Summary Proceedings

Tuesday 8th April

LIFE CYCLE AND MIGRATION STUDIES

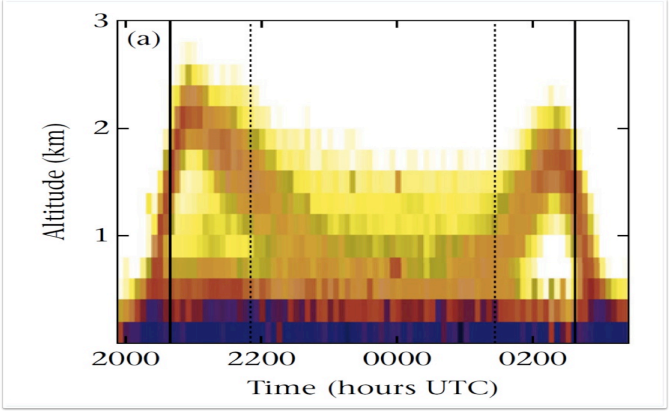
The flight of Swifts as revealed by wind tunnel studies

Anders Hedenström, Lund University, Sweden

Swifts are extremely well adapted for a life in the airspace. Wind tunnel studies of Swift wings and live Swifts in both flapping and gliding flight show the lift to drag ratio is about 12, which occurs at a speed of about 10 m/s. This speed is the preferred speed of Swifts during migration, as revealed by radar studies. Yet, Swifts are capable of sprinting at speeds up to 30 m/s in 'screaming flight' displays, which is the highest documented speed in powered flight for any bird. Data about wake vortices were also presented that reveal the time-history of the aerodynamic force throughout the wing-beat.

The nocturnal activities of Common Swifts

Luit Buurma, Lisserbroek, The Netherlands



Results of dawn and dusk ascent analysis

Since 1979 radar observations over The Netherlands in June and July revealed special nocturnal bird movements over Lake IJssel with a typical peak appearance at dusk and dawn. It was believed that these daily aggregations were of Common Swifts, but it took many years to collect enough circumstantial field evidence to allow publication. The first non-peer-reviewed paper in the Proceedings of the International Bird Strike Committee conference in Amsterdam was based on seven nights of observations by the air defence radar in the North of The Netherlands. (Buurma 2000, see: http://www.planetofbirds.com/common-swift-article-2). This has been confirmed by means of the meteo radar in De Bilt in Central Holland (Dokter et al, 2013, Animal Behaviour 85, 545-552 2013). Moreover, the recent IJsselmeer radar images shown in Berlin (2010 and 2012) were, in 2013, complemented with measurements using a small mobile radar dedicated to bird detection (manufactured by ROBIN Radar systems). What was assumed in 2000 has now been proven:

at midnight the Swifts above the Lake go down to very low levels for feeding. By doing so they disappear under the lowest beam of the big air defence radar. The latest and most detailed images indicate that they follow wind driven insect accumulations along the dykes into corners of the IJsselmeer. These observations of bonanza feeding need further analysis but throw new light on the general story of Swifts sleeping on the wing. We assume that the big majority of IJsselmeer Swift aggregations consist of non-breeders. We hypothesize that the birds use the Lake as an arena for not yet understood social behaviour in order to share knowledge on weather and feeding opportunities. The ascents might help the birds to orient and navigate.

Do weather conditions affect the reproductive success of nesting Swifts? A pilot study of a pair of Swifts over a 2-year period

Ginny Carvisiglia, London, England

One breeding pair of Common European Swifts (*Apus, apus*) were observed over two years, as a pilot study, to see if any relationship could be identified between weather and temperature, and the birds' breeding success. The observed pair had successfully hatched eggs in 2011 but failed to do so in 2012, and it was wondered why this had happened. Swift populations are dramatically declining in the UK so any discoveries contributing to an understanding of the reasons for breeding failure, could possibly highlight a direction forward for future conservation efforts. Average monthly temperatures for the months of April, May and June for 2011 and 2012 were recorded in relation to different categories of the bird's nesting behaviours, highlighting days of extremes of weather and unexpected Swift behaviour. The study results, although mostly inconclusive due to the small sample size, do however suggest that the main influence on the Swift's reproductive behaviour is temperature. This affects the flight of insects, the Swift's sole food source, so colder wetter weather may mean their priority becomes feeding rather than reproduction. From the arrival of the pair in May 2012, the weather was significantly wet and cold with a distinct lack of sunshine hours, whereas 2011 saw much warmer and drier conditions. As this was such a small sample group more longitudinal studies are needed to clarify the effects of the weather on Swift reproduction. The value of this study is that it highlighted a correlation that will benefit from further research**.**

