

*the Forth
Naturalist
and Historian*

Volume 33 2010

1-3 Prelims

4 Author Addresses

Historical Papers

5 James Gray Seed and Grain Merchant Stirling (1833-1890) – Kate Dean

13 The Gartmorn Lade System – Murray Dickie

33 Dunblane Voices from the Great War – Bill Inglis

49 The Kirkyard Cemeteries beside Stirling Castle – John G. Harrison

61 Buried Treasure: a Major Iron Age Gold Hoard from the Stirling Area –
Fraser Hunter

65 Visit by Dr. Robert Munro to the Strathcashell Crannog Loch Lomond –
John Mitchell

Naturalist Papers

69 Dunblane Weather Report 2009 – Neil Bielby

79 The Sparling *Omerus Esperlanus* in the Forth – Peter S. Maitland

91 Plant Records 2009-10 – Roy Sexton et al

99 Confirmed Breeding of the Comma Butterfly *Polygonia C-Album* in Central
Scotland – Heather Young

101 Forth Area Bird Report – Andre Thiel and Chris J. Pendlebury

2 *Forth Naturalist and Historian*, volume 33

Published by the Forth Naturalist and Historian, University of Stirling –
charity SCO 13270.

ISSN 0309-7560

EDITORIAL BOARD

Stirling University–M. Thomas (Chairman);

D. Davidson–Environmental Sciences; A. Durie–History;

Marilyn Scott, Computer Services; Christina Sommerville–Aquaculture;

R. Tipping–Environmental Sciences; M. Usher–Environmental Sciences.

Non University–M. Dickie, Stirling; G. Harewood, Stirling;

W. Inglis, Dunblane; R. Sexton, Stirling.

Honorary Secretary:

Marilyn Scott, Computer Services, University of Stirling FK9 4LA.

Journal Editor:

N. Dix, 7 Laurelhill Place, Stirling, FK8 2JH.

ISBN 978-1-898008-68-2

Single copies may be taken of single articles provided due acknowledgement
is made and the copies are for non-profit education or private use.

Supported by INEOS and Scottish Natural Heritage.

Cover: front– The Stirling hoard of four gold torcs (© National Museums of
Scotland)

back– Common Whitethroat (photograph by John Nadin).

Printed by Meigle Colour Printers Ltd., Tweedbank Industrial Estate, Galashiels.

Set in Zapf Calligraphic on 115 gsm Satin and cover 300 gsm Satin.

THE FORTH NATURALIST AND HISTORIAN

The Forth Naturalist and Historian (FNH) is an informal enterprise of Stirling University. It was set up in 1975 by several University and Central Regional Council staff to provide a focus for interests, activities and publications of environmental, heritage and historical studies for the Forth area, comprising now local authority areas Stirling, Falkirk and Clackmannanshire.

Since then the organisation of an annual environment/heritage symposium called *Man and the Landscape* has been an important feature.

The annual *Forth Naturalist and Historian* has published numerous papers, many being authoritative and significant in their field, and includes annual reports of the weather, and of birds in the locality, plus book reviews and notes. These volumes provide a valuable successor to that basic resource *The Transactions of the Stirling Field and Archaeological Society, 1878-1939*. Four year contents/indexes are available, and selected papers are published in pamphlet form, while others are available as reprints.

In addition a 230 page book *Central Scotland – Land, Wildlife, People*, a natural history and heritage survey, was produced in 1994 and is available in the form of a CD-Rom, *Heart of Scotland's Environment* (HSE).

Other FNH and associated publications still in print include – *Mines and Minerals of the Ochils, Airthrey and Bridge of Allan, Woollen Mills of the Hillfoots, The Ochil Hills* – landscape, wildlife, heritage – an introduction with walks, *Alloa Tower and the Erskines of Mar*, and the *Lure of Loch Lomond* a journey round the shores and islands. Several of these are in association with Clackmannanshire Field Studies Society.

FNH publications are listed on the internet British Library (BLPC) and by booksellers e.g. Amazon, Bol, Barnes and Noble.

Offers of papers/notes for publication, and of presentations for symposia are ever welcome.

Honorary Secretary Marilyn Scott,
Computer Services, University of Stirling, FK9 4LA.
E-mail: fnh@stir.ac.uk
Web: <http://www.fnh.stir.ac.uk>

Author Addresses

Neil Bielby, 56 Ochiltree, Dunblane FK15 0DF

Kate Dean, Waterhead, Fintry G63 0XL

Murray Dickie, 6 Manse Crescent, Stirling FK7 9AJ

John Harrison, 14a Abercrombie Place, Stirling FK8 2QP

Fraser Hunter, National Museums of Scotland, Chamber Street, Edinburgh
EH1 1TF

Bill Inglis, 6 Dargai Terrace, Dunblane FK15 0AU

Peter S. Maitland, Fish Conservation Centre, Gladshot, Haddington EH41 4NR

John Mitchell, 22 Muirpark Way, Drymen G63 0DX

Roy Sexton, 22 Alexander Drive, Bridge of Allan FK9 4QB

Heather Young, 8 Coxburn Brae, Bridge of Allan FK9 4PS

JAMES GRAY
SEED AND GRAIN MERCHANT, STIRLING
1833-1890
People of the Forth (18)

Kate Deans

For the past 3 years a group of volunteers at the Stirling Council Archives has been working on a collection of papers donated by a relative¹ of James Gray, seed and grain merchant of Stirling. The documents arrived in several large cardboard boxes, in no discernible order and some of the contents were suffering a little from damage caused by exposure to damp before their arrival at the Archives in 2006.

Before the task of cleaning and listing started, we had fully expected to find a collection consisting of papers relevant to the running of the seed merchant and grain business, which thrived in Upper Craigs in Stirling over a period of some 120 years. Instead, we quickly realised that this collection consisted, for the most part, of documents relating to James Gray's other business interests. He was frequently called on by his customers for financial aid and advice and he and other local businessmen operated a trust which administered the business affairs of those finding themselves in financial difficulties. After his death in 1890 the trust continued to administer these affairs until it was eventually wound up in the early 1920s.

James Gray was born in 1833 in Slamannan, Clackmannanshire the son of John Gray, a tenant farmer and weaver of lint. An 1860 map of Slamannan shows Lint Pools marked beside Brownrigg, the Gray's farm.

James's father, John Gray, was a deeply religious man. He served as an elder for nearly 30 years. There are frequent mentions of him in the Slamannan Parish Church Session Minutes. After the disruption of the Church in 1843 it is John Gray who heads the list of those who signed *The formula to be subscribed to all bearers to the Church for the founding of the Free Kirk of Slamannan*.

James was apprenticed at the age of 15, firstly (together with his cousin, also named James Gray) to Oliver's Seed Merchants in Falkirk and then in 1850 he moved to Stirling where he completed his apprenticeship with W. Drummond & Sons. James's brother Tom went to New Zealand in the 1860s and news of his exploits were transmitted in frequent letters from his father and mother in Slamannan to their son James in Stirling. Tom was caught up in the Otago Gold Rush that had started in 1861. Gabriel Read, an Australian, had found gold in Otago in May of that year. Between July and December 1861 the local population rose to over 30,000, camping in Gabriel's Gully and other neighbouring valleys.² This extract from one of Tom's letters gives a vivid

description of life in the gold rush in New Zealand in the 1860s and its contents are rapidly conveyed to his brother James:

We have got a letter from Tom today dated Nov 17th. He has been at the diggings for three months previous to the date of his letter and he got few home letters on the day which he had wrote to us. Being the first he had gotton since he joined that employment. He makes no alusion to his former master nor how he left him but he is doing well and has made good wages since he joined the diggings and great numbers are gathering to them every day. He has cleared about £100 since he started but some has done a great deal more. While he is writing there are thousands going away to a new digging 90 miles further away and I start this week if I can pick up mates to go with me – he also speaks of Gabriel Gully where a great deal of gold has been got the last time the escort went down they took 50,000 ozs with them and 8 prisoners, 4 of them robers with fire arms – everybody has got a revolver and Bowie knife for there defence he has also sent a newspaper but it has not reached us yet this is the substance of his letter it appears to have been wrote in a hurry and he says the male was just going away³

As well as family news and gossip there is always a bit of advice from parent to child such as in a letter to James from his mother:

“Not to neglect your bible, to take a look dayley in it for meditation”⁴

In 1865 James Gray set up his business in Stirling, where it traded from Upper Craigs for 120 years, becoming the best-known grain merchant in Central Scotland. He married twice, firstly to Janet Burden in 1857, the daughter of brewer Peter Burden⁵. They had two children: Margaret and John (John died in infancy). Janet, who suffered from tuberculosis, died in 1868. James married for a second time in 1869 and together he and his new wife Jessie Ross had three sons (James, John and Peter) and a daughter, Annie.

In addition to running his business, James found time for other interests. He was involved in the temperance movement and the church. He conducted a Sunday School in the Old Subscription Schoolroom in Stirling and was chairman of the Stirling Sunday School Teachers Union. He was one of the founders of and Chairman of the Foundry Boys Society. He was Lay Correspondent for the Stirling Presbytery on the sustenance Fund Committee. He was a Deacon and an Elder for the Free North Church and for 25 years the superintendent of the Sunday School there.

He also had a long-standing public career, serving as Chairman of the Port Street Ward Committee and later as Town Councillor representing that ward, from 1878 until his death. He was convener of the Cleansing Committee and subsequently of the Lighting Committee where he was instrumental in the improvements to the lighting in Stirling. James Gray was a Magistrate and

became a Baillie in 1885. He was also vice president of the Stirling Liberal Association.⁶

His notoriously brusque exterior concealed a kind heart and he offered practical help and assistance to many tradesmen and individuals struggling with their finances. His strong religious convictions were evident in his business dealings and this can be seen from the prayers which were carefully transcribed into the annual balance sheets.

He died of pneumonia aged 57 at his home at 4, Gladstone Place, in Stirling on May 2nd 1890.

As his children were too young to take over the business, his widow Jessie entered into a copartnery with Hugh Kinross until 1898 with Robert Mercer acting as her delegate. A trust was set up to administer the affairs of the business and its many other interests. In 1898, his oldest son, James, was fatally injured after being hit by a train at Stirling Station⁷. The day to day running of the business was then taken over by his second son, John Gray, who came to be known as 'the old man of Stirling', and like his father before him was involved in many charitable organisations. When John Gray died, the business was then taken over by his son James Gray until it was sold to Fife Building Supply Co Ltd in 1984.

Some of the collection being currently catalogued demonstrates how James Gray involved himself in the running of two farms, one at Shrubhill of Row on the Row estate near Dunblane and the other at Mill of Gask near Dunning in Perthshire. The correspondence gives a fascinating insight into the daily affairs of farming in the late 19th century.

At Shrubhill, farmer Waddell seems to have had great difficulties making ends meet; in a letter dated March 16 1887 he writes:

*5 stirks dead last year loss now £50.00
bad harvest 60 acres damage 30/- p acre £90
damage to hay and corn stacks for being without a barn floor
hay 8 ricks 30/- per rick £12.00
Corn stacks 30 at 10/- per stack £15.00
other items from same cause namely barn floor £10
Our calculations last year as to the financial returns of the farm would have
been nearly great had not the above disasters and others not taken place⁸*

but some of his problems may have been exacerbated by his tendency to drown his sorrows; there follows an extract from a letter to James Gray dated November 27 1888:

*..I am sorry to learn that such a vile report has reached you especially
considering our connection.*

I have never drunk heavily for more than ten years and will not likely begin now in all that time I have not been tipsy six times and will be glad indeed to be met by your informant along with yourself.⁹

However, in addition to some woeful letters, others provide interesting descriptions of daily events on the farm; such as this one describing a new technique for treating colic in horses.

*Shrubhill of Row,
Doune
April 3rd 1886*

to Mr Jas Gray

Dear Sir

When I got home yesterday afternoon, my best Black mare was unwell with inflammatory stopage in the bowels the V.S.[veterinary surgeon] did everything he possible could. She got gradually worse till at 2.0clock in the morning she was so bad that we considered that 15 or 20 minutes would finish her. So he asked me if could apply the last alternative. It is a french discovery of piercing them in the side in order to let off all the gas or wind which accumulates in the bowels. Which in course are stopped . The operation was completely successful and I am glad to say now she is doing quite well. We are treating her with great care, she will not be fit for work for a few days which is not quite so good at this time. I have always used a very little crushed linseed among their oats to prevent that very thing during the spring months when their fodder is so dry so I think it will be wise to get say 2 cwt of linseed crushed for them as I would not like to see another so nearly gone. Mr Macfarline is very proud of his success.¹⁰

Unfortunately, in spite of his assertions to the contrary, it seems that Alexander Waddell was frequently tempted from the straight and narrow..

“Master came home ... worse of drink”.¹¹

and there are some letters from his long suffering wife to James Gray, apologising for her husband’s absences from the farm, and asking for help with the running of the business. By March of 1890 Alexander Waddell was back on the farm but had been told not to involve himself with the running of the business there. A judicial factory was set up to administer affairs and a farm sale took place in November 1890. A dispute then arose concerning the sale of the Waddell’s personal effects. Mr Waddell died in 1911 aged 73, in Portobello where it seems he was working as a gardener. He was survived by his long-suffering wife, Mary, who lived until 1921 – dying at 86 at Monktonhall House in Inveresk.

The other farm in which James Gray took an interest, was sited at Mill of Gask near Dunning in Perthshire. Here a father and son, Lawrence and Alexander Stocks ran into financial difficulties in the 1880s and turned to James Gray for advice and assistance.

Much of the correspondence relates to the running of the farm, maintenance of farm buildings and daily tribulations concerning livestock and crops, and of course the weather. It would appear the Stocks bred Clydesdale horses; there is a pedigree of their mares in the account book and a printed pedigree of a stallion 'Pride of the Day' bred and owned by the Stocks. There are receipts showing prices for cattle, sheep, potatoes, and other crops together with details of farm wages; handbills for farm equipment and bills for harness. There are even some letters of application for the post of cattleman in 1888 with notes on their appearance at interview. The Stocks moved to Crieff, and a new tenant, John Wilson, took over in 1890 and the farm seemed to enjoy more success.

In addition to the farm papers, we have catalogued documents covering a range of businesses dealt with by James Gray. One of his ventures consisted of an investment in a share in a cargo vessel trading from Grangemouth. In April 1899, John Gray was offered an opportunity to purchase a 1/64th share in the vessel SS Palomares¹². This vessel was built in Jarrow on the Tyne in 1881 and purchased by the Crawford family, shipowners, of Glasgow and Grangemouth. This was to be their first venture into extending shares outwith family ownership. The Palomares was a general cargo vessel, typically carrying timber from the Baltic to the UK. One voyage documented in the collection shows the Palomares taking timber from Archangel to Middlesborough, onwards with coal to Bilbao, then a cargo of iron ore back to Middlesborough, ending with a load of pig iron for Grangemouth. The documents in the collection include transfer documents for the vessel and correspondence from the Crawfords assuring John Gray that his investment will be a sound one. John Gray purchased his 1/64th share at a price of £215/0/0d, and was assured a good return on his investment. In 1894, after the death of John Gray (in 1890), the trust administering his estate sold their share for £155/0/0d, perhaps not the solid return he had been hoping for.

James Gray also took an interest in a brick and tile works sited at Meikle Drumquharn¹³ to exploit the clay deposits there. The farm was part of the Killearn estate and the original lease existed between William Cowbrough MacNie and Peter Blackburn of Killearn House. By the mid 1870s the tile works were in debt and James Gray seems to have taken over the ownership of the business, with Mr MacNie in charge of operations while Mr Gray took over the management of the farm. By 1889, James Gray wished to retire from the copartnery that had been formed in 1887 between himself and Alexander Thomson who was at this time running the works. They still traded under the name of William Macnie & co Brick and Tile Makers. Alexander Thomson agreed to pay back the money in instalments over a period of 8 years. In 1903

the lease was terminated and the business was finally liquidated after several years of negotiations.

Perhaps the best way to conclude is to quote briefly from the extensive obituary which appeared in the *Stirling Journal & Advertiser* in May 1890 and offers a fitting tribute to the life's work of James Gray:

*It was one of the chief pleasures of his life to help those in distress or in need. I am sure there are many in Stirling and elsewhere who have been saved from anxiety, and even from ruin, by his spontaneous and kindly intervention.*¹⁴

During the past 4 years spent working on the cataloguing of this collection the group has formed a well rounded picture of the activities, public and charitable, as well as business related, of an important Stirling businessman of the second half of the 19th century and once cataloguing has been completed sometime later in 2010, this fascinating collection will be available for scrutiny at the Stirling Council Archives at their premises at Borrowmeadow Road, Stirling.

Acknowledgements

The Staff at Stirling Council Archives.

The volunteer group currently working on the cataloguing of the James Gray collection: Audrey Birrell, Carole Ford (who transcribed some of the letters) and Marjorie Lumsden. Mrs Sheila Dewar for generously allowing access to her family papers and photographs.

References

¹ Sheila Dewar, granddaughter of James Gray, donated the collection to the Stirling Archive in 2006

² <http://www.teara.govt.nz/en/1966/gold-discoveries/2>

³ private collection

⁴ *ibid*

⁵ Peter Burden, brewer had a malt house and brewery in Broad Street in Stirling until his death in 1843

⁶ SO (SCA) PD72/56 May 8 1890, p5.

⁷ SJA (SCA) PD174/72 September 23 1898, p4.

⁸ SCA ref PD206

⁹ *ibid*

¹⁰ *ibid*

¹¹ *ibid*

¹² ship no 83905

¹³ smr no: 4802

¹⁴ SJA (SCA) PD174/64 May 9 1890, p4.

SCA – Stirling Council Archives

SO – Stirling Observer

SJA – Stirling Journal & Advertiser

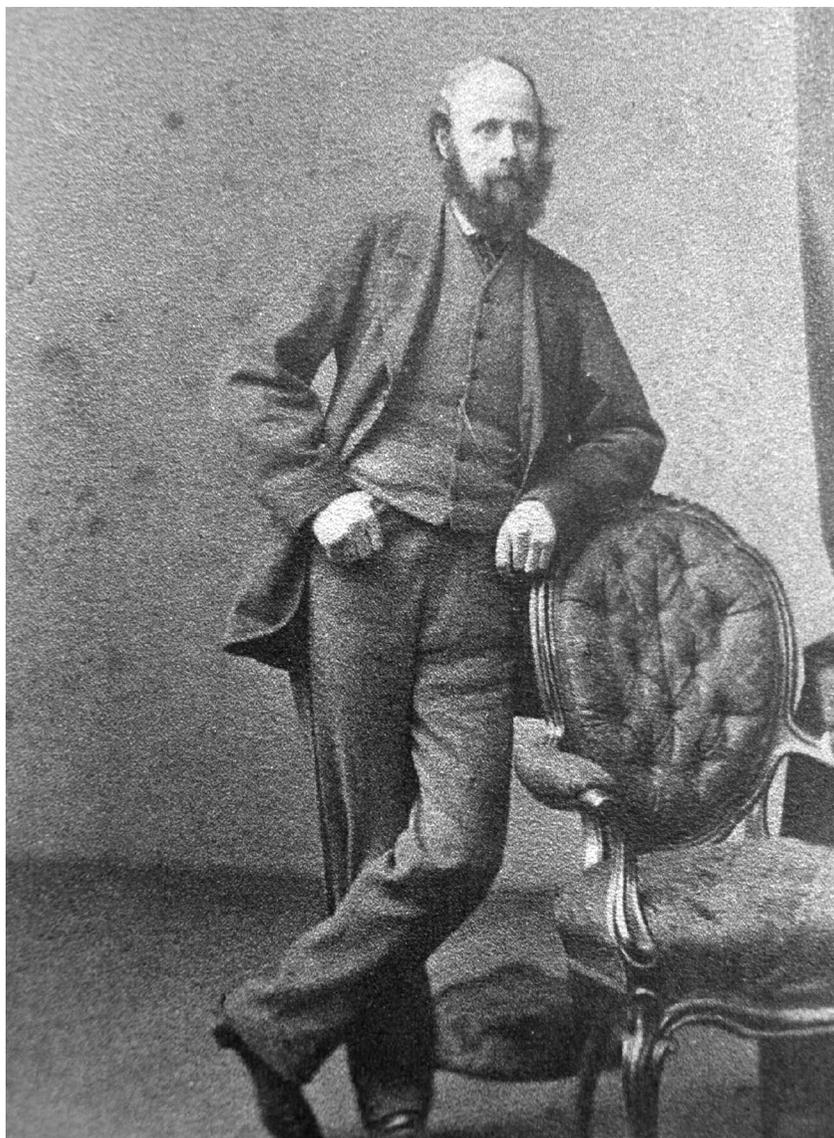


Figure 1 James Gray.
Reproduced by kind permission of the Dewar family.

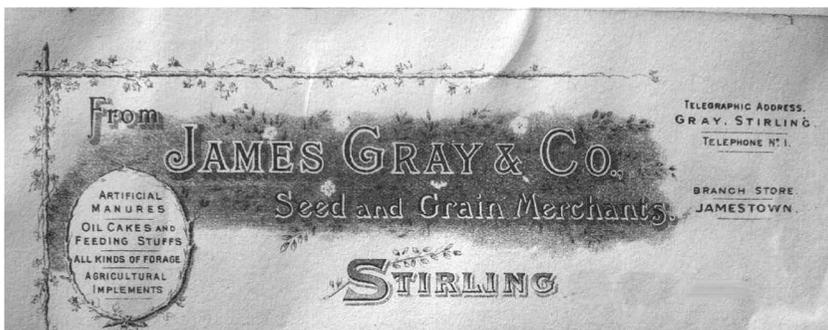


Figure 2 Headed notepaper for James Gray & Co., Seed and Grain Merchants of Stirling.

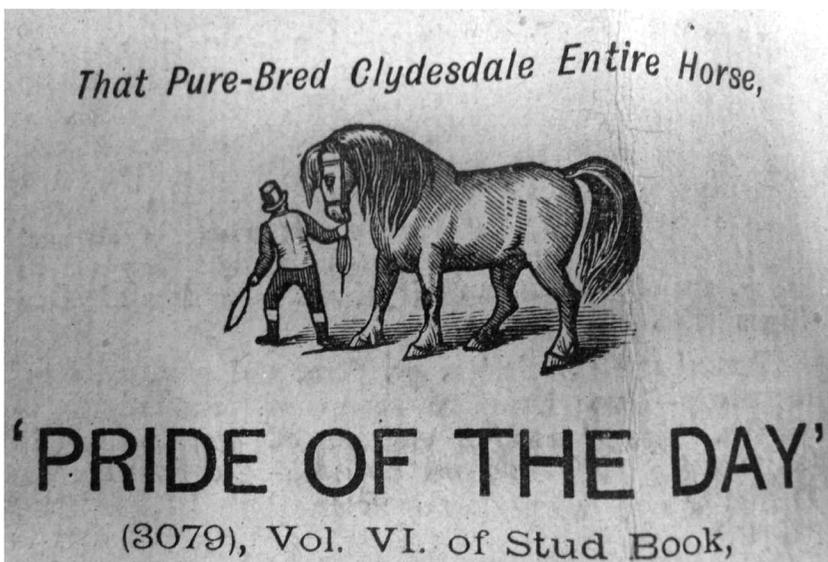


Figure 3 Pedigree of the Clydesdale Stallion "Pride of the Day" owned by L. & A. Stocks, Mill of Gask Farm, near Dunning.

THE GARTMORN LADE SYSTEM

Murray Dickie

The historical sources quoted use a confusing mixture of Scots and Imperial weights, measures and volumes. There is a conversion table at the conclusion of the article to convert to metric equivalents. This is followed by a basic glossary.

Two lade systems were both built initially to carry a supply of water to drain collieries on two estates. Not only were these lades successful in achieving colliery drainage for a considerable period of time, both were subsequently utilised by local industries for both waterpower and as a source of water for industrial processes. Finally, both lades became public water supplies and, in the case of the Gartmorn Lade, the focal point for a Country Park.

The Craigrie lade, powering drainage engines for the Clackmannan Colliery was the earlier, being in existence by the beginning of the 18th century. The Gartmorn Lade was begun slightly later at the beginning of the 18th century, legal papers relating to the agreement of compensation water between the two systems being dated 1711.⁽¹⁾ Much of the Gartmorn lade can still be traced on the ground, a tribute to its long period of industrial history and present use as a country park.

At the time the Gartmorn lade was first developed, Scotland and England, although their crowns were united in the person of Queen Anne, still had separate parliaments, a reflection of their heritage of centuries of strife. One result of this strife was the depression of the Scottish economy, tied as it was to a feudal system where the principal occupation was agriculture. This agriculture was based mainly on the production of grain crops by the communal cultivation of areas of land laid out in run-rigg. A succession of grain crops was taken from a field until the soil was exhausted and the land was then left fallow and used for grazing until it recovered. This practice, together with the use of cumbersome inefficient oxen ploughs, primitive techniques of sowing and harvesting and the poor quality of cereal crops, kept the general population close to starvation point.⁽²⁾ Such conditions led to low earnings for the farmers and low rentals for the estate owners, forcing both to seek other sources of income. This state of affairs continued in the Alloa area until nearly the end of the 18th century when the introduction of agricultural improvements and enclosures transformed agriculture.⁽³⁾

Towns and villages in the 17th century in this area were few in number, centred around the home of the local land owner, an ecclesiastical centre, or, in the case of the Burghs, a market or port. The two market towns of Alloa and Clackmannan developed around Alloa Tower and Clackmannan Tower, the ancestral homes of the Erskine and the Bruce families. Surrounding these two

main settlements the bulk of the population lived in a scatter of farm toons, many of whose locations are shown on a map drawn up by John Adair about 1681.⁽⁴⁾

The Alloa and Clackmannan estates stretched back from the shores of the River Forth on to a ridge of higher ground to the north and were drained by the River Black Devon and the Brothie Burn. The Black Devon, rising near Saline 13 km to the east, had a large catchment area and a considerable flow of water, apart from during the driest parts of summer.⁽⁵⁾ The Brothie Burn, on the other hand, originated in a swampy hollow about 3 km to the north west of Alloa and had a much smaller flow, which also fluctuated severely as the seasons rotated. The marshy pool from which the Brothie Burn flowed was named Gartmorn Loch. The first part of the name Gartmorn is likely to be Scandinavian in origin ('Garth' – an enclosure) and the 'morn' possibly represents ('morren' or 'more' – a moor or marsh).⁽⁶⁾ There are a large number of 'Garth' place names in the south west corner of Clackmannanshire. It is possible that these place names represent the western spread of Scandinavian influence related to the appearance of waves of Danish invaders into the east coastal areas of Scotland in the 9th, 10th and 11th centuries.⁽⁷⁾

Both the Black Devon and the Brothie Burn entered the Forth in a series of winding, semi-tidal loops which afforded sheltered harbours or pows at Clackmannan and Alloa for early small, shallow-draught ships. The waters of the Black Devon had long been used as a source of power. John of Mentieth, Sheriff of Clackmannan reported in his accounts the quarterly rent of *The Mill of Clackmannan for the term of Whitsunday 1357* for two pounds Scots.⁽⁸⁾ In June 1368 Robert Erskine was granted *mills and multures* in the lands of Alloa and Forestmill.⁽⁹⁾

The first coal workings in the Alloa and Clackmannan area are difficult to date but the records of the Scottish Parliament mention coal workings in East Scotland as far back as the 12th and 13th centuries. In 1291, for example, Dunfermline Abbey was given the right to work coal on the lands of Pittencrief.⁽¹⁰⁾ Coal was used locally at first, but exports are soon recorded, indicating that landowners were selling it outside the area, transporting it by sea.⁽¹¹⁾

Coal working in these early times faced a number of challenges. Firstly, there was the need for labour for what was hard, dirty and dangerous work. From the late medieval period, the early miners were bound to the colliery and sold as part of the colliery property.⁽¹²⁾ T.J. Salmon noted that *...as late as 1771 the value of the ownership of forty good colliers, with their wives and children, was estimated to be worth £4,000....*⁽¹³⁾ This state of affairs persisted until the late 18th century when the 1775 Act gave newly engaged miners the chance of freedom, but it was not until the end of the century that the system was completely ended.⁽¹⁴⁾

The next challenge was to keep workings free of water. Earliest coal

workings were located near the coast or in the sides of a valley where seams had been exposed. Coal was dug out until the workings could no longer be drained or the roof was in danger of collapsing, when the workings would be abandoned and new ones opened further along the seam. Where seams lay close to the surface, small shafts could be dug and workings 'belled out' at the base. Again, when drainage or roof collapse problems occurred, these bell pits would be abandoned.⁽¹⁵⁾

Drainage was to be one of the most serious and costly challenges to pit owners, becoming more difficult and expensive as shallower seams were worked out. By the 14th and 15th centuries, more extensive workings became accessible by the use of day-levels, very gently sloping tunnels or adits driven up from a stream in the base of a valley to intersect with a coal seam. The area of coal above this point could then be drained through the day-level into the stream. Once the initial cost of driving the tunnel, or day-level, had been met, maintenance costs were low.⁽¹⁶⁾

As mining gradually exhausted the areas which were easiest to work, shafts had to be sunk to reach deeper parts of the seams. At this point drainage became a serious issue. By the 16th century the Records of the Scottish Parliament report several licence applications for *engines* for mine drainage, with suggestions that *power was supplied by men, horses or water mills*.⁽¹⁷⁾ By the end of the 16th century, larger mines were appearing. Between 1590 and 1625, Sir George Bruce of Carnock developed an extensive coal mining and salt-making industry near Culross. The colliery had two shafts, one on land close to the shore and one sunk below the high water mark, surrounded by a raised mound to protect against flooding (moat pit).⁽¹⁸⁾ Horse gins (engines) were by then in common use to deal with mine drainage, driving endless chains with wooden buckets. In Alloa in 1791 it was reported that *horse machinery (cog and run – a wheel with teeth running into a trunion or lanthorn pinion, as in the old corn mills) with chains and buckets had been used to drain to a depth not exceeding 15 fathoms*.⁽¹⁹⁾

A further challenge facing coal owners was the need to get coal to the surface. Shafts, usually not more than 10 to 12 fathoms deep, provided a means of getting the coal up. This early limit to the depth of shafts was related to the use of *bearers*, usually women, who carried a single piece of *great coal* up the shaft from the pit bottom to the coal hill.⁽²⁰⁾ In Alloa it was noted in 1791 that *The depth of a bearing pit cannot well exceed 18 fathoms or 108 feet. There are traps or stairs down to these pits, with a hand rail to assist the women and children, who carry up the coals on their backs*.⁽²¹⁾ The weight and amount of coal carried by these women bearers was considerable. It was stated that *a diligent bearer often brings up from the bottom of the pit, 6 chalders or 9 tons per week. The weight a good bearer can carry is very great. A lame bearer brought a piece of coal 2cwt out of a pit 12 fathoms deep. Another woman carried a piece of coal 400 yards estimated at 3 cwt*.⁽²²⁾ In 1815 Robert Bald, a mining engineer who campaigned for the emancipation of women and children, described the work of colliers and the bearers still

employed in carrying coals in the Alloa Colliery working in conditions unchanged since the beginning of the 18th century. He stated in 1815 *..the colliers leave home at 11.00 pm and start hewing coal into large pieces (great or sea coal) weighing about 2 cwts. Colliers work five days a week and 10 – 12 hours a day.*⁽²³⁾ He witnessed a woman *..take on a load of at least 170 lbs avoirdupois, travel with this up the slope of the coal below ground, ascend a pit by stairs 117 feet and travel 20 yards more to where the coals are laid down. All this she will perform no less than twenty four times as a day's work.* and notes that she is *paid 8d a day for her labour.*⁽²⁴⁾ Coal haulage in the 18th and early 19th centuries could also be achieved by winding a rope around the shaft of a horse gin. A bucket was attached to each end of the rope. As a bucket with coal came up an empty bucket went down.⁽²⁵⁾

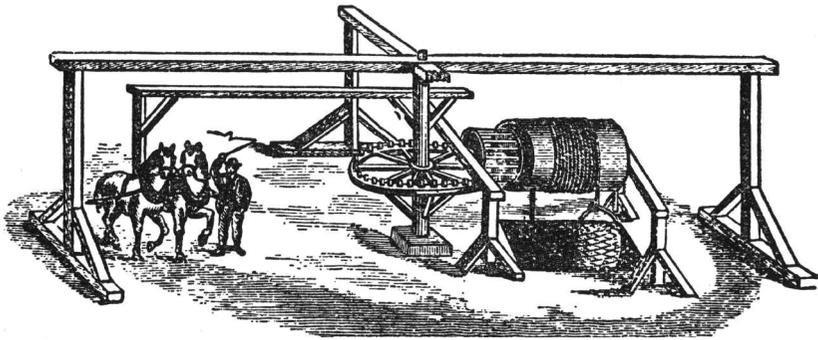


Figure 1. Horse Powered Winding Engine (From A Glossary of Scotch Mining Terms, Barrowman, J, 1886)

Much of the coal from early pits around the Forth estuary was mined in single lumps of one to two cwts to be loaded on to ships and exported by sea as 'great coal'.⁽²⁶⁾ There were regular conflicts between coal owners and local people as the price for exporting often exceeded that available from local sales. Exports were forbidden in 1644, unless local demand had been met first and the Estate of the Scottish Parliament introduced new customs duties *On coal exported in Scottish or English bottoms of the value of £20: 6 shillings. On all coal of the same value exported in foreign bottoms: 12 shillings.*⁽²⁷⁾

Land transport of coal to the shore was often accomplished by tenant farmers as part of their lease.⁽²⁸⁾ When coals were carried in small carts by tenants, the quantity was uncertain and often not considerable.⁽²⁹⁾ They provided a small, horse drawn cart carrying loads of some six cwt.⁽³⁰⁾ As the roads were unpaved and of very poor condition⁽³¹⁾ stocks of coal were built up on a "coal hill" close to the top of the shaft and transported to the shore when conditions were suitable.⁽³²⁾

In the Alloa and Clackmannan area there were four main seams of easily workable coal: a splint coal named the *Upper Five Foot Coal*, the *Nine Foot Coal*

(four feet of splint coal, three feet of cherry coal and a band of ironstone on top), the *Alloa Cherry Coal* or the Under Five Feet Coal and the *Alloa Splint Coal* or the Three and a Half Foot Coal.⁽³³⁾ These seams are generally inclined to the NE at a gradient of about 1 in 6 and separated into a number of different coalfields by a series of east to west and north to south running faults.⁽³⁴⁾

In 1689 Sir John Erskine, 6th Earl of Mar, inherited the Alloa estate which already had a well established colliery,⁽³⁵⁾ mostly drained by a day-level which ran in a northward direction from near Carsebridge.⁽³⁶⁾ The estate was “*heavily encumbered with debt*”⁽³⁷⁾ but fortunately, the 6th Earl held a number of important offices of State; Secretary of State for Scotland 1705-1709 and member of the British Privy Council 1707-1714)⁽³⁸⁾ and married the wealthy Lady Frances Pierrepont, daughter of the Duke of Kingston-upon-Hull.⁽³⁹⁾ These sources of income enabled him to improve his estate and continue to develop his colliery. He was also able to secure a separate custom house for the port of Alloa in 1710. Previously, the port of Alloa had been managed from Bo’ness. The new Alloa customs area covered the harbours at Kincardine, Kennetpans, Clackmannan, Alloa, Cambus, Manor, Stirling, Fallin, and Airth (Elphinstone). The status of a customs port led to a considerable increase in the amount of shipping using Alloa and encouraged exports of coal.⁽⁴⁰⁾

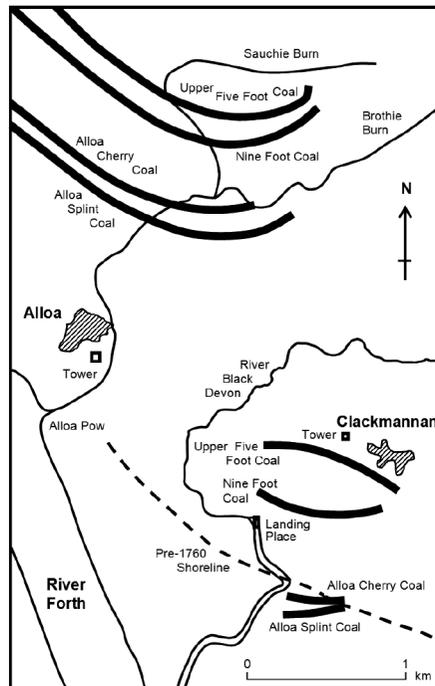


Figure 2. The Alloa and Clackmannan Coalfields.

In 1841 it was reported that there were *still traces of the early day-level running northwards from Carsebridge under Post Hill.*⁽⁴¹⁾ This day level would have drained a significant section of the Upper Five Foot Coal and a small section of the Nine Foot Coal.

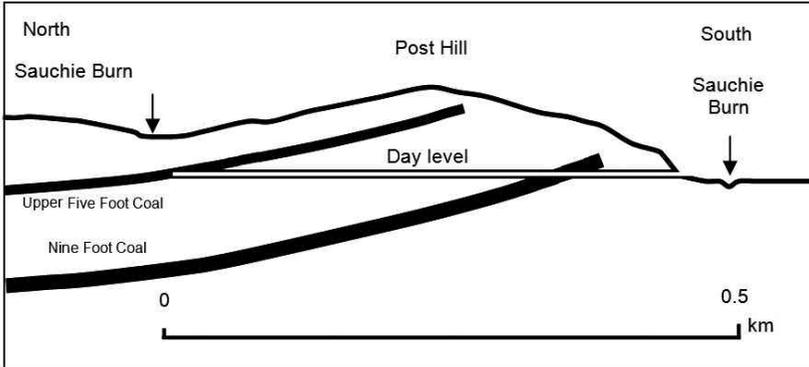


Figure 3. The Carsebridge Day Level.

However, the coal drained by the day-level was being worked out by the end of the 17th century and Sir John Erskine was searching for a means to drain a more significant area of coal from a new shaft further to the north of the day level. Not being able to find sufficient expertise in Scotland, he sent his colliery manager to Newcastle in 1709 to examine the methods used there to drain the mines and to return with drawings of the machinery required.⁽⁴²⁾ His manager reported water wheels and horse gins driving chain pumps, the depths of pits commonly being 20-30 fathoms. Horse gins were expensive and only worked in shallow pits.

Chain pumps were also expensive. The chains for a pit of 80 yards deep cost £160 and, if a bolt gave way, the whole set fell to the bottom and broke every wooden bucket. They were also inefficient as, *although each bucket was full of water as it was lifted from the pit bottom, none of them were more than half full at the discharging point near the axle tree, owing to the leakage of the joints and the vibration of the chains.*⁽⁴³⁾

In 1710 Mr. George Sorocauld, an engineer from Derby, was sent for. He visited Alloa for several days and, for a fee of £50, advised the construction of a series of pumps driven by a water-wheel.⁽⁴⁴⁾ As the nearby Sauchie Burn did not have a sufficient flow, the 6th Earl, who owned the land at "Forrest", decided to build a 16 feet high weir across the River Black Devon to raise the water into a lade to carry it to his *new sinke at Hultone.*⁽⁴⁵⁾

George Sorocauld surveyed the line of a lade from Forestmill to Gartmorn loch where the first earthen Gartmorn dam was thrown across the Brothie Burn

below the marshy loch of Gartmorn to store winter water for use during the summer drought. Levels for the lade were taken using *...a large wooden quadrant, set upon a tripod with brass lights, along the upper radius, the index being a plummet suspended by a fine thread. This instrument was of no use in a strong wind, but when the wind was moderate, the oscillation of the plummet was brought to rest by immersing it in water. For this purpose an attendant was required to carry a wooden cup with water, and apply it to the plummet, at every observation.*⁽⁴⁶⁾ Gartmorn Dam was the largest artificial body of water in Scotland at this time. Another lade, some 3 km long, took water to a new pit at Holton.⁽⁴⁷⁾ Although George Sorocauld had suggested the use of pumps to lift the water out of the shaft, the Earl of Mar was unable to find skilled wrights and had to settle for a bucket-and-chain gin.⁽⁴⁸⁾ A description of the gin and wheel at Holton is given in the *New Statistical Account of Alloa*.⁽⁴⁹⁾ *... a water wheel, with its axle cross the pit mouth; over this (axle) were several tiers of endless pudding link chains of iron, and when the water was scarce (in the lade) then comparatively few buckets were attached to the chains.*

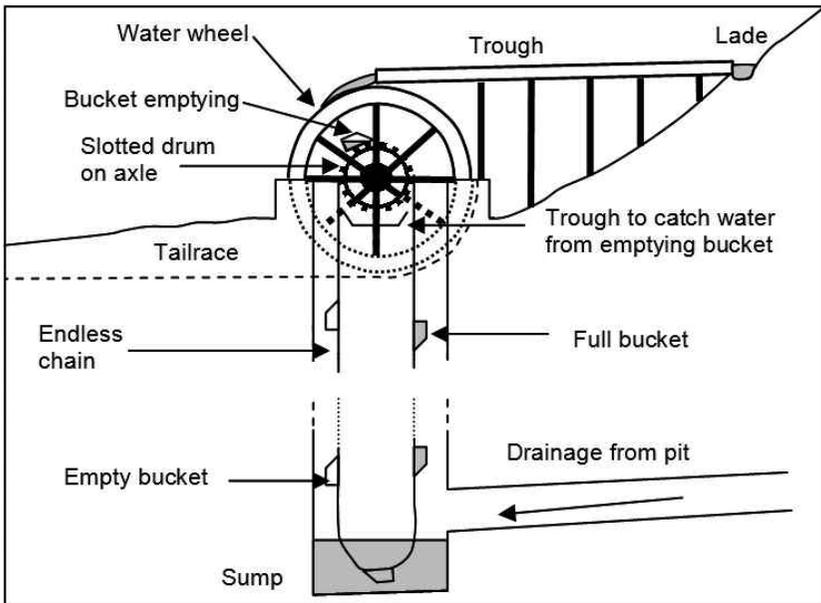


Figure 4. Bucket and Chain Gin.

The shaft at Holton went down 48 fathoms to intersect the seam known as the Nine Foot Coal. It drained the large area of this seam which underlies Keilarsbrae, Post Hill and Holton.⁽⁵⁰⁾ General Roy's map (Plate 1) shows a *Water Engine* in this locality lying on the same general contour as a continuation of the lade from Keilarsbrae.⁽⁵¹⁾ As shown in Figure 5, the quantity of coal made available by this drainage was several times greater, both in area and in thickness than that drained by the Carsebridge day-level.

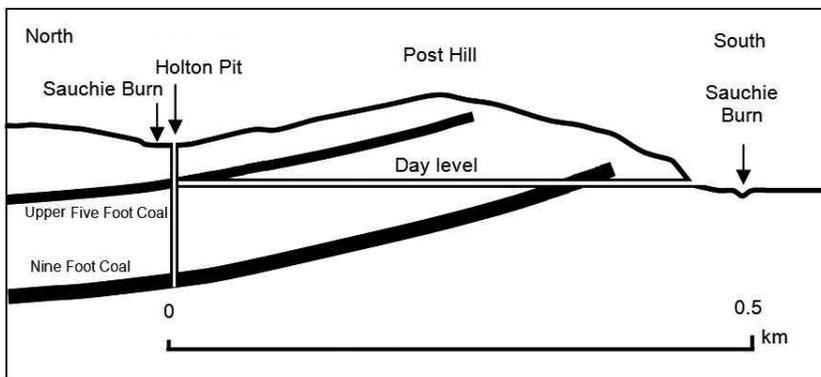


Figure 5. Holton Pit Drainage Shaft and the Carsebridge Day Level.

After passing over the water wheel at the pit and being joined by the drainage from the mine, the water ran into the Sauchie Burn, joined the Brothie Burn then flowed past the town of Alloa, through the newly laid out pleasure gardens of Alloa House towards Alloa Pow. Here it was collected behind an earthen dam, passed through a sluice into a steep stone trough, through which it was released at low tide to clear the harbour of mud.⁽⁵²⁾

It was unfortunate that, in the first few years of working this new pit, Sir John Erskine, the 6th Earl of Mar became embroiled in the Jacobite Rebellion. This involvement ended in his subsequent exile to the court of the Pretender in France. Eventually, the Earl fell out of favour there and spent his remaining years wandering Europe. He continued to have a strong interest in developments in Scotland and Alloa town, suggesting many improvements there.⁽⁵³⁾ His estates were forfeited by the Crown and were managed by the Commissioners for Forfeited Estates from 1716-1724.⁽⁵⁴⁾ During this time there were no substantial improvements to the colliery, in fact the output of coal fell dramatically. In 1724 the Estate was purchased by Lord Grange, the 6th Earl's brother, and relatives. Lady Francis Erskine, the 6th Earl's daughter married her cousin, the son of Lord Grange and most of the estate and was eventually restored to the Erskine Family in 1739.⁽⁵⁵⁾ Lord Thomas Erskine immediately embarked on a continuation of the mining developments initiated by the 6th Earl. He began by constructing a water powered winding engine to hoist coal.⁽⁵⁶⁾ This machine was an adaptation of the bucket-and-chain gin, the water wheel shaft connected to a winding drum. The water wheel was 18 feet in diameter and had an axle 39 inches in diameter.⁽⁵⁷⁾ So that the drum could be worked in both directions the water wheel was constructed with two sets of buckets facing in opposite directions. Valves in a trough above the wheel directed the flow of water into either set of buckets or closed off altogether. A length of rope was wound several times round the axle and the ends adjusted so that when one end was at the base of the shaft the other was at the surface.

