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Cambus Weir Pool and Tidal Harbour

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Cover Rear: Water Rail, at Cambus Pools, Phillip Jones.

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THE FORTH NATURALIST AND HISTORIAN

The Forth Naturalist and Historian (FNH) is an informal enterprise of Stirling University and is a Registered Charity (SC 013270 91992). It was set up in 1975 by several University and Central Regional Council staff to provide a focus for activities and publications concerned with the environment, wildlife and history of the Forth Region.

Currently the area the journal covers is comprised of Stirling, Falkirk and Clackmannanshire local authority areas and their immediate hinterland. Today FNH is run by a committee of volunteers who organise and finance the annual 200 page journal as well as an annual all day conference and wildlife and historical forums held across the Region. The committee is supported by a membership of 50 and there is an AGM at the annual conference.

Forty four volumes of the FNH journal have now been published. They provide a valuable successor to The Transactions of the Stirling Field and Archaeological Society which ran from 1878 to1939. The editorial in the first 1976 volume 1 of FNH states: "*The aim in launching the Forth Naturalist and Historian is primarily to increase our knowledge of this neglected part of Scotland.*" This has certainly been accomplished and since its inception nearly 500 articles have been published.

The FNH website (http://www.fnh.stir.ac.uk) carries a complete title word index together with Volumes 1- 40 which are available on line. Hard copies can be found in local and national libraries, museums and archives and some of the last 20 volumes are still available for sale. FNH's popular multi-author publication Central Scotland: Land, Wildlife and People is also archived on the FNH web site.

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 conference are ever welcome. Visit the website for instructions to authors.

The FNH conferences have been held annually in early November with audiences of 80-150. The conference topics are designed to embrace Natural and Social History as well as Environmental Science. Latterly summaries of the papers delivered at the conference are published in the Journal.

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THE SCOTTISH WILDLIFE TRUST'S CAMBUS POOLS NATURE RESERVE AND ITS WILDLIFE. PART 1: CREATING A NATURE RESERVE

Roy Sexton

Stirling and Clackmannanshire Group
of the Scottish Wildlife Trust

In the summer of 2020 I met a birdwatcher at Cambus Pools Nature Reserve with an impressive pair of Barr and Stroud naval binoculars (Figure 1). He told me that they had been inherited from his uncle Tom Paterson, a gas board engineer from Alloa, who had bought them in a naval sale in 1932.

It transpired that they had a rather special role to play in this story since it was with them that Tom Paterson made the ornithological records that led the Central Branch of the SWT to acquire our three nature reserves on the Upper Forth: Cambus Pools and the two downstream islands of Tullibody and Alloa Inches.

Figure 1. A special pair of Barr and Stroud ex-naval binoculars.

Below are edited extracts from an article written by David Bryant in the SWT's Central Branch Newsletter, 1979:

The late Tom Paterson of Alloa spent many happy hours counting wildfowl in the vicinity of Tullibody Inch between Cambus and Alloa on the Forth Estuary. His counts established that the area was of major importance for Mallard and Teal, 4390 of the latter being recorded on one occasion. Exceptionally high counts had also been made particularly during cold weather such as the sighting of 240 Pintail and 500 Goldeneye in the winter of 1971 -2. A remarkable gathering of wildfowl also took place in an extremely severe spell of weather in early 1979 when counts of 1600

Mallard, 1700 Teal, 1200 Tufted Duck, 320 Pochard, 60 Shelduck and 62 Goosander were recorded together with a wide selection of scarcer species.

During the inaugural 1979 meeting of the Central Branch of the SWT the committee prioritised surveying threatened areas on the Upper Forth Estuary with the objective of picking out reserves for protection. During 1979 they had selected the Bandeath shoreline, spurred on by the loss of a valuable wildlife area at Black Devon Mouth which had become a council rubbish tip. The first mention of Cambus Pools in the committee minutes was in May 1982 when it was revealed that Bill Brackenridge the Central Region Ranger and Branch Secretary (Corbett, 2000) had been discussing the ornithological potential of the site with the Nature Conservancy Council.

Cambus Pools 6.2 ha site is on the opposite bank of the Forth to Bandeath directly upstream of the mouth of the River Devon. In the Roy Military Survey Great Map of 1775 it is shown as an arable field running down to the tidal water's edge. The area was considered good agricultural land and the local landowner John Moubray was awarded a Highland Agricultural Society Prize in 1824 for putting in 35 miles of wedge field drains to improve his land.

In the first Ordnance Survey map of 1886 the field which would become the reserve was shown protected from inundation by a small embankment built just above the spring tide mark. There was a track running along it in 1898-1914 but in subsequent repeat surveys the embankment seems to have degenerated. By 1948, marshland had developed in the lower half of the field and the riverside footpath had deviated inland to avoid it. In 1960, United Distillers expanded their warehousing and started to build the Blackgrange Bond on the West side of the Devon. Today this complex backs onto the Cambus Pools site and according to the information board its 60 warehouses hold 3.6 million casks of Scotch whisky.

Figure 2. Cambus Pools in about 2000 when the area of open water was at its peak (see also Plate 1).

The pool in the western side of the field was thought to have started to form in the 1960s as a result of the river Forth overtopping its banks. We are not sure exactly when the present embankment was built but it was certainly completed by 1979, with the addition of a causeway at the same height which divided the field into western and eastern halves (Figure 2). Retired employees of United Distillers recalled the bank being breached and in a desperate attempt to stop flooding a flatbed truck was driven into the gap and buried by a bulldozer while its engine was still running. Apparently you can still hear the engine when the wind is in the right direction. In 1979 the embankment was overtopped again by the Forth and, as a result, it was further reinforced with material from Manor Powis Bing. Today it is an impressive structure 2.5 m higher than the meadow it surrounds, 20 m wide across the base and with a 3 m wide track running along the top. It has been built of a mixture of old dressed stone, brick masonry, spoil from the Manor Powis Bing, broken concrete and quarried rocks, producing some interesting geology.

A site plan drawn in 1982 by Bill Brackenridge shows the original pond area to the West of the central causeway. It was half filled with water to the South of the diagonal drawn between the NW and SE corners. To the NE of this pond there was a meadow covered in coarse grasses except along the water's edge where periodic inundation produced a strip of shorter grass and a muddy pond margin. There was concern that the District Council was threatening to infill the site, which was one of the last remaining Forthside brackish pools. Bill Brackenridge put forward a proposal which he hoped would *'help the owners overcome their erosion problem and form a first-class wetland area at the same time'*. It is a reflection of his dynamic personality that by August 1982 the Stirling SWT Branch had negotiated an informal management agreement for the 6.2 ha site with the owners Messrs. Scottish Grain Distillers Ltd (SGDL) and had set about improving the habitats and amenity value of the area.

This was a community project that not only included SWT Central Branch and the owners but also the Stirling Conservation Volunteers, the Central Region and Clackmannanshire Ranger services, the Tullibody Guides, Wallace High School pupils and Clackmannanshire Young Naturalists Club. The trees and shrubs were donated by Tilhill Forestry and Central Region Council and the sand and gravel was supplied by Tulliallan Quarries. The programme involved planting a hawthorn and birch screening strip along the riverside bund. Marginal plants were introduced along the pond's edge to provide cover for waterfowl and the corners of the field were planted with Alder, Oak and Willow. John Haddow organised volunteers who planted three hundred hawthorn and birch trees in January 1983, followed by sedge tussocks and reed rhizomes a month later. The whole area was eventually fenced and made sheep proof and in May 1985 the reserve sign was erected.

In Summer 1986 a local contractor offered an earth mover and driver for a week and this allowed the size and depth of the pool to be improved for waders. Islands were also created and, during 1988, they were covered in polythene sheets and

sand and gravel to encourage ground nesting birds. In 1990 the production manager of Distillers Co. Ltd. drew up a management plan with the SWT and Clackmannanshire Rangers and agreed the pools should become a Local Nature Reserve. To celebrate this milestone the first Swans nested and raised young in 1991.

The coordination of the site was handed over in Jan 1993 from amateur volunteers to a professional SWT reserves manager Neil Wilcox. He reported that a second area of marsh on the East side of the causeway would probably become available. An agreement was reached with the owners (United Grain Distillers Ltd.) to manage the reserve from September 1994 to 31st August 2019 (Whyte, 2009). Besides protecting and enhancing the site another objective of this agreement was to accommodate visitor access. Further pool enlargement took place in 1996 when six days work was undertaken with a mechanical excavator funded by the United Distiller's *Water of Life Project*. There was lots of water about in 1997and the area was inundated again. Despite the repairs to the sea wall in 1979 it remained permeable to water from the River Devon which percolated in at high tide to form the circular East pool. This was present in the late 1980s and enlarged in 1996 (D. Hodgson pers.com.). A satellite image showed it was 90 m in diameter in 2004 and had a well established reed bed round it (Figure 2).

Figure 3. A Cambus Pools work party.

During the early part of the new millennium anxiety mounted at the speed of Common Reed invasion and by 2004 the diameter of the open water in the east pool had shrunk to 30 m. The reserve manager Steve Blow organised more ground excavations in both pools to clear reeds and restrict further colonisation by deepening them. A 1 m deep x 2 m wide canal was dug round half of the West pool to prevent further reed advance. Unfortunately the excavator broke into a network of old field drains in April 2004 and they efficiently drained both pools into the rivers. Although caulking was partially effective two sumps remained active, one in each pool where water ingressed from the Forth and Devon at high tide and flowed out at low tide. The West pool sump eventually became blocked but water still slowly percolates in and out of the East pool to this day.

After the rupture of the land drains in April 2004 further leakage was monitored by measuring the salinity of the pools. In the River Forth at high tide the surface water is almost fresh but two metres down it was 40 % sea water. Initially in June 2004 both pools were 11 % sea water (Sexton and Chetcuti, 2004). The caulking of the broken drains worked and the salinity in the West pool declined to 2.7% sea water 4 months later. It has remained approximately the same since. The East pool sump has continued to leak and the area is slightly more saline (5.2 % seawater) as a result.

Unfortunately the 2004 efforts to restrict reed spread failed and the East pool became over-run, as did the canal which was supposed to provide a reed barrier around the West pool. A long dry summer in 2006 dried out the pools allowing the marginal reeds to send out long runners and accelerae colonisation (see Part 2). There was a lot of concern in the naturalist community about the loss of open water. However, reed beds were a UK Biodiversity Action Plan priority habitat and so there was a case to be made for retaining them. Cliff Henty, a local ornithologist and past Reserve Convenor, was asked to produce a discussion paper dealing with this dilemma (Henty, 2007). He considered that the 2.3 ha East Pool reed beds were going to be too small to support populations of iconic marshland species like Marsh

Harrier, Bearded Tits and Bittern. In addition SWT had a dedicated 25 ha reed bed reserve only 1.5 km downstream. He proposed a *Management Plan for Diversity* in which the East pool was left as a reed bed for Water Rail, Snipe, Sedge Warbler and Reed Bunting etc. and the West pool should be managed for open water. He suggested the meadows on each side of the central causeway should be grazed to keep the reeds at bay and produce muddy pool margins.

Since this meeting and the appointment of Rory Sandison as the reserve manager we have largely fulfilled these objectives. The meadows have been re-fenced and grazed successively by Hebridean sheep, Exmoor ponies and Shetland cattle. With the help of a grant as part of an Inner Forth Landscape Initiative project (IFLI 2020a) we were able to hire a Truxor amphibious vehicle and driver in 2017 to cut back the reeds in the deeper areas of the West pool (Figure. 4). The tracks which ran across the reserve were not part of the management agreement, although the generous verges have been planted up with trees, thorn bushes and wildflowers by our local SWT Group. By 2010, the coarse grass vegetation along the central causeway was chest high and the bee and butterfly populations had declined. A volunteer work programme was undertaken in 2014 (Figure 3) to strim annually the 1.7 km of verges so they would support insect friendly plants. The results of the project are described in the botany and butterfly sections in Part 2.

Another project (IFLI, 2020b) known as *Cambus Whisky and Wetland Wander* aimed to connect Cambus village with the wider Clackmannanshire area. It involved upgrading the tracks through the reserve to form a circular walk/cycle path. This project, managed by Central Scotland Green Network, had a major impact on the reserve, increasing the number of visitors several fold. The new dry, level, 2-3 m wide paths were attractive to young families, the elderly and cyclists. During March 2021 a survey of usage was undertaken at midday on 11 dry days. On average, 27 persons per hour visited (including six cyclists) together with eight dogs. On one dull Sunday there were 82 visitors between 10 am and noon; 11 young families and four naturalists.

Figure 4. The Truxor amphibious reed cutter.

There was a time in the 1980s when the visiting of many nature reserves was discouraged for fear of disturbing the wildlife. In the 1988 edition of the *SWT Reserves Handbook* half of the reserves needed visitor permits. The Right of Access Legislation of the Land Reform Act 2003 did away with such practices and in 2017 we held a well attended open day to encourage Cambus villagers to visit the reserve. We were surprised how few actually knew they had a nature reserve on their door-steps and several now help maintain it and keep wildlife records.

Unlike the SWT reserves downstream at Tullibody and Alloa Inches, Cambus Pools is not a Site of Special Scientific Interest (SSSI) and so has no statutory protection. The Clackmannanshire Local Biodiversity Action Plan (LBAP) has a detailed discussion of whether Cambus Pools is a Coastal Lagoon habitat (Campbell, 2003) and there is a similar debate in Heritage Environmental's Habitat Survey of 2007. This distinction is very important since *Saline Lagoons* are listed in Annex 1 of the EEC Habitats Directive which puts a duty on member States to protect them (Campbell, 2003). In Scotland only natural or near natural sites are considered for Special Areas of Conservation status which excludes Cambus Pools. In addition Cambus Pools do not

seem to share all NatureScot's characteristics for a saline lagoon (NatureScot, 2020) lacking sufficient variation in salinity and corresponding specialist species. Cambus Pools did pass the assessment procedure to become a Local Nature Conservation Site (LNCS). This means that there would be a presumption against development in the Clackmannanshire Planning Process. In a recent ten yearly review of the LNCS sites the impressive wildlife records in neighbouring areas led to it being enlarged to include the Haugh of Blackgrange and both Devonmouth and Cambus Village Pools on the other side of the Devon (TWIC, 2018).

Four years ago the Local Stirling and Clacks Group of the SWT decided to document as much of the wildlife of the Pools area as possible. We were encouraged to do so by speakers at our winter meetings who had pointed out the lack of mammal and moth records in our area. The study included both the reserve and the rivers, woodland and fields immediately surrounding it. Part 2 of this article describes the results of the many recorders involved.

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THE SCOTTISH WILDLIFE TRUST'S CAMBUS POOLS NATURE RESERVE AND ITS WILDLIFE. PART 2 : THE RESULTS OF THE GROUP'S WILDLIFE SURVEYS

Roy Sexton

(Stirling and Clackmannanshire Group
of the Scottish Wildlife Trust)

Four years ago the Local Stirling and Clackmannanshire Group of the Scottish Wildlife Trust (SWT) decided to document as much of the wildlife of the Cambus Pools Nature Reserve area as possible. The study included both the reserve (NS848936) as describe in Part 1 of this article (Sexton 2021) together with the rivers, woodland and fields immediately surrounding it (Plate 1). Part 2 of this article describes our results so far, the lists of those collaborating being detailed below.

Mammals: written collaboratively with Gabi Rice Grunert and Michael Christie with records from the Central Scotland Mammal Group, Phillip Jones and Chris Foley.

Birds: written collaboratively with Mike Bell, Jackie Robinson. Jeroen Minderman, using records from Neil Bielby, Tam Craig, Roger Gooch, Phillip Jones, Craig Mackay, Andrew Muirhead and the Forth Naturalist and Historian Bird Reports .

Amphibians and Reptiles : written by Chris Cathrine

Fish : with information from Keith Broomfield, Donald McLusky and Peter Maitland**.**

Butterflies and Moths: written collaboratively with Tony Rogers using records from Melissa Shaw, Paul Dorrington, Heather Young, Philip Sansum, Tim Brain, Stuart Bence and Jan Harbidge.

Plants: with records from Jan Harbidge, Liz Lavery, Laura Kubasiewicz, David Hodgson and Sue Sexton.

Black Whisky Fungus : Written with the help of Helen Bell and Prof B. Ing

Photographers: Phillip Jones and Ian Bone.

Editors; Neville Dix and Jan Harbidge.

These accounts are general over-views, the detailed species lists are available on our Stirling and Clackmannanshire SWT Web site (https://www.swtstirling.org.uk/.) Unfortunately the restrictions introduced during the Covid 19 pandemic prevented the completion of some of the insect studies and we hope to finish these in the near future. The background history of the reserve is found in Part 1 of this article (Sexton, 2021).

Mammals.

Figure 1. A still from a camera trap video of a Wood Mouse (Gabi Rice Grunert.)

We were surprised to find that 26 species of wild mammals have been seen at the reserve. The development of digital photography has done much to facilitate mammal recording. For instance visitors at the reserve have used the cameras on their mobile phones to video Otters, Mink, Seals and Harbour Porpoises in the tidal area of the Devon.

Having these recorded images allows tentative identifications to be confirmed by experts. Waterproof trail or wildlife cameras have also been developed which can be left in the field and are triggered by movement, both in daylight and using infra-red light at night. We have adapted several of these to record small mammals like mice and voles. The trail cameras, fitted with close up lenses, are fixed at the closed end of a 16x16x36 cm elongated wooden box. A bait made up of a mixture of seeds, peanut butter and meal worms is placed at the open end of the box and anything that visits is recorded in a short video clip (Figure 1).

Amongst the larger terrestrial mammals Roe Deer, Foxes, Hedgehogs, Moles and Grey Squirrels are nearly always present and breed on the reserve. Phillip Jones filmed two Otters on the bank of the West Pool in May 2021 and they have also been videoed both at night and during daylight swimming in the tidal Devon.

Figure 2. Otter fishing in the Devon below the weir (Phillip Jones).

Otter footprints have been recognised along the mudflats bordering the reserve along with their faeces or spraints which are full of fish bones and scales and which are deposited on prominent rocks to mark their territories. Beavers have not yet reached the reserve but they have been filmed 500 m upstream of the access bridge over the river Devon in 2021.

Stoats too have been seen playing with their young and their footprints were recorded with those of Hedgehogs in a foot printing tunnel. This is a baited triangular tunnel placed along a regularly used animal run. It is fitted with wildlife friendly inked pads which visiting wildlife walk over before leaving their footprints on sheets of special paper. Although Rabbits and Hares do not breed on the reserve, they visit it from the bordering meadow to the West and from the Blackgrange complex to the East.

In late July 2018 we carried out a survey using two small mammal camera traps concealed in light scrub on the North and South sides of the reserve and left them to record any visitors over a 4 day period.

Table 1. The main visitors to two small mammal camera traps kept in light scrub for 4 consecutive 24h periods during late July 2018. The number of visits over 2h intervals for each species is recorded.

Time	Wood Mouse	Bank Vole	Brown Rat	Fox
00.00-02.00	25	18	25	4
02.00-04.00	21	13	35	4
04.00-06.00	10	18	28	9
06.00-08.00	11	8	13	4
08.00-10.00		26	3	
10.00-12.00		26		
12.00-14.00		15		
14.00-16.00		24	4	
16.00-18.00		25		
18.00-20.00		17		
20.00-22.00		13	1	
22.00-24.00	26	35	13	6
% total visits	20.0%	47.6%	24.4%	5.4 %

The amount of activity, particularly at night, was unexpected. On average, each trap was visited 64 times in each 24 h period. Table 1 shows that the main visitors were Bank Voles that were active both during night and day. Common nocturnal visitors included Wood Mice, Brown Rats and Foxes.

In addition Weasels, Common Shrews, Water Shrews, Field Voles and Hedgehogs were photographed. In the tidal part of the River Devon and at its confluence with the Forth, sightings of Grey Seals are relatively common and, more

rarely, Harbour Seals have also been reported. The fishermen claim the seals are pursuing salmon. Harbour Porpoises have been photographed and two died after becoming trapped at low tide in the mouth of the Devon. In November 2001 David Bryant watched two Bottlenosed Dolphins from the reserve and on 19th April 2021 Isabel Izatt reported three Common Dolphin below Cambus Pools (Forth Marine Mammals Facebook Site), probably the same three animals that were photographed at Dunmore the same day.

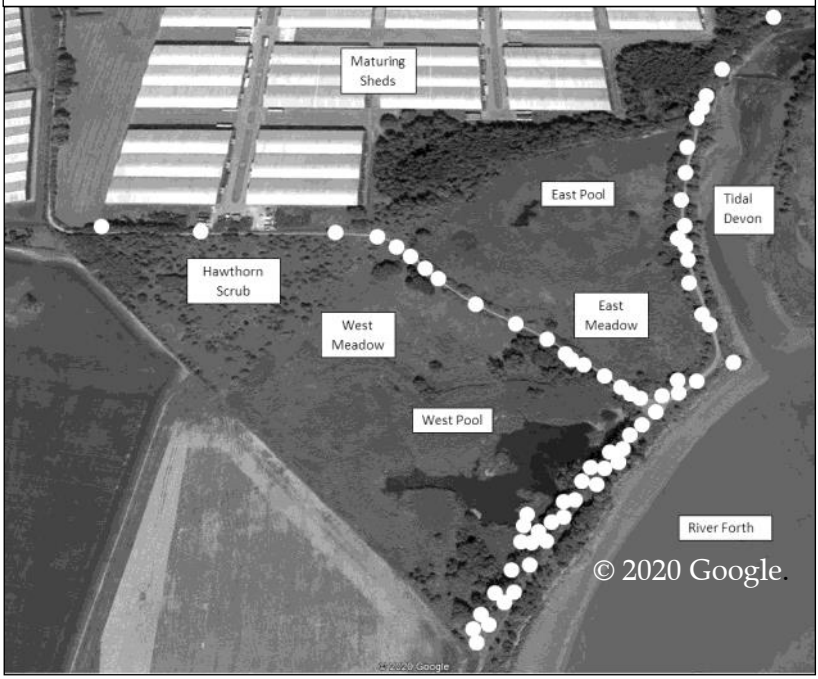
The concrete access bridge over the River Devon is a favourite place to watch Bats. Just after nightfall in the summer they can be seen flying backwards and forwards under the bridge in the beam of a powerful torch.

To try and establish the distribution of Bats over the reserve, we walked twice round all the tracks at 9.30 pm in August 2018. Using a heterodyne echolocation detector we recorded the position of each bat signal. The 245 passes that we recorded showed the bats were virtually everywhere (Figure 3). The highest densities were found along the track by the west pool and the least in the woodlands on the approach to the reserve. In a repeat survey in October there were fewer bats (110 passes) and they were concentrated particularly at the meeting points of hedgerows. In March only three signals were recorded on the reserve, but 33 passes were recorded round the bridge over the Devon.

Heterodyne detectors pick up the high frequency echo-locating pulses produced by the bat and convert them to signals audible to the human ear. Experienced experts can recognise these sounds and identify the species of bat. Recently this process has been simplified by attachments which can be added to IPad or mobile phones. They pick up the echo locating pulses, use a programme to analyse them and ascribe them to a particular species. An ECO 2 detector analysis of 295 bat passes recorded in August 2018 indicated that 58% were Soprano Pipistrelles, 24 % were Common

Pipistrelles, 12 % were Brown Long Eared Bats and 6 % were Daubenton's Bats (Personal communication, Michael Christie, 2018). The latter were probably under-recorded since they skim low over the river and ponds on the reserve some distance from the tracks we used for recording. Their fluttering wing beats allow them to get very close to the surface and pick up emerging insects. We have not established where the bats roost.

Figure 3. A 2020 satellite image of Cambus Pools reserve used as background with every third bat pass (white dots) recorded using a heterodyne detector when walking along the tracks at 9.30pm August 2018.



Birds

We are lucky to have good ornithological records for Cambus Pools, the data having been gathered by the reserve convenors and local bird watchers who regularly walk round the site. Table A in the appendix lists the species seen from the reserve during the periods 1983-1991 and 2002-2021. A total of 139 species have been recorded of which 30 are currently *Red Listed Birds of Conservation Concern* (BoCC, 2010) (Table A (RL)).

Figure 4. A Lapwing chick in the West pool, 2020 (Phillip Jones).

A number of these species still breed on the reserve including Grasshopper Warblers, Tree Sparrows, Lapwings (Figure 4) and Yellowhammers. In addition, in the winter of 20-21 there have been 100 Curlews feeding in the field adjoining the reserve.

The 1983-1991 list in Table A includes 28 species that have not been seen since 2002. This is partly due to the massive spread of reeds which started in the late 90s and resulted in the reduction of both open water and muddy shore line habitats. We suspect that this change was responsible for the loss of both waders and Pintail and Shoveler ducks. The decline in other species simply follows national trends, like the Corn Bunting and Grey Partridge where changes in agricultural practices seem to be responsible (Bryant, 2017).

There are also 42 species in Table A which have only been recorded since 2002. The Water Rails and the rare Bearded Tits have probably been attracted by the enlarging stands of

reeds. Other species have increased generally; for instance Magpies and Buzzards have become more common as a result of reduced persecution. The Little Egret (Pendlebury, 2020) and the Reed Warblers (SOC, 2011) are two recent records of species generally spreading northwards perhaps the result of global warming (Bryant, 2017). Marsh Harriers bred 2 km downstream during 2019 and 2020 (Orr Ewing, 2020) and were seen hunting over the reserve in 2020. Sometimes local fluctuations in Cambus populations are caused by changes in the wintering grounds of summer migrants. The Whitethroat (Plate 2.) population is an example where low numbers during the 1989-2001 period were attributed to persistent droughts in the Sahel.

Pink-footed Geese were recorded less than once per year in the early 1983 list yet they are seen or heard from the reserve during most winter visits these days. The Wetland Birds Survey (WeBS) Pink-foot counts for the entire Forth Estuary have shown an increase from a five year average for 1985-1989 of 7,199 to 18,628 for the last five years (Frost, 2019). Another possible reason for the Cambus increase is a shift in feeding grounds from the west of the Carse of Stirling to the arable lowlands round the estuary. Surveys by the Central Scotland Goose Study Group cited by Henty (1996), showed that SWT's Alloa Inch reserve 3 km down-stream of Cambus started to attract thousands of Geese from the late 1980s. The first Cambus Pools record was 2004 when 376 were reported in the arable field immediately to the west.

The species in Table A are allocated to three major sub-groups according to their migratory patterns (Bielby et al., 2013). Firstly there are resident breeding species (Table A (Re)) which are present all year round. Examples include Robins, Wrens, Reed Buntings (Plate 3), Yellowhammers, Carrion Crows, Jackdaws, Magpies, Mallards, Coots, Dippers, Finches, Tits, Sparrowhawks and Buzzards. During the winter the numbers of some resident species are

reinforced by migrant winter visitors (Table A (WV)) escaping harder winters further North. They include Song and Mistle Thrushes, Starlings, Woodpigeons, Teal, some Gulls, Water Rails and Herons.

The second sub-group are the summer visitors (Table A (SV)) that breed on the reserve but migrate south to winter. It includes all the warblers. During 2020, fortnightly BTO bird ringing sessions at the reserve revealed that Sedge Warblers, Willow Warblers and Whitethroats were all present on the reserve throughout the summer but were not recorded after 17th September (Minderman, 2021). It seems amazing that these tiny warblers, weighing only 9 – 12 grams, are trans-Saharan migrants wintering South of the Sahel. While the Blackcaps that breed in the UK migrate south for the winter there is an increasing population of Blackcaps which replace them migrating NW from mid-southern Europe to the UK during October. They winter here but then return in April to breed particularly in France (Van Doren and Conway, 2020). Swifts, Swallows and Martins do not breed on the reserve but feed in flocks over it especially during the period when they gather prior to migration. 3,500 Swallows gathered 2 km downstream at Tullibody Inch on August 24th 2017 (Bielby, 2017). We also get records of passage migrants (Table A (PM)) like Wheatears which are reported as they pass through the reserve.

The third subgroup are the winter visitors, which are only present outside their breeding season. These include large numbers of Pink-footed and Greylag Geese that migrate from their breeding grounds in Iceland and Greenland. 150,000 were estimated to have arrived in East Central Scotland in autumn 2019 (Frost, 2019). In the winter of 2019-20 Pink-footed Geese started arriving in the Upper Forth Estuary in September and a peak of 3,714 was present a month later (personal communication Bell, 2020). Although many disperse out of the area considerable numbers (1,730)

remain feeding on winter stubbles, winter cereals and root crops. During February and March 2020 the numbers increased again to nearly 7,000 prior to the spring migration North. The fields around Cambus Pools and the Haugh of Blackgrange regularly host hundreds and even thousands of geese. In December 2017 we made regular counts by photographing the predominately Pink-foot flock in the field adjacent to the reserve. They increased from 140 on December 8th to 1600 by 13th January, 2018.

The local record count of 2,000 Greylag was also made in the same fields in March 2006 (Bielby et al., 2013). Whooper Swans arrive later in mid-October and are only seen from the reserve irregularly in small numbers. Water Rail were described as scarce winter visitors in Henty and Brackenridge's 1992 *Checklist of Birds of Central Scotland* but they have become regular residents in the West pool over the last decade (photograph, Bone, rear cover). Two pairs have successfully bred there during the last four summers.

Fieldfares and Redwings are two red-listed winter visitors that start arriving from Scandinavia from late September to mid-October. They are attracted by the 350 Hawthorn bushes planted on the reserve, each of which can bear tens of thousands of berries. In 2017 we carried out daily counts after they started arriving on December 8th. There were three flocks one of which had 140 individuals. Between 200 and 300 remained until Christmas. They then started leaving until only 30 remained on 8th January. These flocks left behind the hawthorns virtually stripped of all their berries. Other winter visitors include Goldeneyes, Goosanders, Long-tailed Ducks and Ravens.

On a defined day each month between September and March the wetland birds in the Upper Forth are counted by 12 volunteers as part of a National Wetland Birds Survey (WeBS). This survey monitors the UK's internationally important water bird populations and includes 3,290

counters who survey 2,846 sites around the UK. The data is assessed by the British Trust for Ornithology (BTO) and alerts are posted both for species and sites causing concern. In the period 2018-19 high alerts were triggered in Scotland for Lapwing, Pochard and Bewick Swans (Frost et al., 2019). The Forth Estuary's Lapwing population in 1979 was 12,000 and had declined to a Webs peak count of just 2,952 in 2019. Flocks are still seen on the arable fields West of the reserve and one pair bred near the West pool in 2020 (Figure 4).

Table 2. The total annual WeBS counts of some common duck species found along the River Devon from the Cambus weir to the SWT reserve. These are the total birds recorded during seven monthly visits in each of the years shown (Courtesy of N. Bielby).

Species	**2017-18**	**2018-19**	**2019-20**
Teal	244	116	160
Mallard	56	78	17
Goldeneye	20	14	10
Goosander	26	31	18

Table 2 shows the annual WeBS counts of the more common ducks found along the River Devon from the weir at Cambus to the mouth of the river at the SWT reserve. There are always good numbers of Teal (Plate 4) forming part of the Upper Forth Estuary population (This peaked at over 3,000 during four of the last five winters and comfortably exceeds the 2,100 threshold for a population of GB national importance (Frost et al., 2019). There are of course many other sightings in this stretch of the Devon including; Mute Swans (Plate 5), Herons, Little Grebe, Dippers, Grey Wagtails, Kingfishers (Plate 6), Moorhen, Cormorants, Black-headed Gulls, Lesser Black-backed Gulls, etc. Guillemots occur occasionally after a *wreck* produced by westerly storms in the North Sea (Bielby et al., 2013).

One of the management objectives of this reserve is to provide a breeding site for both summer visiting and resident birds. For this review we had intended to carry out four annual breeding bird surveys to assess its effectiveness.

Unfortunately the Covid 19 restrictions reduced our ability to complete this exercise. The loss has been more than compensated for by Jeroen Minderman (Plate 7) who set up a BTO trial bird ringing site supported by the Tay Ringing Group in the Hawthorn scrub on the North side of the West pool.

Table 3. Breeding birds ringed during June – Sept 2020.

Species	Juveniles	Breeding adults
Blackbird	1	1
Blackcap	21	3
Blue Tit	6	2
Bullfinch	1	1
Chiffchaff	31	1
Dunnock	3	1
Goldfinch	7	4
Grasshopper Warbler	1	1
Great Tit	11	3
House Martin	0	1
Long-tailed Tit	7	1
Redstart	1	0
Reed Bunting	1	1
Reed Warbler	1	0
Robin	8	0
Sedge Warbler	10	11
Song Thrush	3	1
Whitethroat	15	9
Willow Warbler	43	8
Wren	8	1

In future this may become one of Scotland's 11 BTO *Constant Effort Sites* (CES) where data are collected on a range of passerines and used to inform government on the state of UK's bird populations. The method involves catching birds in mist nets and then fitting them with individually marked leg rings. Catching wild birds without a licence is illegal and participants have to undergo several years of training to meet the highest welfare standards before they can practise.

Jeroen and his colleagues carried out 10 sessions between mid-June and mid-October 2020 and ringed 445 birds of 29 species. Amongst several parameters they record are whether the birds are juveniles (birds hatched in 2020) or breeding parents with brood patches or cloacal protuberances. Table 2 lists 20 breeding species and in most cases both juveniles and breeding adults were caught.

Reed Warblers have been recorded singing at the reserve since 2011 (SOC, 2011) but remain relatively rare in Scotland. The Grasshopper Warbler is Red Listed and during one group survey visit we heard five individuals calling. The ratio of juveniles to adults is taken as an indicator of overall breeding productivity though usually it is computed over several seasons. Productivity appeared high for Blackcap, Chiffchaff and Willow Warbler and relatively low for Sedge Warbler (Minderman, 2021). By early June 2021 eleven of the warblers ringed in 2020 had been recaptured after returning from Africa; they belonged to five different species. The Chaffinches that were ringed on the reserve were all non-breeding adults.

Around the pools two pairs of Water Rail (Plate 8 and 9), and Coot, Mallard, Moorhen and Lapwing (Plate 10) have been seen with young during the last four years. A pair of Herons have nested in trees at the edge of the reserve during 2020 and 2021. Over the last 20 years Swans, Shelduck (Plate 11) and Garganey have also occasionally bred there.

Amphibians and Reptiles

Four species of amphibians have been recorded at Cambus Pools. Two are *Anurans* i.e. the order containing the Frogs and Toads (without tails) and two are *Urodelids* i.e. the Newts.

Figure 5. Frog at Cambus East Pool.

The Common Toad (*Bufo bufo*) has been recorded in both pools and is also likely to breed there. We were unaware quite how many there were until one night when moth trapping we found our route out blocked by hundreds of toads migrating across the tracks from their winter hibernation haunts to the pools. The Common Frog (*Rana temporaria*) has also been confirmed to breed in a number of the water bodies on the site (Figure 5).

Two species of Newt have been found on the reserve and probably breed there too. The Palmate Newt (*Lissotriton helveticus*) is ubiquitous throughout Scotland, tolerating a range of pH and salinity conditions. The Smooth Newt (*Lissotriton vulgaris*) is far less common in Scotland, preferring basic water as opposed to the more frequent acidic conditions. However, Smooth Newts may prefer, or be more tolerant of, water with high metal concentrations which is consistent with the reserves' industrial situation (McInerny & Minting, 2016).

No reptiles have been recorded at Cambus Pools. However, the site offers suitable habitat for all four species native to Scotland: Common Lizard (*Zootoca vivipara*), Slow-worm (*Anguis fragilis*), Adder (*Vipera berus*), and Grass Snake

(*Natrix* sp.). It is possible these animals are present at low densities and may not yet have been recorded, although it is more likely they are absent due to the isolation of the site which is surrounded by agriculture, housing, and commercial development.

Fish and Pollution.

The presence of Otters (Figure 2 and Plate 12), Seals, Harbour Porpoises, Cormorants, Red-breasted Mergansers, Goosander (Plate 13), Herons (Figure 6) and Kingfishers indicate that the river Devon downstream of Cambus Weir is rich in fish, indeed a fishing boat used to visit the mouth of the river. There are a whole series of migratory fish that must make their way up over the fish pass at the weir including Salmon, Sea Trout, Eels and River Lampreys.

Figure 6. Heron fishing for flounders below the weir in the River Devon (Phillip Jones.

In his recent book about the River Devon's Wildlife zoologist Keith Broomfield has a chapter describing the *Hidden riches* of this stretch of the river (Broomfield, 2020). His enthusiasm knows no bounds and to make his observations he donned his wet suit and snorkelled out over the rock shelves and those forbidding mud banks. The main fish he saw were nail -sized juvenile Flounders. Apparently 3-4 year old Flounders spawn in the North Sea in water 25-40 m deep. The fertilised eggs float to the surface and hatch as they drift on currents towards the shore. They metamorphose into tiny flatfish

which make their way up the Forth, where they feed up in nursery areas like the mud banks at the mouth of the Devon. Eventually, they move upstream to live for a year or so in fresh water before returning to the sea to breed.

When I was researching the fish life I spoke to two elderly local gentlemen who had tried to fish the Devon at Cambus as boys in the 1950s. They reminded me how disastrous the pollution of the Devon used to be. Apparently it was far worse than the situation in the Forth and a long brown swirl of chocolate coloured Devon water could be seen snaking its way downstream where the two rivers met. The sources were waste from the distilleries, breweries, the yeast factory, the sewage works and dyes from the mills. The clean-up has been nothing short of remarkable and is largely attributed to the Forth River Purification Board (FRPB), formed in 1951 (McLusky, 2015). In 1961 there were depleted oxygen levels in an *oxygen sag* which occurred in the Forth above Alloa. This prevented fish movement up and down the river in 18 out of 25 sampling days in 1961. By 1976 the FRPB had begun to control the waste discharges and the upper estuary was only impassable to fish on three days out of 21.

The pollution from Cambus was reduced during this period and virtually ceased in 1991 when the distillery closed. The other major polluter in the area was Quest International at Menstrie but it discharged its waste at Alloa not directly into the Devon (McLusky, 2015). The history of this clean up is described in two detailed FNH articles by Judy Dobson (2013) and Donald McLusky (2015). In 2018 the condition of the surface waters of the Upper Forth Estuary were described as moderate according to the Water Framework Directive classification, having been upgraded from poor in 2013 (SEPA, 2021). In September 2021 members of the Devon Angling Association reported seeing sparling below the weir. This rare species is protected under the Wildlife and Countryside Act, 1981.

Butterflies and Moths.

In 2006 we recognized that butterflies, moths and bumblebees were poorly represented on the reserve. We attributed this to the extensive growth of coarse grasses which had overwhelmed the original wild flower rich areas. In 2008 we started strimming and raking the wide track verges each winter and seeding them with yellow rattle, a semi-parasitic plant whose roots invade those of grasses, dwarfing the latter.

Table 4. Counts of the butterfly species observed when walking along the tracks in the SWT reserve boundaries (1.74km). The total counts of each species after 18 visits during April to September 2017-2021 are shown.

Species	Peak count	Date	Total
Comma	2	19/4/2020	2
Common Blue	1	1/7/2018	2
Large White	3	6/9/2019	5
Meadow Brown	2	1/7/2018	3
Orange-tip	18	22/4/2021	16
Painted Lady	17	6/9/2019	31
Peacock	18	15/8/2017	55
Red Admiral	2	13/8/2017	9
Ringlet	56	15/7/2019	85
Small Copper	1	4/8/2021	1
Small Tortoiseshell	3	4/5/2017	8
Small Heath	2	12/6/2018	2
White Small	18	15/8/2017	
White Green-veined	23	4/5/2017	156

Although we only spread a few handfuls of seed of it in 2008, by 2011 all the verges were colonized with thousands of flowering spikes which had a marked impact on the height of the sward. These combined measures led to a resurgence of

insect-friendly plants. We also grew up and planted out 40 Devilsbit Scabious seedlings in 2014 to provide autumn nectar. In their second year they produced 97 flowers, which had risen to nearly 2,000 flowers by August 2020 which were well used by both butterflies and bees.

Between 2017-21 seventeen butterfly surveys (Table 4) were carried out during which we recorded the 14 common local butterflies (Shanks, 2015). The earliest butterflies to emerge are the Green-veined and Small Whites. Two of the latter were seen in the sunny breaks between snow flurries in early April 2017. Both these butterflies produce two broods during the year with the Green-veined Whites becoming the most common of the two. While these species are easily distinguished at rest most recorders have difficulty in distinguishing them in flight so the combined counts are recorded in Table 4.

Large or Cabbage Whites are regularly seen on the reserve and there is one record in 1992 of the Clouded Yellow, a rare migrant from North Africa. The Orange-tip recolonized the Stirling area in 1990 after a long absence. It is now common and is seen round Cambus Pools in early May on Lady's Smock or Cuckoo Flower, its food plant. Similarly the Comma returned to Central Scotland in August 2006 (Young and Sexton, 2007) but it has only been recorded twice on the reserve. The Red Admiral, Peacock and Small Tortoiseshell appear every year but the numbers vary considerably from season to season.

Red Admirals bred on the reserve in a clump of Nettles in July 2017. The single caterpillars surround themselves in a *tent* formed by leaves loosely wrapped with silk threads. Painted Ladies are migrants originating in North Africa and Spain and in *Painted Lady Years* like 2009 and 2019 they appear in large numbers. They produce new broods before migrating back to southern Europe.

Common Blues have only been recorded twice in spite of the presence of Birds-foot Trefoil (Plate 14), their food plant. The Ringlet and Meadow Brown both lay their eggs in tall grasses. The caterpillars of these species overwinter growing slowly over nine to ten months until they pupate in May. The male Ringlets have a strong urge to find a mate and are one of the few butterflies that are seen on the wing in overcast weather (Futter et al., 2006).

The greatest success of these Cambus Pools surveys has been the work of our SWT Moth Group, recently led by Tony Rogers. The group was originally set up as a result of a 2012 SWT evening lecture entitled *Why Study Moths?* given by the late local recorder Prof. John Knowler. He pointed out how poor the Stirling and Clackmannanshire moth records were (see Knowler, 2010) and encouraged us to set up a surveying group. With the help of Heather Young we obtained a grant from the *Awards for All* scheme to buy a mercury vapour-lit Robinson moth trap (Figure 7) and the generator to run it.

Figure 7. Mercury vapour-lit Robinson moth trap.

After moth identification training by Heather and David Bryant, it was agreed that our Cambus Pools reserve should become a fixed long term survey site. It had the advantages of a range of habitats and vehicular access to transport equipment. Tony Rogers took over organising the monthly survey nights which were usually arranged at short notice when the weather was optimal.

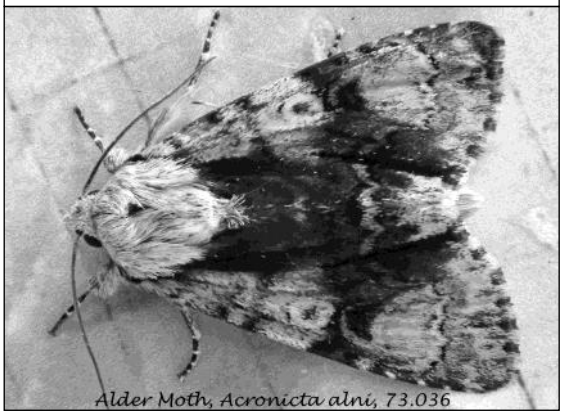
During the four years 2016-19 twenty three surveys were undertaken by 14 recorders sometimes with as many as six traps. Tony Rogers, Paul Dorrington, Heather Young, Melissa Shaw, Philip Sansun and Tim Brain were the main recorders who caught 3,288 moths during the 23 visits. They belonged to 179 different species of macro-moths and 49 micro-moths. The division of moths into macro and micro-moths is one of convenience rather than science (Waring and Townsend, 2003). As the terms imply, the micro-moths are generally smaller (<15 mm wing span) and, as a result, have been studied less than the more easily identified macros. Micros on the whole are more primitive than the macros which tend to have co-evolved more recently with the flowering plants.

A small number of the primitive groups have evolved into quite large species like the Swift moths that have been caught at Cambus Pools and have wing spans of 11-35mm. They are regarded as honorary macros. Where do Butterflies fit into this evolutionary tree? Waring and Townsend (2003) state: *Taxonomically the butterflies are placed in a discrete group of families towards the middle of the moths implying that they evolved later as a branch of the Lepidoptera family tree rather than early in the history of the group.*

The principal traps used were the Robinson mercury vapour type (Figure 7) supported by less powerful Heath traps. Although the peak numbers occur in the summer months (Table 5) a few moths are still found flying at near freezing temperatures in winter. The Winter, December and November moths were all caught at Cambus. There are also species like the Chestnut, Satellite, Sword Grass and Pale Pinion which overwinter as adults and so are on the wing in autumn and early spring. During the summer the commonest moth on the reserve is the Large Yellow Underwing but there were also large numbers of Square-spot Rustic, Antler, Brimstone, Common Marbled, Common Rustic, Large Wainscot, Small Square-spot and Common Swift.

Some uncommon species were also caught, like the Marsh Pug, White-pinion Spotted, Pearly Underwing and Alder Moth (Figure 8).

Figure 8. Alder Moth (Tony Rogers).



The largest moth trapped was the Poplar Hawkmoth with a wingspan of 44 mm and the smallest was a micro-moth, the Holly Tortrix, with a wingspan of only 5.5-7 mm.