Tracking migrating Common Swifts across continents from Europe to Africa

Susanne Åkesson, CAnMove, Department of Biology, Lund University, Sweden

The common Swift is a spectacular migrant, which presumably spends most if not all its life on the wing. Despite being a highly admired and charismatic bird, we still lack information on which routes and to where different populations of common Swifts migrate. Our current knowledge is based on a continent-wide geolocator study on the migration of common Swifts from Europe to Africa and back. We have used miniature geolocators, so-called light loggers, to track the migration and wintering of Common Swifts from several different populations in Europe from Italy in the South to Swedish Lapland in the North. There are also a number of study populations which have been tracked from the UK and central Europe. Generally the southern populations of Common Swifts breeding in Europe initiate autumn migration prior to the northern populations, and they also move to wintering areas further south to southeast in Africa south of the Congo basin. Our initial work revealed that it is predominantly in the Congo basin area where the Swedish Common Swifts winter. Central to most populations are that they pass West Africa on the migration north, make a short stopover in the region of the Liberian rainforest area, before they cross the Sahara in a fast transportation North. The project is a joint effort involving many volunteers and collaborators in several countries. I am grateful to all**.**

Swift nest boxes in Hakkas, Lapland

Common Swift stopover sites in West Africa, including commonalities with other tracked species, such as Cuckoos and Nightjars

Chris Hewson, British Trust for Ornithology, England

18 geolocators retrieved from returning Swifts in 2011-2013 have revealed previously unsuspected stopovers in West Africa. These stopovers occur when drought-breaking rains cause a burst of insect availability. Rainfall patterns are determined by ITCZ and therefore primarily by annual variations in solar radiation intensity.

It is therefore important to consider large-scale geophysical processes when interpreting this new information. The findings of this work can lead to potential insights into processes affection populations of declining species.

Future research will include fieldwork on stopover ecology of Cuckoos, Nightjars and Swifts in West Africa**.**

NEW WORLD (AND OTHER) Swifts

Iberian Pallid Swifts in Winter: new insights

Lyndon Kearsley, Antwerp, Belgium

Pallid Swifts (*Apus pallidus*) have a global population of between 250000-2000000 according to the IUCN and although of least concern, there is currently a strong tendency to urbanisation particularly in Europe, while we know very little about their full annual cycle. There are no African ringing recoveries for this species and only summary distribution data.

We attached 14 geolocators to breeding birds from a large and stable natural coastal colony in Portugal in 2012. Eight of these were recovered in 2013 and we present here five complete migration and winter cycles. We show that the main mid-winter strategies for this population are more coastal than given in the literature and limited in area. These birds used two distinct winter areas separated by 2000 km either separately or moving between them. These movements appear timed to the annual weather cycle in West Africa.

Far from being nomadic the species has finely timed migratory strategies and therefore the wintering areas are of conservation concern.

Lyndon Kearsley, Luís T. Costa, Gonçalo Elias, Alexandre H. Leitão, Martin Poot & Philippe Helsen

The influence of weather on parental care in an aerial feeder: how does the Alpine Swift react in bad weather?