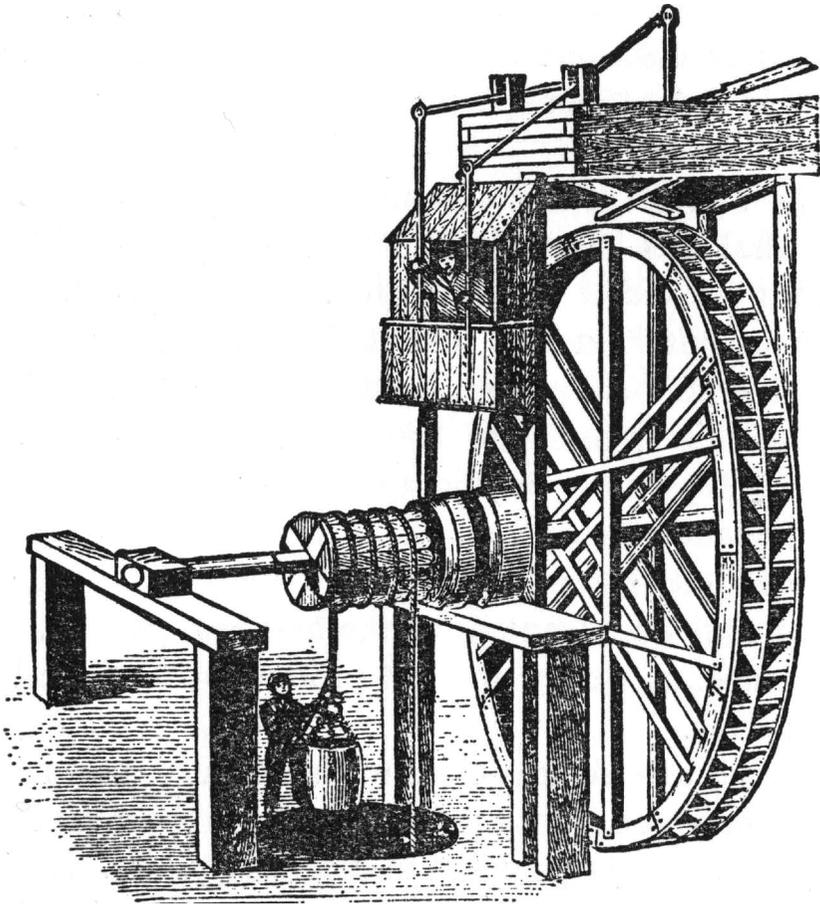


Figure 6. Water Powered Winding Engine (From *A Glossary of Scotch Mining Terms*, Barrowman, J., 1886)

A wooden bucket was then attached to each end of the rope. When the bucket at the bottom of the shaft was filled with some 6 cwt of coal, the appropriate valve was opened and the wheel turned to wind up the full bucket while the empty bucket, acting as a counter balance, travelled down. This winding engine was so efficient and so cheap to run that the managers of several English collieries paid visits to the Alloa colliery to study its construction and mode of operation with a view to introducing it into their own workings.⁽⁵⁸⁾ Despite the low cost of this machine and the eventual introduction of steam power, women bearers continued to be employed in the Alloa Colliery until the Act of 1843 prohibited the employment of women and children underground.⁽⁵⁹⁾



Figure 7. Water Powered Pumping Engine at the Old Watermill Pit
(Photograph belonging to the late James and Isabella Snaddon, by kind permission of their granddaughter, Mrs Sadie Archibald.)

The hydraulic pumps which Sorocauld had suggested in 1710 were finally installed in the Old Watermill Pit about 1760 in a shaft 50 fathoms deep to the Nine Foot Coal.⁽⁶⁰⁾ The Old Statistical Account of Alloa states that in 1796*the lade is conveyed into pipes for forcing the water to an engine for raising water out of the coal pits and another for drawing up the coals.* indicating that feed pipes and siphons were used.⁽⁶¹⁾ A supply of water for the Old Watermill Pit came from the lade just before it entered into the Keilarsbrae woollen mill. It ran into a cast

iron pipe, acting as a siphon, which carried it down under the Sauchie Burn and up to a trough which fed the water to a 30 feet overshot water wheel with three feet wide buckets and three feet cranks. These connected to two balanced wooden beams linked to pump rods in the pit shaft. As each beam lowered the pump rods in the shaft, a series of 10 inch diameter cast iron lift pumps, at about 30 feet intervals, lifted the water from the colliery sump to the surface where it was added to the lade.⁽⁶²⁾

A similar system of pumps was in operation at the Collyland colliery where the pipes were *...made from plane-trees, having a hole bored up their centres, fitted with iron hoops and having spigot and faucet joints.*⁽⁶³⁾ Each column was worked by one of the pump rods, the 'pump stroke' being the down stroke of the pump rod so that the weight of the rod was used to lift the water out of the workings. Although each pump rod weighed several tons, the beams were arranged so that the two pump rods were counterbalanced.

The original earthen Gartmorn dam was replaced by a 320 yards long stone-faced dam in 1785 at a cost of several thousand pounds Scots. This was rebuilt in 1827 by the Alloa Colliery manager (John Craich) for £300 when it threatened to give way.⁽⁶⁴⁾ The tremendous storage capacity of the Gartmorn reservoir and the drop from the shoulder of Post Hill to the Pow gave the Gartmorn lade considerable potential as a source of water power. Also, the water coming from Gartmorn dam was added to by the water pumped out of the colliery workings, all of which made the tailrace of the Gartmorn lade a much sought after supply of water.

Soon after the dam was constructed a mill was built for grinding snuff and shredding tobacco adjacent to the lade next to Jellyholme Farm.⁽⁶⁵⁾ The Second Statistical Account (1841) notes that *tobacco and snuff were manufactured here to a great extent—what was called the Alloa pig-tail having been well known in London. The trade in these is still considerable.*⁽⁶⁶⁾ Jellyholme mill was later converted to grind wood for dyestuff. In 1827 it had been converted to paper making by John and Andrew Young, paper makers of Alloa. In 1852 it was converted to a woollen mill.⁽⁶⁷⁾

In 1791 the First Statistical Account of Alloa⁽⁶⁸⁾ reports that there was a carding and spinning mill and a lint mill at Keilarsbrae. A corn mill had been built on the lade opposite the town in 1731. This mill was rebuilt about 1780 by George Meikle and the new building contained two 19 feet water wheels. The water below these mills originally powered a snuff mill and a fulling mill. Lastly, the water flushed any accumulated silt out of the harbour at the Pow and into the channel of the River Forth.

By the mid-19th century three more woollen mills, Gaberston, Springfield and Kilncraigs, were using the water of the lade to turn water wheels to power their machinery.⁽⁶⁹⁾ In addition, the lade supplied water and power to the distillery at Caresbridge.⁽⁷⁰⁾ The Gartmorn lade, at one time or another

throughout its life as a supplier of water power, drove three pit engines and eleven water wheels as well as cleansing the Pow.

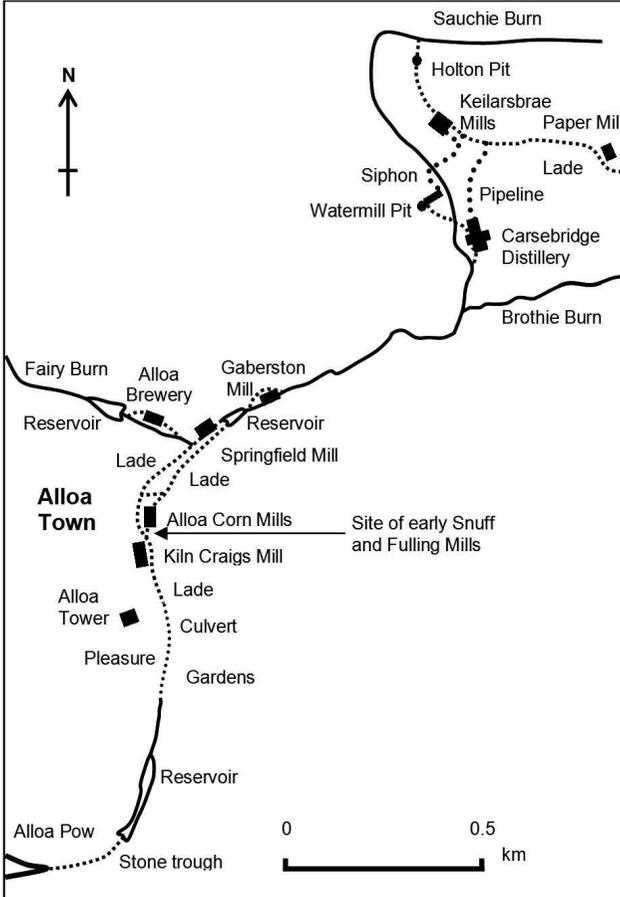


Figure 8. The Development of the Gartmorn Lade for Industry

Newcomen was granted a patent for a steam engine in 1706 and these were in use in Newcastle collieries between 1712 and 1720.⁽⁷¹⁾ Although the first Newcomen steam engine was erected in Scotland at the Elphinstone colliery in 1720⁽⁷²⁾ the first steam engine in Clackmannanshire was not built until 1764, at the Collyland colliery.⁽⁷³⁾ The water powered winding engine at Holton continued to operate into the 19th century.⁽⁷⁴⁾ When in 1840, the responsibility for the Gartmorn reservoir had passed into the hands of the Alloa Coal Company, they were still using the Gartmorn lade as a source of water power for their the Old Watermill Pit pumping engine.⁽⁷⁵⁾

The early endeavours of the Bruce family of Clackmannan together with the foresight and entrepreneurial spirit of John, the 6th Earl of Mar, kick-started development in the Clackmannan and Alloa collieries. This was further promoted by the continued attention of Lord Thomas Erskine, Lady Francis Erskine and John Francis Erskine who carried these initial developments forward.⁽⁷⁾

The water power potential of the Gartmorn lade, together with the introduction in 1768 of a network of waggon ways providing land transport between the collieries and the Pow of Alloa,⁽⁷⁷⁾ made available to the town of Alloa a cheap and reliable source of both water power and coal. This led to extensive industrial growth. As the lade also powered the drainage and winding engines which enabled this coal to be worked in its early stages, it made a significant contribution to this industrial growth. This early advantage created the circumstances upon which the commercial and entrepreneurial skills of local business people combined to develop the town of Alloa as one of the major industrial centres in Scotland of the 18th and 19th centuries.

The rapid growth of the town of Alloa in the early 19th century saw the demand for domestic water supply begin to outstrip the supply available from garden wells and springs. There was also an increasing demand for supply from industry, both for processing and for supplying condensing water for steam engines, together with a continuing demand for water to drive the existing mill wheels. Until this time the townspeople had relied on a number of dipping wells and pump wells. In 1803 trustees were appointed *for the purposes of providing a supply of water to the Town of Alloa from the proprietors of the Estate of Mar.*⁽⁷⁸⁾

In 1820 the first grant of water from Gartmorn dam was made to the town, being conveyed by means of wooden pipes from the Gartmorn lade at Keilarsbrae to a reservoir on top of Hawkhill. The reservoir was not able to contain the water and a new filter bed was made at Keilarsbrae. An industrial supply was subsequently granted to Carsebridge Distillery, Keilarsbrae Spinning Mills, Gabberston Woollen Mills, Springfield Woollen Mills and to the Woollen Mill at Kilncraigs.⁽⁷⁹⁾

In 1835 the Mar family leased out the coal workings to two groups of local business people, splitting the coal workings into two parts. The Collyland, Woodside and Devonside collieries were leased to the Bald family and the Alloa collieries eventually became the first Alloa Coal Company in 1836.⁽⁸⁰⁾ There was much discussion about supply of water to the town of Alloa at this time and, in 1877, the Earl of Kellie gave a grant of water to the town with a 38 year lease.⁽⁸¹⁾ Filters and a water house were constructed at Jellyholme, along with new 12 inch pipe and extended coverage into the town of Alloa.⁽⁸²⁾ A supply of water was also obtained for the village of Sauchie from the filter beds and storage tanks to the west of Keilarsbrae mills. These works are mentioned as existing in the 1891 Alloa Water Act, where the details of compensation water are recorded⁽⁸³⁾ and are shown on the 1863 25 inch OS plans.⁽⁸⁴⁾ (Plate 2)

Between 1820 and 1894 the population of Alloa increased from some 3,000 to over 11,000 and by the end of that period there was a water famine in dry summers.⁽⁸⁵⁾ In 1891 an Act of Parliament established a public water supply from Gartmorn Dam and the dam was extended in 1894, increasing the size of the reservoir⁽⁸⁶⁾ (Plates 3-1 and 3-2) The Alloa Water Act, 1891 gives considerable information about pre-existing and planned water works and compensations volumes. Additional waterworks to the east of Forestmill collected more water for the lade. A compensation weir was built at Forestmill to ensure that at least 2 million gallons of water was released every 24 hours down the river Black Devon. The lade from Forestmill to Gartmorn reservoir was widened and deepened, the Gartmorn dam head was extended to 160 feet above Ordnance Datum and a new 40 foot wide overflow sluice was constructed. New filter beds were established at Jellyholme, feeding pipelines to Forebraes (to the NW of Alloa Hospital) and to Stirling Road (at the western boundary of the burgh). From these mains, pipelines were to be laid to enable the town of Alloa to be supplied with domestic, industrial and bulk purchase water.

Specific details were given of the bulk and compensation volumes required for existing users. Water supplies would continue to be made available from the lade at Keilarsbrae to Sauchie, Holton and the Whins areas. Particular mention is made of colliery water-powered pumping engines and supplies for the steam engines at collieries and the port at Alloa.

In every 24 hours a bulk supply of water was to be provided to the following premises at the rate of:-

Carsebridge Distillery	153,000 gallons
Keilarsbrae Spinning Mills *	200,000 gallons
Hallpark Woollen Mill	15,000 gallons
Gabberston Woollen Mills	15,000 gallons
Springfield Woollen Mills	15,000 gallons

* some could be sent to the Kilncraigs factory.

In addition, water from the lower section of the lade (from below the Pumpmill Pit at Sauchie) was to be available to Carsebridge Distillery at a rate of 4 million gallons every week from May to August and 8 million gallons every day from September to April, at not less than 500,000 gallons in each working day in a continuous flow. The distillery was obliged to return any unused water into the Brothie Burn. Together with supplies to other smaller factories, mines and steam engines it was calculated that the dam supplied about 1.4 million gallons per day to bulk and compensation users on top of 1.5 million gallons to domestic supply.⁽⁸⁷⁾ Lastly, the flow in the Brothie Burn opposite Gabberston Mill was to be maintained at not less than 60,000 gallons every hour between 5.00 h and 20.00 h, a minimum of 900,000 gallons per working day.⁽⁸⁸⁾

A circular tower was constructed at the new Gartmorn dam head to regulate the 12 feet head of water from the dam. A pump house was built at the foot of

the dam head for a hydraulic pumping engine which raised the water up to a new service reservoir. This reservoir, settling pond, filter beds and a cottage for a waterman were established at the southern end of the dam head. A new pipeline was laid southwards past Clackmannan Station to the Tower Hill at Clackmannan where water was pumped up to a service reservoir to meet the domestic needs of the town of Clackmannan. The gas powered pump which lifted water from the base of Gartmorn dam to the service reservoir was constructed by the Glenfield Company of Kilmarnock and ran at 24 strokes per minute. It was eleven and one half inches in diameter and had a stroke of 30 inches, delivering 280 gallons per minute at a head of 34 feet.⁽⁸⁹⁾ This pump was powered by town gas ⁽⁹⁰⁾ and was in use until the town of Clackmannan was connected to the Lossburn reservoir in the Ochil Hills at the beginning of the 20th century.⁽⁹¹⁾ The building which had housed the pump became a visitor centre for Gartmorn Dam between 1980 and 1996.⁽⁹²⁾

The dam, with a head of less than 100 feet, always provided a poor water pressure. In 1928, in order to meet the industrial and domestic demand, an electric pumping system was installed at Carsebridge to boost up the daytime pressure.⁽⁹³⁾ In 1966 there was still a legal agreement to provide Carsebridge distillery with 571,000 gallons a day and Patons and Baldwins (Kilncraigs Mills) with 150,000 gallons a day. In 1994 a new filter house was established at Jellyholme by Central Regional Council.⁽⁹⁴⁾ This provided a secure supply but by 2000 it had been closed over the summer months by algal blooms.⁽⁹⁵⁾ In 2004 a new waterworks was established at Jellyholme by East of Scotland Water.⁽⁹⁶⁾ Opencast coal workings in the catchment area of the reservoir caused water contaminated with fine clay to enter the dam, blocking the filters and ending the use of Gartmorn reservoir as a public water supply. The Jellyholme water works were finally sold off in 2008.⁽⁹⁷⁾

When the problem with the water supply was identified, the water to the lade was turned off at the weir at Forestmill. Sadly, the weir is now in a state of disrepair and, as the water supply was never reconnected, the lade is now a dry bed, slowing filling with leaf mould. This has led to Gartmorn Dam being supplied only by surrounding springs and field drains and presents a grave danger to its condition and status as an SSI.

Conversion Table

The historical sources quoted use a complicated mixture of Scots and Imperial weights, measures and volumes. The table below gives conversions to metric equivalents.

Weights:

Chalder: Varies, but locally in the Firth Estuary area for coal roughly equivalent to 30 cwt, converts to 1.53 tonnes.

Ton: Equivalent to 20 cwt, converts to 1.02 tonnes

Cwt: (hundredweight) Converts to roughly 50.8 kilogrammes.

Length:

Fathom: Equivalent to 6 feet, converts to 1.83 metres.

Yard: Equivalent to 3 feet, converts to 0.92 metres.

Mile: Equivalent to 1,760 yards, converts to 1.61 kilometres.

Volume:

Gallon: Equivalent to 8 pints, converts to 4.55 litres.

Glossary

Adit: A tunnel driven at a very slight slope upwards into the side of a valley to meet a coal seam, providing drainage for the seam above that point.

Bell Pit: A shallow shaft sunk into a coal seam close to the surface and coal removed around the base of the shaft to give a 'Bell' shape.

Chalder: A dry measure originally used for measuring grain. Its use as a weight varied with time and place, Locally in Clackmannanshire in 1791 it was the equivalent of 30 cwt of coal – 6 *chalders* or *nine tons* (Old Statistical Account, 1791, Volume 9, Parish of Alloa, page 680.) and again in 1841 a *chalder waggon containing 30 cwts* (of coal), (New Statistical Account of Scotland 1845, Volume 8, Parish of Alloa, page 31.)

Compensation Water: The volume of water negotiated to be released into a river or stream to cover existing legal rights.

Day-Level: see adit.

Fairm Toon: Up to the early 19th century in this area a collection of houses for tenant farmers working collective land holdings.

Filters: Ponds filled with a carefully graded, different sized mixture of rocks (on the base) and sand (on top) through which water was filtered to remove sediment.

Fire Engine: In the 18th century, a steam engine.

Gauge Weir: low construction across a river with a narrow rectangular area inserted (often within a metal plate) to accurately measure minimum low.

Gin: A machine, powered by men, horses or water to provide power for driving other machinery.

Lade: An open, very gently sloping ditch carrying water to a water wheel.

Lint Mill: Lint was the Scottish term for flax. The lint mill, originally powered by water, separated the fibres of the flax before it was heckled (combed) and then spun into thread for weaving.

Multures: A portion of grain retained by a corn miller as payment for the use of the mill.

Pound Scots: Introduced in the 12th century, it was matched with the Pound Sterling of England in 1603 and finally replaced by the Pound Sterling in 1707 at a rate of twelve Pounds Scots to one Pound Sterling.

Pow: The narrow, tidal part of the lower reaches of a river entering the Forth estuary which provided a sheltered harbour for early, shallow draft sailing ships.

Run-rigg: (also called "ridge and furrow") An early method of ploughing by oxen on land requiring draining. A series of long narrow ridges was created by throwing up soil from interspersed ditches. The distance between the top of the rigg (ridge) and the bottom of the run (furrow) was such that a person sitting in one run could not see someone sitting in the next. The width of the rigg was usually only several metres. The practice was abandoned with the introduction of field drains.

Serfs: Individuals legally owned by a proprietor of an estate, mine or quarry. Their children also became the property of the proprietor. Serfs could be sold as part of the estate. Servitude in collieries in Scotland was not ended until 1799.

Sinke: A vertical shaft sunk to reach a mineral seam.

Snuff: A powdered form of tobacco, a pinch of which was inhaled through the nostril.

Waggon Ways: A narrow gauge railway line, originally made entirely of wood, then cast iron, which enabled horse drawn wagons to carry coal from the pits to the harbour.

In its latter stages there was a substantial network of these lines connecting the Clackmannan and Alloa collieries to Clackmannan Pow, Alloa Harbour and many coal using industrial premises.

Weir: A wall across a river raising the height of water in the river in order to get it to flow into a lade.

Acknowledgement

The information in this article is included by kind permission of the Clackmannanshire Field Studies Society from their publication "The Craigrie and Clackmannan Lades". This publication records the development of two lade systems initiated at the close of the 17th century by the Bruce family of Clackmannan and the Erskine family of Alloa.

References

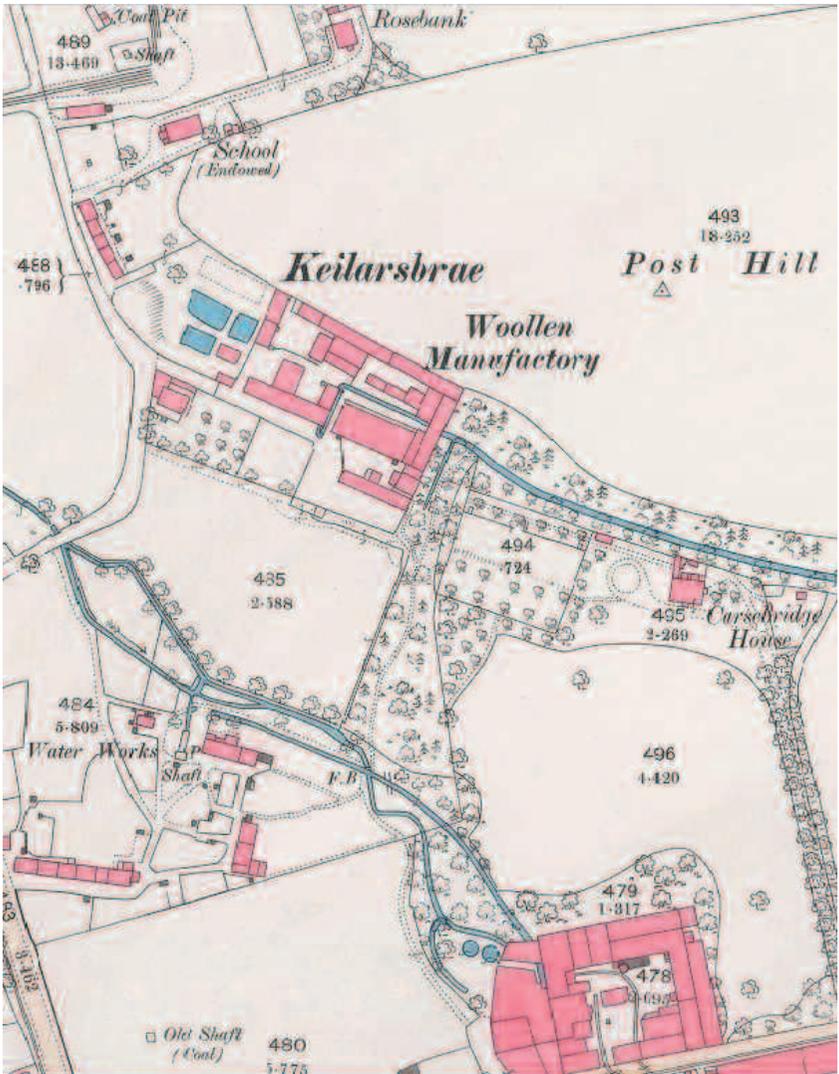
1. Agreement between John, Earl of Mar and Colonel William Dalrymple of Glenmuir, Books of Council and Session, 6th July, 1736.
2. Old Statistical Account, 1791, Vol 9, Parish of Alloa, page 668.
3. Old Statistical Account, 1791, Vol 9, Parish of Alloa, page 666.
4. Adair, J., Map of Clackmannanshire, 1681, National Library of Scotland.
5. New Statistical Account of Scotland, 1845, Vol 8, Parish of Alloa, page 8.
6. Scandinavian Placenames in Scotland, Ordnance Survey Website, 2009.
7. Leighton, J.M., History of the County of Fife, Vol 3, Glasgow, 1860, page 7.
8. Wallace, J., *The Sherrifdom of Clackmannan*, Edinburgh, 1890, page 85 (from the Exchequer Rolls of Scotland, Vol i, page 70).
9. Records of the Scottish Parliament, 1368, June, Scone Parliament (from RSP St Andrew's University).
10. National Coal Board, Scottish Division, *A Short History of the Scottish Coal-Mining Industry*, Edinburgh, 1958, page 34.
11. Records of the Scottish Parliament, 1592, April, Edinburgh Parliament (from RSP St Andrew's University).
12. Salmon, T.J., *Borrowstounness and District*, Edinburgh, 1913, page 308 (quoting James Barrowman, Mining Engineer, Hamilton)
13. Salmon, T.J., *Borrowstounness and District*, Edinburgh, 1913, page 309.
14. New Statistical Account of Scotland, 1845, Vol 8, Alloa, page 33.
15. National Coal Board, Scottish Division, *A Short History of the Scottish Coal-Mining Industry*, Edinburgh, 1958, page 42.
16. National Coal Board, Scottish Division, *A Short History of the Scottish Coal-Mining Industry*, Edinburgh, 1958, page 38.
17. Records of the Scottish Parliament, 1598, October, Edinburgh Parliament (from RSP St Andrew's University).
18. Chambers, R., *Domestic Annals of Scotland from the Reformation to the Revolution*, 1874, Reign of James VI. 1603-1625 Part F.
19. Old Statistical Account, 1791, Vol 9, Parish of Alloa, page 667.
20. National Coal Board, *A Short History of the Scottish Coal-Mining Industry*, Scottish Division, 1958, page 36.
21. Old Statistical Account, 1791, Vol 9, Parish of Alloa, page 668.
22. Old Statistical Account, 1791, Vol 9, Parish of Alloa, page 680.
23. Bald, R., *A General View of the Coal Trade of Scotland*, 1815, Edinburgh, pages 131-132.

24. Bald, R., *A General View of the Coal Trade of Scotland*, 1815, Edinburgh, page 133.
25. National Coal Board, Scottish Division, *A Short History of the Scottish Coal-Mining Industry*, Edinburgh, 1958, page 36.
26. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, pages 48 to 49.
27. Records of the Scottish Parliament, 1644, June, Edinburgh Parliament (from RSP St Andrew's University).
28. Old Statistical Account, Stirlingshire, Alva, 1795, p147.
29. Old Statistical Account, 1791, Vol 9, Parish of Alloa, page 668.
30. New Statistical Account of Scotland, 1845, Vol 8, Parish of Alloa, page 31.
31. Old Statistical Account, 1791, Vol 9, Parish of Alloa, page 697.
32. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, page 49.
33. New Statistical Account of Scotland, 1845, Vol 8, Clackmannan, page 123 & 124.
34. New Statistical Account of Scotland, 1845, Vol 8, Parish of Alloa, Page 22.
35. Old Statistical Account, Vol 9, Parish of Alloa, 1791, page 679.
36. New Statistical Account of Scotland, 1845, Vol 8, Parish of Alloa, Page 26.
37. Carvel, J.L., *One Hundred Years in Coal, Edinburgh*, 1944, pages 11-12.
38. Records of the Scottish Parliament, 1706, 3 October, Edinburgh Parliament (from RSP St Andrew's University).
39. New Statistical Account of Scotland, 1845, Vol 8, Parish of Alloa, page 38.
40. Old Statistical Account, Vol 9, Parish of Alloa, 1791, page 694.
41. New Statistical Account of Scotland, 1845, Vol 8, Parish of Alloa, page 26.
42. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, page 8.
43. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, page 6.
44. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, pages 10 and 11.
45. Books of Council and Session, Agreement between John, Earl of Mar and Colonel William Dalrymple of Glenmuir, 6th July, 1736.
46. New Statistical Account of Scotland, 1845, Vol 8, Parish of Alloa, pages 26-27.
47. Carvel, J.L., *One Hundred Years in Coal, Edinburgh*, 1944, page 12.
48. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, page 11.
49. New Statistical Account of Scotland, 1845, Vol 8, Parish of Alloa, page 26.
50. New Statistical Account, 1845, Vol 8, Parish of Alloa, page 26.
51. British Library Map Collection, Part of Roy's Map, 1747-1755.
52. Old Statistical Account, Vol 9, Parish of Alloa, 1791, pages 667-668.
53. Old Statistical Account, Vol 9, Parish of Alloa, 1791, pages 704 and 705.
54. New Statistical Account, Vol 8, Parish of Alloa, 1791, page 38.
55. CFSS, *Alloa Tower and the Erskines of Mar*, Alloa, 1973.
56. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, pages 88-89.
57. Old Statistical Account, Vol 9, Parish of Alloa, 1791, page 681.
58. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, page 89.
59. Carvel, J.L., *One Hundred Years in Coal, Edinburgh*, 1944, pages 63.
60. New Statistical Account, Vol 8, Parish of Alloa, 1791, page 28.
61. Old Statistical Account, Vol 9, Parish of Alloa, 1791, page 667.
62. New Statistical Account, Vol 8, Parish of Alloa, 1791, page 28.
63. New Statistical Account, Vol 8, Parish of Alloa, 1791, pages 27-28.
64. New Statistical Account, Vol 8, Parish of Alloa, 1791, page 8.
65. Old Statistical Account, Vol 9, Parish of Alloa, 1791, page 667.
66. New Statistical Account, Vol 8, Parish of Alloa, 1791, page 51.
67. Jardine, E., *The History of Paper Mills in Central Scotland*, IPH Yearbook Vol. 7, 1988 81-93 (from Thomson and Pigot 1837).
68. Old Statistical Account, Vol 9, Parish of Alloa, 1791, page 667-668.
69. Scottish National Library Map Collection, Perth and Clackmannanshire Sheet CXXXIX.4

70. Alloa Advertiser, 20th October, 1894, Gartmorn Dam.
71. Bald, R., *A General View of the Coal Trade of Scotland*, Edinburgh, 1815, page 17.
72. Bald, R., *A General View of the Coal Trade of Scotland*, 1815, page 20.
73. Old Statistical Account, Vol 9, Parish of Alloa, 1791, page 667.
74. Bald, R., *A General View of the Coal Trade of Scotland*, 1815, page 89.
75. Clackmannanshire Library, Alloa Water Act, 1891.
76. New Statistical Account, Vol 8, Parish of Alloa, 1791, pages 38-39.
77. New Statistical Account, Vol 8, Parish of Alloa, 1791, pages 28-31.
78. Alloa Advertiser 25th May, 1896, *Gartmorn Dam*, Mr. D. Buchan to the Alloa Society of Natural Science and Archaeology.
79. Carvel, John L., *One Hundred Years in Coal*, Edinburgh, 1944, pages 23.
80. Carvel, John L., *One Hundred Years in Coal*, Edinburgh, 1944, pages 26.
81. Alloa Advertiser 25th May, 1896, *Gartmorn Dam*, Mr. D. Buchan to the Alloa Society of Natural Science and Archaeology page 113.
82. Alloa Advertiser, 20th October, 1894, *Gartmorn Dam*.
83. Alloa Library, Alloa Water Act, 1891.
84. National Library Map Collection, 1st Edition Ordnance Survey, Sheet CXXXIX (4), 1863.
85. Alloa Advertiser 25th May, 1896, *Gartmorn Dam*, Mr. D. Buchan to the Alloa Society of Natural Science and Archaeology.
86. Alloa Library, Alloa Water Act, 1891.
87. Alloa Advertiser 25th May, 1896, *Gartmorn Dam*, Mr. D. Buchan to the Alloa Society of Natural Science and Archaeology.
88. Alloa Library, Alloa Water Act, 1891.
89. Alloa Advertiser, 20th October, 1894, *Gartmorn Dam*.
90. Corbett, L., *Gartmorn Pumping Engine*, Clackmannanshire Field Studies Society Newsletter 23, Vol 8, pages 4-5.
91. Third Statistical Account, The Counties of Stirling and Clackmannan, Clackmannan, 1966, page 535.
92. CW2 Clackweb, Gartmorn Country Park, 1990, page 3.
93. Third Statistical Account, The Counties of Stirling and Clackmannan, Clackmannan, 1966, page 467.
94. Clackweb eplanning, CW2, Application details, 94/00608/FULL, 1994.
95. East Scotland Water, Implications of Diffuse Pollution for East Scotland Water, Morag Garden, Project Leader, Water Quality and Environment Team, East of Scotland Water, 2001, page 2.
96. Clackweb eplanning, CW2, Application details, 94/00608/FULL, 1994.
97. CCC1 Scottish Government Property Pages, "Former Treatment Works, near Jollyholme Farm, Sauchie", 2008.



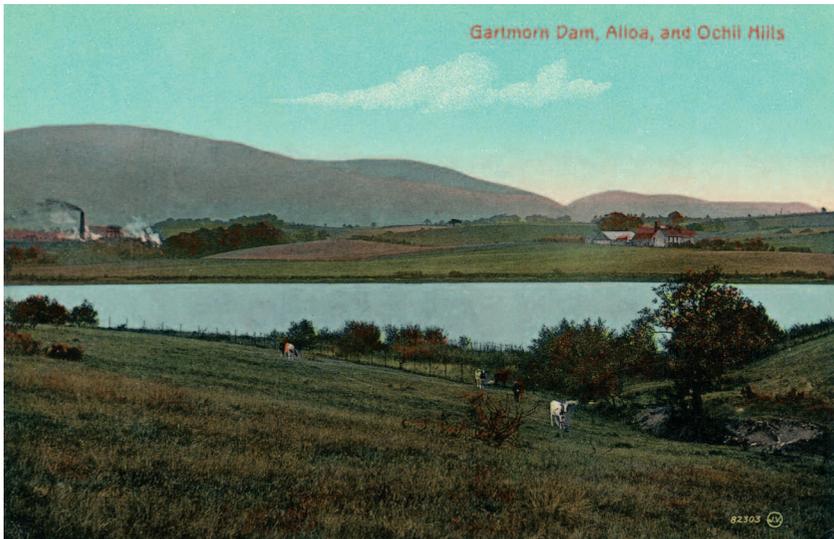
The Gartmorn Lade System, Plate 1. Section of General William Roy's "General Survey of Scotland", 1747-55. © The British Library Board (Maps K.Top.48.25-1.a-f) The Hultone "Water Engine" is shown in the top left corner and "Gartmorn dam" in the top right.



The Gartmorn Lade System, Plate 2. Section from "Perth and Clackmannanshire Sheet CXXXIX.4" 25 inch plan, Surveyed 1863. © Scottish National Library Map Collection.



The Gartmorn Lade System, Plate 3-1. Gartmorn Dam, view from the dam head looking East. Early 20th century postcard by Marshall Wane & Company, Edinburgh.



The Gartmorn Lade System, Plate 3-2. Gartmorn Dam, view from the south bank looking north towards the Ochil Hills. Early 20th century postcard by P. McQueen Junior, Alloa.

DUNBLANE VOICES FROM THE GREAT WAR

Bill Inglis

Dunblane goes to war

Following its ultimatum on Tuesday 4 August 1914 over the German invasion of Belgium Britain formally declared war on Germany on Thursday 6th August 1914. Dunblane had gone to war 24 hours earlier.

The *Stirling Observer* of Saturday 8 August describes what happened as follows: *The mobilisation of the Scottish Horse and Territorials took place on Wednesday. The Scottish Horse mustered at the Headquarters Braeport at 12 noon. The officers under Major Stirling of Kippendavie sent out intimation to all owners of horses thought suitable to parade them at the Stirling Arms Hotel, and after being examined by the vet, if found suitable, were at once taken possession of. The local Territorials left in two companies for Inchkeith and great crowds gathered to witness their departure.*

This account is interesting. It is clear that young men in Dunblane belonged to two units, the Scottish Horse c.30-40 men and the Territorials c.150-200 men. Being cavalry it is likely that the Scottish Horse were socially superior to the Territorials. All the Territorials were members of the Black Watch and nearly all of them ended up in C Company (Dunblane) of the 6th battalion which was the territorial battalion of that regiment.

Two other points are worth noting. First, and this theme will be repeated below, it is clear that the local lairds played a significant part in organising the community for war. Major Stirling of Kippendavie was responsible for the mobilisation of the Scottish Horse and for equipping them with horses from the local community – a form of commandeering (in 1914 with compensation) which must have been used for centuries when Scots went to war. Second, and this was true as much of the Scottish Horse as the Territorials, these men were not off to immediate war – there were not enough rifles and equipment for them. Instead they spent the best part of the next nine months in training, mostly drill and route marches, the Scottish Horse at Perth and the Black Watch at Inchkeith.

It was of course clear that sending the Scottish Horse and the Territorials would not be nearly enough. The First World War was a struggle between massive armies which recruited virtually all the fit young men of their countries except for those exempted because of vital reserved occupations. So new battalions had to be formed and just such a venture was set in motion in Dunblane as is described in the *Stirling Observer* Saturday 15 August 1914: *Captain AWH Drummond of Cromlix, who is a retired army officer, and who is undertaking to raise a battalion of recruits in West Perthshire held a meeting in*



Members of the Scottish Horse at the top of the Braeport shortly after mobilisation. On the extreme right of the photograph is Trooper Hunter, whose son still owns a shop in Dunblane. (By kind permission of Sandy Hunter, High Street, Dunblane.)

the Court House on Tuesday evening in connection with the scheme. It was intimated that he had raised 60 recruits at Blackford, and 40 from Cromlix estate, Ashfield, Kinbuck and district. Companies are also to be formed at Auchterarder, Crieff, Muthill, Braco, Thornhill, Callander, Doune and Dunblane – with Dunblane the centre. Arrangements have been made with members of the Queen Victoria School staff to act as drill instructors.

Captain Drummond was undertaking an ambitious project in raising what looks like a whole battalion of Black Watch in Perthshire, south of Perth. Landowners all over Scotland were taking the same action as Captain Drummond creating companies and battalions of men to serve in the new armies that were being formed. They do not appear to have been put to much expense, the government paying for virtually everything. The landowners were lending their local prestige and status to boost recruitment in their community. In this respect the landowners were behaving as landowners had in Scotland down the ages in times of national danger. It is interesting that the First World War was the last war in which landowners played this role. The situation was very different at the start of the Second World War with the government determined not to be swamped by large numbers of recruits for whom they had no arms or equipment.

A different approach was taken by Captain Stirling of Keir who put pressure on men employed on his estate to join up as is indicated by this report also in

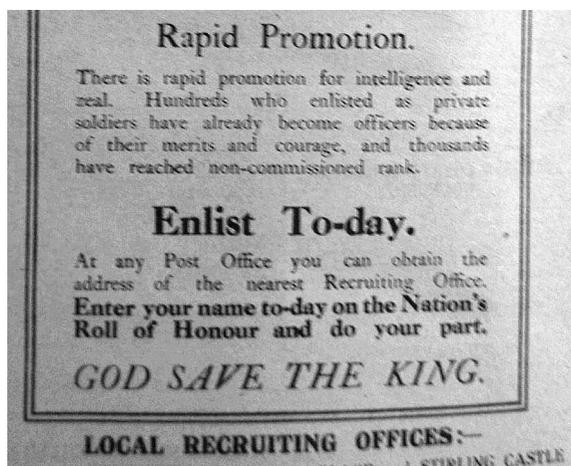
the *Stirling Observer* 15 August 1914 as follows: Captain Stirling of Keir, who commands one of the Lovat Scouts Regiments, has sent out a letter to the tenants on the Keir (Dunblane) and Cadder (near Glasgow) estates, and has asked his tenants that this should be read to the men employed on their farms. The appeal is headed – **The time of national trial, long foretold by patriotic soldiers and statesmen has arrived** and it goes on to impress upon all young men the necessity for their taking up arms to defend our country at this crisis, either by joining the Regular or Territorial Forces.

Captain Stirling of Keir, who commands one of the Lovat Scouts regiments, has sent out a letter to the tenants on the Keir and Cadder estates, and has asked his tenants that this should be read to the men employed on their farms. The appeal is headed—“The time of national trial, long foretold by patriotic soldiers and statesmen, has arrived,” and it goes on to impress upon all young men the necessity for their taking up arms to defend our country at this crisis, either by joining the Regular or the Territorial Forces.

Captain Stirling's appeal in the *Stirling Observer*, Saturday, 15 August 1914.

Captain Stirling's approach was a very mild form of landowner persuasion to join up at the start of the war. Elsewhere it was much more extreme. The Earl of Rosebery, for example, collected men working on his estate drove them to the recruiting stations and insisted on them joining the colours. A careful reading of Captain Stirling's letter reveals other interesting points. Captain Stirling told his tenants to read his letter to their employees he did not write to them direct. Is this because most of them were illiterate? However despite their probable lack of education he still feels able to appeal to what he considers general knowledge – namely that tension had been building up between Germany and Britain for some years and that people had been expecting war. On a more personal note it is worth mentioning that Captain Stirling was the father of David Stirling who established the SAS in the Second World War – it is intriguing that Captain Stirling himself commanded an irregular unit of Lovat Scouts, and so may have influenced his son's unconventional approach to fighting. Of course it was not only the landowners who recruited young men to go to war. There were posters everywhere particularly in the local papers. We are all familiar with Kitchener's **Your Country Needs You** but other approaches were attempted such as in the poster below in which, perhaps surprisingly, promotion by merit is highlighted.

The attempt to recruit by emphasising that merit only could lead to promotion even to the level of officer, *Stirling Observer*, Saturday, 24 July 1915.



What sections of the armed forces did men from Dunblane Join?

There are only two sources for determining which sections of the armed forces were selected by the men from Dunblane – the local newspapers and the two War Memorials in the Cathedral Chapter House (curiously one dated 1916 and one 1922) which list the men and women from the Cathedral congregation who served in the First World War.

Both these sources are suspect to a certain extent. The men mentioned in the local newspapers number just over 200 out of the 500 or more Dunblane men who served in the war. Their names are largely recorded because they were either killed or injured though occasional mention was made of men coming home on leave. Inevitably with death or injury being the main cause for mentioning a man the list from the newspaper exaggerates the proportion of men going into infantry regiments since they suffered the highest proportion of casualties. The lists on the War Memorials in the Cathedral Chapter House do not suffer from this disadvantage because they name those who served and their unit. However we still have to bear in mind that the Cathedral congregation was not necessarily typical of the population of Dunblane. At the time of the First World War the town was served by three Presbyterian churches, and an Episcopalian church, each of which may have catered for different sections of the town's population. So in analysing the lists in the Cathedral Chapter House we have to be aware that any conclusion is to a certain extent provisional.

With that proviso the lists from the Cathedral are still worth analysing. If both lists are considered jointly 338 men from the Cathedral congregation served in the First World War. The men listed who had already emigrated to the dominions, for example Canada and New Zealand, are excluded from this

analysis. By far the highest proportion of these 338 men to serve in one unit were the 120 (35.5 %) who joined the Black Watch. A further 57 joined other Highland Regiments, making the total serving in Highland Regiments 177 (52.37 %). Another 31 men enrolled with Scottish Lowland Regiments so that 208 men (61.54 %) served in Scottish infantry regiments. Unsurprisingly only six men served in English infantry regiments, the reason only being clear in the case of one of the six, a postman in Dunblane, who joined the London Post Office Rifles. In all then 214 men (63.31 %) listed in the Cathedral Memorials served in infantry regiments.

A STIRLING SCENE.



A recruiting office in Stirling in 1914 from the *Stirling Observer*, Saturday, 31 October 1914. Today it is the basement of the Baptist Church in Stirling and is at the top of the hill as you leave the station and walk into the town.

The second largest group 83 men (24.56 %) served in the corps as opposed to infantry regiments. The three most popular the RASC (26 men), the RAOC (13 men) and Artillery (18 men) are still familiar to us. Less familiar and recruiting small numbers were the Labour Corps one man, the Agricultural Corps one man, the Machine Gun Corps four men and the Highland Division Train one man. An interesting trend during the years between the creation of the first and second memorials is the growing attraction of these specialist corps. In the Memorial of 1916 only 17 (11.97 %) out of the 142 men listed enrolled in a corps. By the end of the war which is recorded in the Memorial of 1922, 66 (33.67 %) out of 196 had joined a corps.

In the army the only section not covered so far has been the cavalry. In the Cathedral Memorials 23 men (6.8 %) are recorded as joining the cavalry, 22 in the Scottish Horse. The relatively small number joining the Scottish Horse underlines the social superiority of the cavalry as pointed out above.

The remaining two parts of the armed forces in the First World War - the RAF and the Royal Navy were not popular with men from the Cathedral congregation. It is not surprising that the RAF had only 11 recruits from Dunblane. The force was growing during the war from very small beginnings and very few men from Dunblane will have had any contact with flying. Much more surprising was the small number of men, five, joining the Royal Navy. Before and during the war the Royal Navy was very large and it would be reasonable to expect a town like Dunblane which is close to the sea to have provided far more recruits to its service.

What did the Dunblane men serving in the forces do before the war?

The only sources for determining the jobs done by Dunblane men before they joined up are the local newspapers. When a man was killed, injured or decorated the report in the local press was always accompanied by a brief description of his life before the war which included his pre-war job. Though the nature of these reports may lead to some bias they do provide interesting information about men who served in the war. It appears that only a small number of men from Dunblane became officers, 5 % or less. To judge by the accounts of officers pre-war careers you would only become an officer if you were from a landed family or had completed secondary education but not necessarily a degree.



Photograph of Lt Herron from the *Stirling Observer* of Saturday, 7 June 1917.

Despite the meritocratic recruiting poster mentioned above only two men are described as being promoted from the ranks, Lt Herron who had been organist and choirmaster at St Marys Episcopal School Dunblane before the war and whose father was Headteacher of the Episcopal School in Stirling. It is likely given his education and the position of his father that he should have been made an officer at the start.

The only true promotion from the ranks is 2nd/Lt Benjamin Hannah. He was the son of Mr Robert Hannah, Ashfield. He went to war as a territorial in the 6th Battalion Black Watch and was seriously wounded in the head in November 1915. He spent the next 18 months in Britain gaining a commission during that time and returned to France in August 1917. There is no explanation of why or how he became an officer.