Table 5. The average number of moths caught per visit during different months of the year. A more complete version of this table including species names is available on our Group's Web site (https//swtstirling.org.uk/)

Month	Av. Moths per visit	Species Macro-moths	Species Micro-moths
Jan			
Feb	20	7	3
Mar	15	7	1
Apr	21	13	4
May	118	55	10
June	234	70	18
July	133	60	17
Aug	282	72	30
Sept	62	35	8
Oct	73	25	3
Nov			
Dec	10	2	0

In summer our moth species numbers are boosted by immigrants from Europe and Africa: like the Silver Y, Diamond Back, Angle Shades and Pearly-underwing. Football fans may recall that during the 2016 European Cup Final the Stade de France was turned into an enormous moth trap when thousands of migrating Silver Ys were attracted by the stadium lights.

The life cycle of moths includes a larval or caterpillar stage which requires a food source. In most cases this involves the adults finding and laying their eggs on a particular group of food plants, which in the case of micro moths may be confined to one or two species. There are cases where nutrition does not come from a plant: e.g. the Bee moths caught in this study lay their eggs in old bumble bee nests.

As one might anticipate, some of the moths trapped at Cambus Pools depend on reed bed plants. The Bulrush Wainscot for example lives and then pupates in the stems of Bulrush. The rhizomes and stem bases of Common Reeds are eaten by the larvae of Common and Silky Wainscots and the micro-moth *Chilo phragmitella.* A few moths have aquatic larvae. The Brown China–mark lives inside a floating case made of leaf fragments which they attach with silk to the underside of the leaves of pond weeds. Its food plants include Water Plantain, Duckweed and Burr Reed all found round the Pools (Young, 2014). Impressive numbers of Noctuid moths were also noticed by Philip Sansum feeding on the honeydew produced by Common Reed flowers infected by the Ergot fungus (*Claviceps purpurea*). The rubble embankments around the reserve also provide Tansy and Coltsfoot, the food plants of the Tansy and Triangle Plume moths.

Moths themselves and their caterpillars are an important food source for other wildlife on the reserve particularly birds and bats. For instance, the Winter moth's larvae are so important to Blue and Great Tits that the birds arrange their

breeding cycle to coincide with peak caterpillar numbers. To avoid predation, moths have become masters of camouflage. Their wing colouration and patterns have evolved to match the natural substrates on which they rest like bark and leaves. The Ghost Swift moths recorded at Cambus restrict their flying time to 30 min at dusk and so avoid overlap with bat activity. Moths have also evolved ingenious ways of avoiding the bats' eco-location systems. Many species have ears that allow them to detect the bat's high frequency pulses and make evasive escape manoeuvres, such as closing their wings and dropping to the ground (Waters, 2003). Some moths have modified long thin scales that give the appearance of hairiness which acts as *acoustic camouflage*. They deaden the echo upon which the bat's echolocation system depends (Bouchard, 2018). Finally, the Tiger moths can make a train of clicks that mimic the bat's echo location pulses and either confuse the bat's radar or act as an aposematic signal to remind them that Tiger moths are distasteful (Waters, 2003).

Plants

As explained in Part 1, Cambus Pools reserve was not selected for its floral attributes. However, it does have some features of interest. There have been four floral surveys over the last 30 years and they illustrate how the management of the reserve has improved the original impoverished flora. In 1993 there were 106 species, this had increased to 132 in 2008 and further to 160 species in 2019. The spread of orchids onto the reserve provides an illustration of this progress. In Bill Brackenridge's 1993 survey no orchids were found and there were none listed in 2001. By 2008 the Common Spotted Orchid had arrived (Whyte, 2008) and with the start of verge strimming and meadow grazing the numbers increased to 464 flowering spikes by July 2015. Northern Marsh Orchid hybrids were first recorded in 2014 and the populations increased to 80 by 2017. Unfortunately the growth of birch scrub has recently caused the colony to decline.

Broad-leaved Helleborines were originally in the woodland near the Cambus weir and from there spread along the track reaching the reserve sign by August 2011. Since then they have colonised the Birch/ Willow scrub along the reserve tracks so there were 108 flower spikes in July 2021. Twayblades are the most recent newcomers, arriving in 2018 and progressing to 44 plants in 2021.

Figure 9. Broad-leaved Helleborine.

The plant which currently dominates the reserve is the Common Reed (*Phragmites australis*). Its tall, 2-3 m high, robust stems carry pointed leaves which are attached by loose sheaths around the stem. This allows them to swivel round in a wind so they all point the same way reducing storm damage. In the autumn the leaves detach leaving the stems bearing the remains of the inflorescences. The new shoots grow from rhizomes which can survive permanently submerged in the anaerobic mud anchored by their fibrous roots. Most plants become deprived of oxygen when submerged but aquatic plants have evolved systems of air filled channels (aerenchyma) to carry oxygen from the aerial shoots down to the root tips. This system is very efficient in *Phragmites* (Armstrong and Armstrong, 1987) and there is a controlled leakage of oxygen into the mud around the young roots detoxifying the sulphides that accumulate there.

In winter when the water level in the pools is high and the roots and rhizomes are submerged the persistent stems act as snorkels supplying oxygen down into the mud. The

densely packed forests of living, 2-3 m tall stems, combined with the persistent dead stems, shade out all understorey plants. The older stems tend to snap off at the 3-5th nodes and produce a dense litter thatch elevated away from the wet soil surface. This essentially prevents light penetrating to other plant seeds in the soil resulting in a Common Reed monoculture.

As we have found to our cost, Common Reed is an aggressive colonist. The plants spread both by producing abundant wind dispersed seeds as well as colonising vegetatively using runners or stolons. We were told that if we dug a 1.0 m deep x 2 m wide ditch round the reed-beds it would stop the reed advance. Unfortunately this turned out to be completely untrue. The drought of 2006 revealed stolons up to 5 m in length (Figure 10) snaking across the dried out floor of the pond. By 2017 nearly all the open water on both East and West pools had been overgrown.

Figure 10. This 5 m long stolon with new reed shoots springing from it was revealed when the West pool dried out in summer 2006

A partial solution has been provided by an amphibious tracked vehicle called a Truxor (see Part 1, Figure 3). This was fitted with a reciprocating reed cutter-bar which severs the reed stems under the water surface cutting off the oxygen supply to the rhizomes.

Celery-leaved Buttercup is currently growing on the mud around the ponds. Its small Buttercup-like flowers make it easily identifiable. Although this was present in the 1993 species list it had disappeared by the turn of the century, a casualty of the invasive reed growth. Much to our surprise the mud excavated during the 2005 pond deepening exercise produced a sward of new seedlings. It seems likely that exposure to oxygen breaks the seed dormancy because another spate of seedling growth occurred after the West Pool was cleared in 2018. A new addition to the mud flats in the West Pool has been the Water Plantain a very attractive species with delicate white three petalled flowers.

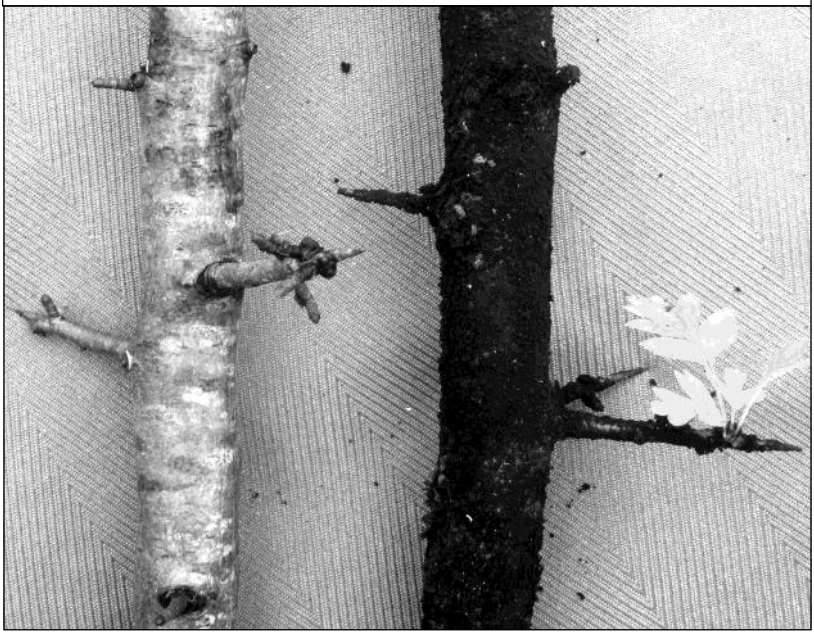
On either side of the reserve there are colonies of invasive non-native species. 1.4 km upstream on the Manor Powis bing there are over 3,000 Giant Hogweed plants. So far only one invader has become established in the reserve and it was spotted before it flowered. We have not been so lucky with Himalayan Balsam with its spring-loaded seed discharge mechanism. It poses a major problem all along the banks of the Devon. A colony which formed in the woods near Cambus weir was exterminated as a result of a regular visitor pulling up a few plants every time he passed. In spite of our best efforts the track upgrading also brought in seed which formed rows of Himalayan Balsam seedlings down the new track edges. Fortunately these were easily treated with the herbicide Roundup.

The East Pool reed beds also became infected in 2017 with 1,400 plants flowering along Diageo's security fence. In 2018 we divided this infected area and sprayed one section with Roundup and simply trampled the plants in the other as suggested by Bullimore (2018). Both methods worked but required follow up hand pulling to remove the misses. Trampling is only effective where there is easy access and would be impracticable for plants growing in hedgerow thickets or steep banks.

The management of the flora of the track side verges is dealt with in the section on butterflies and moths. We are currently trying to re-establish Maiden Pinks and Purple Loosestrife which were recorded in the earliest plant list. The plants along the river bank reflect the changing salinity. From the weir down to our reserve sign there are golden clumps of Marsh Marigold each spring where the Devon water is almost fresh. At the turning circle where the bank is exposed to the saline water of the Forth Scurvy Grass and Sea Aster are found, both specialist salt marsh species.

The Black Whisky Fungus. One striking feature of the biodiversity of Cambus Pools is the black sooty fungus which not only coats the bonded warehouses of the Diageo complex but also many of the trees and bushes in the reserve (Figure 11).

Figure 11. Two hawthorn branches of the same age; the one on the right is from Cambus Pools has been colonised by the Whisky Fungus.



The pitch black growth is produced by the long chains of thick-walled fungal cells or conidia which can cover the trunks, branches and twigs in a luxuriant growth. It colonises all the species of tree but grows most prolifically on Elm, Hawthorn and Willow. It is found up to 200 m from the nearest warehouses. The fungus at Cambus has recently been identified by Ing, Macdonald and Taylor (2018) as *Baudoinia compniacensis*. This fungus was isolated in pure culture by Scott et al. 2007 who using morphological and DNA sequence analysis placed it in a new genus named after the pharmacist Antonin Baudoin. He first reported it growing on the buildings of the brandy distilleries in Cognac, France in 1872. Ing et al's. research team found *Baudoinia* growing around most of the 33 Scottish distilleries and bonded warehouses they studied including Cambus, Deanston and Blackford. They suggest the fungus may have been brought to Scotland on infected empty brandy casks imported from Barbados and Kentucky USA.

Whisky can only be called Scottish Whisky if it is matured in barrels for at least 3 years. Originally these were oak which is permeable and allows about 2 % of the spirit they contain (*the Angel's share)* to be lost into the atmosphere during maturation. Ewaze et al. (2007) showed that *Baudoinia* could grow on this ethanol as its carbon source. The atmosphere at Cambus must be rich in ethanol since according to Blackgrange's information board the 60 bonded warehouses hold a total of 3.6 million casks making it the largest bonded warehouse complex in Europe. The fungus grows prolifically on metal surfaces, including the polished aluminium bodies of the Carntyne trucks, so presumably it is able to obtain all its nutrients from the atmosphere.

Industrial melanism is the evolutionary process whereby in sooty industrial areas dark genetic variants of organisms are selected because they are better camouflaged against a predominately black background and therefore less

susceptible to predation. The classic example of this is the Peppered moth, *Biston betularia,* which normally is light coloured, with dark speckled patches, enabling them to lie camouflaged against lichen growth on the bark of trees. There is a sub-species of this moth found in industrial areas *B. betularia f. carbonaria,* where a genetic mutation has led to the moth being predominately dark with few light patches. It used to be common in Clackmannanshire in the 1970s (Bryant, 2018) however during their surveys at Cambus Pools the Group's moth-team have only encountered the normal pale subspecies. It is possible that slugs and snails that graze on the fungus could also provide examples of melanism.

Photography

The restrictive movements enforced during the Covid 19 Pandemic led a number of local residents to take up natural history photography at Cambus Pools. Two locals, Phillip Jones and Ian Bone, have provided many of the pictures in the text and on the rear cover. Plates 2 to 15 in the end colour section were chosen to represent the wildlife found in and around the reserve. Obtaining these spectacular images takes great commitment and patience.

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Appendix 1. Birds Recorded at Cambus.

The Survey area stretched from the Cambus Bridge down the North bank of the Devon (including the woodland), SWT's Cambus Pools reserve with adjacent Devon and Forth rivers, the field West upstream on the Forth bank and a triangle of hawthorn scrub north west of the reserve next to Blackgrange warehouses.

Status Re = Resident, SV=Summer Visitor, WV = Winter Visitor, PM=Passage Migrant, V=Visitor

Numbers Maximum recorded count and date.

F = Frequent reliably present in season > 50 % visits,
O = Occasional = present in season but only recorded in 10-50 % visits,
R = Rare = less than one record per year
(RL) Red Listed Birds of Conservation Concern.

Species	1983-1991	2002-2020	Max count	Date	Clacks status
Bar-tailed Godwit		R	12		WV
Bearded Tit		R	2	02/2018	Re
Blackbird	F	F	14	12/2018	Re, WV
Blackcap		R	7	08/2020	SV, WV
Black-headed Gull	F	F	234	03/2020	V
Black-tailed God-wit (RL)	O				V
Blue Tit	F	F	14	04/2020	Re
Brambling	F				WV
Bullfinch		F	5	04/2020	Re
Buzzard		F	3	11/2019	Re
Canada Goose	R	O	16		V
Carrion Crow		F	30	11/2018	Re
Chaffinch	F	F	11	12/2012	Re, WV
Chiffchaff		F	12	04/2020	SV
Coal Tit		O	4	12/2018	Re, WV
Collard Dove	F				Re

Species	1983-1991	2002-2020	Max count	Date	Clacks status
Common Gull	F	O	83	10/2019	WV
Common Sandpiper	F				V
Common Tern	O				PM
Coot	F	F	2	05/2020	Re, WV
Cormorant	F	F	55	11/2017	V
Corn Bunting (RL)	O			01/1988	Re
Crossbill	O				V
Cuckoo (RL)	O				PM
Curlew (RL)	F	O	104	12/2020	Re, WV
Dipper		O	1	11/2018	Re
Dunlin	F	F	6	11/2019	WV
Dunnock		O	2	10/2020	Re, WV
Egyptian Goose		R			V
Fieldfare (RL)	F	F	59	12/2017	WV, PM
Gadwall	O	O	2	03/2017	V
Garden Warbler		O	1	05/2018	SV
Garganey	O	R	1	04/2020	PM
Goldcrest		O	9	10/2020	Re, WV
Goldeneye	F	F	11	01/2018	WV
Goldfinch	F	O	19	04/2020	Re
Goosander	O	F	13	12/2017	Re, WV
Grasshopper Warbler (RL)	O	F	6	05/2020	SV
Great Black-backed Gull	F	O			V
Great Crested Grebe	O	R	1	2009	WV
Great Spotted Woodpecker		R	2	12/2018	Re
Great Tit		F	9	04/2020	Re
Green Sandpiper	F				WV
Greenfinch	F	O			Re
Greenshank	F				WV
Grey Heron	F	F	3	12/2017	Re, WV

Species	1983-1991	2002-2020	Max count	Date	Clacks status
Grey Partridge (RL)	F				Re
Grey Plover	R				PM
Grey Wagtail (RL)	O	O	1	11/2020	Re
Greylag Goose	F	F	500	02/2018	Re, WV
Guillemot	O	R	58	03/2018	WV
Hedge Sparrow		O			Re
Herring Gull (RL)	F	O	34	05/2020	Re, WV
House Martin	F	O	1	01/2020	SV
House Sparrow (RL)	F	O			Re
Jack Snipe	R				WV
Jackdaw		F	168	02/2018	Re
Jay		R	1	10/2020	Re
Kestrel	F	R	1	04/2020	Re
Kingfisher	O	R	1	10/2019	Re
Lapwing (RL)	F	F	10	11/2017	Re, WV
Lesser Black-backed Gull	F	F	160	10/2019	SV
Lesser Redpoll (RL)		F	32	01/2017	Re
Linnet (RL)	O	R	70	09/2017	Re, WV
Little Egret		R	1	2002	V
Little Grebe	O	R	1	03/2020	Re, WV
Long Eared Owl	O		1	2006	Re
Long-tailed Duck (RL)		R	1	01/2013	Re, WV
Long-tailed Tit		F	17	08/2020	Re
Magpie		F	6	03/2020	Re
Mallard	F	F	43	06/2020	Re, WV
Marsh Harrier		R	1	06/2020	SV
Meadow Pipit	F	O	1	10/2018	CSV
Merlin (RL)	R	R	1	12/2016	WV
Mistle Thrush (RL)	O	F	10	12/2017	Re, WV
Moorhen	F	F	7	10/2018	C Re
Mute Swan	F	F	64	01/2018	ReB
Nuthatch			1	03/2021	Re
Oystercatcher	F	O	31	05/2016	SV

Species	1983-1991	2002-2020	Max count	Date	Clacks status
Pectoral Sandpiper	R				Re, V
Peregrine	O	R	1	11/2020	Re, WV
Pheasant		F	3	04/2020	IRe
Pied Wagtail	F	O	1	01/2018	SV
Pink-footed Goose	R	F	1180	12/2017	WV
Pintail	R		5	1992	WV
Pochard (RL)	O	R	2	03/2018	WV
Raven		R	5	12/2017	Re
Razorbill	O				V
Red-breasted Merganser	F	R			WV
Redshank	F	O	5	12/2020	Re, WV
Redstart		R	1	08/2020	Re, SV
Redthroated Diver	R				V
Redwing (RL)	F	F	140	12/2017	WV
Reed Bunting	F	F	22	10/2020	Re
Reed Warbler		R	3	05/2016	Re, SV
Ringed Plover (RL)	O				Re
Robin	F	F	8	08/2020	Re, WV
Rock Dove	F				
Rook		F	34	12/18	Re, WV
Ruff	F				V
Sand Martin		F	59	04/2020	SV
Sandpiper		R	1	04/2020	PM
Sandwich Tern	R				V
Scaup (RL)		R	1	04/2019	WV
Scoter (RL)		R	2	12/2017	V
Sedge Warbler	F	F	8	07/2020	SV
Shelduck	F	O	4	04/2018	Re
Short-eared Owl	O	O			WV
Shoveler	F			1989	PM
Siskin	F	F	35	12/2018	Re, WV
Skylark (RL)	F	O	1	06/2020	Re
Snipe	F	O	4	07/2018	R, WV
Song Thrush (RL)	O	O	2	05/2018	R, WV
Sparrowhawk	F	O	1	12/2017	Re

Species	**1983-1991**	**2002-2020**	**Max count**	**Date**	**Clacks status**
Spotted Flycatcher (RL)		R			V
Spotted Redshank	O				PM
Starling (RL)	F	F	43	06/2020	Re, WV
Stock Dove	O	O	19	01/2017	Re
Swallow	F	F	15	07/2020	SV
Swift	F	F	3	08/2019	SV
Tawny Owl		R	1	08/2019	Re
Teal	F	F	66	12/2018	Re, WV
Treecreeper		R	1	10/2020	Re
Treesparrow		O	8	12/2017	Re
Tufted Duck	F	F	2	12/2017	Re, WV
Twite (RL)	O	R	15	01/2016	Re
Water Rail		F	7	07/2018	Re,WV
Wheatear	O				PM
Whimbrel (RL)	O				PM
Whinchat (RL)	O				Re, SV
Whitethroat		O	10	06/2020	SV
Whooper Swan		O	14	04/2020	WV
Wigeon	F	R	3	01/17	WV
Willow Warbler	F	O	27	08/2020	SV
Woodcock (RL)		R	1	01/2016	Re, WV
Wood Pigeon	F	F	250	01/2018	Re, WV
Wood Sandpiper	F				PM
Wren	O	F	13	04/2020	Re
Yellowhammer (RL)	F	F	15	12/2017	Re

UPPER FORTH BIRD REPORT 2020

N. Bielby

This is the 47th bird report for the Upper Forth SOC (Scottish Ornithologists Club) recording area. The area covered by the report comprises the council areas of Falkirk, Clackmannanshire and Stirling but excluding the Clyde drainage basin which contain Loch Lomondside and the Endrick Water area (including Fintry and Balfron) all of which are covered by the Clyde bird report. The total area covered is c.222,554 ha. The report consists of a summary of the main bird news from 2020 followed by detailed species accounts.

Chris Pendlebury, the local SOC recorder, can be contacted by e-mail at chris@upperforthbirds.co.uk; by leaving a message on 07798 711134 or by mail to 23 Ochlochy Park, Dunblane FK15 0DU. Records are best provided through the BTO BirdTrack system (67,908 records were entered into BirdTrack by 155 users for our area in 2020; compared to 49,791 in 2019) or alternatively, by an Excel spreadsheet that can be sourced from Chris. Details of what type of records are required for each species along with advice on writing descriptions and submitting records can be obtained from Chris or the deputy recorder, Neil Bielby at n64b68@gmail.com or by phoning 01786 823830 (please note that records of rare / scarce species entered **only into BirdGuides** cannot be used in this report due to the inability to verify them).

Scarcer and rare species for which a full list of records are provided are highlighted with the use of an asterisk (*). Records of rare species are subject to acceptance by either the BBRC, SBRC or the local rarities panel. The latter currently consists of Graeme Garner, Mark Lewis, Duncan Orr-Ewing, Chris Pendlebury and Andre Thiel. A list of local rarities is available from Chris Pendlebury.

Normally, much information and records - especially counts, rates and comparisons - come from the Wetland Bird Survey

(WeBS) and Breeding Bird Survey (BBS) carried out on behalf of the British Trust for Ornithology (BTO). However in 2020, while WeBS counts were largely unaffected, the imposition of strict travel restrictions during April, May and June to curtail the rapid spread of the Corona Covid 19 virus meant that all but a few late BBS visits were able to be undertaken.

The monthly 'core' WeBS counts (Jan – Mar and Sep - Dec) are split into estuary and inland with the former being co-ordinated by M.V. Bell. The Forth Estuary counts, which are downstream from Cambus, are split into five sectors in the Upper Forth area in which 32,431 wildfowl (excl. geese) and 64,789 waders were counted in the 7 months (Jan-Mar & Sep-Dec) by six volunteers. Inland, 102 still sites and 144.5 km of rivers and canals were counted by 45 volunteers who carried out 615 counts on still sites and perambulated 899 km of river and canal producing 34,011 wildfowl (excl. 'grey' geese) and 2,856 waders in the same 7 months. Note: a detailed weather report for 2020 can be found elsewhere in this journal.

HIGHLIGHTS OF THE YEAR

January

A 1st winter Long-tailed Duck was on Gartmorn Dam (3rd) followed by a ♂ Smew there (26th). A Merlin was at Longcarse (7th) with one being seen regularly in the Skinflats Pools area throughout the month. Four Turnstones were at Kinneil when a Blackcap appeared in a Larbert garden (12th). A 1stW Iceland Gull fed on the sports fields at St Modan's School, Stirling (15th) while a ♂ Scaup was unexpected on L. Lubnaig 2 days later. A Little Egret at Airthrey Loch was also unusual (18th). A 1stW Mediterranean Gull, four Rock Pipits and two Chiffchaffs were in Skinflats Pools area with two Hawfinches spotted in the Glen Rd, Dunblane (19th). Two Green Sandpipers were by the Allan Water near Kinbuck (25th) and an ad. Mediterranean Gull was over the Forth Est. off Blackness when a Greenland White-fronted Goose was near Skinflats Village (27th).

The 'Waxwing Winter' continued over from 2019 with 12 in a Dunblane garden at dawn on the 1st providing an excellent start to the occupiers birding year. This was followed by

several other sightings of increasingly sized groups in the town over the following days culminating with 103 by Newton School (17th). 93 were then back by Newton School (26th). Other notable records included c.70 in Bridge of Allan (10th), 52 in Bainsford, Falkirk (25th) and 89 in Torbrex, Stirling (31st).

February

The ♂ Smew was still on Gartmorn Dam (last reported on the 8th) along with the 1stW Long-tailed Duck when a Greenland White-fronted Goose was at Carronshore (2nd). A Snow Bunting was near the R. Carron at Skinflats (7th) followed by a Common Scoter off Bo'ness the following day. A Rock Pipit and 11 Twite were on Longcarse (15th). An ad. Mediterranean Gull was in the Skinflats Pools area (23rd) while a Little Egret flew N over Dunblane (27th). A Rock Pipit and 11 Twite were on Longcarse (15th). A Blackcap was in a Br. of Allan garden during the month. Waxwings: 21 were in the Broomridge & 62 in the Riverside areas of Stirling (1st) with c.35 at Bainsford, Falkirk (5th) and c.17 Bo'ness (20th).

March

22 Scaup were on the Forth Estuary with 11 Pochard on the Skinflats Pools the next day (1st/2nd). A Little Egret was by the Allan Water in the Kinbuck area (7th) while a Red-throated Diver was on the Forth Est. at Kinneil (8th) with possibly the same bird seen flying NW over the Carse of Lecropt the following day. A Hawfinch was on the W side of Callander (13th); a Greenland White-fronted Goose was in the Skinflats fields (17th); a Green Sandpiper was on Devonmouth Pool (19th); 15 Waxwings were in Newton Cres., Dunblane (28th) and a Long-tailed Duck was off Blackness (29th) with a Mediterranean Gull there on the last day of the month.

April

At Blackness there was a Mediterranean Gull (2nd), four Kittiwakes (4th), a Brent Goose (13th), a Long-tailed Duck (14th) and a Fulmar (15th). Late groups of between 12 & 31 Waxwings were in Dunblane (10th – 18th). Single Ring Ouzels were seen in Menstrie Glen (13th) and on Sheriff Muir (24th). A

Spotted Redshank was at Powfoulis tidal breach (22nd) with two at Skinflats Pools (25th). C.100 White Wagtails were at the Powfoulis tidal breach (22nd). A Great Grey Shrike was at Lix Toll, Killin (24th) while a Little Gull was on Kinneil Lagoon the following day (25th). Single Garganeys were on Devonmouth Pool and Tullibody Inch (possibly the same bird) when a 'blue-headed' Yellow Wagtail was at the head of L. Tay (27th).

May

At Skinflats Pools there were two Reed Warblers (2nd) and a Wood Sandpiper (8th). 12 Common Terns flew past Blackness followed by a Whimbrel there the next day (5th/6th). An Avocet appeared at Kennet Pans (8th) while a Hobby was observed over Dunblane (11th). A Little Ringed Plover was at the head of L. Tay with two on the R. Teith at the Carse of Lecropt during the early part of the month. Honey Buzzards returned to their breeding sites in the Trossachs (15th). A White-tailed Eagle was at the Lake of Menteith (20th & 21st) while a Quail was heard near Dumyat (21st). A Sanderling and a two Arctic Terns were at the head of L. Tay when a late Brambling was at Blairdrummond (23rd). A Temminck's Stint was at the head of L. Tay (from 24th). A Montagu's Harrier (only the 3rd record for the area) flew past E. Frew, Thornhill (28th). Two Ptarmigan at Callander Craig were at an exceptionally low altitude (30th).

June

Quail were heard in the Deanston area on the 1st, 2nd & 14th. The long-staying Temminck's Stilt was still calling at the head of L. Tay (14th). A Lesser Whitethroat was at Kinneil (8th & 21st). At Skinflats Pools there were two Little Gulls (20th), a Mediterranean Gull (20th – 27th), an Arctic Tern (24th – 26th) and a Ruddy Shelduck (30th). A Honey Buzzard was observed in G. Dochart (25th).

July

A Ruddy Shelduck was at S. Alloa (2nd). Three summer plumaged Black Terns were feeding offshore at Kinneil (4th). The Temminck's Stint was back at the head of L. Tay (9th). A

Little Gull was off Blackness (11th). The Ruddy Shelduck was present in the Longcarse area (12th – 24th) with a Little Ringed Plover there (22nd). A Nightjar was reported from the Carse of Lecropt (16th). A Quail was calling at Blair Drummond when a Whimbrel was at the head of L. Tay (22nd) while a pair of Black-throated Divers were on L. Iubhair the next day (22nd). An unseasonal Dark-bellied Brent Goose was at the Powfoulis tidal breach (25th).

August

Skinflats was the place to be at the start of the month with the Dark-bellied Brent Goose (1st – 3rd) being supported by a Marsh Harrier and a 1st summer Mediterranean Gull (2nd). On the east side of Grangemouth, Kinneil produced a Yellow Wagtail (9th), two juv. Mediterranean Gulls (15th), two Great Skuas (18th), single Great Skuas (22nd & 25th), three Arctic Skuas (19th), 3,824 Shelducks, three Sanderlings, a Mediterranean Gull, a Kittiwake and 29 Arctic Terns (22nd), a Fulmar (25th) finishing with a Little Stint (28th). Four Little Egrets at Powfoulis incl. an imm. bird. (15th). Longcarse yielded a juv. Little Ringed Plover (28th) and two Curlew Sandpipers (30th) as well as up to five Ruff throughout the month. A ♂ Mandarin was at the head of L. Tay (22nd) while two Common Scoters were off Blackness (31st).

September

Eight Curlew Sandpipers were in the Skinflats Pools area when an imm. Garganey was at Blairdrummond Ponds (5th). A Hobby was over Flanders Moss (10th). Four Great Skuas were seen at Kinneil and later flying W over Kincardine Br. when a Little Gull was also at Kinneil (12th). A Wood Sandpiper was at Powfoulis tidal breach when a Mediterranean Gull was at Kennet Pans (17th). A Little Stint and a Marsh Harrier were at Skinflats Pools (18th). The nocturnal flight call of a Lapland Bunting was recorded over Stirling when an Arctic Skua was over Skinflats (19th). There were four Red-throated and one Great Northern Diver, two Little Gulls and four Guillemots off Kinneil (22nd). 33 Barnacle & eight pale-bellied Brent Geese were at Blackness (23rd). Highlights on Tullibody Inch were three Little Ringed

Plovers (7th) and an immature Gannet (24th). A Yellow-browed Warbler was in the Middlefield area of Falkirk (25th) and an Arctic Skua was off Kinneil (29th). In the Killin / G. Dochart area there were single Guillemots on L. Tay (3rd & 11th), a juv. Razorbill on L. Tay (9th) and two Guillemots on L. Iubhair (13th).

October

Single Slavonian Grebes were on Skinflats N. pool (4th) and the estuary at Kinneil (18th). The Bean Geese flock at Slamannan numbered 75 (5th). A Spoonbill was at Powfoulis (21st) and Skinflats (25th). A Richardson's Cackling Goose was on the Bandeath peninsula in the company of a Greenland White-fronted Goose and 17 Barnacle Geese (22nd) being last reported from that area (28th). A juv Gannet was sitting on the B826 between Thornhill & Doune (3rd) with six Gannets in the Skinflats Pools area (9th).

November

A 1stW Iceland Gull was on the Blackdub floods (4th), at Blairdrummond Ponds (16th & 30th), seen flying W over Doune Castle (19th) and at Westerton Farm, Cowie (25th). A ♂ Mandarin Duck on flood water by Cambusbarron was a pleasant surprise (4th). A flock of c.125 Whooper Swans along with two white phase Snow Geese were in the Skinflats fields when a Spoonbill was at Powfoulis (7th). The white phase Snow Geese were at Cambus (12th). A Greenland White-fronted Goose was by Plean when a Mediterranean Gull was at Blackgrange (14th). Gartmorn Dam yielded a Long-tailed Duck and a Slavonian Grebe (8th & 25th) with another Long-tailed Duck on the Lake of Menteith (9th). Seven Red-throated Divers and a Guillemot were on the Forth Estuary (15th) while a late Swallow was at Blackness (25th).

December

A Great Northern Diver on L. Mahaick was the 1st for the area in 4 years. Gartmorn Dam provided a Slavonian Grebe (4th), two Scaup (20th) and a 'redhead' Smew (23rd). A Slavonian Grebe was also seen on Carron Valley Resr. (15th). An unseasonal Marsh Harrier was over Longcarse (5th) while

a Hen Harrier was in the Buckieburn area (7th). A Red-throated Diver and two Guillemots were on the estuary (13th) while Mediterranean Gulls were observed at Longcarse and Skinflats Pools (12th & 23rd). 15 Jack Snipe were flushed at the Blackdevon Wetlands (21st), a Scaup was well inland on L. Dochart (24th) and a Merlin was at Skinflats Pools (29th).

SPRING ARRIVALS

March: Chiffchaff 15th; Sand Martin & Wheatear 22nd & Willow Warbler 24th.

April: Osprey 4th; House Martin 5th; Swallow 6th; Sedge Warbler 7th; Tree Pipit & Grasshopper Warbler 10th; Redstart 11th; Whinchat 12th; Garden Warbler 15th; Cuckoo & Whitethroat 17th; Reed Warbler 24th & Wood Warbler 25th.

May: Common Tern 5th & Spotted Flycatcher 6th.

SYSTEMATIC LIST

Codes – F, C and S refer to the Falkirk, Clackmannanshire and Stirling Council Areas respectively.

Names and species order: both the common and Latin names, along with the species order, have been (and continue to be) in a state of flux over recent years. To maintain some semblance of continuity (in order to make locating a species in the report a little easier) the same order as last year has been retained. As with the species order, there appear to be different sets of common English names by different authorities, but for this report the British Birds 2016 list has been used with the IOC International English names (2012) in brackets.

Spring and autumn arrival and departure dates in this report have not usually been recorded systematically so that changes between years should only be seen as indicative and not interpreted as reflecting true phenological variation.

In this report a coded summary of general distribution is included after the species name. 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 or 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, respectively, as in winter status above.

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, respectively, as in winter status above.

Irr Irregular: less than annually.

V Vagrant: fewer than 20 records.

CONTRIBUTORS

This report has been compiled from records submitted by the contributors listed below. Where initials are given, the contributors are listed in species entries of birds that are rare, uncommon or otherwise noteworthy. The editor is grateful to all the contributors for submitting their records without which this report could not be written. Apologies to anyone who has been inadvertently missed out.

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Abbreviations: ad (adult), aon (apparently occupied nest), aot (apparently occupied territory), Av (avenue), b (brood), Br (bridge), BoA (Bridge of Allan), BoD (Braes of Doune), bldg (building), cy (calendar year), CVP (Cambus Village Pools), CP (car park), CVR (Carron Valley Reservoir), Cemy (cemetery), conf (confluence), Cott (cottage), Cres (Crescent), Dr (Drive), E (east), Est (estuary/estate), Fm

(farm), FY (food for young), FL (fledgling), F & C (Forth & Clyde), gdn (garden), G (glen), GC (golf course), GP (gravel pit), G'mouth (Grangemouth), Hosp (hospital), Ho, (house); Imm (immature), Incl (including), juv (juvenile), Kinc. (Kincardine), LDR (Little Denny Resr), L. (loch), max (maximum), mig (migration), N (north), nr (near), NH (new high), NY (nest with young), noc-mig (nocturnal migration), ON (occupied nest), orig (originally), pr (pair), Pl (place), prob (probable), Resr (reservoir), Rd (road), S (south/ summer), sp (species), ssp (sub-species), Sta (station), St (Stirling), TB (tidal breach), UF (Upper Forth), w/e (weekend), W (west & winter), yr (year), Y (young) & > (flying).

MUTE SWAN *Cygnus olor* (B, W)
Inland WeBS: 344 in Jan, 291 in Feb, 320 in Mar, 209 in Sep, 273 in Oct,
293 in Nov & 342 in Dec.
Forth Est. WeBS: 11 in Jan, 9 in Feb, 12 in Mar, 39 in Sep, 28 in Oct, 35 in Nov & 8 in Dec.

F Breeding: pr + 6 cygnets Union Canal, Bantaskine 30 May (WMP); pr + 6 cygnets Reid's Pond 24 Jun (DLT); pr + 8Y Kinneil Ho. Pond 19 Jul (AIB); pr + 3Y N. Pool Skinflats 13 Aug & pr + 3Y LDR 14 Sep (NB); pr + 5Y Callendar Park 15 Sep (AIB); pr + 8Y Larbert Hosp Ponds 19 Sep (AB); pr's with 4 & 2Y F & C Canal (Lock 16 – R. Carron) 20 Sep & pr + 5Y Union Canal (Glen Village – Polmont Sta.) 23 Sep (CM). Site max: 62 (incl 10 juv) N. Pool Skinflats 26 Sep & 44 (incl 9 juv) Helix Park Pond 14 Nov.

C Breeding: 3Y Gartmorn Dam 1 Sep & pr + 5Y Delph Pond, Tullibody 12 Sep (NB); pr + 3Y R. Devon (Dollar – Tillicoultry) 21 Sep (HMcL) & pr + 3Y Blackdevon Wetlands 27 Sep (IR). Site max: 108 R. Devon (Alva - Tullibody Br.) 19 Jan; 49 R. Devon (Tullibody Br. – A907) 16 Mar & 30 Gartmorn Dam 5 Feb. An ad >E from the Blackdevon Wetlands hit a pylon line & fell into long grass 27 Sep (IR).

S Breeding: pr + 8Y conf. of the R's Forth / Teith 7 Jun; pr + 6Y Howietoun Ponds 30 Jun; pr + 2Y (orig 3) Cambusmore/Gart GP 8 Aug; pr + 4Y L. Voil 23 Sep & pr

+ 9Y Cromlix Ho Loch 27 Sep (NB). Pr + 2Y (orig 4) Millhall Pond, Polmaise 19 Sep & pr + 4Y R. Forth, Kildean 20 Sep (DT). Prs with 6Y & 5Y Airthrey Loch 29 Sep (BB). Site max: 47 Netherton, Carse of Lecropt 12 May & 34 (incl 8 juv) Lake of Menteith 19 Jan.

WHOOPER SWAN *Cygnus cygnus* (W)

Inland WeBS: 5 in Jan, 10 in Feb, 65 in Mar, 4 in Sep, 19 in Oct, 38 in Nov & 24 in Dec.
Spring departure: last one Crianlarich 27 Apr (IMcP). Autumn arrival: 15
Longcarse & One Skinflats Pools 25 Sep (DH, DT). A single bird was at
Blairdrummond Ponds on 14 May & 5 Jun.

F Winter/spring site max: 23 >over Bellsdyke Rd, Larbert 22 Mar. Autumn/winter site max: 125 Skinflats Fields 7 Nov; c.94 Airth 30 Oct; 85 Skinflats saltmarsh 24 Oct; 85 Hill of Kinnaird 15 Nov; c.70 Plean 14 Nov; 33 Orchardhead Fm 2 Nov; 31 Powfoulis 7 Nov; 24 (incl 4 juv) Letham Moss 19 Nov; 15 Slamannan 1 Dec & Drumbowie Resr. 22 Dec.

C Winter/spring site max: 23 Gartmorn Dam 2 Mar & 20 >W Cambus 10 Apr. Autumn/winter site max: 41 >SW Cambus 28 Nov.

S Winter/spring site max: 23 Netherton, Carse of Lecropt 9 Mar & 17 L. Dochart 18 Mar. Autumn/winter site max: 74 Blackdub Floods 4 Nov; 61 >SW Ashfield 24 Dec; 42 L. Dochart 19 Oct; 33 Bandeath 5 Nov; 19 Carse of Lecropt 15 Nov & 14 R. Forth, Kippen 19 Nov.

BEAN GOOSE *Anser fabalis* (W)

F Regular wintering flock of Taiga race birds in the vicinity of the Slamannan Plateau. Winter/spring max c.150 Slamannan 2 Jan (AJ), last 3 Easter Jawcraig on 5 Feb. Autumn/winter first: 75 on 5 Oct. Max: c.210 Wester Jaw 28 Nov (BGAG).

PINK-FOOTED GOOSE *Anser brachyrhynchus* (W)

With several birds over-summering it is now difficult to ascertain an accurate last spring departure date but 36 Longcarse 18 May was probably it (GG). Autumn arrival: c.20 > Stirling & 18 Kinc. Br 6 Sep (DT, RSM).
Forth Est WeBS: 798 in Jan, 6,610 in Feb, 6,905 in Mar, 1,711 in

Sep, 3,042 in Oct, 5,097 in Nov & 2,720 in Dec. (Virtually all these birds are in fields above the high-water mark. Although this species is recorded on inland WeBS counts, most flocks spend the day grazing in non-wetland locations making the WeBS counts unrepresentative).
National Autumn Dawn Roost Counts, 17/18 Oct: 10,477 Letham Moss, c.1,010 Skinflats & c.880 Alloa Inch giving a total of c.12,367 which is another record total for the Inner Forth. 21/22 Nov: c.3,586 Letham Moss, 662 Skinflats & c.660 Alloa Inch giving a total of c.4,909.

F Winter/spring site max: c.3,800 Powfoulis 8 Feb; 2,000+ Skinflats Fields 28 Jan; 2,000+ S. Alloa 24 Apr; c.1,930 F & C Canal, Bonnybridge 20 Mar & c.1,500 Carronshore 2 Feb. Autumn/winter site max: c.7,500 Skinflats Fields 14 Oct; 6,000+ Skinflats Pools 7 Nov; 1,727 Blackness 15 Oct; 1,172 Powfoulis 6 Nov & c.1,000 Kincardine Br. 29 Sep.

C Winter/spring site max: 5,673 Tullibody Inch 9 Mar; 2,065 Longcarse 23 Apr; 1,296 Blackgrange 11 Mar & c.900 Blackdevon Wetland 14 Mar. Autumn/winter site max: c.10,500 Longcarse 23 Oct; c.2,000 Cambus 27 Oct & c.1,520 Arns 2 Nov. Summering records: max. 5 Longcarse 13 Jun were noted to be 'poor flyers'. One Kennet Pans 4 Jul possibly had a damaged wing.

S Winter/spring site max: 4,885 Bandeath 20 Mar; c.1,000 Carse of Lecropt 16 Mar; c.1,000 Meiklewood 12 Jan & c.510 Kippen Carse 23 Mar. Autumn/winter site max: c.2,500 Blackdub 4 Nov; c.2,300 Brae of Cessintully 9 Nov; c.2,000 Bandeath 22 Nov & c.1,256 Gartartan Fields, Aberfoyle 10 Dec. Summering records: one Cambusmore / Gart GP 8 Aug.

*WHITE-FRONTED GOOSE (Greater) *Anser albifrons* (w)
All birds recorded were of the Greenland race, *A. a. flavirostris*.

F One Skinflats Fields 28 & 31 Jan (AB); one Carronshore 2 Feb (CAM, JP, AJ); one Airth 29 Feb & 26 Oct (BA, DMB) & one Skinflats Pools 17 Mar (EMcl).

C Two Longcarse 18 Oct (JRC).

S One flew over Dunblane 10 Oct & 2 Bandeath 23 Oct (CJP). One Plean 14 Nov (DOE).

GREYLAG GOOSE *Anser anser* (b, W)
Icelandic birds normally depart in Apr and start to return in mid-Oct but the exact spring departure and autumn arrival dates of these birds are muddied by the presence of an ever-increasing number of resident and passage feral/naturalised birds whose winter population probably at least matches the Icelandic one now.
Breeding records of feral/naturalised birds required.
Forth Est. WeBS: 39 in Jan, 17 in Feb, 23 in Mar, 1,510 in Sep, 210 in Oct, 2 in Nov & 6 in Dec. (Virtually all these birds are in fields above the high-water mark. Although this species is recorded on inland WeBS counts, many flocks spend the day grazing in non-wetland locations making the WeBS counts unrepresentative). The coordinated National Goose Dawn Roost Counts produced 231 birds on the w/e of the 17/18 Oct & 856 birds on the w/e of the 21/22 Nov.

F Winter/spring site max: c.160 LDR 18 Jan. Post-moult/autumn site max (feral/naturalised birds): 783 Blackness 14 Sep incl. two buff/white birds (AF). Winter site max: 252 Blackness 23 Oct.

C Winter/spring site max: c.300 R. Devon (Dollar-Tillicoultry) 15 Mar & c.290 Coalsnaughton 23 Feb. Post-moult/autumn site max (feral/naturalised birds): c.1,480 R. Forth, S. Alloa to Cambus (WeBS) 17 Sep. Winter site max: c.300 Cambus 21 Nov; 268 Gartmorn Dam 20 Nov; 262 Alva 20 Nov & c.230 Longcarse 18 Oct.

S Breeding: 4 prs + goslings CVR 26 May (ACC). Winter/spring site max: 343 L. Coulter 17 Jan. Summer: 86 Longcarse 18 Jul & 65 Earlsburn Resrs 12 Jul. Winter site max: 350+ Drip Moss 13 Dec; 275 Bandeath 22 Nov; c.250 Blairdrummond 26 Dec & 172 Cambusmore/Gart GP 22 Nov.

*SNOW GOOSE *Anser caerulescens* (Irr)

F Two white phase birds Skinflats Pools 6-7 Nov (SWo, AB)

C The same 2 birds were in the Cambus / Longcarse area 8 - 13 Nov (JRC, CVW, GG).