Christoph Meier, Swiss Ornithological Institute, Sempach, Switzerland

For their diet, aerial feeders (AF) rely heavily on insects, which, however, only fly during warm temperature well above 10°C. Therefore, AFs are vulnerable to spells of cold weather during the breeding period. In years with bad weather AFs often suffer a great loss in reproductive success and fledglings may have to fast for several days in such year. Little is known how AFs can adapt their behaviour to mitigate these detrimental effects on their brood. We used geolocators to study the nest visit rates of parenting Alpine Swifts (*Apus tachymarptis*) throughout the breeding season. Geolocators were initially designed to study migration routes of birds but as a by-product they can also be used to monitor individual's time of attendance and number of approaches at the breeding colony. Parenting activity was related to the number and age of fledglings. In the early season and during bad weather parents spent a longer time at the nest. The number of feeding events increased with age of the fledglings, peaked with approximately 7 events per day at day 25 during the phase of maximum growth of the fledglings, and decreased thereafter. With the evidences at hand, I will revise the probability that adult birds were hunting far away from the colony and abandoned fledglings for more than a day due to locally bad weather. This study sheds light on the airspace use of Alpine Swifts.

Northern Black Swift *Cypseloides niger* Research - Past, Present and Future

Carolyn Gunn, Colorado Parks and Wildlife, United States

An overview of research projects conducted in the western United States on Black Swift (*Cypseloides niger borealis*) since 1998 including: 1. Colony surveys. 2. Determination of nesting success at a Colorado colony. 3. Use of temperature/humidity data loggers to determine nest microclimate. 4. Use of geolocators to determine migration paths and wintering grounds. 5. Identification of diet during breeding season. 6. Use of a surveillance camera to observe nesting behavior. 7. Microsatellite marker development and analysis of DNA of western US specimens of *C.n.borealis*; analysis of DNA from two additional subspecies (*C.n.costaricensis* and *C.n.niger*). 8. Plumage characteristics of DNA-sexed males and females as determined by serial photographs.

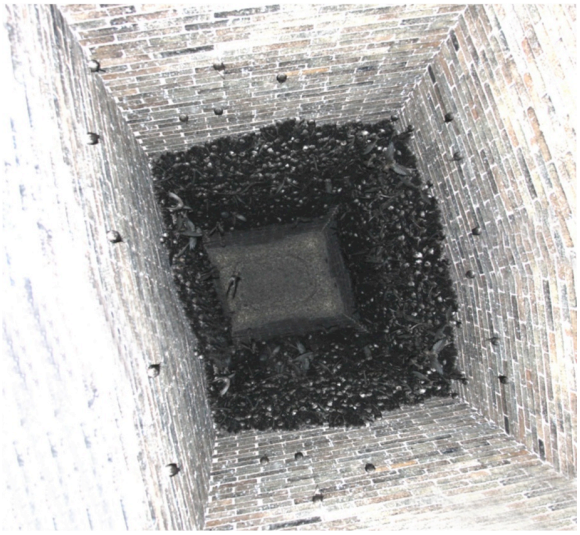
Is habitat limiting the Chimney Swift population in Ontario?

Kristyn Richardson, Stewardship Biologist, Bird Studies Canada

Aerially-foraging insectivorous birds have been declining for several decades in North America and habitat loss is hypothesized as a leading cause for the declines. Chimney Swifts (*Chaetura pelagica*) are a model species to test this hypothesis because habitat use and availability is easily assessed. BSC established a volunteer-based survey across southern Ontario, Canada, within which Ontario SwiftWatch made an inventory and described chimneys that were used or unused by Swifts. It was determined that Swifts preferred chimneys with a greater length exposed above roofline and with greater inside area, which were not associated with residential buildings. Of 366 open chimneys, 139 of them were classified as suitable but only 24.4% were occupied by Swifts. Artificial chimneys are quickly becoming a popular stewardship activity for many communities across Ontario; however, none have been used by Swifts. All thermal parameters differed significantly between occupied chimneys and towers: chimneys had a higher average ambient temperature, less variance, higher maximum temp, and higher minimum than towers. Our results suggest that Chimney Swift populations, and likely other aerially-foraging insectivorous birds, are limited primarily by other processes, such as changes in prey.

Vaux's Happening - a study of a North American Swift

Larry Schwitters, Audubon, United States



Vaux's Swifts in a chimney

In the last twelve migrations, Audubon's Vaux's Happening has documented nearly six million Vaux's Swift (*Chaetura vaux*) Roosting events along the length of the North American Pacific Flyway. Surveillance Cameras installed as part of a chimney roost site earthquake retrofit have recorded hundreds of hours of this species' previously unknown activities and behavior.

