
6-Nov-15										
7-Nov-15	1	0	1	0	6					
8-Nov-15						3	2	0	0	2
9-Nov-15										
10-Nov-15										
11-Nov-15	0	0	0	0	0					
12-Nov-15						0	1	0	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	0	0	0	0	2					
16-Nov-15						0	0	0	0	2
17-Nov-15										
18-Nov-15										
19-Nov-15	0	1	0	0	0					
20-Nov-15						0	0	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	0	0	0	1	0					
24-Nov-15						2	0	0	0	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						3	0	0	0	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	0	0					

Ecoserv Sample Reference Code	B-127-15	B-128-15	B-129-15	B-130-15	B-131-15	B-132-15	B-133-15	B-134-15	B-135-15	B-136-15
2-Dec-15						1	0	0	0	0
3-Dec-15										
4-Dec-15										
5-Dec-15	4	1	0	0	0					
6-Dec-15						0	0	0	0	0
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	3	0	0					
10-Dec-15						0	0	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	0	0	0	0	0					
15-Dec-15						0	0	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	0	0	0	0	0					
18-Dec-15						0	0	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	0	0	0					
26-Dec-15						0	0	0	0	0
27-Dec-15										
28-Dec-15										
29-Dec-15	0	0	0	0	0					
30-Dec-15						0	0	0	0	0
31-Dec-15										

Table B. Daily counts of Chaffinch recorded per site.

Ecoserv Sample Reference Code	B-137-15	B-138-15	B-139-15	B-140-15	B-141-15	B-142-15	B-143-15	B-144-15	B-145-15	B-146-15	B-147-15
Grid Location	4085	3292	4079	4268	6067	4878	2888	4077	4666	6069	4480
20-Oct-15	0	0	0	0	0	0					
21-Oct-15	0						3	0	0	0	0
22-Oct-15	0										
23-Oct-15	0										
24-Oct-15	4	2	0	0	0	0					
25-Oct-15	1						15	0	1	0	0
26-Oct-15	2										
27-Oct-15	1										
28-Oct-15	0	0	0	0	5	0					
29-Oct-15	0						0	0	0	0	0
30-Oct-15	0										
31-Oct-15	0										
1-Nov-15	0	0	0	0	0	0					
2-Nov-15	1						2	0	0	0	0
3-Nov-15	0										
4-Nov-15	0										
5-Nov-15	2	2	0	2	0	2					
6-Nov-15	0						5	0	0	0	2
7-Nov-15	2										
8-Nov-15	0										
9-Nov-15	0	3	1	0	0	2					
10-Nov-15	0						2	0	0	0	0
11-Nov-15	0										
12-Nov-15	1										
13-Nov-15	0	2	0	3	0	0					
15-Nov-15	0						1	0	0	0	0
15-Nov-15	0										
16-Nov-15	0										
17-Nov-15	0	1	0	0	0	0					

Ecoserv Sample Reference Code	B-137-15	B-138-15	B-139-15	B-140-15	B-141-15	B-142-15	B-143-15	B-144-15	B-145-15	B-146-15	B-147-15
18-Nov-15	0						2	0	0	2	1
19-Nov-15	0										
20-Nov-15	0										
21-Nov-15	0	1	0	0	0	0					
22-Nov-15	0						0	0	0	0	0
23-Nov-15	0										
24-Nov-15	0										
25-Nov-15	0	0	0	0	0	0					
26-Nov-15	0						0	0	0	0	0
27-Nov-15	0										
28-Nov-15	0										
29-Nov-15	0	0	0	0	2	0					
30-Nov-15	3						0	0	10	0	0
1-Dec-15	0										
2-Dec-15	0										
3-Dec-15	0	0	2	0	0	0					
4-Dec-15	2						0	0	0	0	0
5-Dec-15	0										
6-Dec-15	3										
7-Dec-15	0	0	0	0	0	0					
8-Dec-15	0						0	0	0	0	0
9-Dec-15	0										
10-Dec-15	0										
11-Dec-15	0	0	0	0	0	0					
12-Dec-15	0						0	0	0	0	0
13-Dec-15	0										
15-Dec-15	0										
15-Dec-15	0	1	0	0	0	0					
16-Dec-15	0						0	0	0	0	0
17-Dec-15	0										
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	1					

Ecoserv Sample Reference Code	B-137-15	B-138-15	B-139-15	B-140-15	B-141-15	B-142-15	B-143-15	B-144-15	B-145-15	B-146-15	B-147-15
20-Dec-15	0						0	0	0	0	0
21-Dec-15	0										
22-Dec-15	0										
23-Dec-15	0	0	0	0	0	0					
24-Dec-15	0						0	0	0	0	0
25-Dec-15	0										
26-Dec-15	0										
27-Dec-15	0	0	0	0	0	0					
28-Dec-15	0						0	0	0	0	0
29-Dec-15	0										
30-Dec-15	0										
31-Dec-15	0	0	0	0	0	0					

Table B continued. Daily counts of Chaffinch recorded per site.

Ecoserv Sample Reference Code	B-148-15	B-149-15	B-150-15	B-151-15	B-152-15	B-153-15	B-154-15	B-155-15	B-156-15	B-157-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	2	0	0	5	0					
23-Oct-15						2	0	0	0	0
24-Oct-15										
25-Oct-15										
26-Oct-15	8	0	0	0	0					
27-Oct-15						3	1	0	0	0
28-Oct-15										
29-Oct-15										
30-Oct-15	0	0	5	0	0					
31-Oct-15						0	0	0	0	1
1-Nov-15										

Ecoserv Sample Reference Code	B-148-15	B-149-15	B-150-15	B-151-15	B-152-15	B-153-15	B-154-15	B-155-15	B-156-15	B-157-15
2-Nov-15										
3-Nov-15	11	0	1	0	0					
4-Nov-15						7	0	2	1	0
5-Nov-15										
6-Nov-15										
7-Nov-15	0	0	2	6	0					
8-Nov-15						0	0	0	0	0
9-Nov-15										
10-Nov-15										
11-Nov-15	3	0	0	0	0					
12-Nov-15						0	0	0	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	0	0	0	0	0					
16-Nov-15						0	0	0	0	0
17-Nov-15										
18-Nov-15										
19-Nov-15	0	0	0	0	0					
20-Nov-15						0	0	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	0	0	0	0	0					
24-Nov-15						0	1	0	1	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						0	0	0	0	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	0	0					
2-Dec-15						0	0	0	0	0
3-Dec-15										