CANADA GOOSE *Branta canadensis* (B, W)
Numbers continue to increase inexorably. Inland WeBS: 830 in Jan, 529 in Feb, 242 in Mar, 797 in Sep, 1,597 in Oct, 729 in Nov & 454 in Dec.
Forth Est. WeBS: 52 in Jan, 30 in Feb, 33 in Mar, 246 in Sep, 388 in Oct, 6 in Nov & 60 in Dec.
F Site max: 396 Larbert Pond 17 Oct; c.240 Skinflats Pools 2 Nov; 189 Black Loch, Limerigg 18 Jan & 152 R. Carron, Larbert 18 Oct.
C Site max: c.800 Longcarse 16 Aug & 272 Tullibody Inch 16 Oct.
S Breeding: Cambusmore/Gart GP: crèche of 42Y + pr's with 6Y & 6 chicks 30 May (NB). 13 goslings head of L. Tay 18 May (JPH). Site max: 755 Blackdub Floods 28 Oct; 600+ Drip Moss 13 Dec; c.400 Blairdrummond 10 Oct; 285 N. Third Resr. 4 Nov; 204 L. of Menteith 19 Jan; c.280 L. Venachar 6 Dec; c.200 R. Forth, Gargunnock 18 Feb & 53 Killin Marshes 23 Feb.

CACKLING GOOSE *Branta hutchinsii* (V)
F One S. Alloa 24 Oct (CAM).
C One Longcarse 22-23 & 28 Oct (GG, JRC).
None of the few previous records have yet been accepted by BBRC so, subject to acceptance, this will be the first for the Upper Forth.

BARNACLE GOOSE *Branta leucopsis* (w)
In the UF, it is difficult distinguishing between genuine wild migrants and the few resident feral birds, but most records of groups Feb –Mar & Sep – Dec will be birds migrating between Svalbard & the Inner Solway
Firth.
F Autumn/winter site max: 37 Blackness 22 Sep; 35 Letham Moss 18 Oct; 21 Airth 1 Nov; 8 Skinflats Pools 17 Oct & 4 Kincardine Br. 29 Sep.
C Winter/spring: 2 Tullibody Inch 9 Mar & one there 3 May. One Gogar Loan 2 Feb. Autumn/winter site max: 68 Longcarse 23 Oct & 2 Arns 2 Nov.
S Winter/spring site max: one Bandeath 20 Mar. Autumn/ winter site max: 45 Bandeath 23 Oct; 40 Plean 14 Nov, 16 >

Stirling (nocturnal flight calls) 17 Oct (GC); 2 Gogar Loan 8 Mar & 2 Blackdub Floods 28 Oct. A probable feral bird was with Canada Geese at Balquhidder 27 Jan & 25 Oct. Recorded via noc-mig over Dunblane on 8 & 17 Oct (FM).

*BRENT GOOSE (Brant Goose) *Branta bernicla* (Irr)

F Blackness: One on 13-14 Apr (EMcL); 8 on 23 Sep (DOE) & 10 (pale-bellied) on 10 Oct (AF). 1 dark-bellied bird Powfoulis TB 25 Jul (AB, DOE) and Skinflats Pools on 1-3 Aug (AB, JRC, SWo).

SHELDUCK (Very common) *Tadorna tadorna* (b, W)

Forth Est. WeBS: 511 in Jan, 758 in Feb, 938 in Mar, 1,530 in Sep, 771 in Oct, 709 in Nov & 620 in Dec. Grangemouth moult flock max count: 6,620 (+ 87 juv) 10 Aug (DMB).

F Breeding: 2 broods of 6 chicks Kinneil 2 Jul (NB). Powfoulis tidal breach: pr + 5 ducklings 30 Jun & 2 broods of 8Y & 5Y 4 Jul (AB). Kinneil monthly highs: 40 in Jan, 217 in Feb, c.500 in Mar, 86 in May, c.1,740 in Jul, 2,005 in Aug, c.650 in Sep, 195 in Oct, 655 in Nov & c.220 in Dec. Other site max: c.2,700 Skinflats mudflats 3 Aug & 213 Blackness Bay 28 Aug. *Inland: one Lathallan Pool 25 Feb (NB).

C Breeding - Tullibody Inch: 10 juv 26 Jul; 40 juv 30 Aug (DH, DMB). Site max. 185 Alloa Inches 28 May; 185 Longcarse 28 Jun (DRB); 23 Kennet Pans 29 Apr & 9 Cambus Village Pool 18 Apr. *Inland: 2 Haugh Cott fields 11 Feb & 2 R. Devon, Alva 8 Mar (AR).

*S Two Blackdub Floods 3 Jan (NB); one Allan Water, Kinbuck 23 Jan with 3 there 8 Feb (DJ, CJP); 2 head of L. Tay 1 Feb & one heard over Dunblane 4 May (MVB).

*MANDARIN DUCK *Aix galericulata* (b, w)

It is unknown whether the following records relate to wild bred birds or escapees.

S Male Howietoun Ponds 5 – 12 May (NB); ♀ head of L. Tay 22 Aug (JPH) & ♂Bearside Flood Pool, Cambusbarron 4 Nov (NB).

WIGEON (Eurasian) *Anas penelope* (s, W)

Inland WeBS: 514 in Jan, 309 in Feb, 373 in Mar, 15 in Sep, 197 in Oct, 368 in Nov & 401 in Dec.

Forth Est. WeBS: 1,463 in Jan, 1,438 in Feb, 799 in Mar, 63 in Sep, 627 in Oct, 1,041 in Nov & 949 in Dec.

F Winter/spring site max: 225 Skinflats (WeBS) 12 Jan. Autumn/winter site max: c.330 Blackness 6 Oct & 225 Skinflats (WeBS) 13 Dec.
C Winter/spring site max: 946 R. Forth (Cambus – S. Alloa WeBS) 8 Feb & 931 Tullibody Inch 4 Jan. Autumn/winter site max: 493 R. Forth (Cambus - S. Alloa WeBS) 15 Dec; 486 Tullibody Inch 13 Nov & c.100 Devonmouth Pool 6 Nov.
S Winter/spring site max: c.160 R. Forth (The Frews) 23 Feb; 81 N. Third Resr 17 Jan & 80 Blackdub Floods 31 Jan. Autumn/winter site max: 127 Cambusmore/Gart GP 24 Dec.

GADWALL *Anas strepera* (s, w)
F Breeding: ♀ + b8 (c. 2 weeks old) N. Pool Skinflats 21 Jul then ♀ + 4 juv 19 Aug (MVB). Site max: 23 Skinflats Pools 31 Aug & pr S. Alloa 24 Apr.
C Site max: 8 (4 ♂) CVP 18 Apr; 2 Alloa Inch 8 Mar; 4 Gartmorn Dam 1 Nov; 3 Tullibody Inch 23 Apr; 2 Blackdevon Wetlands 14 Mar & ♂ Craigrie Pond 10 Mar.
S Male L. Watston 4 Jan, 8 Feb, 6 Nov & 28 Dec. ♂Ochlochy Pond 8 Mar – 14 May & on flood water pool Glen Rd, Dunblane 20 Apr refer to the same individual.

TEAL (Eurasian) *Anas crecca* (b, W)
Inland WeBS: 1,329 in Jan, 1,459 in Feb, 1,030 in Mar, 432 in Sep, 851 in Oct, 1,446 in Nov & 1,559 in Dec.
Forth Est. WeBS: 2,710 in Jan, 2,534 in Feb, 1,425 in Mar, 932 in Sep, 1,728 in Oct, 2,531 in Nov & 2,871 in Dec.
F Winter/spring site max: 419 Skinflats (WeBS) 8 Feb; 158 R. Carron (Carron Ho. - A905) 23 Jan & 154 Bo'ness 23 Jan. Autumn/winter site max: c.1,090 Kinneil 25 Dec & 447 Skinflats (WeBS) 13 Dec.
C R. Forth (Cambus – S. Alloa WeBS) monthly max: 696 Jan, 1,029 Feb, 671 Mar, 557 Sep, 648 Oct, 1,207 Nov & 1,296 Dec. Other site max: 219 CVP 8 Mar; 161 R. Forth (Fallin-Cambus) 2 Dec & 159 Kennet Pans 7 Feb.
S Site max: c.370 Bandeath 22 Nov; 214 Cambusmore/Gart GP 24 Dec; 195 R. Forth (The Frews) 23 Feb; 147 R. Forth (St Br. – A91) 8 Feb; c.140 L. Coulter 19 Dec & 135 L. Watston 8 Feb.

MALLARD *Anas platyrhynchos* (B, W)
Inland WeBS: 1,966 in Jan, 1,461 in Feb, 970 in Mar, 1,939 in Sep, 2,069 in Oct, 2,230 in Nov & 2,100 in Dec.
Forth Est. WeBS: 246 in Jan, 199 in Feb, 106 in Mar, 154 in Sep, 213 in Oct, 240 in Nov & 254 in Dec.
F Breeding recorded from Kinneil Curling Pond, Larbert Ho Loch, Dalderse, R. Carron (Carronshore) & Union Canal (Glen Village). Site max: 105 R. Carron (Carronshore-A905) 13 Nov & 106 Skinflats (WeBS) 22 Aug.
C Breeding recorded from Cambus only. Site max: 101 Gartmorn Dam 1 Dec.
S Breeding recorded Cambusmore/Gart GP, Howietoun, Laigh Hills & Ochlochy Pond (Dunblane). Site max: 179 Airthrey L. 22 Nov; 152 head of L. Tay 18 Oct; 126 L. Watston; 121 Pendreich Pool (BoA) 18 Nov; 114 L. of Menteith 9 Nov & 108 L. Dochart 20 Sep.

PINTAIL (Northern) *Anas acuta* (W)
Forth Est. max: 106 in Jan, 100 in Feb, 116 in Mar, 18 in Sep, 81 in Oct, 132 in Nov & 187 in Dec.
F Winter/spring site max: 108 Forth Est, Skinflats (WeBS) 8 Mar. Autumn/winter site max: 187 Forth Est, Skinflats (WeBS) 13 Dec. Other sites: 2 Blackness 19 Sep (AF); 2 F & C Canal, Underwood 25 Nov & 2 Union Canal, Bantaskine 27 Nov (MSh); ♂ intermittently Larbert Hosp. Ponds Jan, Apr, Nov & Dec (DLT, AB).
*C Two R. Devon, Alva 8 Feb; 3 Longcarse 31 Aug & pr CVP 28-30 Mar (AR, JRC, CVW, DH).
*S Male N. Third Resr 17 Feb & ♂ Eas Gobhain flood water 28 Oct (NB).

*GARGANEY *Anas querquedula* (s)
F Male Skinflats Pools 1 Aug (JRC).
C Male Devonmouth Pool 23 Apr (DH, DMB).
S Male Blairdrummond Ponds 5 Sep (DOE).

SHOVELER (Northern) *Anas clypeata* (p)
F Skinflats Pools (monthly max.): 1 in Apr, 6 in Jul, 4 in Aug, 4 in Sep, 5 in Oct & 1 in Nov. Blackness: 2 on 23 Mar & 2 on 2 Oct. Kinneil: pr on 1 Jan, 2 on 7 Aug & 1 on 1 Sep. ♂ Parkfoot Pool 5 Feb & 1 St Helen's Loch (Bonnybridge) 26 Oct.

C Longcarse (monthly max): 12 in Apr, 2 in May, 2 in Aug, 3 in Sep & 2 in Oct. Cambus Village Pools: 3 on 21 Jan, 3 on 8 Mar, max 6 (3pr) in Apr & 1 on 10 May. 1 Gartmorn Dam 1 Sep.

POCHARD (Common) *Aythya ferina* (w)

Inland WeBS: 1 in Jan, 1 in Feb, 1 in Mar, 1 in Sep & 1 in Nov (Skinflats Pools are counted as part of the estuary although the N pool is essentially fresh water). Numbers have reduced greatly over the past 20 years and the sp's is now scarce. The peak monthly count in 1995 was 230 (Jan).

F Skinflats Pools (monthly max): 17 in Jan, 15 in Feb, 11 in Mar, 5 in Jul, 6 in Aug, 4 in Sep, 9 in Oct, 16 in Nov & 21 in Dec. 2 Kinneil 15 Sep.

*C Gartmorn Dam (monthly max): 1 in Jan, 2 in Feb, 4 in Oct (CAM, GG) & 1 Longcarse 8 Nov (JRC).

*S Male Cambusmore/Gart GP 16 Feb, 22 Mar, 8 & 28 Aug (NB). 1 L. Lubnaig 15 Jan (MGC) & 1 R. Forth, Kildean 20 Sep (DT).

TUFTED DUCK *Aythya fuligula* (B, W)

Inland WeBS: 315 in Jan, 354 in Feb, 319 in Mar, 174 in Sep, 253 in Oct, 356 in Nov & 306 in Dec.

F Breeding: N. Pool Skinflats: br's of 3 chicks 21 Jun, 4 chicks 10 Jul & 4 ducklings 1 Aug (MVB, AB); pr + 3 chicks Kinneil Curling Pond 19 Jul (AIB) & 'young brood' Larbert Hosp. Loch 7 Jul (DLT). Winter/spring site max: 34 N. Pool Skinflats 8 Mar. Autumn/winter site max: 35 Callendar Park Loch 18 Oct & 32 L. Ellrig 26 Oct.

C Gartmorn Dam (monthly max): 79 in Jan, 129 in Feb, 75 in Mar, 41 in Apr, 22 in Sep, 38 in Oct, 74 in Nov & 43 in Dec.

S Breeding: Cambusmore/Gart GP: br's of 5 chicks 14 Jun & 7 chicks 12 Jul (NB): Winter/spring site max: 46 Airthrey Loch 13 Feb (EG); 44 Blairdrummond Ponds 11 Jan & 38 Lake of Menteith 19 Jan. 114 Cambusmore/Gart GP 12 Jul (moult flock). Autumn/winter site max: 56 Blairdrummond Ponds 17 Nov; 49 Cambusmore/Gart GP 6 Sep; 44 Airthrey Loch 22 Nov & 20 Dec.

SCAUP (Greater) *Aythya marila (*w)

F Kinneil monthly max: 12 in Jan, 17 in Feb, 18 (8♂) in Mar, 17 in Sep, 6 in Oct, 6 in Nov & 3 in Dec. Skinflats Pools monthly max: 17 in Feb (5 ♂), 1 in Mar, 2 in Aug, 2 in Sep, 3 in Oct, 4 in Nov & 2 in Dec. ♀ Forth Est, Powfoulis 28 Nov (AB).

*C Gartmorn Dam Dec: 2 on 20th, 3 on 27th & 3 on 30th (GG, JRC, CVW). ♀ CVP 2 Oct (NB).

*S Male L. Lubnaig 15 Jan (MGC); ♀ head of L. Tay (4 Oct) & 1stW♂ L. Dochart 22 - 30 Dec (JPH).

EIDER (Common) *Somateria mollissima (*s, w)

F Blackness monthly max: 5 in Jan, 9 in Feb, 6 in Mar, 2 in Apr, 15 in May, 7 in Jun, 15 in Jul, 17 in Aug, 19 in Sep, 8 in Oct, 2 in Nov & 1 in Dec. Kinneil monthly max: 5 in Jan, 3 in Mar, 8 in Aug, 8 in Sep & 3 in Dec. 2 Skinflats (WeBS) 12 Jan & 8 Feb. 1 Bo'ness 21 Aug & 1 Kinc. Br. 20 Sep.

*LONG-TAILED DUCK *Clangula hyemalis* (w)

F Blackness: singles 29 Mar, 14-15 Apr & ♀ 20 – 26 Nov (EMcl, DOE, AF).

C First winter bird Gartmorn Dam 3 Jan - 16 Feb (NB, JRC et al) & one 30 Oct - 8 Nov (ACC, GG et al).

S Female Lake of Menteith 9 Nov (NB).

*COMMON SCOTER *Melanitta nigra* (w)

F Blackness: 4 on 6 Apr, 7 on 2 Jul, 16 on 4 Jul & 2 on 31 Aug (EMcL, AF, DOE). 1 Carriden 8 Feb (AMac).

S Male head of L. Tay 26 Jun & 11 Aug (JPH).

GOLDENEYE (Common) *Bucephala clangula* (W)

Inland WeBS: 327 in Jan, 350 in Feb, 383 in Mar, 7 in Sep, 25 in Oct, 176 in Nov & 327 in Dec.

Forth Est. WeBS: 100 in Jan, 74 in Feb, 113 in Mar, 6 in Oct, 9 in Nov & 77 in Dec.

F Site max: 64 Kinneil 20 Feb. Summer: 1 Skinflats Pools 13 – 30 Aug & 1 Kinneil 31 Aug.

C Winter/spring site max: 65 Gartmorn Dam 2 Mar; 36 R. Forth (Cambus – S. Alloa) 9 Mar & 28 (16 ♂) R. Devon (Tullibody Br – A907) 16 Mar. Autumn/winter site max:

58 R. Forth (Cambus – S. Alloa) 15 Dec; 31 Gartmorn Dam 8 Nov; 28 R. Forth at Cambus 30 Nov & 28 R. Devon (Tullibody Br – A907) 20 Dec.

S Breeding: ♀ + 5 large ducklings head of L. Tay 10 Jul (JPH). Winter/spring site max: 83 (30 ♂) Lake of Menteith 4 Mar. Summer: up to 8 head of L. Tay Jun – Aug. Autumn/winter site max: 84 (18 ♂) Lake of Menteith 9 Dec; 55 CVR 15 Dec & 25 head of L. Tay 28 Nov.

*SMEW *Mergellus albellus* (Irr)

C Gartmorn Dam: ♂ 26 Jan – 8 Feb (MVB, GG et al) & ♀/1stW 27 Dec (GG).

RED-BREASTED MERGANSER *Mergus serrator* (b, W)

Forth Est. WeBS: 34 in Jan, 48 in Feb, 77 in Mar, 46 in Sep, 79 in Oct, 97 in Nov & 78 in Dec.

F Kinneil monthly max: 20 in Jan, 11 in Feb, 6 in Mar, 3 in May, 95 on 20 Jul (prob. moult flock DMB), 116 in Aug, 62 in Sep, 11 in Oct & 25+ in Nov. Other site max: 67 Bo'ness 21 Aug; 23 Blackness 2 Oct, 26 Skinflats (WeBS) 13 Dec & 14 Skinflats Pools 23 Dec.

C 14 Kennet Pans 20 Nov; 9 (6 ♂) R. Forth (Fallin – Cambus) 11 Feb; 5 Blackdevon Wetland 14 Mar & 4 R. Forth (Cambus – S. Alloa) 9 Mar.

S Breeding: head of L. Tay: 3 ducklings 17 Aug (JPH) Killin / head of L. Tay monthly max: 4 in Apr; 9 in May, 10 in Jun, 6 in Jul, 5 in Aug & 3 in Sep. Other records: 2 R. Teith (Lecropt) 3 & 19 Mar; 1 R. Forth, Raploch 28 Jan & 23 Feb; ♂ L. Venachar 9 Mar; ♂ L. Voil 23 Mar & 2 E. G. Dochart 29 May.

GOOSANDER (Common Merganser) *Mergus merganser* (B, W)

Inland WeBS: 132 in Jan, 150 in Feb, 109 in Mar, 45 in Sep, 114 in Oct, 87 in Nov & 121 in Dec.

Forth Est. WeBS: 7 in Jan; 5 in Feb, 79 in Mar, 19 in Sep, 36 in Oct, 47 in Nov & 30 in Dec.

F Site max: 63 R. Carron mouth 3 Aug; 35 Kinneil 5 Sep & 12 F & C Canal (Lock 16 – R. Carron) 12 Jan.

C Breeding: ♀ + 6Y R. Devon, 30 Jun. Site max: 73 R. Forth

(Cambus-S. Alloa) 9 Mar; 25 (16 ♂ R. Forth (Fallin-Cambus) 11 Feb; 20 Gartmorn Dam 30 Oct (ACC); 18 R. Devon (Cambus Weir-Forth conf) 2 Oct; 18 Union Canal (Polmont–Tamfourhill) 19 Dec & 17 (16 ♂) Delph Pond (Tullibody) 8 Jan.

S Breeding: b of 9 chicks R. Teith/Forth conf 15 May (DMB, NB), b's of 9 & 7 R. Teith, Lecropt 17 May (CAM); ♀ + 8Y R. Teith, Heathershot 3 Jun & ♀ + 7 ducklings Howietoun Ponds 24 Jun (NB). Head of L. Tay: 3 ad's + 9 ducklings 3 Jun; ♀'s + 8Y & 7Y 17 Jun & 5 large Y 27 Jul (JPH). Site max: 17 R. Forth (A91-Haugh Cott) 11 Feb; 16 R. Forth (St Br-A91) 12 Jan & 16 Blairdrummond Ponds 17 Nov.

RED GROUSE (Willow Ptarmigan) *Lagopus lagopus* (B, W)

*C Three Menstrie Glen 20 Jun & 2 Menstrie Moss 6 Dec (JRC, GG).

S Breeding: 6 aot N slopes Dumyat 29 Apr (DMB). Site max: 8 Sheriff Muir 29 Apr; 7 Doune windfarm 6 Dec; 3 Dumyat 25 Dec; 2 Balquhidder Glen 3 Nov; 1 Loss Hill (NN 8300) 23 Mar & 1 Craig of Monievreckie (NN5401) 8 Oct.

*PTARMIGAN (Rock Ptarmigan) *Lagopus muta* (b, w)

S Ten Stuc a' Chroin 21 Nov (CG); 2 Edra, L. Katrine 28 May & 2 Callander Crags 30 May (DOE) were at unusually low altitudes. One Meall Ghaordaidh 5 Feb (AL).

*BLACK GROUSE *Tetrao tetrix* (b, w)

S Lekking heard above L. Tay (NN 5835) 27 Apr (JPH); 2 Strathyre Forest 28 Dec (LH); singing ♂ R. Balvag, Auchtubh 2 Apr (GK); 1 L. Mahaick 6 Nov & 27 Dec (DOE, DMB) & 1 Crow Rd (NS 6482) 24 Nov (AD).

RED-LEGGED PARTRIDGE *Alectoris rufa* (b, w).

Released for shooting but it is thought unlikely that the small feral population is self-sustaining.

*F One Kinneil Lagoon 21 Jun (CRM).

C 11 R. Devon, Balquharn 22 Aug.

S 67 Stonehill (Dunblane) 6 Oct.

GREY PARTRIDGE *Perdix perdix* (b, w)
Has become very scarce during the last 20 years. A small number of releases helps sustain numbers.
F Site max: 8 Skinflats Pools 22 Jan & 6 Carronshore, Falkirk 18 Jan.
*C Two Menstrie Glen 13 Mar & 2 Ditch Fm 23 May (GG).
*S Two Carse of Lecropt 8 Feb & 19 Apr (CRM, DMB).

* QUAIL (Common) *Coturnix coturnix* (b)
C One Menstrie Glen 21 May & 1 Sheardale Braes 12 Jun (GG, JRC).
S One Deanston 1 & 2 Jun (SCW, DOE, CJP); 1 Lochfield, Doune 14 Jun (CJP) & 1 Blair Drummond 22 Jul (SCW).

PHEASANT (Common) *Phasianus colchicus* (B, W)
Large numbers released on shooting estates, otherwise widespread but in small numbers.
F Breeding: ad + 3 juv Powfoulis tidal breach 25 Jul & 1Y Kinneil 2 Jul (AB, NB).
S Breeding: ♀ + 1Y Howietoun Ponds 30 Jun (NB). Counts: 221 Kippenross Cotts, Dunblane 12 Oct & 164 Stonehill, Dunblane 20 Oct.

*RED-THROATED DIVER (Red-throated Loon) *Gavia stellata* (b, w)
F Blackness: singles on 24 Sep, 10 & 23 Oct, 26 Nov & 2 on 23 Nov (AF). One Skinflats (WeBS) 8 Mar (MVB); One Forth Est, Powfoulis 1 Oct (VH) & 1 Kinneil 30 Oct (DT).
S One >NW Carse of Lecropt 9 Mar (CAM) & One L. of Menteith 22 Mar (GG). Two head of L. Tay 23 Aug (JPH).

*BLACK-THROATED DIVER (Black-throated Loon) *Gavia arctica* (b)
S One Strath Fillan 3 Jun (IMcP); 1 L. Chon 7 Jun (CAM); 1 - 2 head of L. Tay 22 Mar – 26 Aug & 2 L. Iubhair 23 Jul (JPH).

*GREAT NORTHERN DIVER (Great Northern Loon) *Gavia immer* (V)
S One L. Mahaick 5 Dec is the 12th record for the area.

LITTLE GREBE *Tachybaptus ruficollis* (B, W)
Inland WeBS: 62 in Jan, 56 in Feb, 45 Mar, 92 in Sep, 83 in Oct, 72 in Nov & 83 in Dec.

F Breeding: N. Pool, Skinflats: b's of 3 & 2Y on 13 Jun, b's of 3,3 & 1Y 21 Jul & b's of 3, 2, 2, & 2Y 22 Aug (AB, MVB); ad + 1 chick W Mains Pond 26 May (AB) & pr + 2 chicks Kinneil Curling Pond 19 Jul (AIB). Site max: 35 N. Pool, Skinflats 17 Sep; 16 Drumbowie Resr. 14 Sep & 6 Kinneil Curling Pond 12 Apr.

C Breeding: 2 juv Gartmorn Dam 1 Sep (NB). Site max: 9 Gartmorn Dam 1 Sep & 5 R. Devon (Alva-Tullibody Br) 19 Jan.

S Breeding: Cambusmore/Gart GP: 1 aon & 3 chicks 30 May, 1 aon 14 Jun & 5 juv 8 Aug (NB). Sheriffmuir Woods pond (NN 8001) ad + 2Y 25 May & 2 chicks 23 Jun (2nd b) 23 Jun (MVB). 1Y Cocksburn Resr 1 Jun (MVB). Site max: 39 Cambusmore/Gart GP 6 Sep; 10 Blairdrummond Ponds 9 Aug, 9 L's Dochart/Iubhair 16 Oct; 7 L. Lubnaig 15 Jan; 7 L. Ard 9 Nov; 6 L. Watston 16 May & 6 L. Venachar 15 Dec. Recorded via noc-mig over Stirling on 12 & 26 Jul (GC).

GREAT CRESTED GREBE *Podiceps cristatus* (b, w)
Inland WeBS: 27 in Jan, 20 in Feb, 41 in Mar, 32 in Sep, 22 in Oct, 12 in Nov & 15 in Dec.
Forth Est. WeBS: 6 in Jan, 10 in Feb, 3 in Mar, 59 in Sep, 51 in Oct, 27 in Nov & 35 in Dec.

F Monthly max: Blackness: 8 in Jan, 11 in Feb, 9 in Mar, 1 in May, 20 in Jul, c.30 in Aug, c.80 in Sep, 36 in Oct 17 in Nov & 6 in Dec. Kinneil: 12 in Jan, 4 in Feb, c.30 in Mar, 8 in Jun, 56 in Jul, 45 in Aug, 76 in Sep, 13 in Oct, 54 in Nov & 29 in Dec. Other site max: 2 Darnrigg Moss Pools 9 Jul; 2 N. Pool Skinflats 30 Aug & 1 Kinc. Br 8 Mar.

C Breeding: Gartmorn Dam: 2 chicks 20 Aug (GG) & 2 large, striped Y 1 Sep (NB). Gartmorn Dam monthly max: 8 in Jan, 9 in Feb, 11 in Mar, 3 in Apr, 1 in May, 11 in Aug, 6 in Sep, 10 in Oct 14 in Nov & 12 in Dec.

S Breeding: Cambusmore/Gart GP: 1 ON & 1 chick (on back of ad) 30 May, ad + 2 chicks & 3Y 14 Jun, 1 ON & 6 large Y 12 & 3 large Y 8 Aug (NB). Four large, striped Y L. of Menteith 17 Sep (NB). Lake of Menteith monthly max:

20 in Jan, 11 in Feb, 22 in Mar, 23 in Sep, 11 in Oct, 3 in Nov & 4 in Dec. Other sites max: 12 Cambusmore/Gart GP 12 Jul (first 4 on 19 Mar & last 1 on 24 Dec); max 2 Blairdrummond Ponds 4 Apr – 29 Aug; 2 CVR 8 Mar & 14 May, last 1 on 18 Oct; 2 L. Coulter 10 Oct & 1 L. Venachar 15 Dec.

*SLAVONIAN GREBE (Horned Grebe) Podiceps auritus (Irr)
F One Skinflats Pools 4 Oct & 1 Kinneil 13 Oct (AD, JRC).
C One Gartmorn Dam 25 Nov & 9 Dec (GG, CAM).
S One CVR 15 Dec (CAM, JS, VW).

FULMAR (Northern) *Fulmaris glacialis* (Irr)
F One Blackness 15 Apr & 1>E Kinneil 25 Aug (EMcl, GG).

GANNET (Northern) *Morus bassanus* (p)
F Blackness: 3 on 19 Apr (EMcL); 4 juv>W 26 Sep & max of 10 (juvs) 10 Oct last 2 on 15 Oct (AF). One (juv) Kinneil 15 Sep & 8 on 26 Sep (DMB,JRC). Skinflats Pools & shore: 1 on 26 Sep, 6 on 9 Oct & 1 on 13 Oct (AB, AE). One Powfoulis TB 26 Sep (DOE).
*C One Longcarse 24 Sep (DOE).
*S One Strathyre 26 Sep (DAC).

CORMORANT (Great) *Phalacrocorax carbo* (S, W)
Inland WeBS: 81 in Jan, 129 in Feb, 46 in Mar, 60 in Sep, 95 in Oct, 98 in Nov & 97 in Dec.
Forth Est. WeBS: 75 in Jan, 43 in Feb, 109 in Mar, 164 in Sep, 122 in Oct, 278 in Nov & 58 in Dec.
F Site max: 100+ R. Carron mouth 5 Sep (roost); 85 Skinflats shore 31 Aug; 52 Powfoulis Est 16 Aug (roost); c.50 Kinneil 1 Sep; 19 Black Loch, Limerigg 5 Jan & 15 Bo'ness 21 Aug.
C Longcarse (the old railway br. piers are a favourite roost): 34 in Jan, 39 in Feb, 33 in Mar, 33 in Jul, 36 in Aug, 73 in Sep, c.130 in Oct, 197 in Nov & c.120 in Dec. Other site max: 45 R. Forth, Fallin 11 Feb; 42 R. Forth, Cambus 12 Nov & 12 Gartmorn Dam 20 Dec.
S Site max: 26 CVR 15 Dec; 25 head of L. Tay 28 Nov; 22 L. of Menteith 7 Feb; 15 R. Forth (St Br – A91) 17 Oct & 11 R. Teith (W. Row – Forth conf) 12 Dec.

LITTLE EGRET *Egretta garzetta* (w, s)

F Powfoulis TB monthly max: 4 in Aug; 1 in Sep, 1 in Nov & 1 in Dec. Skinflats Pools & foreshore monthly max: 1 in Feb, 1 in Mar, 1 in Aug, 3 in Nov & 1 in Dec. 1 - 2 Higgin's Neuk / Kincardine Br. area Jan – Mar. One Kinneil 13-16 Aug, 17 Oct & 25 Dec & 1 Blackness 24 Sep.

*C One Kennet Pans 8 May (JRC); 1 Longcarse 10 May (GG) & 1 R. Devon (Alva-Tullibody Br) 15 Nov (CVW).

*S One Airthrey Loch 18 Jan & 17 – 21 Apr (CP); 1 Allan Water (Ashfield / Kinbuck) 23 Jan, 8 Feb, 7 Mar, 6 & 13 Dec (DJ, CJP, MVB); 1 R. Teith (Lecropt) 16 Mar, 15 Nov & 30 Dec (DT, DOE); 1 Blairdrummond Ponds 11 Apr & 1 Blackdub floods 18 Nov (NB).

GREY HERON *Ardea cinerea* (B, W)

Inland WeBS: 80 in Jan, 65 in Feb, 44 in Mar, 96 in Sep, 92 in Oct, 65 in Nov & 86 in Dec.

Forth Est. WeBS: 23 in Jan, 28 in Feb, 11 in Mar, 87 in Sep, 73 in Oct, 45 in Nov & 47 in Dec.

F Breeding: 8 aon's Kinneil Wood (AIB) & 3 aon's Dalderse Sewage Works (AB). Site max: 37 Skinflats (WeBS) 20 Sep.

C Site max: 18 Inch of Ferryton 20 Dec; 16 R. Forth (Longcarse) 15 Dec & 13 R. Devon (Alva) 12 Dec.

S Breeding: 12 aon's Nyadd 29 Apr & 1 ON Marl Loch 16 Mar was unsuccessful (NB). Site max: 24 (12 juv) Cambusmore/Gart GP 23 Aug & 13 Blairdrummond Ponds 30 Nov & 19 Dec.

*SPOONBILL (Eurasian) *Platalea leucordia* (Irr)

F One Skinflats Pools 25 Oct (CBu) & Powfoulis TB 7 Nov (WC). This is the 20th record for the U.F.

RED KITE *Milvus milvus* (b ,W)

Inland WeBS counts: 1 in Jan, 3 in Feb, 2 in Sep, 3 in Nov & 4 in Dec.

*F One >E Camelon cemetery 4 Apr (SWo).

*C One Menstrie Glen 25 Apr, 30 May, 7 Jun & 30 Aug (JRC, GG), 1 The Nebit 28 Jul (AE) & 1 Bank Hill, Dollar 11 Aug (LMcG).

S Breeding: 34 pairs were on territory with 23 confirmed to have laid eggs producing a min. of 23 fledglings (DOE).

Max of 32 Argaty 2 Feb; 7 Ashfield 24 Dec (CMcK). Regular around BoD, BoA, Blairdrummond, Callander, Carse of Stirling, Cromlix, Doune, Dunblane, Sheriff Muir, Thornhill. Occ. sightings around Balquhidder, Earlsburn Resr's, Flanders Moss, Gargunnock, Kilmahog, Killin, Kippen, Lochearnhead & Menteith.

*WHITE-TAILED EAGLE *Haliaeetus albicilla* (s, w)

S One Lake of Menteith 20 / 21 May & 11 Jun (RJS, DOE).

*MARSH HARRIER (Western) *Circus aeruginosus* (p, s)

F Seven records of 1 - 2 birds in the Skinflats Pools area 19 Apr – 18 Sep incl a pr 24 Apr & a 2nd cy ♀ 18 Sep (SWo, AB, DMB et al).

C Multiple sightings 2 Apr – 4 Sep with confirmed breeding for the 2nd successive year in the UF at an estuarine reedbed where a pr successfully fledged 3 Y. (DOE, JRC et al). ♀ Blackdevon Wetlands 6 Jul (DT).

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

S Singles L. Mahaick 23 Jul, 16 Aug & 19 Dec with 2 ♂ 27 Dec (DOE, DMB); ♂ Kippen N 16 Feb & 10 Oct with ♀/imm 27 Dec (RJS); ♂ Gartmore 7 Feb & ♂ Druim nan Eilid (NN 6513) 26 Sep (CJP); ♀/imm Buckieburn Resr 4 Oct, 6 Nov & 7 Dec (AMcP); 1 Edinample 8 Oct (DOE); 1 BoD 4 Nov (CMcK); 1 Glen Tye Hill 19 Nov (MVB) & 1 the Bows, Doune 30 Dec (DOE).

*MONTAGU'S HARRIER *Circus pygargus* (v)

S A ♂ Montagu's Harrier (only the 3rd record for the area) which flew past E. Frew, Thornhill 28 May (DR) was accepted by the Scottish Birds Rarities Committee (SBRC).

*GOSHAWK (Northern) *Accipiter gentilis* (b, w)

S Breeding: seven nests located with six nests fledging 13 young. These are quite widely spread so there are possibly more (CSRSG per DOE). Other records: 3 Dunblane 15 Apr (PC); 1 L. Mahaick 8 Feb & 17 May (DOE); ♂ over Ochlochy Pond, Dunblane (mobbed by pr Lesser B-b Gulls) 14 Apr (CJP); ♂ circling high over Newton Cres, Dunblane 25 Sep & 1 Cromlix Lodge 30 Nov (MVB).

SPARROWHAWK (Eurasian) *Accipiter nisus* (B, W)
Inland WeBS counts: 3 in Jan, 1 in Feb, 3 in Mar, 5 in Sep, 3 in Oct, 6 in Nov & 4 in Dec. Thinly spread throughout the majority of the recording area. Contributors are encouraged to submit breeding records.

F Three very vocal juvs Skinflats Pools 8 Aug & 3 vocal juvs Skinflats Village area 11 Aug. One carrying a small wader (probably a Dunlin) which was caught over the S. Pool 17 Sep (AB).

S Male bringing food to calling ♀ Carse of Lecropt 9 Mar & 1 carrying prey over centre of Dunblane 17 Jul (CMcK).

BUZZARD (Common) *Buteo buteo* (B, W)
The most numerous raptor recorded throughout the majority of the recording area. Contributors are encouraged to submit breeding records.
Inland WeBS counts: 39 in Jan, 53 in Feb, 54 in Mar, 42 in Sep, 61 in Oct, 33 in Nov & 40 in Dec.

F Max: 5 Skinflats Pools 25 Sep.

C No records of note.

S Site max: 24 G. Tye Hill 11 Oct; 20 in field by Ochtertyre 28 Oct; 18 Blairdrummond 19 Nov; 12 Carse of Lecropt 19 Mar; 9 Edinchip (NN5822) 14 Sep; 7 W Flanders Moss 23 Jul; 6 R. Forth, Gargunnock (WeBS) 27 Feb & 6 Doon Hill, Aberfoyle 16 Aug.

HONEY BUZZARD (European) *Pernis apivorus* (b)

S The 1st birds returned to their breeding sites in the Trossachs 15 May. One Pair fledged 2 y, with the birds last being seen on 24 Aug (CMcI). One Auchlyne, G. Dochart 25 Jun (DOE).

GOLDEN EAGLE *Aquila chrysaetos* (b, w)

S. Eleven territorial pairs fledged 3-4 young (CSRSG per DOE). Outwith breeding season: 1 E. Ben Lomond 8 Jan; 3 ad's N. G. Beich 4 Nov; ad ♀ Ardnandave Hill 13 Nov; 1 G. Buckie 30 Nov & 1 Beinn Chochan, L. Chon 5 Dec.

OSPREY (Western) *Pandion haliaetus* (B)
First of the year: 1 L. Rusky 4 Apr & widely reported during the next few days (JRC et al). Last record: 1 Earlsburn Resr. 29

Sep (DOE).

*F One fishing Forth Est. (off mouth of R. Carron) 31 Aug (DMB).

*C One Balquharn, R. Devon 13 Apr (LW).

S 35 breeding pairs with 22 of these fledging 37+ young (a few of these pairs are in the Clyde recording area on the E side of L. Lomond (CSRG per DOE). Present and nesting throughout the district, particularly Callander, CVR, Cringate Muir, Doune, Menteith, L. Tay / G. Dochart, lower Teith Valley, Strathyre, Touch Hills & the Trossachs.

KESTREL (Common) *Falco tinnunculus* (B, W)

Inland WeBS counts: 5 in Jan, 5 in Feb, 1 in Mar, 3 in Sep, 6 in Oct, 3 in Nov & 10 in Dec. (Spread thinly throughout most of the recording area. Contributors are encouraged to submit breeding records. Normally only single birds seen).

C Pr Blackdevon Wetland 16 Feb (RSm).

S Two ♂♂ interacting Gatehouse, Kippen 6 Feb (RJS).

*HOBBY (Eurasian) *Falco Subbuteo* (Irr)

S One over Dunblane 11 May (KJD). One above feeding Swifts & House Martins BoA 31 Jul & 1 Blairdenon Hill 31 Aug (DMB, MVB).

*MERLIN *Falco columbarius* (b?, w)

F Skinflats area: 1 on 6 Mar then singles 18 & 21 Sep, 25 & 30 Oct, 15 & 29 Dec (AB, DOE, DMB, JRC, CVW). 1 S. Alloa – Dunmore 6 Feb (DT); 1 Bo'ness 15 Aug (WT); ♀/imm Kinneil 4 Nov & ♂ (chasing a Reed Bunting) Powfoulis TB 28 Nov (AB).

C Longcarse: ♀/imm 7 Jan, 1 on 22 Mar & 1 on 12 & 16 Oct (NW, DOE, JRC, DMB).

S One 20 May Sheriff Muir 20 May (ACC); 1 Earlsburn Br 25 May (HT); 1 head of L. Tay 29 Aug (AE); 1 Blairdenon Hill 31 Aug (MVB); 1 Glentye Hill 4 Sep (CJP); ad ♀ (chasing a Swallow) N. Third Resr 9 Sep (AH); 2 Lochan Breaclaich 17 Sep (JHN); 1 Hill of Row 29 Sep & 7 Oct; 1 Argaty 7 Oct, 1 Blairdrummond & 1 L. Watston 14 Nov & 1 Callander 21 Dec (all DOE).

PEREGRINE FALCON *Falco peregrinus* (B, W)
Widely, but thinly spread outwith the breeding season, mostly in lowland areas (incl. urban centres) and especially along the tidal R. Forth and estuary.

F A hunting pr caught a Redshank in the R. Carron / Docks area 13 Dec (MVB) & pr 'day roosting' on Letham Moss 16 Oct (DMB).

S One (the ♂ from 2019) resided on Dunblane Cathedral from 7 Jan to 29 Feb then from 29 Sep to 25 Dec. Prey items incl. Dunnock, Redwing, Mistle Thrush, Starling, (CMcK, CJP, KJD et al). What was likely the same ♂ roosted on Doune church 11 Jan (RGD).

WATER RAIL *Rallus aquaticus* (b, w)
Widespread in suitable habitat but greatly under-recorded. Most records are of birds heard rather than seen.

F Site max: 2 Skinflats Pools 23 Dec. Single birds recorded at Carron Dams; R. Carron, Carronshore; Kinneil Lagoon & W. Mains Pond.

C Breeding: ad + 2 chicks Cambus Pools 24 Jun (CAM). Site max: 4 Longcarse/Tullibody Inch 7 May (recorded here throughout the year); 3 Cambus Pools 2 Apr; 2 Blackdevon Wetlands 27 Sep; 2 Gartmorn Dam 20 Nov & 1 R. Forth, Midtown 11 Mar, 24 May & 7 Nov.

S Site max: 2 L. Watston 12 Jan & 2 head of L. Tay 8 Apr – 1 Jun. Single birds recorded at R. Teith, Carse of Lecropt 9 Mar & Howietoun Ponds. Nocturnal flight calls Stirling: first 10 Apr, last 14 Jul with max of 3 on 8 & 19 May. Dunblane: 1 on 1 Sep (FM).

MOORHEN (Common) *Gallinula chloropus* (B, W)
Inland WeBS: 126 in Jan, 98 in Feb, 121 in Mar, 112 in Sep, 131 in Oct, 107 in Nov & 135 in Dec.

F Breeding: 2 pr + 12 chicks Kinneil Curling Pond 19 Jul (AIB); pr + 4 chicks Union Canal (Bantaskine) 3 Jun (WMP). Site max: 25 Callander Park Loch 15 Nov; 18 F & C Canal (Lock 16 - R. Carron) 8 Feb & 8 Mar; 16 F & C Canal (Bonnybridge – M80) 16 Oct; 10 Skinflats Pools 20 Aug; 10 Kinneil 1 Sep; 8 W. Mains Pond 22 Mar; 8 Kinneil Curling Pond 12 Dec; 8 Larbert Hosp. Ponds 5 Nov & 7 Glen Marsh 21 Sep.

C Site max: 10 R. Devon (Alva-Tullibody Br) 18 Oct; 5 Tullibody Inch 23 Apr & 5 (incl. 1 juv) Delph Pond (Tullibody) 2 Dec. Ad visited a Cambus gdn 4 Dec (DH).

S Breeding: Ochlochy Pond: pr + 2 chicks (didn't survive) 22 Apr & pr + chick 12 Jun (MVB). Two chicks being fed in nest Cambusmore/Gart GP 30 May. Howietoun Ponds: ad + chick 30 Jun & 1 small Y 8 Sep (NB). Site max: 27 Airthrey Loch 22 Jan. Recorded via noc-mig over Stirling on many occasions between 8 Apr – 22 Oct (GC). Recorded via noc-mig over Dunblane on a few occasions between 29 Jul - 19 Sep (FM).

COOT (Common) *Fulica atra* (B, W)

Inland WeBS: 368 in Jan, 276 in Feb, 193 in Mar, 123 in Sep, 130 in Oct, 119 in Nov & 153 in Dec.

F Breeding: 1 ON Larbert Hosp. Ponds 7 Mar & b's of 5 & 7 on 16 May (AB, DLT); min 2 b's Reid's Pond (NS 877818) 24 Jul (DLT); 3 pr's produced 18 Y Kinneil Curling Pond 19 Jul (AIB) & b's of 2,2,2, & 3 of varying ages Skinflats N Pool 21 Jul (MVB). Site max: 98 (incl. 12 juv) Skinflats N Pool 13 Aug & 49 Helix Park Pond 14 Nov.

C Gartmorn Dam max: winter/spring 48 on 3 Jan & autumn/winter: 23 on 1 Sep.