Swift Conservation from a South American perspective: a study of neotropical Swifts

Renata Biancalana, Universidade Presbiteriana Mackenzie, São Paulo, Brazil

Sooty Swift *Cypseloides fumigatus* on the nest

The study of Swifts in a tropical country like Brazil is a challenging task. Most species are poorly known and difficult to identify in the field. Swifts from the *Cypseloidinae* subfamily have peculiar breeding biology characteristics which allows us to monitor populations across the country. There are more than 1900 bird species recorded in Brazil. There are 19 species of *Apodidae*: eight *Cypseloidini* (medium to large size); eight *Chaeturini* (small to medium size); and three *Apodini* (smaller species).

Problems in conducting research include difficulty in field identification and basic lack of data on distribution, diet and breeding; bureaucracy and politics; logistics and costs; safety issues; lack of interested researchers or students. The main threats to

the nineteen species of Swift in Brazil are deforestation (loss of natural cavities) and agribusiness; use of pesticides; hydroelectric power schemes; erosion; loss of resources (eg, bryophytes, swarm insects)
The Sooty Swift Breeding Biology Project was carried out in Intervales State Park, São Paulo, Southeastern Brazil, which is a UNESCO World Heritage Site and the best preserved Atlantic Forest Mountain Range in Brazil. The Project achievements include complete coverage of Sooty Swift (*Cypseloides fumigatus*) and White-collared Swift (*Streptoprocne zonaris*) nestling development; identification of plant species used in nest construction; detailed observation of parental care; egg measurement; and diet insights. We still lack information about possible predators, and the distribution during the non-breeding period.

Foraging ecology of Swifts: it's all up in the air

Charles Collins, California State University, United States

Swifts gather all of their prey items on the wing, selecting from the array of arthropods (mostly insects) available in the air column. Analyses of food brought in boluses to nestlings have shown a wide variety of prey to be taken and great variability in prey type from place to place and time to time, often depending on weather conditions. Comparative studies suggest that prey size is important and, as expected, larger species of Swifts take, on average, larger prey items, when available. This may allow coexistence of several sympatric species of differing body sizes. Similar sized species show several ecological differences in both where they forage and in altitudinal foraging zones. A model for resource partitioning is presented here. In addition, one group of New World Swifts in the genera *Cypseloides* and *Streptoprocne* appear to forage more widely in search of swarms of energy-rich prey which are brought to nestlings at longer intervals.

Film: from BBC programme Urban Jungle about Swifts in Cambridgeshire

Dick Newell, Action for Swifts, England

Urban Jungle is part of the BBC's Summer of Wildlife season of programming, and showcases events that will celebrate the UK's wildlife. The aim is to inspire and galvanise people to discover more about the species and habitats within the urban environment.

A recent programme focussed on Swift conservation, particularly in the Cambridge area, the heartland of the Action for Swifts group, where more than fifty Swift projects have been carried out in commercial and private buildings, schools and church towers.

The programme focuses mainly on the Fulbourn Project in South Cambridgeshire, where a thriving colony of Swifts in old houses was saved as the old houses were demolished and new ones erected by phasing the project over three seasons and by building Swift nest accommodation into the new buildings. Over 200 nests were built into the new houses, and so far 44 breeding pairs have been recorded in them. Other successful projects include a successful rescue operation in St Neots, where Swift accommodation was incorporated into an old factory building when it was being renovated using 12 adapted air brick liners, of which 7 were occupied within a short time of the birds' return. There are also a number of private initiatives, such as Dick Newell's house in Landbeach where up to 8 pairs of Swifts breed. One of Dick's Swifts was fitted with a tracking device, which has contributed to our understanding of where the Swifts winter and the migration routes they take.

A particularly interesting example of Swift conservation is the Cambridge Swift Tower, which was the result of a competition to provide a piece of urban sculpture in a local nature reserve. The colourful disk which incorporates 60+ nest holes is meant to symbolise the African sun, a reminder that our Swifts spend most of their time in sub-Saharan Africa.