The remainder of the men who took part in the First World War from Dunblane, and the great majority, became NCOs and privates. The most numerous group were artisans or their equivalent, for example plumbers, grocers and painters. Almost as many were men who worked at Pullars textile factory in Ashfield. A third significant group were men who were regular soldiers when the war broke out or who had been regular soldiers and returned to the ranks. The remainder included small groups of railwaymen, farm labourers (surprising given the number of farms in the parish), police, postmen, clerks and gardeners. Overall it is clear that while only a minority of these men had served an apprenticeship most of them were in jobs requiring a certain degree of skill and in many cases of responsibility.

There is no doubt that the Dunblane from which these men came, like most small towns in Scotland in the early 20th century, was very socially immobile. A very small number of children went to secondary schools which opened up opportunities to join the professions. Most children left school at 13, literate, but only qualified at the best to serve an apprenticeship. Their lives were confined to Dunblane and were predictable, perhaps even boring. It is not surprising then that the First World War was treated with such enthusiasm initially. It was a chance to get away from their humdrum existence and have some excitement.

Dunblane's Experience of the War.

The local newspapers with their weekly account of events in Dunblane give us a picture not only of the soldiers who were casualties, or who had won medals, but also give occasional hints of how the town was reacting to events as the war unfolded.

Like every other town in Scotland Dunblane contributed in August 1914 to the British Expeditionary Force which, though small, participated in preventing the fall of Paris to the Germans in September 1914. These men were all regular soldiers, either in their regiments, or returning to them. Included among them was the youngest soldier in the BEF trumpeter Farrell who was the son of a grocer in Dunblane and was only 14 years and three months on his arrival in France. The first death, that of Lt Richmond, occurred on August 23rd 1914 at the battle of Mons. It was reported briefly in the Stirling Observer of August 29 1914 and then in more detail in the edition of December 5th 1914 as follows: *A soldier saw him being killed. He was shot through the head going from one trench to another to see if there were any fresh orders.*

Lt Richmond was in the 1st Gordon Highlanders and was the son of Mr and Mrs Richmond who at the time were living at Kippenross House presumably renting it from the Stirlings of Kippendavie. To us the description of Lt Richmond's death is surprisingly, and perhaps shockingly, vivid. A feature of the reporting of soldiers' deaths and injuries in the Stirling Observer was to rely on letters sent by soldiers who witnessed the death at the front. The

soldiers were writing to their own parents who would tell the news reporter as well as breaking the bad news to the parents of the soldier who had been killed. The system of senior officers sending a letter of condolence to the soldier's parents on his death and often masking the true circumstances of his death was not yet general.

The year 1915 saw soldiers from Dunblane involved mainly on the Western Front with the Scottish Horse joining the ill fated campaign at Gallipoli. Soldiers from the Territorial Army saw service in both sectors as did men raised as a result of recruitment during the first months of the war.

Reports in the *Stirling Observer* during this year give the impression that the town was still enthusiastic about the war and taking it light heartedly. Casualties were light with 12 men killed and 15 wounded during the year and the people of Dunblane had no idea what was to come. When Pte James McNroy, the first soldier from Dunblane to be decorated, received the DCM early in the year there was general pleasure in the town and when news spread that he was coming home on leave in September a crowd gathered at the station to greet him only to be disappointed because he arrived on a different train.



A lightness of tone was still evident early in February 1916 when the recent British withdrawal from Gallipoli was celebrated in Dunblane by an exhibition of trophies sent home by a soldier from the town. The trophies were displayed in the shop window of Mrs Hunter, an outfitters in the High Street that still exists, and were described in the *Stirling Observer* 12 February as follows; *There is the cartridge of the second last shot fired by the British – the rifleman being a Dunblane man – on the centre of the Suwla front at 1.30 pm on 20th December: There is also a Turkish handspike, a Perry's pistol, a revolver, pieces of Turkish shells and bullets and a fez.*

In 1916 the clouds began to gather. Until the summer very little happened. It was like earlier wars with the action only taking place in the

Pte James McNroy in his full dress uniform. Ten days after his leave in September 1915 he was killed in a British attack on the German front line. The *Stirling Observer* commented that the people of Dunblane were upset that during his leave nobody in authority in the town made any effort to recognise Pte McNroy's achievement.



Ptes John Small, KOSB, and John Dick, Seaforth Highlanders, both killed on July 1st 1916, the first day of the Battle of the Somme from the *Stirling Observer* 2 August 1916

summer months when the weather was good and the ground firm. All changed with the opening of the Battle of the Somme on July 1st the battle where the new armies created from the vast recruitment of men in 1914 and 1915 were engaged, some of them for the first time. Two men from Dunblane were killed on the first day of the battle, Pte John Small of the KOSB and Private John Dick of the Seaforth Highlanders.

In the month of July eight men were killed and seven wounded close to 10 % of the casualties from Dunblane during the whole war. As we all know the battle rumbled on into the autumn with the Germans determined to recover lost ground. In total, including the losses in July 1916, 18 men were lost in the three months July to September and 12 were wounded.

The two remaining years of the war 1917-18 were ones of unremitting attrition with steady losses and increasingly depressing news. In November 1917 the total number of men killed from Dunblane reached 50. This grim total seemed bad at the time but much worse was to follow. 1918 was by far the worst year of the war for Dunblane with a further 46 men being killed and 31 wounded, the casualties nearly doubling in the last year of the war. It would be interesting to know if other Scottish towns suffered as heavily as Dunblane in

1918. The news was especially bad between March and June. During these months there were four German offensives in France in a desperate attempt to win the war before the Americans arrived. Time and again British positions were overrun and as a result a number of men were reported missing leading to a long worrying wait for relatives to find out if the men had been killed or taken prisoner.

As has already been mentioned soldiers writing home to their parents often provided eye witness accounts of a comrade's death or injury which were then transmitted to the parent of the soldier who had been killed or was injured. Many of these reports are simply that a soldier has been killed in action but some portray the tragically casual nature of death in war. A number of examples should illustrate this point. In April 1916 Sgt Albert Bayne was overcome by a severe and sudden gas attack by the Germans and died presumably in agony two hours later. Two months earlier Sgt Bayne had won a DCM for mounting two machine guns and rallying their crews during a German attack.



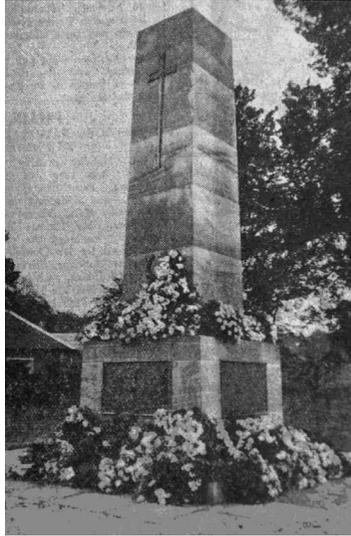
A photograph of Sgt Albert Bayne published in the *Stirling Observer* of 23 March 1916 at the time of the award of his DCM.

Pte John Bayne (no relation) was killed in July 1915 by a grenade while sitting at his dinner. In April 1915 Ptes McKie and McKay who were close friends were standing beside each other when Pte McKay was shot through the head. He died five minutes later. J B Priestley the famous playwright had just such an experience in the First World War when a close friend was killed

standing next to him. Pte Robert Stewart died when his shelter was blown in by a shell in October 1917. Pte Hugh Bruce was killed in May 1917 by a sniper while working behind the lines where you might have expected to be reasonably safe. In June 1916 Pte Thomas Malley died when he and three lads from Deanston were blown up by a mine. Finally everybody's nightmare Pte John Walker was killed as he was leaving the trenches in December 1917 to come home on Christmas leave.

The Impact of the Great War on Dunblane

A very common experience on visiting a town for the first time is to spend some time at a War Memorial to the killed of both wars either in a church or in the centre of the town.



Dunblane's War Memorial in its original position at the Fourways Roundabout from the *Stirling Observer* of 3 November 1921. In the late 1950s it was moved to its present position down by the river.

Such monuments make us aware of the most immediate impact of the World Wars, the loss of so many young men. Dunblane lost 96 men and two women, both nurses, in the First World War. Of the 96 men five were officers, 31 NCOs and 60 privates. It is interesting how few officers were killed despite the depressing statistic that the average expectation of life for a subaltern in the First World War was only six weeks at the front. This is probably because a significant proportion of the officers serving in the First World War from Dunblane were professional soldiers and achieved significant promotion during the war making them less exposed than subalterns inevitably were. However the large numbers of NCOs and privates killed make the First World

War from Dunblane's point of view very much a 'People's War.'

The large number of men killed from Dunblane raises the question. Did Dunblane suffer particularly badly compared say with a similar town in England or with other towns in Scotland?

We certainly know that the numbers killed in the First World War in Scotland were very high compared with other countries. It is now generally accepted that Scotland had proportionally more losses than any other country in the War except Serbia and that compared with England Scotland had approximately 20 % more deaths. Why was this? It almost certainly arises from the fighting reputation of the Scottish Regiments which meant that generals used them to fight in critical situations with inevitably greater losses than their English equivalents.

Also we now know that small communities like Dunblane suffered more losses than the big urban centres in Scotland. Thus Dunblane lost 98 young people out of a population of 3000 or 1:30 of the population. In comparison Glasgow lost 1:57, Edinburgh 1:77 and Dundee 1:43. Why was this? It was caused directly by the number of men working in the armaments industries in Scotland. As a result many men in the Scottish cities were in reserved occupations. There were very few in this category in Dunblane so the number joining up was very high. Also it is well known that in the small towns of Scotland the TA had been very popular creating a fund of partially trained soldiers ready to volunteer at the start of the war. As a result it is likely that Dunblane along with other small Scottish towns suffered very badly compared with the rest of Britain.

Dunblane lost a football team

Inevitably also among the 96 men who were killed were individuals who had made a significant contribution to the life of the town. This is very well illustrated by Dunblane losing a complete football team during the war. Before the war the local Dunblane team affectionately known as the 'Heather' had won many cups and had been watched by enthusiastic crowds at Duckburn where their ground was situated. Also in the days before football academies the 'Heather' had provided a steady supply of footballers to professional clubs including as far south as Liverpool. On 4 May 1918 the *Stirling Observer* recorded the destruction of the Dunblane Football team as follows: *They have played their last game on the shell torn fields of France.*

and then listed the team:

Sgt W. Eadie (Canadians) presumably he had emigrated recently

L/C W. Crawford Black Watch *right back*

L/C D. McInroy Royal Scots

Sgt-Major P Gardiner Black Watch *utility player*

Pte Cullen Black Watch
Pte Hugh Bruce Black Watch *forward*
Pte J.M. McInroy DCM Black Watch
Pte J. Strang MM London Post Office Regt
Pte Alex McKay Black Watch
Pte John Bayne Black Watch *left wing*
Pte John Walker Black Watch

It is interesting that in the short obituaries of these men and other soldiers from Dunblane far more is made of their sporting achievements than of their performance at work. It is as if work was boring and predictable and the only way that you could distinguish yourself was by sport. This observation reinforces the impression mentioned earlier that Dunblane was an immobile society.

Three weeks after reporting the loss of Dunblane's football team the death of the most famous footballer in Dunblane was announced. He was Major Christie who died from gas poisoning and wounds. He had played twice for Scotland as a forward – in the game against England in 1884 when Scotland won 1-0 and the next year against Wales. Unfortunately he did not score on either occasion. After ceasing to play he had a distinguished administrative career in Scottish Football being a former President of the SFA. It will be clear now that he was very old for active service being 52 when he died. At the time he was CO of a Labour Battalion who were not normally involved in the fighting but the Germans had broken through and as a last resort his battalion became involved in the fighting.

The Wounded

The death of its 96 young men and two young women is the most visible effect of the First World War on Dunblane. Less certain is the impact of the number of men who were wounded on the community. The numbers wounded and the nature of their wounds is less thoroughly reported than the deaths but there is enough detail given to guess at its impact. In all 74 men are listed as wounded who did not die. Of these 74 twenty were very seriously wounded of whom 12 had bones shattered, six had amputations and two were severely gassed. All 20 will have been affected for the rest of their lives. It is likely that many of the others who were just described as wounded suffered long term effects though these may have been difficult to distinguish from the impact of simply being in the war.

Widows and Orphans

Our knowledge of the impact of the war on Dunblane's families is also rather shadowy. Twenty two women are mentioned as becoming widows and 38 children as being orphans as a result of deaths during the war – a rather low number because most of the men who were killed were unmarried. We know this because their next of kin are listed as their parents. The proportion

unmarried is perhaps surprising given that most of the men who were killed were in their twenties or thirties but marriage at that time tended to be relatively late when a man had achieved a secure job and some savings. Also once the war began marriages that would normally have taken place will have been postponed. As a result we have no idea how many prospective wives in Dunblane lost their future husbands during the war and as a consequence never married but the numbers will have been considerable. The losses will have exacerbated the numbers of women relative to men in the population of Dunblane. Already at the beginning of the war as a result of men leaving the town for work, and in many cases emigrating, there was 20 % more women than men in the town rising to approximately 30 % as a result of the war.

Psychological Impact – Shell Shock

Even more difficult to assess is the psychological impact of the war on the men returning from the Front. We now know that this is often severe when men return from military conflict. They feel alienated from their families and civilian friends who have not shared their experience. In the case of the First World War this condition was made much worse because apparently the men were unable to describe their experiences to their nearest and dearest. The commonest statement by families about their men's experience of the war is that "They never talked about it." As a result we simply have no idea how damaged the soldiers were psychologically, for example how much they were suffering from shell shock.

In all my reading of the local newspapers I have only come across one example of the effect of shell shock in a man returning from the War to Dunblane. This only came to light because in a dispute with his wife, which came to court, a former soldier claimed that his behaviour was at least in part caused by his experiences during the War. I will include a full account of the case because it reveals how a man's behaviour might be influenced by his war experience.

The *Stirling Observer*, dated 9 August 1919, gives a report of the case heard a few days earlier in Stirling. It concerned a carter, Robert Drummond, who was charged with not maintaining his wife and behaving abusively to her. His wife listed his bad treatment which included striking her on the face with a rabbit. Robert in reply alleged that his wife was of a hasty temper and neglected her house and duties. When he threw dishes at his wife she threw them back. It was he said 'bowl about'.

In mitigation and this is critical to the case he described the impact of his war experiences on his future life. He stated that he was in the 1st Black Watch when war broke out i.e. he was almost certainly a regular soldier. He was wounded seriously in 1915 and then discharged. He goes on to say that his injuries had affected his nerves. On discharge he had been given a fulltime appointment as a postman in Perth but he had only stayed a week in the job

because the noise of the traffic upset him completely, presumably reminding him of the noises he heard at the front. He then stated that he had been urged as a result to go into the War Hospital in Dunblane (which treated soldiers suffering from shell shock) but he had refused to go into the hospital as he thought that he might jump out of the window.

Of course we only have Robert Drummond's attempt to explain his behaviour through his war experience and it is possible that he was exaggerating its impact to plead his case. However the examples he uses of his behaviour shows a level of psychological disturbance and neurotic behaviour that in its absurdity has authenticity.

So far I have presented the conventional case of the problems faced by men returning from the First World War – the likely physical and psychological impact of the war on them and their inability to describe their experiences once home to civilians who could not appreciate what the men had experienced. Numerous texts have argued this case.

In Dunblane the situation may not have been quite as dire as this account indicates. In the *Stirling Observer* 21 August 1919 there is an item describing the attitude of the inhabitants of Dunblane to the shell shocked soldiers hospitalised at the Dunblane Hydro who were being moved to another hospital in Scotland so that the Hydro could reopen as an hotel. The account is as follows: *Dunblane War Hospital was last Thursday vacated by the patients and staff, who left for Bangour, near Edinburgh, and it is expected that the building will be handed over to the Hydropathic Company. For over a year the hospital has been used for treatment of shell shock soldiers, the numbers in residence sometimes exceeding two hundred. Last Thursday over a hundred cases were transferred to Bangour. Their departure was witnessed by a large crowd and there were many personal leave takings, the soldiers having been very popular with the townspeople.*

It is the last sentence which is crucial. It shows that the shell shocked soldiers were very popular with the people of Dunblane who clearly sympathised with their condition. This response is interesting. The notion of shell shock was recent and it could have been viewed as a sham condition and as a way of a soldier avoiding his duty in the front line. Clearly this was not the view of the people of Dunblane who saw shell shock as a genuine condition. It is also worth noting that by the time the patients left for Bangour most of Dunblane's soldiers will have returned home. So the returning soldiers were not out of sympathy with the shell shocked soldiers either and it is difficult to believe that their condition and the possible effect of shell shock on the returning soldiers was not discussed in Dunblane families.

There is more than a hint in this story of a much wider civilian understanding of what the men had been through than the conventional account indicates and of possible discussions about the war in Dunblane homes.

Concluding Remarks

This account of the experience of the First World War in Dunblane is doubtless typical of many other small towns in Scotland – the enthusiasm in the opening months – adventure for the men, drama for the townsfolk – then the increasing and random toll of war rising perhaps surprisingly to a peak in 1918 – then the long term impact on the town – the death especially of young men who had been local heroes mainly on the football field – the unknown effects of war service on those who returned – the long term physical and psychological effects and the possibility that unexpectedly the townspeople had a much more mature understanding of what their men had experienced than is usually thought to be the case.

A major restoration of parts of the landscape and some of the monuments was carried out between late 2008 and mid 2009. This paper brings together previous work and new research including new proposals about the religious symbolism of the Victorian designed landscape.

Undeveloped areas exist between many urban castles and their associated towns. Most early castles in England were rural but there is a group of early royal castles which were built to face an associated town¹. There are parallels between them and Scots urban castles at Stirling and Edinburgh. Having clear ground round the castle had the obvious military advantage of not providing cover for attackers. But a gap also 'set the castle apart' and emphasised the distinctiveness of the castle and its lord so that the approaching visitor could appreciate the scale and grandeur of the edifice as a whole. James IV confirmed the importance of the approach from the town when he completed his four-towered fore-entrance at Stirling in the early sixteenth century, a report of the early 1580s mentioning 'the foure roundis of the foir entries [which] is the hailt utwart beautie of the place'².

The castle and a part of its immediate environs (the constabulary) were under the jurisdiction of a crown officer, known in the seventeenth century as the constable of the castle. The rest of the area being discussed was within the burgh and under the jurisdiction of the magistrates. In 1506 the constabulary was expanded to take in the Gowane Hills to the north and the angle where Upper and Lower Castlehill meet on Figure 1. In 1578 the crown granted a charter to Thomas Ritchie and his wife Jonet Meclum of land called 'The Auld play-feild' which suggests that it was no longer regarded as a play field. Cook could well be right that this area had been the site for pre-Reformation miracle plays or other dramas³. Ritchie and his wife built a house on the plot and over the following couple of decades, as more charters were issued, a small suburb known as Castlehill appeared. Since the area was within the constabulary, the inhabitants were not subject to the burgh magistrates, an anomaly which led to many later disputes and confusions⁴.

The rest of the gap (Valley, Esplanade, Kirkyard etc) was within the burgh⁵. Prior to being transformed by the creation of the Esplanade and the Valley Cemetery much of the area was rough, rocky ground traversed by the castle approach road from the town. In the seventeenth century several executions were carried out there, at least one involving the burning of an alleged witch or witches⁶. It was the site of the town's horse fairs until the Valley Cemetery was laid out in 1857-8. The town's troops and the army exercised there whilst Rogers also mentions a piggery, rag sorting and market gardens⁷. Some of these activities would take place in private properties such as Miss Gilfillan's shown on the map.

However, the widespread local belief that 'medieval tournaments' took place in the Valley, the ladies of the court watching from the Ladies Rock, is based on later claims and is contradicted by contemporary evidence. The



Figure 2. From about 1506 a new royal sports ground was created in the Butt Park, the field below the castle in this picture (photo author).

tournaments of the fourteenth and fifteenth centuries, such as the fight between teams led by Sir James Douglas and Jacques de Lallain at Stirling in 1449, required level ground and lots of space. Those in Stirling almost certainly took place at the Justinflats and adjacent butts, close to modern Victoria Square. In 1506, partly in response to continuing changes in the nature of tournaments but also as part of a much wider re-organisation of Stirling's royal landscapes, new butts and lists [stands for the spectators] were created in a field immediately beneath the castle which is still called the Butt Park [Figure 2]⁸.

In the later sixteenth century the emphasis of tournaments shifted from the sporting element to drama and symbolism and again required a new site. The first to be held in the Valley were the outdoor events for the baptism of Prince James which took place at night in December 1566. Wild men besieged a mock castle which was successfully defended by the forces of order and loyalty. The message was that only support for Queen Mary and the Stewarts could ensure stability. The target audience were Scotland's senior nobles who would need to be close to the action to appreciate the details. The location (which was conveniently close to the castle entrance) is confirmed by a payment of 3 shillings Scots to compensate a man whose dyke was demolished 'at the horse market where the queen and ambassadors stood'. The site also provided space for a wider audience to enjoy one of Britain's first firework displays⁹. The outdoor parts of the baptismal celebrations for Prince Henry in 1594 probably also took place in the Valley¹⁰.

The precipitous, exposed Ladies Rock was clearly not a suitable site for the queen, her ladies and the ambassador to stand on a December night. Nor can a wall ever have been built there. But, if the ladies did not watch the events from the rock, how did it get its name? Historical records more often refer to the Lady Hill, sometimes (as in Figure 1) as the Lady's Hill¹¹. I suggest that in the pre-reformation period it had been the site of a shrine to 'Our Lady', the Virgin Mary. In the seventeenth century it is recorded as the site of municipal

bonfires to mark royal events. The Jacobite army set up one of their batteries on the hill in 1746 – a site as ill-chosen as their main battery on the Gowane Hills¹².

In 1807, the town council (presumably in a fit of patriotic fervour during the French wars) ‘granted’ some vacant ground below the castle to the army to construct a parade ground. Ground within the burgh and not allocated to private owners certainly belonged to the council. The army also purchased some adjacent properties in the ordinary way and both were incorporated into the Esplanade. However, there was no formal legal transfer of the main block from the council, which then hedged its bets by reserving the ‘right’ of the inhabitants to walk in the area ‘as formerly’. In 1857, when the army were being urged to object to the laying out of the Valley Cemetery by opponents of the scheme, the town clerk sharply warned them that if they did so, the council would revoke the ‘grant’ of 1807. The army backed down on legal advice¹³. The property issues continue to reverberate today with questions about whether car parking charges or pop concerts are infringements of the inhabitants’ rights.

The Kirkyard must have been the town’s main burial site for many centuries, though some elite burials took place in the church and in private burial aisles until at least the later eighteenth century. Family plots in the Kirkyard might have been marked by uninscribed stones or by impermanent markers even before inscribed stones started to appear in the later sixteenth century. At first these stones were flat slabs. Upright headstones first appeared about the 1620s. Inscribed early gravestones were fashionable status symbols and, in the Stirling area, were not commemorative but were often erected whilst the owners were alive, to mark the plots intended for their own and their family’s burials. A distinctive feature is that the graves are in rows running north and south, the burials orientated east and west. There are no paths and access to the lairs inevitably involves walking across other graves. Modern burials within the Kirkyard have been fitted into the ancient orientation, preserving its distinctive character¹⁴.

Two aspects of the layout of the Kirkyard call for new comment. Firstly, there are no stones older than c.1700 in the seven rows at the extreme western end of the Kirkyard, where the orientation of the rows also seems slightly different, perhaps resulting from an extension around that date. Secondly, increasing parliamentary concern about proper care of kirkyards in the later sixteenth century culminated in a legal requirement that they should be enclosed by stone dykes in 1597¹⁵. Stirling, a prominent burgh where any wall on the southern side may have had some slight defensive function, may have enclosed the Kirkyard before that but the first record of a dyke found is from 1626¹⁶. At one time the dyke incorporated a number of ‘mural monuments’ but all except the huge Sconce monument were lost when, despite some vehement local opposition, the Kirkyard dyke was demolished in 1857-8, leaving only some footings on the southern edge and at the north-west end.

The creation of the Valley Cemetery, a burial ground on a wholly new

model, was a response to local and practical concerns as well as to wider cultural and aesthetic concerns¹⁷. Most obviously, the frequent disturbance of the 'unripe graves' of the Kirkyard when new burials took place on the crowded site was increasingly unacceptable and became technically illegal under the Burial Grounds (Scotland) Act of 1855. Press reports also mention the 'indecent' of walking over graves to access funerals. Modern stone-cutting and preparation methods and transport by railway had made gravestones both cheaper and more enduring than the older, softer local stones, so that the number of stones and the space required was increasing rapidly.

By 1855 a campaign for change led by Rev. Charles Rogers had begun. Various business plans were mooted and a variety of sites for a new cemetery discussed before the burgh council, energetically supported by Rogers and a nucleus of activist councillors, pitched on the Valley area. One attraction was that much of the proposed site already belonged to the council, so saving costs. The adjacent Mar's Wark Garden and Ladies Rock (which had belonged to the Erskines of Mar since the sixteenth century) were purchased and incorporated into the design¹⁸.

Rogers provides a characteristically trenchant account. The local press reported and commented freely as the work on this important civic development progressed. In 1856, for example, the hope was expressed that it 'may really be laid out as an Ornamental Cemetery according to the most approved manner of a modern Necropolis'¹⁹. A plan was prepared by the Edinburgh architects Peddie and Kinnear and a detailed lair plan by local surveyor Francis Mackison (dated 4 Dec.1857). The driveways and paths divided the space into a series of distinct plots; lair prices varied according to the choice of site, from £1 10s to £20 with some free plots for the poor²⁰.

Gardenesque cemetery designs had emerged in eighteenth-century France, had been advocated by the landscape designer Loudon and were exemplified in Scotland by the Glasgow Necropolis. As the name implies, the ideal was a layout reminiscent of a garden, with regular plots and vistas. As the Stirling Observer noted, it required a single level space, distinct from all others, a place 'set apart and held sacred for the rest of the dead'. It was to be 'one grand whole'²¹. It was as a threat to that integrity that the old Kirkyard dyke was swept away and it was to underscore that integrity that new perimeter rails were erected – again, despite strong objections. Planting of 'appropriate' tree species created clear sight-lines focused on key points and features.

Essential to providing a modern and appropriate place for burials was the integration of the aesthetic with the practical arrangements. The lairs were no longer in rows but laid out on a rationally-organised plan, divided into plots by the carriageways and paths. These gave ready access to every plot but also divided the cheaper from the more expensive plots so the new cemetery, like the new suburbs, divided the rich from the poor. But the developers did not get it all their own way and the proposals to turn Mars Wark into burial vaults and

to place guns on the Ladies Rock pointing towards Bannockburn were not realised. In a further layer of practicality, the access paths were also key links on the town's main tourist routes such as the Back Walk and the steps to the Castle. These routes were of increasing importance as the railways brought more visitors. Even as the grounds were being laid out the promoters rejoiced that, for example, the Ladies Rock, recently 'the resort of idle loungers and the scene of horrible filth' was now 'every day visited by parties of ladies and gentlemen' come to enjoy views 'the equal of which is not present in any cemetery in Europe'²².

The last property unit to be added to the Victorian scheme was the area around the Pyramid. Though marked on Figure 1 as Miss Gilfillan's it was probably actually owned by several people and had had a variety of uses over the previous century or so, Miss Gilfillan selling it (or parts of it) to the army about 1832. Charles Rogers organised the eventual purchase on behalf of local businessman William Drummond, who paid to have the Star Pyramid built within it. The pyramid was dedicated in April 1863; it had its own, planted enclosure and Drummond set up a trust to manage the area (to be known as the Drummond Pleasure Ground) after his death and arranged for his own, solitary burial there²³.

The Pyramid contributed to yet another aspect of the Victorian scheme, the didactic or religious landscape which also included the various statues and the Valley Rock Fountain (all largely paid for by Drummond). These all celebrated aspects of Scots Presbyterianism and adherence to the National Covenant. The Valley Rock Fountain (Figure 3) was the focal point of the scheme. It stands at the central point of The Valley and is dominated by the figures of Knox, Melville and Henderson. Knox was the leader of the Scots Reformation movement, Melville developed doctrines central to later Scots Presbyterianism and Henderson was the main ministerial influence on the Scots Covenant, so central to much later thinking. The location of the other figures (Guthrie, Erskine, Renwick and the Wigtown or Virgin Martyrs) reflects their more marginal role, though each is the focus of its own part of the cemetery. The choice of figures highlights Stirling's role in the evolution of Presbyterianism since Guthrie and Erskine both held positions as ministers in Stirling and Henderson was asked to take the charge though did not do so. But the distribution, with the major figures at the centre and the others in more peripheral sites, is clearly not chance.

A contemporary 'Guide' to the Valley Rock Fountain hints at yet more complex symbolism. It is a small leaflet or flyer signed 'Transcriber' but probably written by Drummond himself²⁴. Some of the difficulty in understanding the text results from loss of some of the detail of the design of the fountain. But the difficulties are certainly increased by the complex language, non-standard grammar and the unexplained allusions. However, there was a central drinking fountain surrounded by carved olive wreaths, vines and ears of corn with the 'great Name' (in Hebrew) radiating light. And



Figure 3. The Valley from the Ladies Rock in 2010. Star Pyramid (far right) with Valley Rock Fountain centre foreground (photo author).

a quotation at the foot of the Guide is ‘Whosoever will, let him take the Water of Life freely’. The drinker at the physical fountain is also being invited to take ‘spiritual refreshment’ as it springs at the feet of Knox, Melville and Henderson.

The Star Pyramid, also called Salem Rock, also had a role within this deeper layer of meaning. Pyramids had long had an overt association with stability. Salem, with its echoes of Jerusalem, was also associated with ideas of completeness, perfection, a place of safety or retreat, echoed in the innumerable Salem Chapels of the time. Salem itself is mentioned three times in the Bible²⁵. All refer to the priestly or ministerial function and the last, in particular, links Melchisadech, king of Salem, with Christ and the idea of renewal through new forms of ministry. The link between Salem Rock and the wider landscape is via the pool beside the pyramid from which the water seems to flow to the Valley Rock Fountain. That is, the water flows from Salem, via Melchisadech and Christ to the feet of the great protestant leaders, each in turn representing a new form of ministry.

The restoration work carried out in 2008-9 and mentioned at the start of this paper is fully explained at http://hsewsf.sedsh.gov.uk/hslive/hsstart?P_HBNUM=41126 and at <http://www.oldtowncemetery.co.uk/> and will not be considered further here. However, it is fitting to point out that Fiona Robertson (who was

responsible for much of the design work for the project) suggests that the Ladies Rock has also been assigned a metaphorical meaning within the designed landscape. In Bunyan's *Pilgrim's Progress* a work almost as widely-owned in Victorian Scotland as the bible, the pilgrim Christian traverses a rugged landscape with three routes. Two are false, leading to Death and to Destruction. One is the 'straight and narrow' path to Salvation. Two 'false' routes ascend the lower slopes of the Ladies Rock but only one achieves the summit. Might it also be significant that Book Two of *Pilgrim's Progress* concerns the longer and even more difficult journey of Christian's wife and other womenfolk and that the Virgin Martyrs monument stands at the foot of the approach to the Ladies Rock?

Even contemporaries found the pyramid curious. One viewed the whole scheme as a 'Walhalla'(sic) and noted that the texts around the Pyramid were titles of evangelical tracts sold by the Drummonds and cynically interpreted the project as a monstrous advertisement for their garden supplies and publishing enterprises rather than as a religious statement²⁶. But serious Scots Presbyterians of the period were much more familiar with the texts than are most modern readers. Anyone who has attempted to decipher the detailed meaning of the Valley Rock Fountain Guide will recognise that 'making things easy' was not an important part of the agenda. And even if some of the message was lost it was still a functional scheme, with adequate space for burials; ready access to the lairs and the paths still contributed to the town's tourist potential. The statues and pyramids were, at the very least, talking points; the fountain might have kept a few folk out of the pubs. Metaphor or not, the Ladies Rock provides by far the best vantage point to appreciate this astonishing Victorian scheme as well as magnificent views of the castle and the more distant landscapes.

By 1863 the scheme as originally conceived was complete. However, the town continued to grow and there was continued pressure for more space for burials. In the 1880s a new cemetery was created at Ballengeich, on the north side of Stirling Castle. In 1924 the Snowdon Cemetery was created between The Valley and Stirling Castle itself. This area, on record as Crandy Hill in the sixteenth century, had belonged to the Earls of Mar. It was probably used as garden ground and was the site of the Earl's gardener's house (which is probably the house seen to the left of Slezer's well-known late-seventeenth century view '*The Prospect of Sterling Castle*' (<http://www.rsgs.org/ifa/gems/viewstirling.html>) and appearing, too, on various Board of Ordnance plans. At some time previous to 1814 a villa known as Snowdon House was built there for Allan Johnstone²⁷. By the time Snowdon Cemetery was developed, the fashion for the gardenesque was long past and much of the interest of this cemetery does not lie within it but in the astonishing views of the Castle on one side and the Carse on the low ground below.

The space between castle and town exists for complex historical reasons associated with both the castle and the town. For many centuries it hosted

ritual functions including burial, witch-burning and royal celebrations. Firework displays have been held there for almost 450 years. The Esplanade formalised an older history of military drilling. Pop concerts continue the tradition of rituals in a spectacular space. It was the continued underdevelopment of the area in the nineteenth century which allowed the emergence of a new, designed landscape adjacent to the ancient burial ground. So, within a small area, there is a rare continuity of gravestone styles, from the late sixteenth century to the present day whilst the distinctions in the layout of the three main burial areas exemplify changing attitudes to death and burial. Perhaps even more striking, this 150 year old tourist attraction still works as modern visitors tread the paths, wonder at the statues and head for the Ladies Rock to enjoy the views and to snap the castle. Few will now even try to grapple with the complex religious messages of the 1850s. But it is clear that this is a landscape of many layers and meanings.

Acknowledgements

Fiona Robertson of Fiona Robertson Landscape Design has been endlessly helpful and enthusiastic. I am grateful for her permission to publish her suggestion that the paths around the Ladies Rock might be based on those in Bunyan's *Pilgrim's Progress*. Figure One is reproduced by permission of the Trustees of the National Library of Scotland. The Heritage Lottery Fund supported some of the research as part of the restoration scheme.

-
- ¹ Creighton, O.H. 2002. *Castles and Landscapes: Power, Community and Fortification in Medieval England*, London: Equinox, p.133-162; Liddiard, R. 2005. *Castles in Context: Power, Symbolism and Landscape, 1066 to 1500*, Macclesfield: Windgather, p.18-22.
 - ² National Archives of Scotland [NAS] E37/2, Inventory of munitions in Stirling Castle, 1583.
 - ³ *Register of the Great Seal of Scotland, IV 1546-1580*, Edinburgh, 1984, entry 2800; NAS GD193/69/10.
 - ⁴ Cook, W.B. 1897. The Old Playfield, Stirling, *Transactions of the Stirling Natural History and Archaeological Society* 20, 38-44; Morris, D.B., 1927. The Incorporation of Weavers of Stirling, *Transactions of the Stirling Natural History and Archaeological Society* 49, 6-61; Harrison, J.G. 1986. The Hearth Tax and the Population of Stirling in 1691, *Forth Naturalist and Historian* 10, 89-109.
 - ⁵ Renwick, R., 1884. *Charters and other Documents relating to the Royal Burgh of Stirling AD1124-1705*, Glasgow. p.140, p.158, p.162.
 - ⁶ Ronald, J., 1899. *Landmarks of Old Stirling*, Stirling: Mackay. p.116-7; Stirling Council Archives [SCA], B66/23/1 discharge September 1652.
 - ⁷ Rogers, C., 1876. *Leaves from my Autobiography*, London, Grampian Club. p. 102
 - ⁸ Sutherland, [Capt.] 1794. *A General History of Stirling*, Stirling: Randall; Hume Brown, P. 1891, *Early Travellers in Scotland*, Edinburgh, Douglas, pp.30-38; ER XVIII p.2; Renwick, 1884 pp.69-70; Ronald, 1899, pp.102-4; SCA SB6/3/1a/4 Miscellaneous Stirling Burgh Records; Accounts of the Lord High Treasurer of Scotland, various dates, Edinburgh, volume I p.329; *ibid*, volume II p.368; Barker, J.R.V. 2000. *The Tournament in England, 1100-1400*, Woodbridge: Bodell. pp.34-6, p.147; Hardy, S.H.

1998. The Medieval Tournament: A Functional Sport of the Upper Class, *Journal of Sports History*, 25, 91-105.
- ⁹ Renwick, 1884, p.209; Renwick, R., 1887. *Extracts from the Records of the Royal Burgh of Stirling 1519-1666*, Glasgow. p.182 and p.301; Accounts of the Lord High Treasurer of Scotland, volume XII, p.408; Lynch, M., 1990. Queen Mary's Triumph: the Baptismal Celebrations at Stirling in December 1566, *Scottish Historical Review*, 69, 1-21.
- ¹⁰ Lynch, M. 2001, The Great Hall in the Reigns of Mary, Queen of Scots and James VI. In *Stirling Castle: The Restoration of the Great Hall*, (ed. R. Fawcett) pp.15-22, York: Council for British Archaeology.
- ¹¹ NAS B66/5/24, sasine 21 July 1858; SCA B66/25/779/1 bundle 5 item 57 miscellaneous burgh court papers; B66/16/28 f. 28r Stirling Burgh Court Books; Ronald, J. 1905. *The Earl of Mar's Lodging, Stirling; historical and architectural*, Stirling; MacKay. p.34-5; NAS RHP13274 Plan of ground to be purchased 1856.
- ¹² NAS E82/55/5 Stirling Common Good Accounts, f. 61v discharge 1669-70; *ibid* f. 81r discharge 1672/3; SCA B66/23/1 Stirling Common Good Accounts, discharge 1683-4, p.6; Renwick, R., 1889. *Extracts from the Records of the Royal Burgh of Stirling 1667-1752*, Glasgow. p.276; *ibid* p.362.
- ¹³ Drysdale, W.1899. *Old Faces, Old Places and Old Stories of Stirling (second series)*, Stirling; Mackay, p. 234-6; SCA, SB1/11/47, correspondence mainly re parade ground c.1807; NAS MW1/93 Scroll Plan of Parade Ground, surveyed Oct 1807; NAS E886/114 Copy correspondence re Valley and Lady's Hill; National Archives (Kew) WO55/ letters regarding property adjacent to Stirling Castle.
- ¹⁴ Harrison, J.G. 1990. Some Early Gravestones in the Holy Rude Kirkyard, Stirling, *Forth Naturalist and Historian* 13, 79-96.
- ¹⁵ Records of the Parliaments of Scotland, 1597/11/10 (<http://www.rps.ac.uk/>); Willsher, Betty, 1985. *Understanding Scottish Graveyards*, Edinburgh: Chambers. p.8.
- ¹⁶ SCA CH2/1026/2 28 Nov 1626, Stirling Kirk Session Minutes.
- ¹⁷ McKichan, Finlay, 1989. 'A Burgh's Response to the Problems of Urban Growth: Stirling 1780-1880', *Scottish Historical Review*, 57, 68-86.
- ¹⁸ Stirling Observer, 29 Nov, p.2 c4; Rogers, 1876, p.99-110; Allan, J.M., 1990. Who was Charles Rogers? *Forth Naturalist and Historian*, 13, 97-107.
- NAS GD124/1/639; Ronald, 1905, p.34-5.
- ¹⁹ Stirling Observer, 27 March 1856, p.3; Stirling Sasine Abridgements, 1858, PR 283; NAS RHP13274.
- ²⁰ SCA SB1/14/1; SCA MP/SB30 Lair Plan.
- ²¹ Stirling Observer, 27 March 1857, p.3; Stirling Observer, 24 Dec 1857, p.3.
- ²² Rogers, 1876, p.103-4; Stirling Observer, 4 June 1857, p.2; *ibid*, 18 June 1857, p.3; *ibid*, 9 July 1857 p.2; *ibid*, 23 July 1857 p.2; *ibid*, 30 July 1857, p.2; *ibid* 6 Aug 1857, p.3.
- ²³ Rogers, 1876, p. 109-110; SCA B66/2/17 f. 122; NAS E886/113; Stirling Observer 30 April 1863, p.4 col5.
- ²⁴ Stirling Central Library, Stirling Scrapbook.
- ²⁵ Genesis 14, 18; Psalms, 72 2; Hebrews, 7 1 & 2, particularly verse 10 onward.
- ²⁶ *Miller's Handbook of Central Scotland*, nd, np., p.22; Stirling Central Library, Stirling Scrapbook, undated press cutting.
- ²⁷ SCA B66/5/2 f. 212r-213v; Stirling Observer, 24 Oct 1915; Drysdale 1899, p.54 and p.163; Chambers R., *A Picture of Stirling; A series of light views*, 1830, Edinburgh, p.52; SCA B66/16/2 f 235, 18 May 1614; SCA B66/16/4 f94v-96v 1 Dec 1620; SCA B66/9/1 155v.

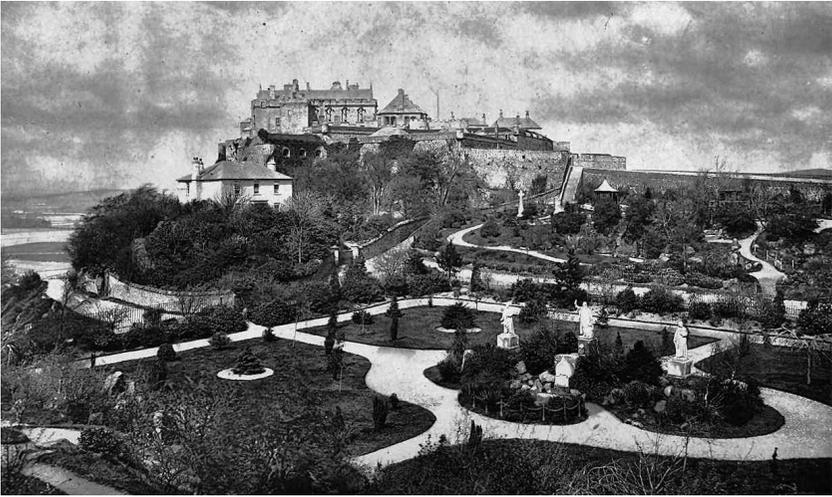


Figure 4. The Valley Rock Fountain and statues of Knox, Melville and Henderson with Snowdon House beyond (from Rogers, 1876, author's collection).

BURIED TREASURE: A MAJOR IRON AGE GOLD HOARD FROM THE STIRLING AREA

Fraser Hunter

Discovery

On 28th September 2009, David Booth went on his first expedition with his newly-bought metal detector. Only seven paces from his car, his machine registered a signal. As he dug he saw the gleam of gold. He had just found Scotland's most important Iron Age gold hoard – a discovery of European importance. This short article gives an interim account of what we know now, and what we hope the find will tell us as research progresses.

The hoard

The find consists of four gold torcs (Plate 8). These are neck ornaments dating to about 300-100 BC, towards the end of the Iron Age. Each has a story to tell. Two of them are made from fine twisted ribbons of gold, a style known as ribbon torcs (Plate 9). This creates a dramatic visual impression using only a small amount of gold, but is surprisingly difficult to make – it is hard to get an elegant regular twist. On one torc, the ends are curved into hooks which would lock together to hold it when it was worn, the terminals formed into small knobs. The other has disc terminals, but these are less hooked, and it would have been open when in use. They have a very small diameter; if they were worn round the neck, they would only have fitted women or youths, but it is also possible that they were worn as arm ornaments.

There has been a lengthy academic debate over such ribbon torcs, and especially over their dating. For a long time they were thought to be Bronze Age in date, but with hints that they could be later. This find provides emphatic confirmation that this style of tightly-twisted ribbon torc is Iron Age in date. Such torcs are found in both Scotland and Ireland, showing the connections between these two countries. The small knobbed terminals of one torc are common in Scottish finds, but the disc terminals are much more unusual, and have Irish parallels; it may have been an import.

The third torc is more exotic. It survives in two fragments which join to form half of a tubular torc (Plate 10); the other half would have made up a complete circle. A sheet of gold was hammered into a curved cylinder, with the outer surface beaten up into a complex and highly decorative shape comprising three rows of mushroom-like designs. The design was probably hammered out from the sheet while it was flat; it was then bent into a tube, perhaps over a soft core of wax or resin, and the decorative detail was then worked into the surface.

This torc takes us far beyond Scotland – this is a style well-known from south-west France, from the area around Toulouse. It dates most likely to the 3rd century BC, and shows the wide-ranging connections which were available at this time. We do not yet know if it was an import, or was inspired by these French torcs but made more locally. Remarkably, the publicity around the Stirling hoard has brought another of these torcs to light – two fragments from another half-torc which had been in a safe in the National Museum of Ireland since the 19th century, and assumed to be a recent ethnographic object. It is very similar indeed to the Stirling example. Future work will involve analysing the gold and studying the manufacturing techniques to see if the Scottish, Irish and French finds were all made in the same workshops, or if the island ones were locally-made versions. Whether import or inspiration, they remind us of the long-range contacts available to at least some people at this time.

The final part of the hoard emphasises these connections across Europe even more strongly. It is made from twisted gold wires which have been braided together into a flexible rope-like hoop to fit round the neck, with the ends forming loops (Plate 11). This is a style of torc well-known across Iron Age Europe, with close parallels in particular from East Anglia. What makes it exceptional is the decoration. Gold discs were soldered into the loops, with spirals of gold wire and pyramids of small gold balls soldered onto them. To either side of the loops, further spiral gold wires and balls are attached, while a fine chain links the two terminals. These techniques of filigree (wire-work), granulation (the small balls) and chain-making are alien to Iron Age traditions. They are much more characteristic of the Mediterranean world, from workshops in Greece or Italy.

There is no other torc quite like this from the rest of Europe. This fusion of Iron Age and Mediterranean styles is remarkable. Does it represent a craft-worker from the Mediterranean, plying their trade north of the Alps among powerful chiefs? Was it a special commission, or a gift from a group with Mediterranean links to further-flung compatriots? Is it the work of someone who had seen Mediterranean material, and wanted to try their hand at this new-fangled technology? These are questions which only future research can answer, but it shows the connections across Iron Age Europe, long before the Roman period: some people in the Forth valley were well-connected in the Iron Age, and tapped into European fashions.