Ecoserv Sample Reference Code	B-148-15	B-149-15	B-150-15	B-151-15	B-152-15	B-153-15	B-154-15	B-155-15	B-156-15	B-157-15
4-Dec-15										
5-Dec-15	0	0	0	0	0					
6-Dec-15						0	0	0	1	0
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	0	0	0					
10-Dec-15						0	0	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	0	0	0	0	0					
15-Dec-15						0	0	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	0	0	0	0	0					
18-Dec-15						0	0	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	0	0	0					
26-Dec-15						0	0	0	0	0
27-Dec-15										
28-Dec-15										
29-Dec-15	0	0	0	0	0					
30-Dec-15						0	0	0	0	0
31-Dec-15										

Table C. Daily counts of Greenfinch recorded per site.

Ecoserv Sample Reference Code	B-158-15	B-159-15	B-160-15	B-161-15	B-162-15	B-163-15	B-164-15	B-165-15	B-166-15	B-167-15	B-168-15
Grid Location	4085	3292	4079	4268	6067	4878	2888	4077	4666	6069	4480
20-Oct-15	0	0	0	0	0	0					
21-Oct-15	0						0	0	0	0	0
22-Oct-15	0										
23-Oct-15	0										
24-Oct-15	0	0	0	0	0	0					
25-Oct-15	0						0	0	0	0	0
26-Oct-15	0										
27-Oct-15	0										
28-Oct-15	0	0	0	0	0	0					
29-Oct-15	0						0	0	0	0	0
30-Oct-15	0										
31-Oct-15	0										
1-Nov-15	0	0	0	0	0	0					
2-Nov-15	0						0	0	0	0	0
3-Nov-15	0										
4-Nov-15	0										
5-Nov-15	0	0	0	0	0	0					
6-Nov-15	0						0	0	0	0	0
7-Nov-15	0										
8-Nov-15	0										
9-Nov-15	0	0	0	0	0	0					
10-Nov-15	0						0	0	1	0	0
11-Nov-15	0										
12-Nov-15	0										
13-Nov-15	0	0	1	0	0	0					
15-Nov-15	0						0	0	0	0	0
15-Nov-15	0										
16-Nov-15	0										
17-Nov-15	0	0	0	0	1	0					

Ecoserv Sample Reference Code	B-158-15	B-159-15	B-160-15	B-161-15	B-162-15	B-163-15	B-164-15	B-165-15	B-166-15	B-167-15	B-168-15
18-Nov-15	0						0	0	0	0	0
19-Nov-15	0										
20-Nov-15	0										
21-Nov-15	0	0	0	0	0	0					
22-Nov-15	0						0	0	0	0	0
23-Nov-15	0										
24-Nov-15	0										
25-Nov-15	0	0	0	0	0	0					
26-Nov-15	0						0	0	0	0	0
27-Nov-15	0										
28-Nov-15	0										
29-Nov-15	0	0	0	0	0	0					
30-Nov-15	0						0	0	0	0	0
1-Dec-15	0										
2-Dec-15	0										
3-Dec-15	0	0	0	0	0	0					
4-Dec-15	0						0	0	0	0	0
5-Dec-15	0										
6-Dec-15	0										
7-Dec-15	0	0	0	0	0	0					
8-Dec-15	0						0	0	0	0	1
9-Dec-15	0										
10-Dec-15	0										
11-Dec-15	0	0	0	0	0	0					
12-Dec-15	0						0	0	0	0	0
13-Dec-15	0										
15-Dec-15	0										
15-Dec-15	0	0	0	0	0	0					
16-Dec-15	0						0	0	0	0	0
17-Dec-15	0										
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-158-15	B-159-15	B-160-15	B-161-15	B-162-15	B-163-15	B-164-15	B-165-15	B-166-15	B-167-15	B-168-15
20-Dec-15	0						0	0	0	0	0
21-Dec-15	0										
22-Dec-15	0										
23-Dec-15	0	0	0	0	0	0					
24-Dec-15	0						0	0	0	0	0
25-Dec-15	0										
26-Dec-15	0										
27-Dec-15	0	0	0	0	0	0					
28-Dec-15	0						0	0	0	0	0
29-Dec-15	0										
30-Dec-15	0										
31-Dec-15	0	0	0	0	0	0					

Table C continued. Daily counts of Greenfinch recorded per site.

Ecoserv Sample Reference Code	B-169-15	B-170-15	B-171-15	B-172-15	B-173-15	B-174-15	B-175-15	B-176-15	B-177-15	B-178-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	0	0	0	0	0					
23-Oct-15						0	0	0	0	0
24-Oct-15										
25-Oct-15										
26-Oct-15	0	0	0	0	0					
27-Oct-15						0	0	0	0	0
28-Oct-15										
29-Oct-15										
30-Oct-15	0	0	0	0	0					
31-Oct-15						0	0	0	0	0

Ecoserv Sample Reference Code	B-169-15	B-170-15	B-171-15	B-172-15	B-173-15	B-174-15	B-175-15	B-176-15	B-177-15	B-178-15
1-Nov-15										
2-Nov-15										
3-Nov-15	0	0	0	0	0					
4-Nov-15						0	0	0	0	3
5-Nov-15										
6-Nov-15										
7-Nov-15	0	0	0	0	0					
8-Nov-15						0	0	0	0	0
9-Nov-15										
10-Nov-15										
11-Nov-15	0	0	0	0	0					
12-Nov-15						0	0	0	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	0	0	0	0	0					
16-Nov-15						0	0	0	0	0
17-Nov-15										
18-Nov-15										
19-Nov-15	0	0	0	0	0					
20-Nov-15						0	0	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	1	0	0	0	0					
24-Nov-15						0	0	0	0	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						0	0	0	0	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	0	0					
2-Dec-15						0	0	0	0	0

Ecoserv Sample Reference Code	B-169-15	B-170-15	B-171-15	B-172-15	B-173-15	B-174-15	B-175-15	B-176-15	B-177-15	B-178-15
3-Dec-15										
4-Dec-15										
5-Dec-15	0	0	0	0	0					
6-Dec-15						0	0	0	0	0
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	0	0	0					
10-Dec-15						0	0	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	0	0	0	0	0					
15-Dec-15						0	0	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	0	1	0	0	0					
18-Dec-15						1	0	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	0	0	0					
26-Dec-15						0	0	0	0	0
27-Dec-15										
28-Dec-15										
29-Dec-15	0	0	0	0	0					
30-Dec-15						0	0	0	0	0
31-Dec-15										

Table D. Daily counts of Siskin recorded per site.