S Breeding: Airthrey Loch: pr ON 1 Jun; 2 pr's + 5 FL 15 Jul (MVB). Ochlochy Pond: pr + 2 chicks 16 Jun; 1 NY & pr + 2 FL 26 Jun & 2 pr + 5 FL 5 Jul (MVB). Pr + 1 FL Ashfield Pool 14 May (MVB). Lake of Menteith max: winter/spring 180 on 19 Jan & autumn/winter 30 on 9 Dec. Other site max: 51 Airthrey Loch 13 Feb. Recorded via noc-mig over Dunblane on 9 Sep, 24 Oct & 2 Nov (FM).

OYSTERCATCHER (Eurasian) *Haematopus ostralegus* (B, W)

Inland WeBS: 28 in Jan, 281 in Feb, 281 in Mar, 2 in Nov & 4 in Dec.

Forth Est. WeBS: 155 in Jan, 387 in Feb, 370 in Mar, 221 in Sep, 335 in Oct, 265 in Nov & 286 in Dec.

Early inland spring return: 1 R. Forth, Kildean 12 Jan & 1 R. Forth, The Frews 19 Jan (DT, MWW).

F Site max: 346 Kinneil 15 Sep; 195 Skinflats (WeBS) 18 Feb;

c.120 roosting on Kinc. Br. 18 Sep (DMB) & 79 Blackness 8 Feb.

C Site max: 52 Tullibody Inch 9 Mar.

S Breeding: pr Keir roundabout 3 Mar but no record of nesting; 1 ON Barbush B8033 roundabout (Dunblane) 5 Apr hatched 2 chicks 27 Apr. Both are thought to have fledged (MVB, NB); 1 ON new Stirling cattle market CP 5 May (DMB) & 1 aon Cambusmore/Gart GP 10 Apr & 30 May (NB). Site max: 87 Blairdrummond Ponds 8 Mar & 45 Cambusmore/Gart GP 10 Apr. Winter inland: 2 Killin Marshes/head of L. Tay 7 Nov - 28 Dec; 1 Allan Water, Kinbuck 13 Dec & 20 R. Forth, Cornton 20 Dec.

AVOCET (Pied) *Recurvirostra avosetta* (Irr)

C One Kennet Pans 24 Apr & 8 May (JRC) is the 20th record for the UF.

*LITTLE RINGED PLOVER *Charadrius dubius* (b) (Plate 17)

F Skinflats Pools: juv on 1 Aug & 1 on 20 - 23 Aug (SWo, AB, DOE). One Powfoulis TB 11 Jul (GW).

C Longcarse: 1 on 16 & 23 Jul, 1 on 28 Aug & 3 on 18 Sep (NB, DOE).

S Breeding: pr copulating shingle island in R. Teith, Carse of Lecropt 27 Apr (GGT); 1 ON Cambusmore/Gart GP 30 May then pr + large juv 12 Jul (NB) & 2 ad + 2Y still being brooded Cowie/Throsk quarry 30 Jun (DMB). R. Teith (Carse of Lecropt): pr's 27 Apr, 1, 8 & 16 May with 2 pr's 5 May (CJP, DOE, CAM, DMB); pr N. Third Resr. 17 Apr (BA) & 1 head of L. Tay 1 – 8 May (JPH).

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

Forth Est. WeBS: 0 in Jan, 0 in Feb, 12 in Mar, 38 in Sep, 0 in Oct, 0 in Nov & 0 in Dec. Another poor year.

F Monthly max: Blackness: 40 in Jan, 22 in Feb, 3 in Mar, 4 in Apr, 5 in May, 2 in Jun, 13 in Jul, 140 in Aug, 69 in Sep, 34 in Oct, 45 in Nov & 28 in Dec. Kinneil: 12 in Jan, 4 in Feb, 1 in Mar, 2 in Jul, 49 in Aug, 20 in Sep & 23 in Dec. Skinflats Pools: 2 in Jun, 1 in Jul, 7 in Aug & 8 in Sep.

C Kennet Pans: 2 on 6 Mar & 1 on 8 May. Longcarse: 1 on 3 & 10 May, 1 in Jul, max of 8 in Aug & max of 5 in Sep.

S Monthly max: Cambusmore/Gart GP: 1 on 16 Feb, 2 on 22

Mar, 1 on 30 May & 1 on 14 Jun. Head of L. Tay: 2 in Apr, 8 in May, 2 in Jun & 1 in Jul. 1 Carse of Lecropt 19 Apr. Recorded via noc-mig over Stirling on several occasions between 15 Aug – 5 Sep (GC). Recorded via noc-mig over Dunblane on 14 & 19 Sep (FM).

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

Forth Est. WeBS: 33 in Jan, 56 in Feb, 0 in Mar, 185 in Sep, 234 in Oct, 266 in Nov & 97 in Dec.

F Monthly max Kinneil: c.30 in Jan, 1 in Aug, c.90 in Sep, 117 in Oct & c.400 in Nov. Skinflats Pools area: 2 in Aug, c.300 in Oct, c.250 in Nov & 35 in Dec. Site max: 38 Blackness 17 Oct.

*C Three Longcarse on 8 & 1 on 18 Sep (DOE).

*S C.5 Creag Mhor, G. Lochay 23 Aug (MW); 2 R. Forth, The Frews 26 Sep (MWW) & 3 Drip Moss 29 Nov (DOE). Recorded via noc-mig over Stirling on several occasions between 18 Apr – 22 Sep (GC). Recorded via noc-mig over Dunblane on 17 & 18 Sep (FM).

GREY PLOVER *Pluvialis squatarola* (p/w)

F Monthly max Skinflats Pools & shore: 5 in Jan, 5 in Feb, 11 in Sep, 63 in Oct, 10 in Nov & 10 in Dec. Other records: Powfoulis TB: 15 on 1 Oct & 6 on 7 Nov. 1 Blackness 10 Oct.

*C Two Longcarse 8 Oct (DOE). Unusual this far inland (Ed.).

LAPWING (Northern) *Vanellus vanellus* (B, W)

Inland WeBS: 241 in Jan, 176 in Feb, 94 in Mar, 220 in Sep, 110 in Oct, 55 in Nov & 218 in Dec.

Forth Est. WeBS: 384 in Jan, 551 in Feb, 4 in Mar, 839 in Sep, 1,016 in Oct, 1,339 in Nov & 661 in Dec.

F Kinneil monthly max: c.660 in Jan, 170 in Feb, 8 in Jun, 209 in July, c.700 in Aug, 1,065 in Sep, c.350 in Oct, c.70 in Nov & 465 in Dec. Skinflats Pools area monthly max: 96 in Jan, 322 (WeBS) in Aug, 322 in Sep, 700+ in Oct, c.400 (WeBS) in Nov & 417 in Dec. Other site max: 123 Blackness 1 Aug.

C Breeding: ¾ grown juv Cambus Pool 15 Jun (GG, DH). Longcarse area monthly max: 61 in Jun, c.350 in July, c.340 in Aug, c.380 in Sep, c.240 in Oct, 404 in Nov & c.90 in Dec. Other site max: c.220 Cambus 30 Nov; c.80 R. Devon

(Alva- Tullibody Br.) 20 Sep & 79 Alva Pools.

S Breeding: 5 ad + 2 Y Walters Muir (NN 816004) 9 Jun (NB) & 7 ON The Linns, Sheriffmuir 2 May are all thought to have failed (MVB). Site max: c.410 Bandeath 22 Nov & 87 Cambusmore/Gart GP 16 Feb.

KNOT (Red) *Calidris canutus* (W, s)

Forth Est. WeBS: 3,609 in Jan, 4,280 in Feb, 475 in Mar, 376 in Sep, 1,167 in Oct, 936 in Nov & 2,006 in Dec.

F Kinneil monthly max: c.2,900 in Jan, c.1,500 in Feb, 58 in Mar, c.80 in Apr, 9 in Jul, 110 in Aug, c.190 in Sep, c.100 in Oct, 936 in Nov & c.4,200 in Dec. Other sites max: c.500 Skinflats Pools area 11 Dec with 57 on 23 Jun & 32 Blackness 20 Dec.

*C. C.30 Longcarse 3 Sep (CAM).

*SANDERLING *Calidris alba* (p)

F Kinneil: 1 on 9 Aug, 2 on 30 Aug & 1 on 1 Sep (VH, DOE, DMB). Two Blackness 21 Aug (DOE).

C One Longcarse 16 Aug (JRC).

S Head of L. Tay: single birds 22/23 May, 6 Jun & 21/22 June (JPH).

*TEMMINCK'S STINT *Calidris temminckii* (V)

S One 24 May – 22 Jun & 9 Jul head of L. Tay is the 5th record for the Upper Forth, 4 of which have been at this location. The bird was observed singing and displaying – video provided (JPH).

*LITTLE STINT *Calidris minuta* (p)

F One Skinflats Pools 18 Sep (DMB).

*CURLEW SANDPIPER *Calidris ferruginea* (p)

F Kinneil: first, 2 on 30 Aug, last, 1 on 13 Oct with high of 11 on 13 Sep (DOE, JRC et al). Skinflats Pools: first & max of 8 on 2 Sep with last 1 juv on 18 Sep (JD, WT, DMB et al). 3 Blackness 28 & 31 Aug (DOE, DMB).

C One Longcarse 16 Aug with 2 on 30/31 Aug (JRC, NB et al).

DUNLIN *Calidris alpina* (b? W)

Forth Est WeBS: 3,867 in Jan, 5,094 in Feb, 522 in Mar, 341 in Sep, 1,235 in Oct, 2,647 in Nov & 2,952 in Dec.

F Kinneil monthly max: c.1,172 in Jan, c.2,040 in Feb, 3 in Apr, 30 in Jul, c.250 in Aug, c.250 in Sep, c.150 in Oct, c.2,460 in Nov & c.3,800 in Dec. Skinflats Pools & shore monthly max: c.640 (WeBS) in Jan, c.510 in Feb, 111 in Mar, 1 in Apr, 2 in Jun, 121 in Jul, 129 in Aug, c.250 in Sep, 304 (WeBS) in Oct, 129 in Nov & c.510 in Dec. Other sites max: 295 Bo'ness 23 Jan & c.120 Blackness 21 Aug.
C Monthly max Longcarse: 19 in May, 7 in Jul, 108 in Aug, 31 in Sep & 72 in Oct. Other sites: 96 Kennet Pans 13th & 8 Black Devon mouth 20 Dec.
S Monthly max head of L. Tay: 6 in Apr, 11 in May, 2 in Jun 1 in Jul & last 1 on 18 Aug. Stirling noc-mig: 2 on 19 May, 1 on 13 Aug, 1 on 19 Sep & 1 on 10 Oct (GC). Recorded via noc-mig over Dunblane on several occasions between 27 Jul – 20 Oct (FM).

*RUFF *Philomachus pugnax* (w, p)
F Skinflats Pools: 2 on 18 Sep & 3 on 19 Sep (AB, DOE, DMB). 1 - 3 Kinneil 11 – 24 Aug (VH, DOE). Powfoulis TB 1 on 8 Sep & 19 Sep (AB, DOE).
C One Longcarse 10 Jul then max 5 from 16 – 31 Aug (JRC, DOE, DMB).

*JACK SNIPE *Lymnocryptes minimus* (w)
F Skinflats Pools area: 3 on 22 Oct, 1 on 24 Oct & 2 on 29 Nov (BD, CAM, AD).
C One Kennet Pans 28 Nov & 1 Craig Leith 6 Dec (GG).
S One 'Doune' 8 Nov & 2 on 8 Dec (DOE); 3 Torrie (NN 6303) 11 Nov (DOE) & 1 Ashfield Pools 23 Dec (CJP).

SNIPE (Common) *Gallinago gallinago* (B, W)
Inland WeBS: 38 in Jan, 65 in Feb, 16 in Mar, 50 in Sep, 36 in Oct, 106 in Nov & 66 in Dec.
Forth Est. WeBS: 7 in Feb, 7 in Sep, 8 in Oct, 6 in Nov & 21 in Dec.
F 52 Skinflats Fields 7 Dec; 47 Larbert Hosp. Ponds 14 Nov & 15 Skinflats Pools 9 Nov.
C Site max: 20 Longcarse 30 Aug & 11 Kennet Pans 5 Dec.
S Breeding: 2 aot 20 May then family party smallholding,

Strathyre 5 Jun (DRC). Heard drumming Sheriff Muir 9 Apr & head of L. Tay (NB, JPH). Site highs: 24 Howietoun Ponds 24 Jan & 6 Dec; 23 R. Teith (W. Row – R. Forth) 21 Sep; 20 'Doune' 11 Nov; 16 R. Devon (Alva – Tullibody Br) 20 Sep; 18 R. Forth (The Frews) 22 Nov; 17 'Doune' 10 Nov; 11 Ashfield Pools 30 Nov & 10 R. Forth (Offrins – Cardross Br) 19 Feb. Recorded via noc-mig over Dunblane on 22 Aug & 18 Oct (FM).

WOODCOCK (Eurasian) *Scolopax rusticola* (B, W)
Widely, but thinly spread. Resident numbers greatly bolstered by winter visitors. Underreported. Records of roding birds required.

F Site max: 14 Skinflats fields 7 Dec; 3 Glenbervie 7 Jul; 3 Kinneil 4 Mar & 2 Wallacebank Wood 13 Jun. Singles: Dunmore Wood, Larbert & R. Carron (M876-Larbert) 16 Nov.

*C Singles: Cambus, R. Forth, Midtown, Gartmorn Dam & Sheardale Wood.

S Site max: c.40 Torrie (NN 6303) 11 Dec; 3 BoD windfarm 6 Dec; 2 R. Forth, Meiklewood 12 Jan & 2 head of L. Tay 29 Aug. Singles: Deanston, Doune, Dunblane (Greenyards, Kippenrait & Whiteston Wood), Killin Marshes, Millhall (Stirling), R. Teith (Lecropt) & Sheriffmuir Woods.

BLACK-TAILED GODWIT *Limosa limosa* (W, S)
Forth Est. WeBS: 698 in Jan, c.750 in Feb, 818 in Mar, 894 in Sep, 1,333 in Oct, 64 in Nov & 436 in Dec.

F Kinneil monthly max: c.780 in Jan, c.500 in Feb, c.300 in Mar, 89 in Apr, c.60 in May, 14 in Jun, 924 in Jul, c.1,270 in Aug, 1,438 in Sep, 500+ in Oct, 22 in Nov & c.950 in Dec. Other site max: 117 Skinflats Pools & shore 22 Jun; 22 Powfoulis TB 25 Jul & 6 S. Alloa 24 Apr.

C Longcarse monthly max: 3 in Apr, 59 in May, 60 in Jul, 6 in Aug & 2 in Sep. Other site max: c.730 Kennet Pans 6 Mar; 17 Devonmouth Pool 16 Jul & 2 Alloa Inch 7 Jul.

*S Two head of L. Tay 30 Apr / 1 May (JPH).

BAR-TAILED GODWIT *Limosa lapponica* (W)
Forth Est. WeBS: 85 in Jan, 216 in Feb, 17 in Mar, 35 in Sep, 33 in Oct, 52 in Nov & 172 in Dec.

F Kinneil monthly max: 75 in Jan, c.100 in Feb, 1 in Mar, 8 in Apr, 6 in Jul, 4 in Aug, 13 in Sep; 1 in Oct; 3 in Nov & 126 in Dec. Other site max: 212 Bo'ness 23 Jan; 16 Blackness 30 Mar & 12 Skinflats Pools & shore 17 Oct. A bird was predated by a Carrion Crow at Blackness 30 Oct (DLT).

*C 20 Kennet Pans 6 Mar (MVB) & 1 Tullibody Inch 31 Aug (GG).

WHIMBREL *Numenius phaeopus* (p)

F Skinflats Pools monthly max: 7 in Apr, 2 in Jul, 1 in Aug & 3 in Sep. Kinneil monthly max: 2 in Apr, 8 in Jul, 8 in Aug & 1 in Sep. Other sites: 5 Powfoulis TB 22 Apr, 1 on 12/13 Jul & 8 Sep. 1 Blackness 28 Aug, 5 & 14 Sep.

C Longcarse monthly max: 2 in Apr, 4 in May & 6 in Aug. Cambus Village Pools monthly max: 4 in Apr, 1 in Oct & 1 in Dec.

*S One R. Teith (Lecropt) 8 May with 2 on 22 May (NB, CJP, DOE). One head of L. Tay 24 Apr, 19 May, 17 & 22 Jul (JPH).

CURLEW (Eurasian) *Numenius arquata* (B, W)

Inland WeBS: 64 in Jan, 3 in Feb, 173 in Mar, 99 in Sep, 4 in Oct, 80 in Nov & 259 in Dec.

Forth Est. WeBS: 1,267 in Jan, 1,281 in Feb, 861 in Mar, 729 in Sep, 534 in Oct, 843 in Nov & 840 in Dec.

F Site max: Skinflats (WeBS) 469 on 12 Jan, 265 on 22 Aug & 339 on 15 Nov. Blackness: 317 on 8 Feb, 188 on 3 Sep & 297 on 5 Dec. Kinneil: c.260 on 23 Jan; 262 on 4 Jul & 305 on 25 Dec. C.150 Meadowfield (nr S. Alloa) 5 Aug & 76 Bo'ness 23 Jan.

C Site max: Longcarse (WeBS) 371 on 8 Feb, c.260 on 18 Oct & c.240 on 24 Dec. Kennet Pans: 227 on 7 Feb, 179 on 22 Aug & c.140 on 28 Nov. 257 Haugh Cottage fields 2 Dec & 98 Cambus Village Pool 30 Aug.

S Breeding: 4 aot Sheriff Muir 11 May & 3 aot Carse of Lecropt 15 May (DMB). Site max: c.100 Bandeath 20 Dec; c.80 Carse of Lecropt 21 Mar; 79 head of L. Tay 19 Mar & 61 Kinbuck 7 Mar.

COMMON SANDPIPER *Actitis hypoleucos* (B)

First of year: 1 R. Devon, W Glenochil 7 Apr & 3 R. Devon, Tillicoultry 9 Apr (JS, CAM). [21 year range: 26 Mar – 21

Apr]. Last of year: 2 Skinflats Pools 1 Oct (AB).
F Site max: 10 Kinneil 8 Jul & 6 Powfoulis TB 11 Jul.
C Site max: 12 Longcarse 17 Jul & 6 Alloa Inch 7 Jul.
S Site max: 6 R. Teith, Carse of Lecropt 16 May & 6 head of L. Tay 30 Apr.

*WOOD SANDPIPER *Tringa glareola*
F One Powfoulis TB 17 Sep (DOE)
C One Longcarse 28 Aug (JRC).
S One nocturnal flight call Dunblane 28 Aug (FM).

*GREEN SANDPIPER *Tringa ochropus* (p)
F One Kinneil 24 Aug (VH). 1 Skinflats Pools 3 Aug & 1 heard in flight 5 Aug (DT, AE, AB).
C One Cambus 19 Mar & 27 Jun (GG, JRC) & 1 Longcarse 21 Mar (JRC).
S Allan Water (Kinbuck): 2 on 25 Jan then singles on 23 Jan, 16 Nov & 26 Nov (CMcK, DJ, HT, MVB). 1 Touch Resr's 26 Jul & 1 Carse of Lecropt 21 Jul (JD, DOE).

*SPOTTED REDSHANK *Tringa erythropus* (p)
F Two Skinflats Pools 24/25 Apr (SWo, CAM) & 1 Powfoulis TB 22 Apr (AD).

GREENSHANK *Tringa nebularia* (w, p)
F Monthly max Kinneil: 6 in Jan, 5 in Feb, 5 in Mar, 1 in Jun, 6 in Jul, 5 in Aug, 6 in Sep, 6 in Oct, 6 in Nov & 2 in Dec. Skinflats Pools area: 1 in Jan, 1 in Mar, 2 in Aug, 1 in Sep, 2 in Nov & 1 in Dec. Blackness: 1 in Jan, 1 Feb, 2 in Mar, 1 in Apr, 1 in Jul, 2 in Aug 2 in Sep, 2 in Oct, 3 in Nov & 2 in Dec. Other sites: max 4 Powfoulis TB 11 Jul – 13 Sep; 1 Skinflats fields 9 Nov & 1 R. Carron (M9) 1 Dec.
*C Two Longcarse 16 Aug with singles 10 Jul – 31 Aug (JRC, GG, NB, DOE) & 1 Blackdevon Wetland 27 Sep (IR).
*S One Fillan Lochan (NN 3925) & 2 Inverhaggernie (NN3727) 3 Jun (IMcP); 1 Allan Water, Kinbuck 12 Sep (CJP) & 1 - 2 head of L. Tay 3 Apr – 19 May then 1 on 14 Jul (JPH).

REDSHANK (Common) *Tringa totanus* (b, W)
Forth Est. WeBS: 2,152 in Jan, 2,496 in Feb, 1,728 in Mar, 2,658 in Sep, 2,026 in Oct, 2,479 in Nov & 2,040 in Dec.
F Kinneil monthly max: 1,146 (WeBS) in Jan, c.2000 in Feb,

1,249 (WeBS) in Mar, c.100 in Apr, 616 in Jun, c.770 in July, c.1,270 in Aug, 1,618 in Sep, 825 in Oct, 902 in Nov & 882 in Dec. Skinflats monthly max: c.850 (WeBS) in Jan, c.1,510 in Feb, 295 (WeBS) in Mar, 29 in Apr, 589 in Jul, 797 (WeBS) in Aug, 903 (WeBS) in Sep, c.1,200 in Oct, 1,345 in Nov & 954 in Dec. Other site max: c.150 Blackness 28 Aug & 20 Nov & c.120 Bo'ness 20 Feb.

C Site max: 105 R. Forth (Cambus – S. Alloa) 15 Dec (unusual for mid-winter); c.90 Kennet Pans 29 Dec; 52 Blackdevon Wetland 14 Mar; 10 the Rhind 18 Jul & 9 R. Forth, Cambus 15 Apr.

S Head of L. Tay monthly max: first, 1 on 23 Mar, 6 in Apr, 6 in May, 13 in Jun, 4 in Jul with last 1 on 4 Sep (JPH). 5 N. Third Resr. 20 Apr (CAM) & 1 Crianlarich 7 Apr (IMcP). Recorded via noc-mig over Stirling on several occasions between 8 Apr – 21 Oct (GC). Recorded via noc-mig over Dunblane on 13 Aug & 21 Oct (FM).

TURNSTONE (Ruddy) *Arenaria interpres* (w)

Forth Est. WeBS: 7 in Jan, 5 in Feb, 7 in Mar, 8 in Oct & 16 in Nov.

F Site max: 11 Bo'ness 6 Nov; 10 Kinneil 29 Sep; 5 R. Carron mouth 10 Nov; 2 Skinflats Pools 25 Oct & 3 Blackness 15 Apr (KC, VH, MVB, EMcL, CVW).

GREAT SKUA *Stercorarius skua* (Irr)

F Kinneil: 2 on 18 Aug, 1>E on 25 Aug, 4 on 12 Sep & 2 on 13 Oct (VH, GG, RDG, WT, JRC).

POMARINE SKUA *Stercorarius pomarinus* (Irr)

F Ad mid est. between Kinneil & Valleyfield 29 Aug & 1 Kinneil 13 Oct (DMB, JRC). -

ARCTIC SKUA *Stercorarius parasiticus* (Irr)

F Kinneil: 3 on 19 Aug then 1 on 26 & 29 Sep (DT, JRC, VH). 1 Blackness 2 & 10 Oct (AF) & 1 Skinflats Pools area 19 Sep (DOE).

* KITTIWAKE (Black-legged) *Rissa tridactyla* (p)

F c.630 Kinneil 13 Oct (JRC); 4 Blackness 4 Apr & 1 on 28 Aug (EMcL, DMB); 1 Kinneil 25 Aug (GG) & 1 Skinflats 19 Aug (MVB).

C One R. Forth, Cambus 9 May (CAM).

BLACK-HEADED GULL *Chroicocephalus ridibundus* (b, W)
Inland WeBS: 1,262 in Jan, 742 in Feb, 1,244 in Mar, 238 in Sep, 670 in Oct, 1,320 in Nov & 1,229 in Dec.
Forth Est. WeBS: 273 in Jan, 246 in Feb, 553 in Mar, 344 in Sep, 241 in Oct, 211 in Nov & 117 in Dec.
F c.300 Powfoulis TB 13 Sep.
C Site max: c.1,580 Tullibody Inch (flying downriver to roost) 23 Oct; 502 Gartmorn Dam 23 Mar; 342 Longcarse 3 Aug & 227 R. Devon (Alva – Tullibody Br) 13 Dec.
S Breeding: 4 aon Cambusmore/Gart GP 30 May (NB) & 1 ON Falcon Foods bldg, Stirling Uni 1 Jun (MVB). Site max: c.400 Craigforth 1 Nov & c.300 Blairdrummond 18 Jan.

*LITTLE GULL *Hydrocoloeus minutus* (Irr)
F One Kinneil 25 Apr & 12 Sep (AJ, RDG, WT); 2 Skinflats 20 Jun then 1 on 21 Jun (AB, SWo) & 1 Blackness 11 Jul (EMcL).

*MEDITERRANEAN GULL *Larus melanocephalus* (w)
F Blackness: singles on 28 Jan, 31 Mar & 2 Apr (EMcL). Kinneil: 1 on 10 Aug, 2 on 15 Aug & 1 on 18 Aug & a 2nd W on 15 Sep (VH, DOE). 1 Powfoulis TB 20 Aug (DOE). Skinflats Pools area: 1st W bird 19 Jan, ad on 23 Feb (SWo), 1st summer bird 20 – 23 Jun, 2nd summer bird 24 & 27 Jun & 1 on 2, 8 & 20 Aug (GWa, AB, SWo, CAM, DOE) & 2 on 23 Dec (JRC, CVW).
C One Kennet Pans 17 Sep (GG); 1 Haugh of Blackgrange 14 Nov & 1 Longcarse 12 Dec (JRC, CVW).

COMMON GULL (Mew Gull) *Larus canus* (b, W)
Inland WeBS: 723 in Jan, 1,550 in Feb, 1,004 in Mar, 286 in Sep, 942 in Oct, 1,005 in Nov & 318 in Dec.
Forth Est. WeBS: 109 in Jan, 67 in Feb, 314 in Mar, 995 in Sep, 97 in Oct, 215 in Nov & 19 in Dec.
F Site max: c.240 Blackness 21 Aug.
C Site max: 597 Gartmorn Dam 2 Mar.
S Breeding: Cambusmore/Gart GP: 9 aon 30 May & 4 juv being fed 12 Jul (NB); 11 aon Falcon Foods bldg. (Stirling Uni) 1 Jun (MVB); 2 ON & 3 NY Ballendall gas plant (NN 7906) 31 May (MVB); 2 ON Inverhaggernie (NN 3727) 3

Jun (IMcP) & 4 chicks head of L. Tay 6 Jul (JPH). A pr reared a single chick on a flat roof of the Dunblane Hydro 4 Jul (CMcK). Site max: c.560 Allan Water, Kinbuck Br 28 Feb; c.370 R. Forth, The Frews 23 Feb; c.320 Cairnston, Ashfield 24 Dec; c.300 Blairdrummond 25 Mar & 163 Killin Marshes 23 Feb.

LESSER BLACK-BACKED GULL *Larus fuscus* (B, P, w)
Inland WeBS: 9 in Jan, 2 in Feb, 274 in Mar, 269 in Sep, 674 in Oct, 375 in Nov & 110 in Dec.
Forth Est. WeBS: 0 in Jan, 0 in Feb, 13 in Mar, 47 in Sep, 11 in Oct, 3 in Nov & 7 in Dec.
F Site max: 107 Little Denny Resr. 14 Sep.
C Site max: 135 Longcarse 14 Sep.
S Breeding: 7 ON Pathfoot bldg. (Stirling Uni.) 1 Jul (MVB). Site max: 253 (only 5 juv) Gartartan fields 15 Oct; 145 L. of Menteith 9 Nov & c.200 R. Forth (The Frews) 26 Oct.

HERRING GULL (European) *Larus argentatus* (b, W)
Inland WeBS: 164 in Jan, 530 in Feb, 150 in Mar, 16 in Sep, 56 in Oct, 144 in Nov & 940 in Dec.
Forth Est. WeBS: 10 in Jan, 86 in Feb, 159 in Mar, 130 in Sep, 448 in Oct, 88 in Nov & 1,117 in Dec.
F Site max: c.1,030 Grangemouth Docks 13 Dec & c.250 Kinneil 23 Sep. A bird stole a fish from a Red-breasted Merganser at Bo'ness 7 Mar (AIB).
C C.810 R. Devon (Tullibody Br – A907) 20 Dec.
S 62 Kippen Carse 12 Jan. One head of L. Tay 1 Apr.

*ICELAND GULL *Larus glaucoides* (Irr)
C One Longcarse 21 Oct (JRC).
S One Springkerse (on school playing field), Stirling 15 Jan (GC, GG). 1st W bird: Blackdub 4 Nov (DMB); Doune 16 & 19 Nov (DOE, RDG); 1 Blairdrummond Ponds 16 & 30 Nov (DOE) & Westerton Farm, Cowie 25 Nov (GC).

GREAT BLACK-BACKED GULL *Larus marinus* (S, W)
Inland WeBS: 11 in Jan, 24 in Feb, 5 in Mar, 5 in Sep, 4 in Oct, 14 in Nov & 7 in Dec.
Forth Est. WeBS: 19 in Jan, 6 in Feb, 4 in Mar, 28 in Sep, 18 in Oct, 8 in Nov & 18 in Dec. Recorded in small numbers. Widespread but scarce inland, mainly in winter.

F Site max: 85 ad's Kinneil 15 Sep & 31 Forth Est, Skinflats 26 Nov.
C Site max: 9 Longcarse 30 Aug.
S Site max: 7 Blackdub floods 28 Oct; 5 Lake of Menteith 19 Jan & 2 head of L. Tay 6 Apr – 24 May.

SANDWICH TERN *Sterna sandvicensis* (s, P)
First for year: 3 Skinflats Pools 16 May (AB). Last of year 1 Blackness 1 Nov (GG).
F Site max: c.500 (incl c.25 roosting on mudflats) Blackness 28 Aug; c.250 Kinneil 15 Sep; c.250 Powfoulis TB 15 Aug; 150+ Skinflats 15 Sep & c.30 Bo'ness 21 Aug.
*C Longcarse: 6 on 6 & 1 on 8 Aug (GG, DOE) & 10 Kennet Pans 17 Aug (GG).
*S One Stirling 27 May (1st) & 4 on 18 Sep (last) (GC, noc mig). Recorded via noc-mig over Dunblane on 20 Sep (FM).

COMMON TERN *Sterna hirundo* (S)
First of year: 12 Blackness 5 May (EMcl). [10 year range: 26 Apr – 18 May]. Last of year Kinneil/Bo'ness 26 Sep (CVW).
F Breeding: 2 juv & 1 large FL Grangemouth Docks 22 Aug (MVB). Site max: 151 Blackness 1 Aug; c.150 Skinflats Pools & area 20 Aug; c.150 Kinneil 20 Aug & c.50 Powfoulis TB 20 Aug.
C Site max: 2 Longcarse 6 Aug (5 records. DOE) & 56 Kennet Pans 26 Aug (3 records. GG).
*S One head of L. Tay 17 Jun & 1 Killin 11 Jul (JPH, DOE). 14+ recorded via noc-mig over Dunblane on 13 Aug (FM).

*ARCTIC TERN *Sterna paradisaea* (p)
F Skinflats Pools area: singles 23, 24 & 27 Jun & 4, 6 (2nd S.) 21 Jul (the 23/24 Jun bird was a 1st S.) (AB, SWo, JRC, DMB, AE, DOE) & 1 Blackness Bay 28 Aug (DMB).
S Noc-mig: 67 Dunblane (04.07 hours to 04.52 hours) 13 Aug (FM) & 1 Stirling 21 Aug (GC). Other: 2 head of L. Tay 23 May (JPH).

COMMON / ARCTIC TERN (Commic)
F c.230 Skinflats (WeBS) 22 Aug.

* BLACK TERN *Chlidonias niger* (Irr)
F Three summer plumaged birds were 'dip-feeding' offshore, Kinneil 4 Jul (DMB).

* GUILLEMOT (Common Murre) *Uria aalge* (s, w)
F Blackness: 5 on 15 Oct then singles on 13 & 26 Nov (AF). 1 Kinneil 26 Sep (JRC). Forth Est., Skinflats: 5 on 30 Oct & 3 on 13 Nov (AB).
S One Kilmadock Cemetery, Deanston 13 Sep (AA). Singles head of L. Tay 3, 11, 23 & 27 Sep; 2 L. Iubhair 14 & 17 Sep (JPH).

* RAZORBILL *Alca torda* (Irr)
F One Blackness 13 Nov (AF).
S Juv head of L. Tay 9 Sep (JPH).

FERAL PIGEON *Columba livia* (B, W)
F C.70 Stonehouse Fm. (Skinflats) 20 Oct (NS 9184).
S C.150 Dunblane centre (pre roost) 27 Jan & c.100 Bandeath 22 Nov.

STOCK DOVE *Columba oenas* (B, W)
F Site max: 8 Kinneil 14 Jul.
C Site max: 14 Longcarse 2 Oct.
S Site max: 32 L. Watston 3 May & 14 Blairdrummond 4 Apr.

WOOD PIGEON (Common) *Columba palumbus* (B, W)
F Site max: c.1,100 Powfoulis 13 Dec.
C Max: 84 Blackdevon Wetlands 3 Jan.
S Site max: 4,122 > Ashfield 19 Nov; 2,553 > Braes of Doune (NN 6904) 6 Nov (mig. counts CMcK); c.1,270 Greenyards (Dunblane) 1 Dec; c.700 Craigarnhall (NS 7598) 28 Dec & c.500 Blairdrummond Ponds 2 Nov.

COLLARED DOVE (Eurasian) *Streptopelia decaocto* (B, W)
F Max: 4 S. Alloa 24 Apr.
C Max: 5 Alloa Inch 7 Jul.
S Max: 8 L. Watston 24 Dec; 8 Kinbuck 29 Dec & 5 Stirling (NS 8093) 16 Mar.

CUCKOO (Common) *Cuculus canorus* (B)
First spring records: 1 Tyndrum 17 Apr (IMcP). [20 year range 14 to 29 April]. Last record juv Kirkton Fm, Strath Fillan 29 Jul (JPH).
*F One Tarduff Hill (NS 7483) 26 Apr (HT).
*C One Menstrie Glen (NS 8598) 5, 16 & 30 May (GG) & 1 Dollar 30 Apr (KB).

S Widespread in the 'highland glens' and the lowland moors and mosses. Breeding: 4 aot Sheriff Muir 7 Jun (DMB) & 1 juv Kirkton Fm, Strath Fillan 28 Jul (JPH). Site max: 4 head of L. Tay 3 May; 4 at Sheriff Muir 26 May & 4 G. Lochay 7 Jun.

*BARN OWL (Western) *Tyto alba* (b, w)

F Breeding: chick heard in nest hole Glenbervie 1 Jul (AB). Other records 1 Powfoulis 28 Jan (TC).

C One Boghall, Dollar 2 Aug (CB).

S Six Argaty 5 Jun with 4 there 6 Oct; 4 The Bows 7 Jun; 3 Doune 10 Jun; 3 Kirkton Fm, Tyndrum 8 Sep; 2 Killin Marshes 1 Aug & 2 Strathyre 21 Dec. Singles: Auchlyne, G. Dochart 3 Jan; Cowie 3 Feb; 1-3 Dunblane noc-mig (29 records) 26 Jul – 5 Nov; central Dunblane 9 Aug; Gogar 1 Jun; head of L. Tay 12 Aug; Howietoun Ponds 16 Jun; Stirling noc-mig (6 records) 24 Apr – 25 Sep; Strathyre 13 Oct; Teith Br, Doune 27 Jan & W Flanders Moss 21 Sep (DOE, JPH, LH, JP, CAM, CMcK, GG, NB, FM, DJC).

TAWNY OWL *Strix aluco* (B, W)

Widespread but under-recorded.

F Recorded from: Blackness, Carron (Falkirk), Denny & Larbert Loch Woods.

C Recorded from: Cambus, Gartmorn Dam, Menstrie & Myreton Hill.

S Breeding: 2 FL's on ground Sheriffmuir Woods 2 May (MVB). Ad + 'branched' Y Brig o' Turk 7 Jun (CAM). Killin: 2 calling Y Creag na Dunaich 6 Jun & 1 Y 'squeaking' Pier Rd 10 Jul (JPH). Recorded from: Argaty, Balquhidder, Blairdrummond, Broomridge (Stirling), Cocksburn Resr., Doune, Drip Moss, Dunblane (several locations), G. Dochart, Hill of Row, Kilbryde, L. Ard Forest (various locations), L. Lubnaig (NS 5811), N. Third Resr., Stirling M9 services, Killin, Strathyre & Wallacestone (Stirling).

*LONG-EARED OWL *Asio otus* (b, w)

F One Skinflats Fields 24 Aug (AE).

C One Cambus 23 Dec (GG).

S Breeding: pr + 3 FL's Drumallan, Kinbuck 29 May (CJP); 2 Y heard calling Blair Drummond 12 Jun (SW) & 'young

heard' Touchadam Muir 13 Jun (JD). Other records: 1 Earlsburn Resr. 8 Apr (DOE); 5 Touch Resr's. 16 May (JD); 2 W Flanders Moss 24 Sep & 2 Argaty 6 Oct (DOE).

*SHORT-EARED OWL *Asio flammeus* (b, W)

F One 'Tak ma Doon' Rd (NS7381) 11 May (SWa).

S Sheriff Muir: 2 on 18 Apr, 1 on 7 Jul & 1 on 13 Oct (NB, CAM, CJP). Two Glentye Hill 25 Apr (CJP); 2 Earlsburn Resr's 7 May & 1 there 12 Jul (DOE); 1 Menstrie Glen 2 Jul (GG); 1 Red Brae (NS 8499) 22 Sep (JD); 1 W Flanders Moss 24 Sep; 1 Callander Crags 14 Oct (DOE) & 2 Touchadam Muir 15 Nov (JD).

SWIFT (Common) *Apus apus* (B)

Recorded throughout the area. First for year: 5 BoA 1 May (DMB). [21 year range 24 April to 6 May]. Last 1 Cambus 13 Sep - a very late bird (DH).

F Site max: c.30 Skinflats Fields 21 Jul & c.20 Kinneil 10 Aug.

C Max: c.30 Cambus 22 Jul.

S Breeding: 14 confirmed nests Dunblane (CMcK). Site max: c.90 Dunblane centre 1 Jul; c.90 Dykedale Woods, Dunblane 30 Jul; c.50 Ashfield 1 Jul; c.50 BoA 31 Jul; c.45 Blairdrummond Ponds 18 May; 29 Strathyre 21 Jul & 28 Killin 21 Jul.

KINGFISHER (Common) *Alcedo atthis* (b, w).

Inland WeBS: 2 in Jan, 2 in Feb, 4 in Mar, 14 in Sep (indication of a good breeding season? Ed), 7 in Oct, 6 in Nov & 8 in Dec. Breeding in small numbers in suitable habitat throughout the area. A little more widespread outwith the breeding season.

F Breeding: pr seen periodically at nest site on tidal R. Carron 6 -14 May nest probably flooded out due to a high tide 8 May while ♂ observed carrying a fish to nest site 18 May (AB). Site max: 3 R. Carron, Carronshore 10 Sep; 3 R. Carron, S. Broomage 20 Sep; 2 Chapel Burn, Carronshore 6 Jun & 2 R. Carron, Larbert 18 Oct.

C Breeding: 2 birds visiting separate nest holes on R. Devon, Glenochil 30 Jun (CAM). 2 R. Devon (Alva – Tullibody Br) 22 Aug (CVW).

S Three Blairdrummond Ponds 26 Jul & 2 R. Teith Carse of Lecropt 9 Mar & 5 May.

GREEN WOODPECKER (European) *Picus viridis* (B, w)

F No records.

C Recorded from: Dollar, Menstrie, Menstrie Glen, Myreton Hill (2) & Woodhill (Alva).

S Recorded from: Argaty (2), Balquhidder, Blairlogie, Braes of Doune, BoA (Gallow Hill, Hermitage Wood, Pendreich & Yellowcraig Woods), Buchany (2), Callander (Bracklinn Falls, Callander Craig, Coilhallan Wood & Kilmahog), Doune, Dumyat, Dunblane (Biggins Wood & Whiteston Wood), G. Lochay (2), Killin, L. Lubnaig, Logie Kirk, N Third Resr., Sheriff Muir & Touch.

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

Recorded thinly throughout the area and year.

F Breeding: 2 aot Larbert Loch 21 Mar (AB); juv being fed Carronshore 13 Jun (AE); NY (same nest hole as last year) Kinneil Ho 5 Jun & 2 juv Kinneil Curling Pond 22 Jun (AIB).

C No notable records.

S Breeding Dunblane area: NY Wanderwang Wood 27 May; NY Dykedale S Wood 28 May; 2 NY Whiteston Wood 6 Jun; NY Sheriffmuir Woods 13 Jun & juv Pisgah (Dunblane) 16 Jun (MVB). 3 aot Gallow Hill (BoA) 19 Apr (DMB). 3 pr's G. Lochay 13 Jun, NY Firbush (L. Tay) 3 Jun & juv Auchtertyre (NN 3528) 17 Jul (JPH). Max: 5 W Flanders Moss 6 Aug; 4 R. Teith, Lanrick 4 Apr & 4 Blairdrummond 12 Apr.

SKYLARK (Eurasian) *Alauda arvensis* (B, W)

F Max: c.180 (flushed by a Sparrowhawk) Orchardhead, Skinflats 18 Oct.

C Max: 25 Longcarse 2 Oct.

S Max: c.110 Carse of Lecropt 30 Sep; c.110 Hill of Row 7 Dec; 108 Braes of Doune 4 Nov & c.100 R. Teith, Lanrick 31 Dec.

SAND MARTIN *Riparia riparia* (B)

First for year: 4 Lake of Menteith, 4 head of L. Tay, 2 Dollar & 1 L. Coulter all 22 Mar (GG, JPH, KB, AMcP). [21 year range 4 Mar to 30 Apr]. Last: 1 Cambus 1 Oct (DH).

F Breeding: 6 birds utilising tubular air vents in wall of old stone barn for nesting Kinneil Mill Fm 25 May (AIB). Max: c.30 Skinflats Pools 30 Aug.
C Site max: c.140 Cambus 11 Apr; c.100 Tullibody Inch 31 Aug & c.95 Menstrie 9 Apr.
S Breeding: 707 aon's Cowie / Throsk quarry 30 Jun (DMB); c. 56 aon's from four sites on R. Teith (Steeds – Greenocks) 3 Jun (NB); 19 aon's R. Balvag, Strathyre 2 Jun (DJC); c.13 aon's Wharry Burn, Sheriffmuir Inn 5 Jun (NB); 2 aon's Wharry Burn, The Linns (NN 818010) 7 Jun (MVB). Site max: c.1,000 Cowie / Throsk quarry 30 Jun (DMB) c.500 Blairdrummond Ponds 13 Sep; c.250 head of L. Tay 8 Apr; c.150 R. Teith, Lecropt 22 May; c.130 Kippenross Ho, Dunblane 16 Apr; c.110 N. L. Lubnaig 6 Apr & c.100 Allan Water, Dunblane 18 Apr.

SWALLOW (Barn) *Hirundo rustica* (B)
First for year: 2 Blairdrummond, 1 Blackness & 1 Menstrie 6 Apr (DOE, EMcl, GG). [21 year range: 6 Mar – 11 Apr]. Last: 1 Skinflats 29 Oct & 1 Blackness 25 Nov (DMB, EMcl). More breeding records please.
F Max: c.70 Skinflats Pools 30 Aug.
C Max: c.650 Tullibody Inch (evening roost) 23 Sep (GG) & c.600 Cambus 23 Jul.
S Breeding: nested at Kippenross Ho, Sheriffmuir Inn & Strathyre. Max: c. 350 (feeding over stubble) Stonehill, Dunblane 16 Aug (MVB).

HOUSE MARTIN (Common) *Delichon urbicum* (B)
More breeding records please. First of year: singles St Ninians 5 Apr & Blackness 6 Apr (BA, EMcl). [21 year range: 25 Mar – 21 Apr]. Last: 8 Aberfoyle & 2 Alva 27 Sep (SCW, IB).
F Breeding: 3 visiting last year's nests Bryce Av, Carron 24 Apr (AB). Max: c.200 Skinflats Pools 30 Aug & c.50 Powfoulis TB 30 Aug.
C Max: c.20 Longcarse 30 Aug.
S Breeding: 10+ on Bandeath warehouses 25 May (DMB); 2 ON Sheriffmuir Inn 25 May; 2 ON Howietoun Ponds 1 Jun (NB); NY Auchtertyre, Strath Fillan 17 Aug (JPH) & 2 visiting nest BoA 23 Sep (DMB). Site max: c.100

Blairdrummond 13 Sep; c.70 L. Mahaick 10 Aug & c.60 Killin Marshes 3 Aug.