Compare and contrast

The mixture of material in the Stirling area hoard is remarkable, but it has similarities to other finds. Ribbon torcs are a well-known (though not a common) type from the Forth northwards, while a very few other hoards in Scotland and Ireland have material from a mixture of sources. But the Stirling find changes our view of gold in the Iron Age. Previously, researchers have been rather blinded by the quantity of gold coming out of East Anglia, from sites such as Snettisham; the rest of Britain has seemed very impoverished by comparison. Our find not only redresses the balance, but by confirming that

ribbon torcs are of Iron Age date, it gives us a lot more Iron Age gold. This suggests there were different styles of gold ornaments in different areas of the country, some with the heavy Snettisham-type torcs, some with the lighter ribbon torcs. The evidence of wide-ranging contacts from the Stirling hoard also shows that many parts of Britain and Ireland had widespread connections and wealth at this time, not just the south.

The setting

David Booth immediately reported the find to the Treasure Trove Unit, who deal with all discoveries of finds of archaeological importance. The exact findspot is being kept confidential at the moment, but it was clear that there was a great opportunity here to find out more about the setting. Many Scottish hoards are old finds, where we know very little about why they were buried or what the surroundings were like. Here we had the chance to explore this with a modern, precisely-located find. Was this buried for safety in an out-of-the-way place, or was there evidence of other activity in the area? Was it buried as part of a communal religious ceremony, or a small, private offering?

Thanks to the support of the landowner, we were able to excavate a large area around the discovery spot. It sits on a patch of drier land in a boggy, wet area.



Figure 1. Excavated view of the circular timber structure where the hoard was found.
© National Museums Scotland.

There has been human activity in the area for thousands of years – we found a scatter of flints and remains of a cooking site probably dating back to the early Bronze Age. We could also demonstrate that the hoard did not come from an isolated site – it was buried inside a circular timber building, some eleven metres in diameter (Figure 1). This shape and size of building would normally represent a house, but this one is a bit odd – apart from a central cooking pit, there is no trace of normal domestic activity, such as rubbish or cooking waste, although evidence of repairs indicates it was standing for some time. We don't even know if it is the same date as the hoard, although samples taken for radiocarbon dating will clarify this. It is tempting to speculate that this was some sort of shrine. This kind of isolated, boggy location is a typical place to find Iron Age religious offerings. However, we very rarely get the chance to investigate such a site scientifically, and we are planning a wide-ranging research project to take advantage of this tremendous potential. Was this a secluded, wooded site, hidden from view, or was it an open landscape, visible to crowds gathered to watch the spectacle? How wet was it? Was it boggy, or flooded, or was it perched above the water, a dry island in a wet landscape? And how did it relate to the surrounding area? Where were the nearest settlements, and what was the basis of the wealth which allowed people to acquire such gold? Was this a time of agricultural prosperity? Or was it a time of crisis, when valued objects might be sacrificed to appease the gods?

These are only a few of the questions which this discovery opens up. It is a remarkable find, which has changed our view of the Scottish Iron Age, and put the Stirling area centre-stage in a European story. In the months to come, as teams of specialists pore over the evidence, we look forward to teasing apart this gleaming glimpse into a long-lost world.



Plate 8. The hoard of four golden torcs.
© National Museums Scotland.



Plate 9. One of the two ribbon torcs found in association with the two other torcs proves these ribbon torcs are of Iron Age date. © National Museums Scotland.



Plate 10. The two fragments of the ornate French-style torc.
© National Museums Scotland.



Plate 11. Detail of the decorated terminals of the hybrid torc, showing the decorative braided wires and small gold balls. © National Museums Scotland.

VISIT BY DR. ROBERT MUNRO TO THE STRATHCASHELL CRANNOG, LOCH LOMOND

John Mitchell

In October 2010 an international seminar on lake settlements in Scotland and elsewhere in Europe is to be held at the University of Edinburgh. It will commemorate the centenary of the Munro Trust, an organisation which funds a small number of public lectures each year on anthropology and prehistoric archaeology⁽¹⁾. Dr. Robert Munro (1835-1921), who financed the trust with a generous endowment in 1910, was both a medical practitioner and a distinguished field archaeologist. His *Ancient Scottish Lake-Dwellings or Crannogs*⁽²⁾ published in 1882 was a classic in its day and paved the way for future studies into these man-made islands.

A crannog of presumed iron age just off Strathcashell Point on the east side of Loch Lomond (Figure 1) was first brought to general notice in the Reverend William Nimmo's *History of Stirlingshire*, with reference made to an account of the Parish of Buchanan written in 1724 by Alexander Graham of Duchray. In this manuscript housed in the Advocates Library, Edinburgh, the small island of gathered stones is described as having been founded on "large square joists of oak firmly mortised in one another"⁽³⁾.

Nothing more appears to have been recorded about the Strathcashell crannog until the area was visited by the Andersonian Naturalists' Society of Glasgow on 26th August 1899. According to the Excursion Secretary's hand-written report, the members were told that what remained of the lake dwelling was being excavated by Mr William Donnelly and Mr John Bruce of the Helensburgh Naturalist and Antiquarian Society⁽⁴⁾. Further details are lacking, but it seems likely that progress with the investigation by Messrs Donnelly and Bruce would have been severely hampered by the infrequency the island is fully exposed. Underwater excavation techniques were still well in the future.

Dr. Robert Munro and Mr. David MacRitchie representing the Society of Antiquaries of Scotland were next in line to examine the Strathcashell crannog. At the time of their visit by hired rowing boat in April 1901, the loch level was drawn down sufficiently for the artificial island to be just breaking the water surface. Measurements were taken of the structure and its distance from the mainland shore noted⁽⁵⁾. Before taking leave of the site, the archaeologists and boatmen posed for a group photograph which fortunately still survives (Figure 2).

References

- (1) Society of Antiquaries of Scotland *Newsletter* March 2010.
- (2) Munro, R. 1882. *Ancient Scottish Lake Dwellings or Crannogs*. Edinburgh: David Douglas.

- ⁽³⁾ Nimmo, Reverend W. 1880. *The History of Stirlingshire* (3rd ed.). Glasgow: Thomas D. Morrison.
- ⁽⁴⁾ Andersonian Naturalists' Society of Glasgow. *Excursion Minutes Book* 26 August 1899.
- ⁽⁵⁾ Blundell, Father O. 1913. Further Notes on the Artificial Islands in the Highland Area. *Proceedings of the Society of Antiquaries of Scotland* **47**, 257-302.



Figure 1 The Strathcashell crannog exposed during the exceptionally low loch level of August 1984. (Author's photograph.)



Figure 2 Dr. Robert Munro (in the stern of the boat) at Strathcashell Point, April 1901. The almost submerged crannog can be seen immediately behind the party. (A.J. Macfarlane collection.)

Dunblane Weather Report 2009

Neil Bielby

The weather station is a suburban back garden in Ochiltree, Dunblane. This is situated 50 metres to the east of the Dunblane Hydro ridge, 100 metres a.s.l., in a shallow, sheltered valley.

Daily rainfall, maximum and minimum temperatures, barometric pressure, cloud cover, wind direction and speed (Beaufort Scale) are logged. All except the maximum daily temperature are recorded at 09.00. A brief description of the day's weather is also noted along with exceptional and unusual weather phenomena across the UK.

(Note: all normals etc. refer to the last 14 years (since 1995) and because there is much annual variation in Britain in the parameters used to define climate, climatological averages are usually taken over periods of 30 years for temperature and 35 for rainfall; therefore, all averages in this report should be viewed with some caution.)

2009 – Overview

The year was slightly cooler and wetter than normal with the mean temperature of 8.47°C being 0.09°C below the average while total precipitation of 1163.5 mm, was 5 % above the norm. There were 71 air frosts (16 more than the mean) with a low of -11.7°C (28th December). Snow lay on the ground at 09.00 on 32 days. The highest temperature was 29.7°C (2nd July). The above facts hide some seasonal variations: winter (December 08 to February 09) was colder and drier than usual; spring (March to May) was notably warmer and wetter; summer (June to August) had average temperatures but was 32 % wetter while autumn (September to November) was cooler and wetter. Across Scotland, it was the 13th warmest and the 4th sunniest year.

January was colder and drier than normal with the mean temperature of 1.96°C being 0.59°C below the average. There were 15 air frosts with a low of -7.6°C (6th) and snow lay on the ground at 09.00 on only one morning. The total precipitation of 108.2 mm was 85 % of the norm with amounts of 1 mm and above recorded on 19 days. Overall in Scotland, it was the third sunniest January since records began in 1914.

High pressure continued to dominate with a mixture of clear and overcast days. There were nightly frosts (-5°C on the 1st & -7.6°C on the 6th (-13°C in Oxfordshire (7th)) and little wind. Varying amounts of snow fell on eastern and southern England (4th) then Scotland and northern England during the night of the 6th/7th. This spell of settled weather ended on the 10th when an Atlantic low (976 mb) pushed an occluded front across Scotland with driving rain on

30 mph southwesterly winds from noon that day (150 mm (5.91 in) at Shap, Cumbria). Atlantic weather systems then dominated for the next 14 days as regular depressions and associated fronts produced varying amounts of wind and rain with only brief spells of clear, dry weather. Inveruglas (Dunbartonshire) recorded 281 mm of precipitation in the ten days up to the 20th. After 2 weeks of cold weather, temperatures peaked at an unseasonal 14°C in Machrihanish, Kintyre (11th). On the 18th, a low of 944 mb to the NW of the Hebrides produced winds of up to 70 mph in SW Scotland causing structural damage (gusts of 107 mph were recorded in County Mayo, Ireland). A spell of quieter weather ensued from the 25th-29th with night frosts and some sun. Another Atlantic front produced 11 mm on the 30th when temperatures reached 14°C at Kinlochewe before colder NE winds developed on the last day of the month.

February was slightly colder and much drier than normal with the mean temperature of 3.1°C being 0.11°C below the norm. There were 15 air frosts (two above the mean) yet the 13.8°C (23rd) was the warmest February day recorded here. Precipitation at 26 mm was only 26 % of the average making it the driest February to date, with 21.5 mm of this falling as snow which lay for 14 consecutive days. To use a footballing cliché, this was a 'month of two halves' with an unusually cold first fortnight followed by an equally unseasonably mild second.

Wintery weather returned on the 2nd with 4 cm of 'fluffy' snow lying at 9am. Regular showers during the day (heavy in the afternoon) increased the depth to 10 cm. A steady thaw the following day (drizzle and light rain) condensed the snow, and as temperatures fell to -7.1°C that night (-10°C in Buckinghamshire), it set solid. Also on the morning of the 2nd, heavy snowfalls brought the SE of England to a standstill, with the 30-40 cm recorded confining all London buses to their depots. The following 4 days all had long sunny spells and a frost of -8.3°C was recorded on the morning of the 6th. The A9 between Aviemore and Inverness was blocked on the 5th while blizzard conditions in SW England during the evening and night of the 5th/6th stranded over 200 motorists near Exeter. The cold snap continued with nightly frosts until the 14th. Temperatures plunged to -18.4°C at Aviemore on the 9th in contrast to the daytime high of 11°C in the Scilly Isles on the same day. The 10th and 11th were calm days of virtually unbroken sunshine as Scottish skiing enjoyed its best conditions for over a decade. Pressure rose to 1019 mb by the 13th as damp, misty weather heralded the start of a slow thaw. Much milder air, drawn in from the south-west, saw temperatures rise to 9.5°C on the 15th as the final remnants of snow melted. The weather remained mild and virtually dry with several spring like days when the sun broke through the blanket cloud. Temperatures peaked at 11.9°C on the 17th (15°C at Aberfeldy). The weather continued quiet and mild until the end of the month as a large high pressure system established itself over SW England. Temperatures peaked at 17°C in Kent (27th) when gales and rain lashed Orkney with gusts of up to 68 mph. Locally; there was occasional drizzle and light rain during the last 3 days as the

high pressure system declined.

March was a little warmer and wetter than normal with the mean temperature of 5.58°C being 0.62°C above the average whilst the total precipitation of 89.1 mm was 15 % above the norm. The 16.2°C recorded on the 31st made it the 2nd warmest March day at this location (after 17.5°C in 2003). There were only seven air frosts – the lowest number since 1997.

An unsettled start to the month with precipitation every day. Rain turned to snow during the night of the 3rd/4th with 4 cm lying at 9am on the 4th. Heavy snow fell in Devon and Dorset during the night of the 4th/5th depositing up to 19 cm in the latter county. The snow remained here for three days with good periods of sunshine and night frosts (-5.5°C on the 5th (-10°C at Braemar)). Heavy rain, accompanied by fresh southwesterly winds, during the night of the 7th/8th turned to snow before dawn with 2 cm of wet snow at 9 am. There were frequent snow showers throughout the day but any lying snow quickly melted, especially when these showers turned to rain during the late afternoon. Gusts of 89 mph were recorded on Foula, Shetland (8th) and 75 mph on Fair Isle (14th). This unsettled spell lasted for 16 days until a high pressure system (1037 mb) established itself over Scotland. This produced five days of spring-like weather with much diffuse sunshine and light winds. Temperatures peaked at 12.9°C (21st) and an exceptional 18°C at Altnaharra (20th). Unsettled weather returned for the next six days as pressure dropped to 983 mb (27th). Calmer weather returned on the 28th as pressure built and daytime temperatures rose to a year high of 16.2°C (18°C Dyce 31st).

April was warmer and wetter than normal with the mean temperature of 9.04°C being the 2nd highest to date; 1.22°C above the mean. Temperatures peaked at 19°C (20th) while there were only two air frosts, the lowest being -2.5°C (19th). Precipitation of 78.6 mm was 25 % above average with measurable rainfall (>0.1 mm) on 17 days. Average pressure was 1009 mb.

The warm, settled spell lasted until the 3rd with daytime temperatures peaking at 16.5°C (2nd) and a remarkable 19.8°C at Kinlochewe (3rd). There was no measurable rain for seven days. A wet spell followed with heavy rain during the evening and nights of the 6th, 7th and 9th producing a total of 42.4 mm. The weather then remained fairly settled with only occasional small amounts of rain and several sunny days until the 26th when Atlantic fronts brought a wet end to the month. Minimum temperatures of -5°C and -6°C were recorded at Kinbrace, Sutherland (14th and 19th) whereas they peaked at 22°C at East Malling in Kent (15th). A violent thunderstorm deposited a total of 85 mm (3.36 in) on Penzance during the night of the 24th/25th washing away bridges and causing severe flooding.

May was cooler and wetter than normal. The mean temperature of 10.74°C was 0.27°C below the mean while total precipitation of 98.8 mm was 40 % above average. Measurable rainfall fell on 19 days. There were no air frosts.

Averaged nationally, the first half of May was almost 4°C cooler than in 2008.

The month started unsettled with a particularly wet and cold spell from the 5th to the 9th with 46.7 mm of rain. The 7th was quite windy with gales on the west coast (72 mph Uists). A short settled spell followed (11th-14th) although the sunny weather was tempered by some cold E. winds which depressed temperatures (only 12.7°C max on the 12th whereas 21°C was recorded at Broadford on Skye the next day when a low of -2°C was logged at Braemar). A complex low to the west of the British Isles brought bands of rain and showers from the 15th when the daytime temperature struggled to only 11.2°C. The unsettled weather lasted until the 27th when high pressure (1028 mb) brought sunny, warm conditions with temperatures peaking at 24.4°C on the last day of the month.

June was warmer and drier than usual. The mean temperature of 14.52°C was 0.57°C above the norm while the total rainfall of 46.8 mm was only 62 % of the norm. There were 12 days with measurable rainfall (> 0.1 mm) and the average pressure of 1016 mb was 2 mb above the mean.

The month began with glorious weather with the 29.3°C recorded on the 1st being the highest yet for June at this station. The first rain in eight days fell on the 4th as the high pressure system waned. Snow fell on the mountain tops (5th) and a low of -3°C was recorded at Kinbrace, Sutherland (7th). A prolonged downpour produced 94 mm of rain and flooding in the Exeter area (6th). The cool north-easterly winds persisted for the next few days bringing with them sharp showers and the temperature fell to -1°C at Altnaharra (11th). Thunder showers on the 14th were followed by heavy rain during the afternoon of the next day causing flash flooding (the new Dunblane High School had to be evacuated as water poured through the roof). The weather remained unsettled with spells of rain and fresh winds at times, until the 19th, when building high pressure introduced a spell of settled, warm weather with temperatures reaching 21.5°C on the 20th and 21st. The mostly fine weather continued until the end of the month; the 23rd was a particularly glorious day with not a cloud in the sky with the temperature peaking at 27.9°C.

July was the 4th wettest in the UK since modern records began in 1914. In Dunblane, it was slightly cooler but quite a bit wetter than usual. The mean temperature of 15.75°C was 0.14°C below the norm while the total rainfall of 112.9 mm was 46 % above average. There was measurable rainfall on 24 days, eight more than the norm, and the average barometric pressure of 1008 mb was 5 mb below the mean.

Mostly sunny and warm to start but with the occasional front producing rain: 11.1 mm (3rd); 6.4 mm (6th) and 10 mm (11th). Temperatures reached 29.7°C on the 2nd (27.7°C Strathallan; 32°C Berkshire) and 25°C on the 10th. It then turned unsettled and cooler as Atlantic lows crossed the country with rain almost every day from the 11th to the month end. Liscombe (North Devon)

received 105 mm on the 16th. The maximum temperature during this period was 21.9°C (15th) while the night low was 5.8°C on the 25th (2°C Tulloch Bridge). There were rare, warm, sunny days on the 25th and 29th. A tornado swept through Stornoway (Lewis) during the morning of the 28th causing minor structural damage and overturning cars.

August was cooler and much wetter than usual. The mean temperature of 14.88°C was 0.48°C below average (low +0.25°C; high -1.21°C) while precipitation of 158.9 mm was 82 % above the norm making it the second wettest August to date (after 171.9 mm in 2004). The average pressure of 1010 mb was 4 mb below the mean in a fairly narrow range of 1001 to 1019 mb. With 393.2 mm, Eskdalemuir endured its wettest month in 100 years of recording and it was also the wettest August in other parts of Scotland.

The weather settled down with much less rain than of late and temperatures peaked at 22.5°C (26°C Norwich, 1st). Warm, humid, Mediterranean air pushed temperatures up to 31°C in Kent but triggered downpours in southern England with 61 mm falling on Holbeach, Lincolnshire (6th). It turned unsettled again from the 9th with an Atlantic front depositing 15.8 mm during the night of the 9th/10th followed by a low pressure system which crossed Scotland on the 14th producing 26.8 mm in 24 hours (58 mm Inveruglas). An unstable SW airstream developed during the 15th with gusts of up to 45 mph. The unsettled weather continued until the month end with rain, sometimes heavy, almost every day (20.9 mm on the 19th (78 mm Eskdalemuir)). The 24th was a rare dry and sunny day.

September was slightly warmer and drier than normal. The mean temperature of 12.73° was 0.5°C above the average while rainfall of 71 mm was 83 % of the norm, there being only 12 days with measurable amounts (>0.1 mm). The average pressure of 1018 mb was 3 mb above the mean. Across the UK, September had 40 % less rainfall and 9 % more sunshine than normal.

The wet weather continued into September with 28.1 mm falling between 8 pm on the 2nd and 9 am on the 4th. The NE of Scotland experienced its highest 24 hour rainfall total in 'decades' with many roads flooded and c.450 houses having to be evacuated in the Elgin area as both the Spey and Lossie rivers broke their banks (102 mm at Lossiemouth, 3rd). 87 % of the average monthly rainfall fell in the first eight days. More than 2 months of very unsettled weather came to an end on the 9th as high pressure built rapidly over Scotland, peaking at 1042 mb making it the most intense recorded over the British Isles in September (11th). The sun shone and temperatures climbed to 20.8°C as this early 'Indian Summer' allowed farmers to finally begin the cereal harvest (29°C Kent, 8th). Pressure had fallen to 1013 mb by the 19th but it remained dry until the 21st, giving 12 consecutive rainless days. It gradually became cooler with a daytime max. of only 14°C (18th) compared to 24°C in London (19th) and a night low of 3.9°C (17th). The weather remained fairly settled until the month end with little rain and a maximum temperature of 18.8°C (27th).

October was slightly warmer and a good deal drier than normal. The mean temperature of 9.12°C was 0.61°C above average while rainfall of 91.3 mm was only 67 % of the norm; although more than 0.1 mm was recorded on 25 days. The average air pressure of 1012 mb was 3 mb above the mean (max. 1039 mb/min 992 mb) while there was only one air frost.

The weather became unsettled as an Atlantic low brought strong south-westerly winds (gusting to 100 mph at Munro level) on the 3rd while locally a number of trees were blown over. A calmer spell ensued with some pleasant, sunny and calm days and only small amounts of rain, mostly in the form of showers. A high pressure system built over Scotland (1039 mb) giving some fine, sunny days with daytime temperatures peaking at 17.0°C (14th). It also produced the first air frost of the winter (-1.0°C on the 17th (-4°C at Tyndrum)). As this high pressure system decayed, Atlantic fronts raced in depositing 11 mm of rain during the night of the 20th/21st and 10.9 mm on the 24th (67 mm Inveruglas). The NE of Scotland experienced prolonged, heavy rainfall on the 21st with several roads flooded and 83 mm (3.27 in) being logged at Aberdeen airport. The final week of the month was mild but unsettled as a warm air mass intruded into Britain from the south. Temperatures peaked at 14.8°C on the 28th (20.5°C in North Wales (30th)) but it rained at some point every day, the 27th being the wettest with 14.7 mm.

November was slightly warmer but much wetter than normal. The mean temperature of 4.9°C was 0.17°C above average whilst rainfall of 211.2 mm was almost double the norm, making it not only the wettest November to date but also the third wettest month overall at this location. There were six air frosts (just below the average) while the mean pressure of 989 mb was also a new low for this month. Averaged across the UK, it was the warmest November since 2003 and the wettest ever in a series dating back to 1914.

A deepening low (983 mb) crossed Scotland during the 1st with 24 hours of heavy rainfall producing 25.5 mm (52 mm at Aberdeen Airport). This resulted in widespread flooding in the NE of Scotland, especially in Huntly and Stonehaven. Many roads became impassable and the rail links to both Inverness and Dundee were cut off. Another deep low (976 mb) became stationary over Scotland during the 3rd/4th, resulting in a further 20 mm of rain. The weather then improved as pressure slowly built to 1021 mb, giving clear skies and night frosts: -4.1°C on the 9th (-8.6°C Braemar). The weather quickly deteriorated from the 11th as a succession of Atlantic lows passed through. One such low (969 mb) brought gales and flooding to Wales and Southern England on the 14th with gusts of 72 mph recorded in Cornwall. Prolonged heavy rain produced 47 mm in c.40 hours from 15.00 on the 18th. This caused widespread flooding in the Carse of Stirling but the SW of Scotland and Cumbria fared much worse, with Dumfries; Workington and especially Cockermouth, suffering damaging floods with many houses flooded and three bridges swept away in the latter town alone. 236.6 mm of rainfall was recorded at Seathwaite (Lake District) in the 24 hours to 09.00 on 20th. (New national

rainfall records were set for one-, two-, three-, four, and five-day totals). Eskdalemuir recorded 103 mm – its highest ever 24 hour total. The weather continued unsettled until the 29th with a low of 960 mb to the west of Scotland on the 25th bringing especially wet and windy weather (42 mm Tyndrum; 109 mm Cluanie Inn). The month ended on a cold but dry note, with a frost of -3.7°C on the 30th being followed by a cloudless day.

December was the coldest ever month at this station (and the coldest in Scotland since 1981 and the third coldest on record) with the mean temperature of -1.03°C being 3.1°C below the December norm and 0.7°C below the previous coldest month – December 1995. There were 25 air frosts (equal to the previous high in January 1995) with the -11.7°C recorded on the 28th being the 2nd lowest after -14°C in December 1995. Snow lay on the ground at 09.00 for the last 13 days of the month. Precipitation was 71 % of the norm with 41 % of this being snow. The first day of the month started frosty (-7.1°C ; -9°C in Braemar) but rain that night brought a return to very unsettled weather, with rain every day until the 10th, when a ridge of high pressure started to build, bringing to an end five weeks of 'Atlantic' weather. Frosty nights became the norm along with dense fog in low lying areas – this persisted in the Carse of Stirling all day on the 11th whereas Dunblane had clear skies. The weather remained cold with night frosts until the month's end. There were snow flurries on the 18th and a band of snowfall moving south across Scotland during the afternoon of the 19th deposited a centimetre (the north-east, east and south-east of England had up to 20 cm during this period). There was further snowfall during the mornings of the 20th and 21st while heavy snow, starting in the afternoon of the 26th, had deposited a further 12.6 cm (5 in) on the lying 7.05 cm (3 in) by the time it ceased the following morning (Aberfeldy had 40 cm (16 in)). Further occasional showers resulted in 14 cm (5.5 in) of consolidated snow lying at the month end. Temperatures plummeted to -11.7°C on the 28th (-18.4°C at Braemar) which contrasted markedly with the 12°C maximum on the Scilly Isles (30th).

Table 1. Temperature and precipitation 2009 Climatological Station Dunblane.

	Temp Mean maxima	Temp Mean minima	Number of air frosts	Total precipitation (mm)	Greatest 24 hour total (mm)	Number of days of measurable rain
January	4 (4.5/6.5)	-0.1 (0.2/0.5)	15 (14/13)	108.2 (122.5/110.7)	14.5 (35.0)	19 (20)
February	6 (5.9/6.9)	0.2 (0.2/ 0.8)	15 (13/11)	26.0 (98.3/73.2)	14.5 (38.0)	14 (17)
March	8.9 (8.5/9.1)	2.3 (1.3/1.9)	11 (11/7)	89.0 (76.5/81.4)	16.9 (30.5)	18 (16)
April	13.8 (12.3/11.8)	4.3 (3.5/3.4)	5 (4/4)	65.2 (63.1/ 47.5)	16.0 (27.8)	17 (15)
May	15.9 (16.2/15.3)	5.5 (5.8/5.8)	3 (2/ 1)	99.8 (68.1/56.9)	20.5 (27.1)	19 (17)
June	19.6 (19.2/17.7)	9.4 (8.9/8.4)	0 (0/<1)	46.8 (72.8/57.1)	17.3 (28.0)	12 (15)
July	21.5 (21.0/19.8)	10.4 (10.8/10.6)	0 (0/0)	112.9 (82.5/62.9)	20.0 (33.5)	24 (16)
August	18.9 (20.1/19.4)	10.9 (10.6/10.2)	0 (0/0)	158.9 (87.4/68.1)	26.8 (35.4)	25 (15)
September	16.6 (16.1/16.3)	8.9 (8.4/8.3)	0 (<1/<1)	71.0 (86.5/87.7)	19.0 (36.5)	12 (17)
October	12.4 (11.8/12.9)	5.8 (5.2/5.4)	1 (3/2)	91.3 (136.1/ 97.9)	14.7 (41.9)	25 (22)
November	7.3 (7.4/9.2)	2.5 (2.1/2.6)	6 (8/8)	211.2 (112.7/98.9)	25.5 (39.0)	25 (20)
December	1.6 (4.2/7.2)	-3.6 (0.0/1.1)	25 (15/11)	70.7 (99.9/101.0)	16.5 (26.8)	17 (19)
Year (2009)	12.2 (12.3/13.2)	4.7 (4.9/5.3)	71 (55)	1163.5 (1112.7/943)	26.8 (41.9)	227 (209)

The Climatological Normals Dunblane/Parkhead are shown in ()s. Figure in parenthesis in the 'Greatest 24 hour total (mm)' refer to the highest figure for that month. Temperatures are given in degrees Celsius.

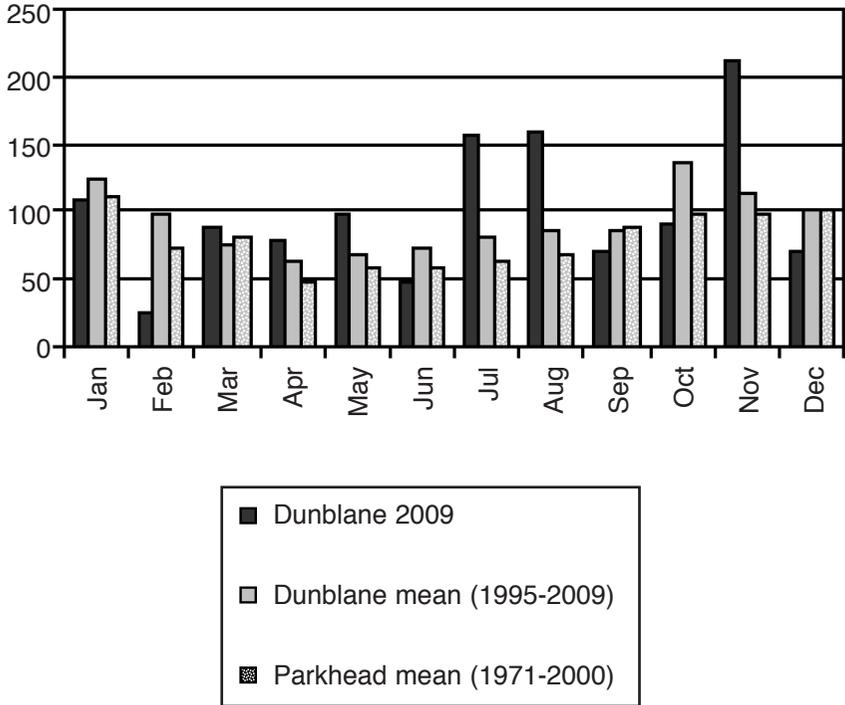


Figure 1. Rainfall 2009

THE SPARLING *OSMERUS EPERLANUS* IN THE FORTH

Peter S. Maitland

‘In the month of March these fish ascend the Forth in large shoals.’
(Parnell, 1838)

The sparling is an attractive estuarine fish which was formerly economically important in the Forth and in many other estuaries around northern Europe. The population in the Forth has had rather a chequered history, with the very large numbers reported two centuries ago by Parnell (1838) declining to apparent extinction by the 1970s and then recovering to the modest population which we appear to have there today. This paper describes the fish and its fortunes in the Forth area.

Distribution

World-wide, the sparling occurs from southern Norway around the western coast of Europe (including the Baltic Sea) to north west Spain. It is found mainly in coastal waters and estuaries and migrates into large clean rivers at spawning time. The species is tolerant of wide salinity changes and there are several non-migratory purely freshwater populations in large freshwater lakes in Finland, Sweden and Norway. In Great Britain, the sparling was once a common estuarine species and occurred in most larger rivers from the Clyde and Tay southwards. It supported small commercial fisheries in the estuaries of some of these rivers. Over the last century, the species has gone into decline and has disappeared from many rivers.

In Scotland, sparling populations have been recorded from at least 15 rivers (Almond, Annan, Bladnoch, Clyde, Cree, Dee, Esk, Fleet, Forth, Girvan, Lochar, Nith, Stinchar, Tay and Urr), but over the 20th century the species has suffered a severe decline and has disappeared from all its former sites except the Rivers Cree, Forth and Tay. These populations must now be regarded as having high conservation importance (Maitland, 2007).

Appearance

A small slender fish with large shiny scales and big eyes, the sparling has a large mouth with a projecting lower jaw and obvious teeth on both jaws. It can sometimes be confused with other fish in Scotland such as small grayling, powan and vendace – which have small mouths and no teeth – and with salmon and trout smolts which have small scales and at least a few spots of some kind. In addition to teeth on both jaws, the sparling has teeth on the tongue and on the roof of the mouth. Like other salmonoid fish, it has a fleshy adipose fin between the dorsal fin and the tail fin (Plate 13).

In colour, live fish are somewhat translucent in appearance. The top of the head and the back are a rather variable dark grey-green which shades into a silvery green stripe along each side and a silvery white colour below. In 1904, Herbert Maxwell described it well: 'The creature is of a fairy-like beauty when freshly landed, the colour on the back varying from sea-green to palest brown; the sides are faintly tinged with yellow, violet, or rose, shot with silvery gleams.

They have a very characteristic cucumber-like smell, an odour which accounts for their popularity as a food fish. Herbert Maxwell writes: 'About that fragrance there can be no doubt in the mind of anyone who has seen the fish landed. It is perceptible under a gentle breeze at a distance of nearly one hundred yards. Some have compared it to the scent of violets, others to that of cucumbers.' On account of this odour it is sometimes called the cucumber smelt. Other names used for this species are spirling, sperling, and smelt.

Size

The sparling is a small to medium sized fish whose adult size varies greatly according to habitat. The normal range in length is 10-20 cm but some fish reach 30 cm. A fish about 15 cm long weighs some 30 gm. The largest female recorded by the author in Scotland was 189 gm and 290 mm and the largest male was 176 gm and 272 mm; both were caught in the River Cree in 1994.

In 1935, Rintoul and Baxter noted that, in the River Forth, 'Up to January those taken usually measure from four to six inches [100-150 mm] in length, while from that time to the end of March the larger ones make their appearance and the young ones disappear.'

More recently, the lengths of adult sparling taken around spawning time in Scotland by the author show clear differences among fish from the three remaining populations. Forth sparling are typically from 125-175 mm, Tay sparling from 150-200 mm and Cree sparling from 175-250 mm. However, there is evidence that the length of adult sparling in the Forth is increasing since they reappeared in 1989 and occasional specimens over 200 mm are now taken there.

Sparling are relatively short-lived and, on average, live to a maximum of four or five years. In the Forth (Figure 1), usually only three or four year-classes are present at any one time (Figure 1).

Growth can be variable. In suitable estuaries the young may reach 10 cm by the end of the first year and some 15 cm by the third year, by which time they have all started to breed. The males are usually smaller than the females and average weights are about 28 and 36 gm respectively. Sparling entrained at Longannet Power Station in 1996 had a mean weight of 35.7 gm in first half of the year. After August, however, with the new generation entering the stock, the mean weight dropped to 5.5 gm.

Ecology

Sparling favour clean estuaries except at spawning time and are apparently very susceptible to pollution and perhaps other stresses created by humans. Many estuaries which formerly had large populations lost them as pollution increased. The ecology of sparling in the Rivers Cree, Forth and Tay has been studied by Hutchinson and Mills (1987), Lyle *et al.* (1996), Maitland and Lyle (1996) and Maitland (2003) and these studies are the basis of much of our present knowledge of this species in Scotland.

Most recent information concerning sparling in the Forth has been from fish entrained at power stations and from trawling by the Scottish Environment Protection Agency (SEPA).

Scot Mathieson (personal communication, 1995) recalls catching large sparling in a creek in the Kincardine salt marsh in February 1994 on a night-time high tide. The largest fish was 219 mm and its gut contained common shrimps. Although this was the only occasion that adult fish were taken, juvenile sparling were found to be entering creeks in spring and summer 1995 (on 10 % of 70 tides sampled over a 15-month period), particularly on dawn tides.

The fry of sparling are very small at first and feed on minute zooplankton, probably mainly protozoans and rotifers. As they grow they take larger planktonic crustaceans and some bottom animals and eventually they become quite voracious predators taking larger crustaceans (shrimps and mysids) and young fish such as sprat *Sprattus sprattus*, herring *Clupea harengus* and whiting *Merlangius merlangus*.

Reproduction

On reaching maturity, adults migrate up the estuaries and into the lower reaches of rivers in March and April. Frank Buckland recorded in 1873 that 'They spawn exactly at the head of the tideway among the small shingle-stones; they never go further up the river than the brackish water extends.' Usually the run in each river occupies only a few days, but during that time the spawning activity becomes furious and the sticky eggs attach themselves to everything on the river bed – gravel, stones, weed and sticks. This is certainly the case in the River Cree and was also the case in the River Forth in earlier times when the population there was large. Parnell (1838) recorded that they '... deposit their spawn in fresh water; this they shed in immense quantity about two miles below Stirling Bridge, when at that time every stone, plank and post appear to be covered with their yellowish coloured ova.' However, since its recovery in recent years the present spawning grounds in the Forth have not been located, despite searches there from 1991-94 as part of the Operation Brightwater project (Lassiere, 1993). Similarly, it has not yet proved possible to identify the spawning grounds of sparling in the River Tay. It is

suspected that, in both these rivers, the spangling spawn, unseen, over gravel beds in relatively inaccessible freshwater parts of the upper estuaries.

At spawning time, the adults are very vulnerable to all kinds of predators. A fairly sure sign that a spawning run is under way is an increase in the numbers of piscivorous birds in the area, and numerous cormorants appear in the upper Tay Estuary at this time.

Value

The spangling was formerly a highly valued food fish across all parts of its range. With the decline in stocks, however, the public have had declining access to it and it has fallen out of favour as food. Contrast this with the situation described in 1880 by Clement Gunn, a doctor in Newburgh. ‘Lastly, to complete this gastronomic paradise, there were the sparlings, which followed the salmon, and were in excellent condition just when the salmon fishing closed. These were elongated silver fish, semitransparent, and a great delicacy. They were packed into flat boxes as soon as caught, and like the salmon, hurried off by special train to the London market.’

The late Charlie Johnson was one of the last of the spangling fishermen in the Tay (Maitland, 2007). ‘At the turn of the century there used to be 40 boats here at Newburgh. My boat, the *Fait*, is one of the last pair. ... and there used to be a demand in the Netherlands. Dutch boats came over to fish for them here after the war. ...You can smell them in the water. It’s just like cucumbers. If you’re fishing the Tay, and you catch them with other fish, then the whole netful will smell of cucumber.’

Forth spangling - historical

In former times, the spangling was clearly an important food fish in the lower Forth and, seasonally, considerable numbers were caught and marketed in Edinburgh. Nimmo (1777) noted that, in the Stirling area, ‘The smelt or spangling was wont to be caught here in great numbers during the spring months ... The poet Dunbar, in his poem *Dirigie to the King, bydand our lang in Stirling* mentions spangling’:

‘Cum hame and dwell nae mair in Stirling,
Quhair fisch to sell at nane but spirrling.’

Frame and Erskine (1791-99) described the fishery further downstream. ‘... the river becomes narrower; and there are some beautiful islands, which are called *Inches*. ... Upon the point of these inches, they erect what are called *yares*, a sort of scaffold projecting into the water; ... from these scaffolds they let down, at certain times of the tides, their nets, and are often very successful at taking the smaller fish, such as herrings, *garvies* or sprats, *sparlings* or smelts, small whittings, haddocks, sea trout and eels. In this manner salmon are

sometimes caught; as well as Congo eels, sturgeon, soals, cod, gurnet, or piper, and skate. – Sometimes, about the end of September, there comes a vast shoal of fish, called *gandanooks*, or Egyptian herring.’

Sparlings continued to be of importance in the Stirling area in the 19th Century, as Beith *et al.* (1841) recorded. ‘The sparling makes its appearance for some time in the spring; and is, while it remains, a favourite article of food, especially with the lower classes.’ Further downstream too, the list of fish for the Alloa area included sparling (Brotherston, 1841).

Thus the River Forth at one time supported an enormous population which was the basis of an important fishery, both for local needs and as a luxury item for the Edinburgh market. The spawning run during the 1800s was apparently spectacular. Parnell (1838) says ‘In the month of March these fish ascend the Forth in large shoals ... The young can be taken at Alloa throughout the summer months, but the larger specimens are only met with during the season of spawning.’ Rintoul and Baxter (1935) recorded that ‘Near Alloa Sperlings are taken in great numbers in the Firth’.

A Scottish Office review of the fisheries of the Firth of Forth (Howard *et al.*, 1987), noted that, for sparling: ‘Data on the catches from this fishery are available from 1891 to 1974 This fishery yielded an average of 15 tonnes of fish each year up to the mid 1910s, from then until the mid 1940s the annual catch was around 7.5 tonnes. Following a short period of higher catches in the late 1940s the catches declined to zero by the mid 1950s, during the 1960s there was a slight recovery in the fishery but it again declined to zero in the mid 1970s. Although the catches of sparling in the area have never been high, this species, particularly in the late 19th century, was highly prized and commanded a high price.’

Sampling of fish entrained at Kincardine Power Station on the Forth was carried out by D.P. Sharman (1966) from 1961-2 and from 1964-65. Sparling were taken in both these periods of sampling. No numbers are available but it was certainly less common than several other species, notably sprat and herring.

Further sampling of entrained fish at Kincardine was carried out by the author in 1979, 1980 and 1981 after which this power station closed. No sparling were recorded in these years. This agrees with the data from the commercial fishery and it appears therefore that this species was extinct or was present only in very low numbers by the mid 1970s.

Forth sparling – present status

Sampling of fish entrained at Cockenzie Power Station was carried out in 1977, 1979 (Maitland, *et al.*, 1980) and 1996. No sparling were ever recorded there.

The species remained unrecorded from the Forth until, in 1989, a single specimen was recorded by the Forth River Purification Board (FRPB, 1989) and three further specimens were taken in 1990. From 1991 onwards, trawling in the upper Forth Estuary by the FRPB (now SEPA) regularly takes significant numbers of sparling – an average of 38 per survey over the 10-year period 1993–2002 (Lex Pearce, personal communication). Regular, though smaller numbers are taken by trawling in the lower Forth Estuary.

During seven years of the 20-year period 1979–98, multiple seasonal collections of the fish entrained at Longannet Power Station, which lies downstream of Kincardine Power Station, were carried out by the author (Table 1). Whereas in 1979, 1980 and 1981, no sparling were collected, by 1992, the population was recovering, with sparling the 4th most abundant fish entrained at Longannet (the others in order were herring, whiting and sprat). A similar situation existed in 1994 and in 1996 (Table 2). Fish entrainment at Longannet Power Station is now monitored by SEPA: in 2001 668 sparling were taken on 30 sampling occasions and in 2002 there were just 62 sparling in 25 samples.

The numbers of sparling (and several other species) entrained at Longannet Power Station can, at times, be considerable. Entrainment rates as high as 3,312 sparling per day were recorded in 1994 (Maitland, 1998). In February 1997, the estimate was 822 per day and in April, 1997, the estimate was 828 per day (Figure 2). The numbers entrained vary diurnally according to darkness and tides.

It is believed that sparling were extirpated in the Forth by overfishing, siltation, and low dissolved oxygen (Greenwood and Maitland, 2009). Improvements in water quality attributable to commissioning of secondary sewage treatment facilities (Balls *et al.*, 1996) led to the resurgence of this species in the Forth in the 1980s. A similar historical pattern has occurred in the River Thames (Maitland, 2003).

Thus the sparling is now common again in the Forth estuary and is taken regularly in monitoring at Longannet Power Station and in trawls by SEPA, as well as in commercial boom netting for sprats near Kincardine-on-Forth.

Discussion

There are still several commercial fisheries for sparling in the British Isles which rely mainly on their vulnerability during the short spawning run to catch them (sometimes in enormous numbers) in traps and nets. In some parts of Europe they are caught in the estuaries in drift nets and trawls and they are sold either fresh or smoked. The author can verify that they are delicious to eat, as is the roe when lightly fried. Sadly, most of the sparling caught in Britain today are sold as pike bait.

There are various reasons for the decline of the sparling in Scotland. In some

rivers (e.g. the Forth, Clyde and Stinchar), pollution in the lower reaches has prevented successful spawning migration and reproduction. In other rivers, high weirs and barriers (e.g. the Tongland Power Station on the River Dee) have completely cut off access to spawning grounds. In some estuaries and rivers, overfishing is believed to have been responsible for eliminating local stocks (e.g. in the Rivers Esk, Annan, Nith and Urr).

Much of the historical data on sparling in Scotland is from the Solway area, where the extinction of stocks, with the exception of the Cree, was almost certainly due to overfishing, although pollution and river barriers were also likely contributory factors. Over a century ago (1897), Herbert Maxwell wrote of his concern and since then, with the exception of the Cree stock, sparling have disappeared from the Solway. Over the last century, threats additional to overfishing have increased in all sparling rivers. Changes in land use practice in agriculture and forestry have led to the enrichment of rivers and estuaries and to altered hydrology. Pollution from domestic and industrial sources and acidification from the atmosphere has also contributed to habitat damage.

The words of Herbert Maxwell highlight what communities with access to sparling can lose when stocks disappear. 'One mild November morning I enjoyed the best dish that I can recollect ever to have eaten at breakfast. It was in an excellent little hotel in Creetown. We had been down to the tidal estuary before sunrise to watch the nets drawn for smelts (or sparlings as we call that pretty fish in Scotland), and we carried some of them up to the hotel and had them piping hot on the table before they had been half an hour out of the water. ... smelts are more perishable than any other British fish, and a few hours suffice to dissipate their peculiar aroma ... No one, therefore, can have a notion of the subtle toothsome of the smelt who has not treated it as we did ours on that far-off morning at Creetown.'

Thus the return of the sparling to the River Forth has meant that, not only has an important element of the biodiversity of the river and its estuary been restored, but also an important economic opportunity is again available for local fishermen and communities. In modern parlance this is surely a 'win-win' situation.

Acknowledgements

I am grateful to Lex Pearce (SEPA) for recent data on sparling catches in the Forth Estuary and to Neville Dix for comments on this paper.

References

- Balls, P.W., Brockie, N., Dobson, J. and Johnston, W. 1996. Dissolved oxygen and nitrification in the Upper Forth (1982-92), patterns and trends. *Estuarine, Coastal and Shelf Science* **42**, 117-134.