Ecoserv Sample Reference Code	B-179-15	B-180-15	B-181-15	B-182-15	B-183-15	B-184-15	B-185-15	B-186-15	B-187-15	B-188-15	B-189-15
Grid Location	4085	3292	4079	4268	6067	4878	2888	4077	4666	6069	4480
20-Oct-15	0	0	0	0	0	0					
21-Oct-15	0						0	0	0	0	0
22-Oct-15	0										
23-Oct-15	0										
24-Oct-15	0	3	0	1	0	2					
25-Oct-15	0						0	1	4	0	0
26-Oct-15	1										
27-Oct-15	0										
28-Oct-15	0	0	0	0	0	2					
29-Oct-15	0						0	0	0	0	0
30-Oct-15	0										
31-Oct-15	0										
1-Nov-15	0	0	0	0	0	0					
2-Nov-15	1						0	0	0	0	0
3-Nov-15	1										
4-Nov-15	0										
5-Nov-15	0	1	1	0	0	0					
6-Nov-15	1						0	0	2	0	0
7-Nov-15	1										
8-Nov-15	0										
9-Nov-15	1	2	0	0	0	0					
10-Nov-15	2						3	0	7	0	3
11-Nov-15	0										
12-Nov-15	2										
13-Nov-15	0	3	1	0	0	0					
15-Nov-15	2						2	2	0	0	1
15-Nov-15	0										
16-Nov-15	3										
17-Nov-15	4	7	0	4	0	0					

Ecoserv Sample Reference Code	B-179-15	B-180-15	B-181-15	B-182-15	B-183-15	B-184-15	B-185-15	B-186-15	B-187-15	B-188-15	B-189-15
18-Nov-15	0						1	0	5	0	0
19-Nov-15	0										
20-Nov-15	2										
21-Nov-15	0	0	0	0	0	0					
22-Nov-15	0						0	0	0	0	0
23-Nov-15	0										
24-Nov-15	2										
25-Nov-15	0	0	0	0	0	0					
26-Nov-15	0						2	0	0	0	0
27-Nov-15	3										
28-Nov-15	1										
29-Nov-15	0	1	0	0	0	0					
30-Nov-15	0						0	0	0	0	0
1-Dec-15	2										
2-Dec-15	0										
3-Dec-15	0	0	0	0	0	0					
4-Dec-15	2						2	0	0	0	0
5-Dec-15	0										
6-Dec-15	0										
7-Dec-15	0	4	0	0	3	0					
8-Dec-15	3						0	0	0	0	0
9-Dec-15	0										
10-Dec-15	0										
11-Dec-15	0	0	0	0	0	0					
12-Dec-15	0						0	0	0	0	0
13-Dec-15	0										
15-Dec-15	3										
15-Dec-15	0	0	0	0	0	0					
16-Dec-15	7						0	0	0	0	0
17-Dec-15	0										
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-179-15	B-180-15	B-181-15	B-182-15	B-183-15	B-184-15	B-185-15	B-186-15	B-187-15	B-188-15	B-189-15
20-Dec-15	0						0	0	0	0	0
21-Dec-15	2										
22-Dec-15	0										
23-Dec-15	0	0	0	0	0	0					
24-Dec-15	0						0	0	0	0	0
25-Dec-15	0										
26-Dec-15	0										
27-Dec-15	0	0	0	0	0	1					
28-Dec-15	4						0	0	0	0	0
29-Dec-15	0										
30-Dec-15	1										
31-Dec-15	0	0	0	0	0	0					

Table D continued. Daily counts of Siskin recorded per site.

Ecoserv Sample Reference Code	B-190-15	B-191-15	B-192-15	B-193-15	B-194-15	B-195-15	B-196-15	B-197-15	B-198-15	B-199-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	1	0	0	0	0					
23-Oct-15						0	1	1	3	0
24-Oct-15										
25-Oct-15										
26-Oct-15	0	1	0	0	0					
27-Oct-15						0	0	0	0	0
28-Oct-15										
29-Oct-15										
30-Oct-15	0	0	0	0	0					
31-Oct-15						0	0	1	0	0
1-Nov-15										

Ecoserv Sample Reference Code	B-190-15	B-191-15	B-192-15	B-193-15	B-194-15	B-195-15	B-196-15	B-197-15	B-198-15	B-199-15
2-Nov-15										
3-Nov-15	0	0	0	0	3					
4-Nov-15						3	0	0	1	0
5-Nov-15										
6-Nov-15										
7-Nov-15	0	0	0	0	3					
8-Nov-15						0	1	2	0	4
9-Nov-15										
10-Nov-15										
11-Nov-15	1	0	0	1	2					
12-Nov-15						0	6	0	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	0	0	0	0	0					
16-Nov-15						0	0	0	0	0
17-Nov-15										
18-Nov-15										
19-Nov-15	0	3	0	0	1					
20-Nov-15						0	0	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	0	0	0	0	1					
24-Nov-15						4	0	0	0	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						0	0	2	1	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	0	0					
2-Dec-15						0	0	0	0	0
3-Dec-15										

Ecoserv Sample Reference Code	B-190-15	B-191-15	B-192-15	B-193-15	B-194-15	B-195-15	B-196-15	B-197-15	B-198-15	B-199-15
4-Dec-15										
5-Dec-15	0	0	0	0	0					
6-Dec-15						0	0	0	0	0
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	0	0	0					
10-Dec-15						0	0	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	1	0	0	0	0					
15-Dec-15						1	2	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	0	0	0	0	0					
18-Dec-15						2	2	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	0	0	0					
26-Dec-15						0	0	0	0	0
27-Dec-15										
28-Dec-15										
29-Dec-15	0	0	0	0	0					
30-Dec-15						0	0	0	0	0
31-Dec-15										

Table E. Daily counts of Goldfinch recorded per site.