TREE PIPIT *Anthus trivialis* (B)
Widespread to N & W of Stirling, scarcer elsewhere.
First of year: 1 Buchany 10 Apr (DOE). [21 year range: 2 Apr – 27 Apr]. Last: 1 Longcarse 20 Aug (DOE) & 1 Dunblane noc -mig 23 Sep (FM).
F Site max: 12 Kinneil 19 Aug; 2 Powfoulis TB 22 Apr; 2 Skinflats Fields 24 Apr & 1 Blackness 15 Apr (EMcl).
C Site max: 4 Menstrie Glen 25 Apr (GG); 2 Myreton Hill 12 Apr & 1 Longcarse 20 Aug.
S Breeding: 12 singing birds in 4 wooded areas E side of Dunblane 19 – 25 Apr (MVB) & 5 aot Touch 26 Apr (DMB). Max: 6 Hill of Row 17 Aug.

MEADOW PIPIT *Anthus pratensis* (B, W)
F Site max: c.80 Skinflats Pools 18 Apr & c.40 Powfoulis TB 22 Apr.
C Site max: c.200 Longcarse 18 Sep & 29 Kennetpans 20 Nov.
S Site max: 55 Kippenross Cotts, Dunblane 2 Sep; c.50 Harperstone, Sheriff Muir 30 Aug; c.50 Argaty 10 Apr & c.50 L. Mahaick 10 Apr.

*ROCK PIPIT (Eurasian) *Anthus petrosus* (w)
F Blackness: 2 on 24 Sep then singles on 20 Jan, 22 Sep & 23 Nov (AF). Skinflats Pools foreshore: 1 on 24 Jan, 1 on 27 Feb, 1 on 9 Nov & 1 on 23 Dec (AB, DMB, DOE, JRC, CVW). Powfoulis TB: 1 on 28 Jan, 4 & 6 Feb (TC, JL).
C One Longcarse 15 Feb, 6 Nov, 13 Nov & 5 Dec (DOE, JRC).

*YELLOW WAGTAIL *Motacilla flava* (Irr)
F One Skinflats Pools 9 Aug (VH).
S One head of L. Tay (ssp '*flava*') 27 Apr (JPH).

GREY WAGTAIL *Motacilla cinerea* (B, w)
Found in small numbers in suitable habitat throughout the area. A partial migrant. Inland WeBS: 6 in Jan, 18 in Feb, 23 in Mar, 22 in Sep, 9 in Oct, 3
in Nov & 4 in Dec.
F Max: 4 R. Carron, Larbert 21 Sep.
C Max: 4 Pool of Muckhart 29 Mar.

S Max: 9 R. Forth (Shaw of Touch – Teith conf.) 12 Feb; 8 Allan Water, Dunblane 12 Jun & 7 Wharry Burn, Cauldhame 7 Jun.

PIED WAGTAIL *Motacilla alba yarrellii* (B, w)
F Max: 25+ Powfoulis TB 23 Aug & 15 Skinflats Fields 20 Dec.
C Breeding: 1 FL R. Devon, Glenochil 30 Jun (CMcK). Max: 27 Longcarse 22 Jul & 24 E of Menstrie (NS 8696) 5 Dec.
S Max: 135 flying over Hungryhill Wood, Dunblane to roost at the Keir roundabout 16 Sep (CMcK); 47 Auchtertyre, Strath Fillan 10 Mar; 43 head of L. Tay 7 Sep; 25 Killin Marshes 3 Aug & 21 feeding in field of horses Strathyre 30 Aug (DAC).

WHITE WAGTAIL *Motacilla alba alba* (p)
F Skinflats Pools area: first 45 on 19 Apr with 17 on 25 Apr & 1 on 5 May the last. Powfoulis TB: 2 on 19 Sep & 2 on 12 Nov.
C Cambus Village Pools: 1 on 18 Apr, 2 on 20 Apr & 1 on 28 Apr. Longcarse: 3 on 13 Apr & 6 on 23 Apr.
*S Head of L. Tay: 1 – 6 from 14 Apr – 20 May. Three Killin sewage works 3 Apr with 1 there 25 Apr (JPH).

WAXWING (Bohemian) *Bombycilla garrulus* (w)
The influx from late 2019 remained for the winter/spring 2020.
F Site max: 74 Bainsford 29 Jan; 25 Airth 27 Jan & c.20 Larbert 10 Feb.
C No records.
S Dunblane monthly max: 103 on 17 Jan, 76 on 2 Feb, 15 on 28 Mar, 23 on 13 Apr with last 15 on 17 Apr. Other site max: 89 Torbrex 29 Jan; c.80 James St, Stirling 30 Feb; 75 Riverside, Stirling 2 Feb & c.70 BoA 9 Jan.

DIPPER (White-throated) *Cinclus cinclus* (B, W)
Recorded on suitable watercourses throughout the region. Inland WeBS: 27 in Jan, 37 in Feb, 24 in Mar, 27 in Sep, 47 in Oct, 26 in Nov & 40 in Dec.
F Singing birds: R. Avon (NS9776) 6 Feb (AF) & Chapel Burn, Carronshore 11 Nov (AB). Site max: 7 R. Carron

(M876-Larbert) 18 Oct.

C Breeding: R. Devon: Vicar's Br-Tillicoultry WeBS max: 11 in Jan, 19 in Feb, 13 in Sep, 20 in Oct, 23 in Nov & 15 in Dec.

S Breeding: pr + 2 FL Bannock Burn, Ladywell Park, Bannockburn 3 May (DT) & ad + juv head of L. Tay 9 Jun (JPH).

WREN (Eurasian) *Troglodytes troglodytes* (B, W)
Widespread and common.

C Site max: 13 Cambus Pools area 7 Apr; 12 Gartmorn Dam 19 Apr; 11 R. Devon, Tillicoultry 9 Apr & 11 Wood Hill, Alva 9 May.

S Breeding: 14 aot Whiteston Wood, Dunblane 13 May (MVB) & 11 aot Howietoun Ponds 23 Apr (NB). Site max: 14 R. Teith (Wester Row – R. Forth WeBS) 12 May & 12 Tyndrum 17 Apr.

DUNNOCK *Prunella modularis* (B, W)
Widespread and common.

F Breeding: 2 FL Old Bellsdyke Rd gdn, Larbert 9 Jun (DLT).

C Breeding: juv Tullibody gdn 20 May (JS).

S Breeding: ad collecting moss Ochiltree gdn (Dunblane) 28 Apr (NB). Site max: 8 Howietoun Ponds 20 May & 7 Blairdrummond 14 Nov.

ROBIN (European) *Erithacus rubecula* (B, W)
Widespread and common.

F Max: 13 Union Canal, Greenbank 27 Nov.

C Breeding: juv Tullibody gdn 4 Jun (JS). Max: 12 Jellyholm 30 Dec & 12 Gartmorn Dam 6 Feb.

S Breeding: 13 aot Whiteston Wood, Dunblane 13 May (MVB). Max: 18 Tyndrum 17 Apr; 14 Hill of Row 29 Dec; 12 Blairdrummond 30 Oct; 12 Hill of Row 29 Sep & 12 R. Teith (Wester Row – R. Forth WeBS) 21 Sep.

REDSTART (Common) *Phoenicurus phoenicurus* (B)

Found in low numbers mostly to the N & W of Stirling. First spring record: 1 Auchlyne, G. Dochart 11 Apr (JPH). [13 year range: 10 Apr – 29 Apr]. Last: 1 R. Forth (Poldar Br – Br of Frew) 20 Sep (RJS).

*F One Skinflats Pools 30 Aug (DOE).
*C One Menstrie Glen 24 May & 1 Dollar Glen 12 Jun (JRC).
S Breeding: 5 aot's head of L. Tay 19 Apr (JPH). Max: 10 Kilbryde (NN 70) 25 May; 7 L. Chon 25 Jun; 5 G. Dochart 16 May & 5 Lake of Menteith 30 Jun.

WHINCHAT *Saxicola rubetra* (B)

Recorded mostly to the N & W of Stirling. First spring record: ♂Sheriffmuir Inn 12 Apr is the earliest recorded date (CAM). [21 year range: 12 Apr – 26 May]. Last: 1 Skinflats Pools 23 Sep (AB).
F Max: 4 Skinflats Fields 8 Aug.
C Max: 11 Menstrie Glen 10 May.
S Breeding: 3 singing ♂♂ Lade Trail, Sheriff Muir 19 May with 6 juv there 6 Aug (MVB); juv Howietoun Ponds 6 Jul (NB) & family group Auchlyne, G. Dochart 30 Aug (JPH). Max: 5 Harperstone, Sheriff Muir 20 Jun.

STONECHAT (European) *Saxicola rubicola* (B, w)
F Site max: 5 Skinflats Fields 21 Sep.
C Max: 6 Ochils above Alva 28 Jul.
S Breeding: 5 aot Sheriff Muir 11 May (DMB); pr + 1 juv Sheriffmuir Road 9 Jun (NB); 12 juv Lade Trail, Sheriff Muir 13 Jul; family Auchlyne, G. Dochart 30 Aug (JPH) & juv Strathyre 17 Oct (DJC). Site max: 24 Lade Trail, Sheriff Muir 24 Aug; 8 Auchtertyre, Strath Fillan 1 Oct; 7 The Bows 25 May; 6 Argaty 25 May; 6 (incl 1 juv) Harperstone, Sheriff Muir 20 Jun & 6 Lochan Breaclaich (NN 6232) 17 Sep.

WHEATEAR (Northern) *Oenanthe oenanthe* (B)
First spring record: 2 L. Coulter 22 Mar (AMcP). [13 year range: 14 Mar – 8 Apr]. Last 1 Powfoulis 24 Oct (GW).
F Site max: 3 Skinflats Fields 24 Apr.
C Max: 15 Menstrie Glen 25 Apr & c.10 Ochils above Alva 28 Jul.
S Breeding: 2 aot Sheriff Muir 7 Jun (DMB) & family Lochan Breaclaich (NN 6131) 20 Jun. Max: 11 Sheriff Muir 25 Apr.

*RING OUZEL *Turdus torquatus* (b)
C Two Menstrie Glen 10 Apr (JRC) & 1 Myreton Hill 12 Apr (GG).

S Male Sheriffmuir Inn 24 Apr (NB) & 1 Beinn Each summit (NN 6015) 5 Sep (JD). Dunblane noc-mig: 1 on 9 & 14 Sep (FM).

BLACKBIRD (Common) *Turdus merula* (B, W)
Widespread and common.

F Max: 23 F & C Canal (Lock 16 – Forth Est) 8 Mar.
C Max: 17 Blackdevon Wetlands 3 Jan; 15 R. Devon (Tillicoultry) 9 Apr & 14 Jellyholm 30 Dec.
S Max: 20+ R. Forth, Drip Moss 15 Nov; 16 Hill of Row 29 Dec; 15 Greenyards, Dunblane 1 Dec & 14 Howietoun Ponds 6 Nov.

FIELDFARE *Turdus pilaris* (W)
Last spring record 11 Ashfield 27 Apr (MVB) is within 11 yer range of 25 Mar - 14 May. First autumn record 8 Kippen 11 Oct (RJS) is within the 11 year range of 3 Sep to 22 Oct.

F Winter / spring site max: c.200 Skinflats Fields 6 Mar. Autumn / winter site max: c.600 S. Alloa 3 Dec; c.400 Skinflats Fields 29 Oct; & c.300 Airth 26 Oct.
C Site max: c.150 Longcarse 18 Oct.
S Winter / spring site max: c.160 Dykedale, Dunblane 25 Jan. Autumn / winter site max: 287 Braes of Doune 15 Oct; c.275 Lanrick, Dunblane (>SW in 4 flocks) 24 Oct; c.250 Carse of Lecropt 5 Nov; c.220 Corscaplie, Dunblane 25 Nov & c.150 G. Dochart 17 Oct.

SONG THRUSH *Turdus philomelos* (B, W)
A partial migrant.

F Breeding: ad + juv Kinneil Curling Pond 22 Jun (AIB). Max: 7+ Skinflats 9 Oct.
S Noc-mig max: 36 Dunblane 17 Oct & 31 Stirling 7 Oct (FM, GC). Site max: 14 Blairdrummond 25 Mar; 14 R. Teith, Lanrick 14 Mar; 12 Cromlix 25 Apr; 10 Drumloist 25 Apr & 8 Auchtertyre, Strath Fillan 18 Mar.

REDWING *Turdus iliacus* (W)
Last physical spring record: 1 Ashfield 17 Apr (MVB) is within the previous 10 year range of 7 Mar to 1 May. First physical autumn record: 12 Hutchison, Ashfield 29 Sep (MVB) is within the previous 10 year range of 16 Sep to 12 Oct. Noc-mig last & first: 1 Stirling 24 Apr & 1 Dunblane 25 Sep (FM).

F Max: c.150 Skinflats 29 Oct.
C Max: c.200 Longcarse 16 Oct & c.200 Cambus 17 Oct.
S Max: 162>ENE Stockbridge, Dunblane 14 Oct; 152 R. Forth, Kippen 15 Nov; c.140 Blairdrummond 31 Oct; 134> over Dunblane 13 Oct; c.100 L. Mahaick 27 Dec & c.100 G. Dochart 7 Apr.

MISTLE THRUSH *Turdus viscivorus* (B, W)
F Max: 12 Skinflats Pools 5 Oct.
C Max: 4 Braehead GC, Alloa 30 Apr.
S Breeding: pr + 4 FL Sheriffmuir Woods 5 May (MVB). Max: 14 Blairdrummond 29 Nov; 14 Auchtertyre, Strath Fillan 10 Oct & c.12 head of L. Tay 29 Aug.

GRASSHOPPER WARBLER (Common) *Locustella naevia* (B)
Widely but thinly spread throughout the area. First spring record: 1 Menstrie Glen 10 Apr is a new early date (JPH). [21 year range 10 Apr to 27 Apr]. Last 1 Powfoulis TB 28 Aug (DOE).
F Breeding: Skinflats Pools: 4 'reeling birds' 23 Apr (AB) & 2 pr feeding Y 21 Jun (SWo). Also at: CVR, Dalderse, Kinneil & Skinflats Fields.
C Max: 3 Longcarse 10 Jul. Also at: Alva, Blackdevon Wetland, Cambus, Ditch, Dollar, Gartmorn Dam, Jerah, Lecropt, Longcarse, Menstrie Glen, Park Fm & R. Devon (Glenochil & Tillicoultry).
S Breeding: pr feeding Y Strathyre 24 May (DJC). Max: 3 Killin Marshes 1 May & 1 Aug. Also at: Argaty, Balquhidder, Bows, Cocksburn Resr, Craigforth, Crianlarich, Drumloist, Flanders Moss, Howietoun Ponds, Kippenrait, Linns (Sheriff Muir), L. Mahaick & L. Watston.

SEDGE WARBLER *Acrocephalus schoenobaenus* (B)
First spring record: 1 Cambus Pools 7 Apr is a new early date (CAM) [21 year range 7 Apr - 1 May]. Last: 1 Longcarse 26 Sep (DOE).
F Breeding: ad + FL Powfoulis TB 12 Jul (AB). Site max: 12 Skinflats Pools 8 May.
C Breeding: 13 aot R. Forth (Cambus – Tullibody inch) 28 May (DMB). Site max: 22 Longcarse 9 May & 10 Blackdevon Wetlands 7 May.

S Breeding: 8 aot R. Teith, Lecropt 5 May (DMB). Site max: 13 Blairdrummond Ponds 9 May; 10 L. Watston 16 May & 10 R. Teith, Lecropt 8 May.

REED WARBLER (Eurasian) *Acrocephalus scirpaceus* (b)
Breeding of the species in the Upper Forth area was first confirmed in 2011. First spring record: 2 Cambus 24 Apr is a new early date (JRC). [5 year range: 24 Apr – 17 May]. Last Skinflats Pools 19 Sep (DOE).

F Breeding: 2 pr feeding Y Skinflats Pools 21 Jun & 3 singing ♂♂ Skinflats Pools 6 Jul (SWo, DMB). Site max. 4 Skinflats Pools 6 Jul.

C Breeding: 3 aot R. Forth (Cambus – Tullibody Inch) 28 May (DMB). Site max: 6 Longcarse 9 May & 4 Cambus Pools 27 Jun.

S One R. Forth, Lower Taylorton 15 Jun is the 1st record for Stirling District (GG).

BLACKCAP (Eurasian) *Sylvia atricapilla* (B)
As it is difficult to separate the few over-wintering birds from Eastern Europe with genuine summer migrants in spring, no definitive early arrival date can be listed although 1 in Camelon Cemy 28 Mar is possibly it. Last: 4 Skinflats Pools 5 Oct (AE).

F Winter record: 1 Polmont gdn 13/14 Jan (DN) & 1 ♂Tamfourhill gdn 17 Feb (WT) . Max: 9 Skinflats Pools 21 Jun.

C Max: 12 Gartmorn Dam 27 Apr.

S Winter records: ♀ Alexander Dr gdn, BoA 16 Feb (MS) & 1 BoA 22 Nov (DMB). Max: 14 Blairdrummond 3 May.

GARDEN WARBLER *Sylvia borin* (B)
Recorded throughout the area in small numbers. First spring records: 1 Kingseat Pl, Falkirk 15 Apr (WMP) & 1 Cambus 18 Apr (CAM, GG) [21 year range 14 Apr to 5 May]. Last: Kennet Pans 17 Aug (GG).

S Breeding: nest by a Strathyre gdn 21 May (DJC). Max: 4 singing Pisgah Wood, Dunblane 16 Jun.

WHITETHROAT (Common) *Sylvia communis* (B)
First spring record: 1 Tyndrum 17 Apr (IMcP) [20 year range 9 Apr to 2 May]. Last: 1 Kinneil 26 Sep (DB).

F Site max: 9 Kinneil 15 May; 8 Skinflats Pools 23 Jun & 4 singing S. Alloa 24 Apr.
C Site max: 6 Cambus Village Pools 8 Jun.
S Breeding: 1 FL Auchinlay, Dunblane 1 Jul (MVB). Site max: 9 Hill of Row 24 May; 8 Blairdrummond 9 May; 7 (5 singing ♂♂) Howietoun Ponds 1 Jun & 4 singing ♂♂ G. Dochart 7 Jun.

LESSER WHITETHROAT *Sylvia curruca* (Irr)
F Kinneil: 1 on 8 Jun & 1 on 21 Jun (DB, CAM).

WOOD WARBLER *Phylloscopus sibilatrix* (B)
First spring records: 2 Kilmahog, Callander 25 Apr & 2 Killin Marshes 26 Apr (DOE, JPH). [20 year range: 17 Apr to 24 May]. Last 1 L. Chon 25 Jun (NB).
C Recorded from: Dollar Glen (2) & Ochil Woodland Park (2).
S Recorded from: Bracklinn, Deanston, Kippenrait Glen, G. Lochay (2), Kilbryde, Kilmahog (2), L. Chon, E L. Katrine (4), L. Watston & Logie Kirk.

CHIFFCHAFF (Common) *Phylloscopus collybita* (B, w)
First singing record: 1 Bothkennar (NS 9083) 15 Mar (AE).
F Site max: 5 Callendar Park 17 May. Winter: 1 Skinflats Fields 20 / 21 Jan (AB, AE, DH) & 1 Blackness 1 Nov (GG).
C Site max: 12 Cambus Pools 7 Apr; 12 Gartmorn Dam 27 Apr; 9 R. Devon, Tillicoultry 9 Apr & 8 Menstrie 24 Mar. Winter: 1 Gartmorn Dam 19 Nov (GG).
S Site max: 8 Cocksburn Resr. 4 May.

WILLOW WARBLER *Phylloscopus trochilus* (B)
Widespread. First of year: 1 Allan Water, Dunblane 24 Mar & 1 singing Cambus 27 Mar are both prior to the earliest dates previously recorded (SM, CAM). [21 year range 24 Mar - 18 Apr]. Last: 1 Skinflats Pools 9 Oct (AE).
F Max: 35 Skinflats Pools 23 Aug.
C Max: 24 Gartmorn Dam 27 Apr.
S Breeding: 45 aot Touch 26 Apr (DMB) & 13 aot Whiteston Wood, Dunblane 13 May (MVB). Max: 35 L. Mahaick 1 May; 24 Sheriff Muir 11 May & 17 Tyndrum 17 Apr.

YELLOW-BROWED WARBLER *Phylloscopus inornatus* (V)
F One calling in trees along Etna Road, Falkirk 25 Sep (SWo).

GOLDCREST *Regulus regulus* (B, W)
Widespread and fairly numerous, especially in mature conifer plantations. Winter numbers boosted by Scandinavian migrants.
S Max: 8 Blairdrummond 7 Nov & 8 Tyndrum 17 Apr.

SPOTTED FLYCATCHER *Muscicapa striata* (B)
First spring record: 1 singing Darn Walk, Kippenross 6 May (MVB). [21 year range: 1 to 25 May]. Last: 1 noc-mig Dunblane 9 Sep (FM). Found in ever decreasing numbers – mostly to the N & W of Stirling.
*F Three Skinflats Pools 30 Aug (AB, DOE) & 1 Powfoulis TB 22 Aug (MVB).
*C Four Dollar Glen & 2 Sheardale Braes 12 Jun (JRC) & 1 Menstrie Glen 30 May (GG).
S Breeding: nest in dead Alder (*Alnus glutinosa*) stump G. Ample (NN 5918) 29 Jun (DRC) & family parties head of L. Tay 25 Jul & Auchlyne, G. Dochart 30 Aug (JPH). Max: 8 The Bows 25 May; 8 Killin Marshes 3 Aug & 5 G. Lochay 7 Jun. Recorded via noc-mig over Stirling on 27 May (GC). Recorded via noc-mig over Dunblane on 13 Aug, 22 Aug, 9 Sep, 24 Oct & 2 Nov (FM).

PIED FLYCATCHER *Ficedula hypoleuca* (b)
S One E L. Katrine 15 Jun (JF).

BEARDED TIT (Bearded Reedling) *Panurus biarmicus* (b)
F Breeding along the estuary: ♀ + FY 21 & 27 Jun (SWo) & 3 juv 3 Aug (DT). 9 Grangeburn (NS 9583) 20 Sep (JRC).
C Tullibody Inch: breeding: 2 juvs 6 Aug: Monthly max: 1 in Mar, 2 in Apr, 4 in May, 4 in Jun, 6 in Jul, 3 in Aug, 6 in Sep, 3 in Oct, 2 in Nov & 3 in Dec.

LONG-TAILED TIT *Aegithalos caudatus* (B, W)
Widespread.
F Max: 15 S. Alloa 12 Oct & 15 Skinflats Pools 9 Nov.
C Max: c.20 Tullibody gdn 16 Nov & c.20 Gartmorn Dam 6 Oct.

S Max: c.30 CVR 18 Oct; 16 Blairdrummond 2 Jan & 16 R. Teith, Lecropt 12 Dec.

BLUE TIT (Eurasian) *Cyanistes caeruleus* (B, W)
Widespread.
F Max: 11 Larbert Loch 4 Jan.
C Max: 25 R. Devon, Tillicoultry 9 Apr & 16 Longcarse 7 Apr.
S Breeding: min 8 aot Whitestone Wood (NN 8002) 13 May (MVB). Max: 24 R. Teith, Lecropt 8 Feb & 18 R. Forth (Poldar Br – Br of Frew) 8 Feb.

GREAT TIT *Parus* major (B, W)
Widespread.
F No notable records.
C Max: c.20 R. Devon, Tillicoultry 9 Apr; 10 Cambus Pools 10 Apr & 10 Gartenkeir, Coalsnaughton 9 Dec.
S Breeding: min 5 aot Whitestone Wood (NN 8002) 13 May (MVB). Max: 20+ R. Forth, Drip Moss 15 Nov; 11 R. Forth, Lecropt 15 May; c.10 Hill of Row 29 Dec; c.10 R. Teith, Lanrick 14 Mar & c.10 Blairdrummond 4 Apr.

COAL TIT Periparus *ater* (B, W)
F Max: 8 Falkirk Tunnel area, Union Canal 27 Nov.
S Max: 14 Tyndrum 17 Apr; 12 Sheriffmuir Woods 28 Feb; 11 Argaty 12 Oct & 11 Glassingall, Dunblane 13 Apr.

NUTHATCH (Eurasian) *Sitta europaea* (B)
After the first record in 1999 breeding was first recorded in 2009. Now widespread in steadily increasing numbers, especially to the N & W of Stirling. Becoming a regular visitor to garden bird feeders.
S Breeding: 63 aot's Upper BoA to Abbey Craig 23 Mar – 22 Apr (DMB). Max: 14 Blairdrummond 4 Apr; 8 W Flanders Moss path 6 Aug; 6 BoA 6 Apr & 6 head of L. Tay 13 Apr.

TREECREEPER (Eurasian) *Certhia familiaris* (B, W)
Widespread in small numbers. Occasionally recorded using bird feeders.
F Max: 7 Skinflats Pools 27 Jun & 5 Camelon Cemy 22 Mar.
S Max: 8 R. Teith, Lanrick 4 Oct; 7 Gatehouse, Kippen 1 Apr & 6 Blairdrummond 4 Apr.

*GREAT GREY SHRIKE Lanius excubitor (Irr)
S One Lix Toll, Killin 24 Apr (JPH).

JAY (Eurasian) *Garrulus glandarius* (B, W) Widespread in small numbers. Secretive in the breeding season.
F Max: 6 Bantaskine 17 Jul.
C No notable records.
S Max: 10 R. Teith, Lanrick 6 Nov; 8 Balquhidder Glen 17 Dec & 6 Strathyre gdn 14 Jul.

MAGPIE (Eurasian) *Pica pica* (B, W)
Widespread in Falkirk and Clackmannan districts plus the Stirling area. Unusual N of the Highland Line.
F Max: c.20 Kinneil 25 Feb & 20+ Falkirk Tunnel area, Union Canal 27 Dec.
C Max: 12 Cambus 13 Jan.
S Max: c.25 BoA 10 Apr; 22 Newton Cres. (Dunblane) 2 Jan (at first light, MVB); 21 Greenyards, Dunblane 14 Oct & a 'gang' of 17 Broomridge, Stirling 26 Feb (DT). Highlands: 1 Strathyre 22 Oct was first record in 20 years of the observer living there (DJC) & 1 Balquhidder Glen 30 Oct (DA).

JACKDAW (Western) *Corvus monedula* (B, W)
F Max: c.120 Carron, Falkirk 12 Jan & 10 Nov.
C Max: c.150 R. Devon, Glenochil 25 Jun.
S Site max: c.400 Doune 8 Apr; c.200 Killin Marshes 3 Aug; c.190 Lennieston Muir 22 Nov; c.170 Dunblane centre 14 Feb & c.150 Hill of Row 29 Dec.

ROOK *Corvus frugilegus* (B, W)
F Breeding: 25 aon Larbert Loch 7 Mar; 12 aon Kinc. Rd & 4 aon Carronshore Rd (both Carron) 11 Mar (AB). Max: c.150 Kingseat Pl., Falkirk 29 Feb & 15 Dec; 100+ Larbert Loch 21 Aug & 100 Skinflats Pools 9 Nov.
C Max: c.230 R. Devon, Glenochil 25 Jun; c.110 Gartmorn Dam CP 5 Jan & c.100 Longcarse 6 Nov.
S Breeding: 347 ON Dunblane in Apr - a new high (MVB). Max: c.150 Lennieston Muir 22 Nov & 102 Kippen Carse 12 Jan.

CARRION CROW *Corvus corone* (B, W) (Plate 17)
F Max: 55 Greenbank, Falkirk 3 May.

S Three birds predated a juv Starling Kippen Kerse 12 Jul (RJS). Max 100+ R. Forth, Drip Moss 15 Nov; 48 Kippen Carse 13 Dec & 45 Longleys, BoA 27 Feb.

HOODED CROW *Corvus cornix* (b, w)

Most pure birds are found in far north-western part of the area. Hybrids with Carrion Crow are common in a transition band running E-W across the area to the N of Callander.

S Breeding: Carrion & Hooded Crow pr building nest Crianlarich 29 Mar (IMcP). Max: 10 Strath Fillan 24 Dec & 4 Tyndrum 17 Apr. Also: 1 Dunblane gdn 25 Apr; 1 Carse of Lecropt 5 May; 1 Bracklinn, Callander 6 Jun; 1 Gartartan, Aberfoyle 10 Dec & 50/50 hybrid R. Forth, Lecropt 5 May.

RAVEN (Northern) *Corvus corax* (B, W)

Now quite widespread but mostly in small numbers apart from non-breeding 'gangs'.

F Recorded in small numbers (max 2) from several locations.

C Max: 4 Craighorn (NN 8800) 3 Aug. Recorded in small numbers (max 2) from several other locations.

S Site max: 48 pre-roost gathering W Ben Our (NN62A) 4 Nov; 14 L. Mahaick 27 Dec; 12 Kirkton Annet (Braes of Doune) 1 May; 12 Gleann a' Chlachain, Tyndrum 30 Dec; 11 Strath Fillan 3 Aug; 11 Stuc a' Chroin 2 Oct; 10 Buchany 15 Apr & 10 R. Teith, Lanrick 6 Dec.

STARLING (Common) *Sturnus vulgaris* (B, W)

In mid-December several power outages in Airth, eventually attributed to Starlings gathering on the lines prior to roosting on Kinc. Br., was reported on various national news mediums incl. TV.

F Site max: c.500 Powfoulis saltmarsh 23 Aug; c.300 Skinflats fields 6 Mar & 300+ Skinflats Pools 13 Sep & 6 Dec.

C Breeding: 2 juv being fed in a Tullibody gdn 15 May (AIB). Site max: c.400 Kennetpans 5 Dec.

S Breeding: 1 ON in old Great Spotted Woodpecker nest in an electricity pole Woodend Cott, Dunblane 14 May (MVB). Site max: c.250 Drip Moss 5 Jan & 29 Nov & c.220 Ashfield 6 Dec.

HOUSE SPARROW *Passer domesticus* (B, W)

F A leucistic House Sparrow was by the R. Carron in Denny 29 May (RD). Max: c.60 Skinflats fields 15 Aug; c.50 Wallacestone 29 Jul & c.30 Powfoulis TB 26 Sep.

C Max: c.30 Longcarse 8 Aug.

S Breeding: Dunblane sparrow survey found 292 – 338 aot (MVB, CMK). Ad's feeding 2 newly fledged Y Dunblane gdn 16 May (NB) & 5 fledged from nest box on house Strathyre 21 May (DJC). Max: 25 Blairdrummond 28 Dec.

TREE SPARROW (Eurasian) *Passer montanus* (B, W)

F Max: c.30 Airth 26 Oct & 24 Skinflats saltmarsh 7 Feb.

C Max: 15 Longcarse 18 Sep.

S Breeding: Dunblane sparrow survey: 35 – 44 aot (MVB, CMcK). 1 ON in old Great Spotted Woodpecker nest in an electricity pole which had a nesting Starling in a hole below it, Woodend Cott, Dunblane 14 May (MVB). Max: 80+ Carse of Lecropt 20 Sep; 65 Craigarnhall (NS 7598) 28 Dec; c.40 Keirarnhall 21 Dec & 33 Greenyards (Dunblane) 25 Nov.

CHAFFINCH (Common) *Fringilla coelebs* (B, W)

F Max: c.40 Powfoulis TB 14 Nov.

C Max: 31 Tullygarth 17 Dec.

S Site max: c.500 R. Teith, Lanrick Est. 31 Dec; c.410 Greenyards (Dunblane) 1 Dec & c.150 Ashfield 26 Nov.

BRAMBLING *Fringilla montifringilla* (w)

Last spring record: 4 Blairdrummond 23 May (DOE). First autumn record: 1 Dunblane 13 Oct (FM).

F No records.

C One >NW West End Park, Alloa 24 Sep (CAM).

S Site max: 10 Lake of Menteith (19 Jan) & 8 R. Teith, Lanrick 31 Dec.

GREENFINCH (European) *Carduelis chloris* (B, W)

Still widely, but now thinly, spread.

F Breeding: ad + 3juv Carron 18 Aug (AB). Max: 20 F & C Canal (L.16 – R. Carron) 14 Dec.

C Max: 10 Tullibody Inch 16 Oct.

S Site max: c.280 Dykedale Woods, Dunblane 21 Jan; 56

Gibson Grove, Dunblane 8 Dec; c.30 Lecropt 8 Nov & 16 Newton Cres, Dunblane 14 Nov.

GOLDFINCH *Carduelis carduelis* (B, W)

F Site max: c.150 Powfoulis TB 23 Aug; c.80 Skinflats Pools 31 Aug; 35 Kincardine Br 18 Oct & 35 Kinneil Ho 4 Dec.

C Max: 65 Cambus 22 Sep & 35 Alloa Park Woods 1 Apr.

S Site max: c.110 Lade Trail, Sheriff Muir 19 Jul; 55 Howietoun Ponds 8 Sep; c.50 Scouring Burn, Dunblane 16 Jan; c.50 (feeding in birch) centre of Dunblane 24 Jan (CMcK) & 45 Newton Cres., Dunblane 10 Oct.

SISKIN (Eurasian) *Spinus spinus* (B, W)

F Max: c.50 Dunmore 15 Jan & c.30 Bantaskine 9 Mar.

C. Max: 63 Gartmorn Dam 8 Jan & c.30 Blackdevon Wetlands 3 Jan.

S Site max: 2,553 Dunblane gdn scan 13 Sep (CMcK); c.110 Dykedale South Wood, Dunblane 16 Aug; 95 Newton Cres, Dunblane 1 Feb; c.90 Dunblane gdn 27 Feb; c.70 Stockbridge, Dunblane 25 Nov; c.60 BoA 11 Sep; c.50 Invertrossachs 25 Jan; 36 Strathyre gdn 8 Mar & 30 Kirkton, Tyndrum 29 Feb.

LINNET (Common) *Linaria cannabina* (B, W)

F Breeding: pr + 3 juv Skinflats Pools area 27 Jun (SWo). Site max: c.160 Orchardhead (NS 9184) 15 Nov; c.50 Skinflats saltmarsh 24 Oct & c.50 S. Alloa shore 14 Nov.

C Breeding: ad's carrying insects Cambus 28 May (DH). Max: c.40 Longcarse 2 Oct.

S Breeding: 5 prs Sheriff Muir E 21 Apr (DMB). Site max: c.120 Hill of Row 29 Dec; 105 Greenyards, Dunblane 26 Feb; c.80 Carse of Lecropt 23 Oct; c.70 Stonehill, Dunblane 27 Nov; c.60 Kippenross Cotts, Dunblane 12 Oct & 10 Dec & c.50 Doune 30 Dec.

TWITE *Linaria flavirostris* (b, W)

F Site max: 164 Higgin's Neuk area 22 Dec; 92 Skinflats Pools 7 Feb; 20 Powfoulis TB 7 Nov & 8 Kinneil 25 Feb.

*C 11 Longcarse 15 Feb & 2 Longcarse 21 Oct.

*S 62 Kippen carse 18 Oct; c.50 Flanders Moss NNR 12 Feb; 3 Doune 30 Dec; 1 Menstrie Glen 13 Mar & 1 Drip Moss 15 Nov.

LESSER REDPOLL (Common) *Acanthis cabaret* (b, W)
F Max: 17 Powfoulis TB 6 Nov; 12 Bryce Av, Carronshore 15 Oct & 11 Skinflats Pools 23 Sep.
C Max: 8 Gartmorn Dam 6 Oct.
S Site max: 75 Auchtertyre 28 Jul; 35 Hill of Row 21 Sep; 33 Strathyre 30 Aug; 20 Doune 18 Sep; 17 Dykedale Woods, Dunblane 21 Jan; 15 Blairdrummond 29 Nov; 14 Sheriff Muir 28 Mar & 10 L. Mahaick 1 May.

COMMON CROSSBILL (Red) *Loxia curvirostra* (b, W)
F No records.
*C 12 Menstrie Glen 7 Jun (JRC, CVW).
S Max: c.40 N. Third Resr 18 Jan incl 5 singing ♂♂; 31 Sheriffmuir Woods 17 Jun; c.20 Strathyre Forest 3 Jan & 15 Acharn Woods, Killin 5 Aug. Recorded in smaller numbers at several other sites.

BULLFINCH (Eurasian) *Pyrrhula pyrrhula* (B, W)
F Max: 8 R. Carron, S. Broomage 13 Dec.
C Max: 8 Gartmorn Dam CP 6 Oct.
S Breeding: pr feeding a juv Ochiltree gdn, Dunblane 9 Jun (NB) & pr + 3 juv Kinbuck 28 Sep was a late brood (MVB). Site max: 17 Dykedale Woods, Dunblane 21 Jan; 14 Blairdrummond 28 Nov; 13 Hill of Row 29 Nov; 12 L. Mahaick 27 Dec & 11 Doune 17 Nov.

*HAWFINCH *Coccothraustes coccothraustes* (V)
S Two Glen Rd, Dunblane 19 Jan (CS). One W side of Callander 13 Mar (KR).

*LAPLAND BUNTING *Calcarius lapponicus* (V)
S One recorded via noc-mig over Stirling on 18 Sep is the 7th record for the area (GC).

*SNOW BUNTING *Plectrophenax nivalis* (w)
F One Skinflats Pools > E calling 7 Feb (MVB).
C Six King's Seat Hill 30 Dec (KB).
S Flock of 22 Gleann a' Chlachain (NN 3529) 30 Dec (JPH); 3 Ben Lomond (NN 3702) 8 Jan (ES) & 1 Stuc a' Chroin 21 Nov (CG).

YELLOWHAMMER *Emberiza citrinella* (B, W)
F Max: c.20 Skinflats Pools 25 Sep.
C Site max: 45 Longcarse 4 Jan & 22 Park Fm 20 Dec.
S Site max: 51 Greenyards, Dunblane 25 Nov; c.50 Carse of Lecropt 30 Dec; c.40 R. Teith, Lanrick Est. 31 Dec; c.40 Hill of Row 29 Dec; 30+ R. Forth, Drip Moss 15 Nov & 25 Blairdrummond 16 Feb.

REED BUNTING (Common) *Emberiza schoeniclus* (B, W)
F Site max: 14 Skinflats Pools 21 Jun & 12 Powfoulis TB 6 Nov.
C Site max: c.100 Tullibody Inch (feeding on oats in adjacent field) 19 Sep (DH).
S Breeding: 4 pr bred on Strathyre smallholding 20 May (DJC) & 4 singing ♂♂ Ashfield Pools 26 May. Site max: 45 Lecropt 30 Dec; 23 Greenyards, Dunblane 9 Dec & 15 R. Teith, Lanrick Est 31 Dec.

HYBRIDS

CANADA GOOSE x GREYLAG GOOSE
C Gartmorn Dam: 1 in Jan, Feb, Mar & Dec. 3 Tullibody Inch 14 Sep.
S Balquhidder: 1 on 27 Jan, 2 on 26 Feb & 1 on 23 Mar. Cambusmore / Gart GP: 1 on 30 May & 2 on 6 Sep. 4 Blackdub Floods 28 Oct.

SCAUP x TUFTED DUCK
F Male Kinneil 27 Jan – 16 Mar (CAM).

ESCAPED AND INTRODUCED SPECIES

WHITE STORK *Ciconia ciconia*
F One at Slamannan 28 May had fishing line attached to it and was taken in by the SSPCA (AD).

*RUDDY SHELDUCK *Tadorna ferruginea* (Irr)
This sp's is listed as Cat B on the Scottish List & is therefore not known to have bred in the wild in Scotland since at least 1949.
F One Skinflats Pools 30 Jun (VH, DLT).
C Ad ♀ Tullibody Inch 2 - 24 Aug (DT, DOE et al.).

BUDGERIGAR *Melopsittacus undulatus*
C One Longcarse 18 Sep (JRC).

ERRATA

BAIKAL TEAL *Anas Formosa* (V)
F Male N. Pool, Skinflats 2 Jun 2019 (AD et al.). (Ed. This bird was not considered to be of wild origin by the BBRC and thus is not a first record for the UF).

BLACK REDSTART Phoenicurus ochruros (Irr)
S One Springkerse (Stirling) 13/14 Oct (LMP, CJP) was the 7th, not 6th, record for the UF.

DUNBLANE and KIRKTON WEATHER REPORTS 2020

Neil Bielby and Dr. John P. Holland

The weather station is my suburban back garden in Ochiltree, Dunblane. This is situated 50 m to the East of the Dunblane Hydro ridge, 100 m a.s.l., in a shallow, sheltered valley. (G.R. NN 78990143).

I have been recording the weather since 1995 and all averages etc. refer to the last 26 years. (Note: because there is much variation from year to year in Britain in the parameters used to define climate, climatological averages are usually taken over periods of 30 years for temperature and 35 years for rainfall. Therefore, all averages in this report should be interpreted with that caveat). I am indebted to Dr. John P. Holland for providing Met Office and additional weather records from Kirkton Farm, Strathfillan (NN 359283; 170 m a.s.l.) and Killin. Weather recording began in 1991 at Kirkton Farm and means etc. for this site date from that year. Killin means date from 2000. The data from Kirkton allows for some interesting meteorological comparisons between the far north-west and central areas of our region.

Daily rainfall (0.2 mm), maximum and minimum temperatures, barometric pressure, cloud cover, wind direction and speed (Beaufort scale) are recorded. All except the maximum daily temperature are recorded at 09.00 hours. A brief description of the day's weather is also noted along with exceptional and unusual weather phenomena across the UK. Unless indicated otherwise, daily (24 hour) rainfall amounts are measured from 09.00 hours on the date mentioned until 09.00 hours the following morning. The long -term average (LTA) is calculated from the years 1981 – 2010.

Summary

The mean temperature for 2020 of 8.75°C was 0.24°C above the 1995 – 2020 average while precipitation of 1339.6 mm (52.74 inches) was 227.1 mm (20%) above the average making it the 2nd wettest year at this station after 1423.5 mm in 2002. The month with the most precipitation was February (257.6 mm) which made it the wettest month ever here using a daily rate measure. In complete contrast April, with only 13.8 mm, was the driest ever month (see Plates 18 & 19). The warmest month was August (mean temp. 14.93°C) and the coldest December (mean temp. 2.70°C). The highest recorded temperature was 27.9°C (29th May) and the lowest -5.5°C (30th December). There were 58 air-frosts (average 70) and six ground frosts (average four) while snow lay on the ground at 09.00 hours on nine occasions (average 20). Temperatures of over 25.0°C were recorded on four days (one each in May, June, July and August). There were 219 (60%) 'rain days' (average 209) with the highest 24 hour total being 59.7 mm (measured at 09.00 hours on the 5th of August), yet another record. The mean barometric pressure was 1010.3 mb (average 1011.4 mb) with a high of 1049.1 mb (29th March) and a low of 964 mb (27th December). It was calm at 09.00 hours on 148 (40%) of mornings although only on 55 occasions (15%) did it remain calm throughout daylight hours. Turning to the seasons: Winter (Dec. 2019 – Feb. 2020) was milder (+1.2°C) but much wetter (+97%) than average with the 526.8 mm of precipitation recorded being the 2nd highest for this season after 553.8 (2013/14). It was also the 5th wettest winter in the UK in a series dating back to 1842. Spring (Mar. – May) was a little warmer (+0.38°C) and drier than the norm (-23%). It was also the sunniest spring in Scotland since records began in 1929 (as was the case for the rest of the UK). The total of 504.2 hours (up to 30/5) surpassed the previous high of 484.6 in 1955. (Plate 20). Summer (June – August) was slightly cooler (-0.29°C) and markedly wetter (+46%) while the mean temperature in

Autumn was also a little warmer than the average at 8.65°C but notably wetter with the rainfall total of 338.4 mm being 39% above the average.

The Weather through the Year

January 2020 was the mildest yet at this station with the mean temperature of 4.49°C being 0.37°C above the previous high of 4.12°C in January 1996. The highest daytime temperature was 12.3°C (7th) and the lowest night temperature -3.9°C (10th). There were seven air-frosts (average 14). Rainfall of 124.5 mm was only 1.0 mm above the average with measurable amounts on 21 days (average 20). The highest 24 hour total was 26.6 mm (29th). Snow lay on the ground on only one occasion (average six). The mean barometric pressure was 1010 mb (average 1009 mb) with a high of 1042 mb (19th) and a low of 974 mb (13th). Scotlandwide, the mean temperature was 2.1°C above the LTA making it the fifth warmest January in a series dating from 1884. Rainfall was 19% above average while sunshine was only 72% of average. The following were both Scottish and UK extremes: a maximum temperature of 15.5°C Achfary, Sutherland (7th); a low of -7.9°C at Braemar (10th); 138.0 mm of rain Alltdearg House, Skye (11th) and a wind gust of 87 mph South Uist (13th).

After a frosty start (-2.3°C, -4.9°C Kirkton, 1st) the weather was wet and windy until high pressure started to build on the 18th. 21.7 mm of rain fell during the 6th / 7th with the virtually continuous south-westerly winds gusting up to 55 mph. The 8th to the 10th saw a short spell of calmer weather before the next Atlantic depression deposited 29.1 mm on SW 6 winds, gusting SW 8, during the 11th. There was only a day's respite before the second named storm of the winter 'Brandan' saw the barometric pressure fall to 974 mb (13th) as south-westerly gales produced maximum gusts of 52 mph at this station, 79 mph in Glen Ogle and 87 mph on South Uist. These winds slowly moderated over the following three

days. A high pressure system then developed from the 18th (1041 mb, 19th). This initially gave two sunny days but then a blanket of cloud covered the UK although the Forth Valley saw some brightness on the 21st to the 23rd which, along with the mild conditions (10.2°C, 21st), made these days quite pleasant. There was no measurable rain for eight days and, being towards the northern end of the high pressure system, this area had a mostly light south-westerly airflow although gusts of 33 mph and 32 mph were recorded during the early hours of the 20th and 21st respectively. Snow fell during the early hours of the 28th to give a depth of 2.5 cm at 09.00 hours – the first measurable fall of the winter. It didn't last long though as light rain during the day caused it to melt. Persistent heavy rain from 13.00 hours on the 29th until noon the following day produced 31.4 mm. Inevitably this rainfall was heavier in the West and almost equally inevitably, the A83 at the 'Rest and be Thankful' was blocked by yet another landslide. It took 3 days to clear the c.1,300 tonnes of mud and stones before the road could be reopened. The final two days of the month were windy with south-westerly gusts of up to 55 mph.