- Beith, A., Cupples, G. and Leitch, A. 1841. Parish of Stirling. *New Statistical Account of Scotland* **8**, 390-450.
- Brotherston, P. 1841. Parish of Alloa. *New Statistical Account of Scotland* **8**, 1-65.
- Buckland, F. 1873. *A Familiar History of British Fishes*. London: Society for Promoting Christian Knowledge.
- Frame, J. and Erskine, J.F. 1791-99. Parish of Alloa. *Statistical Account of Scotland* **8**, 592-650.
- FRPB 1989. *Annual Report*. Edinburgh: Forth River Purification Board.
- Greenwood, M.E.D. and Maitland, P.S. 2009. Long-term changes in fish-assemblage composition from cooling water intake screens in the Forth Estuary, UK. *Marine Biodiversity Records* **2**, 1-4.
- Gunn, C.B. 1880. *Leaves from the Life of a Country Doctor*. Newburgh.
- Howard, F.G., McKay, D.W. and Newton, A.W. 1987. Fisheries of the Forth, Scotland. *Proceedings of the Royal Society of Edinburgh* **93B**, 479-494.
- Hutchinson, P. and Mills, D.H. 1987. Characteristics of spawning-run smelt, *Osmerus eperlanus* (L.), from a Scottish river, with recommendations for their conservation and management. *Aquaculture and Fisheries Management* **18**, 249-258.
- Lassiere, O. 1993. *Central Region lochs and ponds: the Operation Brightwater survey of their status; past, present and future*. University of Stirling.
- Lyle, A.A., Maitland, P.S. and Sweetman, K.E. 1996. The spawning migration of the smelt *Osmerus eperlanus* in the River Cree, S.W. Scotland. *Biological Conservation* **80**, 303-311.
- Maitland, P.S. 1998. Fish entrainment at power stations on the Firth of Forth. Final Technical Report to Scottish Power.
- Maitland, P.S. 2003. The status of smelt *Osmerus eperlanus* in England. *English Nature Report* **516**, 1-82.
- Maitland, P.S. 2007. *Scotland's Freshwater Fish: Ecology, Conservation and Folklore*. Victoria: Trafford.
- Maitland, P.S., East, K. and Morris, K.H. 1980. Fish entrained in 1977 at Cockenzie Power Station, Firth of Forth. *Forth Naturalist and Historian* **5**, 35-45.
- Maitland, P.S. and Lyle, A.A. 1996. The Smelt in Scotland. *Freshwater Forum* **6**, 57-68.
- Maxwell, H. 1897. *Memories of the Months. First Series*. London: Arnold.
- Maxwell, H. 1904. *British Freshwater Fishes*. London: Hutchinson.
- Nimmo, W. 1777. *The History of Stirlingshire*. Glasgow: Morrison.
- Parnell, R. 1838. Fishes of the District of the Firth of Forth. *Wernerian Natural History Society* **7**, 161-520.
- Rintoul, L.J. and Baxter, E.V. 1935. *The Vertebrate Fauna of Forth*. Edinburgh: Oliver and Boyd.
- Sharman, D.P. 1966. Further observations on fish catch at Kincardine Power Station. Unpublished Technical Report.

Table 1. Sampling of sparling entrained at Longannet Power Station.

Year	1979	1980	1981	1992	1994	1996
Number of collections	21	23	34	18	24	24
% occurrence in collections	0	0	0	66	100	100
Total numbers collected	0	0	0	665	521	558

Table 2. Monthly sampling of sparling entrained at Longannet Power Station. Numbers represent sparling collected in 30 minutes.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1994	3	8	0	8	0	0	12	9	23	3	2	8
1996	3	8	18	0	77	3	3	2	12	53	99	2

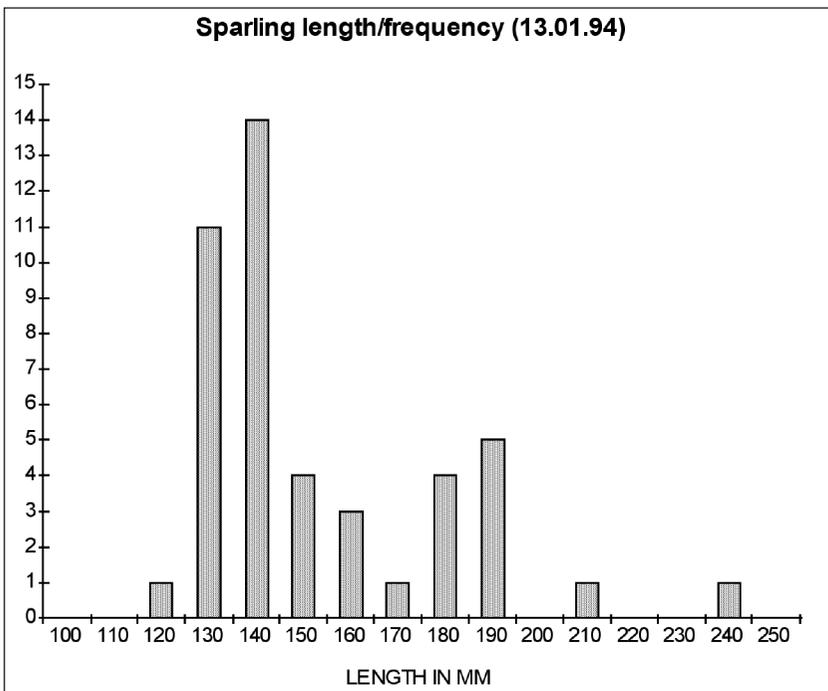


Figure 1. Length/frequency distribution in a sample of sparling entrained at Longannet Power Station on 13 January, 1994, indicating at least three year-classes.

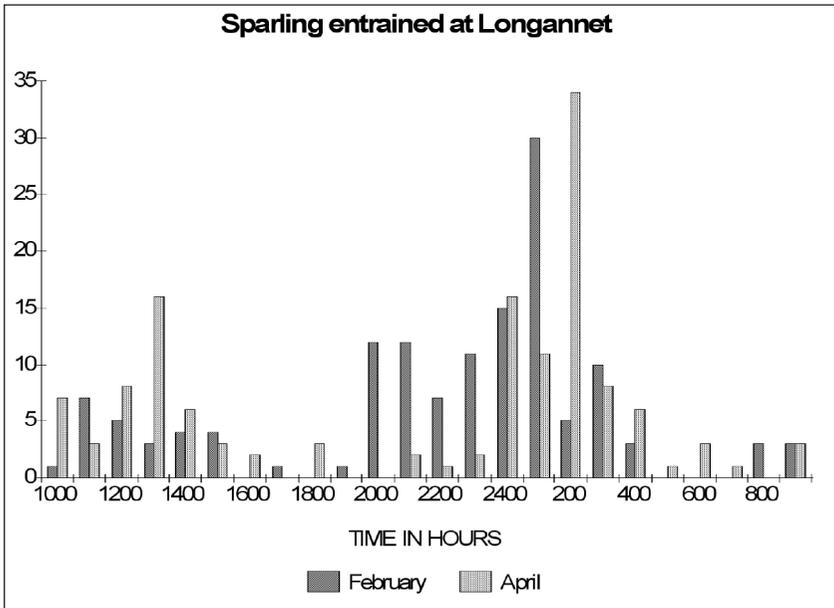


Figure 2. Numbers of sparling entrained at Longannet Power Station over two 24-hour periods - 25/26 February and 24/25 April, 1997. Sampling was carried out for 10 minutes every hour.



Plate 13 Live male sparling collected from the River Cree during the spawning run.

Photo P.S. Maitland

PLANT Records 2009-10

Roy Sexton, et al.

Plant Local Action NeTwork is an informal grouping of botanists whose objective is to assist with the monitoring and conservation of the local flora. The Group has been invited to write up some of the findings in its annual newsletter to the Forth Naturalist and Historian Journal.

Participants: Liz Albert, Bob Cook, Jennifer Davidson, Mary Gooch, Jan Harbidge, Jane Jones, Liz Lavery, Sarah Longrigg, Tom MacDonald, John Mitchell, Pam Murdoch, Eleanor Strain, Roy and Sue Sexton, John Snodin, Paul Stanley, Edna Stewart and Paul Taylor. (Contact; Roy Sexton RoyGravedigger@aol.com)

Lesser Butterfly Orchids: Both the lesser butterfly orchid (*Platanthera bifolia* L.) and greater butterfly orchid (*Platanthera chlorantha* L.) are found in the Forth Valley growing in unimproved wildflower rich grassland. Although their names imply that the two species can be distinguished by size this is not a very useful characteristic and it is the position of the anther sacs that is definitive (Plate 5). In his famous book *The Contrivances by Which Orchids are Fertilised by Insects* Charles Darwin (1862) correctly predicted that both of these beautiful orchids had evolved to be pollinated by large night flying moths. He pointed out that the 'angel like' flowers of both species were white to stand out at night and that they only produced their heavy scent during darkness. In addition the 18-28 mm long conical nectaries or spurs which protrude behind each floret suggested a long tongued pollinator, like a moth.

The pollen grains of our native orchids are not loose but are cemented into two large balls or pollinia. These become attached to a visiting insect with a sticky pad which Darwin showed had evolved from a modified stigma. The two anther lobes of *P. bifolia* are located together immediately above the entrance to the spur (Plate 4). In this case the pollinia stick onto the insect's tongue as it is inserted into the nectary. By contrast the anther lobes of *P. chlorantha* are found above the entrance to the spur but are separated by 3.5 mm (Plate 4). In this position they become glued on the insect's compound eyes as it thrusts its tongue into the nectary (Sexton, 2004).

National records showed that over the period between 1964 and 2002 *P. bifolia* suffered a 33 % decline throughout Britain. This has been attributed to the drainage of fields, ploughing of grassland and the widespread improvement of pastures by the use of fertilizers and herbicides. As a result *P. bifolia* has been selected as one of the 22 species targeted for conservation action as part of Scottish Natural Heritage's Species Action Framework. This list includes other endangered species such as red squirrels, capercaillie, yellow

tailed bumble bees, freshwater pearl mussels etc. (<http://www.snh.gov.uk/protecting-scotlands-nature/>).

Our contribution to this conservation programme has been to locate local colonies and keep a check of their condition by making annual counts of flowering spikes (Table 1). Interpreting the counts is difficult both because orchids flower inconsistently and the flower spikes are subject to selective grazing by deer. As far as can be judged the populations at Wester Balgair and Quoigs meadow seem stable but conservation work has been necessary at Ballangrew meadow and Callander Golf Course to reverse gorse invasion. Most of these colonies enjoy some statutory protection being located on Sites of Special Scientific Interest (SSSI), the exceptions being Callander Golf Course and part of the Wester Balgair site. The colony of *P. bifolia* previously recorded at Powside cornstone workings (NS 623 915) on Kippen Muir could not be found (Mitchell, 1995) but in 2010 a new site was found at Carsebreck Loch SSSI.

Table 1 Sites in the Forth Valley where the Lesser Butterfly Orchid has been located. The minimum and maximum numbers of flowering spikes during the last five years are indicated in the right hand column.

Site name	Map reference	Annual flower spike counts
Quoigs meadow SSSI	NN 831 053	63 - 128
Wester Balgair Meadow SSSI	NS 592 897	39 - 146
Callander Golf Course	NN 642 076	4 - 10
Ballangrew Meadow		
Flanders Moss NNR	NN 621 987	9 - 87
Denny Muir SSSI	NS 761 836	18 - 38
Carsebreck Loch SSSI	NN 872 098	4

The more widespread *P. chlorantha* also grows together with the *P. bifolia* on the sites at Denny Muir, Quoigs Meadow, and Callander Golf Course. Although in one or two cases the plants are only separated by about a metre we have found no evidence of hybridisation. A possible explanation is that *P. bifolia* flowers in mid June seven to ten days before *P. chlorantha* so that the flower spikes of the former are going over before the buds of latter open.

Records from Vice County 86: VC 86 (or Stirling) includes the old Victorian County of Stirling which encompasses modern Falkirk. It covers the watershed to the south of the Forth from Milngavie in the west to Grangemouth in the east. The Botanical Society of the British Isles (BSBI) recorder for the area is Edna Stewart (Contact: edna.stewart@ntlworld.com).

Junipers at Touch: On the same date 26th June 2008 the Group repeated a Stirling Field Club botanical excursion to the Touch Estate (2 km west of Cambusbarron NS 736 919) originally held in 1880. The club's account of the

trip included interesting records of ferns, a stand of old juniper trees and a number of rare flowering plants including the lesser butterfly orchid (*Platanthera bifolia*), the frog orchid (*Dactylorhiza viridis*), lesser twayblade (*Listera cordata*) and starry saxifrage (*Saxifraga stellaris*) (Anon, 1880).

Most of the ferns including beech (*Phegopteris connectilis*) and oak ferns (*Gymnocarpium dryopteris*) were still present though no sign could be found of adder's tongue fern (*Ophioglossum vulgatum*) and moonwort (*Botrychium lunularia*). Sadly none of the rare flowering plants was found though the northern marsh orchid (*Dactylorhiza purpurella*) was a welcome addition to the species lists. Like so much of our local upland grassland the area around the Touch reservoirs has suffered from heavy grazing by sheep which has disastrous effects on the flora.

The junipers (*Juniperus communis*) which were considered ancient 130 years ago were still present (Plate 5) though there were significant numbers of dead stumps. At a distance these plants look like 1-3 m high vigorous young bushes. Closer examination reveals that many are very old with the tufts of green vegetation growing from the ends of 2-3 m long horizontal trunks concealed beneath bracken litter.

The earliest record we have of junipers at Touch is 1831 (Forrest, 1831) and it seems quite possible that some of the current trees survive from this period. A number were found with trunk diameters of 35 cm and it was hoped to use knowledge of the annual growth increment to date them. Counts of the annual rings in sections of 15 dead side branches revealed that the growth rates were too variable to be particularly useful. For instance the age of branches with diameters between 10-11 cm varied from 39-108 years (Plate 5).

Juniper has been selected as a 'Priority Species' in both the UK and Stirlingshire Biodiversity Action Plans so further trips were made to survey this Touch population. The 217 juniper trees on this 150 hectare site were mapped using Global Positioning System receivers and found to be largely restricted to steep sided north facing burn sides and small cliff faces created where a layer of harder basalt outcrops on the escarpment sides. Measurements of the lengths of a sample of 130 trees showed that this was an ageing population with little regeneration. Only 32 seedlings (ie plants <30 cm) were found on the entire site and 72 % of trees were classified as old (ie >2-3 m long). Where they were present the fleshy cones (berries) on the female trees seemed to contain quite good numbers of seed. Of the seedlings 24 were within areas fenced to exclude sheep and the rest were on rock crevices which were inaccessible to them. All the seedlings were found within 7 m of a cone bearing female tree and all were on very shallow soils less than 2 m from bare ground (Basely, 2006). Both these findings are completely consistent with Ward's generalisation (Ward, 2004) that juniper seedling establishment is very intolerant of shading and very susceptible to winter sheep and deer grazing. During the study period a bracken fire killed a number of these venerable old

trees, an additional significant factor in the dynamics of local juniper populations.

Juniper is very scarce in the Central Belt south of the line of the rivers Forth and Allan although large colonies can be found further north particularly around Comrie (Forbes and Proctor, 1986). Although our surveys are far from complete we have only found a few other junipers on the Gargunnock Hills, two near the falls on the Gargunnock Burn (NS 709 927) and others at the Spout of Ballochleam (NS 652 900). So far only one plant has been discovered in the Ochils on the walls of Glen Tye (NN 8348 0198) though they are being widely planted in the Woodland Trust's new forest in Glenquoy. One would have to agree with Ward's conclusion *In the West Central Belt of Scotland juniper is rare with practically no regeneration. Its status is therefore precarious, although the decline is from a low base. Intervention is necessary to conserve and expand all juniper populations.*

Juniper berries are used as a spice in a wide variety of culinary dishes but are best known as the primary flavoring in gin. The wood's highly aromatic smoke is used to preserve fish, game and ham and could have been kept on the Touch estate for these purposes. According to Mabey (1996) *The oil distilled from juniper has an ancient reputation as an abortifacient (which may have echoes in the Victorian belief in gin for the same purpose). In Lothian in the medieval period, giving birth 'under the savin tree' (savin is an alterernative name for juniper) was a euphemism for a juniper provoked abortion.* In some versions of the famous ballad the *Four Maries*, Mary Hamilton, who according to the legend had conceived the king's child, unsuccessfully attempts an abortion:

*She's gane to the garden gay
To pu of the savin tree;
But for a' that she could say or do,
The babie it would not die.*

Records from Vice County 87: VC 87 (or West Perth) includes the western end of the combined Victorian Counties of Perthshire and Clackmannan as well as half the modern county of Stirlingshire. It covers the watershed to the north of the Forth from Loch Lomond in the west to Culross in the east. The BSBI recorders for the area are Liz Lavery (contact: lavery@carbo.freeseerve.co.uk) Jane Jones and Paul Stanley.

The Early Marsh Orchid: An attempt was made by the group to re-locate colonies of the early marsh orchid (*Dactylorhiza incarnata*) from past records (Table 2). This beautiful orchid (Plate 6) in its common form is easily identified by its characteristically flesh coloured flowers (hence its specific name). In addition it can be distinguished from the other local spotted orchids because the main petal or labellum of the flower is folded back from the midline and the two lateral sepals are held vertically as if it is holding its arms up in surrender (Plate 6). The tips of the upper leaves are keeled and hooded at the tip like the prow of a boat. Colouration can vary from pale pink to magenta and

purple and some taxonomists ascribe four different subspecies rankings to them. John Mitchell made us aware of two sites at the Glen Tye lime workings on Sheriffmuir and the old Brig o' Turk curling pond. The size of the colony in the former has varied alarmingly from 59 to eight over the last few years. The Brig o' Turk population was made up of almost equal numbers of purple and flesh coloured types and they were found with the lovely tall bottle sedge (*Carex magellanica*). Roy Sexton found a site in a flush just upstream of Glenlichorn Farm in Glen Knaik along with the fragrant orchid (*Gymnadenia borealis*) and globe flower (*Trollius europeus*). Mike Bell pointed out another colony in a wonderful wild flower rich mire at the northern end of Carsebreck Loch SSSI. During 2010 a single plant was found at Denny Muir SSSI as well as others during the Perth Society of Natural Sciences (PSNS) visit to the SSSI at the north end of Loch Lubnaig. Our records show the main flowering period is the second and third weeks in June which as the common name suggests is earlier than most other marsh orchids but a month later than the early purple orchid (*Orchis mascula*).

Table 2 Sites of the early marsh orchid (*Dactylorhiza incarnata*) together with flower colours and minimum and maximum flowering spike counts over the last five years.

Site	Map ref	Flower colours	Numbers
Quoigs meadow SSSI	NN 831 053	Flesh and magenta	10 - 16
Glen Tye lime workings	NN 831 020	Flesh	8 - 59
Glen Knaik flushes	NN 797 131	Flesh and magenta	44 - 59
Brig o' Turk curling pond	NN 540 067	Flesh and purple	49
Denny Muir SSSI	NS 763 835	Flesh	1
Loch Lubnaig Marshes SSSI	NN 558 158	Flesh	9
Westerton Fen, Carsebreck Loch	NN 872 098	Flesh and purple	46

Other Finds: As part of a follow up to the site condition monitoring of the Leny Flushes SSSI Pam Murdoch discovered 17 spikes of the rare Coralroot orchid (*Corallorhiza trifida*) under birch in tussocks of purple moor grass (*Molinia caerulea*). This has to be the find of the year since it has never been recorded in our area before. Like the birds nest orchid (*Neottia nidus-avis*) (discussed in the last issue of the journal) the plant has no green leaves and merely consists of a yellow green flower spike with up to 13 tiny similarly coloured flowers (Plate 7). The plant is only capable of minimal photosynthesis and grows by digesting the hyphae of a toadstool which invades its tubers. This has been identified as a *Russula* species which in turn obtains some of its nutrients from trees by forming hyphal connections with their roots. In this way nutrients are transferred from the tree to the orchid via the toadstool.

A PSNS field trip in July 2009 to Inverlochlarig (NN 437 181) and Beinn Tulaichean (NN 418 195) made several interesting finds. Les Tucker found one bush of the very rare downy willow (*Salix lapponum*) near one of the high

waterfalls at 550 m. Liz Lavery stumbled upon what was initially thought to be *Calamagrostis purpurea* (Scandinavian Small Reed) in alder carr beside the car park at Inverlochlarig. Although found elsewhere in Perthshire this very rare grass is found in fewer than ten sites in Scotland. However on a subsequent visit in 2010 a member of the Group more familiar with the English flora correctly recognised it as *Calamagrostis canescens* (purple small reed) a species new to Perthshire and never found north of the Forth.

The delightful yellow musk (*Mimulus moschatus*) was also discovered in a field of horses (NN 439 184) its only other recorded site in VC 87 on the track leading to Quoigs Meadow SSSI (NN 418 195). It is a diminutive cousin of the much more widespread and gaudy monkey flower (*Mimulus guttatus*). As its name implies this native of Western America was cultivated for its scent but all the naturalised plants are mysteriously scentless. Sarah Longrigg returned to the area a month later in a successful attempt to find the minute (1-5 cm) bog orchid (*Hammarbya paludosa*) which had been previously reported on a sphagnum bog (NN 433 184). The group had previously been shown a colony of this orchid on Conic Hill (NN 424 917) by John Mitchell.

Yellow Craig (NS 8190 9716) and Witches Craigs (NS 8219 9705) above Logie Kirk were favourite venues for botanising excursions in Victorian times and there exists records of the plants found on them (e.g. Couper, 1901). We are so used to finding our local flora seriously diminished that it was refreshing to find most of the plants recorded are still present. Presumably this is because neither man nor beast find it easy to climb these screes and rock faces. Viper's bugloss (*Echium vulgare*), Mullein (*Verbascum thaspus*), Storksbill (*Erodium cicutarium*), Rock Rose (*Helianthemum nummularium*), Weld (*Reseda luteola*), Cudweed (*Filago vulgaris*) were all there. Hare's foot clover (*Trifolium arvense*) was not found but was present together with all these species on similar rocky slopes in front of Tillicoultry quarry (NS 9114 9760).

The beautiful pink inflorescences of the sticky catchfly (*Lychnis viscaria*) light up the rock face of Yellow Craig in mid-May where it tenaciously clings on to narrow ledges and crevices. It is listed in the plants found in Logie Parish by the Minister in 1834 (Robertson, 1834) and 55 clumps were still present in 2009. This represents a small increase since 1976 (Blake, Wallis and Proctor, 1976). In a UK context sticky catchfly is a rare species being limited to 28 distinct populations in Scotland and two sites in Wales. Of these the Ochils represents the most important 'metapopulation' or cluster of interbreeding populations. During the summers of 2004-5 Tom MacDonald a keen rock climber surveyed the previously recorded Ochil sites and in the course of this exercise found several new locations. He has kindly allowed us to reproduce this important information.

Table 3 shows the main locations and flower clump numbers including approximations in the most inaccessible sites. The data indicated that the plants were more widespread in the south Ochils than previously thought. All plants

were located on rock outcrops and few now exist on sites accessible to grazing animals. Many colonies particularly on the lower slopes are potentially threatened by scrub growth with the associated risk of fire and shading. No plants were found on Abbey Craig (NS 810 954) the decline of this once flourishing population has been discussed previously (Stewart, 1989). Two plants were found in Menstrie Glen (NS 8491 9723) and none in Alva and Blairlogie Glens (NS 826 972).

Jane Jones led a group to a small bog at Balanton in Aberfoyle (NN 530 008) with both tall bog sedge (*Carex magellanica*) and bog sedge (*Carex limosa*), so hybrids between the two are a real possibility. Sarah Longrigg identified lesser bladderwort (*Utricularia minor*) in the same bog. Paul Stanley made several new and updated many rare records in Clackmannanshire. New for VC87 were warty cabbage (*Bunias orientalis*), smooth tare (*Vicia tetrasperma*), the very tiny slender trefoil (*Trifolium micranthum*), black nightshade (*Solanum nigrum*), caraway (*Carum carvi*), loose silky bent (*Apera spica-venti*) and black grass (*Alopecurus myosuroides*) this last not recorded since 1970. Other finds were corn cockle (*Agrostemma githago*), found as a seed contaminant, night flowering catchfly (*Silene noctiflora*), the first record since 1860, *Cardamine pentaphyllos*, a garden escape found naturalised in woodland and many plants of northern yellow cress (*Rorippa islandica*) at Sauchie allotments. Greater celandine (*Chelidonium majus*) which is in the poppy family and no relation to lesser celandine was found near Menstrie. Other finds were wild onion (*Allium vineale*), few flowered leek (*Allium paradoxum*), hairy garlic (*Allium subhirsutum*), a hybrid downy rose (*Rosa sherardeii x mollis*), lesser chickweed (*Stellaria pallida*) and *Scrophularia umbrosa* at Blair Castle.

Table 3 Main sites of sticky catchfly *Lychnis viscaria* in the South Ochils, located and surveyed by Tom MacDonald 2004-5.

Site	Map ref	Flowering Clumps	Threat
Blairlogie Car Park Craig	NS 8313 9699	Hundreds	Medium
Blairlogie Castle Craig	NS 8258 9715	10	High
Blairlogie East Rocks Craig Leith	NS 8382 9720	25	Low
Balquharn Craig	NS 8759 9775	19	Low
Craig Leith Carnaughton Glen	NS 8781 9779	8	High
Craig Leith Lower Escarpment	NS 8766 9790	259	Medium
Craig Leith Upper Escarpment	NS 8753 9793	85	Low
Dumyat Castle Law Craigs	NS 8335 9733	32	None
Dumyat Ewe Lairs	NS 8300 9730	Approx 100	None
Dumyat Gully	NS 8335 9742	Approx 100	Medium
Dumyat Out-crops	NS 838 974	30	Low
The Kips	NS 8391 9733	642	Low
Yellow Craig	NS 8194 9720	Approx 100	Medium
Yellow Wood	NS 8183 9737	5	High

References

- Anon. 1880. Visit to Touch. *Transactions of the Stirling Field Club* **4**, 88-90.
- Basley, K. 2006. The long term viability of local (*Juniperus communis*) populations in Eastern Stirlingshire. BSc Dissertation, Department of Biological and Environmental Science, Stirling University.
- Blake, E.A. Wallis, P.R. and Proctor, J. 1976. The Red German Catchfly on the Western Ochil Hills. *Forth Naturalist and Historian* **1**, 117-121.
- Couper, J. 1901. Remarks on the Flora of Menstrie and Neighbourhood. *Transactions of the Stirling Natural History and Archeological Society* Vol **23**, 80-90.
- Darwin, C. 1862. *The Various Contrivances by which Orchids are Fertilised by Insects*. London: John Murray.
- Forbes, A.R.D. and Proctor, J. 1986. The Glen Artney Juniper Wood. *Transactions of the Botanical Society of Edinburgh* **45**, 63-72.
- Forest, W.H. 1831. Report, chemical and medical of Airthrey Mineral Springs: and a list of phaenogamous plants collected in the vicinity. Stirling 1831.
- Mabey, R. 1996. *Flora Botanica*. London: Sinclair Stevenson.
- Mitchell, J. 1995. Old cornstone workings in Dunbartonshire and West Stirlingshire with notes on their associated flora. *Glasgow Naturalist* **22**, 485-491.
- Robertson, W. 1834. Logie Parish, County of Stirling. *Second Statistical Account* **8**, 224-230.
- Sexton, R. and McQueen, A.E.D. 2004. Greater Butterfly-Orchids *Plantathera chlorantha* (Custer) Reichenbach. *The Forth Naturalist and Historian* **27**, 77-87.
- Stewart, N.F. 1989. The Sticky Catchfly on Abbey Craig. *Forth Naturalist and Historian* **11**, 83-4.
- Ward, L. 2004. *Juniperus communis: species dossier for Plantlife*. Available at www.plantlife.org.uk.



Plate 4 The lesser butterfly orchid (right) is generally smaller than the greater though without both together they are difficult to distinguish using size alone. The most obvious distinguishing characteristic is the position of the pollen sacs. In the flowers of the lesser butterfly orchid they are found adjacent and parallel to each other in the centre of the flower above the entrance to the spur (top left). In the greater butterfly orchid they diverge and are separated by 3 mm (bottom left).



Plate 5 One of the venerable old juniper trees (top) on the Touch Estate near Cambusbarron. The lower picture shows part of a cross section of an old branch showing the annual rings besides a 18 mm 5P coin for reference. The coin width represents almost 30 years growth so a trunk of 180 mm radius could potentially be 10 times this figure.



Plate 6 Early Marsh Orchid
Dactylorhiza incarnata with flesh
(upper) and purple (lower) colour
forms.



Plate 7 Coral root orchid *Corallorhiza trifida*. A diminutive plant consisting of a flower spike with a few scale leaves tightly adpressed to the stem. Found in the woodland above the Falls of Leny and previously unrecorded in the Forth Valley.

**CONFIRMED BREEDING OF THE COMMA BUTTERFLY
POLYGONIA C-ALBUM IN CENTRAL SCOTLAND**

Heather Young

The comma butterfly (*Polygonia c-album*) had become extinct in Scotland but its return to the Forth Valley had been anticipated from distribution data showing a northerly movement starting from the Midlands in the 1970s and reaching the Scottish border by 1995. The first local sighting was made on 21st August 2006 near the *Gathering Stone* on Sheriffmuir (Young, Sexton and Sexton, 2007). Over the subsequent three years there have been an increasing number of local records including some at the original site (Plate 12). It was not possible to tell whether these individuals had migrated from England where the species is quite common or if the butterfly had been breeding in the neighbourhood.

Several sightings of adult comma butterflies were made in the Bridge of Allan area this spring, which suggested they had successfully hibernated over the very harsh winter. On the 13th July 2010 a caterpillar was found by the author on elm (*Ulmus sp.*) beside the River Allan, between Bridge of Allan and Dunblane. The comma's larvae are quite distinctive with a white spiny saddle which is said to provide camouflage by mimicking a bird dropping (Plate 12). This is the first evidence of confirmed breeding of this butterfly in the Forth Valley; two previous larval records for Scotland were from Sprouston, near Kelso, on elm (*Ulmus sp.*) in 2006, and Duns in early July 2010, on common nettle (*Urtica dioica*).

Reference

Young, H., Sexton, S. and Sexton, R. 2007 New Record of the Comma Butterfly in Central Scotland. Forth Naturalist and Historian 30, 85-87.



Plate 12 Above: A comma 'nectaring' on devil's bit scabious near the *Gathering Stone* Sheriffmuir. Below: A comma larva found on an elm near the River Allan. The bird dropping-like saddle of white provides camouflage.

FORTH AREA BIRD REPORT 2009

A.E. Thiel and C.J. Pendlebury

This is the 35th bird report for the Forth Area (or Upper Forth). The area covered by the report comprises the council areas of Falkirk, Clackmannan and Stirling but excludes Loch Lomondside and other parts of the Clyde drainage basin as well as the Endrick Water, i.e. Fintry and Balfron, all of which are currently covered by the Clyde bird report.

The report was written by Chris Pendlebury (non-passerines, excluding waders) and Andre Thiel (waders, passerines and escapees) with Cliff Henty contributing the half-monthly summaries to the wader accounts. Chris Pendlebury, as SOC recorder, can be contacted by e-mail at chris@upperforthbirds.co.uk, by leaving a message on 07798 711134 or by mail to 3 Sinclair Street, Dunblane FK15 0AH.

The main part of the report consists of detailed species accounts presented in a systematic list arranged in the latest order, as adopted by the BOU, and using the now internationally agreed nomenclature for English names of Gill and Wright (2006), as adopted by the BOU and recommended by the SOC. This is preceded by a summary of the main bird news from 2009 and a Ringing Report, both compiled by Andre Thiel.

ROUND-UP OF THE YEAR

January

The year started with a very cold spell followed by alternating mild and cold periods. Temperature and rainfall in Scotland were about average. Five Bohemian Waxwings in Killin and one in Dunblane on 1st were a good start to the new year. The same day saw an overwintering Blackcap at Grant Drive, Stirling, the only one seen during January. Even better was an adult Iceland Gull at Kinneil on 2nd. A Eurasian Rock Pipit at Cambus Pools on 5th was the only one seen during the year. Eight Oystercatchers at Craigforth near Stirling on 10th had either overwintered there or were returning very early; either is unusual at an inland location. Eighty-two Northern Pintails at Skinflats on 12th would have brightened up the day. Thirty-six Common Snipe at St. Helen's Loch, Bonnybridge, on 14th was a good count, as were 37 the following day on the Stirling-Upper Taylorton stretch of the River Forth. 4,560 Red Knots at Skinflats were counted during the WeBS count there on 23rd. The Ochils above Tillicoultry were the place to be on 24th when twelve Northern Ravens graced King's Seat Hill and 30 Snow Buntings were nearby on The Law. Two Bramblings were at Glenhead, Dunblane on 27th. The month ended with a Jack Snipe at the former tip at Kinneil on 31st. Meanwhile the drake Green-winged Teal from 2008 stayed at Kinneil throughout January, as did the adult Ring-billed Gull also from 2008.

February

The first half of February was cold with frequent snow and severe frosts, while the second half was much milder with rain at times, though rainfall was generally below average. Sixteen Stock Doves at Skinflats on 6th was a good-sized flock. A Common Redpoll in a Dunblane garden on 8th and 9th was only the 2nd one recorded in the Forth Area. The Ring-billed Gull was last seen at Kinneil on 10th. Forty-five Snow Buntings at Auchentyre, Crianlarich on 11th was the highest count of the year. The 13th was clearly the day to be at Kinneil where three Ruddy Turnstones, a Short-eared Owl and some ten Twite were logged. The same day a Robin laying claim to a territory in a large shop in Alloa would have raised a few eyebrows. A Black-legged Kittiwake at Lanrick, Doune, on 15th was unusual for this seabound species. Unusual behaviour was also displayed by two male Reed Buntings taking bread in Grangemouth on 18th. A Barn Owl ringed in Achray Forest in June 2007 was found dead in Shrewsbury (Shropshire) on 21st, having covered 398 km; such long-distance movements are unusual for these owls. Finally a Black Scoter was seen at Kinneil on 22nd.

March

March was initially changeable, then settled and dry before becoming rather cold again. There was above normal sunshine duration and below normal rainfall in eastern Scotland. A Common Tern at Skinflats and six Sand Martins at Blairdrummond on 6th and a Barn Swallow in Dunblane on 8th were very early arrivals, while the last Redwings of the winter, also in Dunblane, on 10th were rather early departing. Following the February sighting, there was another sighting of a Black-legged Kittiwake at Lanrick, Doune on 15th. Three hundred White (Pied) Wagtails roosted at Stirling railway station on 16th. Sightings of Eurasian Nuthatch in Airthrey, Bridge of Alan on 20th, 21st and 29th were to herald something bigger. The first Common Chiffchaffs at Cambus Pools and Skinflats on 21st were a definite sign that spring had arrived. A Snow Goose was at Blackgrange on 23rd. This species is commonly kept in captivity and the origin of such birds is always uncertain. The last Fieldfares of the year, a flock of 30, were at Loch Rusky on 25th, while the month ended with a Spotted Redshank at Kinneil on 31st.

April

April started dry and fine but turned changeable but with little rain. April was the third warmest since 1914. At least six Water Rails were at Kinneil on 2nd. Competing for attention with the imminent return of summer migrants were twenty late Bohemian Waxwings flycatching over Airthrey Loch, Bridge of Allan, on 3rd. Equally unseasonable was a Jack Snipe at Cambushinnie Hill on 5th. A Willow Warbler at Lake of Menteith on 10th was within the normal arrival time for this species. A Little Ringed Plover in the Falkirk area on 12th and 13th was the 14th record of this species for the recording area. A Lesser Scaup - the 4th for the recording area - at Quarry Loch, Blairdrummond, between 15th and 18th was thought to be the returning bird from 2008. The first two Common Sandpipers of the year were on the Carse of Lecropt on 16th. Common Redstart

at the head of Loch Tay, Common Grasshopper Warbler in North Tullibody and Wood Warbler at Brig o' Turk all on 17th and Garden Warbler in Dunblane on 19th were all slightly earlier than in preceding years. A colour-ringed Black-tailed Godwit seen at Kinneil on 18th had been ringed at Olafsfjordur in northern Iceland in July 2008 and had been seen at Kinneil in September 2008 and Blackness during December 2008 and January 2009. The first Whimbrel on spring passage was seen at Tullibody Inch on 20th. The northwards spread of Eurasian Nuthatch was reflected in yet more sightings of what until recently was a very rare bird in the recording area and on 22nd evidence of the first confirmed breeding of the species was found in Mine Wood in Bridge of Allan. Two Pied Avocets at Kinneil between 22nd and 29th were the 6th record for the recording area and the 5th in 8 years. Another Black-tailed Godwit at Cambus Village pool on 24th was easily trumped by over 400 birds at Kinneil on 25th with some 120 birds of the Icelandic race there the following day. Meanwhile the first of very few Common Cuckoos was logged at Kinneil on 24th, as was the first returning Common Whitethroat at Skinflats the same day and more or less at the usual time. A pair of Garganey at Kinneil on 25th was a good sighting. Following hot on the heels of the first recorded breeding record of Eurasian Nuthatch came a second one at the head of Loch Tay on 28th. These are a further step in the colonization of the Forth Area.

May

A generally changeable month with more settled conditions leading up to mid-month and dry, warm and sunny weather at the end. Although May was overall rather sunny and temperatures above normal, rainfall was also above average. The first Common Swift on 1st was slightly later than in preceding years. A Eurasian Siskin ringed in Thetford (Norfolk) in March was found dead in Balfron on 3rd, 521 km away, while another Siskin ringed in Brandon (Suffolk) also in March hit a window in Callander on 7th, having flown a very similar distance of 519 km north-west. Meanwhile there was evidence that Twite bred at Balquhiddier Glen on 6th. Twelve Whimbrel at Malling, Lake of Menteith, on 7th was a good inland count. A Marsh Harrier graced the Blackdevon Wetlands on 8th and Alloa Inch on 9th. Further down the Forth a Sanderling was a Skinflats on 8th, while two Arctic Terns at Skinflats the same day were the only ones recorded during the year. A Glaucous Gull at Airth on 9th was an excellent sighting, this being the 17th record of this species in the recording area. Five White Wagtails of the *alba* sub-species were logged at Skinflats on 9th. A Spotted Flycatcher in Dunblane on 16th was within the species' normal arrival window. A Garganey graced the Blackdevon Wetlands in Alloa on 21st. A Ruff there the same day was rather late on spring passage. An adult Eurasian Spoonbill turned up at Kinneil on 23rd and stayed into June. The month ended with two male and a female Ring Ouzel mobbing a Kestrel in Glen Kendrum on 31st, potentially evidence that breeding took place.

June

June was generally dry and warm with cooler temperatures and unsettled

conditions at the start. Overall it was drier and sunnier than normal. Generally a quiet month, it did have a few surprises in store. A Common Quail singing at Doune Lodge, Braes of Doune, on 1st preceded the arrival of more birds in July. After the 2008 bird at Tyndrum, another – the same ? – Common Rosefinch appeared there on 2nd but was found dead the next day after colliding with a window. This is the sixth record for this species, which seems to be increasing in the recording area. A female Red-backed Shrike at Kinneil on 16th was the sixth record of that species. The Eurasian Spoonbill from May stayed to 5th but reappeared and was joined by a second bird from 19th to 30th. A Ruff at Skinflats on 6th was either a late spring migrant or heralded what would be a very poor autumn passage for this species. A female Tufted Duck with a young bird at St Helen's Loch, Bonnybridge, on 30th was a good record, as this species is an uncommon breeder in the Forth Area.

July

July was unsettled and wet with twice the average rainfall. It was the 5th wettest July in eastern Scotland since 1914. A female Northern Pintail and 24 Black-tailed Godwits graced the Blackdevon Wetlands on 2nd. Two Common Quail were singing north of Thornhill between 2nd and 24th. A Dunlin at Kinneil and Whimbrels at Skinflats and Kinneil on 4th heralded the imminent autumn wader arrival. The two Eurasian Spoonbills from Kinneil at the end of June were seen at Tullibody on 3rd. A Little Gull at Skinflats on 4th to 5th and one at Kinneil on 15th were the only sightings of that species this year. Following the June brood, there were two more Tufted Duck broods, this time at Drumbowie Reservoir, on 14th. Kinneil hosted a flock of eight Common Sandpipers on passage on 22nd. A moulting male Ferruginous Duck – the 2nd for the recording area – was briefly present at Skinflats on 25th before moving to Loch Gelly in Fife where it stayed into September. Also on 25th the only Black Tern of the year was spotted flying past Kinneil. Another brood, this time of Ruddy Duck, was found at Kinneil on 26th. With the nationwide cull of Ruddy Ducks having massively reduced its British population, it is becoming increasingly uncommon to see this species.

August

August was unsettled and wet with showers or longer outbreaks of rain. On the birding front, however, August was pretty quiet. There was only a trickle of passage waders along the coast, involving six Greenshanks at Kinneil on 5th, two Common Sandpipers there on 6th, six Red Knots at Skinflats on 7th, a single Whimbrel at Kinneil on 14th and 23rd, single Ruff at Blackdevon on 16th and at Kinneil on 20th and 22nd. The only notable counts were 357 Black-tailed Godwits at Kinneil and eight Common Greenshanks at Skinflats on 20th, a Sanderling there on 21st and up to 120 Godwits of the *islandica* race at Kinneil on 25th.

September

September was marked by heavy rain during the first week, followed by a more settled spell, but turned changeable again in the last third of the month. Overall Scotland was generally warmer than average. Two Common House

Martins were still being fed in the nest in Carronshore on 1st, while birds were passing through elsewhere on their return leg to Africa. Three Golden Eagles and two White-tailed Eagles from the Fife re-introduction scheme at Uamh Mhor, Braes of Doune, on 2nd must have been a very rewarding experience. The returning adult Ring-billed Gull from 2007 re-appeared at Kinneil on 5th and stayed into late October. Two Little Stints popped into Kinneil on 6th and again on 27th. A Hobby in Aberfoyle on 9th was only the 2nd record of this species for the recording area. Three Parasitic Jaegers passed Kinneil on 13th. A Lesser Black-backed Gull that had been ringed at Flanders Moss in June 1981 was found dead at Nantwich in Cheshire on 14th, 362 km away. The last Spotted Flycatcher of the year at King's Park, Stirling, on 15th was somewhat later than in preceding years. A Little Egret – the 8th record and almost expected annually these days – was at Blackness between 17th and 19th before being seen flying upstream past Powfoulis on 20th. Seventeen Little Grebes at Drumbowie Reservoir, Denny, on 18th was a good count. A first-winter Mediterranean Gull at Blackness on 19th was the 18th record for the Forth Area of this increasingly common species. Eight pale-bellied Brant Geese at Blackness on 20th left no doubt that autumn had arrived. There were several Curlew Sandpipers in September with a maximum of four at Kinneil on 27th. A Great Skua flying past Kinneil on 30th was the only record of this species in 2009.

October

October was mainly unsettled but mild with above average temperatures. The last Curlew Sandpiper of the year was seen at Kinneil on 2nd. A moulting Green-winged Teal there from 6th October into early November was thought to be the returning bird first seen in December 2006. A Black Scoter was present at Kinneil on 10th and another one at Blackness on 20th. A Redwing at Crianlarich on 10th was the first of the year. Ten Rock Ptarmigan at Ben More on 11th was an exceptional count. There were more arriving thrushes with three Fieldfares at Cocksburn Reservoir, Bridge of Allan, on 14th. Between five and six hundred Black-legged Kittiwakes flying past Kinneil on 16th was a good count. The only Purple Sandpiper of the year was at Kinneil on 31st, rather unexpectedly seen feeding on open mud. Meanwhile 1,329 Common Redshanks counted during the October WeBS count on the estuary off Skinflats represented the highest count of the year.

November

November was unsettled with showers or longer periods of rain and strong winds at times. Despite above average temperatures, it was the wettest November in Scotland since 1914. A female Goshawk at Drumloist, Braes of Doune, on 5th was a good sighting. Eight hundred European Greenfinches at Dykedale, Dunblane, on 8th was an excellent count of this species that has suffered a decline linked to trichomonosis, an infectious disease first recorded in garden finches in the UK in 2005. A Common Starling ringed in Ballyholm, Northern Ireland, in August 2006 was seen in Fallin – a distance of 195 km – on 8th, having already been seen there in December 2007 and December 2008. Probably the best bird of the year, a Glossy Ibis, was seen briefly in flight at

Airthon on 9th. It was searched for subsequently but could unfortunately not be relocated. Following the influx of this species to Britain in 2008, this represents the first record of this species for the recording area. Fifty Eurasian Collared Doves at Blairdrummond on 11th was a good-sized flock. Two Sanderlings at Kinneil on 13th and a Ruff on the River Carron at Skinflats on 15th brought a generally poor wader year to an end. There were four Eurasian Woodcocks at Dumyat on 22nd, while a White-tailed Eagle flew over Drip Moss, Stirling, on 26th. The month ended with an overwintering Common Chiffchaff at Cambus Pools on 30th.

December

The first days of December were mild but it turned colder thereafter with significant snowfall from mid-month that lay into 2010. It was the coldest December since 1995 and the equal fourth coldest since 1914. Another overwintering Common Chiffchaff popped in to Airthrey Loch, Bridge of Allan, on 1st. Seventy White (Pied) Wagtails roosted at Stirling railway station on 2nd. Earlsburn Reservoir hosted a Short-eared Owl on 5th and a Long-eared Owl, only the second of the year, on 7th. Green Sandpipers continued the fairly recent trend of overwintering locally with birds seen at Skinflats on 9th and on the Carse of Lecropt on 12th. A White-tailed Eagle flew over Dunblane on 17th. The same day a Great Northern Diver appeared at Loch Achray where it stayed till 28th. Good counts of Common Snipe on the Stirling-Upper Taylorton stretch of the River Forth culminated in 48 birds on 19th. Twenty Bramblings in Bridge of Allan the next day would have been a nice sight. The year ended with something for larid enthusiasts. An adult Mediterranean Gull at Kinneil on 22nd was the second record of the species for 2009 and the nineteenth for the recording area. An adult Iceland Gull at Kinneil on 25th was a Christmas bonus but a revisit the next day did even better, turning up a Glaucous Gull, after the May bird the eighteenth record for the recording area.