Ecoserv Sample Reference Code	B-200-15	B-201-15	B-202-15	B-203-15	B-204-15	B-205-15	B-206-15	B-207-15	B-208-15	B-209-15	B-210-15
Grid Location	4085	3292	4079	4268	6067	4878	2888	4077	4666	6069	4480
20-Oct-15	0	0	0	0	0	0					
21-Oct-15	0						0	0	0	0	0
22-Oct-15	0										
23-Oct-15	0										
24-Oct-15	0	0	0	0	0	0					
25-Oct-15	0						0	0	0	0	0
26-Oct-15	0										
27-Oct-15	0										
28-Oct-15	0	0	0	0	0	0					
29-Oct-15	0						0	0	0	0	0
30-Oct-15	0										
31-Oct-15	0										
1-Nov-15	0	0	0	0	0	0					
2-Nov-15	0						0	0	0	0	0
3-Nov-15	0										
4-Nov-15	0										
5-Nov-15	0	0	0	0	0	0					
6-Nov-15	0						0	0	0	0	0
7-Nov-15	0										
8-Nov-15	0										
9-Nov-15	0	0	0	0	0	0					
10-Nov-15	0						0	0	0	0	0
11-Nov-15	0										
12-Nov-15	0										
13-Nov-15	0	0	0	0	0	0					
15-Nov-15	0						0	0	0	0	0
15-Nov-15	0										
16-Nov-15	0										
17-Nov-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-200-15	B-201-15	B-202-15	B-203-15	B-204-15	B-205-15	B-206-15	B-207-15	B-208-15	B-209-15	B-210-15
18-Nov-15	0						0	0	0	0	0
19-Nov-15	0										
20-Nov-15	0										
21-Nov-15	0	0	0	0	0	0					
22-Nov-15	0						0	0	0	0	0
23-Nov-15	0										
24-Nov-15	1										
25-Nov-15	0	0	0	0	0	0					
26-Nov-15	0						0	0	0	0	0
27-Nov-15	0										
28-Nov-15	0										
29-Nov-15	0	0	0	0	0	0					
30-Nov-15	0						0	0	0	0	0
1-Dec-15	0										
2-Dec-15	0										
3-Dec-15	0	0	0	0	0	0					
4-Dec-15	0						0	0	0	0	0
5-Dec-15	0										
6-Dec-15	0										
7-Dec-15	0	0	0	0	0	0					
8-Dec-15	0						0	0	0	0	0
9-Dec-15	0										
10-Dec-15	0										
11-Dec-15	0	0	0	0	0	0					
12-Dec-15	0						0	0	0	0	0
13-Dec-15	0										
15-Dec-15	0										
15-Dec-15	0	0	0	0	0	0					
16-Dec-15	0						0	0	0	0	0
17-Dec-15	0										
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-200-15	B-201-15	B-202-15	B-203-15	B-204-15	B-205-15	B-206-15	B-207-15	B-208-15	B-209-15	B-210-15
20-Dec-15	0						0	0	0	0	0
21-Dec-15	0										
22-Dec-15	0										
23-Dec-15	0	0	0	0	0	0					
24-Dec-15	0						0	0	0	0	0
25-Dec-15	0										
26-Dec-15	0										
27-Dec-15	0	0	0	0	0	0					
28-Dec-15	0						0	0	0	0	0
29-Dec-15	0										
30-Dec-15	0										
31-Dec-15	0	0	0	0	0	0					

Table E continued. Daily counts of Goldfinch recorded per site.

Ecoserv Sample Reference Code	B-211-15	B-212-15	B-213-15	B-214-15	B-215-15	B-216-15	B-217-15	B-218-15	B-219-15	B-220-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	0	0	0	0	0					
23-Oct-15						0	0	0	0	0
24-Oct-15										
25-Oct-15										
26-Oct-15	0	0	0	0	0					
27-Oct-15						0	0	0	0	0
28-Oct-15										
29-Oct-15										
30-Oct-15	0	0	0	0	0					
31-Oct-15						0	0	0	0	0
1-Nov-15										

Ecoserv Sample Reference Code	B-211-15	B-212-15	B-213-15	B-214-15	B-215-15	B-216-15	B-217-15	B-218-15	B-219-15	B-220-15
2-Nov-15										
3-Nov-15	0	0	0	0	0					
4-Nov-15						0	0	0	0	0
5-Nov-15										
6-Nov-15										
7-Nov-15	0	0	0	0	0					
8-Nov-15						0	0	0	0	0
9-Nov-15										
10-Nov-15										
11-Nov-15	0	0	0	0	0					
12-Nov-15						0	0	0	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	0	0	0	0	0					
16-Nov-15						0	0	0	0	0
17-Nov-15										
18-Nov-15										
19-Nov-15	0	0	0	0	0					
20-Nov-15						0	0	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	0	0	0	0	0					
24-Nov-15						0	0	0	0	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						0	0	0	0	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	0	0					
2-Dec-15						0	0	0	0	0
3-Dec-15										

Ecoserv Sample Reference Code	B-211-15	B-212-15	B-213-15	B-214-15	B-215-15	B-216-15	B-217-15	B-218-15	B-219-15	B-220-15
4-Dec-15										
5-Dec-15	0	0	0	0	0					
6-Dec-15						0	0	0	0	0
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	0	0	0					
10-Dec-15						0	0	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	0	0	0	0	0					
15-Dec-15						0	0	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	0	0	0	0	0					
18-Dec-15						0	0	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	0	0	0					
26-Dec-15						0	0	0	0	0
27-Dec-15										
28-Dec-15										
29-Dec-15	0	0	0	0	0					
30-Dec-15						0	0	0	0	0
31-Dec-15										

Table F. Daily counts of Serin recorded per site.