Wednesday 9th April

Swift CONSERVATION PROJECTS
Sessions for Architects and Planners

The RSPB Swift inventory

Laura Nicholls and Stephanie Morren, RSPB, England

Common Swifts (*Apus apus)* are declining in the UK and are an amber listed species of conservation concern. The RSPB asks the public each year to enter their sightings of Swift nest sites around the UK and low-level screaming parties, into their survey form at www.rspb.org.uk/helpSwifts. The data is then shared at the end of each year with the National Biodiversity Network where the public, planners, developers etc. can download the records and see if Swifts are already nesting in an area of interest or might want to. The aim behind this is to protect existing nest sites when people are refurbishing their homes or provide new nest sites in new developments where Swifts are present. However, to make the data even more beneficial we ask that people continue to enter data year after year to give us a more accurate idea of whether nest sites are being lost and/or if the Swifts are not returning every year. This could then give an indication if nesting opportunities are the main problem in the UK or whether other factors are affecting their numbers.

RSPB policy and progress to date in the South West

John Day, RSPB, England

The RSPB has responded to the amber-listing of Swifts by promoting their cause and creating and maintaining the Swift Inventory. In the southwest this has been used to encourage local authorities to make it a condition of all new development projects that nesting places for Swifts and other building-dependent species are incorporated. This has been adopted as an example of good practice by national stakeholders in the fields of planning, architecture and ecology/nature conservation and is now being put into practice elsewhere in the UK.

The UK housing crisis - an opportunity for Swifts

Edward Mayer, Swift Conservation, England (www.Swift-conservation.org.uk)

Housebuilding in the UK collapsed during the years 1990 to 2012. Very few new homes were built for people, let alone ones with places for Swifts to nest in. The situation is changing. The government estimates that 1.4-1.8 million more households will need accommodation by 2020. A building boom will be necessary to provide for them all. From the point of view of saving declining Swift populations, the problem is that new buildings are useless for Swifts.

The truth is that new housing projects will only include Swift nest places if we ask for them.

Developers often have little idea of "green" requirements, so we must teach them that Swifts need new homes too, if only by using commercially-available Swift nest bricks in every new development. This will only happen if we, as Swift enthusiasts, make it happen. We must

-find out developments planned for our area
-research local planning applications
-make our formal request for Swift nest places
- try to interest local councillors and your MP
-get local people enthused with talks and meetings
-exploit local media (radio, TV, press)
-ask for Swift nest places to be included in EVERY new building project
-tackle the projects one by one as they come up

With the right approach, local government (ie, Councils) and NGOs (eg, NHS hospitals) can be persuaded to incorporate Swift accommodation into their buildings, but only if we ask, keep an eye on developments, and keep up the pressure**.**

Conserving Swifts in the community

Chris Mason, Cherwell Swifts Conservation Project, England

The Cherwell District is in North Oxfordshire with 78 parishes and a population of c.150,000. The focus of our project is the protection of existing Swifts' nest sites. This is achieved as follows:

1 Through the Council planning system. The local Environmental Records Centre converts recorded nest sites into computerised map form. This information is available to the Council's ecologist and planning department. They can (and do) recommend Swift-friendly building work
2 Through a volunteer network which records nest sites and looks out for potential threats, eg, planning notices, scaffolding or local knowledge. Volunteers also try to increase awareness of Swifts and the risks they face.
3 Through Swift walks, talks, displays and stalls designed to interest local people. (So far c. 220 Swift buildings, used by approx. 6-700 nesting pairs, have been recorded).
New sites
The strong link with the Council has resulted in nest boxes/bricks being incorporated in new buildings. Through the volunteer network, boxes have been put up on private homes and in church towers.
Swift Stories is a full-length, locally-made film. From May 2014 the following are freely available:

1. Short version (10-20 minutes) downloadable from website (www.different-films.com/Swifts) and later from other websites too.
2. 45 minute version on DVD (email mason@cando.eclipse.co.uk for details)

The Maiden Tower and Swift Conservation

Anar Guliyev, State Historical-Architectural Reserve, Azerbaijan

Regarding our project, we have just finalised conservation works on the Maiden Tower. Thanks to our restorers we were able to keep up to 150 nests in the Tower itself without damaging it. The process of relocating Swifts to new nests is also going smoothly. We had more birds occupying new nests this year.