RECORD SUBMISSION AND REPORT FORMAT

Annual Bird Reports depend largely on contributions from the local birdwatching community. Due to the ever growing (and welcome) volume of data that are submitted, some data that may be of relevance in one year may not be so in another year. Whether a particular record is included is determined to a large degree by the space allocated to the bird report in any one year. This should, however, not discourage contributors from submitting data that they feel are of relevance to their local area, as it will only become obvious whether a particular record should be included or not once the entire dataset is available. Several observers send in a list largely or entirely for their home locality. Much of this information is not suitable for inclusion in these annual reports but is valuable to have on record (e.g. for conservation action). These data are kept in a special file. There are fifteen such lists from across the whole district, ranging from Falkirk to Killin. Several contributors send in data, often of common species, from repeated transect visits to the same locality, e.g. Airthrey, Bridge of Allan; King's Park, Stirling, etc. This has become more common since the advent of the BTO's Birdtrack on-line project. Such data

reflect birds per walked route rather than flock sizes. These data are especially useful, if collected repeatedly and using the same effort between visits and years, in which case they allow valid comparisons between seasons and years to be made. Contributors are therefore encouraged to provide a measure of effort, e.g. duration of visit, length of transect.

Assessment of autumn wader passage is done by adding up the maximum number of birds recorded in each successive half month for all distinct sites. The aim is to eliminate as far as possible the distorting effect of using total bird-days where observer coverage and effort can vary significantly between sites and months. The figures are thus an estimate of the minimum number of birds in each half month. The procedure is likely to underestimate the true total during periods of high turn-over and to overestimate it when birds stay on and are double-counted in successive half months. There is no practical way of quantifying these effects, although the data for well covered sites occasionally show clear examples of both.

To facilitate the preparation of the report, contributors are strongly encouraged to submit their data as soon as possible after the end of the year. Electronic files are much the preferred format, as it greatly speeds up cross-checking and summarizing of data. A standard spreadsheet is available from Chris Pendlebury. The vast majority of contributors now submit their data in this format, which is most appreciated.

Following past appeals for more complete information, most records now include the name of the nearest village and an increasing number of records are also submitted with 6-figure grid references. This is very much appreciated, as it enormously speeds up cross-checks and is a valuable resource for conservation action.

The sometimes sparse information available for some common breeding species is augmented by data from the Breeding Bird Survey (BBS). For less common species data can sometimes be summarized in terms of the numbers of pairs or apparently occupied territories for particular locations. The organizers for both the estuary and the inland waters parts of the national wetland bird survey (WeBS) have also made available the results from these for this report. Where appropriate, these data are included in the species accounts.

For some species the records sent in are unrepresentative of their general distribution. This applies particularly to common species or to those that are secretive or breed in inaccessible locations. The status of species is detailed in a check list, published in the *Forth Naturalist and Historian*, Vol 15. In this report a coded summary of general distribution is included after the species name. This sometimes apparently contradicts the records that follow the species account. This is merely a reflection of the number of records submitted for any particular year. The codes used in this report are:

- B Breeding status: widespread (present in more than five 10 km squares)
 b Breeding status: local, scarce (present in fewer than five 10 km squares)
 W Winter status: widespread or often in groups of more than ten
 w Winter status: local, scarce (usually fewer than ten in a group)
 P or p Passage (used for species usually absent in winter; P and p used for widespread and local/scarce as in winter status)
 S or s Summer visitor (used for species present in summer but which do not normally breed; S and s used for widespread and local/scarce as in winter status).

Thus, BW would be appropriate for European Robin, B for Barn Swallow, p for Ruff and SW for Great Cormorant. No status letter is used if a species occurs less than annually.

Vetting of records of species that are locally rare is carried out by a panel of five members, which currently consists of C. Pendlebury, C. Henty, D. Orr-Ewing, D. Douglas and A. McIver. The panel has produced a list of species where submitted records need to be supported by either a full description or sufficient evidence to remove any reasonable doubt. The list is available from Chris Pendlebury. Any species which is a vagrant to the area and some of those which are asterisked (*) in this report fall in this category. At the discretion of the panel a description may also be required for more common species. The first twenty occurrences of a species in the recording area are highlighted. Vetting of Scottish rarities is done by the SBRC and of national rarities by the BBRC. Descriptions need to be submitted to these committees, as appropriate.

The British Ornithologists' Union (BOU) has appealed in the past for introduced/escaped species to be recorded locally. As the published information on these species is not necessarily complete, it is important to monitor changes in the status of these species more accurately. The BOU therefore encourages observers to record and monitor all naturalized species (particularly but not exclusively breeding records and interactions with native species) and escaped species seen in the wild to assist it to make future recommendations for category C status of the British list, if a self-sustaining naturalized population is established.

The following abbreviations have been used in the report: Ad(s) - adult(s), AoT - apparently occupied territory, b/lkm - birds per linear kilometre, Br - bridge, BoA - Bridge of Allan, BoD - Braes of Doune, ca - circa, c/n - clutch of n eggs, conf - confluence, BBS - Breeding Bird Survey, CP - Country Park, E - east, Est - estuary, Fm - farm, F - Female, G - Glen, GP - gravel pit, imm - immature, incl - including, juv - juvenile, L - Loch, N - north, NR - Nature Reserve, nr - near, M - Male, max - maximum, ON - on nest; pr - pair; Res - Reservoir, R - river, Rd - road, S - south, SP - summer plumage, W - west, WeBS - Wetland Bird Survey, Y - young, > flying/flew.

CONTRIBUTORS

This report has been compiled from records submitted by the contributors listed below. Where initials are given, the contributors are listed in the species entries of birds which are rare, uncommon or otherwise noteworthy.

M. Albert, D. Anderson (DA), M. Anderson, G. Applegate (GAp), R. Ashworth, G. Auty, Bean Goose Action Group (BGAG), D. Beaumont (DM), M. Begg (MB), J. Bell (JBB), M. Bell (MVB), N. Bielby (NB), Birdguides (BRG), Mr. Blackwood, A. Blair (AB), R. Broad (RAB), K. Broomfield, D. Brown (DWCB), D. Bryant (DMB), R. Bullman (RB), J. Calladine (JRC), D. Cameron (DJC), J. Campbell (JC), A. Carrington-Cotton (ACC), J. Carson (JCa), P. Carter, N. Chambers (NC), R. Chapman, D. and A. Christie (DAC), F.C. Clark, C. Convery, J. Craig (JCr), R. Dalziel, B. Darvill (BD), B. Dawson (BD), J. Deans (JD), A. Derks, F. Dowell, K. Drew (KD), D. Eggerton, J. Evans (JE), G. Ferguson (GFe), C. Fleming, D. Flynn (DJF), G. Fraser (GF), J. Fulton, E. Gallagher (EG), G. Garner (GG), K. Gibb (KGi), T. Gibson-Poole, K. Gillon (KG), R. Glyne-Owen (RGG), R. Gooch, S. Gordon (SG), R. Griffiths, D. Haines (DH), N. Haycock (NH), I. Henderson, C. Henty, L. Hesp, J. Holland (JH), S. Humphries (SH), D. Irving (DI), D. Jones, R. Kermod (RiK), C.D. Kerr, R. Knight, J. Lee, G. and E. Leisk (GEL), N. Littlewood (NL), P.A. Lubbers, D. MacAlpine (EAM), C. MacInnes (CMcl), A. MacIver (AMcl), I. MacPherson (IMcP), C.J. Mallett, D. Matthews, E. McGuire (EMcG), S. Milligan, C. Moore (CM), A. Muirhead, F.A.E. Murray, A. Musgrove, J. Nadin (JSN), S. O'Donnell, L. Odershaw, D. Orr-Ewing (DOE), B. Osborn (BO), G. Owens (GO), E. Payne (EP), C. Pendlebury (CJP), D. Perry, T. Plumb (TP), L. Pryde, A. Reid (AJR), R. Robertson (RR), T. Rogers (ACR), S. Roos (SR), R. Sexton (RSx), R. Shand (RS), J. Shanks, B. Sharp (BS), C. Spray, A. Sullivan (AS), C. Sumner (CES), A. Thiel (AET), W. Thom (WT), D. Thorogood (DT), M. Thrower (MT), J. Towill (JT), C. Twist (CT), G. Uney (GU), R.A. Vasey, C. Walker (CW), C. Wernham (CVW), M. White, K. Wilkinson, S. Wilkinson (SW), R. Wilson (RW), S. Wilson (SWi), G. Wood (GW), A. Young (AY).

WeBS estuary and inland counts are made available by M. Bell and N Bielby. Apologies to anybody who has been inadvertently missed out of the above list.

RINGING REPORT

This is the sixth ringing report. The following section lists birds ringed and/or reported in the recording area during 2009 as well as a selection from previous years. The online publication of such data by the BTO has made ringing data much more accessible and vastly increased the number of species and birds in the recording area for which ringing data are available. As a result a different layout has been adopted in this report to reduce the amount of space needed. Contributors are encouraged to report all ringed, especially colour-ringed, birds to the relevant organizers and/or the BTO and not to assume that somebody else has already done so, as all movements are of interest to the ringers and add to the understanding of bird ecology and migration patterns.

During 2009 there were 46 reports of birds ringed or recovered in the recording area, involving 19 species, as follows:

	Number of reports	Number of species
Birds ringed in Forth Area and recovered elsewhere	30	10
Birds ringed elsewhere and recovered in Forth Area	14	12
Birds ringed and recovered in Forth Area	2	2

Recoveries are listed in the same order as for the systematic list under the headings shown below. After the species name, data are presented as follows:

Ring number	Date ringed	Location ringed	Observer
	Date recovered	Location recovered	Distance and direction
Additional information			(where applicable)

• **GREATER WHITE-FRONTED GOOSE (GREENLAND race)**

J9F, J4H	16 Jul 2008	WEST GREENLAND	MVB
	28 Oct 2008	Skinflats	
	17 Nov 2008	North Slob, Wexford, IRELAND	

Ringed as adult M and adult F.

• **CANADA GOOSE**

5246859	29 Jun 2008	Llangorse Lake (Powys)	BTO
	19 Sep 2009	R Forth, Dunmore	465 km N

Ringed as an adult. Shot.

• **EURASIAN WIGEON**

FP26890	28 Dec 2008	Kinloch nr. Collessie (Fife)	BTO
	19 Oct 2009	nr. Blackness	40 km SW

Ringed as an adult male. Shot.

• **GREAT CORMORANT**

5252045	28 Jun 2008	Inverbervie (Grampian)	BTO
	12 Mar 2009	Keir Estate, BoA	131 km SW

Ringed as a nestling. Found dead.

• **RED KITE**

GC02655	12 Jul 2007	Argaty	BTO
	2 Mar 2008	Near Keillour (Tayside)	33 km NE

Ringed as a nestling. Found freshly dead (hit by car).

• **EURASIAN SPARROWHAWK**

DA87835	17 Jul 2008	L Ard Forest	BTO
	12 Nov 2008	Socchoth, Arrochar (Strathclyde)	20 km WNW

Ringed as a nestling male. Found long dead (hit glass).

• **COMMON BUZZARD**

MA15163	12 Apr 2008	Torrie Forest	BTO
	14 Feb 2009	Kirkdale Bank, Carsluith (Dumfries & Galloway)	151km S

Ringed as a first-year male. Found long dead.

MA01490	17 Jun 2007	Argaty, BoD	BTO
	14 Feb 2009	North Blackruthven, Perth (Tayside)	40km ENE

Ringed as a nestling. Found long dead (hit by a car).

MA1523 6 Jun 2008 Aberfoyle Forest BTO
 23 Feb 2009 Linlithgow (West Lothian) 53km ESE
 Ringed as a nestling. Found freshly dead (hit by a car).

MA15426 10 Dec 2008 L Ard Forest BTO
 10 Mar 2009 L Lomond, near Luss (Strathclyde) 14km WSW
 Ringed as a first-year female. Found freshly dead.

• **OSPREY**

1366567 13 Jul 2007 L Ard Forest BTO
 21 Jul 2009 New Galloway (Dumfries & Galloway) 122km S
 Ringed as a nestling male. Recovered sick.

• **PEREGRINE FALCON**

AJ57915 25 May 2007 Laiken Quarry, Nairn (Highlands) BTO
 18 Sep 2008 Cambusbarron, Stirling 162km S
 Ringed as a nestling. Found sick (hit wires).

• **COMMON SNIPE**

NLA1205682 23 Aug 1986 Moerdijk (Noord-Brabant), NETHERLANDS BTO
 28 Nov 1986 Ochterture, near Stirling 751km NW
 Ringed as a first-year bird. Shot.

• **BLACK-TAILED GODWIT**

Colour-ring 14 Jul 2008 Olafsjordur, N ICELAND DT
 Sep 2008 Kinneil 1,374km SE
 Dec 2008 - Blackness
 Jan 2009
 18 Apr 2009 Kinneil

Field sightings.

• **LESSER BLACK-BACKED GULL**

GH00989 2 Jul 1983 Flanders Moss, near Thornhill BTO
 21 Nov 2005 Sines (Baixo Alentejo), PORTUGAL 2,052km S
 3 Mar 2006 Sines (Baixo Alentejo), PORTUGAL 2,052km S

Field sightings.

GK79491 25 Jun 1978 Flanders Moss, near Thornhill BTO
 19 Nov 2008 Viisershaven, Santander, SPAIN 1,412km S

Field sighting.

SGJ54437 28 Jun 1981 Flanders Moss, near Thornhill BTO
 14 Sep 2009 Ravensmoor, Nantwich (Cheshire) 362km SSE

Ringed as a nestling. Found dead.

• **BARN OWL**

GN41096 21 Jun 2002 Southwick CP (Wiltshire) BTO
 17 Jun 2008 Aberfoyle Forest 559km NNW

Ringed as a nestling female. Caught by ringer in nestbox.

GC36069 18 Jun 2007 Achray Forest BTO
 21 Feb 2009 Shrawardine, Shrewsbury (Shropshire) 398km SSE

Ringed as a nestling. Found freshly dead.

AJ63650 18 May 2008 L Ard Forest BTO
 11 Mar 2009 Redlairdstone, Buchlyvie 10km SE

Ringed as an adult female. Found dead.

•BARN SWALLOW

P080920 23 Jul 2009 Argaty, BoD BTO
 19 Sep 2009 Icklesham (Sussex) 666km SSE

Ringed as a nestling. Caught by ringer.

N839349 15 Jun 2009 Argaty, BoD BTO
 7 Aug 2009 Errol (Tayside) 57km ENE

Ringed as a nestling. Caught by ringer.

N839379 1 Jul 2009 Argaty, BoD BTO
 16 Oct 2009 Argaty, BoD 2km

Ringed as a nestling. Freshly dead (caught by bird of prey).

•WHITE (PIED) WAGTAIL

Colour-ring 17 Nov 2008 Slapton Ley (Devon) JT
 23 May 2009 David Marshall Lodge, Aberfoyle 658km N

Field sighting.

•SEDGE WARBLER

FRP 5413132 9 Aug 2007 Mars-Ouest, Saint-Philbert-de-Grand-Lieu, BTO
 (Loire-Atlantique), FRANCE 1,021km N

3 May 2008 Blackgrange

Caught by ringer.

•COMMON CHIFFCHAFF

BLB AJ0676 15 Oct 2007 Ingooigem (West-Vlaanderen), BELGIUM BTO
 27 Jun 2008 Yellow Craig Wood 766km NW

Ringed as a first-year male. Caught by ringer.

•PIED FLYCATCHER

X041148 16 Jun 2009 Brenachoile, Katrine BTO
 28 May 2009 Inversnaid (Clyde) 16km W

Ringed as a nestling female. Caught by ringer in nestbox.

•BLUE TIT

N070825 13 May 2008 Aberfoyle Forest BTO
 8 Feb 2009 Kinlochard 8km WNW

Ringed as a first-year bird. Found freshly dead (caught by cat).

V198198 1 Jun 2008 W Lendrick, Brig O' Turk BTO
 18 Feb 2009 Tarbet, Cnoc, L. Lomond (Strathclyde) 22km W

Ringed as a nestling. Caught by ringer.

•GREAT TIT

X420597 20 Sep 2008 Menteith Cottage, Aberfoyle BTO
 17 Apr 2009 Tarbet, Cnoc, L Lomond (Strathclyde) 19km W

Ringed as a nestling. Caught by ringer.

•COAL TIT

V990077 28 Jan 2009 Barony College (Dumfries & Galloway) BTO
 28 Mar 2009 Mill of Chon, Kinlochard 130km NNW

Ringed as a full-grown bird. Found freshly dead (caught by cat).

•COMMON STARLING

RR25985	31 Aug 2006	Ballyholme, Co. Down	BTO
	15 Dec 2007	Fallin	195km NE
	27 Dec 2008	Fallin	195km NE
	08 Nov 2009	Fallin	195km NE

Field sightings.

•EUROPEAN GREENFINCH

TA37253	18 Oct 2006	Bo Nan Taigh, Kirkton	BTO
	10 Aug 2009	Isleornsay, Sleat, Isle of Skye (Highland)	138km NW

Ringed as first-year male. Found freshly dead (hit glass).

TK85727	12 Feb 2007	Bo Nan Taigh, Kirkton	BTO
	6 Aug 2009	Aberfoyle	0km

Ringed as first-year male. Found freshly dead (disease).

•EURASIAN SISKIN

X451533	16 Apr 2009	Spurn Point (Humberside)	BTO
	3 May 2009	Buchlyvie	399km NW

Ringed as an adult female. Found freshly dead (hit glass).

X673064	22 Mar 2009	Brandon (Suffolk)	BTO
	7 May 2009	Easter Coillechat Fm, Callander	519km NW

Ringed as first-year male. Found freshly dead (hit glass).

SYSTEMATIC LIST

Codes - S, F and C refer to Stirling, Falkirk and Clackmannanshire Council Areas.

MUTE SWAN *Cygnus olor* (B,W)

Inland WeBS counts: 183 in Jan, 141 in Feb, 209 in Mar, 169 in Sep, 168 in Oct, 161 in Nov, 186 in Dec.

Forth Est (WeBS): 2 in Jan, 12 in Feb, 9 in Mar, 5 in Sep, 12 in Oct, 20 in Nov, 3 in Dec.

F Max: 20 Skinflats 6 Nov.

C Site max: 58 Gartmorn 15 Mar and 32 on 27 Dec.

S Breeding: pr and 3 Y Polmaise, Fallin 17 Sep; pr and 6 Y Ochlochty Pond, Dunblane 4 Sep; pr and 1 Y Cousty Pond, Blairdrummond 19 Sep; pr and 2 Y L Mahaick, BoD 19 Sep; pr and 6 Y Cambusmore 13 Sep; pr and 1 Y R Teith, Callander 13 Sep; pr and 5 Y Auchenlaich, Callander 13 Sep; pr and 4 Y Buchlyvie 8 Jul; pr and 3 Y Killin Marshes 7 Sep; no successful breeding at Cocksburn Res, BoA. Site max: 59 Airthrey Loch 4 Dec; 29 R Forth, Stirling 10 Jan; 16 Lake of Menteith 14 Dec; 16 Cambuskenneth 28 Dec.

WHOOPE SWAN *Cygnus cygnus* (W)

Inland WeBS counts: 7 in Jan, 30 in Feb, 44 in Mar, 0 in Sep, 1 in Oct, 22 in Nov, 19 in Dec.

F Winter/spring: 5 Kinneil 12 Jan; 8 Stenhousemuir 23 Jan; 1 St Helen's Loch 11 May. Autumn/winter: 3 ads Skinflats 1 to 20 Oct, 15 there 5 Nov; 14 Dunmore 10 Nov.

C Autumn/winter: 9 ads Cambus 28 Nov, 6 there 30 Nov and 1 Dec. 5 Blackgrange 29 Nov.

- S Winter/spring, site max: 8 L Coulter Res 13 Feb; 5 Carron Valley Res 17 Feb to 5 Mar; 10 R Forth, Craigforth in Mar; 19 L Dochart 25 Mar; 3 Cambusmore 8 Apr. Autumn/winter site max: 14 L Katrine/Achray 21 Dec; 12 L Dochart 12 Dec; 11 Drip Moss, Stirling 30 Nov; 3 imms R Forth, Craigforth 24 Dec; 3 over Dunblane 24 Dec.
- BEAN GOOSE *Anser fabalis* (W)
- F Recorded in the vicinity of the Slamannan Plateau. Winter/spring: 22 Wester Jawcraig Fm 13 Jan, 70 Beam Fm 24 Jan; 77 Hillend Farm 7 Feb (BGS). Autumn/winter: 12 California 1 Oct, 301 Wester Jaw 26 Nov, 276 Shieldknowes 3 Dec (GG, DWCB).
- PINK-FOOTED GOOSE *Anser brachyrhynchus* (W)
- Last spring record: 11 Alloa Inch 21 May (DMB). First autumn return: 26 > SW BoA 7 Sep (GG).
Forth Est (WeBS): 27 in Jan, 74 in Feb, 2774 in Mar, 66 in Oct, 371 in Nov, 1950 in Dec.
Total roost counts: 6936 in Oct, 9133 in Nov, 1312 in Dec.
- F Winter/spring: 2200 Skinflats 14 Mar. Autumn/winter: 1950 Airth 19 Dec. Summer: 1 Skinflats 11-23 Jul.
- C Winter/spring: 1450 Kennet Pans and 600 Menstrie 6 Feb; 2200 Alloa Inch 20 Apr. Autumn/winter: 3045 Kennet Pans roost and 2620 Alloa Inch roost 15 Nov.
- S Winter/spring: 494 Ashfield 22 Feb; 1229 Lake of Menteith 6 Mar; 700 Cambuskenneth 9 Mar; 550 Thornhill Carse 20 Mar. Summer: 2 Cambusmore 3 May (feral?). Autumn/winter: 2500 Aberfoyle 7 Oct; 1500 Aberfoyle and 3000 Flanders Moss 12 Oct; 3034 Lake of Menteith roost 15 Nov; 3500 Thornhill Carse 21 Dec.
- GREYLAG GOOSE *Anser anser* (b, W)
- Forth Est (WeBS): 5 in Jan, 5 in Feb, 0 in Mar, 262 in Sep, 451 in Oct, 29 in Nov, 7 in Dec.
- F Winter/spring: 737 High Bonnybridge 14 Jan; 137 Black Loch, Limerigg 9 Mar. Summer (feral): max of 50 Skinflats 18 Jul.
- C Winter/spring: 158 Cambus 5 Jan; 360 Gartmorn 17 Jan. Autumn/winter: 320 Alloa Inch roost 19 Oct; 300 Cambus 25 Oct.
- S Winter/spring: 45 Cambuskenneth 9 Mar; 137 Thornhill Carse 20 Mar; 23 Airthrey Loch 15 Apr. Summer: pr L Rusky 23 Apr; 2 R Forth, Craigforth Apr and May; 2 L Achray 3 May; 8 Carron Valley Res 8 May. Autumn/winter: 244 L Coulter Res 26 Oct; 55 G Dochart 8 Nov; 365 N Third Res 20 Dec.
- *SNOW GOOSE *Anser caerulescens*
- C One Blackgrange 23 Mar (ACC, GG). Altogether there have been 11 records of this species, involving an estimated 8-9 separate occurrences. Most, if not all of these, were probably escapees.
- CANADA GOOSE *Branta canadensis* (b W)
- Inland WeBS counts: 530 in Jan, 383 in Feb, 169 in Mar, 173 in Sep, 850 in Oct, 256 in Nov, 204 in Dec.
Forth Est (WeBS): 0 in Jan, 0 in Feb, 0 in Mar, 589 in Sep, 0 in Oct, 11 in Nov, 3 in Dec.
- F Max: 147 St Helen's Loch, Bonnybridge 14 Jan, 119 there 26 Oct; 27 Little Denny Res 26 Oct.
- C Max: 7 Gartmorn Dam 11 Jan; 450 R Forth, Cambus to S Alloa 20 Sep; 100 Cambus 12 Oct.
- S Breeding: pr L Rusky 27 Mar; pr Cromlix 18 Apr; pr ON Cambusmore 3 May; pr and 4 Y Gartmore Pond, Aberfoyle 8 Jul. Max: 101 L Benachar 21 Jan; 84 L Voil 26 Jan; 163 Lake of Menteith 7 Feb; 73 Cambusmore 11 Oct; 142 L Rusky 14 Oct; 133 Quarry Loch, Blairdrummond 20 Oct; 208 L Coulter Res 26 Oct.

*BARNACLE GOOSE *Branta leucopsis* (w)

- F Four Skinflats 28 Sep (AB). 84 Skinflats and 3 Kincardine Br 1 Oct (DMB). 21 Skinflats 4 Oct (GO). 32 Skinflats 6 Oct (GO). 38 Airth 18 Oct (MVB). 35 Dunmore (JSN). 13 Skinflats 10 Nov (RS).
- C One Kennet Pans 6 Feb (MVB). 3 Alloa Inch 29 Apr (DMB). 6 Kennet Pans 15 Nov (MVB).
- S Twenty-one Flanders Moss 12 Oct (RAB). 6 Aberfoyle 14 Oct (NB). 8 Thornhill Carse 17 Oct (JCr).



Mixed flock of Barnacle and Pink-footed Geese at Dunmore, R Forth 9 Sep

Photograph by John Nadin

BRANT GOOSE *Branta bernicla*

- F Eight pale-bellied race birds Blackness 20 Sep (WeBS).

COMMON SHELDUCK *Tadorna tadorna* (b, W)

Forth Est (WeBS): 1496 in Jan, 1252 in Feb, 638 in Mar, 2490 in Sep, 2425 in Oct, 1007 in Nov, 699 in Dec.

Breeding season: 107 prs R Forth, between Cambus and Kinneil Apr (DMB).
Max of 18 Y at Kinneil 4 Jul.

- F Moulting flock: 4240 Grangemouth area 20 Aug (DMB).
- C Max: 14 Cambus 21 Mar; 33 Blackdevon Wetlands 3 Apr.
- S One pr Lecropt Carse 7 May.

EURASIAN WIGEON *Anas penelope* (b, W)

Inland WeBS counts: 754 in Jan, 448 in Feb, 436 in Mar, 35 in Sep, 120 in Oct, 198 in Nov, 314 in Dec.

Forth Est (WeBS): 777 in Jan, 261 in Feb, 224 in Mar, 22 in Sep, 49 in Oct, 555 in Nov, 438 in Dec.

- F Winter/spring max: 224 Skinflats 12 Jan; 45 Black Loch, Limerigg 14 Jan; 40 Kinneil 24 Jan. Summer: pr Skinflats 27 May; 2 M Kinneil 24 Jun.
- C Winter/spring max: 340 S Alloa 12 Jan; 80 Gartmorn Dam 22 Feb. Autumn/winter max: 295 S Alloa 15 Nov.

- S Winter/spring max: 142 Lecropt Carse 18 Jan; 133 Thornhill Carse 23 Jan; 72 Killin 24 Jan; 69 L Venachar 9 Feb; 67 Cambusmore 15 Mar. Autumn/winter max: 141 Cambusmore 6 Dec; 82 L Dochart 10 Dec.
- GADWALL *Anas strepera* (s, w)
- F M Kinneil 13 Feb (DMB). 1 Millhall Res, Polmont 22 Feb (EP). 2 Skinflats 2 Apr (RS). 2 M Kinneil 24-25 Apr (DMB, AET). 2 M Skinflats 25 Apr (AB). 6 Kinneil 23 May (GO, RS). M Skinflats 27 May (AB). Up to 3 Skinflats and 5 Kinneil 20 Sep (MVB). 3 Kinneil 19 Dec, 1 pr 23-25 Dec (JRC, GO, RS).
- C Two pr Gartmorn Dam 17 Jan, 2 on 22 Feb, 4 on 15 Mar (DAC, GF). 1 pr Cambus 9 Mar, 4 there 21 Mar; pr on 1 and 22 Apr (ACR, ACC, DAC). 2 Blackdevon Wetlands 24 Apr, 3 M and 1 F 29 Apr (DOE, DMB). 2 M Devonmouth Pool 1 Sep (NB). 1 Gartmorn Dam 27 Sep, 3 there 25 Oct and 22 Nov (GE, MVB).
- EURASIAN TEAL *Anas crecca* (b, W)
- Inland WeBS counts: 1553 in Jan, 1102 in Feb, 906 in Mar, 330 in Sep, 743 in Oct, 904 in Nov, 731 in Dec.
Forth Est (WeBS): 1283 in Jan, 710 in Feb, 683 in Mar, 501 in Sep, 1113 in Oct, 1558 in Nov, 1233 in Dec.
- F Winter/spring max: 479 Skinflats and 437 Kinneil 12 Jan. Autumn/winter max: 808 Kinneil 16 Nov; 236 Skinflats 19 Dec.
- C Winter/spring max: 139 Tillicoultry 23 Jan; 85 Blackdevon Wetlands 23 Feb. Autumn/winter max: 103 Devonmouth Pool 4 Oct; 270 Blackdevon Wetlands 22 Nov; 136 Blackgrange and 74 Cambus 29 Nov; 46 Silverhills Pond, Kersiepow 1 Dec.
- S Winter/spring max: 101 Cambusmore 17 Jan; 91 L Venachar 21 Jan; 83 Blairdrummond Moss 22 Jan; 108 Touch 4 Res 28 Jan; 283 Fallin 31 Jan; 228 R Forth, Stirling 21 Feb. Summer: 2 Carron Valley Res 3 May. Autumn/winter max: 106 Fallin 22 Oct; 109 Cambusmore 6 Dec; 245 R Forth, Stirling 19 Dec.
- *GREEN-WINGED TEAL *Anas carolinensis*
- F M Kinneil from 5 Oct 2008 to 22 Mar 2009 (EG, GO *et al.*) and again from 6 Oct (moulting out of eclipse plumage) to 8 Nov (GO *et al.*). This bird has now been recorded annually since December 2006 and may even be the bird recorded on the R Forth near Stirling in 2004. These are the 6th and 7th records of this species, thought to involve 2-3 individuals.
- MALLARD *Anas platyrhynchos* (B,W)
- Inland WeBS counts: 2142 in Jan, 1522 in Feb, 1080 in Mar, 1430 in Sep, 1928 in Oct, 1927 in Nov, 1942 in Dec. Forth Est (WeBS): 197 in Jan, 79 in Feb, 102 in Mar, 296 in Sep, 216 in Oct, 212 in Nov, 291 in Dec.
For such an omnipresent species few breeding records have been submitted.
- F Breeding: F and 4 Y Carronshore 4 Jun. Max: 62 Skinflats 12 Jan; 186 Kinneil 19 Dec.
- C Max: 191 Cambus 29 Nov.
- S Breeding noted at: Cocksburn Loch, BoA; Ochloch Pond, Dunblane. Max: 80 Airthrey Loch 28 Jun.
- NORTHERN PINTAIL *Anas acuta* (W)
- Forth Est (WeBS): 84 in Jan, 55 in Feb, 34 in Mar, 5 in Sep, 30 in Oct, 64 in Nov, 64 in Dec. The majority of these were at Skinflats and Kinneil.
- F Site max: 82 at Skinflats 12 Jan; 50 at Kinneil 13 Feb.
- C F Blackdevon Wetlands 2 Jul (DMB). 1 Silverhills Pond, Alva 1 Dec (NB).
- GARGANEY *Anas querquedula*
- F Pr Kinneil 25 Apr (GO, RS *et al.*).
- C M Blackdevon Wetlands 21 May (DMB).

NORTHERN SHOVELER *Anas clypeata* (p)

- F Kinneil: up to 6 in Jan; up to 4 in Feb; 1 on 15 Mar; 1 on 24-25 Apr; M on 24 May and pr on 29 May; 5 on 25 Jul; up to 16 in Sep; 3 on 19 Oct; 1 on 15-16 Nov, pr 1-31 Dec (GO, DMB, AET, RS, JRC *et al.*). Skinflats: M 24-25 Apr; pr 13 May; 6 on 23-26 Jul; 2 on 16 Aug; up to 4 in Sep (DMB, AB, GO). F St Helen's Loch 30 Jun (NB).
- C M Blackdevon Wetlands 29 Apr (DMB). 2 F/imm Devonmouth Pool 1 Sep (NB). 6 Tullibody Inch 6 Sep (DMB). 3 Blackdevon Wetlands 7 Sep (DMB).
- S Pr Lake of Menteith 7 Apr (RAB).

COMMON POCHARD *Aythya ferina* (W)

- Inland WeBS counts: 37 in Jan, 19 in Feb, 9 in Mar, 9 in Sep, 39 in Oct, 26 in Nov, 3 in Dec.
- F One Kinneil 15 Feb (GO). One Skinflats 14 Mar (WeBS).
- C Pr Blackdevon Wetlands 2 Jul (DMB). 3 Cambus 9 Sep (DMB).
- S Twenty-three Carron Valley Res 20 Jan, 14 there 17 Feb (DAC). 8 L Lubnaig 1 Feb (CJP). 26 Carron Valley Res 20 Oct, 20 there 27 Nov (DAC).

*FERRUGINOUS DUCK *Aythya nyroca*

- F Moulting ad M Skinflats 25 Jul (SG, GO, RS), moved to L Gelly, Fife where present 26 Jul to 2 Sep. If accepted, this would be the 2nd record for the recording area.

TUFTED DUCK *Aythya fuligula* (B, W)

- Inland WeBS counts: 401 in Jan, 325 in Feb, 429 in Mar, 279 in Sep, 414 in Oct, 210 in Nov, 279 in Dec.
- F Max: 21 Callendar Park Loch, Falkirk 20 Feb; 4 Kinneil 25 Apr, 3 there 27 Sep. Summer: 2 M and 1 F Skinflats 25 Apr; F and 1 Y St Helen's Loch, Bonnybridge 30 Jun; 2 broods (7, 7) Drumbowie Res, Denny 14 Jul.
- C Winter/spring max: 156 Gartmorn Dam 15 Mar; 5 R Devon, Alva 10 Apr. Autumn/winter: 185 Gartmorn Dam 25 Oct.
- S Spring: pr Cocksburn Loch, BoA 1-7 Apr. Winter/spring max: 47 Airthrey Loch 23 Jan; 79 Vale of Cousty 28 Jan. Autumn/winter max: 30 Cambusmore 11 Oct; 39 L Mahaick 20 Oct; 40 Airthrey L 14 Dec; 31 Lake of Menteith 14 Dec; 68 Vale of Cousty 15 Dec; 9 R Forth, Carse of Lecropt 24 Dec.

GREATER SCAUP *Aythya marina* (s, w)

- Forth Est (WeBS): 30 in Jan, 23 in Feb, 55 in Mar, 10 in Sep, 8 in Oct, 13 in Nov, 24 in Dec.
- F Kinneil: up to 37 in Jan; up to 44 in Feb; up to 55 in Mar; up to 45 in Apr; up to 7 in May; F/imm 13-28 Aug; up to 46 in Sep; up to 22 in Oct; up to 20 in Nov; up to 24 in Dec (AB, MVB, DT, GO *et al.*). 1 Bothkennar, Skinflats 21 Sep (DOE).
- S One 1w Lake of Menteith 2 Jan (NB). F/imm Cousty Pond, Blairdrummond 15 Dec (NB).

*LESSER SCAUP *Aythya affinis*

- S M Quarry Loch, Blair Drummond 15-18 Apr (CJP, KG). Pending acceptance by BBRC. Probably the returning individual from 2008, which was the 4th record for the area.

COMMON EIDER *Somateria mollissima* (w, s)

- Forth Est (WeBS): 82 in Jan, 93 in Feb, 106 in Mar, 0 in Sep, 10 in Oct, 18 in Nov, 2 in Dec.
- F Kinneil: up to 82 in Jan; up to 88 in Feb (JRC). 4 Skinflats 22 Feb, 8 on 14 Mar (MVB). 98 Kinneil/Bo'ness 15 Mar (JRC). Kinneil: up to 48 in Apr, up to 3 in May, up to 6 in June, up to 25 in Sep and Oct, up to 14 in Nov and 2 on 19 Dec (DT, AB, JRC).

- BLACK SCOTER (COMMON SCOTER) *Melanitta nigra*
 F Three Kinneil 22 Feb (JRC). F Kinneil 1 Oct (DT). 1 Blackness on 20 Oct.
- COMMON GOLDENEYE *Bucephala clangula* (W)
 Inland WeBS counts: 430 in Jan, 472 in Feb, 380 in Mar, 3 in Sep, 87 in Oct, 264 in Nov, 350 in Dec.
 Forth Est (WeBS): 61 in Jan, 25 in Feb, 15 in Mar, 1 in Sep, 1 in Oct, 24 in Nov, 56 in Dec.
 First autumn record: 1 Quarry Loch, Blairdrummond 16 Sep.
 F Max: 87 Kinneil 30 Oct; 26 Skinflats 15 Mar.
 C Max: 38 Cambus 5 Jan; 44 S Alloa 12 Jan; 45 Gartmorn Dam 22 Jan; 43 R Devon, Tullibody 16 Dec.
 S Max: 165 Lake of Menteith 7 Feb; 28 L Tay 21 Mar; 45 L Dochart/Lubhair 19 Feb; 35 R Forth, Stirling 19 Dec, and 30 R Forth, Lecropt 12 Dec.
- RED-BREASTED MERGANSER *Mergus serrator* (B, W)
 Forth Est (WeBS): 56 in Jan, 27 in Feb, 36 in Mar, 53 in Sep, 69 in Oct, 66 in Nov, 44 in Dec.
 F Site max: 27 Blackness 20 Sep; 29 Kinneil 19 Oct; 20 Dunmore 30 Oct. 14 Skinflats 15 Nov.
 C Max: 37 S Alloa 12 Jan; 7 Cambus 9 Mar.
 S Two Blairdrummond Safari Park 22 Feb. 1 L Ard 10 Feb. 4 L Dochart 12 Feb. 1 Doune 13 Apr. Pr Cambusmore 3 May. M L Venachar 21 Dec.
- COMMON MERGANSER (GOOSANDER) *Mergus merganser* (B, W)
 Inland WeBS counts: 122 in Jan, 101 in Feb, 103 in Mar, 52 in Sep, 52 in Oct, 78 in Nov, 86 in Dec.
 Forth Est (WeBS): 0 in Jan; 1 in Feb, 0 in Mar, 14 in Sep, 6 in Oct, 10 in Nov, 6 in Dec.
 F Breeding: F and 4 Y R Carron, Carronshore 1 Jun. Max: 9 Stenhousemuir 20 Sep; 14 Skinflats 20 Sep.
 C Max: 20 Cambus 9 Oct; 11 R Devon, Tillicoultry 30 Nov.
 S Breeding: F and 5 Y R Forth, Carse of Lecropt 7 May. Max: 13 Airthrey L 23 Jan; 23 R Forth, Stirling 21 Feb.
- RUDDY DUCK *Oxyura jamaicensis*
 F Breeding: F and 4 Y Kinneil Wood pond 26 Jul (RS).
- WILLOW PTARMIGAN (RED GROUSE) *Lagopus lagopus* (B, W)
 S Recorded from: Dumyat (AB), Sheriffmuir (MVB), Ben Ledi (CJP), Glenn Finglas (DOE), Cruach Ardrain (RiK) and Creag Charbh, L Tay (SR).
- ROCK PTARMIGAN *Lagopus muta*
 S One Stuc a'Chroin 4 Oct (RR). 10 Ben More 11 Oct (JC). 2 Beinn a'Chroin (JE). 1 Meall Ghaordie, G Lochay 18 Dec (CES).
- BLACK GROUSE *Tetrao tetrix* (B, W)
 S Records from: Carron Valley, Cromlix, BoD, Callander, Ben Ledi, G Finglas, L Katrine, G Buckie, L Tay and Tyndrum (CJP, JH, DOE, DJE, CVW, SR).
- GREY PARTRIDGE *Perdix perdix* (B, W)
 F Skinflats: max of 14 on 24 Dec (GO). 2 Carronshore 28 Feb (JT). Also recorded in Stenhousemuir area.
 C Ten Tullibody 23 Oct (DAC). 2 Menstrie 15 Jun (JRC).
 S Two Bannockburn 6 May. 2 Dunblane 26 Jul.
- COMMON QUAIL *Coturnix coturnix*
 S M Doune Lodge, BoD 1 Jun (DOE). One G Casaig, G Finglas 1 Jul (NL). Flanders Moss/Thornhill Carse: 2 N of Thornhill 2 to 24 Jul (RW); 1 Poldar Moss 2 Jul (CT); 1 Dykehead 20 Jul (RW).

COMMON PHEASANT *Phasianus colchicus* (B, W)

Very large numbers released on shooting estates, otherwise widespread but in small numbers.

F 20 Kinneil 25 Apr (ACC), F and 3 Y there 16 Jun.

RED-THROATED LOON *Gavia stellata* (b, w)

F Kinneil: singles on 2 Apr, 19 Oct and 6 Dec (DT, JRC).

S 1 Little L Ard 20 Jan (DOE). Trossachs: 3 at undisclosed site 2 Aug (DAC).

GREAT NORTHERN LOON *Gavia immer*

S One 1w L Achray 17 to 28 Dec (SH, CW, NB, CJP, JT *et al.*).

LITTLE GREBE *Tachybaptus ruficollis* (B, w)

Inland WeBS counts: 72 in Jan, 56 in Feb, 38 Mar, 99 in Sep, 93 in Oct, 55 in Nov, 65 in Dec.

F Site max: 17 Drumbowie Res, Denny 18 Sep; 5 St. Helen's Loch, Bonnybridge 18 Sep; 8 Black Loch, Limerigg 26 Sep.

C Max: 4 Silverhills Pond, Kersiepow 2 Nov; 4 Gartmorn Dam 27 Dec.

S Breeding sites: Polmaise Lagoons; Cocksburn Res and Pendreich Pool, BoA; Ochloch y Pond, Dunblane; Buchlyvie; Cambusmore; L Katrine; L Voil; David Marshall Lodge and Gartmore Pond, Aberfoyle. Max: 30 Cambusmore 13 Sep; 12 Crianlarich 4 Oct; 24 L Dochart/Lubhair 7 Oct; 9 L Voil 4 Dec.

GREAT CRESTED GREBE *Podiceps cristatus* (b, W)

Inland WeBS counts: 9 in Jan, 12 in Feb, 48 in Mar, 31 in Sep, 12 in Oct, 7 in Nov, 10 in Dec.

Forth Est (WeBS): 12 in Jan, 3 in Feb, 0 in Mar, 10 in Sep, 14 in Oct, 12 in Nov, 7 in Dec.

F Site max: 21 Kinneil 1 Oct.

C Site max: 8 Gartmorn Dam 15 Mar.

S Breeding: 2 prs Cambusmore, 1 ON there 3 May; pr and 3 Y L Coulter Res 14 Jul; 12 Y Lake of Menteith 10 Sep with 29 there 10 Sep.

NORTHERN FULMAR *Fulmaris glacialis*

F Two Kinneil 29 May (DT).

S One > W Lake of Menteith 5 May (RAB).

NORTHERN GANNET *Morus bassanus* (p)

F Five Kinneil, 2 Blackness and 1 Skinflats 20 Sep (MVB, JRC). 130+ Kinneil 26 Sep, including 2 plunge diving (DT); 118 on 27 Sep (DMB); 10 Kinneil 27 Sep (AB). 25 Skinflats 28 Sep (AB). 4 Kinneil 30 Sep (AB). 6 Skinflats and 3 Kinneil 1 Oct (DT, GO). 4 Kinneil 7 Oct (GO). All of the preceding records refer to immes.

S One > W Plean 26 Sep (DT). 10 > W Stirling 26 Sep (RB). 39 immes > WNW Lecropt Carse 27 Sep, 1 returning SE (DT).

GREAT CORMORANT *Phalacrocorax carbo* (S, W)

Inland WeBS counts: 86 in Jan, 61 in Feb, 43 in Mar, 30 in Sep, 59 in Oct, 59 in Nov, 54 in Dec.

Forth Est (WeBS): 16 in Jan, 36 in Feb, 26 in Mar, 150 in Sep, 106 in Oct, 148 in Nov, 38 in Dec.

F Max: 90 Skinflats 15 Nov.

C Max: 80 R Forth, Cambus to S Alloa 23 Sep.

S Max: 9 Carron Valley Res 20 Jan; 18 Lake of Menteith 7 Feb; 13 R Forth, Stirling 10 Oct; 8 Airthrey Loch 16 Dec.

*LITTLE EGRET *Egretta garzetta*

F One Blackness 17 to 19 Sep (KD) then > W Powfoulis, Skinflats 20 Sep (RS). This is the 8th record for the recording area since 1974.

GREY HERON *Ardea cinerea* (B,W)

Inland WeBS counts: 92 in Jan, 64 in Feb, 73 in Mar, 79 in Sep, 87 in Oct, 89 in

Nov, 77 in Dec.

Forth Est (WeBS): 10 in Jan, 19 in Feb, 6 in Mar, 61 in Sep, 70 in Oct, 45 in Nov, 19 in Dec.

F Breeding: 7⁺ nests (12 discarded eggs) Dunmore Woods 11 Apr (AB). Max: 11 Kinneil 1 Oct; 34 Skinflats 18 Oct. No information on Kinneil Woods colony.

C Max: 10 Dollar-R Devon, Tillicoultry 7 Sep; 26 R Forth, S Alloa-Kincardine Br 20 Oct.

S Breeding: 1 ON Argaty, BoD. Max: 10 L Coulter Res 17 Jan; 12 L Lubnag 26 Jan.

*GLOSSY IBIS *Plegadis falcinellus*

F One in flight nr Airth 9 Nov (JSN), accepted by BBRC. This is the first record of this species in the recording area, following an influx of this species to Britain in 2008.

*EURASIAN SPOONBILL *Platalea leucorodia*

F Ad Kinneil 23 May to 5 Jun (TP, GO *et al.*) and 2 ads 19 to 30 Jun (RS *et al.*). These are the 7th and 8th records for the recording area.

C Two ads (same as above) Tullibody Inch 3 Jul (DMB).