February. The 261.6 mm of precipitation not only made this the wettest February yet at this station but also the second wettest month ever here after 265.4 mm in January 2008 (the daily mean precipitation of 9.02 mm actually makes it the wettest ever month using this criteria – the daily average for Jan 2008 being 8.56 mm). There were measurable amounts on 25 days (average 17) with the highest daily total being 31.0 mm on the 8th. As well as the rain, the three named storms during the month also brought almost continuous south-westerly winds which gusted over 40 mph on several occasions, the strongest being 56 mph during the evening of the 16th. The mean temperature of 2.89°C was just 0.17°C below the average with a daily high of 9.0°C (4th) and a night low of -2.6°C (7th). There were 13 air-frosts (average 13) while snow lay on the ground at 09.00 hours on only one occasion

(average four). The mean barometric pressure was 998 mb (average 1009 mb) with a high of 1033 mb (5th) and a low of 959 mb (9th). Scotlandwide, the mean temperature of 3.1°C was 0.4°C above the LTA while it was the second wettest February in a series dating from 1862 being 113% above the average. The UK average precipitation of 202.1 mm makes this the wettest February since records began in 1862 beating the 193.4 mm in 1990. Overall rainfall was 137% of the LTA but some places had over 300%. Many places in England suffered extreme flooding with communities along the Rivers Severn and Wye in the south-west badly affected. Other UK monthly extremes were: a minimum temperature of -10.2°C (Braemar, 13th); a maximum temperature of 16.0°C (E. Malling, Kent. 16th); 180.4 mm of rain (Honister Pass, Cumbria. 20th); a gust of 96 mph (The Needles, Isle of Wight. 9th) and a snow depth of 23 cm (Copley, Durham. 24th).

The first 3 days of the month were wet and breezy with 20.8 mm of rain and south-westerly winds gusting up to 40 mph. High pressure then built (1033 mb, 5th) but only the 4th was a sunny day although early fog on the 7th slowly cleared to give some sunshine. The much heralded named storm 'Ciara' duly arrived the following day depositing 32.6 mm of rain in the 17 hours from 15.30 on the 8th to 08.30 hours the next day. A further 26.9 mm of precipitation fell during the 9th / 10th with the barometric pressure falling to low of 959 mb on the 9th which is the third lowest reading at this station after 952 mb (Dec. 2013) and 958 mb (Jan. 2012). It was also very windy with several bridges closed to high-sided vehicles while a lorry was blown over on the A96 close to Inverness Airport. Ferries were cancelled and some schools closed. There was a thin covering of snow at 09.00 hours on the 13th but this soon melted as the falling snow turned to light rain during the morning. 'Dennis', the fourth named storm of the winter, hit Scotland on the 15th with 25.5 mm of rain falling between 10.00 and 18.00 hours. On this occasion the Scottish Borders fared the worst with the Liddel Water

overtopping its banks and flowing down the main street in Newcastleton. This was followed by 55.9 mm of rain falling onto heavily saturated ground from the 16th – 20th. Then, during yet another day of heavy rain the following day, travel in the Stirling and Falkirk areas was disrupted by flooded roads and rail lines with the Dunblane to Stirling section of the latter not opening again until the morning of the 26th. There was relatively little rain between the 23rd and 27th with some sunny days and night frosts. Although hardly any snow fell at lower levels, during the second half of the month it did so above c.300 m, plastering the hills in the north-west of the region which looked splendid in the sun during this period. However, the month ended with yet another named storm, 'Jorge' which produced 34.3 mm of precipitation during the 28th / 29th bringing the monthly total to 261.6 mm.

March was slightly cooler than average with the mean temperature of 4.81°C being 0.1°C below the average. The maximum daytime temperature was 12.2°C (31st) while the minimum night temperature was -4.0°C (20th). There were 13 air-frosts (average 11). Precipitation of 76.5 mm was only 1.3 mm below the average with 19 days of measurable precipitation – the same as the average with the highest daily total being 11.0 mm on the 14th. Snow lay on the ground at 09.00 hours on only one occasion (average four). The mean barometric pressure was 1012 mb (average 1012 mb) with a high of 1049.1 mb – the highest ever at this station (29th) and a low of 967 mb (1st). For Scotland as a whole, the mean temperature was equal to the LTA while rainfall was 88% of the average being just above normal in the West and below average in the East. Some UK extremes were: a maximum temperature of 19.4°C Rhyl, Clwyd (24th); a low of -7.6°C at Aboyne (6th); 107.2 mm of rain Alltdearg House, Skye (8th) and a wind gust of 78 mph at Aberdaron, Gwynedd (11th).

Although the wet and windy weather of February

continued on the 1st, the following five days were relatively calm and dry with night frosts from the 4th – 6th. Unsettled weather then returned with mostly south-westerly winds and spells of rain from the 7th until the 17th. There was a light covering of wet snow at 09.00 hours on the 12th (13 cm Tulloch Bridge, Inverness-shire) when a maximum south-westerly gust of 38 mph was recorded. A brief ridge of high pressure on the 13th brought a frost (-0.4°C, -3.6°C Kirkton, -7.6°C Aboyne), a drying northeast breeze and a sunny morning before Atlantic weather systems resumed the following day with a strengthening south-westerly wind and 11.0 mm of rain. A high pressure system, centred over Scandinavia, started to build from the 18th reaching 1035 mb (20th). This brought very welcome dry, calm and sometimes sunny days until the 24th when, although the high pressure system still pertained, the central third of Scotland was the only part of the UK covered in a blanket of damp murk with almost everywhere else enjoying cloudless skies. The murk finally cleared on the 28th as another high pressure system (1049.1 mb, 29th – the highest ever in 25 years of records at this station - after 1046 mb in January 2019) built to the north-West of Scotland. Unfortunately, the welcome sunshine was accompanied by a cold, Arctic airstream. The final three days of the month were sunny and dry.

April was a little warmer but much drier than average. The mean temperature of 8.42°C was 0.58°C above the average with a daytime high of 20.7°C (24th and 25th) and a night low of -1.6°C (3rd). There were four air-frosts (average 5). Rainfall of 14.9 mm (23% of the average) made this not only the driest April in 25 years of recording at this station, but also the driest ever month during this period after 18.4 mm in August 1995 and 18.7 mm in May 2008. This of course follows on from the second wettest month ever just 2 months previously! The average barometric pressure of 1018 mb was 6 mb above the average. The mean temperature Scotland-wide was 0.9°C above the LTA while it was the third driest in

a series dating back to 1862 and the sunniest April since 1929 with only 31% of average rainfall and 151% of average sunshine. The highest daytime temperature was 22.0°C at Achnagart, Ross & Cromarty (22nd) with the lowest -6.9°C at Aboyne (19th). Fair Isle recorded 14.3 hours of sunshine (20th). Some UK extremes were: a maximum temperature of 26.0°C Treknow, Cornwall (10th); a low of -6.9°C at Aboyne (19th); 38.4 mm of rain Portsea, Hampshire (18th) and a wind gust of 74 mph on South Uist (5th).

With high pressure systems dominating (1033 mb, 13th) the settled, mostly dry weather continued until the 27th with a year high temperature of 20.7°C (24th and 25th). At times, a cool north-easterly airflow subdued the temperatures, especially between the 20th – 22nd when gusts of up to 29 mph were recorded. There was no rain from the 11th – 26th, a run of 16 consecutive dry days (the 5th longest dry spell at this station), while only 8.2 mm of rain was recorded during the 40 days from the 18th March to the 27th April. This mini drought ended at 15.00 hours on the 27th as meandering low pressure systems moving up from England provided some much needed rain for both gardeners and farmers alike.

May was warmer and drier than usual. The mean temperature of 11.74°C was 0.66°C above the average with a high of 27.9°C (29th) and a low of -1.8°C (13th). There were three air-frosts (average two). Rainfall of 37.0 mm was only 56% of the average with measurable amounts on 10 days (average 16). The mean barometric pressure of 1020 mb was 6 mb above the average. The mean temperature Scotlandwide of 9.6°C was 0.8°C above the LTA while rainfall was 90% of the average. The maximum temperature was 29.3°C Cromdale, Morayshire (29th) and the lowest -6.6°C Kinbrace, Sutherland (3rd). 97.2 mm of rain fell at Achnagart, Sutherland when gusts of up to 71 mph were recorded at L. Glascarnoch, Ross & Cromarty (22nd). (These were also the UK monthly extremes). Kirkwall, Orkney enjoyed 16.5 hours of bright sunshine (31st).

As another high pressure system built (1027 mb, 6th) the daytime temperatures climbed with the 6th – 9th being mostly sunny and pleasantly warm. The 6th, which was cloudless and calm all day, saw the temperatures peak at 21.2°C – perfect weather. A cool airstream from the northerly quarter from the 10th to the 16th depressed temperatures with night frosts on the 11th, 13th and 14th 'nipping' the growth on unprotected tender garden plants. The continuing dry spring had produced only 6.2 mm of rain during the first 17 days of the month so heavy rain (9.5 mm) during the night of the 17th / 18th was welcomed by gardeners and their plants alike. Normal service quickly resumed as a plume of warm southerly air provided a taste of summer from the 19th to the 21st with temperatures reaching a year high of 23.5°C (24.2°C Aviemore, 20th). However, an Atlantic low (998 mb), passing north-eastwards above Scotland during the weekend of the 22nd / 23rd, brought some, by now, unaccustomed stormy weather with the south-westerly gales producing gusts of up to 53 mph which were strong enough to break off small branches while 20.8 mm of rain fell in 24 hours. This reminder of more typical Scottish weather soon faded as the barometer, rising once more (1038 mb, 27th), brought another spell of settled, sunny weather. As the high built over Scandinavia it introduced a stream of southerly warm air which saw the temperature reach a year high of 27.9°C (29th). Although daytime peak temperatures remained in the 20's until the month end, fresh easterly breezes took the edge off them.

June was a little warmer but wetter than average with the mean temperature of 14.92°C being 0.83°C above the average with a daytime high of 25.9°C (1st) and a night low of 4.4°C (5th). Rainfall of 97.6 mm was 27 % above the average although the 16 days with measurable rain was equal to the norm. The highest 24 hour total was 26.8 mm recorded at 09.00 hours on the 27th. The mean barometric pressure of 1011 mb was 3 mb below the average with a high of 1027 mb (1st)

and a low of 990 mb (28th). For Scotland as a whole, June was warmer and wetter than usual with the mean temperature of 12.6°C being 1.5°C above the average and rainfall 42 % above the average but with 13% less sunshine. Some UK monthly extremes were: a maximum temperature of 33.4°C at Heathrow (25th); a minimum temperature of -1.9°C at Tulloch Br., Inverness-shire (8th) and 212.8 mm of rain at Honister Pass, Cumbria (29th).

The warm conditions continued for the first 1½ days of the month (25.6°C, 1st) before a front, passing across Scotland during the night of the 2nd / 3rd deposited 8.4 mm of rain. As it drifted eastwards into the North Sea a northerly airstream set in which depressed temperatures (daytime max. 14.1°C, 5th). These northerly winds became quite blustery during the 5th – 7th gusting up to 32 mph (5th). The Central Belt was relatively sheltered though with the daytime temperature reaching a surprising 20.4°C (6th). The north and coastal areas of Scotland were much windier, wetter and colder during this period. A north-easterly airflow dominated from the 7th to the 19th with the maximum daytime temperatures ranging from 12.2°C (10th) to 23.4°C (17th). It was mostly dry however with the only notable rain being 9.4 mm on the 10th. There was a pattern of overcast mornings developing into warm, and sometimes humid, afternoons between the 14th and 19th as the haar, which had encroached from the East coast during the night, burnt back. During the 19th the winds turned southerly. bringing with them more unsettled conditions as 6.4 mm of rain fell during the last 4 hours followed by 8.5 mm in the early hours of the 21st. It continued unsettled until the 24th when a brief incursion of warm, humid air from the South saw temperatures peak at 26.6°C (30.8°C Prestwick, Ayrshire 25th). This inevitably resulted in electrical storms with one in the afternoon of the 27th depositing 23.0 mm of torrential rain in just 30 minutes at this station. The following two days saw a further 11.3 mm more rain fall with the accompanying south-westerlies gusting to 37 mph on the 28th.

July was much cooler and wetter than average with the mean temperature of 14.22°C being 1.59°C below the average which makes it the lowest at this station for July after 14.31 (2015) and 14.47 (2007). The daytime maximum temperature was 27.4°C (37.8°C Heathrow 31st) with a night low of 7.2°C (6th, -0.8°C Kinbrace, Sutherland (8th)). Rainfall of 132.2 mm was 44% above the average with measurable amounts on 21 days (average 16). The highest daily (24 hour) total was 27.9 mm recorded at 09.00 on the 27th. The mean barometric pressure of 1011 mb was one mb below the average with a high of 1026 mb (12th) and a low of 997 mb (5th). The mean temperature Scotlandwide of 12.2°C was 1.1°C below the LTA making it the joint coolest, alongside 2012 and 2015, since 1993. Rainfall was 37% above and sunshine 14% below their LTA averages. Some UK monthly extremes were: a maximum temperature of 37.8°C at Heathrow Airport (31st), a minimum temperature of -0.6°C Kinbrace, Sutherland (8th), 101.8 mm of rain at Aberllefenni, Gwynedd (4th) and a wind gust of 67 mph at Capel Curig, Gwynedd (5th).

A succession of Atlantic low pressure systems meant that the weather remained unsettled and unseasonably cool with 37.2 mm of rain in the first four days. This unsettled period finally came to an end when a broad ridge of high pressure (1026 mb, 12th) gave the first warm and dry weekend in the last three with temperatures reaching 21.6°C. With the barometric pressure remaining around 1016 mb, the weather stayed reasonably settled with a mixture of occasional spells of light rain, sunshine and fresh breezes. Maximum afternoon temperatures ranged from 17.9°C (18th) to 20.3°C (16th) with night lows from 8.2°C (19th) to 14.1°C (17th). Rain, heavy at times, from 03.00 to 15.00 hours deposited 18.0 mm on the 22nd (45.6 mm Dundrennan, Kirkcudbrightshire) with a further 12.8 mm falling during the night of the 24th / 25th. In-between, temperatures peaked at 21.5°C in the afternoon of the 23rd. This highly variable weather continued until the end of the month as yet another shallow Atlantic low (1000 mb)

produced 32.5 mm of rain from 06.00 hours to 17.00 hours on the 27th. Another day of mostly light rain on the 30th saw a maximum daytime temperature of only 14.4°C which was immediately followed by the hottest day of the month as a surge of hot, humid air from the South saw temperatures peak at 27.4°C (28.8°C Kinloss, Morayshire) which set off the inevitable electric storm in the evening.

August was cooler and much wetter than average. The mean temperature of 14.93°C was 0.17°C below the average with a maximum daytime high of 25.1°C (12th) and a night low of 5.2°C (29th). Rainfall of 156.3 mm was 64% above the average with measurable amounts on an average seven days. The highest daily (24 hour) total was 59.7 mm recorded at 09.00 hours on the 5th. This was the highest ever 24 hour total in 25 years of recording at this station being 46% more than the previous record of 41.9 mm on the 11th October 2005. The average barometric pressure of 1013 mb was equal to the average with a high of 1026 mb (9th) and a low of 989 mb (21st). Scotland's mean temperature of 13.5°C was 0.5°C above the LTA with rainfall and sunshine close to average. However, as usual, this hides regional variations as, while in the north-west it was a dry and sunny month, in the South and Central Belt it was cloudy and wet. Some UK monthly extremes were: a maximum temperature of 36.4°C at Heathrow Airport (7th), a minimum temperature of -0.4°C at L. Glascarnoch, Ross & Cromarty (24th), 103.8 mm of rain fell at Hollies, Staffordshire (13th) and a wind gust of 81 mph was recorded at Needles, Isle of Wight (25th).

Persistent heavy rain from 06.30 hours to 20.30 hours on the 4th resulted in a total of 61.3 mm (99.0 mm Inveruglas, Dunbartonshire). Warmer and mostly drier weather developed from the 5th with an incursion of hot air from the South. The weekend of the 8th / 9th was very pleasant with almost unbroken sunshine and temperatures peaking at 24.4° C (8th). A violent thunderstorm, the worst I can remember in

Dunblane, raged from 01.30 hours to 04.30 hours (12th). It was accompanied by spells of torrential rain which produced 19.2 mm. The East of Scotland from the borders to Aberdeen suffered most with much road flooding reported from Aberdeen, Falkirk and Perth as up to 40 mm fell in an hour with totals reaching 100 mm as the storm very slowly passed through from South to North. The M8 was closed for a time and tragically three people, including the driver, died when the early Aberdeen to Glasgow train was derailed just South of Stonehaven at 09.43 after hitting a landslide. Carriages piled up on top of each other with one going down a steep embankment. Another deluge created a 30 metre breach in the Union Canal 500 metres East of the A801 (between Polmont and Linlithgow) with the water and debris pouring down across fields and through a wood to undermine a 300 metre long stretch of embankment of the main Edinburgh to Glasgow railway line - Scotland's busiest. It was estimated that it will take 2 months before repairs are completed and the line reopened. Repairing the canal was estimated to take 4 – 5 months. A more immediate problem was resolved when c.11,000 fish, including Pike (*Esox lucius*), Perch (*Perca fluviatilis*), Roach (*Rutilus rutilus*) and Brown Trout (*Salar trutta*), were returned to another part of the canal a week later from the temporary pools they had been washed into downstream of the breach. The Met office estimated that there had been c.20,000 lighting strikes hitting the ground and a house near Falkirk was burnt out after receiving a direct hit.

The ensuing day was sunny, humid and very warm (25.1° C, 28.8°C Threave, Kirkcudbrightshire). A weak ridge of high pressure then developed just to the North of Scotland which drew in a light easterly airstream. This allowed low blanket cloud to penetrate far up the Forth Valley during the night which, from the 14th to the 19th, only occasionally retreated East during the day while areas just a little further West basked in sunshine. Storm Ellen (985 mb) brought wet and

windy weather (62 mph South Uist) on the 21st depositing a further 10.3 mm of rain. The weather remained unsettled with another named storm, 'Francis', dumping 28.4 mm of rain from 07.00 hours on the 25th to 09.00 hours the next day. This rain was accompanied by northeasterly F4 winds, gusting F6 (34 mph) which meant that the daytime maximum temperature only reached 12.8°C. A further 9.1 mm of rain fell during the 28th which, when added to the recent heavy rainfalls, caused a number of houses to be flooded in Broxburn, West Lothian. Thankfully the final 4 days of the month were dry as a ridge of high pressure developed (1021 mb, 31st). However, this was tempered by northerly winds on the 28th and 29th which depressed temperatures below the seasonal norm with a daytime maximum of 15.0°C (28th) and a night low of only 5.2°C (29th).

September was cooler and a little wetter than average. The mean temperature of 11.41°C was 0.8°C below the average with a daytime high of 20.9°C (15th) and a night low of -2.5°C (27th). There was one air and four ground frosts. Rainfall of 96.6 mm was 9.5% above the average with measurable amounts on 14 days (average 16). The highest 24 hour total was 25.2 mm in the 24 hours ending on the 1st October. The mean barometric pressure of 1015 mb was one mb above the average with a high of 1031 mb (17th) and a low of 994 mb (24th). The mean temperature for Scotland of 11.0°C was 0.1°C above the 1981 – 2010 average with rainfall being 90% of the average. Some UK monthly extremes were: a maximum temperature of 31.0°C Frittenden, Kent (15th); a minimum temperature of -5.0°C Altnaharra and Braemar (30th); 88.4 mm of rain Glen Nevis, Lochaber 12th and a wind gusts of 67 mph at Weybourne (Dorset) and Donna Nook (Lincolnshire) on the 25th.

The very unsettled, often wet weather, of the past two months continued with rain of varying intensity during the 2nd producing 20.7 mm. The persistent south-westerly airflow

strengthened during the 11th – 13th to a constant force 4-5 with gusts of up to 40 mph. The accompanying rain deposited 29.4 mm during this period (71.4 mm Kirkton, 88.4 mm Glen Nevis 12th). Much more rain fell in the West causing yet another landslip and resulting road closure on the A83 at the 'Rest and be Thankful'. Unsurprisingly, temperatures remained depressed during this period with a maximum of only 14.1°C (12th). The prolonged period of unsettled weather was finally interrupted as a high pressure system built over Scandinavia from the 14th (1032 mb 17th). The resulting run of 7 dry days was the longest since 8 days at the end of May. It was also cloudless and warm from the 17th – 19th with daytime temperatures peaking at 20.2°C (17th); 24.4°C Kinlochewe, Ross & Cromarty (19th). An all too brief 'Indian Summer'. It continued virtually rain free until the 28th with, at times, a breezy, northerly airstream bringing clear skies, sunny days and cold nights from the 23rd. The car windscreen was iced at dawn on the 24th, 25th and 26th with the first frost of the autumn (-2.4°C) on the morning of the 27th (-4.3°C Kirkton, -5.0°C Altnaharra and Braemar). The month closed with 25.2 mm of rain falling between 09.00 hours on the 30th and 09.00 hours on the 1st of October which caused flooding on the railway at Barrhill on the Girvan to Stranraer line.

October was cooler and wetter than average. The mean temperature of 8.3°C was 0.24°C below the average with a high of 15.1°C (2nd) and a low of 0.7°C (15th). For the first time since 2014 there were no air frosts (average 3) and only one ground frost. Total rainfall of 154.2 mm was 21% above the average with measurable amounts on 24 days (average 21). The highest 24 hour rainfall total of 40.3 mm (3rd) was the third highest at this station after 58.0 mm (04/08/20) and 41.9 mm (11/10/05). The mean barometric pressure was 1004 mb with a high of 1031 mb (15th) and a low of 984 mb (27th). The mean temperature for Scotland of 7.9°C was 0.1°C below the LTA with rainfall 36% above this average. A monthly high temperature of 18.0°C was recorded at Auchincruive,

Ayrshire (4th) while the overnight temperature at Logan Botanical Gardens, Wigtownshire (20th/21st) didn't fall below 12.3°C. It was a relatively dull month with an average of 60.2 hours which is 17% below the norm. Some UK monthly extremes were: a maximum temperature of 19.1°C at Whittle, Essex (8th), a minimum temperature of -3.3°C at Tyndrum (15th), 127.1 mm of rain fell at Fettercairn, Kincardineshire (4th) and a wind gust of 79 mph was recorded at Altnaharra, Sutherland (25th).

Early mist on the 2nd eventually cleared at 10.30 hours to give beautiful sunny and calm autumn weather. The next day was a complete contrast as a northern offshoot of storm 'Alex' deposited 40.3 mm of rain in the 24 hours ending at 09.00 hours on the 4th. A quieter and drier spell of weather ensued with a northerly airflow from the 7th – 11th depressing temperatures slightly. Light rain and drizzle predominated during the following three days before high pressure (1031 mb, 15th) brought four days of dry weather although only the 15th was sunny.

From the 18th, the rest of the month was very unsettled as a conveyor belt of Atlantic low pressure systems passed across the UK producing rain every day. Heavy rain in the NE of Scotland on the 22nd resulted in flooded roads in Ellon and Angus as well as causing the rail line between Elgin and Nairn to be closed for a while. 20.3 mm fell at this station on the 23rd / 24th with southerly gusts of up to 41 mph during the morning of the latter. A strong southerly airstream (max gust of 44 mph) during the night of the 29th / 30th produced a high temperature of 13.7°C which was above the maximum daytime value of either the 29th (8.4°C) or 30th (10.6°C). On the 31st storm 'Aiden' brought a fitting climax to a wet and windy October with heavy rain accompanied by SW 6 winds gusting up to 49 mph. The A82 was yet again closed at the 'Rest and be Thankful' due to a landslip.

November was much milder and a little drier than average. The mean temperature of 6.24°C was 1.61°C above the average with a high of 12.9°C (5th) and a low of – 2.5°C (29th). The temperature during the night of the 17th / 18th fell to a mild 11.2°C. There were only 3 air-frosts (average 8) and one ground frost. Total rainfall of 95.6 mm was 86% of the average with measurable amounts on 21 days (average 20). The highest 24 hour rainfall total was 11.0 mm (23rd) while the mean barometric pressure was 1012 mb (average 1008 mb) with a high of 1034 mb (5th) and a low of 983 mb (15th). The mean temperature for Scotland of 6.6°C was 1.6°C above the LTA making it the 5th warmest November in a series dating from 1884. A monthly high of 16.6°C was recorded at Dyce, Aberdeenshire (5th) and a low of -6.1°C at Aboyne (Aberdeenshire) and Cromdale (Morayshire) on the 29th. Rainfall of 153.8 mm was just 2% below the average while the highest 24 hour total was 129.2 mm at Alltdearg House, Skye (11th). There was just 42.1 hours of sunshine – only ⅔ rd's of that enjoyed in England! Some UK monthly extremes were: a maximum temperature of 18.4°C Hawarden, Clwyd (1st); a minimum temperature of -6.1°C at Aboyne, Aberdeenshire (29th); 129.2 mm of rain at Alltdearg, Skye (11th) and a wind gust of 92 mph at the Needles, Isle of Wight (15th).

The wind and rain of storm 'Aiden' continued into the 1st but then a band of high pressure (1034 mb, 5th) running from West to East moved slowly eastwards across Scotland during the next 6 days. This gave calm and mostly sunny weather until the 7th when thick fog, persisting all day, restricted the maximum temperature to only 4.5°C: almost the lowest in the whole of the UK. Following another two murky, damp but calm days, a succession of low pressure systems, crossing Scotland from the West, brought the usual wet and windy weather. This pattern continued until the 25th with only one very brief transient ridge of high pressure (1031 mb, 19th) providing a rare dry and mostly sunny day. The night of the 17th/18th was unusually mild with a minimum temperature of

11.2°C (13.3°C Edinburgh Botanic Gardens). The predominating south-westerly winds gusted up to 43 mph (15th). The procession of Atlantic lows finally ceased as barometric pressure built from the 25th. The resulting calmer conditions produced some weak winter sun but also, typically for November, fog, which was often slow to clear from low lying areas.

December was a little milder and wetter than usual. The mean temperature of 2.7°C was 0.42°C above the average with a high of 8.0°C (16th) and a low of -5.5°C (30th). There were 14 air frosts, the same as the average. Total precipitation of 122.1 mm was 7% above the average with measurable amounts on 22 days. There was snow cover at 09.00 hours on 6 occasions (average 5). The mean barometric pressure of 998.7 mb was the lowest for December at this station with a high of 1031 mb (25th) and a low of 964 mb (27th) which equalled the previous December low in 1999. Scotland's mean temperature of 3.4°C was 0.6°C above the LTA with precipitation 20% above the norm. Sunshine of 26.1 hours was just below the average. Some UK monthly extremes were: a maximum temperature of 14.9°C Prestatyn, Clwyd (18th); a minimum temperature of -10.2°C Dalwhinnie (30th); 109.0 mm of rain at Honister Pass, Cumbria (29th) and a wind gust of 106 mph at the Needles, Isle of Wight (27th).

The 3rd was sunny and calm but strong north-easterly winds brought snow, then sleet during the early hours of the 4th which had produced the first lying (wet) snow of the winter. By dawn the precipitation had turned to heavy rain which continued unabated until midnight resulting in a total of 46.0 mm between 00.00 hours on the 4th to 09.00 hours on the 5th - although virtually all of this fell on the 4th. Edinburgh received more snow during the early hours of the 4th which was also accompanied by an electric storm, a phenomena apparently known as 'thundersnow'. The following three days were mostly sunny with light winds and frost at night (-3.0°C, 6th). Calm but damp, dreich conditions ensued until the

13th when a vigorous front moving across the country from the SW brought wet and windy weather. A succession of weak Atlantic lows produced damp but mild conditions with an unseasonably high temperature of 12.0°C at 02.00 hours on the 18th (14.2°C Edinburgh Royal Botanic Gardens). There was a short drier, colder and calmer spell with night frosts from the 20th to the 25th (-3.3°C, 25th) before storm 'Bella' swept across the UK during the 26th. This brought strong south-westerly winds and heavy rain and, while a moderate 11.8 mm was recorded at this station on Boxing Day, Tyndrum received 73.8 mm. The wind gusted up to 46 mph (66 mph South Uist) as the barometric pressure fell to 963 mb. As 'Bella' moved away to the East the temperature dropped and we awoke to a light covering of snow on the 27th. The last 5 days of 2020 were cold and calm with night frosts (-5.5°C, -8.4°C Kirkton, -10.2°C Dalwhinnie (30th)) which preserved the snow cover. The skies were largely clear until a weak front, crossing from North to South, added a little more wet snow during the morning of the 31st.

Kirkton Farm (Met Office Automatic Weather Station), near Tyndrum, Perthshire

Summary

The total rainfall recorded at the Met Office automatic weather station at Kirkton in 2020 was 3114.9 mm (122.8 inches). This was 521.7 mm more than the thirty-year 1991-2020 average (2597.7 mm). 2020 was the third wettest year during this thirty-year period. The wettest month was February when a total of 488.2 mm (19.2 inches) of rainfall was recorded. January, October, and November were also particularly wet months. The rainfall was above average in nine of the twelve months. The driest month was April with 46.4 mm of rainfall (only 33% of the 30-year average). This was the driest April recorded at the farm. The highest rainfall over a calendar week (Monday to Sunday) was 172.0 mm between the 17th February and 23rd February (week 8). There

were 11 calendar weeks when the total rainfall exceeded 100 mm. The highest rainfall in a single day (09:00 GMT to 09:00 GMT) was 71.4 mm on the 12th September. There were seven days in 2020 when more than 50 mm of rainfall was recorded and a further 30 days when there was more than 25 mm of rainfall recorded. The highest rainfall in a single half-day 12-hour period (09:00 GMT to 21:00 GMT) was 62.6 mm on the 4th August. The total number of rain days was 273 (74.6%).

The lowest temperature recorded during 2020 was on the 30th December when the temperature fell to -8.4oC. There were no days in 2020 when the temperature failed to rise above freezing. The lowest maximum temperature was recorded on the 28th December (1.5°C). An air frost was recorded on a total of 67 days. There were no air frosts recorded in June, July, or August. The highest temperature recorded was on the 25th June (26.7°C). June and August were the warmest months with mean temperatures of 14.1°C and 14.56°C respectively; and mean maximum temperatures of 18.7°C and 18.7°C respectively. Temperatures of 25°C or above were recorded on five days, while temperatures above 20°C (but less than 25°C) were recorded on a further 27 days. Sleet or snow was recorded falling at the weather station on 31 days. There were four days in 2020 when sustained gale force winds were recorded at the farm (7th January; 13th January; 3rd February; and 9th February).

See also Plates 21 and 22 for Monthly Mean Temperatures and Wind Direction.

Thanks to the Met Office for supplying the data from the automatic weather station at Kirkton.

John Holland (SRUC Hill & Mountain Research Centre, Kirkton & Auchtertyre Farms)

Table 1. Temperature and precipitation 2020. Climatological Stations Dunblane / Kirkton.

	Temp mean minima	Temp mean maxima	Number of air frosts	Total precipitation (mm). Means for Dunblane: 1995-2020 Means for Kirkton: 1991-2020	Greatest 24 hour total (mm)	Number of days of measurable precipitation
January	3.3 / 2.4 (0.2)	7.4 / 7.9 (4.5)	7 / 7 (14)	120.7 / 454.8 (119.7 / 351.5)	25.0 / 66.8	21 / 29 (20)
February	1.1 / 0.4 (0.3)	5.8 / 6.6 (5.9)	13 / 10 (13)	257.6 / 488.2 (100.3 / 256.4)	31.0 / 49.8	25 / 27 (17)
March	1.5 / 1.1 (1.3)	8.9 / 8.0 (8.5)	13 / 11 (11)	76.5 / 243.8 (77.8 / 227.5)	11.0 / 50.0	19 / 25 (16)
April	3.3 / 2.5 / (3.3)	14.2 / 12.9 (12.4)	4 / 8 (5)	13.8 / 46.4 (59.1 / 141.8)	6.0 / 15.6	9 / 12 (15)
May	5.7 / 4.4 (5.9)	17.7 / 15.5 (16.3)	3 / 8 (2)	37.0 / 122.2 (66.2 / 134.8)	9.5 / 49.2	10 / 17 (16)
June	10.3 / 9.5 (9.1)	19.5 / 18.7 (19.1)	0 / 0 (0)	95.2 / 127.0 (74.9 / 122.8)	26.8 / 25.0	16 / 20 (15)
July	10.0 / 9.1 (10.8)	18.5 / 16.8 (20.8)	0 / 0 (0)	127.9 / 150.2 (88.7 / 131.4)	27.0 / 16.8	21 / 24 (16)
August	11.2 / 10.4 (10.5)	18.7 / 18.7 (19.7)	0 / 0 (0)	150.4 / 176.8 (91.8 / 158.9)	59.7 / 65.0	17 / 17 (17)
September	7.4 / 6.5 (8.4)	15.8 / 15.7 (16.1)	1 / 4 (0)	92.3 / 252.8 (84.1 / 200.5)	24.9 / 71.4	14 / 23 (16)
October	7.0 / 4.8 (5.3)	11.4 / 12.1 (11.8)	0 / 2 (3)	150.5 / 366.4 (123.9 / 269.4)	40.0 / 44.8	24 / 26 (21)
November	4.7 / 4.2 (2.0)	9.0 / 9.8 (7.3)	3 / 3 (8)	95.6 / 369.4 (111.0 / 275.0)	11.0 / 55.4	21 / 28 (20)
December	0.9 / 0.1 (0.2)	5.3 / 6.0 (4.4)	14 / 14 (14)	122.1 / 321.4 (114.3 / 327.8)	31.0 / 69	22 / 25 (20)
Year	5.5 / 4.6 (4.8)	12.7 / 12.4 (12.2)	58 / 67 (70)	1339.6 / 3119.4 (1112.5 / 2597.7)	58.0 / 71.4	219 / 273 (209)

The single climatological means in ( ) relate to Dunblane. Where either two 2020 values or climatological means are given, the first relates to Dunblane and the second to Kirkton. Temperatures are in degrees Celsius.

MUTE SWAN FATALITIES, 2020

David Hodgson

Back in November 2020, the River Devon at Cambus witnessed the start of an epidemic of dead Mute Swans. On the 12th an adult dead bird got caught in branches trapped on the weir, presumably having been washed downstream. By the 17th it had disappeared and subsequent comments from others in the village lead to the conclusion that it had probably been washed away (into the Forth). Others had contacted SEPA, the Local Council, SSPCA and other organisations, with no-one expressing any interest because the bird was dead.

However, also on the 17th, a neighbour knocked on my door to report a dead swan washed up on the River Forth at Cambus – wrapped in two black refuse bags. We went to investigate and found a second bag, with another dead bird inside about 100 metres away. Because of the suspicious circumstances, I reported this to the police and made contact with the local Wildlife Liaison Officer, who subsequently arrived and took the "evidence" away.

Had the birds been shot, before being placed in bags and dumped in the river? Again, one particular neighbour made enquiries and quickly came back with a report that "kids" had been heard/seen recently with air rifles near Alva. As the days went by, more dead swans appeared in the Devon or Forth; thankfully all "whole" with no signs of bags or other suspicious human involvement; as follows

1 Dec. 1 swan, caught in vegetation, but gone by 4 Dec.

3 Dec. 2 swans, drifting downstream in the river Devon.

8 Dec. 1 swan, on the high tide line, tidal Devon.

9 Dec. 1 juvenile, caught in vegetation, freshwater Devon.

11 Dec. 1 adult, caught in vegetation, freshwater Devon.

In the meantime, another corpse could be seen on the south bank of the Forth opposite Cambus. By the 9th December, I realised it was time to report the most recent dead swans to the DEFRA Helpline. However, by the 11th, I had not heard back from them, so the bird I had found that morning was retrieved, bagged and taken by me to SRUC Veterinary Services, near Penicuik, for Post-mortem analysis (*). Needless to say, that evening I got a call from XL Farmcare indicating they would attend the following morning with a view to retrieving the corpses, to be checked for avian flu. (*), which by this time was widespread across the UK. By the following morning, two which had been on the high tide line had been washed away by a subsequent high tide, and the third was out near the middle of the river and deemed inaccessible.

The collector who visited me was also calling at Menstrie, to recover one corpse, and at Gartmorn Dam, to recover two. When I spoke to him a few days later, the Menstrie bird had just been feathers and the Gartmorn Dam birds were again deemed inaccessible. The SRUC Autopsy Report came back quite quickly and gave an acute bacterial infection (*Riemerella anatipestifer*) as the cause of death, notwithstanding that Avian Influenza may have been present as well. At the time, the pathologist said that another swan from another location in East Central Scotland had also recently presented with *Riemerella*.

I then received an e-mail on 19th December to say that 2 dead Mute Swans had been seen at Alva Floods on the 13th December. I decided to just go and investigate, met the farmer and learned that there had been a total of 6 dead swans, of which 2 had been taken away by someone else from XL Farmcare. The remaining corpses at Alva Floods had by then been half eaten. A number of reports appeared in the local newspaper, the Alloa Advertiser, including a reference to at least 6 more dead Mute Swans at Gartmorn Dam, so we have a conservative estimate of 24 dead swans altogether in a 4-5 week period, mid-November to mid-December. As far as I am aware, there have been none since, and there are no references to any more on the Government websites.

Figure 1. Dead swan, Freshwater Devon at Cambus, 02/12/2020.

Figure 2. Dead swan, Freshwater Devon at Cambus, 12/12/2020.

It may be noted that the Scottish Government website only indicates H5N8 Avian Influenza in 3 Mute Swans from Clackmannanshire (1 collected 11 December and 2 collected 15 December, which are presumably "mine" plus the 2 from Alva Floods). The UK Government website also shows that a fourth bird had tested positive a little later in December.

This is the first such incident I can recollect in over 30 years living in Cambus, but I have learned one key lesson. If I find any dead bird on the high tide line, or indeed below it, I shall ***move it higher***, if I can't retrieve it there and then. Government advice is not to touch dead birds, but, so long as the bird is complete, with PVC gloves/gauntlets & double bagging any hygiene risk is reduced and thorough personal hygiene afterwards reduces risk still further. I think this is preferable to losing a specimen completely, and not being able to establish cause of death.

(*) It should be noted that wild birds tested for Avian Influenza, via DEFRA, do not receive a full post mortem analysis. This contrasts with birds taken to the SRUC Veterinary service, which do.

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RECENT FINDS FROM STIRLING CASTLE MIDDEN

Murray Cook, Torben Bjarke Ballin and Andrew Morrison

To the West of Stirling Castle on the slopes below the King's Old Buildings there is a large area of organic rich black soil, some 40-50 metres wide. This soil is dotted with thousands of objects and represents hundreds of years of rubbish disposal from Stirling Castle. What survives includes animal bone and oyster shells (representing food waste) and pottery, glass, stone and metal. The entire area of the midden is a Scheduled Monument and therefore protected by criminal law and any intervention in the midden requires prior permission to do so in the form of Scheduled Monument Consent. All finds retrieved and discussed here are subject to Treasure Trove legislation and are the property of the Crown, requiring declaration to the Scottish Treasure Trove office for allocation to a registered museum collection.

In the nineteenth century an extension to the Upper Back Walk was cut through this material, replacing John Bog's 1531 Passage (Harrison undated, 21) which ran to what is now Raploch Fire Station. The midden itself is gradually moving down slope and periodically slumps over the Upper Back Walk on its east side, exposing new objects. On its West side this slumping creates holes in the path. In 2016 an excavation of the midden material on the Upper Back Walk was undertaken by the lead author, with appropriate Scheduled Monument Consent, to ensure the path was walkable and the results were subsequently reported upon by GUARD Archaeology (Will, 2018). This intervention revealed finds ranging in date from the late 12th century to the middle of the 20th century, with the bulk dating to the 19th century. Since that point, the author has undertaken two further interventions on the midden, in Spring and Autumn 2019 (McLaren et al 2019, Ballin 2020 and Hall 2020). These interventions are very basic; spoil from the midden that had fallen onto the Upper Back Walk was sieved, only pre-19th century objects was kept and the resulting spoil was used to fill holes in the eastern side of the path.

This article publicises two of the most interesting finds from the recent fieldwork: an unused 19th gun flint and a possible late medieval or early post-medieval badge of St Andrew.

Gun Flint

The classification and dating of the single gunflint is based on information in Torben Bjarke Ballin (2012; 2013a; 2013b).

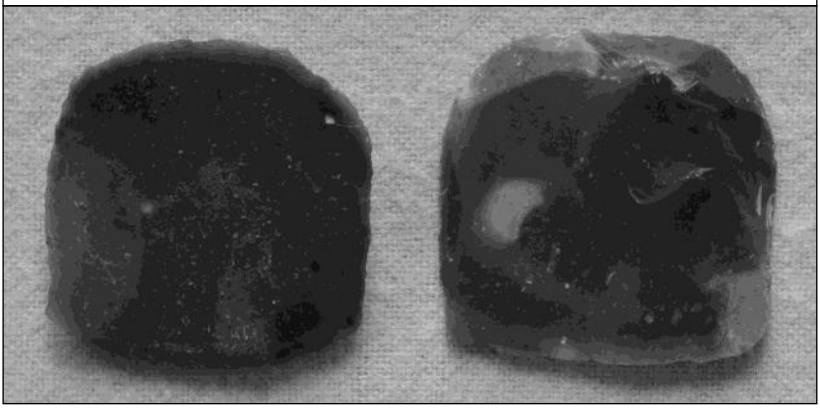
Terminology and chronology.

Figure 1. The descriptive terminology of gunflints (A British blade-based gunflint is used as an example).

	Skertchley (ideal)	Hamilton (range)	
Wall piece	38	>34	Musket
Musket	28	28-34	Carbine
Carbine	25		
Horse Pistol	23	20-28	Tadeguns
Single	22		
Double	18	<20	Pistol
Pocket pistol	17	<20	Pistol

When gunflints are characterised, a number of formal elements are focused upon, as shown in Figure 1 (above). In Britain, only a small number of formal gunflint types are known, some of which are diagnostic of nationality, while others are chronologically diagnostic. The three main types are early flake-based gunflints and British and French blade-based gunflints. Figures 2-4 show the three main types.

Figure 2. Early flake-based gunflints (gun-spalls). Upper and lower faces of gunflints from the British ship The Invincible (1758), photo: Beverley Ballin-Smith.



These are typical, early, flake-based gunflints (gun-spalls) with a convex heel. Pieces like these are known from Britain as well as France, but the dates of the British ones differ from the dates of the French ones.

In Britain, flake-based gunflint production was replaced by the more economical/productive method of producing gunflints by segmenting long blades just prior to 1800.

In France, this change occurred approximately 100 years earlier. French gunflints tend to be either honey-coloured (from Meusnes) or light-grey (Provence) (Emy 1978; Weiner 2016) and to be D-shaped or have rounded corners. British gunflints tend to be black and rectangular in shape (although variants occur.

Figure 3. Examples of typical late, French, blade-based gunflints, photo: Beverley Ballin-Smith.

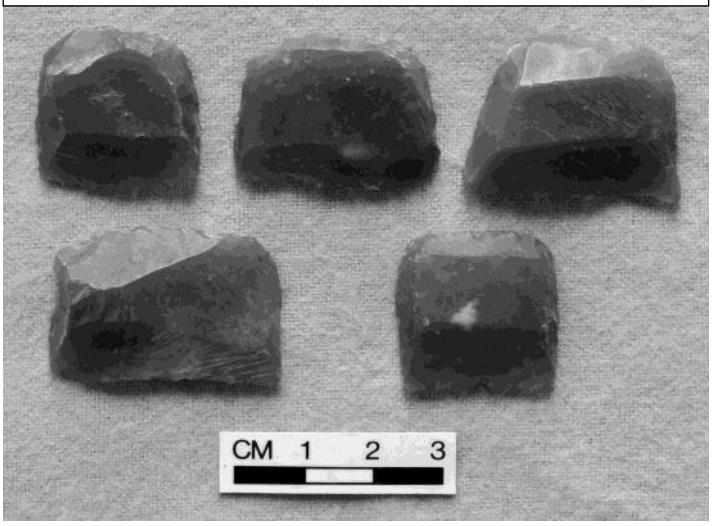


Figure 4. British blade-based gunflints, manufactured in Brandon, Suffolk, photo: Beverley Ballin-Smith.