Ecoserv Sample Reference Code	B-221-15	B-222-15	B-223-15	B-224-15	B-225-15	B-226-15	B-227-15	B-228-15	B-229-15	B-230-15	B-231-15
Grid Location	4085	3292	4079	4268	6067	4878	2888	4077	4666	6069	4480
20-Oct-15	0	0	0	0	0	0					
21-Oct-15	0						0	0	0	0	0
22-Oct-15	0										
23-Oct-15	0										
24-Oct-15	0	0	0	0	0	0					
25-Oct-15	0						0	0	0	0	0
26-Oct-15	0										
27-Oct-15	0										
28-Oct-15	0	0	0	0	0	0					
29-Oct-15	0						0	0	0	0	0
30-Oct-15	0										
31-Oct-15	0										
1-Nov-15	0	0	0	0	0	0					
2-Nov-15	0						0	0	0	0	0
3-Nov-15	0										
4-Nov-15	0										
5-Nov-15	0	0	0	0	0	0					
6-Nov-15	0						0	0	0	0	0
7-Nov-15	0										
8-Nov-15	0										
9-Nov-15	0	3	0	0	0	0					
10-Nov-15	0						2	0	0	0	0
11-Nov-15	2										
12-Nov-15	0										
13-Nov-15	0	3	0	0	0	0					
15-Nov-15	0						0	0	0	0	0
15-Nov-15	0										
16-Nov-15	2										
17-Nov-15	0	3	0	0	2	0					

Ecoserv Sample Reference Code	B-221-15	B-222-15	B-223-15	B-224-15	B-225-15	B-226-15	B-227-15	B-228-15	B-229-15	B-230-15	B-231-15
18-Nov-15	3						0	0	0	0	0
19-Nov-15	0										
20-Nov-15	2										
21-Nov-15	0	1	0	0	0	0					
22-Nov-15	0						0	0	0	0	0
23-Nov-15	0										
24-Nov-15	2										
25-Nov-15	0	0	0	0	0	0					
26-Nov-15	0						0	0	0	0	0
27-Nov-15	0										
28-Nov-15	2										
29-Nov-15	0	2	0	0	0	0					
30-Nov-15	0						0	0	0	0	2
1-Dec-15	0										
2-Dec-15	0										
3-Dec-15	0	2	0	0	0	2					
4-Dec-15	0						0	0	0	0	0
5-Dec-15	0										
6-Dec-15	0										
7-Dec-15	2	2	1	0	0	0					
8-Dec-15	0						0	0	0	0	0
9-Dec-15	0										
10-Dec-15	0										
11-Dec-15	0	2	0	0	0	0					
12-Dec-15	0						0	0	0	0	0
13-Dec-15	2										
15-Dec-15	2										
15-Dec-15	0	2	0	0	0	0					
16-Dec-15	2						0	0	0	0	0
17-Dec-15	0										
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	2					

Ecoserv Sample Reference Code	B-221-15	B-222-15	B-223-15	B-224-15	B-225-15	B-226-15	B-227-15	B-228-15	B-229-15	B-230-15	B-231-15
20-Dec-15	0						0	0	0	0	0
21-Dec-15	3										
22-Dec-15	0										
23-Dec-15	0	2	0	0	0	2					
24-Dec-15	0						0	0	0	0	0
25-Dec-15	2										
26-Dec-15	0										
27-Dec-15	0	0	1	0	0	0					
28-Dec-15	0						0	0	0	0	0
29-Dec-15	3										
30-Dec-15	0										
31-Dec-15	0	0	0	0	0	0					

Table F continued. Daily counts of Serin recorded per site.

Ecoserv Sample Reference Code	B-232-15	B-233-15	B-234-15	B-235-15	B-236-15	B-237-15	B-238-15	B-239-15	B-240-15	B-241-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	0	0	0	0	0					
23-Oct-15						0	0	0	0	0
24-Oct-15										
25-Oct-15										
26-Oct-15	0	0	0	0	0					
27-Oct-15						0	0	0	0	0
28-Oct-15										
29-Oct-15										
30-Oct-15	0	0	0	0	0					
31-Oct-15						0	0	0	0	0
1-Nov-15										

Ecoserv Sample Reference Code	B-232-15	B-233-15	B-234-15	B-235-15	B-236-15	B-237-15	B-238-15	B-239-15	B-240-15	B-241-15
2-Nov-15										
3-Nov-15	0	0	0	0	0					
4-Nov-15						0	0	0	0	0
5-Nov-15										
6-Nov-15										
7-Nov-15	0	0	0	0	0					
8-Nov-15						1	0	0	0	0
9-Nov-15										
10-Nov-15										
11-Nov-15	0	0	0	0	0					
12-Nov-15						0	0	0	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	4	0	0	0	0					
16-Nov-15						0	3	0	8	0
17-Nov-15										
18-Nov-15										
19-Nov-15	0	0	0	0	0					
20-Nov-15						0	0	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	0	0	0	0	0					
24-Nov-15						0	0	0	0	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						0	0	0	0	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	0	0					
2-Dec-15						0	0	0	2	0
3-Dec-15										

Ecoserv Sample Reference Code	B-232-15	B-233-15	B-234-15	B-235-15	B-236-15	B-237-15	B-238-15	B-239-15	B-240-15	B-241-15
4-Dec-15										
5-Dec-15	0	0	0	0	0					
6-Dec-15						0	2	0	0	3
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	0	0	0					
10-Dec-15						0	3	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	0	0	0	0	5					
15-Dec-15						0	0	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	0	0	0	0	0					
18-Dec-15						2	0	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	4	0	0					
26-Dec-15						2	0	0	0	3
27-Dec-15										
28-Dec-15										
29-Dec-15	0	0	0	0	0					
30-Dec-15						0	1	0	0	0
31-Dec-15										

Table G. Daily counts of Hawfinch recorded per site.