RED KITE *Milvus milvus* (b, W)

S Breeding: 25 prs laid eggs, 17 successfully fledging 28 Y (DOE). Max at Argaty, BoD: 50 on 4 Jan (DOE). Away from BoD: 1 L Venachar 21 Jan; 1 L Earn 17 Feb; 1 Lecropt Carse 10 May and 26 Jul; 1 Thornhill 14 Aug; 1 G Lochay 8 Oct; 1 Dunblane 15 Dec.

*WHITE-TAILED EAGLE *Haliaeetus albicilla*

At least two immms from the Fife reintroduction scheme were seen in the recording area in 2009.

F One Bo'ness 12 Jan (per DOE).

S One Argaty, BoD 28 Jan; 1 roosted Flanders Moss 29 Jan; 1 Argaty, BoD 2 and 9 Feb; 2 Blairdrummond 10 Feb; 1 Doune 11 Feb (DOE). 1 Aberfoyle > L Ard 4 Jun (DA). 2 (ad and sub-ad) Uamh Mhor 2 Sep (DJC). 1 > Drip Road, Stirling 26 Nov (DA). 1 > N Dunblane 17 Dec (MVB).

*MARSH HARRIER *Circus aeruginosus*

C One 1s F Blackdevon Wetlands 8 May and Alloa Inch 9 May (DMB).

NORTHERN HARRIER (HEN HARRIER) *Circus cyaneus* (b, w)

S One M Bows, BoD 2 Jan (DOE). M Cromlix 18 Apr (CJP). F Earlsburn Wind Farm 10 Jun (ACC). 2 M and 2 F Cromlix 30 Aug (SW). 1 ringtail L Coulter Res 18 Sep (NB). 1 at N Third Res 31 Oct (BO). F Torrie, Thornhill 3 Nov (DOE). M Row House, Doune/Dunblane 22 and 27 Nov (NH). 1 2w M Stockbridge, Dunblane 26 Nov (MVB). 1 N Third Res 5 Dec (DB). F Lecropt Carse 24 Dec (DT).

*NORTHERN GOSHAWK *Accipiter gentilis*

F 2007: 1 > Cumbernauld 26 Dec (AY).

S F Drumloist, BoD 5 Nov (DA).

EURASIAN SPARROWHAWK *Accipiter nisus* (B, W)

Recorded throughout the majority of the recording area.

COMMON BUZZARD *Buteo buteo* (B, W)

F Breeding: of 41 sites checked, 32 were occupied by prs and one by a single bird (AMcl).

C Breeding: of 169 sites checked, 141 occupied by prs; 74 prs were confirmed to have laid eggs, 62 fledged a minimum of 91 Y while 8 prs failed (DOE, DA).

GOLDEN EAGLE *Aquila chrysaetos* (b, w)

S One Ben Ledi 10 Feb (GU). 2 ads Tyndrum 10 Jul (EAM). 1 G Lochay Hills 16 Aug (GAP). Pr and 2 M Uamh Mhor, BoD 2 Sep (DJC). 1 Beinn Each 4 Oct (RR)

OSPREY *Pandion haliaetus* (B)

- S First records: 1 L Ard 28 Mar; 1 L Rusky 1 Apr. Other records from: Cocksburn Loch, BoA (1 on 12 Aug); BoA (1 on 17 Aug); Blairdrummond; Carron Valley Res (4 birds); L Venachar; Lake of Menteith; L Tay.

COMMON KESTREL *Falco tinnunculus* (B,W)

Recorded throughout most of the recording area.

MERLIN *Falco columbarius* (b?, w)

- F One > SW Plean 20 Mar (RS). F Skinflats 4 Apr and 28 Oct (DMB, AB). Imm Kinneil 8 Nov (DT). 1 Kinneil 6 and 22 Dec (DT, RS).
- S One Bovain, G Dochart 26 Jan (NB). 1 Lecropt 5 Mar (DT). M Bows, BoD 15 Mar (DOE). Pr bred BoD area (DOE). 1 L Ard Forest 24 Nov (DA).

*HOBBY *Falco subbuteo*

- S One Aberfoyle 9 Sep (DA). This was the 2nd record for the Forth Area.

PEREGRINE FALCON *Falco peregrinus* (B, W)

- F One Skinflats 24 Jan and 1 there at Bothkennar 7 Sep. Kinneil: 1 on 26 Feb, 1 on 19 June, 1 on 21 July, 2 on 28 Aug, 1 on 27 Sep and 1 on 22-30 Oct.
- S One Doune 18 Jan, 15 Feb and 15 Mar. 1 Braeval, Aberfoyle 12 Feb. One Cononish, Tyndrum 3 Mar. 1 Ashfield 27 Aug. 1 Doune 15 Nov.

WATER RAIL *Rallus aquaticus* (b, w)

- F At least 6 Kinneil and 2 Skinflats 2 Apr (DT, RS). 1 Skinflats 22 Jul (RS). 3 Kinneil 13 Sep and up to 2 to year-end (DT). 1 Tippetcraig, Slamannan 26 Oct (NB). 1 Kinneil 15 Nov (AB). 1 Carronshore 22 Nov (AB). 1 Langlees, Stenhousemuir 22 Nov (NB)
- C Up to three Cambus in Mar (ACC). 1 Tullibody Inch 18 Mar, 3 there 9 Sep (DMB). 1 R Devon, Alva 21 Dec (CVW).
- S One Cambusmore 17 Jan (NB).

COMMON MOORHEN *Gallinula chloropus* (B,W)

Inland WeBS counts: 85 in Jan, 76 in Feb, 77 in Mar, 91 in Sep, 114 in Oct, 73 in Nov, 92 in Dec.

- F Breeding: ad and 5 juvs Kinneil 22 Jun. Max: 17 Callendar Park, Falkirk and 8 Kinneil House 17 Jan.
- C Max: 7 R Devon, Alva 21 Dec; 8 Gartmorn Dam 27 Dec.
- S Breeding: pr and 7 Y Pendreich Pool, BoA 4 Sep; ad and 1 Y Ochloch Pond, Dunblane 4 Sep; 2 Y Cocksburn Loch, BoA 9 Sep; pr and 4 Y Auchlenlaich Farm, Callander 13 Sep; pr and 2 Y Doune Ponds 16 Sep. Max: 13 Airthrey L, BoA Oct/Dec; 11 Cultenhove Dam 29 Dec.

COMMON COOT *Fulica atra* (B, W)

Inland WeBS counts: 191 in Jan, 178 in Feb, 196 in Mar, 54 in Sep, 90 in Oct, 57 in Nov, 240 in Dec.

- F Breeding: 7 ads and 4 Y St Helen's Loch, Bonnybridge 30 Jun.
- C Winter/spring max: 123 Gartmorn Dam 11 Jan. Autumn/winter max: 140 Gartmorn Dam 27 Dec.
- S Breeding: pr and 4 Y Ochloch Pond, Dunblane 23 Jun; ad and 2 Y L Coulter Res 14 Jul; 3 ads and 6 Y Cocksburn Res, BoA 5 Aug. Site max: 63 Lake of Menteith 7 Feb; 46 Airthrey L, BoA 17 Mar.

EURASIAN OYSTERCATCHER *Haematopus ostralegus* (B, W)

WeBS Forth estuary peaks were 349 in Mar and 168 in Dec.

- F Return inland: 20 Kinneil on 24 Jan increased to 100 by 15 Mar with 105 there 4 Jun, ca 150 on 24 Jul, 137 on 5 Aug, 162 on 28 Aug and ca 220 on 26 Nov. Nearby at Skinflats 20 on 15 Mar with 86 on 23 Jul.
- C Return inland: 1 Kersiepow, Alva 8 Feb.
- S Return inland: 8 Craighforth by R Forth 10 Jan increased to 100 on 7 Feb with 41

on 15 Mar. As in 2008 a small flock overwintered with 4 noted there 12 Dec and 4 (same?) at the Teith-Allan conf same day. Upstream 25 at Carse of Lecropt 14 Jan increased to 38 on 21 Jan, 100 on 7 Feb, 53 still on 6 Mar and 14 on 25 Mar. 5 Drip Moss, Blackdub 14 Jan. 1 Cocksburn Res, BoA 16 Jan with 27 there 25 Feb. 1 Br of Frew-E Frew, R Forth 23 Jan. 2 Quarry L, Blairdrummond 27 Jan with 173 at Vale of Cousty 23 Feb and 198 there on 17 Mar. 1 Doune 29 Jan. 41 Ashfield 20 Feb. 39 Kinbuck 21 Mar. 14 L Dochart 5 Apr. 36 head of L Tay 7 Jul. 18 L Venachar 17 Sep.

*PIED AVOCET *Recurvirostra avosetta*

F Two Kinneil 22 to 29 Apr (JCa, EG, RS, GO, AET, DMB, ACC, CJP, AB, DT, RAB). This is the 6th record for the area since modern recording began in 1974 and the 5th record in 8 years.

*LITTLE RINGED PLOVER *Charadrius dubius*

F One Falkirk area 12 and 13 Apr (RGG). This is the 14th record.

C Juv Tullibody Inch 23 Jul (DMB). This is the 15th record for the area since modern recording began in 1974.

COMMON RINGED PLOVER *Charadrius hiaticula* (b, W)

WeBS estuary peaks were 3 in Mar and 33 in Sep.

F Kinneil: slightly larger numbers than in the preceding 3 years with 10 on 13 Feb, 15 on 19 Feb, 2 on 25 Apr, 16 on 20 Aug, 14 on 5 Sep and 42 on 25 Oct; also a leucistic bird there in Oct. 96 Kincardine Br area 21 May (DMB) was a good count. 2 Skinflats 4 Jul. 70 Blackness 11 Oct.

C Sixteen Kennetpans 17 Aug.

S Four Gart GP, Callander 15 Mar and 3 May.

EUROPEAN GOLDEN PLOVER *Pluvialis apricaria* (B, W)

WeBS estuary peaks were 86 in Feb and 1330 in Nov.

F No records received for first part of year. In second part: 14 Kinneil 4 Sep, with ca 106 on 26 Sep, 200 on 30 Sep, 556 on 24 Oct, 676 on 30 Oct and ca 70 on 6 Dec. Elsewhere 100 Blackness 11 Oct and 720 Kincardine Br during WeBS count of 15 Nov.

S One hundred Slymaback, BoD 10 Apr.

GREY PLOVER *Pluvialis squatarola* (W)

F A poor year with 2 Skinflats 12 Jan (WeBS) the only count during the first winter season. 1 there 1 Oct and 2 on 18 Oct (WeBS). Kinneil: singles 7 and 8 Aug and in Oct and Nov.

NORTHERN LAPWING *Vanellus vanellus* (B, W)

WeBS estuary peaks were 861 in Feb and 1198 in Nov.

F The trend of generally low numbers since 2007 continued. 350 Kinneil 24 Jan with ca 480 there on 31 Jan and 80 on 28 Feb. Ad with downy Y 5 Jun. 90 on 4 Jul increased to 170 on 9 Jul, ca 450 on 4 and 26 Sep. WeBS counts at Skinflats of 537 on 20 Sep and 604 on 15 Nov.

C Smaller numbers than in 2008 at Tullibody Inch with 860 on 9 Sep but larger numbers elsewhere with ca 100 R Devon, Tullibody Br-A907 17 Oct; 155 Cambus 25 Oct; 134 Blackgrange and 400 Cambus 29 Nov.

S R Forth: 264 Upper Taylorton-Fallin 31 Jan with ca 270 Bandeath 1 Sep and 216 Stirling Br-Upper Taylorton 19 Dec. Ca 100 Carse of Lecropt 7 Feb with 31 there 6 Mar; 2 displaying prs 15 Mar and 4 juvs and 1 small chick 10 Jul. 200+ E of Stirling 19 Feb. 118 Gart GP, Callander 13 Sep and ca 100 there 11 Oct.

RED KNOT *Calidris canutus* (W)

WeBS estuary peaks were 1591 in Feb and 851 in Nov.

F Good counts from Skinflats: at least 3000 on mudflats on 16 Jan, 4560 on 23 Jan, 2200 on 6 Feb, 1200 on 23 Feb (WeBS) with 2 still at Bothkennar on 24 Apr.

Kinneil: 1160 on 23 Jan and 40 on 25 Apr. Late return there in small numbers with 6 on 7 Aug, 7 on 28 Aug, then 50 on 30 Sep, 70 on 29 Oct and ca 250 on 6 Dec.

SANDERLING *Calidris alba*

The only WeBS estuary count was 3 in Sep.

F Singles Skinflats 8 May and 21 Aug. 2 juvs Kinneil 13 Nov (GO, GW).

*LITTLE STINT *Calidris minuta*

F Two Kinneil 6 and 7 Sep (RS, CJP).

CURLEW SANDPIPER *Calidris ferruginea* (p)

The only WeBS estuary count was 6 in Sep.

F Kinneil: singles on 9 and 18 Sep, juv 9 Sep, 6 on 20 Sep, 4 juvs 27 Sep and 1 juv on 2 Oct (GO, DT, DMB, AB, JRC). Skinflats: poor year with only single on 15 Sep (DMB).

C Juv Tullibody Inch 6 Sep and 2 juvs there 9 Sep (DMB).

Autumn passage, area summary (minimum number/half month)							
Jul		Aug		Sep		Oct	
0	0	0	0	3	6	1	0

*PURPLE SANDPIPER *Calidris maritima* (w)

F One Kinneil 31 Oct was feeding on open mud with large numbers of Dunlin, European Golden Plover, etc. (DT).

DUNLIN *Calidris alpina* (b?, W)

WeBS estuary peaks were 2874 in Jan and 4412 in Dec.

F Skinflats: recorded in good numbers again with 1300 on 12 Jan (WeBS), at least 1500 on 16 Jan, rising to 3670 on 23 Jan, 4040 on 6 Feb before dropping to 590 on 22 Feb. 87 on 23 Jul was the only autumn record. 1475 on 19 Dec (WeBS). Kinneil: 250 on 24 Jan, 850 in the general Grangemouth area 8 Feb, 250 on 28 Feb and 150 on 15 Mar. 1 on 4 Jul was followed by 41 on 28 Aug, ca 160 on 5 Sep, ca 300 on 1 Oct, ca 450 on 25 Oct, ca 1000 on 31 Oct and ca 1500 on 8 Nov.

RUFF *Philomachus pugnax* (w, p)

A poor year for this species with only singles noted, apart from a WeBS estuary count of 5 in Sep.

F No overwintering birds were noted at the start of the year. Skinflats: singles 6 Jun, 2 Sep (juv), 6-8 Sep, 15 Sep (M), 20 Sep (R Carron) and 15 Nov (CJP, AB, BRG, GG, GO, MVB, RS). Kinneil: singles 18 Jul, 23 Jul, 20 and 22 Aug. 4 on 20 Sep. Singles 31 Oct and 3 Nov (ACC, GO, RS, DT, JRC).

C M Blackdevoon Wetlands 21 May. F Tullibody Inch 16 Aug (DMB).

Autumn passage, area summary (minimum number/half month)							
Jul		Aug		Sep		Oct	
0	1	0	2	1	5	0	1

JACK SNIFE *Lymnocyrtus minimus* (w)

None recorded on the WeBS estuary counts.

F One Kinneil 31 Jan (former tip), 24 Apr, 19 Dec (former tip) and 26 Dec (DT, JD, BRG, GO). Singles St. Helen's L, Bonnybridge 6 Feb and 9 Mar (NB). 8 on saltmarsh, Kincardine Br 9 Nov (BRG).

C One R Devon, Tillicoultry-Alva stretch 16 Dec (GEL).

S Two Netherton Marsh, Carse of Lecropt 12 Jan with 1 there 15 Nov. 2 R Forth, Teith-Allan conf 12 Jan and 7 Feb (DT). 1 Poldar Moss, Flanders Moss 25 Jan. 1 Cambushinnie Hill 5 Apr and 1 Cullens Pond, Cromlix 22 Oct (DOE, DMB, NB).

COMMON SNIPE *Gallinago gallinago* (B,W)

WeBS estuary peaks were 0 during the early year counts and 12 in Dec.

- F Thirty-six St. Helen's Loch, Bonnybridge 14 Jan with 13 there 18 Feb, 24 on 9 Mar, 65 on 26 Oct and 12 on 23 Nov (NB). 11 Kinneil 25 Oct, with 13 on former tip there 26 Nov and 22 at lagoon and tip 19 Dec (DT).
- C Seventeen R Devon, Alva-Tullibody Br 21 Dec (CVW).
- S R Forth: 37 Stirling-Upper Taylorton 16 Jan with 41 there 21 Feb, 30 on 10 Oct, 29 on 23 Nov and 48 on 19 Dec. 12 Br of Frew-E Frew 23 Jan. 6 Ladylands-Br of Frew 29 Jan with 7 on 24 Dec. 48 Carse of Lecropt and 10 Netherton Marsh both 15 Nov. 7 Allan Water-Stirling Br conf 25 Dec. Elsewhere 7 Polmaise lagoons, Fallin 19 Feb with 8 here 16 Dec. 14 Wester Cambushinnie Pond, Cromlix 22 Oct. 37 Gart GP, Callander 15 Nov with 43 there 6 Dec. 12 'Blue Banks', by R Teith 12 Dec. Breeding season: 1 chipping Lower Earlsburn Res 31 Mar, 1 Cromlix 18 Apr, 1 drumming Killin Marshes 17 May and 1 chipping Sheriffmuir 29 Jun.

EURASIAN WOODCOCK *Scolopax rusticola* (B, W)

Grossly under-recorded during the breeding season.

- F Singles Drumbowie Res, Denny 9 Mar and South Drum, High Bonnybridge 23 Nov.
- C Singles Blackdevon Wetlands 26 Oct and Dollar garden 30 Dec.
- S Singles Carsran, Lochearnhead 23 Jan; Allan Water, BoA 7 Feb; Boreland, Killin 7 Feb; 2 Lanrick, Doune 15 Feb; 1 L Ard 28 Feb; 1 R Forth, Br of Frew-E Frew 20 Mar; 1 L Dochart 4 Nov; 2 Holmehill, Dunblane 21 Nov; 4 Dumyat 22 Nov; 3 Coilantogle, L Venachar 22 Nov and 3 Gart, Callander 21 Dec.

BLACK-TAILED GODWIT *Limosa limosa* (W)

WeBS estuary peaks were 144 in Feb and 471 in Sep.

Several birds at Kinneil carry colour rings, with birds ringed in France and Iceland using this site as a stop-over. Please scrutinize flocks carefully and submit details to the BTO and the recorder.

- F Recorded all year in the Grangemouth area, except June. Monthly peaks at Kinneil: 100 on 24 Jan, 145 on 19 Feb, 178 on 11 Mar, 400+ on 25 Apr (with ca 120 *islandica* birds recorded the next day), 6 on 18 May, 106 on 25 Jul, 357 on 20 Aug (with up to 70 *islandica* birds on 25 Aug), 349 on 7 Sep, 185 on 29 Oct, 160 on 9 Nov and 31 on 25 Dec. Much smaller numbers at Skinflats, where monthly peaks: 9 on 22 Feb (WeBS), 2 on 21, 23 and 31 Mar, 84 on 24 Apr, 125 on 5 May, 5 on 19 Jul, 3 on 21 Aug, 22 on 28 Sep, 82 on 1 Oct and 19 on 15 Nov (WeBS).
- C One Cambus Village pool 22 Apr. 24 Blackdevon Wetlands 2 Jul.

BAR-TAILED GODWIT *Limosa lapponica* (W)

WeBS estuary peaks were 280 in Jan and 270 in Nov.

- F Kinneil: 200 on 12 Jan, 239 on 23 Jan, 75 on 8 Feb (general Grangemouth area), 50 on 15 Mar, 20 on 26 Apr and on 7 Sep, 60 on 29 Oct and 20 on 15 Nov. 1 Skinflats 16 Mar.

WHIMBREL *Numenius phaeopus* (p)

The only WeBS estuary count was 1 in Sep.

- F Airth: singles on 22 Apr, 21 May and 25 Aug (DMB). Skinflats: 2 on 24 Apr, 1 on 4 Jul, 5 on 5 Jul, 1 on 20 Jul, 1 on 23 Aug (DOE, GG, RS, WT). Kinneil: singles on 7 and 9 Apr, 5 on 20 May, singles on 24, 25 and 29 May, singles on 4, 9 and 16 Jul, 2 on 18 Jul, 1 on 19 Jul, 4 on 22 Jul, 6+ on 23 Jul, 5+ on 24 Jul and 1 on 14 Aug (GO, AET, DT, DH, BRG, ACC, AB, MB, RS). Kincardine Br: 5 flew upstream 24 Apr and 1 on 20 Sep (WeBS) (NC, DMB).
- C Single Tullibody Inch 20 Apr with 2 there 9 Sep. 1 Blackdevon Wetlands 24 Apr (DMB, DOE).
- S Twelve Malling, Lake of Menteith 7 May was a good inland sighting (RAB).

Autumn passage, area summary (minimum number/half month)							
Jul		Aug		Sep		Oct	
8	7	1	2	2	1	2	0

EURASIAN CURLEW *Numenius arquata* (B, W)

WeBS estuary peaks were 806 in Feb and 1006 in Oct.

- F Skinflats: 200 on 12 Jan, 258 on 22 Feb (WeBS), 18 on 15 Mar, 460 on 18 Oct (WeBS), 319 on 15 Nov (WeBS), 220 on 29 Nov and 60 on 18 Dec. Kinneil: 25 on 24 Jan, 50 on 28 Feb, 30 on 15 Mar, 349 on 25 Jul, 398 on 5 Aug, 500 on 20 Aug and ca 500 on 4 Sep.
- C Cambus Pools area: 45 on 21 Jan, 460 on 14 Feb, 170 on 23 Feb, 131 on 25 Oct, 78 on 2 Nov and 400 on 29 Oct.
- S R Forth: 150 Fallin-Cambus 25 Jan and 84 there on 15 Feb. Carse of Lecropt: 80 on 25 Feb, ca 333 flying by in groups 15 Mar. In breeding season: 12 at head of L Tay 2 Apr; 2 Touchadam Muir 18 Apr; 4 Blairdrummond Moss 25 Apr; 2 Drip Moss, Stirling 21 May; 1 L Mahaick 30 May, 2 King's Park, Stirling 9 Jun.

COMMON SANDPIPER *Actitis hypoleucos* (B)

- F Kinneil: 2 on 25 Apr, 2 on 16 Jul, 4 along sea wall on 19 Jul, 8 on 22 Jul, 1 on 23 Jul, 2 on 6 Aug, 1 on 13 Aug, 1 on 28 Aug and 1 on 23 Oct. Skinflats: 1 on 24 Apr, 2 on 25 Apr, 1 on 19 and 2 on 25 Jul and 2 on 23 Jul.
- C Four Blackdevon Wetlands 2 and 22 Jul.
- S Two Carse of Lecropt 16 Apr; singles L Mahaick 18 Apr, L Drunkie 24 Apr and Tigh Mor, L Achray 3 May; 2 Gart GP, Callander 3 May; 2 Carron Valley Res 3 May; 2 Cocksburn Res, BoA 9 May, 2 Braeleny, Callander 11 Jun; 6 incl juvs. R Cononish, Tyndrum 8 Jul.

Autumn passage, area summary (minimum number/half month)							
Jul		Aug		Sep		Oct	
4	13	7	3	0	0	0	1

GREEN SANDPIPER *Tringa ochropus* (w, p)

This species now occurs as a wintering bird in small numbers as well as a passage migrant.

- F Singles Kinneil 17 Aug and 29 Oct with 3 there 13 Nov. 2 Gilston, Polmont 21 Nov. Single Skinflats 9 Dec (RS, GW, RS, GO).
- S Singles Quarry L, Blairdrummond 17 Mar and 15 Apr. 1 R Forth, Carse of Lecropt 12 Dec (NB, CJP, DT).

*SPOTTED REDSHANK *Tringa erythropus* (p)

- F Singles Kinneil 26 and 28 Feb, 31 Mar, 27 and 28 Apr, 30 Oct and 14 Dec. Single Skinflats 25 Jul (BRG, CJP, GO, RS).

COMMON GREENSHANK *Tringa nebularia* (w, p)

WeBS estuary peaks were 5 in Feb, Nov and Dec.

- F Present at Skinflats all year, except June. Monthly maxima: 3 on 12 Jan (WeBS), 4 on 22 Feb (WeBS), 5 on 23 Mar, 1 on 2 and 24 Apr, 4 on 5 May (MVB, AB, AET, GO, RS, DMB). Autumn passage monthly maxima: 6 on 25 Jul, 8 on 20 Aug, 2 on 4, 6 and 7 Sep. (DMB, BRG, GO). Winter maxima: 2 on 28 Oct, 4 on 15 Nov and 2 on 19 Dec (WeBS) (AB, MVB, RS). At Kinneil all year, except Apr-Jun. Monthly maxima: 2 on 23 Jan; 2 on 1, 6 and 13 Feb; 2 on 6 Mar (MVB, DMB, BRG). Autumn passage maxima: 3 on 17 Jul, 6 on 5 Aug, 6 on 26 Sep (BRG, RS, DT). Winter monthly maxima: 4 on 31 Oct, 2 on 8 and 15 Nov and 4⁺ on 2 Dec (DT, AB, RS). Elsewhere 1 Dunmore 10 Nov (RS).
- C Two Blackdevon Wetlands 9 Jun with 3 there 2 and 22 Jul. 2 Tullibody Inch 23 Jul and 1 there 16 Aug (DMB).

- S One R Forth, Cambus-Fallin 15 Feb (ACC).

Autumn passage, area summary (minimum number/half month)							
Jul		Aug		Sep		Oct	
6	14	8	15	4	5	0	4

COMMON REDSHANK *Tringa totanus* (B, W)

WeBS estuary peaks were 1890 in Jan and 2766 in Oct.

- F Skinflats estuary: 1154 on 12 Jan, 976 on 14 Mar, 924 on 20 Sep, 1329 on 18 Oct, 1113 on 15 Nov and 1296 on 19 Dec. Kinneil: 150 on 24 Jan, 300 on 28 Feb, 250 on 15 Mar, 165 on 4 Jul and 343 on 28 Aug.
- C Six Cambus Pool 21 Mar with 2 there 26 Oct.
- S Only recorded in small numbers (up to 5). 1-3 along various sections of the R Forth in Feb, Mar, Oct and Dec. 5 on Allan Water conf-Stirling Br stretch 25 Dec. In breeding season: 2 Gart GP, Callander 19 Mar with 2 there 8 Apr and 1 on 3 May; 3 Ashfield, Allan Water and 2 Kinbuck 21 Mar; 1 Wester Cambushinnie L, Cromlix 24 Mar; 5 R Forth, Cambus-Fallin 29 Mar; 1 N Third Res 30 Mar; 2 L Mahaick 18 Apr; 1 Carse of Lecropt 12 May.

RUDDY TURNSTONE *Arenaria interpres* (W)

WeBS estuary peaks were 2 in Mar and 4 in Nov.

- F Kinneil: 2 on 31 Jan, 3 on 13 Feb, 1 on 18 Apr, 4 on 16 Nov and 1 on 19 Dec (DT, JRC). Skinflats: 1 Carron mouth 22 Feb (WeBS) and 2 there 14 Mar (WeBS) (DMB).

PARASITIC JAEGER (ARCTIC SKUA) *Stercorarius parasiticus* (p)

- F Kinneil: 3 (1 pale phase ad and 2 imm dark phase) on 13 Sep (DT), 2 (1 pale phase, 1 dark phase) on 30 Sep (AB, GO), 1 (imm dark phase) on 1 Oct (DT), 1 > W 6 Oct (GO).

GREAT SKUA *Stercorarius skua*

- F One > W Kinneil 30 Sep (GO, AB).

*BLACK-LEGGED KITTIWAKE *Rissa tridactyla* (P, w)

- F Ca 100 at Kinneil 29 Mar (DT). Juv Kinneil 13 and 20 Sep (DT, JRC). 1 Bothkennar, Skinflats 21 Sep (DOE). Kinneil: 1 on 1 Oct (DT), 500-600 > W 16 Oct (GO), 1 on 8 Nov (DT).
- S One Lanrick, Doune 15 Feb and 15 Mar (DOE). 1 R Forth, Lecropt Carse 15 Mar and 15 Nov to 24 Dec (DT).

COMMON BLACK-HEADED GULL *Larus ridibundus* (B,W)

Forth Est (WeBS): 294 in Jan, 279 in Feb, 234 in Mar, 1189 in Sep, 394 in Oct, 243 in Nov and 203 in Dec.

- F Max counts: 580 > E Kincardine Br 23 Jan (dusk roost), 201 Kinneil 12 Jan, 540 Skinflats 22 Feb, 100 Denny 3 May and 78 Blackness 19 Oct.
- C Max count: 1035 S Alloa 20 Sep.

LITTLE GULL *Larus minutus*

- F Ad Skinflats 4-5 July (GG, RS). One Kinneil 15 Jul (MB).

*MEDITERRANEAN GULL *Larus melanocephalus*

- F One 1w Blackness 19 Sep (EMcG). Ad Kinneil 22 Dec (RS). These are the 18-19th records for the recording area.

MEW GULL (COMMON GULL) *Larus canus* (B,W)

Forth Est (WeBS): 64 in Jan, 76 in Feb, 40 in Mar, 157 in Sep, 76 in Oct, 96 in Nov, 1117 in Dec.

- F Max counts: 451 St Helen's Loch, Bonnybridge 17 Dec; 802 Kinneil and 302 Blackness 19 Dec.
- S Breeding: 5 ON Cambusmore 2 May. Max counts: 300 Blairdrummond Moss 22 Jan; 754 Lake of Menteith 7 Feb.

*RING-BILLED GULL *Larus delawarensis*

F Ad at Kinneil from 2008 to 10 Feb and from 5 Sep to 25 Oct is thought to be the returning bird from 2007 and 2008 (DT, GO *et al.*). These are the 5th and 6th records thought to involve 4 individuals.

LESSER BLACK-BACKED GULL *Larus fuscus* (b, S)

Forth Est (WeBS): 0 in Jan, 2 in Feb, 10 in Mar, 5 in Sep, 15 in Oct, 3 in Nov, 1 in Dec.

F Breeding: 25+ ON Grangemouth Docks 31 Mar; 15 Y Bonnybridge Ind Est 30 Jun.

S Max counts: 89 Lake of Menteith 6 Mar; 577 Thornhill Carse 14 Oct.

HERRING GULL *Larus argentatus* (b, W)

Forth Est (WeBS): 30 in Jan, 303 in Feb, 245 in Mar, 800 in Sep, 178 in Oct, 90 in Nov, 78 in Dec.

F Breeding: 15+ ON Grangemouth Docks 31 Mar. Max count: 1300 Grangemouth area 8 Feb.

C Max count: 78 Kennetpans 18 Oct.

*ICELAND GULL *Larus glaucooides*

F Ad Kinneil 2 Jan. 1w Skinflats 6 Feb to 25 Apr (MVB, AB, DOE). 2w/2s Skinflats 22 Feb to 13 Mar, 6 May, 12 Jul and 20 Aug (MVB, GO, RS). 1 ad Kinneil 25 Dec (MT, GO, RS).

*GLAUCOUS GULL *Larus hyperboreus*

F One 1w Airth 9 May (DMB). 1w Kinneil 26 Dec (DT).

GREAT BLACK-BACKED GULL *Larus marinus* (S,W)

Forth Est (WeBS): 6 in Jan, 8 in Feb, 0 in Mar, 1 in Sep, 2 in Oct, 2 in Nov, 4 in Dec.

F Max count: 10 Grangemouth area 8 Feb and 25 Apr.

C One Cambus 9 Oct.

S Two Carron Valley Res 3 May. 1 Ashfield 27 Aug.

*BLACK TERN *Chlidonias niger*

F Moulting ad > W Skinflats 25 Jul with Sandwich Terns (GO, RS).

SANDWICH TERN *Sterna sandoicensis* (P)

F At least 40 > W Skinflats 25 Jul. 1 Skinflats 15 Sep. Kinneil: 2 on 27 Sep, 30 on 20 Sep, 5 on 30 Sep. 55 Kincardine Br area and 25 Skinflats 1 Oct.

COMMON TERN *Sterna hirundo* (B)

F Skinflats: first on 5 May, up to 61 during May, up to 4 in Jul, 7 on 5 Aug. Kinneil: 3 on 4 Jul, ad and juv 4-12 Aug, 1 on 13 Sep.

ARCTIC TERN *Sterna paradisaea*

F Two Skinflats 8 May (GO).

COMMON PIGEON (FERAL PIGEON) *Columba livia* (B,W)

No notable records were received.

STOCK DOVE *Columba oenas* (B, W)

F Sixteen Skinflats 6 Feb with 11 there 23 Jul and 24 on 19 Dec. 9 Kinneil 18 Apr with 8 there 25 Apr, 2 on 4 Jul, 7 on 29 Jun and 3 on 28 Aug.

C One Blackgrange 29 Nov.

S Three Lanrick, Doune 11 Jan; 2 Greenyards, Dunblane 27 Jan; 3 Cambuskenneth 6 May; 2 Airthrey, BoA 21 May and 1 there 2 Dec. Pr Argaty, BoD 28 May. 28 feeding in stubble/rape field Lower Polmaise, Fallin 3 Dec.

- COMMON WOOD PIGEON *Columba palumbus* (B, W)
 BBS¹: recorded at 4.4 b/lkm
 C One thousand one hundred Gartmorn 22 Nov.
 S Eight hundred Greenyards, Dunblane 19 Jan. 100 Cultenhove Dam, Stirling 1 Mar.
- EURASIAN COLLARED DOVE *Streptopelia decaocto* (B, W)
 Greatly under-reported, especially breeding records.
 S Fifty Blairdrummond 11 Nov.
- COMMON CUCKOO *Cuculus canorus* (B)
 Few records received. Arrival² in Apr: 1 Kinneil 24th was a day earlier than in 2008 and 2007. This was followed by singles at Drumloist, BoD 25th; Lanrick, Doune 1st May; Flanders Moss and L Lubnaig 2nd May.
 S One Doups Fm, Denny Muir 26 May.
- BARN OWL *Tyto alba* (b, w)
 After indications in previous years that the species was spreading, Barn Owls are likely to have suffered during the cold winter. This is reflected in fewer records from a more restricted range, mainly in the Doune-Dunblane area, this year.
 F One carrying prey at disused opencast coal site Darnrig Moss Jul. 1 Grangemouth 8 Oct.
 C One Tullibody 25 Jan.
 S Two East Poldar, Flanders Moss 25 Jan and 2 ads on moss Jul. Singles L Watston, Doune 30 Jan; Glenhead, Dunblane 14 Feb; Dunblane 7 Apr. 1 L Dochart 16 Apr and 25 May with 2 there 12 Sep and 1 on 16 Oct. 1 Hill of Row, Lecropt 5 Jul. Bred Brows, BoD and Kilbryde, BoD 7 Jul. 1 Doune 9 Nov.
- TAWNY OWL *Strix aluco* (B, W)
 F One Kinneil Woods 26 Apr. Two (1 in garden, 1 at cottage) at The Pineapple, Airth 7 Nov. 1 Champany, Linlithgow 24 Dec.
 C One Menstrie 25 Jan.
 S One Earnknowe, Lochearnhead 20 Feb. 1 Airthrey, BoA 15 Apr with a half grown chick there mobbed by Blackbirds 21 May. 2 juvs Sheriffmuir 29 Jun. Singles calling Ashfield 27 Aug and Argaty, BoD 29 Aug.
- LONG-EARED OWL *Asio otus* (b, w)
 F One Kinneil 15 Jul.
 S One Earlsburn Res 7 Dec.
- SHORT-EARED OWL *Asio flammeus* (b, W)
 Very few records this year. For this rather local breeder, a more systematic survey of known breeding areas and potential breeding sites would be of value.
 F One flushed from sea bank fronting former tip at Kinneil 13 Feb and 2 Apr (DT).
 S One Earlsburn Res 5 Dec (DB).

¹ Due to the small and varying number of squares, turn-over of surveyors and different percentages of habitats covered each year, inter-annual comparisons are unlikely to be valid. Breakdown into habitat categories is not valid due to the unrepresentativeness of the squares surveyed and the varying percentage of each habitat category covered each year. Figures should therefore be seen as reflecting the situation in any one year for those squares covered.

² Spring arrival and autumn departure dates are not recorded systematically at the same locations with the same effort and coverage across years. Changes between years should therefore be seen as indicative only and not be interpreted as reflecting true phenological variation.

COMMON SWIFT *Apus apus* (B)

Spring arrival in May: 1 Ochiltree, Dunblane 1st was 4 days later than in 2008, 3 days later than in 2007, on the same day as in 2006 and 2 days later than in 2005. This was followed by 1 Plean 5th, 20 Carse of Lecropt 7th, 1 Lake of Menteith 7th, 2 Coneyhill, BoA 9th, 3 Doune 10th, 16 Dunblane Hydro 10th and 3 Stirling centre 11th.

Autumn departure in August: 1 Dunblane Hydro 5th and 2 Coneyhill, BoA 6th, which was 24 days earlier than in 2008, 4 days earlier than in 2007, 22 days later than in 2006 and 13 days earlier than in 2005.

F Twenty-three Skinflats 19 Jun with 70 there 19 Jul and 170 on 23 Jul.

S Five Doune Rd, Dunblane 25 Jun where nested previously but not this year. 10 calling Main Street, Doune 11 Jul. 20 Coneyhill, BoA 20 and 27 Jul. 16 Drip Moss, Stirling 25 Jul.

COMMON KINGFISHER *Alcedo atthis* (b, w)

F Skinflats: singles 18 and 26 Jul. Kinneil: singles 4 Jan, 19 and 29 Oct, 3 and 15 Nov and 1 on 25 Dec. R Carron: singles Carronshore 20 Sep and 8 Nov and along B902 Carron-Carron House stretch 22 Nov.

C R Devon: 2 Tillicoultry-Alva 21 Feb with singles there 10 Oct and 16 Dec; single Dollar-Tillicoultry 24 Feb and 16 Oct with 2 there 30 Nov; singles B934-Crook of Devon 17 Mar, 28 Sep, 22 Oct and 10 Dec; singles by Menstrie Br 24 Mar and 23 Oct; single Tullibody Br-A907 17 Oct. Elsewhere single Inglewood Pond, Alloa 1 Sep and 2 Kennetpans 1 Oct.

S R Teith: singles Callander 17 Jan, 11 Oct and 18 Dec with 2 on Wester Row-R Forth conf stretch 19 Dec. R Forth: singles Br of Frew-E Frew 27 Feb and 17 Oct; Teith-Allan conf 15 Mar and 15 Nov; Stirling Old Br 28 Aug. Callander: singles Gart GP 17 Jan and 8 Apr with 2 there 3 May and 1 on 6 Dec; single Eas Gobhain 17 Sep. Elsewhere single R Balvag, Balquhidder-Strathyre 22 Feb; 2 Lake of Menteith 6 Mar; 1 BoA 25 May; 1 Polmaise lagoons, Fallin 17 Sep; 1 Gartmore Pond, Aberfoyle 11 Nov and 1 L Lubnaig 28 Nov.

EUROPEAN GREEN WOODPECKER *Picus viridis* (B, W)

Mainly concentrated in SE quarter of recording area.

F One at The Pineapple, Airth 10 Dec.

C F Dollar Glen 24 May.

S Doune: singles calling Doune Ponds 27 Feb; Doune 20 Mar; Doune Lodge 31 Mar and Argaty, BoD 29 Aug. BoA: 1 > W near Sheriffmuir Rd on track to Dumyat 26 Jan. 1 Airthrey 28 and 29 Mar and 9 Jun, Yellow Craig Wood 12 Apr and Cocksburn Res 21 Apr. 1 head of L Tay 1 Jun. Elsewhere 1 Carse of Lecropt 21 Dec.

GREAT SPOTTED WOODPECKER *Dendrocopos major* (B, W)

F Singles Skinflats 7 Jan; Tamfourhill, Falkirk 8 May; Dunmore, Airth 12 Jun; Kinneil 26 Jul, 13 Sep and 8 Nov; Liddle Drive, Bo'ness (M) 25 Dec and Carron garden 27 Dec where feeding on fat balls.

C Singles Castlebridge Business Park, Forestmill 19 and 27 Feb, 7 Jul, 29 Oct and 14 Dec. Singles S Menstrie 6 Feb; Gartmorn 29 May; R Devon, Menstrie 23 Oct and Old Railway, Clackmannan 10 Dec.

S Pr Holmehill, Dunblane 17 Jan with 2 there 21 Jul and 3 on 26 Oct. Singles drumming Killin 26 Jan and Marl L, Argaty, BoD 28 Jan. 3 Lake of Menteith 19 Feb. F Stronvar, L Voil 19 Feb. 2 Earnknowe, Lochearnhead 20 Feb. 2 Culthove Dam, Stirling 1 Mar. 2 Fore Road, Kippen 5 Apr. Singles Yellow Craig Wood, BoA 12 Apr and nearby at Airthrey 28 Jun. 1 W Balquhidder 14 Apr. Singles Argaty, BoD 29 Aug; N Doune 31 Aug; Carron Valley Res 20 Oct; R Dochart, Auchlyne Br 8 Nov and Flanders Moss 9 Nov.

SKY LARK *Alauda arvensis* (B, W)

BBS: recorded at 2.1 b/lkm.

- F Flocks of 240 and 55 Skinflats 6 Feb. 150 N Bellsdyke, Airth 6 Feb. 95 Skinflats 15 Nov with 320 there 19 Dec.
 S Three hundred and ten Carse of Lecropt 10 Feb with ca 80 there 24 Dec.

SAND MARTIN *Riparia riparia* (B)

Arrival in Mar: 6 Blairdrummond on 4th were 26 days earlier than in 2008, 15 days earlier than in 2007, 16 days earlier than in 2006 and 13 days earlier than in 2005. This was followed by 4 more seasonal birds at Auchentyre, Crianlarich 18th; 3 BoA 19th; 8 Cambus Pools 21st; 5 > W Skinflats 23rd; 8 Cromlix 26th; 8 BoA 30th. In April: 2 Deanston and 4 Carronshore 4th; 40⁺ Lake of Menteith 8th and 2 Blairdrummond 15th.

Departure in Aug: 2 Ashfield 27th, 6 S Doune 31st, followed in Sep by ca 10 Cambus Village Pool 1st, 250⁺ Skinflats 2nd and 8 Eas Gobhain Callander 17th, which was 3 days later than in 2007, 4 days later than in 2006 and 24 days later than in 2005.

- F At least five active nest holes R Avon, Slamannan 11 May.
 S Twenty nests in sandy hillock Balquhidder Glen 6 May. 25 assumed occupied nests Clash, R. Teith, Callander. 20 nests L Mahaick 30 May.

BARN SWALLOW *Hirundo rustica* (B)

BBS: recorded at 3.5 b/lkm.

Spring arrival in Mar: 1 Dunblane 8th was 29 days earlier than in 2008, 2 days later than in 2007, 23 days earlier than in 2006 and 26 days earlier than in 2005.

The next birds were not due until April with 1 at head of L Tay 1st; 1 California 2nd; 1 Carronshore and 2 Kinneil 4th; 1 Lake of Menteith 7th; 1 Bows, BoD 8th; 3 R. Devon, Alva-Menstrie 10th; 2 Glenhead, Denny 12th; 1 Bannockburn 13th; 1 BoA 14th and 1 Blairdrummond 15th.

Autumn departure in Sep: 1 Holmehill, Dunblane 27th; 2 West Gogar, Menstrie 29th. In Oct: 2 Torwood, Larbert 2nd and 4 California 5th, which was 25 days earlier than in 2008, on the same day as in 2007, 11 days earlier than in 2006 and 22 days earlier than in 2005.

- F Four prs nested Carbrook Mains, Plean 11 Jul (compared to ca 11 nests last year).
 S Twenty Severie, BoD 30 May. 20 Cononish, Tyndrum 8 Jul.

COMMON HOUSE MARTIN *Delichon urbica* (B)

Arrival in Apr: 6 Cocksburn Res, BoA 7th was 9 days earlier than in 2008, 2 days earlier than in 2007, 11 days earlier than in 2006 and on the same day as in 2005.

This was followed by 1 BoA 14th; 2 R Devon, Alva-Menstrie 17th; 2 Earlsburn wind farm turn-off and 4 Carronshore 18th.

Departure in Sep: 50 Skinflats 2nd; 6 Haircraigs, Dennyloanhead 3rd; 1 Broomridge, Stirling and 4 Callander 17th and 3 Cocksburn Res 23rd, which was 8 days earlier than in 2008 and 2006, 12 days later than in 2007 and 17 days earlier than in 2005.

- F Eight occupied nests Bryce Avenue, Carronshore 16 Aug with 2 Y still being fed in nest there by 1 Sep.
 S Twenty Airthrey, BoA 26 May. 2 nests Milnholm, Dunblane 2 Jul.

TREE PIPIT *Anthus trivialis* (B)

Arrival in Apr: 2 Cromlix 18th were 9 days earlier than in 2008, 5 days later than in 2007, 1 day later than in 2006 and 6 days later than in 2005. This was followed by 1 Dalrigh, Tyndrum 23rd; 1 L Drunkie 24th; 2 L Lubnaig 25th; 1 Kinneil 26th; 1 N Tullibody and 4 Doups Fm, Denny Muir 28th. No departure dates were again received this year.