The renovated Maiden Tower left, and new nest boxes, right

Fulbourn Swift mitigation project

Rob Mungovan, South Cambs District Council, England

70 pairs of Swifts breeding in 1960's buildings have been offered new accommodation in 227 nest boxes on a nearby housing estate. In 2013, Swifts used 66 out of 139 internal nest boxes, but only 9 out of 88 external nest boxes. It has been a highly successful mitigation project.

Swift exiting an internal nest box *Photos Judith Wakelam*

Designing for biodiversity: The RIBA book

Carol Williams, Bat Conservation Society, England

In 2010 the first edition of a new concept was published entitled 'Biodiversity for Low and Zero Carbon Buildings'. The second edition was published in 2013 and entitled 'Designing for Biodiversity'. The change in building regulations and the growing requirement for buildings to greatly reduce heat/energy loss and therefore become airtight, led to an awareness that if the provision for building-reliant species was not built in, that for the first time those species that had lived alongside us would no longer share our built environment.

Of those building-reliant species the Swift is one. Others include swallows, house martins, house sparrows, starlings, barn owls, peregrine falcons and bats. 17 species of bat breed in the UK, all of which have been known to use buildings – some are now heavily reliant on buildings as roosts. Our bat species have things in common such as being long-lived and only giving birth to one youngster per year and all having suffered serious declines, but what they need from a roost varies per species.

The book gives all the information necessary about the type, size and location of provision for the full range of bird and bat species. And for ready-made products, it reviews their features and how they can be incorporated in low carbon builds without adversely affecting the u-value. There are also bespoke drawings that cater for a range of current build types. Other considerations include: solar and pv panels, breathable roofing membranes, cavity wall and loft insulation and artificial lighting.

Green infrastructure can go a long way in providing important areas for feeding and safe corridors by which to reach these for biodiversity in our built areas, and this links to wider considerations such as green bridges and underpasses The important thing is that all this provision of green infrastructure and consideration of biodiversity is not only good for biodiversity; it is good for people and their sense of place and health and well-being. And through being the sort of places people want to live and work and offering ecosystem services, there are economic benefits too. So it is a win all round.

Protecting Swifts and other birds during maintenance and rebuilding works in Segovia

Francisco Javier Sáez-Frassinet, Foro Biodiversidad Segovia, Spain

Declared a UNESCO World Heritage Site in 1985, Segovia's walled old town offers many opportunities for nesting in its historical buildings, including its well-known Roman Aqueduct. However, actions taken against pigeons and rebuilding works have threatened wild birds. This communication describes some actions taken to counteract this, resulting in a number of preserved nesting places for Swifts (and for other wild birds) in the last two years. These actions are planned to continue for the coming years.

Franciscojavier.saezfrayssinet @gmail.com

Helping Swifts to survive in Slovakia: building insulation and Swift survival

Ľubomíra Vavrová, Slovak Bat Conservation Society, Slovakia

In recent years more than 95 % of the Swift population in Slovakia lives in buildings in urban areas. They nest mainly in ventilation shafts in attics and in crevices between panels of prefabs. Over the last decade, many prefabs have been renovated and thermally insulated and existing nesting sites of Swifts have been lost. This trend is on-going and even increasing and if no action to protect Swifts nesting sites in buildings is taken, the Swift population in Slovakia would be decimated in the next 10-20 years.

To halt this negative trend and take appropriate actions to protect existing or create new nesting sites for Swifts, the project *LIFE10 NAT/SK/000079 Protection of Common Swift (Apus apus) and bats in buildings in Slovakia* was launched in 2012. The project is supported by European Commission and Ministry of Environment of the Slovak Republic.