Ecoserv Sample Reference Code	B-242-15	B-243-15	B-244-15	B-245-15	B-246-15	B-247-15	B-248-15	B-249-15	B-250-15	B-251-15	B-252-15
Grid Location	4085	3292	4079	4268	6067	4878	2888	4077	4666	6069	4480
20-Oct-15	0	0	0	0	0	0					
21-Oct-15	0						0	0	0	0	0
22-Oct-15	0										
23-Oct-15	0										
24-Oct-15	0	0	0	0	0	0					
25-Oct-15	0						0	0	0	0	0
26-Oct-15	0										
27-Oct-15	0										
28-Oct-15	0	0	0	0	0	0					
29-Oct-15	0						0	0	0	0	0
30-Oct-15	0										
31-Oct-15	0										
1-Nov-15	0	0	0	0	0	0					
2-Nov-15	0						0	0	0	0	1
3-Nov-15	0										
4-Nov-15	0										
5-Nov-15	0	0	0	0	0	0					
6-Nov-15	0						0	0	0	0	0
7-Nov-15	0										
8-Nov-15	0										
9-Nov-15	0	0	0	0	0	0					
10-Nov-15	0						0	0	0	0	0
11-Nov-15	0										
12-Nov-15	0										
13-Nov-15	0	0	0	0	0	0					
15-Nov-15	0						0	0	0	0	0
15-Nov-15	0										
16-Nov-15	0										
17-Nov-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-242-15	B-243-15	B-244-15	B-245-15	B-246-15	B-247-15	B-248-15	B-249-15	B-250-15	B-251-15	B-252-15
18-Nov-15	0						0	0	0	0	0
19-Nov-15	0										
20-Nov-15	0										
21-Nov-15	0	0	0	0	0	0					
22-Nov-15	0						0	0	0	0	0
23-Nov-15	0										
24-Nov-15	0										
25-Nov-15	0	0	0	0	0	0					
26-Nov-15	0						0	0	0	0	0
27-Nov-15	0										
28-Nov-15	0										
29-Nov-15	0	0	0	0	0	0					
30-Nov-15	0						0	0	0	0	0
1-Dec-15	0										
2-Dec-15	0										
3-Dec-15	0	0	0	0	0	0					
4-Dec-15	0						0	0	0	0	0
5-Dec-15	0										
6-Dec-15	0										
7-Dec-15	0	0	0	0	0	0					
8-Dec-15	0						0	0	0	0	0
9-Dec-15	0										
10-Dec-15	0										
11-Dec-15	0	0	0	0	0	0					
12-Dec-15	0						0	0	0	0	0
13-Dec-15	0										
15-Dec-15	0										
15-Dec-15	0	0	0	0	0	0					
16-Dec-15	0						0	0	0	0	0
17-Dec-15	0										
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-242-15	B-243-15	B-244-15	B-245-15	B-246-15	B-247-15	B-248-15	B-249-15	B-250-15	B-251-15	B-252-15
20-Dec-15	0						0	0	0	0	0
21-Dec-15	0										
22-Dec-15	0										
23-Dec-15	0	0	0	0	0	0					
24-Dec-15	0						0	0	0	0	0
25-Dec-15	0										
26-Dec-15	0										
27-Dec-15	0	0	0	0	0	0					
28-Dec-15	0						0	0	0	0	0
29-Dec-15	0										
30-Dec-15	0										
31-Dec-15	0	0	0	0	0	0					

Table G continued. Daily counts of Hawfinch recorded per site.

Ecoserv Sample Reference Code	B-253-15	B-254-15	B-255-15	B-256-15	B-257-15	B-258-15	B-259-15	B-260-15	B-261-15	B-262-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	0	0	0	0	0					
23-Oct-15						0	0	0	0	0
24-Oct-15										
25-Oct-15										
26-Oct-15	0	0	0	0	0					
27-Oct-15						0	0	0	0	0
28-Oct-15										
29-Oct-15										
30-Oct-15	0	0	0	0	0					
31-Oct-15						0	0	0	0	0
1-Nov-15										

Ecoserv Sample Reference Code	B-253-15	B-254-15	B-255-15	B-256-15	B-257-15	B-258-15	B-259-15	B-260-15	B-261-15	B-262-15
2-Nov-15										
3-Nov-15	0	0	0	0	0					
4-Nov-15						0	0	0	0	0
5-Nov-15										
6-Nov-15										
7-Nov-15	0	0	0	0	0					
8-Nov-15						0	0	0	0	0
9-Nov-15										
10-Nov-15										
11-Nov-15	0	0	0	0	0					
12-Nov-15						0	0	0	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	0	0	0	0	0					
16-Nov-15						0	0	0	0	0
17-Nov-15										
18-Nov-15										
19-Nov-15	0	0	0	0	0					
20-Nov-15						0	0	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	0	0	0	0	0					
24-Nov-15						0	0	0	0	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						0	0	0	0	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	0	0					
2-Dec-15						0	0	0	0	0
3-Dec-15										

Ecoserv Sample Reference Code	B-253-15	B-254-15	B-255-15	B-256-15	B-257-15	B-258-15	B-259-15	B-260-15	B-261-15	B-262-15
4-Dec-15										
5-Dec-15	0	0	0	0	0					
6-Dec-15						0	0	0	0	0
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	0	0	0					
10-Dec-15						0	0	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	0	0	0	0	0					
15-Dec-15						0	0	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	0	0	0	0	0					
18-Dec-15						0	0	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	0	0	0					
26-Dec-15						0	0	0	0	0
27-Dec-15										
28-Dec-15										
29-Dec-15	0	0	0	0	0					
30-Dec-15						0	0	0	0	0
31-Dec-15										

Table H. Daily counts of Golden Plover recorded per site.