- S Three singing Balleich, Aberfoyle and 3 singing Barbadoes, Aberfoyle 2 May. 1 Tigh Mor, L Achray 2 May. 2 Doune Lodge and 2 Carron Valley Res 3 May. 1 Balquhiddier Glen 6 May. 10 singing Tyndrum 11 May. 2 singing Callander and 2 singing Cromlix 25 May. 1 Auchentyre, Criarlarich 29 Jun.
- MEADOW PIPIT *Anthus pratensis* (B, W)
BBS: recorded at 4.1 b/lkm. Scarce mid-winter.
- F Thirty-five Dunmore, Airth 8 Feb. 20 Skinflats 19 Sep.
- S Twenty-six Blairdrummond Moss 25 Apr. 60 E Frew, Thornhill 13 Aug. 25 Argaty, BoD 29 Aug. 80 Lairhill, Sheriffmuir 10 Sep. 18 Cocksburn Res, BoA 23 Sep.
- EURASIAN ROCK PIPIT *Anthus petrosus* (w)
C One Cambus Pools 5 Jan (DMB).
- GREY WAGTAIL *Motacilla cinerea* (B, w)
F R Carron: 1 Larbert-Carron Br 11 Jan, 2 M876-Larbert 11 Jan and 15 Feb, 1 Carron House-A905 17 Jan, 1 in unspecified location on river 20 Sep; 1 Stenhousemuir 14 Oct, 2 Carronshore 8 Nov and 2 B902-Carron House 22 Nov. Elsewhere singles Kinneil 1 Feb, 30 Sep and 21 Oct; 1 Drumbowie Res, Denny 13 Feb and 4 Grange Burn, Grangemouth 28 Aug.
- C One Gartmorn 17 Jan. R Devon: 1 Menstrie Br 6 Feb and 1 Jun; pr Cambus 1 Apr; 1 S of Menstrie 2 Apr; 1 Cambus Pools 9 Oct; 1 Dollar-Tillicoultry 30 Nov; 2 Tillicoultry-Alva 16 Dec; 1 Alva-Tullibody Br 21 Dec. 2 Castlebridge Business Park, Forestmill 5 Oct with 1-2 there 9 Nov, 1 on 19 Nov and 1 on 4 Dec.
- S One in garden Springwood Avenue, Stirling 6 Jan to 14 Feb and Nov. 1 sewage works, Doune Castle 9 Jan. 1 Malling, Lake of Menteith 7 Feb. 2 L Venachar 9 Feb. 6 Allan Water, Ashfield 22 Feb. Pr Airthrey L, BoA 28 Mar and 2 there 14 Dec. Pr W Balquhiddier 14 Apr. Singles Earlsburn wind farm turn-off 18 Apr; Tigh Mor, L Achray 3 May. 3 Carron Valley Res 3 May. F Coneyhill, BoA 3 May. M Cringate Moor 22 May. 2 Falls of Falloch, Glen Falloch 30 Jun. 2 Ashfield 27 Aug. 1 Argaty, BoD 29 Aug. 2 Cocksburn Res, BoA 23 Sep. R Forth: 3 Carse of Lecropt 15 Nov; 1 Allan Water conf-Stirling Br 27 Nov and 2 there 25 Dec. 1 Auchenlaich Fm Pond, Callander 6 Dec. 2 Allan Water, Ashfield 13 Dec. 1 R Teith, Wester Row-Forth conf 19 Dec.
- WHITE WAGTAIL (PIED WAGTAIL) *Motacilla alba* (B, w)
Again comparatively few winter records: 3 Jan records (3 in 2008, 9 in 2007, 3 in 2006 and 4 in 2005): singles Alva woodlands 1 Jan; Castlebridge Business Park, Forestmill 9 Jan and Stirling town centre 9 Jan. 1 Feb record (3 in 2008, 11 in 2007, 6 in 2006 and 1 in 2005): 1 N Tullibody 6 Feb. 2 Nov records (0 in 2008, 6 in 2007-2005): 6 Cambus Pools 30 Nov and 2 Tullibody Inch 30 Nov. 2 Dec records (2 in 2008, 7 in 2007-2005): 70 at roost Stirling station 2 Dec and 3 Gargunnoch Br 4 Dec.
- F Five Skinflats 31 Mar with 19 there mobbing a Sparrowhawk 15 Sep and 8 on 19 Sep. 8 Kinneil 28 Aug. Birds of the *alba* race: 1 Kinneil 25 Apr. 2 Skinflats 5 May with 5 there 9 May and 2 on 4 Sep.
- C One hundred Alloa 1 Oct. *M.a.alba*: 1 Blackdevon Wetlands 8 May. 2 Tullibody Inch 9 May and 3 there 6 Sep.
- S Three hundred at roost Stirling station 16 Mar. 70 E Frew, Thornhill 13 Aug. 73 King's Park, Stirling 22 Sep with 105 there 6 Oct. *M.a.alba*: 1 Carse of Lecropt 10 May.
- BOHEMIAN WAXWING *Bombycilla garrulus* (w)
Following the invasion of late 2008, small flocks stayed around until early April, especially in the Falkirk-Grangemouth and the Stirling-Dunblane-Doune areas.
- F Fifty Skinflats 2 Jan with 20 feeding by the A905 on 20 Jan. Falkirk: 20 at

- Laurieston 5 and 6 Jan, 15 in unspecified Falkirk location on 10 Jan, 25 on 20 Jan, 30 on 27 Jan and 20 at Princess Park 23 Feb. 30 Main Street, Larbert 20 Jan. 16 Carronshore 23 Jan with 3 there 2 Feb. 20 Grangemouth 22 Feb.
- C Eleven Alloa Business Park 5 Jan. 50 Alloa 6 Apr.
- S Dunblane: 1 High Street 1 and 4 Jan, 15 at supermarket on 8 Jan, 12 on 9 Jan and 11 on 10 Jan; 17 feeding on cotoneaster Ochiltree 24 Jan; 22 in unspecified location 9 Feb; 41 at Newton Crescent 15 Feb, 5 at supermarket 16 and 17 Mar with 32 there 19 Mar feeding on cotoneaster; 22 in unspecified location 21 Mar. 5 Killin 1 Jan and 3 there 2 Jan. 3 Doune 4 Jan with 6 there on 6, 7, 10 and 11 Jan. 7 Aberfoyle 8 Jan. Stirling: 60 on 9 Jan, 40 at Friar Street 13 Jan, 15 Springwood Avenue 14 Jan, 30 in unspecified location 17 Jan, 40 at Stirling Royal Hospital 16 Feb and 20 in unspecified location 6 Apr. BoA: 30 on 18 Jan, 18 in Pullar Avenue 18 Feb and 20 flycatching over Airthrey L 3 Apr. 2 Callander 18 Jan. 12 Bannockburn 12 Mar. 10 Cambuskenneth 18 Mar.
- WHITE-THROATED DIPPER *Cinclus cinclus* (B, W)
- F Two Carron Works, Stenhousemuir 19 Mar and 1 there 20 Sep. Pr also Carron Glen in Mar.
- C R Devon: 7 along B934-Crook of Devon stretch 13 Jan with 5 there 24 Feb, 28 Sep, 22 Oct, 10 Dec and 6 on 23 Nov. 5 Dollar-Tillicoultry stretch 23 Jan and 8 there 30 Nov. 5 on Tillicoultry-Alva stretch 16 Dec. 1 Cambus Pools 9 Oct with 2 at Cambus 25 Oct.
- S One singing R Dochart 26 Jan. 1 L Lubnaig 1 Feb. 2 L Voil 12 Feb. 2 Callendar prospecting holes in Ash tree by R Teith 14 Feb. 5 Alan Water, Ashfield 22 Feb. 2 singing N Third Res 9 Mar. 1 Carron Valley Res 3 May. 1 carrying food Cringate Muir 22 May. 1 in aggressive encounter with Kingfisher BoA 30 May. 1 Falls of Dochart, Glen Dochart 30 Jun. 2 Ashfield 27 Aug. 1 Argaty, BoD 29 Aug. 1 Cocksburn Res, BoA 9 Sep. 2 Eas Gobhain, Callander 17 Sep. 1 Kirkton Fm, Tyndrum 1 Oct. 1 in unspecified location Doune 8 Oct with 1 on Dragen Burn 21 Nov and pr there 24 Dec. 1 singing Auchlyne Br, R Dochart 8 Nov.
- WINTER WREN *Troglodytes troglodytes* (B, W)
- Widespread and common but under-recorded. BBS: recorded at 2.1 b/lkm.
- S Fifteen Airthrey L, BoA 15 Apr. 9 Holmehill, Dunblane incl ad feeding Y 30 May; 8 (7 in song) there 27 Jun, 10 on 26 Oct and 8 on 21 Nov.
- DUNNOCK *Prunella modularis* (B, W)
- Widespread and common but under-recorded.
- S Seven (4 in song) Holmehill, Dunblane 28 Feb with 5 (3 in song) there 18 Apr. 8 King's Park, Stirling 17 Mar with 4 there 15 Sep. 10 Airthrey, BoA 15 Apr. 12 Blairdrummond Moss 25 Apr.
- EUROPEAN ROBIN *Erithacus rubecula* (B,W)
- Widespread and common but under-recorded. BBS: recorded at 1.0 b/lkm.
- C One singing inside large shop, Alloa 13 Feb.
- S Holmehill, Dunblane: monthly maxima of 5 (2 singing) on 24 Jan, 7 (6) 14 Feb, 12 (6) 28 Mar, 5 (3) 10 Apr, 8 (3) 16 May, 7 (2 juvs) 27 Jun, 5 (2 juvs) 21 Jul, 9 (3 juvs) 22 Aug and 14 on 26 Oct. King's Park, Stirling: 12 on 4 Mar with 13 there 24 Sep and 18 on 6 Oct. 20 Pass of Leny 10 May.
- COMMON REDSTART *Phoenicurus phoenicurus* (B)
- Arrival in Apr: 1 head of L Tay 17th was 10 days earlier than in 2008, 5 days earlier than in 2007, 6 days earlier than in 2006 and 2 days earlier than in 2005. This was followed by singles Drumloist, BoD 25th; Kilbryde, BoD 26th and Lanrick, Doune on 1st May (JH, DOE).
- S Six singing Tyndrum 11 May. 2 singing Killin Marshes 17 May with ad and 2 juvs there 4 Jul. 1 Corscaplie, Dunblane 31 May (DMB, NB, DSK).

WHINCHAT *Saxicola rubetra* (B)

Spring arrival in April: 2 Kinneil 26th was 6 days earlier than in 2008, 1 day earlier than in 2007, 3 days earlier than in 2006 and 4 days earlier than in 2005. This was followed by pr Blackdevon Wetlands 29th and 3 Flanders Moss 3 May. Autumn departure: 2 Skinflats 16 Aug and 4 Ashfield 27 Aug, which was 26 days earlier than in 2008, 19 days later than in 2007, 4 days earlier than in 2006 and 12 days earlier than in 2005 (apart from a very late bird in Oct then). The large differences are no doubt a reflection of observer coverage rather than true variation.

- F One Skinflats 18 Jul and 2 there in Aug.
- S Three Flanders Moss 3 May. 1 Cringate Muir 22 May. M Bracklinn Falls, Callander 7 Jun.

EURASIAN STONECHAT *Saxicola torquata* (b, w)

Fewer records this year could indicate that the species did not cope well with the cold winter.

- F Kincardine Br: 1 on 8 Feb with 2 there 15 Nov. Kinneil: pr 8 Feb, single 15 Mar, F with 5 Y 16 Jun, single 30 Sep, pr 8 Oct and single 8 Nov, pr 14 Dec. Skinflats: singles 21 Jun and 20 Oct, 2 on 15 Nov and pr on 18 Dec.
- C M and/or F recorded on several dates 4 Mar to 1 Jun N Tullibody. 4 Blackdevon Wetlands 24 Apr.
- S Pr Polmaise lagoons, Fallin 16 Jan and 16 Apr with pr and 2 Y there 22 May. Pr Flanders Moss 21 Jan, 2 (East Poldar) 25 Jan, 2 prs 11 Jun, single 9 Nov and F there 29 Nov. 1 on track from Sheriffmuir Rd to Dumyat in Jan. 2 prs Lower Earlsburn Res 31 Mar. Pr Dumyat 12 Apr. 3 Cocksburn Res, BoA 22 Apr. Pr Stirling garden centre 10 May and 2 at King's Park 6 Oct. 6 L Mahaick 30 May. Pr Braeleny, Callander 11 Jun. 2 Ashfield 27 Aug. 4 juvs Argaty junction, Dunblane. 2 Cambuskenneth 20 Oct. Single Carse of Lecropt 15 Nov with 2 F there 24 Dec. M Netherton Marsh, BoA 15 Nov.

NORTHERN WHEATEAR *Oenanthe oenanthe* (B)

Spring arrival in Mar: 2 M Lower Earlsburn Res 31st were 6 days earlier than in 2008, 6 days later than in 2007, 4 days earlier than in 2006 and 10 days later than in 2005. This was followed in Apr by 1 Lake of Menteith 7th, 1 Bows, BoD 8th, 3 Dumyat 12th and 2 Glenhead, Denny 16th.

Autumn departure: 1 Skinflats 23 Aug, 1 Cromlix Fm 30 Aug, 2 Kinneil 4 Sep, M BoD wind farm 16 Sep, 1 Cruach Ardrain 12 Oct. This was 28 days later than in 2008, 3 days later than in 2007, 1 day earlier than in 2006 and 37 days later than in 2005. The large differences are no doubt a reflection of observer coverage rather than true variation.

- F F Kinneil 24 Apr; 2 M, 1 F there 25 Apr; 4 on sea wall 26 Apr, 8 in ploughed field 28 Apr and M 9 May. 8 Skinflats 24 Apr. 1 Glenhead, Denny 28 Apr.
- S One West Bracklinn, Callander 25 Apr. 8 Doups Fm, Denny Muir 28 Apr. 1 Carron Valley Res 3 May. 1 Balquhiddier Glen 6 May. 1 Carse of Lecropt 10 May. 4 (2 nests) Cononish, Tyndrum 8 Jul.

RING OUZEL *Turdus torquatus* (b)

- S F Hillhead, Gargunnock 25 Apr. 2 M, 1 F mobbing Kestrel Glen Kendrum 31 May. 3 Glas Leathad, Ben More 8 Jul. 2 Cononish, Tyndrum 15 Jul (AJR, DJC, JH, IMcP).

COMMON BLACKBIRD *Turdus merula* (B, W)

BBS: recorded at 2.9 b/lkm.

- F Fledged Y Carronshore 29 May. 1 carrying food Kinneil 16 Jun.
- C M carrying food Dollar Glen 24 May.
- S Holmehill, Dunblane: 12 on 28 Feb, 28 Mar and 16 May (when 6 in song), 13 (7 in song, recently fledged Y present) there 23 May, 11 (5 in song, Y being fed) on

30 May, 18 on 26 Oct and 19 on 13 Dec. King's Park, Stirling: 13 on 17 Mar, 12 on 31 Mar, 17 on 21 Apr, 23 on 1 May, 12 on 5 May, 17 on 9 Jun and 15 (several carrying food) on 23 Jun. Airthrey L, BoA: 12 on 21 May, 20 on 26 May and 20 on 9 Jun.

FIELDFARE *Turdus pilaris* (W)

Spring departure in Mar was early: 1 Grant Drive, Dunblane 23rd, 24 Kinbuck and ca 200 Cromlix both on 24th and ca 35 L Rusky 25th Mar. This was 33 days earlier than in 2008, 4 days earlier than in 2007, 50 days earlier than in 2006 and 35 days earlier than in 2005. The large differences are no doubt a reflection of observer coverage rather than true variation.

Autumn arrival in October: 3 Cocksburn Res, BoA 14th was 4 days earlier than in 2008, 7 days later than in 2007, 8 days earlier than in 2006 and 6 days earlier than in 2005. This was followed by 25 Sheriffmuir Inn 20th, ca 300 Touch Res 29th, 1400 > SW Sheriffmuir in 13 flocks above fog 30th.

- F Seventy in hedgerows at Skinflats 7 Jan. 30 feeding on crab apples at The Pineapple, Airth 9 Nov. 119 Tippetcraig, Slamannan 23 Nov.
- C One hundred and seventy Kennetpans 12 Jan with 35 there 6 Feb. 100 Gartmorn Dam 22 Nov.
- S Ca 80 Cromlix 28 Jan. 118 Carse of Lecropt 10 Feb. Ca 100 Touch Hills 23 Feb. 60 Coneyhill, BoA 25 Dec.

SONG THRUSH *Turdus philomelos* (B, W)

Under-recorded.

Fewer winter records than in 2007 and 2008. No Jan records. Feb: singles SE Menstrie 6 Feb, S Dollar 7 Feb, W Callander 8 Feb and 2 Firbush, L Tay 19 Feb. Nov: 7 Kinneil 8 Nov. No Dec records.

- S Holmehill, Dunblane: 2 singing 28 Mar, 3 (1 in song) 10 Apr, 3 (2 in song) 18 Apr, 3 (1 juv being fed) 27 Jun, 7 (3 juvs being fed) 22 Aug and 5 on 27 Sep.

REDWING *Turdus iliacus* (W)

Spring departure: 10 Holmehill, Dunblane 7 Mar were 28 days earlier than in 2008, 1 day earlier than in 2007, 29 days earlier than in 2006 and 37 days earlier than in 2005. The large differences are no doubt a reflection of observer coverage rather than true variation.

Autumn arrival in Oct: 1 Crianlarich 10th was 1 day later than in 2008, 13 days later than in 2007, 2 days earlier than in 2006 and 2 days later than in 2005. This was followed by 20 Sheriffmuir Inn 20th and 30 Holmehill, Dunblane 26th.

- C Two hundred and fifty Gartmorn 22 Nov.
- S Twenty-five Argaty, BoD 19 Jan. 30 Holmehill, Dunblane 24 Jan and 25 there 6 Feb. 30 Airthrey L, BoA 3 Mar. 110 > SW in 6 flocks Sheriffmuir 30 Oct. 37 Dunblane 20 Dec. 20+ feeding on cotoneaster Coneyhill, BoA 23 and 24 Dec.

MISTLE THRUSH *Turdus viscivorus* (B, W)

Under-recorded. Few noteworthy records received this year.

- S Thirty Cromlix Fm 30 Aug.

COMMON GRASSHOPPER WARBLER *Locustella naevia* (b)

Spring arrival in Apr: 1 N Tullibody 17th where also 28th was 6 days earlier than in 2005 and 2008, 8 days earlier than in 2007 and 10 days earlier than in 2006. This was followed by 1 at head of L Tay 19th, 1 singing Blackdevon Wetland 22nd with 2 singing there 24th, 1 singing Skinflats 22nd to 25th, 1 singing Kinneil and Argaty, BoD 26th and 3 Doups Fm, Denny Muir 28th.

- F One singing Airth 9 May. 1 Kinneil (former tip) 4 Jun and 1 singing there 24 Jun. 1 singing Skinflats 22 May and 4 Jun.
- S One Carron Valley Res 3 May. 1 Cromlix 5 May. 1 singing Balquhiddar Station 5 May.

SEDGE WARBLER *Acrocephalus schoenobaenus* (B)

Spring arrival in Apr: 1 Skinflats 22nd was 5 days earlier than in 2008, 3 day earlier than in 2007, 4 days earlier than in 2006 and 8 days earlier than in 2005. This was followed by 1 singing Blackdevon Wetlands and 2 singing Skinflats 24th, 1 Kinneil 26th and 28th and 1 R Devon, Alva-Menstrie stretch 28th. The large differences are no doubt a reflection of observer coverage rather than true variation.

Autumn departure: 2 Cockburn Res, BoA 12 Aug and 1 Skinflats 15 Sep, which was 7 days earlier than in 2008, 36 days later than in 2007, 33 days later than in 2006 and 9 days later than in 2005.

F Two Kinneil 4 and 9 Jul. 1 carrying food Skinflats 19 Jul.

C Nine singing Tullibody Inch 9 May.

S Two singing Drumloist, BoD 24 May.

EURASIAN BLACKCAP *Sylvia atricapilla* (B)

Winter records: 1 Grant Drive, Dunblane 1 Jan. F Alexander Drive, BoA 8 Feb and F in unspecified location, BoA 14 Feb. M Springwood Avenue, Stirling 4 Mar and F there in Nov.

Spring arrival in Apr: 1 Cambus Pools 5th was followed by 1 Airthrey L, BoA 11th; 1 singing BoA 14th; 1 Castle Avenue, Airth 14th; 1 Viewforth, Stirling 15th; 1 singing Laighills, Dunblane 17th; 1 singing Conehill, BoA 20th; 1 singing Carronshore and 4 King's Park, Stirling 21st; 2 singing Skinflats 25th; 1 singing Blairdrummond 26th.

C One Birneyknowe, Clackmannan 6 Jun.

S Two Pass of Leny 10 May. 2 singing Holmehill, Dunblane 16 May with M visiting probable nest site there in brambles 23 May, 3 singing 27 Jun and juv 21 Jul. 1 Polmaise Woods, Fallin 16 May. 1 Airthrey L, BoA 21 May with 3 there 9 Jun. 1 King's Park, Stirling 23 Jun. 1 Viewforth, Stirling 4 Jul.

GARDEN WARBLER *Sylvia borin* (B)

Spring arrival in Apr: 1 Dunblane 19th was 4 days earlier than in 2008, 9 days earlier than in 2007, 15 days earlier than in 2006 and 13 days earlier than in 2005. This was followed by 1 singing Argaty, BoD 26th, then in May 1 singing Airthrey, BoA 1st, 1 singing Port of Menteith 5th, 1 N Tullibody 6th and 1 singing Carse of Lecropt 7th.

Autumn departure: 2 feeding on elderberries Skinflats 2 Sep were 2 days earlier than in 2008 and 21 days later than in 2006. No departures dates were received for 2007 and 2005.

C One Birneyknowe, Clackmannan 6 Jun.

S Singles Pass of Leny and Carse of Lecropt 10 May. 1 singing Holmehill, Dunblane 16 May.

COMMON WHITETHROAT *Sylvia communis* (B)

Spring arrival in Apr: 1 singing Skinflats 24th was on the same day as in 2008, 1 day later than in 2007 2 days earlier than in 2006 and 6 days earlier than in 2005. This was followed by 1 Blairdrummond 25th, 1 Carronshore 27th, 1 Tullibody N 28th.

Autumn departure in Sep: 1 Greenyards, Dunblane 6th and 1 Kinneil 13th, which was 11 days earlier than in 2008, 42 days later than in 2007, 21 days later than in 2006 and 5 days later than in 2005. The large differences are no doubt a reflection of observer coverage rather than true variation.

F One Kinneil 29 May, with 7 there 4 Jun, 1 on 4 Jul, 4 on 9 Jul. 1 carrying food Skinflats 19 Jul with 3 there 23 Jul.

C Three Birneyknowe, Clackmannan 6 June.

S One singing Sheriffmuir 12 May. 1 King's Park, Stirling 17 May.

WOOD WARBLER *Phylloscopus sibilatrix* (B)

Under-recorded. Few records received this year.

Spring arrival in Apr: 1 Brig o' Turk 17th was 13 days earlier than in 2008, 10 days earlier than in 2007 and 12 days earlier than in 2006. No arrival dates were received for 2005. This was followed by 1 head of L Tay 25th.

- C The species appears to have disappeared from its last foothold in Dollar Glen.
- S Twelve Pass of Leny 10 May. 2 singing Bracklinn Falls, Callander 7 Jun. 1 singing Kilmahog 7 Jun.

COMMON CHIFFCHAFF *Phylloscopus collybita* (B)

Winter records: singles Cambus Pools 30 Nov and Airthrey L, BoA 1 Dec.

Spring arrival in Mar: singles Cambus Pools and Skinflats 21st were 9 days earlier than in 2008, 6 days later than in 2007, 10 days earlier than in 2006 and 3 days earlier than in 2005. This was followed by 1 singing Skinflats 22nd; birds singing Carronshore, Airthrey L and in an unspecified location BoA 29th; 3 Doune Ponds and Viewforth, Stirling 30th. In April: birds singing head of L Tay 1st and Blairdrummond 5th.

Autumn departure in Sep: 1 singing briefly Viewforth, Stirling 16th; 1 Skinflats 20th and 3 Holmehill, Dunblane 27th. This was 2 days later than in 2008, 9 days earlier than in 2007 and 7 days earlier than in 2006. No records were received for 2005.

- F Three singing Dunmore Woods 11 Apr.
- S Holmehill, Dunblane: 5 (2 singing) 10 Apr with 2 singing there 16 May and 3 singing 30 May. BoA: 2 Yellow Craig Wood 12 Apr, 3 Airthrey L 15 Apr with 2 there 21 May and 4 on 9 Jun. 1 King's Park, Stirling 21 Apr and 2 there 1 May. 1 Carron Valley Res 3 May. 4 Polmaise Woods, Fallin 16 May.

WILLOW WARBLER *Phylloscopus trochilus* (B)

BBS: recorded at 1.3 b/lkm. Spring arrival in Apr: 1 singing Lake of Menteith 8th was on the same day as in 2008, 3 days earlier than in 2007, 6 days earlier than in 2006 and 5 days later than in 2005. This was followed by 1 singing Culthenove Dam, Stirling 9th; 4 along ca 400m stretch of R Devon, Alva-Menstrie 10th; 8 Airthrey L, BoA 15th and 1 singing Carse of Lecropt 16th, after which widespread.

No autumn departure records received.

- F Five singing Skinflats 25 Apr.
- C Seven singing along 1km stretch Birneyknowe, Clackmannan 6 Jun.
- S Thirty-two Cromlix, 6 singing Doune and 4 at Earlsburn wind farm turn-off all on 18 Apr. 7 King's Park, Stirling 21 Apr with 6 there 1 May and 8 on 5 May. 5 Dalrigh, Tyndrum 23 Apr. 8 Pass of Leny 10 May. 6 Polmaise Woods, Fallin 16 May. 1 Cononish, Tyndrum 4 Aug.

GOLDCREST *Regulus regulus* (B, W)

Under-recorded. Again no notable records were received this year.

SPOTTED FLYCATCHER *Muscicapa striata* (B)

Spring arrival in May: 1 Dunblane 16th was the only record received. This was 3 days later than in 2008, 3 days earlier than in 2007, 7 days later than in 2006 and 2 days later than in 2005.

Autumn departure: Aug: 1 Airthrey L, BoA and 2 S Doune 31st. Sep: 1 Skinflats 2nd, 1 Kippen Marshes 9th and 1 King's Park, Stirling 15th, which was 7 days later than in 2008, 22 days later than in 2007 and 14 days later than in 2006. No departure dates were received in 2005.

- S One Blairdrummond 6 Jun. 1 Airthrey L, BoA 9 Jun. 1 L Voil 11 Jun. Prs Tyndrum 11 Jun and Aberfoyle 27 Jun. Pr with 4 downy Y in nest box Cononish, Tyndrum 18 Jul. 1 with Y Doune Lodge 9 Aug. 1 with Y Strathyre 17 Aug.

EURASIAN PIED FLYCATCHER *Ficedula hypoleuca* (b)

C M Blackwater Marshes 27 Jun (DOE).

S One Kirkton Fm, Tyndrum 27 Apr with 2 there 11 May and 16 Jun (JH). M Barbadoes, Aberfoyle 2 May (DOE).

LONG-TAILED BUSH TIT (LONG-TAILED TIT) *Aegithalos caudatus* (B, W)

F Ten R Carron, Stenhousemuir 20 Jan. 15 Bryce Avenue, Carron on feeders 6 Dec.

C Ten Castlebridge Business Park, Forestmill with lots more along cycle lane 27 Feb.

S Eleven Holmehill, Dunblane 6 Feb with 13 there 13 Dec.

BLUE TIT *Cyanistes caeruleus* (B, W)

Under-recorded. BBS: recorded at 1.9 b/lkm.

S Twenty Holmehill, Dunblane 31 Jan with 22 there 6 Feb, 19 on 28 Feb, 16 on 21 Mar, 16 (2 broods of 5 Y) on 21 Jul and 20 on 27 Sep. 7 King's Park, Stirling 19 Feb with 16 (6 Y being fed by ads) there 9 Jun.

GREAT TIT *Parus major* (B, W)

Under-recorded.

F Eight Skinflats 15 Mar. Fledged Y Carronshore 31 May.

S Sixteen (some singing) Holmehill, Dunblane 31 Jan. 1 singing Ochiltree, Dunblane 9 Feb.

COAL TIT *Periparus ater* (B, W)

Widespread but under-recorded.

C Two Dollar Glen carrying food 24 May.

EURASIAN NUTHATCH *Sitta europaea*

The spread of this species continues, as does the run of records in the area since 1999, including the first confirmed records of breeding.

S One Airthrey, BoA 20 and 21 Mar, 29 Mar, 3 Apr, with a pair there from 10 Apr which bred (nest located) and still there 23 Dec (DI, RD, ACC, RD). Nearby a single at Mine Wood, BoA 17 Apr, where a bird had been present in Sep and Nov 2008. A separate nest from the above was located on 22 Apr and food seen taken in (BD, ACR, RSx). A single still there 20 Dec (MVB). Elsewhere 1 Kippen 5 Apr (AS) and a nest at the head of L Tay 28 Apr (RD). The above represent the 8th to 11th records of this species in our area since 1974.

EURASIAN TREECREEPER *Certhia familiaris* (B, W)

Under-recorded.

C Two Cambus 9 Mar with a pair carrying nesting material at Cambus Pools 1 Apr.

S Pair and single Holmehill, Dunblane 21 Mar. Breeding season: singles Fore Road, Kippen 5 Apr and Pass of Leny 10 May.

RED-BACKED SHRIKE *Lanius collurio*

F F Kinneil 16 Jun (EG, GO, RS, AET). This is the 6th record of this species in the recording area since 1974.

EURASIAN JAY *Garrulus glandarius* (B, W)

F Two Torwood, Larbert 2 Oct. 1 Haircraigs, Dennyloanhead 6 Oct. 1 Chasefield, Denny 13 Nov.

C One Alva woodlands 1 Jan.

S One Keir roundabout, Dunblane 4 Jan. 3 L Rusky 8 Jan. 2 Barbadoes, Flanders Moss 21 Jan and 1 at the moss 29 Nov. 1 Kilbryde, BoD 19 Mar. 1 Cocksburn Res, BoA 25 Mar. 2 Balquhiddy 14 Apr. 1 Glen Finglas woods 2 Aug. 2 Argaty, BOD 29 Aug. 2 S Doune 31 Aug. 1 Gart GP, Callander 13 Sep. 2 Dalrigh, Tyndrum and 2 Darnhall, Dunblane 1 Oct. 1 Carron Valley Res 20 Oct. 1 Rodgerhead, Stirling 23 Nov. 1 Drymen Road, L Ard Forest 5 Dec.

EURASIAN MAGPIE *Pica pica* (B, W)

Continues to be very scarce NW of Dunblane. Abundant around Stirling but is

- not usually as frequent in the west; large groups now widespread in Falkirk. Only small groups recorded this year.
- F Ten Haircraigs, Dennyloanhead 1 Feb. 6 Kinneil 16 Mar. 6 Chasefield, Denny 17 Oct.
- C Five Gartmorn Dam 5 Nov.
- S Seven Holmehill, Dunblane 22 Aug included 2 juvs. 2 L Rusky 14 Oct. 1 Gartmore Pond, Aberfoyle 14 Oct.
- WESTERN JACKDAW *Corvus monedula* (B, W)
Under-recorded. BBS: recorded at 3.2 b/lkm.
- S One hundred and six Drip Moss, Stirling 25 Jul. 130 Argaty, BoD 16 Sep.
- ROOK *Corvus frugilegus* (B, W)
BBS: recorded at 2.7 b/lkm. Systematic counts of known rookeries (e.g. BoA, Gartmorn, Forth and Clyde Canal, Lake of Menteith, etc.) needed.
- F One hundred Glenhead, Denny 11 May.
- S One hundred Cambuskenneth 18 Feb. 155 Drip Moss, Stirling 25 Jul.
Rookeries: Holmehill, Dunblane 95 nests 18 Apr; 'King's Park, Stirling 4 nests 31 Mar; Black Boy', Stirling 9 nests.
- CARRION CROW *Corvus corone* (B, W)
BBS: recorded at 3.2 b/lkm. No notable records received.
- HOODED CROW *Corvus cornix* (b, w)
Few records received.
- S Nine Inverlochlarig 12 Feb with 1 there 14 Apr. 5 Earnknowe, Lochearnhead 20 Feb. 1 Flanders Moss 13 Mar. 2 L Voil 10 May. 2 Ben More 11 Oct.
- NORTHERN RAVEN *Corvus corax* (B, W)
There were again a number of reports from south/southwest of the core Callander-Doune-Dunblane area and NW Stirlingshire.
- F One Kinneil 27 Feb. 1 > N Tippetcraig, Slamannan 26 Oct.
- C One > NE Cambus 5 Jan. 12 King' Seat Hill, Tillicoultry 24 Jan. 3 flying over Castlebridge Business Park, Forestmill 11 Aug with 1 flying over there 4 Dec.
- S Core area: 10 Doune Lodge roost 2 Jan. Numbers appear to have declined significantly here in the last 2-3 years. 1 Gart Fm, Callander 17 Jan. 2 L Lubnaig 11 Feb. 4 Ben Ledi 10 Feb. 23 Beinn Chaorach, Tyndrum 11 Feb. 2 Earnknowe-Lochearnhead 20 Feb. 2 Cromlix 21 Feb. 1 Earlsburn wind farm turn-off 18 Apr. 2 L Mahaick, BoD 30 May. 2 Glen Casaig, Glen Finglas 21 Jun. 4 Ashfield 27 Aug. 3 Argaty, BoD 29 Aug. 4 Cromlix Fm 30 Aug. 3 N Doune 31 Aug. 1 Gart GP, Callander 13 Sep. 2 Cruach Ardrain 12 Oct.
Outside the core area: 2 Yellow Craig Wood, BoA 12 Apr. 1 Stirling Castle 24 Apr. 1 Carron Valley Res 3 May. 1 Polmaise Woods, Fallin 16 May. 3 flying over Cocksburn Res, BoA 30 Sep. 3 Powblack, Flanders Moss 5 Dec and 3 Myme Fm, Flanders Moss 28 Dec.
- COMMON STARLING *Sturnus vulgaris* (B, W)
Greatly under-reported. BBS: recorded at 5.2 b/lkm.
- F Two hundred Haircraigs, Dennyloanhead 1 Feb and 150 there 2 Oct. Y being fed by ad Castle Avenue, Airth 11 Jul. 80 Glenhead, Denny 15 Oct with 200 there 18 Oct and 150 on 6 Dec.
- S Three hundred Bows, BoD 15 Mar.
- HOUSE SPARROW *Passer domesticus* (B, W)
Under-recorded. BBS: recorded at 2.1 b/lkm.
- F Breeding season: Castle Avenue, Airth. Outside breeding season: 70 Skinflats 21 Sep.
- C Breeding season: Birney Knowe, Clackmannan and Clackmannan Cross.

- S Breeding season: Blairdrummond Moss; King's Park, Stirling; Drip Moss, Stirling (20 on 21 May, 80 incl juvs 25 Jul); Auchentyre, Crianlarich; Cambuskenneth. Outside breeding season: 50 Thornhill 25 Jan. 12 King's Park, Stirling 18 Feb. 20 Ashfield 27 Aug.
- EURASIAN TREE SPARROW *Passer montanus* (B, W)
No large flocks again this year.
- F Skinflats: 23 on 4 Jan, 34 on 6 Feb, 37 on 7 Mar, 55 on 11 Mar. 2 gathering nest material (Newton Road) 25 Apr with 10 there 8 Nov. 2 ads and 2 imms 5 Jul. 26 on 12 Aug and 15 on 16 Aug. 10 Brackenlees Fm 11 Oct. 30 in unspecified location 29 Nov and 15 on 19 Dec. Elsewhere: Singles Grangemouth garden 4 and 22 Jan. 6 Dunmore, Airth 8 Feb with 2 there 12 Jun. Breeding colony of 30 prs in nest box scheme Powfoulis Manor 24 Apr. 4 Carbrook Mains, Plean 11 Jul. 2 Blackness 11 Oct. 1 The Pineapple, Airth 27 Nov. 3 Balderston, Linlithgow 17 Dec.
- C Two NE Clackmannan 7 Jan and 4 Dec. 2 E Gartmorn 17 Jan with 2 Gartmorn Dam 26 Jan and 14 there 22 Nov. 1 SE Menstrie 6 Feb. 22+ Tulligarth Fm, Clackmannan 20 Feb. 2 Cambus Pools 1 Apr.
- S Carse of Lecropt: 10 on 10 Jan with 6 there 14 Jan and 1-2 birds in Feb, Mar and May. Blairdrummond: 3 on 24 Jan, 4 on 21 Apr and 9 on 6 Jun with 2 at Sommers Lane, Blairdrummond Moss 15 Feb and 5 at S Kirklane, Blairdrummond Moss 21 Jun. 10 East Poldar, Flanders Moss 25 Jan. 10 Thornhill 25 Jan. Singles Pullar Avenue, BoA 25 May and Cauldhame, Kippen 13 Jun. 6 Drip Moss, Stirling 25 Jul. Doune: 6 in N and 4 in S 31 Aug, 20 Longbank Fm 21 Dec. Dunblane: 4 Dykedale 8 Nov, 2 Ochiltree 5 Dec and 7 Sheriffmuir Rd 31 Dec. 2 Lochend Fm, Menteith 11 Nov.
- CHAFFINCH *Fringilla coelebs* (B, W)
BBS: recorded at 4.0 b/lkm.
- F Five hundred Glenhead, Denny 26 Nov.
- S Dunblane: 130 Dykedale 1 Jan with 150 there 8 and 14 Nov and 450 on 9 Dec, 550 Glenhead 27 Jan. 120 Carse of Lecropt 10 Feb. 1 singing Callander 11 Feb. Ca 300 Longbank Fm, Doune 21 Dec.
- BRAMBLING *Fringilla montifringilla* (W)
F One Kinneil 20 Dec. 2 Wallacestone, Falkirk 29 Dec and 1 there 30 Dec.
C One Dollar 15 Nov.
S Dunblane: 2 Glenhead 27 Jan, 6 Newton Crescent 14 Oct, 3+ Dykedale 14 Nov and 4 there 9 Dec, F Ochiltree 5 and 12 Dec, 6 on golf course 20 Dec, 3 Sheriffmuir Rd 31 Dec. 30 BoA 20 Dec. 3 Longbank Fm, Doune 21 Dec.
- EUROPEAN GREENFINCH *Carduelis chloris* (B, W)
Under-recorded.
- S Eight Fore Road, Kippen 5 Apr. Dunblane: 90 Newton Crescent 30 Oct, 140 Dykedale 30 Oct with 800 there 8 Nov, 700 on 15 Nov, 420 on 9 Dec and 70 on 21 Dec.
- EUROPEAN GOLDFINCH *Carduelis carduelis* (B, W)
Again no significant flocks reported from the Doune-Dunblane area.
- F Seventy Kincardine Br 8 Feb with 60 there 15 Nov. 25 Skinflats 15 Mar with 35 there 15 Nov. 37 Kinneil 28 Aug.
- S Twenty-nine feeding on Ash seeds Holmehill, Dunblane 14 Feb. 25 Ashfield 27 Aug. 13 Grant Drive, Dunblane 30 Dec.
- EURASIAN SISKIN *Carduelis spinus* (B, W)
Only very small flocks recorded this year.
- F Fourteen Grangemouth garden 25 Mar. 16 > W Kinneil 8 Apr. 5 Castle Avenue,

- Airth 8 Apr. 5 Langlees, Stenhousemuir 22 Nov.
- C At least seventy-five in 4 flocks Gartmorn Dam 22 Nov.
- S One singing Holmehill, Dunblane 28 Mar, 18 Apr and 23 May. 5 Yellow Craig Wood, BoA 12 Apr. 2 Crianlarich, Auchentyre 29 Jun. 6 Ashfield 27 Aug.
- COMMON LINNET *Carduelis cannabina* (B, W)
- No records again from the Doune and Carse of Lecropt areas; only two flocks from the Dunblane area.
- F Ninety Skinflats 6 Feb with 80 there 13 Mar.
- C Sixty NE Clackmannan 7 Jan. 74 R Devon, Alva-Menstrie 8 Jan and 150 there 6 Feb. 100 Kennetpans 6 Feb.
- S One hundred and twenty Kippenrait, Dunblane 21 Oct. 90 Dykedale, Dunblane 14 Nov.
- TWITE *Carduelis flavirostris* (b, W)
- F Ca 10 Kinneil 13 Feb and 10 there 22 Dec. 60 Dunmore, Airth 11 Nov. 21 Kincardine Br 15 Nov.
- C Fifteen R Forth, Cambus 25 Oct.
- S Fifty Doune 6 Mar. Pr Lundie, BoD 4 Apr. 3 Balquhidder Glen 6 May included 1 carrying nesting material. 6 Glen Casaig, Glen Finglas 2 Aug.
- LESSER REDPOLL *Carduelis cabaret* (b, W)
- F Fifteen Langlees, Stenhousemuir 22 Nov.
- S Fifteen by R Forth, Carse of Lecropt 7 Feb. 2 prs Cromlix 20 Apr. 22 Newton Crescent, Dunblane 18 Nov.
- COMMON REDPOLL *Carduelis flammea*
- S One Dunblane 8 and 9 Feb (DI). This is only the 2nd record of this species in the recording area since 1974.
- RED CROSSBILL (COMMON CROSSBILL) *Loxia curvirostra* (b, W)
- F Two Skinflats 21 Mar with 3 (2 M, 1 F) there 23 Mar. 10 Plean CP 5 Apr.
- S Single Cromlix 18 Apr. 19 Tyndrum 11 Jun. 4 Aberfoyle 11 Jun. 3 L Rusky 16 Jun. 6 Argaty, BoD 29 Aug with 3 there 29 Oct and 6 on 17 Nov. 1 Crianlarich 30 Aug. Pr Cocksburn Res, BoA 9 Sep. 5 Crianlarich 12 Sep. 3 Newton Crescent, Dunblane 25 Sep. 12 L Mahaick 20 Oct with 10 there 17 Nov. 3 Holmehill, Dunblane 21 Nov. 6 Carron Valley Res 27 Nov with 8 M there taking grid/salt from the road 31 Dec. 25 Torrie, Thornhill 29 Nov. 4 Gart, Callander 21 Dec. 2 Dykedale Wood, Dunblane 31 Dec.
- COMMON ROSEFINCH *Carpodacus erythrinus*
- S One Kirkton Fm, Tyndrum 2 Jun was found dead there the following day after colliding with a window (JH). After last year's bird in Tyndrum, this could be a returning bird. The 2009 sighting is the 6th record of this species in the recording area since 1974, potentially involving 5 individuals.
- COMMON BULLFINCH *Pyrrhula pyrrhula* (B, W)
- S Six King's Park, Stirling 20 Jan with 8 there 6 Oct. 5 Holmehill, Dunblane 14 Feb. M fed Y Milnholm, L Coulter Res 14 Jul. 6 Cocksburn Res, BoA 6 Sep. 18 Doune 7 Nov.
- SNOW BUNTING *Plectrophenax nivalis* (W)
- C Thirty on snow line of The Law, Tillicoultry 24 Jan (TGP).
- S Tyndrum: 3 Gleann, a' Chlachain 9 Jan and 11 Feb with 1 at Bealach Ghlas Leathaid. 1 L Ard Forest 27 Jan. 21 Ben Ledi 10 Feb. 45 Auchentyre, Crianlarich 11 Feb (JH, DOE, GU).
- YELLOWHAMMER *Emberiza citrinella* (B, W)
- F Six Skinflats 7 Jan and 15 Mar.
- C Twenty-one R Devon, SE Menstrie 6 Feb. 25 on tideline Tullibody Inch 28 Nov.
- S Thirty Doune 8 Mar. 6 Blairdrummond Moss 25 Apr. 7 Drip Moss, Stirling 25 Jul.

20 Brucehill, Flanders Moss 5 Oct. 49 Greenyards, Dunblane 26 Nov. 30 Longbank, Doune 21 Dec.

REED BUNTING *Emberiza schoeniclus* (B, W)

- F Twenty-five Skinflats 7 Jan with 14 there 15 Nov. 15 Dunmore, Airth 8 Feb. 2 M eating bread Grangemouth 18 Feb with 5 there 14 Mar and 7 on 20 Mar.
- C Eight Gartmorn Dam 26 Jan.
- S Ca 20 Carse of Lecropt 7 Feb with 33 there in 2 flocks 10 Feb, 15 on 6 Mar, ca 30 on 15 Mar and ca 50 at M9 bridge 24 Dec. Breeding season: Cocksburn Res, BoA; Blairdrummond Moss, Cambuskenneth; Drip Moss and Stirling.

ESCAPED SPECIES

ROSS'S GOOSE *Anser rossii*

This is the 1st record of this species for the recording area.

- C One Alloa Inch 9-10 May (DMB, GO).
This species is currently included in category D of the BOU list and is therefore not included in the official British List. As a result of a large increase in its population, the species has expanded its range and since the mid-1990s has regularly overwintered on the east coast of the United States. As a result some birds of wild origin are expected to reach Britain. The record has been submitted to the BBRC with regard to its potential wild status. Pending its decision the record has been included here as an escapee.

BAR-HEADED GOOSE *Anser indicus*

This is the 3rd record for the recording area. Previous records were of singles recorded at Thornhill in 2006 and Blackness in Aug 2008 and all of these may refer to the same bird.

- C One Gartmorn Dam 24 Jun (BS).

WOOD DUCK *Aix sponsa*

This is the 5th record (omitting multiple sightings of a long-staying bird in 2004-2006) of this species for the recording area. A male was present on the canal in Jan, Feb, Mar and Sep 2008 and this was probably the same bird as recorded in 2009. It is therefore likely that only 4 different individuals have been involved.

- F Summerford-Glen Village stretch of Union Canal, Polmont 7 and 11 Nov (CM, SWi).

WHITE STORK *Ciconia ciconia*

A bird was recorded at Blairdrummond from May to Dec 2008 and this is more than likely the same bird that was recorded there this year as well. It is also likely that all of the records below refer to this same bird. The sightings constitute the 2nd to 6th records of escaped birds for the recording area but are all likely to refer to just one individual.

- F One flew over Falkirk 17 May (BRG).
- S Singles Blairdrummond Safari Park 15 Apr (CJP); > S Airthrey, BoA 22 Apr (ACC); Blackdub, Drip Moss 25 Apr (BRG) and Blairdrummond 14 Jul (KGi).

HARRIS'S HAWK *Parabuteo unicinctus*

This is the 1st record of this species for the recording area.

- C One in Clackmannan garden bearing a metal ring on its left leg 25 Jan (GFe).



Harris's Hawk in Clackmannan garden
Photograph by Gregor Ferguson