Over the first two years of the project's lifetime more than 4800 nesting sites of Swifts have been recorded in 270 cities in Slovakia. During reconstruction and thermal insulation of buildings several conservation measures have been applied. Through implementation of a low-cost measure – installation of modified plastic grids on ventilation shafts in attics – more than 8000 existing nesting sites have been preserved in buildings. To compensate for the loss of nesting sites, more than 900 Swift boxes have been installed on buildings. Conservation measures have been applied on prefabs as well as historical buildings, e.g. castles. Actual experience has proved these conservation measures to be effective. Some of the Swift boxes have

already been occupied by Swifts and other birds, although it is too early to evaluate the overall effectiveness of this action on the Swift population in the country as a whole.
Intensive media campaigns, lectures at schools, workshops for stakeholders and meetings with decision makers have led to increased public awareness on protection of Swifts and the important role they play in urban ecosystems.
Contacts:
1. BROZ – Regional Association for Nature Conservation and Sustainable Development, Na Riviére 7/a, 841 04 Bratislava, Slovak Republic; e-mail: vavrova@broz.sk
2. Slovak Ornithological Society / BirdLife Slovakia, Mlynské nivy 41, 821 09 Bratislava, Slovak Republic, e-mail: gugh@vtaky.sk
3. SON - Slovak Bat Conservation Society, Andraščíkova 618/1, 085 01 Bardejov info@netopiere.sk

NESTBOXING AND CONSERVATION PROJECTS

Swift schools in the Czech Republic

Lukáš Viktora, Czech Society for Ornithology, Czech Republic

We need Swift conservation because thermal insulation is depriving Swifts of nesting places, and because there is low public awareness of nature conservation. Children are probably the best ambassadors to promote ideas. If we can motivate children, this will lead to conservation action.

The original Swift Schools programme involved setting up the organisation "Friends of the Swifts". So far, there are 40 Friends, including house-owners, government and municipal personnel, and construction companies. 18 schools have met the criteria, and a further 15 have expressed interest in the programme. Sources of Project funding include grants, sponsorship (eg Lafarge Cement), donations and lecture fees.

Swift Schools must fulfil three requirements:

-active protection of an existing colony or creation of new nesting possibilities;

-participation in the Spring Alive programme.

-annual reporting.

Every Swift School gets a board with the title Friends of Swifts; a certificate; a manual on how to use Swifts for education; and one event every year. The Project also involves participation in the Birdlife International Spring Alive programme. Activities include: recording first arrival dates of Swifts; working lists for teachers; games; competitions and lectures.

We hope to establish cooperation through partnership between schools; cross-border and international collaboration; sharing of experiences; and web cameras and website links.

Swifts and the Town Hall - the Bishop's Castle Project

Peta Sams, Ludlow Swift Group, England

Shropshire fortunately still has a reasonable number of unrenovated older buildings in its market towns and hence a reasonable population of Swifts. Bishops Castle, a small town on the Welsh borders, is one such town, although it is recognised that Swift numbers have declined considerably in recent years. The town received Heritage Lottery funding to restore its eighteenth century Grade II-listed Town Hall. The team working on the renovation of the town hall identified the opportunity to include potential new Swift nest sites in the new dormer windows that were being installed. Together with the Bishop's Castle Swift group, we worked with the architect, project manager, Swift Conservation and the building contractors to design, construct and install boxes in the dormers. A sound call system has also been installed and we hope the birds appreciate the efforts made on their behalf. More seriously this project shows what can be achieved for Swifts when the right people come together at the right time**.**

A new Swift colony - lessons from the first 10 years

Tim Collins, North Luffenham, Rutland, England

Swifts first bred on our house in Rutland in the East Midlands in 2004, a year after a bird was first seen to enter a box and three years after we had erected the first (double) nestbox. The colony is unusual in that it has developed without the use of tape lures to attract the birds. The colony has increased steadily since 2004 with additional boxes attracting additional pairs. In 2013 Swifts were entering all 14 boxes and young birds successfully fledged from eight of these. Detailed records kept since the first pair bred chart the development of the colony, and show the relationship between nest box availability, occupied boxes and nesting pairs; productivity per nesting attempt (with statistical comparisons to other UK colonies); fledging times of the young (precise times have been recorded for more than 70% of the young), with comparisons toother colonies; and the length of time adults stay after their young have fledged.