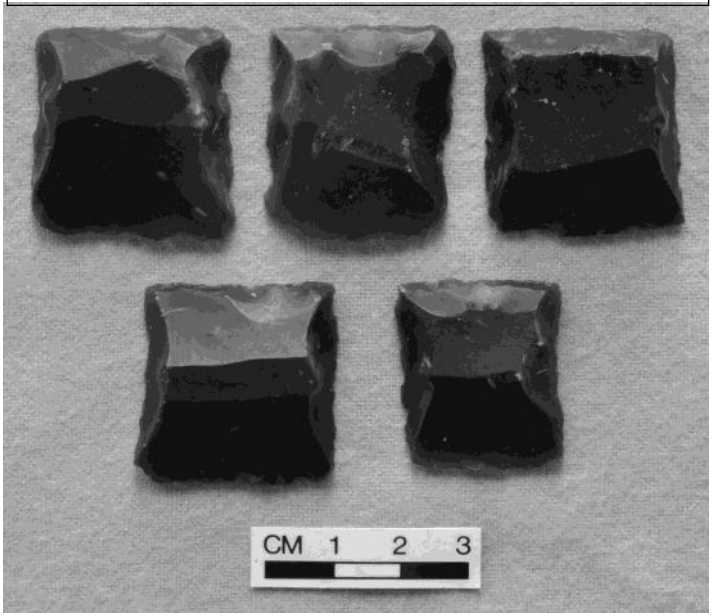


Figure 5. The Stirling Castle midden gun flint.

It is possible to characterise the Stirling gunflint in the following manner Formal type: Rectangular, blade-based; Flint type: Black flint; Length: 30.4mm.; Width: 32.5mm.; Thickness: 10.0mm.; Depth of leading edge bevel: 4.8mm. ; Angle of front bevel: 29 degrees; Angle of rear bevel: 63 degrees.

Unusually, the leading edge bevel is on the dorsal face, where it would usually be on the ventral face (See Figure 1). Most heels tend to be fully modified, but the present piece has only got retouched at the heel's corners. Commonly, small cones ('demi-cones') may be spotted at the centre of the lateral sides where the original blade was struck with a steel hammer to segment it into small rectangular gunflint blanks. In the present case, these cones have been removed by fully retouching the lateral sides. The piece has a ventral swelling near one lateral side, showing that this piece was located near the bulbar end of the original blade. The piece displays no use-wear and it appears to be in mint condition.

Conclusion

The gunflint from Stirling Castle (Figure 5) is clearly a British, blade-based gunflint and its black colour suggests that it was produced at Brandon in Suffolk. The fact that it is British and blade-based suggests a date around, or slightly after, 1800. In Britain, gunflints were generally phased out during the 1830s and 1840s with the introduction of the percussion cap technique.

The Badge, *Andrew Morrison.*

One lead alloy object was recovered from the midden. This is possibly a horse harness mount or dress accessory, like a sporran badge or similar. The badge depicts a bearded St. Andrew, standing on a mound, facing forward, dressed in long pleated robes, and holding a large cross (Figures 6, 7 and 8).

Figure 6. Photograph of the obverse (front) face of the midden badge.

The badge was formed in a one-piece mould and has a single mushroom-head stud faster on the reverse that is made up of crudely gathered lead to form a stalk topped with a flattened circular blob to form the head. There is overspill from the mould present at the base of the badge that has been partially clipped, and an irregular unfinished edge along the right side.

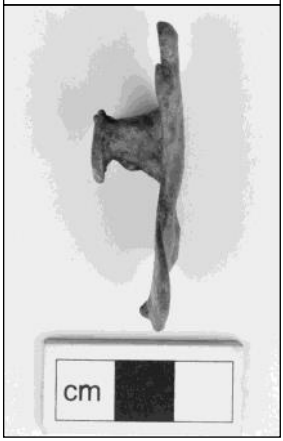
This clipping suggests that the badge may have been intended as an openwork design, but the rough and unfinished edges combined with a lack of wear around the fastener suggests that this object may have been abandoned part of the way through the manufacturing process. The figure's features are not well defined, indicating that is was probably formed in a well-used, well-worn or poorly formed mould. There is an area on the reverse below the fastener that displays a lattice of irregular vertical, horizontal, and diagonal incisions overlain by a fan of five sweeping parallel scratches. These appear to be irregular scratches rather than purposeful decoration and were likely made when the edges of the badge were being clipped; other surface marks and wear present on the badge appear to all be post-depositional.

Figure 7. Photograph of the reverse face of the midden badge.

No exact parallels of the badge have yet been identified, though there are a number of possibilities for its intended function. The size, material, and subject matter of St. Andrew holding a cross are consistent with military cap badges and sporran badges from a few of the Scottish regiments like the Queen's Own Cameron Highlanders, and The Black Watch.

The fastener on the reverse does not match those used on cap badges or sporran badges, and the finish is not consistent with the usually well-made finishes of military regimental badges. These factors, when considered alongside the lead-alloy metal type and its potential unfinished state, suggest that the badge is earlier in date and a military association, although possible, is not assured.

Figure 8. Side view of the midden badge.



St Andrew holding an equal armed cross is regularly depicted as the subject of pilgrim badges produced from a cheap alloy of tin and lead during the medieval period until the 16th century (Spencer 1998). One particularly close example to that discussed is held in the collections at the British Museum (Accession number: 1856.0701.2129). It was found in mid-19th century in London and is thought to date to the 16th century, prior to the Reformation.

Pilgrim badges typically had some form of integrated loop faster so that

they could be sewn on to garments if desired. An example from the British Museum has a loop fastener on the reverse which differs from the thick fastener on the Stirling midden example.

The height, thickness and style of the mushroom-head type fastener on the Stirling example suggests that it was intended to be inserted through a slit in a thick, robust material like leather, and kept in place as a cufflink or button through a buttonhole. This form of fastener is common on Roman strap mounts and some Medieval horse harness fittings but undoubtedly continued into late medieval/post-medieval times. In this case it seems likely that the badge was used as a horse harness mount, attached to a leather harness, strap or saddle. The badge is not closely dateable being somewhat roughly made with the subject matter being common through the medieval period to the present day. In this instance, a late medieval or early post-medieval date is thought likely due to the character of associated finds.

Discussion and Conclusion

It is assumed that both objects originated as rubbish from within the castle, however, it is not clear how old they were when they were disposed of and they could have been decades or centuries old when they ended up in the midden. The nature and function of the badge is unclear: is it a poorly made Catholic pilgrim's badge dating from before the Reformation or a military badge made and abandoned before completion due to production problems? It might have been made in the castle or it might have brought in a batch of others, we shall never know..

Certainly, the gun flint appears to be military surplus and is the second to be recovered from the midden in recent years (McLaren et al 2019). It is estimated that gun flints could only be used around 20 times (Vallandigham undated) and so in theory, as the castle was an active military base to the 1960s (Yeoman undated, 63) it should have contained thousands. However, excavations to date in the Castle have only identified three (Ewart and Gallagher 2015, 213) in contrast to Edinburgh Castle where thousands were found, although

these were in a cache, so may not be representative (Ruckely and Gallagher 2014, 154). These two recent finds from the Stirling Castle Midden, while small, offer a unique window into the people who lived and worked in the Castle.

Acknowledgments

The main author would like to thank the volunteers who helped in the recovery of the objects, Stirling Council's Land Services for allowing permission. Dawn McLaren kindly glanced over the paper and made some very useful comments.

Table 1. The standard gunflint classes suggested by Skertchley (1879) and Hamilton (1976) based on width (mm).

	Skertchley (ideal)	Hamilton (range)	
Wall piece	38	>34	Musket
Musket	28	28-34	Carbine
Carbine	25		
Horse Pistol	23	20-28	Tadeguns
Single	22		
Double	18	<20	Pistol
Pocket pistol	17	<20	Pistol

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THE HOUSE ON THE HILL: EXCAVATION AT CAMBUSBARRON, STIRLING.

Aisling Fitzpatrick-Sinclair

Summary

Excavations carried out by Headland Archaeology (UK) Ltd at Cambusbarron to the West of Stirling in 2019 focused on features identified during trial trench evaluation completed late the previous year. This site was located within the area of the Battle of Bannockburn yet did not reveal any evidence of the battle. However, the works did identify a middle to late Bronze Age roundhouse with associated features, a rare occurrence for this type of location and time period; one early historic pit and two undated isolated pits likely to also date to the early historic period.

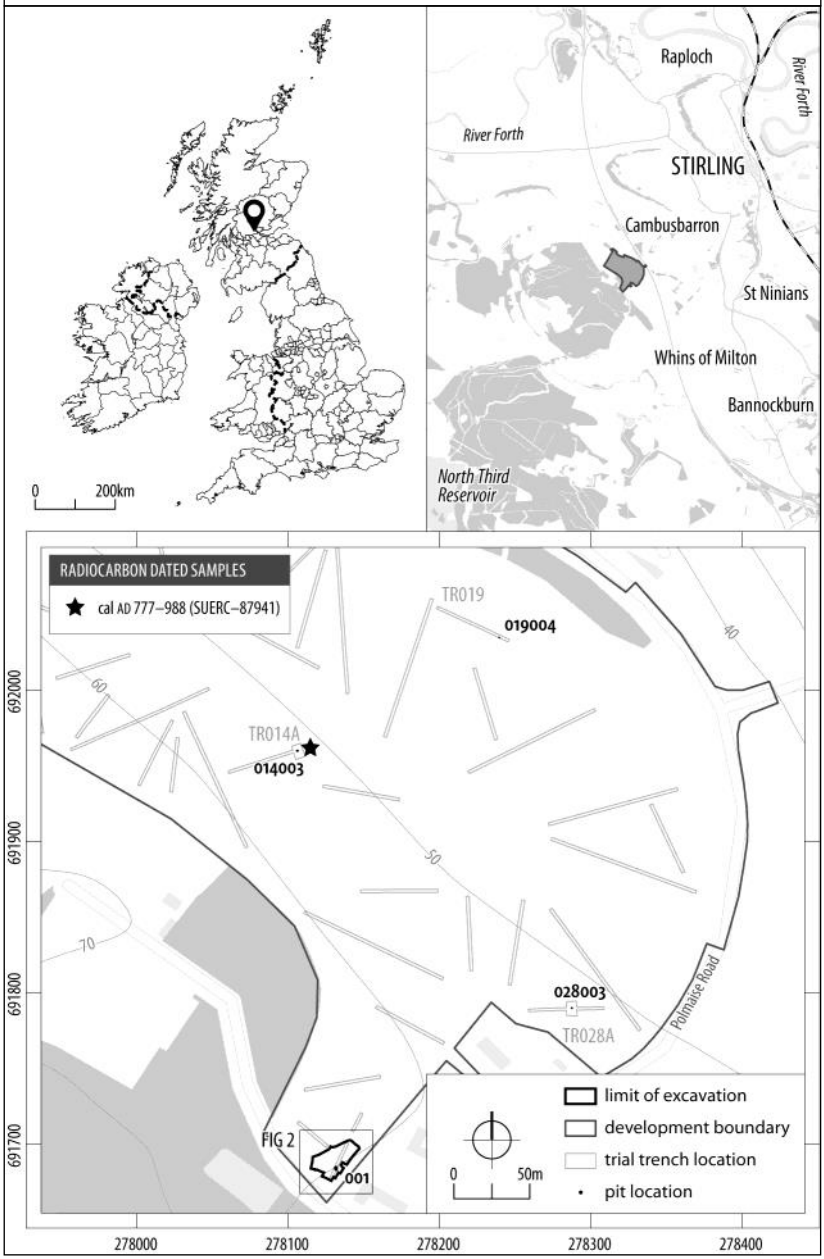
Introduction

A programme of archaeological investigation undertaken in advance of development at Cambusbarron revealed the presence of an unenclosed Bronze Age roundhouse with associated internal and external features, an isolated early historic pit and two undated pits. The presence of this type of unenclosed structure in Stirlingshire is rare and the focus of this paper is to try and place the structure into the context of the wider landscape. The presence of the early historic pits is also of note, with activity of this type and date relatively rare in the archaeological record. This site adds to the growing corpus of archaeological activity known across Stirlingshire.

Background of the project

The site was located at the top of a small hill in an open arable field in Cambusbarron, a village situated 1.2km West of the centre of the city of Stirling (Figure 1). The South of the site was elevated in comparison to the rest of the site and was bounded by mature woodland and housing. It was also bounded by modern development associated with the village of Cambusbarron. The roundhouse lay in the southern part of the site and was in close proximity to modern houses to the East and woodland to the South and West. The

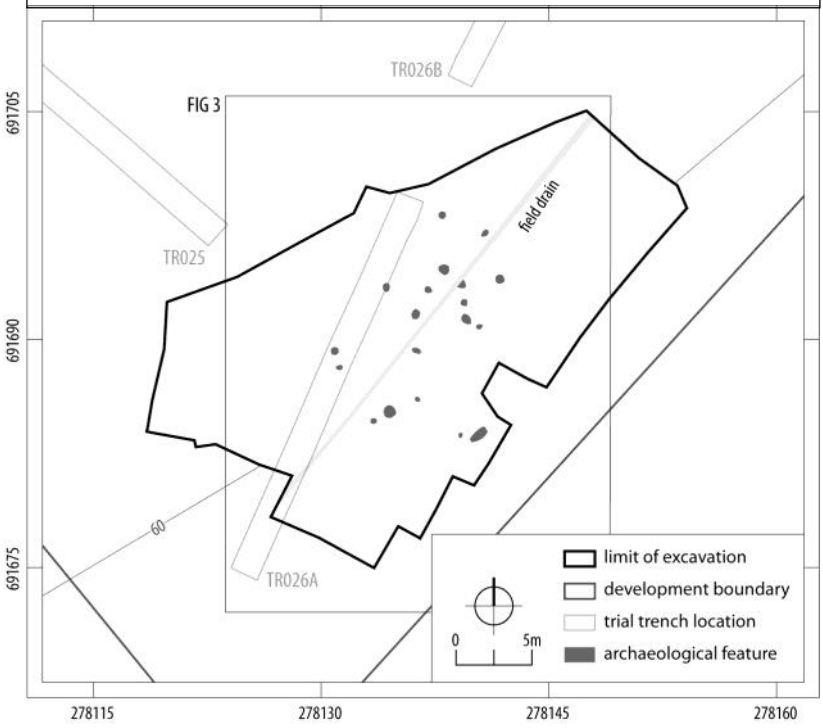
Figure 1. Location of the site.



excavation area extended as far as the site boundary to the East.

Prior to the works, few recorded archaeological sites were known in the immediate vicinity. However, the site was located within the boundary of the site of the Battle of Bannockburn as defined by Historic Environment Scotland (HES reference BTL4), as the area within which the main events of the battle were considered to have taken place. Bannockburn is considered to be one of the most iconic battles in Scottish history and a key moment in the Scottish Wars of Independence. While the entire battleground landscape has been significantly altered through drainage, peat extraction, felling of woodland and modern development, significant open areas remain.

Figure 2. Plan of the roundhouse with the trial trench locations.



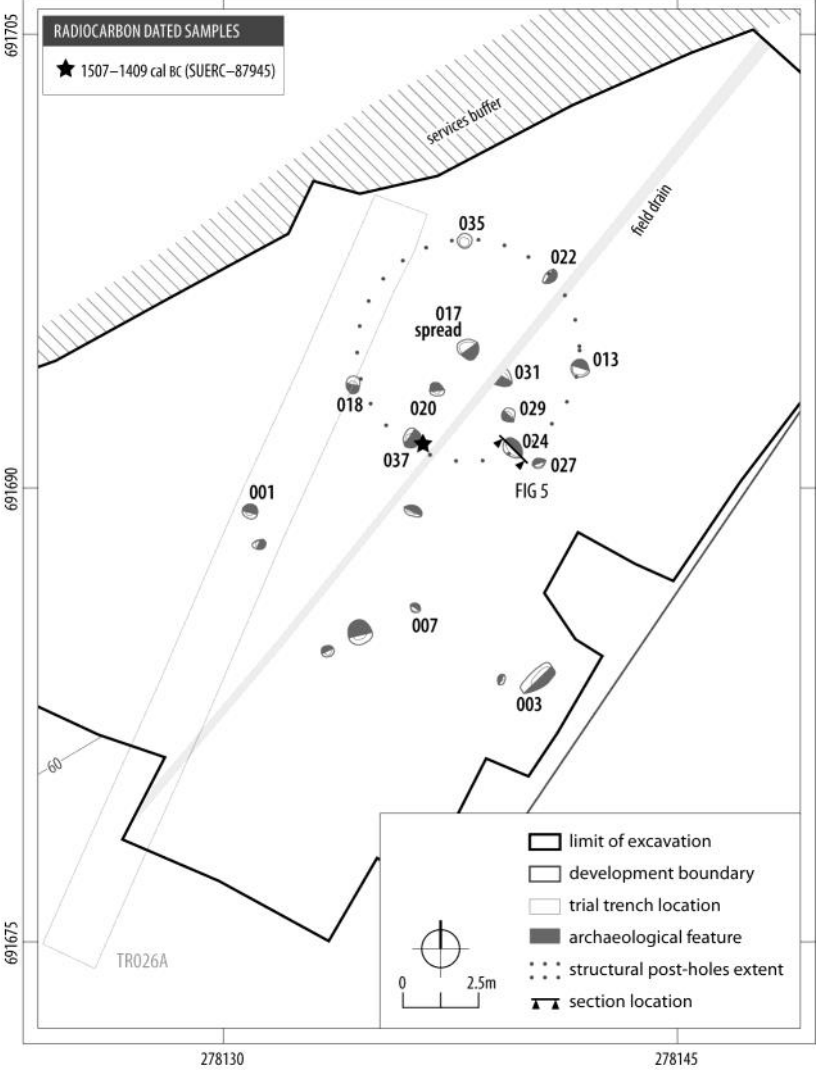
One of the aims of the archaeological work was to identify any remains which might relate to the battle, however, extensive metal detecting across the site, followed by trial trenching failed to produce any evidence of this period, with the vast majority of metal finds uncovered dating to the 20th century. Despite the lack of evidence relating to the Battle of Bannockburn, the trial trenching did identify remains of prehistoric date, particularly clustered in the south of the site, and these were targeted for full excavation.

Topsoil stripping revealed an unenclosed roundhouse (Figure 2, opposite). Post-excavation assessment and analysis found that the roundhouse, located at the top of the small hill, dated to the middle Bronze Age and a pit located further down slope dated to the early historic period. This hill provided the ideal location for settlement with far reaching views to the North, East and north-west and protection from the elements provided by a steep rise in the landscape to the South. This paper presents the results of the excavation and includes three isolated pits identified during the trial trench evaluation, which provide an interesting strand of evidence of a relatively poorly represented period in Scotland, in terms of excavated material.

Results of the investigation

The roundhouse comprised a post-ring with six postholes measuring 7.5m in diameter with the posts spaced between 2.1m and 2.7m apart (Figure 3 on following page).

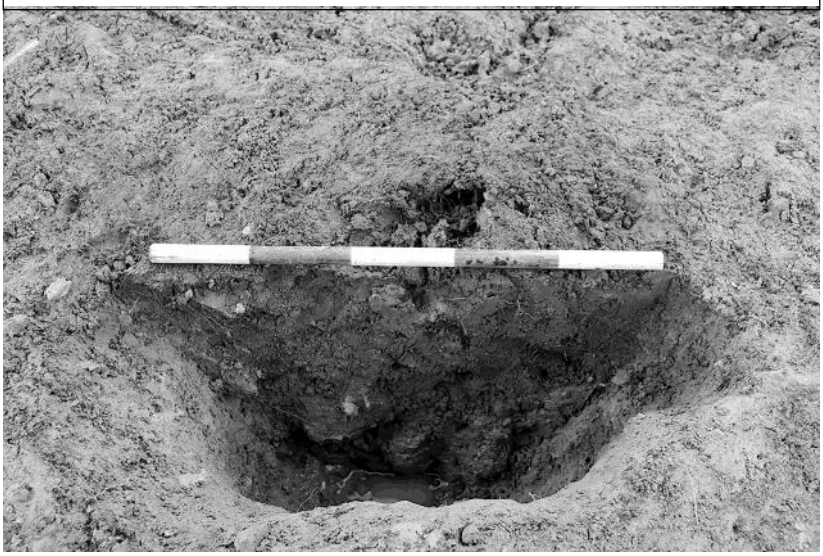
Figure 3. Detailed plan of the roundhouse.



A wider gap of 3.3m at the north-west of the structure was likely due to truncation. The post-holes were roughly circular, averaging 0.6m in diameter with near vertical sides and flat bases. Three of the post-holes, [024, 035 & 037], contained Bronze Age pottery fragments. A single AMS date

was obtained from the fill of post-hole [037] (Figure 4) which yielded a date of 1510-1400 cal BC (SUERC-87945; Table 1).

Figure 4. View of post-hole [037] which contained fragments of prehistoric pottery.



Two small fragments of burnt bone were present in post-holes [035] and [024]. The bone was heavily fragmented and lacked diagnostic features so the species could not be identified. Hulled barley (*Hordeum vulgare*) was also identified in post-hole [024]. This type of cereal was the most commonly identified grain recovered from the site. Other environmental remains included Hazel (*Corylus avellana*) nutshell, present in small amounts in posthole [035] and roundwood charcoal fragments recovered from postholes [013] and [024].

Although the post-holes that made up the post-ring were fairly uniform, post-hole [024] was slightly different, being oval in shape and containing two fills, (025) and (026) (Figure 5). The primary fill (025) represents what is left of the original construction; this fill likely acted as packing material around a structural timber. The second fill (026) represents the destruction of the roundhouse in the form of the structural post being removed either by human intervention or through natural processes.

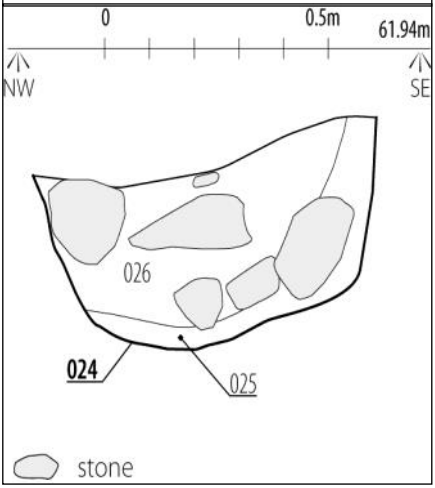


Figure 5. Section drawing of post-hole [024] showing the dislodged packing stones.

It is likely that the stones in this fill were originally packing stones, dislodged upon removal of the post. The date from post-hole [037] confirmed the suspected Bronze Age date provided by the pottery recovered from the post-holes during excavation. The security of this date, although supported by the artefactual finds, must be assumed to give a general date of occupation in this area rather than accurately dating the construction of the roundhouse. As the pottery fragments were heavily abraded it is likely that they were incidental inclusions in the post-holes, and this is likely also true for the charcoal fragments.

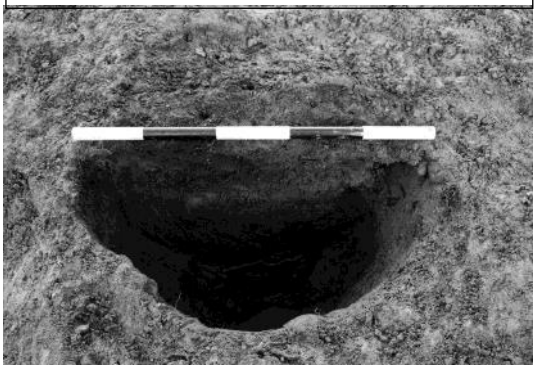
The roundhouse contained four internal features: a pit, a spread and two post-holes. Spread (017) was initially thought to represent a hearth however there was no evidence of burning in situ, with the fill appearing more organic in nature. It contained charcoal fragments and charred cereal, comprising heavily abraded, porous, indeterminate grain. Although there was charcoal present the size of the fragments suggested more of an incidental inclusion within the fill.

Pit [031] was located to the south-east of the spread and contained Bronze Age pottery fragments, hulled barley and roundwood charcoal fragments. Roundwood charcoal fragments were also present in post-hole [020]. Post-hole [029] was located 0.5m to the north of post-hole [024] and contained in situ packing stones (Figure 6). This post-hole was the only one where these stones were still in position suggesting that this post was not removed but rotted in situ. Although the entrance is not clearly identifiable, it is likely that it was at the south of the structure due to the location of external features being concentrated in this area.

Figure 6. Section drawing of post-hole [024] showing the dislodged packing stones.

There were nine external features in total: two post-holes and seven pits. Post-holes [001 & 007], located approximately 5m from the post-ring, were similar to those of the roundhouse (Figure 7), but had no obvious structural function.

Figure 7. View of post-hole [001] which was one of the external features located to the south-east of the roundhouse.

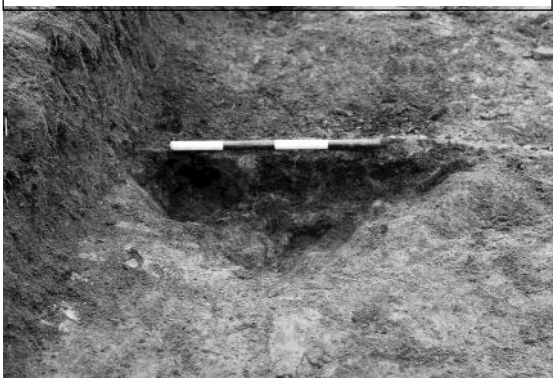


Post-hole [001] also contained eight prehistoric pottery fragments that were consistent with those found within the roundhouse, suggesting that both the structural and external post-holes were contemporary.

The remaining seven pits were of varying sizes measuring between 0.35m and 1.8m in length, 0.25m and 0.75m in width and 0.1m and 0.18m in depth. A small amount of bread/club wheat (*Triticum compacto-aestivum*) was recovered from pit [003], however the pits had no clear function. It is presumed that they relate to the occupation of the roundhouse.

Three isolated pits were identified during the trial trench evaluation, located up to 300m away further down slope to the north (Figure 1). Pit [014003] was located to the north-west and measured 0.82m long, 0.68m wide and 0.18m deep It was filled by a dark mottled blackish-brown silty coarse sand that was charcoal rich.

Figure 8. View of pit [014003]. Charcoal from this pit was dated to the early historic period.



This deposit contained a small amount of charred weed seeds and three lithics were also recovered.

The nature of the fill suggested the pit was comprised of deliberately dumped material; however, no function could be discerned.

Despite the presence of charcoal, there was no sign of burning in situ; the feature is very unlikely to have been a hearth or a fire. However, the presence of charcoal does suggest that burning was taking place in the vicinity. The charcoal recovered from this pit produced an AMS date of cal AD 770-1000 (SUERC-87941), an early historic date.

The second pit [028003] was a little smaller with a diameter of around 0.5m, and only 0.1m deep. It was filled by a dark greyish-black, silty sand and contained a small fragment of charred Hazel nutshell, charred weed seeds and one lithic. Again, there was no evidence of in-situ burning and so it is unlikely to have functioned as a hearth or fire. The third pit,

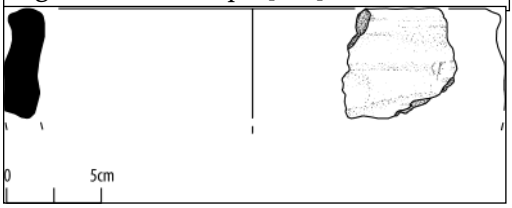
[019003], was only observed in plan as the northern part of the site was flooded following heavy rain. It measured 0.48m long and 0.4m wide and the fill appeared consistent with the two other pits.

Finds Analysis by Owain Scholma-Mason

The pottery numbers 19 sherds (287g) and is mostly represented by abraded, fragmentary body sherds (Table 2). In total around five vessels can be identified in the assemblage. Most are represented by a few small sherds, excepting V5 where four medium sized body sherds are present. The pottery was predominantly in a coarse fabric with common stony inclusions (< 3 mm).

The sherds were retrieved from five features with three examples of rim sherds, one from post-hole [001] and the other from pit [031]. The form of the rims and decoration of V1 suggest the vessels are likely to be middle to late Bronze Age. A complete pottery catalogue is available in the site archive.

Figure 9. V1 from pit [031].



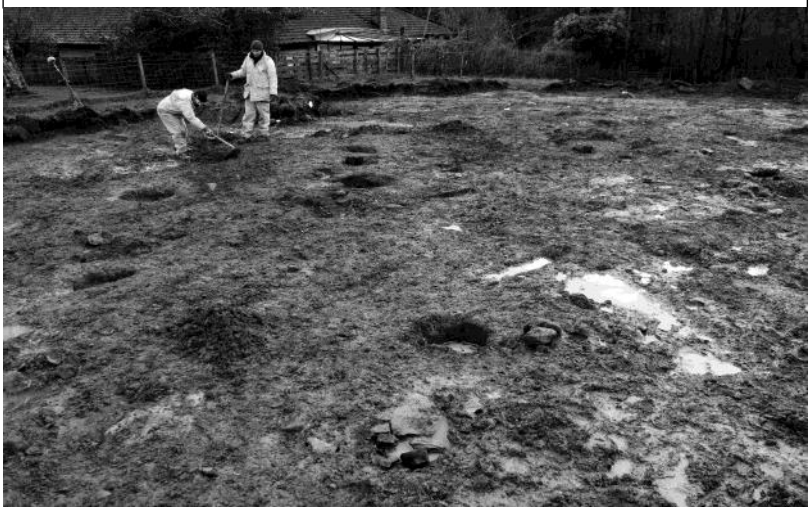
Finds Discussion

The assemblage overall is undiagnostic, except for the three rim sherds; V1, V3 and V4. The form and decoration of V1 (Figure 9) suggest an affinity with Flat-rimmed ware. Flat-rimmed ware encompasses a diverse array of pottery types across Scotland during the mid-late Bronze Age (Coles & Taylor, 1970, 96; Halliday, 1989,108). Flat-rimmed ware is widely recorded from domestic contexts, although plain bucket shaped vessels are also found in funerary contexts.

The ridging below the rim of V1 is one of the few embellishments that is well established within the earlier phases of the Flat-rimmed ware tradition. An example found

at Echline Fields was associated with a radiocarbon date of 1379-1123 cal BC (SUERC-39754, Robertson et al, 2013, V12, 122). The similarities in fabric across the assemblage as well as the form of the rims suggest the remaining sherds likely belong to a similar tradition. On the interior and exterior of several vessels' surfaces signs of smoothing was observed. In places wiping marks were visible, similar to those noted at Ormiston Farm where it was suggested that the exterior and interior of vessels may have been smoothed with a handful of grass (Halliday, 1989, 104). On the interior of several sherds were small patches of soot, probably reflecting their use as domestic vessels. The recovery of sherds from pits and post-holes support the interpretation of these sherds as representing domestic waste. V1 probably derives from a large storage vessel, whilst the thinner and smaller vessels probably represent cooking wares.

Figure 10. View south-east of the roundhouse during excavation, illustrating the shallow nature of the majority of features.



Discussion

During the initial investigations of this site, it was thought that the main focus would be evidence of the Battle of Bannockburn and so the discovery of prehistoric activity was unexpected. The discovery of a small settlement of Bronze

Age date, particularly one formed of a single roundhouse rather than a cluster of them, is relatively rare. To the author's knowledge, it is the only recorded example of this type of isolated settlement, with a single post-ring and both internal and external features, from this date in Stirlingshire (Figure 10).

Despite centuries of agricultural activity, including ploughing which would gradually erode and cut away the upper parts of the archaeology, this structure survived. In addition to the roundhouse, the discovery of features from the early historic period is unusual; as recorded archaeology from this period is usually high status and complex.

A roundhouse was excavated at Greenyards near Bannockburn in 2010 which provides a close structural and chronological match to the roundhouse at Cambusbarron (Mitchell, 2010). This site was located approximately 3.5 miles to the south-east of Cambusbarron and is one of very few settlements of this date in the area. Both of these structures had external associated activity, which in Greenyards was focused around the entrance. Although there was possible evidence for two structures at Greenyards, they were not thought to be in simultaneous use as there would have been a slight overlapping of the structures. On both sites there was no evidence for the replacing or repairing of the structures over time.

The lack of evidence for the repair or replacement of structural posts suggests that the Cambusbarron roundhouse was in use for a relatively short period of time. The average life span of a timber-built roundhouse has been argued to be c. 60 years with increasing evidence for the complexities of settlement duration (Crone et al, 2018; Pope, 2003, 345). Several factors likely influence the rate at which posts and structures degrade, such as the type of timber used, waterlogging, or soil conditions (Pope, 2003). The duration for which these structures are used is not the same as the physical lifespan as structures were often abandoned prior to their decay (Pope, 2003, 345) and so we can therefore theorise that the roundhouse at Cambusbarron was occupied for significantly less than c. 60 years.

An Iron Age roundhouse uncovered at Fairly Knowe, near Buchlyvie to the north of the Campsie Fells provided further structural similarities (Main, 1998). Although the roundhouse in Cambusbarron was less well preserved than the Fairy Knowe example, the size and spacing of the post-holes were very similar. The Fairy Knowe roundhouse had a variety of associated shallow stake holes and ring-groves that had an average depth of 0.04m, both internal and external to the post-ring. No evidence of similar shallow features was identified in Cambusbarron, possibly because they were never created, or more likely because they have not survived due to truncation through ploughing. Evidence of agricultural process was observed during the trial trench evaluation.

There is no direct evidence to locate the entrance at Cambusbarron. The gap in the post-ring to the north-west is most likely due to loss of archaeological features rather than being deliberate. However, the location of the external features concentrated to the South of the structure may give some clue. A similar arrangement was seen at Greenyards where the external features were located beyond the porch entrance to the south-east (Mitchell, 2010). At Cambusbarron it is likely that the inhabitants were taking advantage of the natural shelter provided by the rising landscape to the south, undoubtedly sheltering the external activities from the worst of the elements. When considering general trends, it was during this period that a preference for a western entrance changed to the east as it maximised the interior sunlight exposure during the short winter days (Pope, 2003, 201). The eastern/south-eastern tendency is seen at Fairy Knowe in Stirlingshire, Kirkton Farm, Blackford in Perth and Kinross, Bellfield, North Kessock in Ross-shire and Whitecrook Quarry, Glenluce (O'Connell and Gray, 2008; Jones, 2009; Gow and Gordon, 2006).

The location of the Cambusbarron roundhouse was ideal as it provided an excellent vantage point across the landscape as well as basic shelter from the elements. It is therefore perhaps unusual that this is an isolated single use roundhouse as the location seemed to be ideal for continued

settlement. This type of isolated settlement although unusual, is not unique during this period.

Two recorded examples of isolated roundhouses found during a recent road project in Aberdeen are Bronze Age in date. These were found around 2.5km apart at Gairnhill and Nether Beanshill (Dingwall et al, 2019, Chapter 3). Although structurally very different, they represent this type of isolated occupation. The roundhouse structure at Nether Beanshill was associated with a cremation complex located to the East and so it could be interpreted as a ceremonial structure rather than for occupation, however, this cannot be said for that uncovered at Gairnhill. There were other structures in the vicinity of the Gairnhill roundhouse, located approximately 300m away, however, these dated to later in the Bronze Age and so were not contemporary.

Features may have been lost through truncation for some of these roundhouses or perhaps the excavation area has not included extensive areas beyond the structure. Truncation was not a significant factor at Gairnhill or Nether Beanshill, although in the latter the outer limit of the enclosure of the structure lay less than 4m from the edge of the excavation. At Cambusbarron, although the roundhouse appears to be in isolation, we are only seeing a small window of what may have been present in the past. As the edge of excavation on the south-eastern side lay only 5m from a row of modern houses; it is possible that further structures are present there. However, the lack of structures to the West and North can be stated with some confidence. On balance, it seems fair to describe this roundhouse as isolated.

From the evidence we currently have, the concept of the isolation of structures such as these may have been a commonality during the Bronze Age, with a movement towards more nucleated settlements in the late Bronze Age to early Iron Age (Dingwall et al 2019, 199). This shift from isolated settlement to clustered dwellings is clearly represented at Gairnhill and might be why we have no further settlement at Cambusbarron; settlement continued in a more complex form elsewhere. This tradition also potentially highlights why so few of these types of site are

known; a single roundhouse with limited elaboration and a lack of a dense spread of surrounding features will likely be harder to identify than a landscape with multiple overlapping and phased structures. The radiocarbon dating highlighted a second phase of activity on this site. A pit located down the slope to the North dated to the early historic period is likely contemporary with two other undated pits. Similar to the roundhouse, these types of feature are fairly unique. When considering early historic features in Stirlingshire and the surrounding areas, they are predominantly represented through early churches, such as Logie Church (Canmore ID 47165) and St Ninian's (Canmore ID 46227) Stirling; Old Parish Church, Muthill (Canmore ID 25308); St Kessog's Church and Churchyard, Luss (Canmore ID 319270); carved stones such as those recorded at Kirk Street, Dunblane Cathedral (Canmore ID 24673) or large fort sites such as Abbey Craig (Canmore ID 47113) and Dumyat (Canmore ID 47117). These sites represent high-status sites with evidence of continental trade and a high degree of complexity (see Noble & Gondek, 2011, 36-41). In contrast, the pits uncovered at Cambusbarron represent small-scale activity representing possibly only fleeting interactions with the landscape. Although their function is not clear and they do not appear to represent in situ hearths, their contents indicate some form of fire in the immediate vicinity.

These small features of this date are relatively unseen in the archaeological record. It is often the case that small isolated pits such as these are not routinely dated. When the opportunity for radiocarbon dating arises features with significant complexity are often favoured, understandably as they can help tie down the sequence of activity and clarify phasing. This preferential approach has likely led to the under-representation of some time periods, such as the early historic period, in the archaeological record. Equally, without scientific dating and given the presence of other structures of confirmed Bronze Age date, pits such as these might be assumed to be prehistoric in date, perpetuating the problem. These features, although seemingly small and insignificant, likely represent the day to day activities of people during the early historic period, in comparison to the wealthy, high

status individuals who might typically be encountered at some of the more renowned sites of early historic date. Although the three pits at Cambusbarron do not do much to advance our understanding of the specific activities and behaviours of the ordinary person in this period, they do highlight the importance of radiocarbon dating as a tool to identify these lesser-understood periods.

Acknowledgements

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Table 1. Radiocarbon dates from Cambusbarron. All dates calibrated using OxCal v4.4 Bronk Ramsey (2021); r5; IntCal 13 atmospheric curve (Reimer et al 2020) with endpoints rounded outwards by 10 (following Mook 1986).

Laboratory Code	Context No.	Material Dated	Radiocarbon Age BP	Calibrated (95.4%)
SUERC-87945	(038), fill of post-hole [037]	Charcoal: *Maloideae sp.*	3182 ± 30	1510-1400 cal BC
SUERC-87941	(014004), fill of pit [014003]	Charcoal: *Salix sp.*	1130 ± 30	cal AD 770 -1000

Table 2. Summary of vessels from Cambusbarron.

Vessel No.	*Context*	*Sherds*	*RD (mm)*	*Thick (mm)*	*Notes*	*Fig.*
1	(032) Fill of pit [031]	5	260	12	Squared rim sherd. Ridges on exterior. Inner surface is smooth, but the outer surface has a slightly gritty surface.	9
2	(038) Fill of post-hole [037]	1	n/a	9	Traces of sooting on interior.	
3	(002) Upper fill of post-hole [001]	7	n/a	9	Simple rounded rim.	
4	(025) Fill of post-hole [024]	2	160	9	Simple rounded rim. 'Smoothing' on exterior and interior.	
5	(036) Fill of post-hole [035]	4	n/a	12	Sherds slightly oxidised. Exterior lacks the smoothing observed on V1 and V4 giving it a coarser feel.	

CAMBUS - A PORT ON THE RIVER FORTH

Andrew Jamieson

"The king sits in Dunfermline toune
drinking the blude reid wine,
"O whar can I get skeely skipper,
To sail this ship o' mine?"
"Sir Patrick Spens". Traditional.

The River Forth flows into the largest estuary on the East coast of Scotland. It has been an important waterway since earliest times. The Romans probably re-supplied their garrisons in Central Scotland by sea. Early kings sent ships out across the North Sea for brides and trade. The Forth is surrounded by royal residences at Edinburgh, Linlithgow, Stirling and Dunfermline, all communicating by water. Religious houses at Edinburgh, Culross and Cambuskenneth relied on the river. King James IV's royal dockyard, where some of the biggest ships in Europe were maintained and repaired, is believed to have been located at Higgins Neuk, near Airth. The King's flagship, the *Great Michael*, the largest ship in the world at that time, is thought to have docked there before setting off to the Battle of Flodden in 1513. The early burghs of the East Neuk of Fife and the estate owners of the Upper Forth Estuary built up a substantial sea trade with Europe and the Baltic. All of these developments reflect the river's strategic position as an important area of influence and trade.

In the context of this cosmopolitan maritime world, Cambus is only a small port at the mouth of the river Devon on the northern shore of the tidal Forth between Alloa and Stirling. Today its few streets are dwarfed by the acres of whisky bonded warehouses stretching westwards across the carse-lands of West Cambus - so extensive they are visible from space. However, located at the upper tidal limit on the

river Devon, Cambus was for many years an active port and industrial site with sea-going vessels serving its mills, brewery and distilleries. With the introduction of larger ships and the arrival of the railway in 1852, the port went into decline and, with changes in the economy, its industries have disappeared or changed. However, Cambus may have had a different future if a long-forgotten project of 1774 had been adopted and followed through.

Cambus, the village.

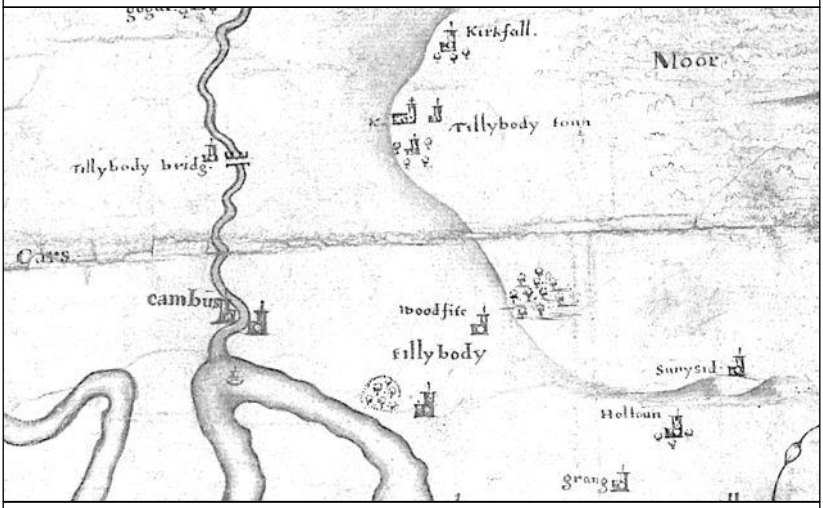
For a small village Cambus has a complex personality - part 'fermtoun', part estate-village, part seaport, part industrial estate. It is sited on flat carse-lands, bounded on the North by the prominent, wooded escarpment of the Main Post Glacial Shoreline. It formed the south west corner of the Tullibody estate, with a small detached area on the West bank of the river Devon. The western edge of the productive Coal Measures, upon which much of the economic wealth of the County of Clackmannan was based, lies just to the north east of Cambus. The rocks under the village are part of the Millstone Grit series, a not very valuable deposit of resistant rock. This is overlain by softer deposits of more recent sediments.

The Devon, winding its way southwards to join the Forth, cuts across this formation at Cambus. The village's location, on the river Devon gives Cambus its name (Gaelic: *camais* - a channel, bay or harbour). The upper edge of a rock bed in the centre of the village marks a change in level in the Devon, which must have formed a natural upper limit to the navigation of the river from earliest times. A stone-built weir has been built at this point. Above it is an extensive pool of water in the river Devon, while below it there is a 400m tidal section underlain by rock, followed by another 400m section underlain by tidal muds (Plate 23). This geological formation gave Cambus two assets; a small, safe, rock-bottomed tidal-harbour and a regular supply of water power.

Cambus has very little confirmed early history, although Canmore records that an oval-shaped stone - possibly a mace -head or sinker was found in the bed of the river Devon c.1860. When the lands of Tullibody and the salmon fishings on the river Forth were granted to Cambuskenneth Abbey this included Cambus. The area lay surrounded by the heavy clay soils of the 'carse', which would require drainage and 'liming', but the canons of Cambuskenneth had expertise in cultivating these carse-lands.

The first appearance of Cambus on a map is on Adair's *Strath Devon and the district between the Ochils and the Forth* of 1681 (Figure 1) where it appears as a settlement on both sides of the river Devon with a symbol for a harbour in the river Forth. It is located on the river Devon, lying to the south-west of "*Tillibody Toun*" and to the northwest of "*Tillibody*" (house).

Figure 1: Adair, 1681: Cambus - in relation to '*Tillybody toun*', '*Tillybody House'* and the River Forth.