Ecoserv Sample Reference Code	B-263-15	B-264-15	B-265-15	B-266-15	B-267-15	B-268-15	B-269-15	B-270-15	B-271-15	B-272-15	B-273-15
Grid Location	4085	3292	4079	4268	6067	4878	2888	4077	4666	6069	4480
20-Oct-15	0	0	0	0	0	0					
21-Oct-15	0						0	0	0	0	0
22-Oct-15	0										
23-Oct-15	0										
24-Oct-15	0	0	0	0	0	0					
25-Oct-15	0						0	0	0	0	0
26-Oct-15	0										
27-Oct-15	0										
28-Oct-15	0	0	0	0	0	0					
29-Oct-15	0						0	0	0	0	0
30-Oct-15	0										
31-Oct-15	0										
1-Nov-15	0	0	0	0	0	0					
2-Nov-15	1						1	2	0	0	0
3-Nov-15	0										
4-Nov-15	0										
5-Nov-15	0	0	0	0	0	0					
6-Nov-15	0						2	0	0	0	0
7-Nov-15	0										
8-Nov-15	0										
9-Nov-15	0	0	0	0	0	0					
10-Nov-15	0						0	0	0	0	0
11-Nov-15	0										
12-Nov-15	0										
13-Nov-15	0	0	0	0	0	0					
15-Nov-15	0						0	0	0	0	0
15-Nov-15	0										
16-Nov-15	0										
17-Nov-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-263-15	B-264-15	B-265-15	B-266-15	B-267-15	B-268-15	B-269-15	B-270-15	B-271-15	B-272-15	B-273-15
18-Nov-15	0						0	0	0	0	0
19-Nov-15	0										
20-Nov-15	2										
21-Nov-15	0	0	0	0	0	0					
22-Nov-15	0						0	0	0	0	1
23-Nov-15	0										
24-Nov-15	0										
25-Nov-15	1	2	0	0	0	0					
26-Nov-15	0						0	0	0	0	0
27-Nov-15	0										
28-Nov-15	1										
29-Nov-15	0	0	0	0	1	0					
30-Nov-15	2						2	0	0	0	0
1-Dec-15	0										
2-Dec-15	0										
3-Dec-15	0	0	0	0	8	0					
4-Dec-15	4						4	0	0	0	1
5-Dec-15	3										
6-Dec-15	4										
7-Dec-15	1	1	0	0	0	0					
8-Dec-15	0						0	0	0	0	0
9-Dec-15	0										
10-Dec-15	0										
11-Dec-15	0	0	0	0	0	0					
12-Dec-15	2						1	0	0	0	0
13-Dec-15	1										
15-Dec-15	0										
15-Dec-15	0	0	0	0	0	0					
16-Dec-15	0						0	0	0	0	0
17-Dec-15	0										
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-263-15	B-264-15	B-265-15	B-266-15	B-267-15	B-268-15	B-269-15	B-270-15	B-271-15	B-272-15	B-273-15
20-Dec-15	0						0	2	0	0	0
21-Dec-15	1										
22-Dec-15	0										
23-Dec-15	0	0	0	0	0	0					
24-Dec-15	0						0	0	0	0	0
25-Dec-15	0										
26-Dec-15	0										
27-Dec-15	0	0	0	0	0	0					
28-Dec-15	0						0	0	0	0	0
29-Dec-15	0										
30-Dec-15	2										
31-Dec-15	0	0	0	0	6	0					

Table H continued. Daily counts of Golden Plover recorded per site.

Ecoserv Sample Reference Code	B-274-15	B-275-15	B-276-15	B-277-15	B-278-15	B-279-15	B-280-15	B-281-15	B-282-15	B-283-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	0	0	0	0	0					
23-Oct-15						0	0	0	0	0
24-Oct-15										
25-Oct-15										
26-Oct-15	0	0	0	0	0					
27-Oct-15						1	0	0	0	0
28-Oct-15										
29-Oct-15										
30-Oct-15	0	0	0	0	0					
31-Oct-15						0	0	0	0	0
1-Nov-15										

Ecoserv Sample Reference Code	B-274-15	B-275-15	B-276-15	B-277-15	B-278-15	B-279-15	B-280-15	B-281-15	B-282-15	B-283-15
2-Nov-15										
3-Nov-15	0	0	0	0	0					
4-Nov-15						0	0	0	0	0
5-Nov-15										
6-Nov-15										
7-Nov-15	0	0	0	0	0					
8-Nov-15						0	0	0	0	0
9-Nov-15										
10-Nov-15										
11-Nov-15	0	0	0	0	0					
12-Nov-15						0	0	0	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	0	0	0	0	0					
16-Nov-15						0	0	0	0	0
17-Nov-15										
18-Nov-15										
19-Nov-15	0	0	0	0	0					
20-Nov-15						0	0	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	0	0	0	0	1					
24-Nov-15						0	0	0	0	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						0	0	1	0	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	0	1					
2-Dec-15						3	1	0	0	1
3-Dec-15										

Ecoserv Sample Reference Code	B-274-15	B-275-15	B-276-15	B-277-15	B-278-15	B-279-15	B-280-15	B-281-15	B-282-15	B-283-15
4-Dec-15										
5-Dec-15	0	0	0	0	0					
6-Dec-15						1	0	1	0	0
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	1	0	0					
10-Dec-15						0	0	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	0	0	0	0	0					
15-Dec-15						2	0	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	4	0	0	0	0					
18-Dec-15						2	0	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	0	0	0					
26-Dec-15						0	0	0	0	0
27-Dec-15										
28-Dec-15										
29-Dec-15	0	1	0	0	0					
30-Dec-15						0	0	0	0	0
31-Dec-15										

Table I. Daily counts of Song Thrush recorded per site.