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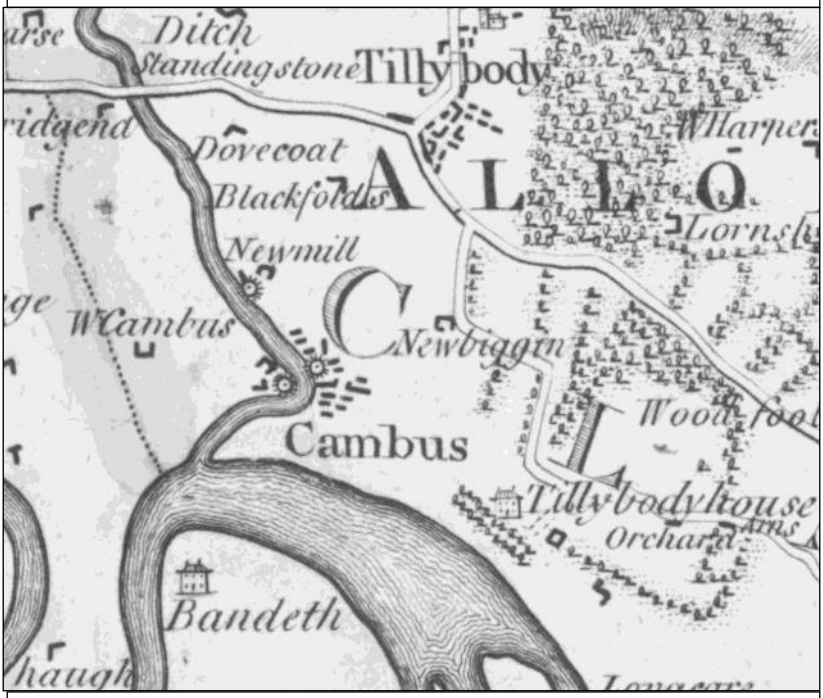
Cambus formed the lower part of the 'barony' of Tullibody and has always been part of the 'Tullibody and Cambus' community. It was part of the parish of Tullibody until 1600 and remained so when Tullibody parish was absorbed into Alloa parish after the Reformation. The village of Tullibody was the 'kirkton' and Cambus folk had to travel up the hill to Tullibody for religious observance and latterly for school. Cambus would initially have been a 'fermtoun' - a cluster of crofter-tenants - ekeing out a living from the heavy carse soils. The baronial mansion - Tullibody House - was located just east of Cambus c.1650 and there may have been an earlier castle on that site.

Figure 2. Stobie, J., 1785, The counties of Perth and Clackmannan, showing Cambus.



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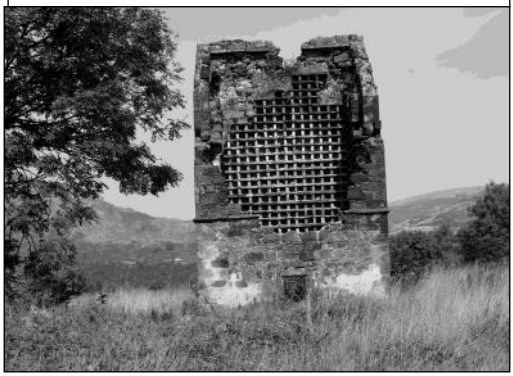
Cambus was the power house of Tullibody barony. Stobie's map of 1785 shows a water mill located on each side of the river Devon, coinciding with the site of the Cambus weir (Figure 2). The two settlements shown on Adair's 1681 map may have related to these mills. By 1785 a third mill (Newmill) had been erected on the East ride of the river a short distance to the North of the Cambus weir. The mill on the western side of the Devon was then a sawmill and the one on the East side was a grain mill - presumably serving the woodlands and agriculture of the barony estate. A third mill - at Newmills - is described in the Old Statistical Account of 1793 (OSA) as an oil mill, which might be for linseed oil from the flax which was imported at Cambus. Stobie's map also shows the extension of the Tullibody estate across the river Devon, including the farm of West Cambus. The only access between the two parts of the estate was across the Old Bridge at Bridgend.

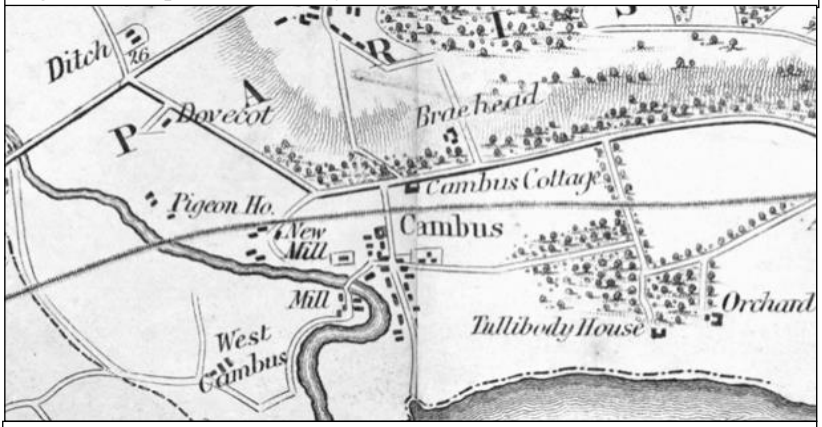
William Johnstone's 1827 map of "*Stirlingshire with part of Clackmannan*" is based on Stobie's earlier survey, but shows a road northwards along the East side of the river Devon from Cambus through Newmills to Bridgend. By now, a small settlement of "Dovecoat" is shown to the North of Newmill. In 1855 Robert Moubray was tenant of both Cambus Farm and West Cambus Farm.

Figure 3. New Mills Crossing Dovecot.



The substantial remains of a purpose-built, "dovecot" still stands on the site. This building once housed pigeons, providing the estate with a supply of meat, particularly in the colder part of the year.

Figure 4. Map of the County of Clackmannan, Michie, R.S., 1848.



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The first well-detailed map of Clackmannanshire was drawn up by R.S. Michie and published in 1848 (Figure 4). The simple street plan for Cambus shown on this map indicates that the main street is aligned West to East, leading eastwards towards Tullibody House This suggests the early development of Cambus as an estate village servicing the baronial mansion, with the adjacent farm being effectively the 'Home Farm' of the estate.

Of the other streets - one (Forth Street) leads down to the river Forth, connecting with a small, man-made harbour constructed in the late 18th century. This harbour is mentioned in the OSA and first shown on this map. Michie also shows the line of the Stirling to Dunfermline Railway, which was started in 1846 and completed in 1852. Lastly, it shows that by then the road layout had been extensively altered. A bridge had been built across the river Devon, just upstream from the Cambus weir, for the first time, connecting the two parts of the village. As a result, the road northwards from New Mill to Bridge End was abandoned and new roads are shown, connecting both Cambus and New Mill to the road between Alloa and Stirling.

Figure 5. Cambus Cast Iron Bridge.

This bridge, a cast-iron arch structure of 65 ft span, was built across the Devon near its confluence with the Forth, probably between 1825 and 1840. Local opinion favours the earlier date and that the bridge was cast and erected by the Carron Company (Paxton, R. and Shipway, J., 2007).

Figure 6. Cambus Bridge Deck

Its 12 ft wide timber deck is supported on four cast iron ribs composed of five elements. The timber deck has two iron channels to cater for the wheels of horse-drawn carts.

The bridge, which originally carried horse-drawn traffic, was conserved c.1975 under the direction of Ronald Noble, consulting engineer, Alloa, as part of a riverside walkway project, but is now sadly dilapidated and fenced off.

The Port of Cambus.

Little is known of the early history of Cambus as a port. Oram (2012) describes the founding of Cambuskenneth Abbey upriver near Stirling c.1140 which was granted the lands and fishings of Tullibody which would include Cambus at that time. The abbey had its own harbour and watergate and also had lands at Polmaise on the South side of the Forth, so it may be assumed that there was active river traffic up and down and across that part of the Forth involving the port of Cambus.

Cambus occupies a strategic position where the river Devon enters the river Forth, with a good tidal range. James Watt (1774) records that Cambus had a quay with a bottom of loose stones "*easily made a foot or two deeper*" (Figure 7.)

Figure 7. Shelving rock and loose Stones in the river Devon close to Cambus Quay.

"*The bottom of the River Devon above the quay, at this time, was of shelving rock not too difficult to quarry for building work to enhance the quay.*" This places Cambus Quay close to the weir across the river Devon.

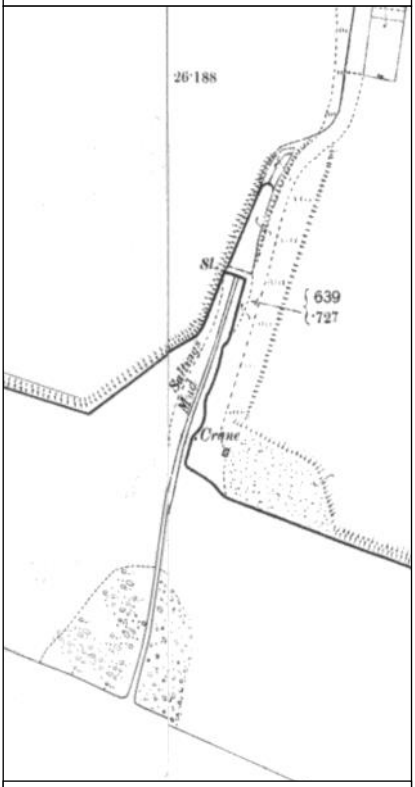
Watt describes the port of Cambus as having 9 ft (2.7 metres) of water at low neap tides and 13.5 ft (4 metres) in spring tides. This tidal range gave Cambus a competitive advantage over Manor, the next harbour upstream on the North bank of the Forth, which had only 5 ft (1.5 metres) on neap tides and 9 ft (2.7 metres) on spring tides.

The OSA States "*sloops and large boats, loaded with grain, come up near to the village of Cambus, to supply the mills, and a brewery and to carry of the manufactures of both*". This harbour lay in the tidal river Devon above the mud and silt of the river-mouth, probably near the head of tide and the site of the original distillery and brewery (Cambus Quay).

Figure 8. Cambus Quay, just below the Cambus Weir.

The OSA also notes that "*vessels of tolerable burden*" are able to load and unload at the pier at the mouth of the Devon (Cambus Pow). James Watt noted in his report to the Lord Commissioners of Police in 1773 that "*the bottom of the Devon has a conſiderable declivity betwixt the quay of Cambus and the Forth, ſo that veſſels, drawing more than nine feet water, cannot come to that quay in neap - tides , as the harbour now ſtands.*" By 1793 there were two harbours at Cambus, one in the tidal river close to the village (Cambus Quay) and one built on the North bank of the Forth (Cambus Pow). This was excavated out of the river bank (Figure 8) and set into the embankment which ran along the North bank of the Forth to Clackmannan Pow.

Figure 9. Cambus Pow, 1898.



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There had been successive embankments built on both sides of the Forth in the 17th to 19th centuries. These embankments had tidal sluices at regular intervals, allowing the water in the drains in the lands behind to empty into the river Forth at low tide. The harbour at Cambus Pow was still in use in the late 19th century and is shown in detail on the OS 1896 second Edition O.S. map. The harbour was set into the Forthside embankment and, at its landward end, had a large pond, held back by a small dam. This allowed water to be collected and released at low tide by means of a sluice at to help keep the harbour clear of silt. There was a similar arrangement at Alloa and Kennetpans harbours.

The 1898 OS map shows that Tullibody House had its own pier (Plate 24), extending out of the riverside embankment. The embankment is part of lengthy stretch of embankments which extend from Cambuskenneth Abbey to Kincardine. These embankments were constructed in the 17th to 19th centuries to reclaim areas of tidal saltmarsh and protect existing land from flooding. The 1920 revised edition of the 25 inch O.S. map shows the pond silted up, but records four "*mooring posts*" along the side of the harbour in front of the crane. A local resident described seeing the wooden crane

and remembered that there was a "canal" carrying water to fill the pond.

The harbour at Cambus Pow was still in use in 1898 when there are records of grain barges being towed up the Forth to Cambus. These records are associated with the navigational difficulties created by the construction of the South Alloa Railway bridge in 1885, which seriously reduced the channel available to vessels sailing upriver. There were so many accidents that the insurers of vessels and masters increased charges if they were sailing upstream of the rail bridge and Cambus was seriously affected by this situation.

Figure 10. The wedge-shaped basin of Cambus Pow, now heavily wooded.

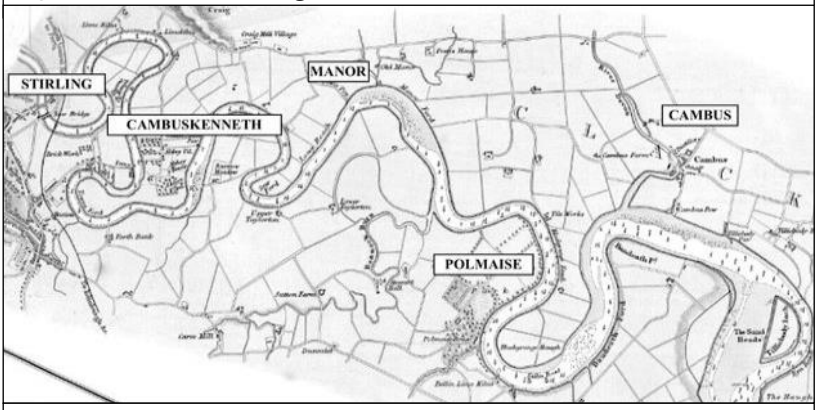
There is little evidence left of Cambus Pow. In 1971 it was visited by A. Graham and Canmore records that there were the slight remains of a stone quay of late-18th or early-19th century date.

He noted a stone base, possibly of the crane shown on the second edition O.S. map of 1898. The whole area was very overgrown then and the riverside embankment had been extended in front of the Pow. Today, the wedge-shaped shape of the basin of the Pow is still visible from the top of the extended riverside embankment which has been built across its mouth (Figure 10).

Another competitive advantage of Cambus in relation to upstream ports, in days of sail, was that it lay downstream of the first great meanders of the 'Links of Forth' at Bandeath, Fallin and Blackgrange which, with prevailing westerly

winds, could cause delays for sailing ships heading up to Manor or Stirling Shore, as they had to use the rising tide to travel upstream and the ebb tide to travel downstream.

Figure 11. The Windings of the Forth above Cambus.



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The Rise Of Alloa as a Customs Port.

In 1707 the port of Alloa, 3 km down-river, had been elevated to the status of a *'customs port'* controlling shipping in the upper Forth between Kincardine and Stirling. This included Cambus as well as the small harbours, or 'pows', at Clackmannan, Kennetpans, Kincardine and Manor, on the north side of the Forth, and at Airth, Dunmore and Fallin on the south side, together with The Shore at Stirling. The status and activity of these lesser harbours was overshadowed by the influence of Alloa. A port at Alloa is first mentioned in 1502. Alloa's coal trade goes back to at least 1558 when coal is recorded being was being carried from Alloa to the island of Inchkeith, near Edinburgh.

The location of Alloa and the other small harbours so far up the river Forth, significantly reduced transport costs for exports and imports, compared with land travel. The trade through the port grew dramatically once coal began to be

mined in the area. Dickie (2016) describes the network of waggon-ways which transported the coal from the mines and pits of Clackmannanshire down to the ports of Alloa, Clackmannan Pow and Kennetpans.

During the 1700s, Glasgow merchants built warehouses here to hold sugar and tobacco intended for re-export to the continent. By the mid 1700s there were over 100 brigantines and sloops registered at Alloa. The tobacco trade stopped around the 1790s when the Forth and Clyde Canal was opened but the coal trade became more important. The OSA records, that in 1774, 555 ships had been in Alloa harbour with a tonnage of 20,036. In 1791 there were 775 ships with a tonnage of 48,524. By the mid 1800s, 2,000 vessels were using the docks at Alloa and 175,000 tonnes of coal were exported each year.

Cambus had no coal pits in the immediate hinterland. The nearest coal workings were upstream in the valey of the river Devon at Collyland, Sauchie and Sheardale and coal was taken overland and exported through Alloa. However, that may all have been different if a project proposed in 1774 had been implemented. Cambus could have been connected by canal to the coal pits of the Devon valley and had a future as a coal-exporting port which might have rivalled Alloa.

The Proposed Canal to Cambus, 1774.

On 12 January 1774 James Watt presented a report to a group of nine landowners, including Lords Kames and Alva and representing interests in Clackmannanshire, Stirling and Kilmadock, on a proposal to built an ambitious system of inland navigation between the Devon valley and Gartmore near Aberfoyle, with a branch to Cambus.

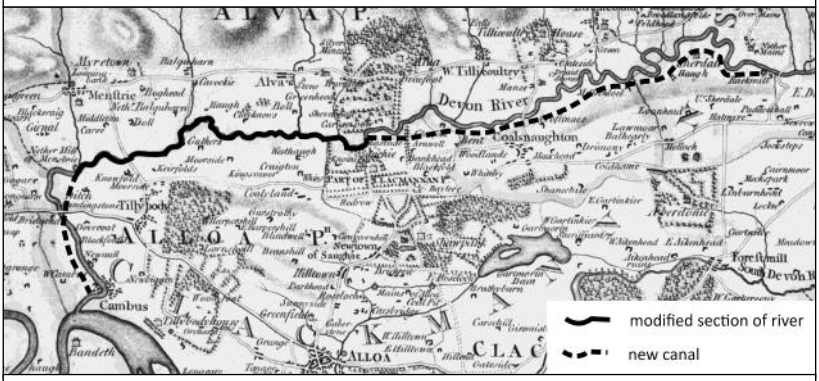
The initiative arose in the parish of Kilmadock in the West end of the Carse of Stirling. The carse farms of Kilmadock needed considerable quantities of lime for their fields. Limestone was available from quarries at Aberfoyle and Leny, near Callander but required large quantities of coal to convert into agricultural lime. Existing overland transport from pits at Bannockburn and imports via the Shore at Stirling were expensive. At that time it was much cheaper to transport goods by water than by land. It was also the era of canals. James Watt was already experienced in the design and construction of the Monklands Canal, surveyed in 1769, while the Forth and Clyde canal was opened in 1790.

The overall plan was to create a canal or inland waterway down the Devon valley, from Rackmill, near Dollar, down to Tullibody (Old) Bridge. From there, the main canal would head West to enter the tidal part of the Forth at Manor, below Stirling. From Tullibody Bridge a branch of the canal would lead south for c1.5km down to Cambus. Cambus was deemed a suitable port for expansion. Boat traffic would navigate the tidal part of the Forth as far as Craigforth at Stirling before entering the non-tidal river Forth up to Gartmore and the Goodie water up to near Thornhill.

At that time, coal from the mines of the Devon valley, from Coblecrook to Rackmill, had to be transported overland for export at Alloa. A waggonway was constructed in 1767-68 from Carsebridge to Alloa harbour and extended to Collyland between 1772 and 1774. The Collyland Extension enabled easy transport of coal from the Erskine's Devon Valley mines to the harbour at Alloa. An extension of the proposed canal to Cambus would open up a cheaper export route for those and the mines of other landowners and generate more income to Cambus from tolls and harbour dues. However, this would have put it in direct competition with the Alloa waggonway and Alloa harbour, owned by the Erskines, and would not be in their commercial interest.

Watt's proposal clearly set out the design of the canal and its mode of operation. It was to be designed with a width of 16 ft at the bottom, with 4 ft of water. Locks would be 72 ft long. This would accommodate boats with a width of 13 ft, a draught of 3.5 ft and a length of 56-60 ft, similar to those used on the inland waters of England and capable of use on tidal waters.

Figure 12. *An Interpretation of the 1774 Proposed Canal from Dollar to Cambus,* Superimposed on Stobie 1785 *The Counties of Perth and Clackmannan.*



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The canal between Rackmill at Dollar and Cambus would be constructed in three parts (Figure 12). From Rackmill down to (Old) Sauchie a new canal would be constructed to the South of the existing river Devon. This would require 23 feet of lockage. From Sauchie down to Menstrie Dam was three miles of 'dead water' except at West Haugh and Coble Crook fords. This would require four locks to drop the 26 ft. (The location of Menstrie Dam is uncertain. It does not appear on available maps but is described as 1.75 m above Cambus. Ainslie's map shows the "*Nether Mill of Menstrie*" at the mouth of the Menstrie Burn which perhaps required a dam to provide a head of water.)

From Menstrie Dam to Tullibody Bridge there were numerous shallows and a new canal would require to be built. From Tullibody Bridge another new canal would go West to join the tidal Forth at Manor, while the remaining 4488 ft (c1.5 km) of the river Devon down to Cambus would also require a canal, created by excavating 24,334 cubic yards (c20,000 cums) of earth. Both ports, Manor and Cambus, would be deepened and provided with the facilities for exporting coal.

Watt provided detailed estimates of cost. Excluding the land purchase, the project from Craigforth westwards would cost £5,833 and the Devon part of the project from Rackmill to Manor and Cambus would cost £7,403. The meeting agreed a number of resolutions, including to open up a subscription with a view to obtaining an Act of Parliament. The immediate result of that resolution is uncertain.

Watt was familiar with the engineering and financial risks of building canals. He had surveyed the route of the Monklands Canal in 1769 only to see it run out of money in 1773. More money was raised in 1780 for construction to continue. Work began on the Forth and Clyde Canal in 1768 but also ran out of money in 1775. Further funding allowed it to be completed in 1790.

Had the Devon valley canal been built it may have suffered the same fate. However, that was not to happen. McGibbon (1799) submitted a proposal to the landowners of the Kilmadock parish promoting an alternative inland waterway which excluded the Dollar to Cambus/Manor part of Watts proposal on the ground of cost. Had Watts proposal gone ahead, Cambus would have had an export business in coal from the Devon valley pits together with a deeper harbour. This would have given Cambus a competitive advantage which could have led to expansion and other significant industrial developments. But that advantage may not have lasted. By 1831, the railways were beginning to offer

competition to canals and, by 1867, both the Monklands Canal and the Forth and Clyde Canal were purchased by the Caledonian Railway Company.

Industrial Cambus.

Regardless of a potential canal, Cambus had industries based on its natural resources; the ease of importing raw materials and exporting bulky products through its harbours and the availability of a substantial, regular supply of water for processing and power.

Milling. Stobie's map of 1783 shows two mills at Cambus, one on each bank. The OSA refers to the high dam which had been built across the river at Cambus to power the corn and barley mills on either side of the river. An oil mill had also been erected on the river at that time, presumably at Newmills, and was *"said to perform a great deal of* work*"*. The OSA also records that Lord Alva's tenants on the south side of the Forth at Polmaise and Fallin, as well as the farmers of West Cambus, were '*thirled*' to (obliged to use) the Lord Alva's mill at Cambus. It might be assumed that the grain would be shipped across the Forth to Cambus for that purpose. The early O.S. maps of the mid-19th century show a saw-mill on the right bank and describe the mill at Newmills as a flour mill. The saw mill continued in use until shown on the 1920 OS map as "*disused*". The river Devon at Cambus obviously provided plenty of water power.

Cambus Weirs and Lades

The main weir across the river Devon at Cambus is well preserved. It is constructed at the top of several ledges of sedimentary rock. An inverted V in shape, the two arms directed water to each bank of the river, feeding two lades.

The lade on the East (village) bank has been lost to development but the lade on the West bank, together with its relief sluice, has survived more or less intact.

Figure 13. The "V"-shaped weir across the river Devon at Cambus.

The stonework leading from the West weir, the sluice mechanism returning water to the river and the tailrace are all visible. A wall of the sawmill next to the lade is also still standing.

Figure 14. The Sawmill lade and sluice.

Figure 15. The Newmill lade from the river Devon.

The line of the lade from the river Devon to the site of New Mills is still visible as a tree-lined ditch. A weir across the river Devon diverted water into the lade and was returned to the river just above the Cambus Weir pool, ensuring that it would be available to the other two mills fed from the Cambus weir.

Brewing. A brewery had been established in Tullibody by Robert Knox in 1786. It moved to Cambus in 1792 and flourished during the late 19th and early 20th centuries. This made use of Cambus Pow for importing supplies and distributing its finished products. With the arrival of the Stirling and Dunfermline Railway in 1852, the Cambus Quay became slowly redundant and, in 1866, the new 'Forth Brewery' was moved to a new site which could be served by a siding from the railway. The brewery closed in 1955 and was converted into the Strathmore Distillery, specialising in the production of lowland malt. The Stirling and Dunfermline Railway was closed to passenger services in 1968 and was completely closed in 1979.

Distilling. A whisky distillery was established in Cambus in 1806. Although the OSA noted that, in 1793, "*the great distilleries were much diminished*", they obviously recovered again. The Caledonian Mercury reported in 1824 that "*So great is the predilection for whisky of the true highland flavour, that a cargo of peats from Ferintosh was discharged this week at Cambus Pow*". By the 1840s the distillery employed 60 men, produced 300,000 gallons of spirit per annum and paid duties of £51,000 to the exciseman. It also supported 400 cattle on the residues of the process. In 1877 ownership was merged into the Distillers Company Limited as a malt whisky distillery.

Anon (1969) *provides* an eye-witness account of grain being discharged for the distillery at Cambus Pow in the early 1900s: "*The Pow used to be the scene of great activity when lighters with grain for the distillery were being discharged. They had attractive names: Dart, Flash, Glance, Gleam and Comet. They were timed to arrive at high water. The tug signalled to cast off the tow-rope in mid-stream and moved out of the way. It required some judgement to know when to do this so that the lighter, with wind and tide to contend with, and only the helm to guide it, could make the narrow entrance at the right speed without over-reaching the berthing pl*ace."

Unloading the grain from the lighter was equally entertaining: John Reid, a stevedore from Alloa, contracted to discharge the cargo. Cowan and Company supplied the lorries. They brought with them a motley gang of men and women known as "*Breetners*" dressed almost like scarecrows and no wonder, because, *after* a day in the hold, dust penetrated clothes to such an extent that no amount of brushing could remove it. The woman held open the mouth of the bag and the men filled it from iron scoops. The full bag was raised by windlass to an upended barrel so it was easy for a man to take it on his back, run along the gangway and dump it on the lorry. As the lorry left another was ready to take its place. In 1966 the distillery was operated by Scottish

Grain Distillers but was closed down in 1993, although the cooperage remained.

Modern Cambus.

Little remains of the harbours and industries of Cambus. The Stirling and Dunfermline Railway connected Cambus to the main network in 1852 and the brewery moved from its original site by the river closer to the railway to be served by sidings which also serviced the distilleries. The quay at Cambus became redundant but was utilised to bring in materials to construct the Alva branch section of the Stirling to Dunfermline railway line when, in 1862, the railway company arranged to have all the rails delivered there.

Cambus distillery shut down in 1993, but the cooperage was retained and the highly-visible evidence of the whisky heritage is the vast area of whisky bonds which spread westwards across the Carse and the extensive barrel stores (See plate 25). A further legacy is the network of 'blackened' trees, coated with an algae - *baudoinia compniacensis* - a unique whisky fungus found near distilleries and thrives in damp conditions, possibly aided by whisky fumes. The railway line to Alloa was reopened in 2008 and a passenger service was reinstated, but did not include Cambus station.

Conclusion.

Despite its small size and distance upriver, Cambus has had an interesting history. Located at the tidal head of the river Devon, it was for many years an active port and industrial site with sea-going vessels serving its mills, brewery, distilleries and sawmill With the development of larger ships and the arrival of the railway in 1852 the port went into decline and changes in the economy have seen its industries changed or disappeared. There is little evidence of its life as a port but Cambus may have had a different future if James Watt's long-forgotten project of 1774 had been adopted and followed through.

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Author Guidelines.

This Journal is the official publication of The Forth Naturalist and Historian (FNH). The Journal was launched in 1975, and is published in November each year. The Journal usually includes a combination of bespoke Natural History and Historical articles, as well as annual regular sections such as the Forth Area Bird Report, weather and plant reports. For all inquiries about FNH, including informal inquiries for potential articles for FNH, please contact: fnh@stir.ac.uk

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FNH welcomes any article submissions relevant to the history, natural history or archaeology of the Forth Valley. Articles describing the lives of locally important people or events are also welcome.

Examples of recent articles include:

- Giant hogweed in the River Allan and the Upper Forth, by Guy Harewood
- A survey of the hoverflies of the Inner Forth, by Scott Shanks
- Rookeries in the Upper Forth bird recording area, by Neil Bielby
- A brief history of King's Park Football Club, by Nigel Bishop
- Cambuskenneth Abbey and its Estate, by Richard Oram
- Upper Carron Valley and the Highland drovers, by John Mitchell

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We have a very friendly Editorial Board that is interested in receiving all article submissions relevant to the Forth Valley. Authors may contact the Journal with informal inquiries about submitting articles to FNH at fnh@stir.ac.uk Fully formatted papers that are submitted to FNH are evaluated for suitability by the Editor, who then assigns the paper to one or two members of the Editorial Board. The Editorial Board then will make the necessary suggestions, and work with the authors, to make the manuscript suitable for publication.

Plate 1. Aerial View of Cambus Pools from a drone (Gabi Rice-Grunert).

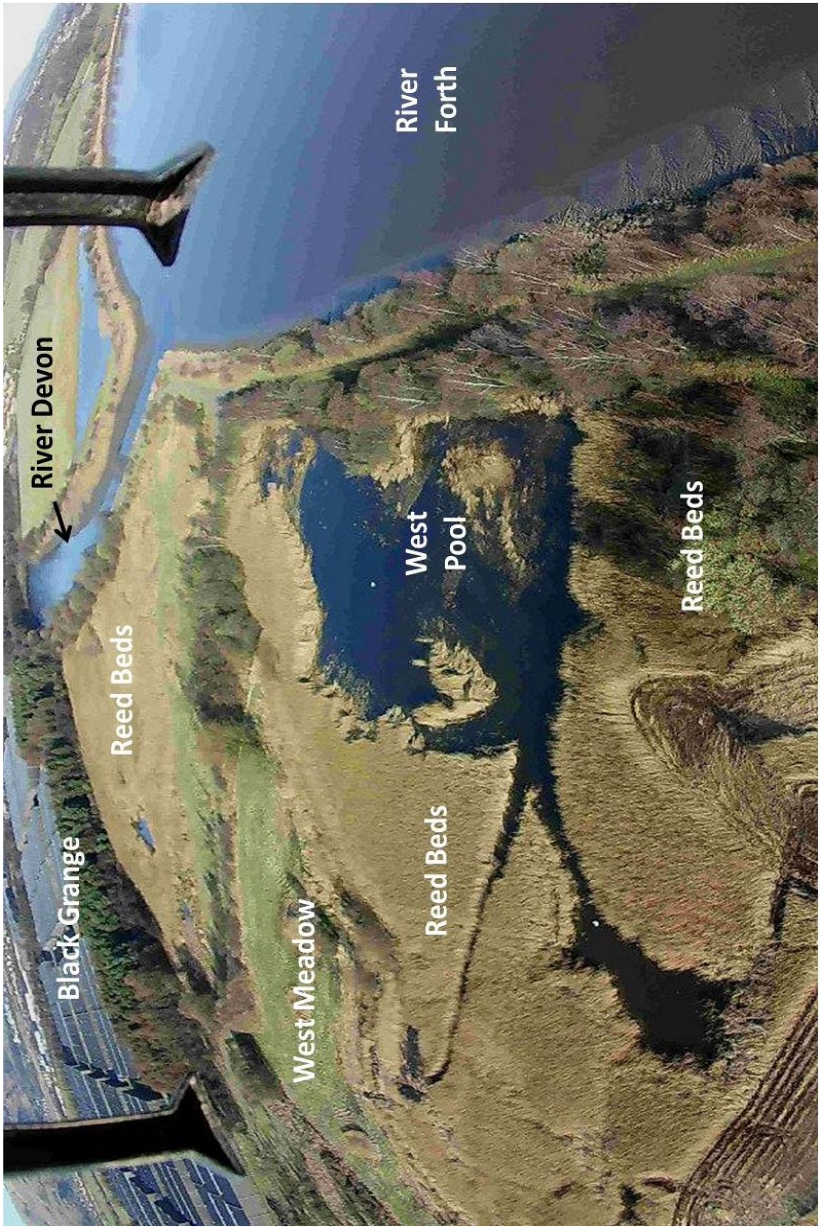

Plate 2. One of the seven breeding warblers at the Pools - Whitethroat (Ian Bone)

Plate 3. One of the seven breeding warblers at the Pools - Reed Bunting (Phillip Jones)

Plate 4. Teal, seen in the tidal River Devon adjacent to the Pools. (Phillip Jones).

Plate 5. Breeding birds - Swans and signets in the River Devon, adjacent to the Pools (Phillip Jones).

Plate 6. A Kingfisher on the edge of the river Devon adjacent to the Pools. (Phillip Jones).

Plate 7. Jeroen Minderman bird ringing in the Hawthorn scrub (Roy Sexton).

Plate 8. One of the West Pool's breeding birds - Water Rail (Phillip Jones)

Plate 9. Watching Water Rails in the West pool (Roy Sexton).

Plate 10. One of the West Pool's breeding birds - Lapwing (Phillip Jones)

Plate 11. Shelduck, seen in the tidal River Devon adjacent to the Pools. (Phillip Jones).

Plate 12. Young otters in the River Devon adjacent to the Pools. (Phillip Jones).

Plate 13. Breeding birds - Goosander and chicks in the River Devon, adjacent to the Pools (Phillip Jones).

Plate 14. One of the invertebrates at Cambus Pools - Common Blue butterfly (Roy Sexton).

Plate 15. One of the many hundreds of invertebrates at Cambus Pools - Blue-tailed Damselfly (Ian Bone).

Plate 16. Little Ringed Plovers on the River Teith in the Carse of Lecropt (C&G Thomson).

Plate 17. Crow predating on a juvenile Starling at Kippen (RJN Stewart)

Plate 18. Rainfall Amount, % of 1981-2010 Average, February, 2020.

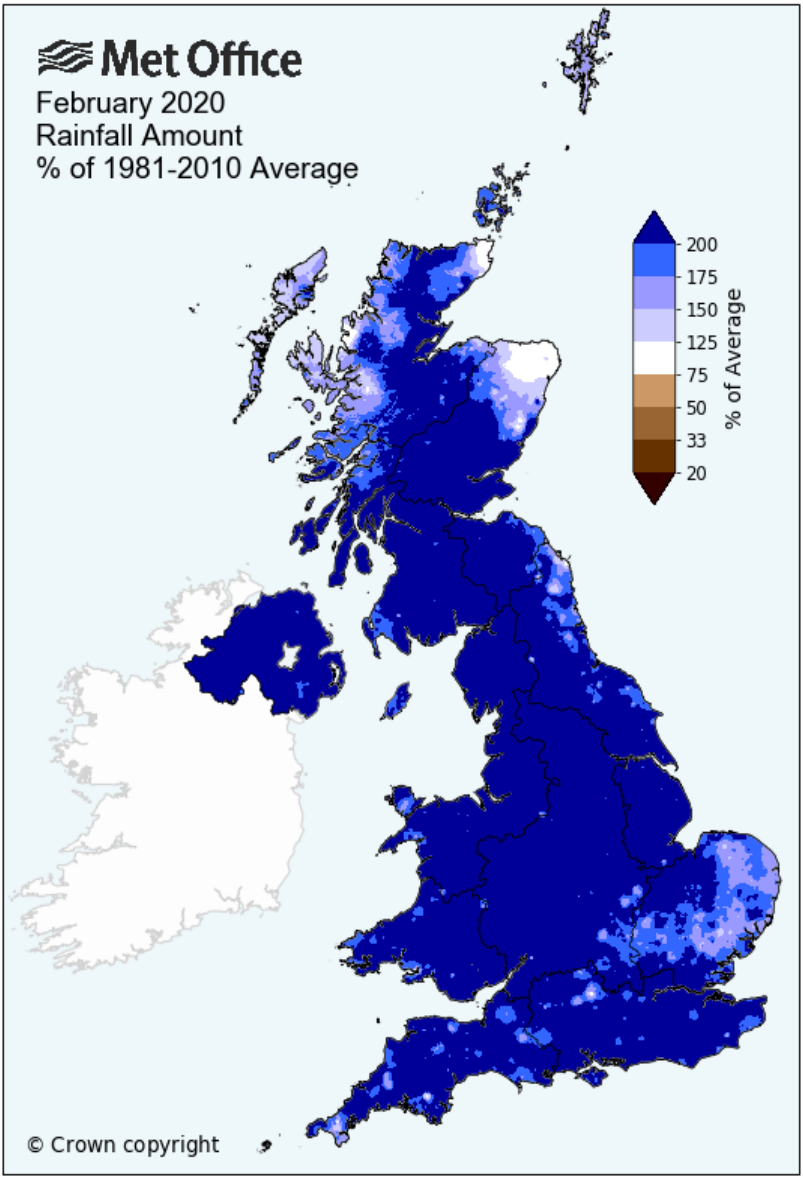

Plate 19. Rainfall Amount, % of 1981-2010 Average, April, 2020

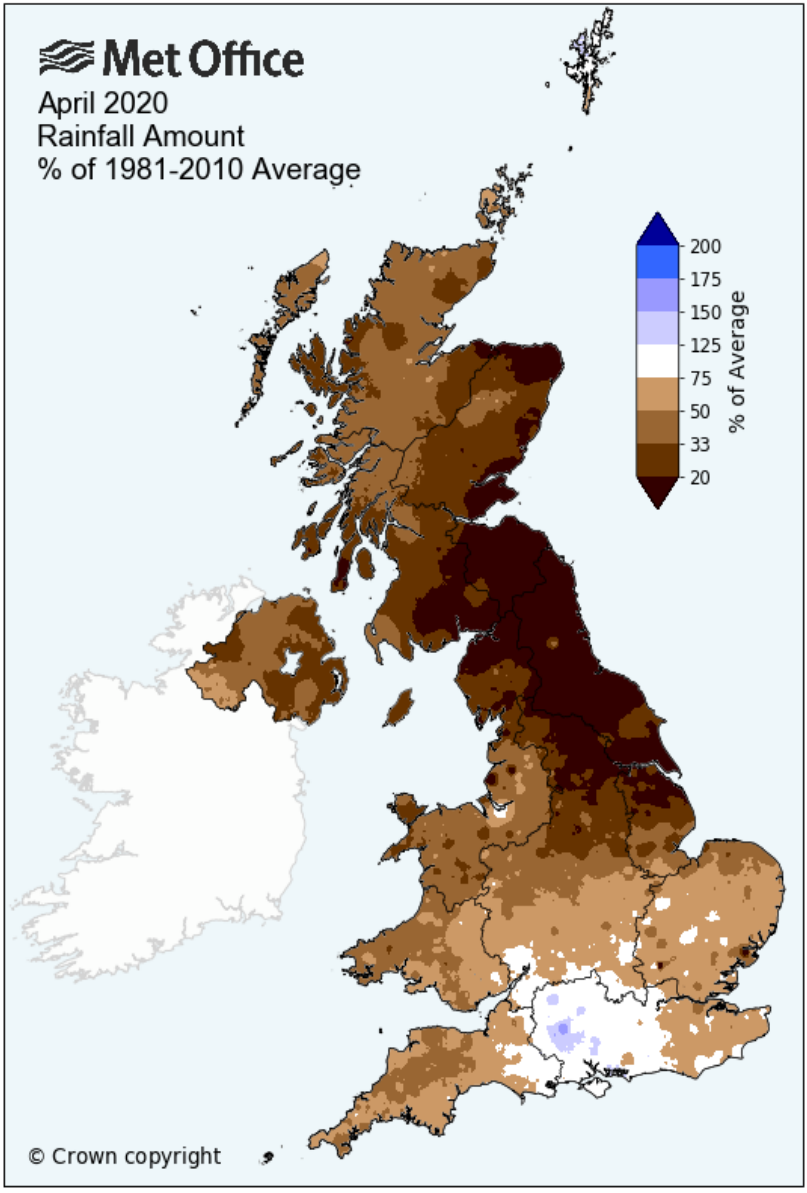

Plate 20. Sunshine Duration, % of 1981-2010 Average, Spring, 2020.

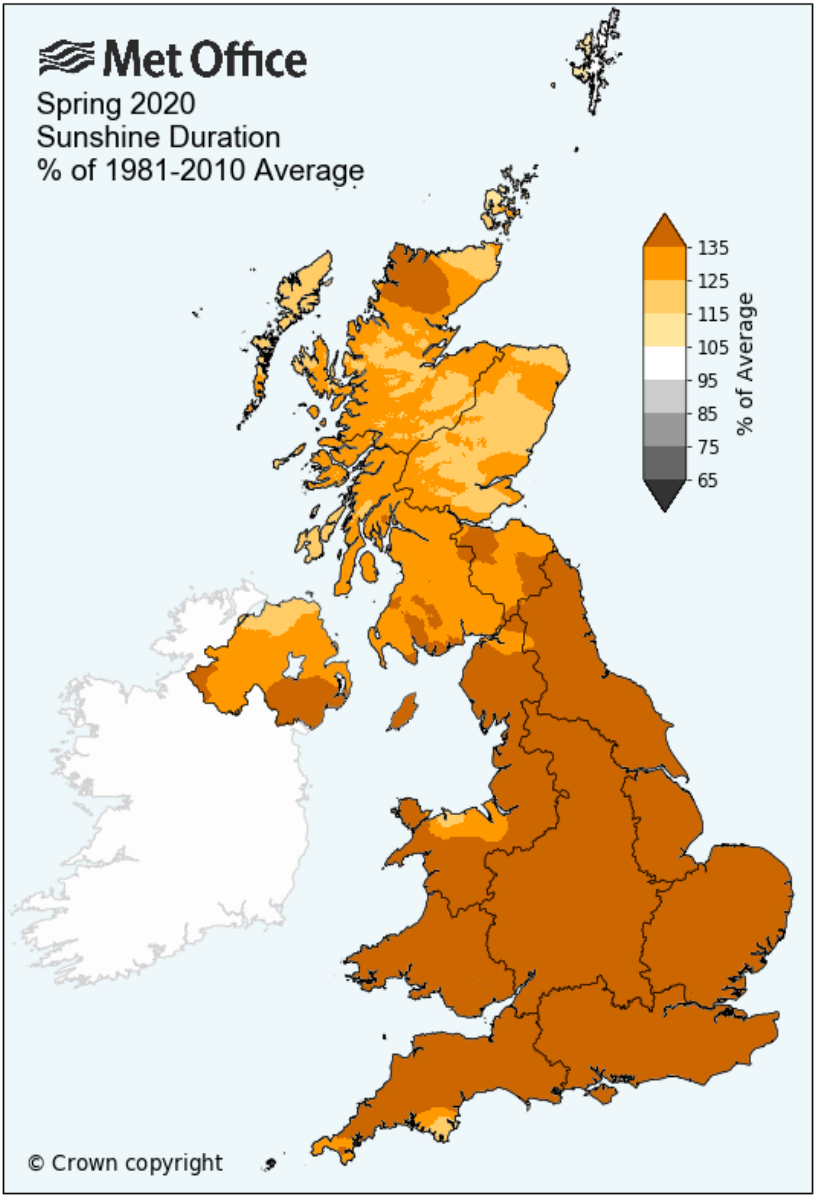

Plate 21. Dunblane and Kirkton—Monthly Mean Temperatures

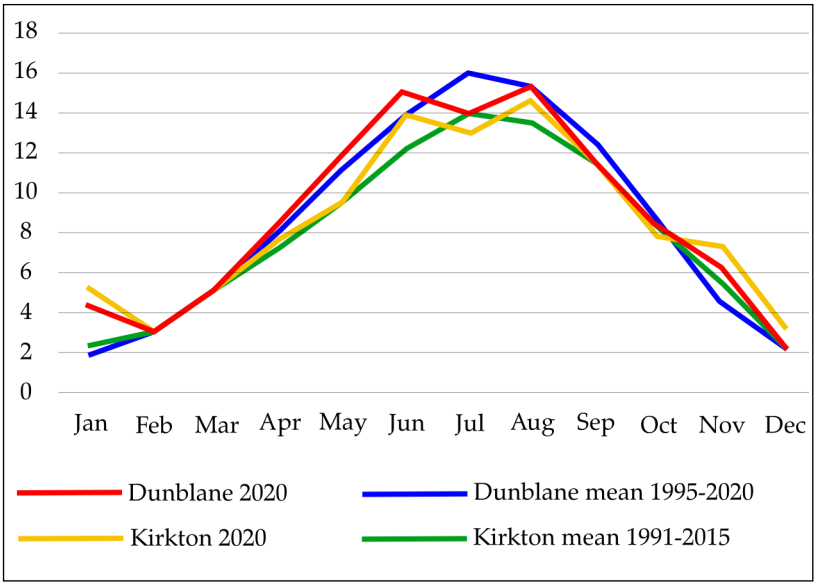

Plate 22. Wind Direction—Dunblane, 2020.

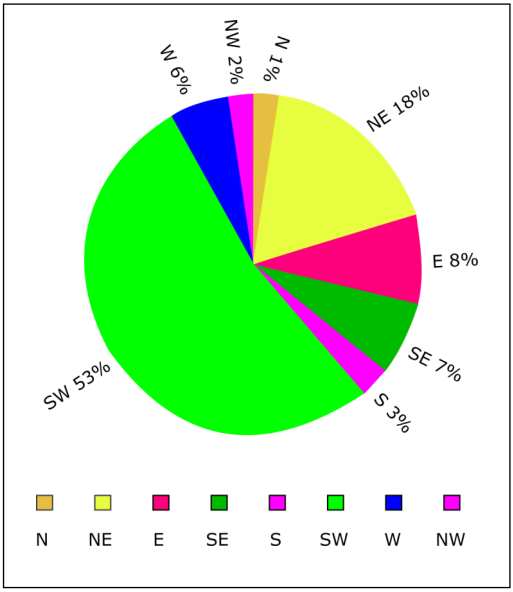

Plate 23. The junction of bedrock and tidal mud in the river Devon.

Plate 24. The tidal embankment on the river Forth and the site of the Tullibody House pier.

Plate 25. One of the barrel stores at Cambus.

the Forth Naturalist and Historian

Water Rail at Cambus Pools

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