Ecoserv Sample Reference Code	B-284-15	B-285-15	B-286-15	B-287-15	B-288-15	B-289-15	B-290-15	B-291-15	B-292-15	B-293-15	B-294-15
Grid Location	4085	3292	4079	4268	6067	4878	2888	4077	4666	6069	4480
20-Oct-15	0	0	0	0	0	0					
21-Oct-15	0						0	1	0	0	0
22-Oct-15	1										
23-Oct-15	0										
24-Oct-15	0	6	0	14	3	0					
25-Oct-15	5						9	17	76	0	17
26-Oct-15	11										
27-Oct-15	3										
28-Oct-15	13	4	1	3	5	0					
29-Oct-15	5						5	1	3	0	0
30-Oct-15	4										
31-Oct-15	2										
1-Nov-15	0	2	0	0	0	0					
2-Nov-15	3						3	3	0	0	0
3-Nov-15	10										
4-Nov-15	11										
5-Nov-15	12	8	6	3	0	0					
6-Nov-15	1						3	0	3	0	3
7-Nov-15	3										
8-Nov-15	3										
9-Nov-15	3	2	1	0	0	0					
10-Nov-15	3						2	0	0	2	2
11-Nov-15	1										
12-Nov-15	1										
13-Nov-15	2	2	0	0	0	0					
15-Nov-15	3						2	2	1	0	0
15-Nov-15	0										
16-Nov-15	1										
17-Nov-15	0	4	1	0	0	0					

Ecoserv Sample Reference Code	B-284-15	B-285-15	B-286-15	B-287-15	B-288-15	B-289-15	B-290-15	B-291-15	B-292-15	B-293-15	B-294-15
18-Nov-15	0						2	0	0	0	1
19-Nov-15	1										
20-Nov-15	0										
21-Nov-15	2	0	0	0	0	1					
22-Nov-15	2						1	2	0	0	0
23-Nov-15	0										
24-Nov-15	0										
25-Nov-15	0	0	0	0	0	0					
26-Nov-15	0						0	0	0	0	1
27-Nov-15	0										
28-Nov-15	0										
29-Nov-15	0	0	0	0	0	0					
30-Nov-15	1						0	0	0	0	1
1-Dec-15	0										
2-Dec-15	0										
3-Dec-15	0	0	0	2	0	0					
4-Dec-15	4						0	0	0	0	0
5-Dec-15	2										
6-Dec-15	1										
7-Dec-15	2	0	0	0	0	0					
8-Dec-15	1						0	0	0	0	0
9-Dec-15	0										
10-Dec-15	0										
11-Dec-15	0	0	0	1	0	0					
12-Dec-15	0						0	2	1	0	1
13-Dec-15	0										
15-Dec-15	0										
15-Dec-15	0	0	0	0	0	0					
16-Dec-15	0						0	0	1	0	0
17-Dec-15	2										
18-Dec-15	0										
19-Dec-15	0	0	0	0	0	0					

Ecoserv Sample Reference Code	B-284-15	B-285-15	B-286-15	B-287-15	B-288-15	B-289-15	B-290-15	B-291-15	B-292-15	B-293-15	B-294-15
20-Dec-15	0						0	0	0	0	0
21-Dec-15	0										
22-Dec-15	3										
23-Dec-15	0	0	0	0	0	0					
24-Dec-15	0						0	0	0	0	2
25-Dec-15	0										
26-Dec-15	0										
27-Dec-15	0	0	0	0	0	0					
28-Dec-15	1						0	0	0	0	0
29-Dec-15	0										
30-Dec-15	0										
31-Dec-15	0	0	0	0	0	0					

Table I continued. Daily counts of Song Thrush recorded per site.

Ecoserv Sample Reference Code	B-295-15	B-296-15	B-297-15	B-298-15	B-299-15	B-300-15	B-301-15	B-302-15	B-303-15	B-304-15
Grid Location	3268	4073	5064	5872	4283	3690	3881	4070	5663	5277
20-Oct-15										
21-Oct-15										
22-Oct-15	0	1	0	0	1					
23-Oct-15						0	0	0	0	0
24-Oct-15										
25-Oct-15										
26-Oct-15	11	8	0	3	8					
27-Oct-15						11	5	4	1	2
28-Oct-15										
29-Oct-15										
30-Oct-15	0	0	3	0	2					
31-Oct-15						4	0	6	1	0
1-Nov-15										

Ecoserv Sample Reference Code	B-295-15	B-296-15	B-297-15	B-298-15	B-299-15	B-300-15	B-301-15	B-302-15	B-303-15	B-304-15
2-Nov-15										
3-Nov-15	12	9	0	3	26					
4-Nov-15						3	2	2	0	0
5-Nov-15										
6-Nov-15										
7-Nov-15	4	1	3	0	3					
8-Nov-15						2	2	6	1	1
9-Nov-15										
10-Nov-15										
11-Nov-15	1	2	0	0	0					
12-Nov-15						1	0	1	0	0
13-Nov-15										
15-Nov-15										
15-Nov-15	0	2	0	0	1					
16-Nov-15						0	0	0	0	0
17-Nov-15										
18-Nov-15										
19-Nov-15	0	0	0	0	0					
20-Nov-15						5	2	0	0	0
21-Nov-15										
22-Nov-15										
23-Nov-15	0	0	0	0	0					
24-Nov-15						1	0	0	0	0
25-Nov-15										
26-Nov-15										
27-Nov-15	0	0	0	0	0					
28-Nov-15						0	0	0	0	0
29-Nov-15										
30-Nov-15										
1-Dec-15	0	0	0	1	0					
2-Dec-15						0	0	0	0	0
3-Dec-15										

Ecoserv Sample Reference Code	B-295-15	B-296-15	B-297-15	B-298-15	B-299-15	B-300-15	B-301-15	B-302-15	B-303-15	B-304-15
4-Dec-15										
5-Dec-15	0	0	0	0	1					
6-Dec-15						0	0	0	0	0
7-Dec-15										
8-Dec-15										
9-Dec-15	0	0	0	0	0					
10-Dec-15						0	0	0	0	0
11-Dec-15										
12-Dec-15										
13-Dec-15	0	0	0	0	0					
15-Dec-15						1	0	0	0	0
15-Dec-15										
16-Dec-15										
17-Dec-15	0	0	0	0	0					
18-Dec-15						0	0	0	0	0
19-Dec-15										
20-Dec-15										
21-Dec-15	0	0	0	0	0					
22-Dec-15						0	0	0	0	0
23-Dec-15										
24-Dec-15										
25-Dec-15	0	0	0	0	0					
26-Dec-15						0	0	0	0	0
27-Dec-15										
28-Dec-15										
29-Dec-15	0	0	0	0	1					
30-Dec-15						0	0	0	0	0
31-Dec-15										