3 chicks peering out of an entrance adjacent to the wall

Other factors include: the design of the boxes (another

unusual aspect of this colony is that all the boxes have their entrance holes in the bottom of the box); the departure flight lines of fledging birds and the value of a large nearby reservoir as a food source in poor weather.

There are now plans to expand the colony both on our own house and to neighbouring houses.

Renovating our roof, maintaining existing and creating new nest sites in the eaves

Tanya Hoare, Manchester, England

Our 150-year old cottage has been the home to a colony of Swifts for many years. Recently we had to completely replace the original roof, exposing the Swift nest sites under the eaves on top of the 50 cm thick wall.

Our talk described how, in the autumn after the Swifts had left, our builders co-operated in preserving all the existing nest sites and also creating new ones. The particular design of our house enabled us to also access the nest sites from within our bathroom and bedrooms via custom -made access doors. Cameras were installed and motion activated images recorded and displayed on a TV monitor.
The Swifts returned the following years and more pairs have bred in the newly created sites. Our talk incorporated video clips of Swift behaviour, including egg ejection, mating, Swifts fighting, press-ups and *Crataerina pallida*. We use these to illustrate talks to various societies and groups, to raise awareness about Swifts and the threat to their habitat.

Swift nest sites

Susanne Salinger, Berlin/BUND/Mauerseglernetzwerk, Germany

Directive 79/409/EEC on the conservation of birds protects all European wild birds and also their nests, eggs and young. “The Birds Directive bans activities that directly threaten birds, such as ... the destruction of their nests and taking of their eggs.”
In the case of birds that nest in caves the cave is protected as important part of the living space by law even if the birds are not breeding or like migrating birds are not present. Federal Nature Conservation Act of Germany transforms the Bird directive into German law. In order to protect Swifts, you have to know where their nests are. In 1996 some friends of the German organisation for the protection of nature and environment BUND / Friends of the Earth International started a campaign to save Swifts. We asked people to report breeding-places of Swifts and other birds breeding in buildings in Berlin. The results were given to the authorities responsible for nature conservation. Many nest sites on buildings were saved as a result of this campaign.

During our campaign we collected many facts about Swifts and other birds breeding in buildings. For example, in Berlin 65% of the houses with Swift nests were built before WWII, 35% of houses with Swift nests were erected after WWII.

Buildings being renovated or restored must be checked by an expert to determine the nest sites, what species use the building and in what numbers. To find out this you have to look into the nests by climbing on the scaffold.

During the last seventeen years, I have investigated hundreds of buildings for nests of Swifts and other birds. These houses are of all types and heights, from small one-family houses to skyscrapers. Through this work, I gained a good idea of where Swifts are nesting For example, you can find nests beneath the window frame, on the window frame, inside or behind the shutter casing, in crevices in prefabricated buildings, under the gutter, behind the down pipe, on the eaves behind the gutter and under the abutment. Often the roof void is used for nests.
Normally the Swifts prefer nest sites into which they can fly directly. But there are also cases where they arrive by landing and then climbing into their nest.
Sometimes you may discover very special nests in the roof void. If the eaves are very small, Swifts can build nests resting on the lower part on the eaves and projecting in a similar way to the nest of an Alpine Swift. At one house I found about 50 nests of this kind.
In many cases Swifts use nest material from House Sparrows' nests, or will build their own nests on top of them. It seems that the breeding of sparrows is a signal to Swifts of a suitable nesting site. For many years House Sparrows have bred on our balcony. They begin breeding at the end of March or beginning of April. By the time the Swifts arrive, the young have fledged and the Swifts take over. The same sometimes even occurs with nests of tits (Parus spp) if Swifts can get in.

You can easily confirm if Swifts have taken over a House Sparrow or tit's nest by feeling the hardened surface where the Swifts have stuck their nesting material together.

Swift conservation projects in Guernsey

Vic Froome, La Sociėtė Guernesiaise, Guernsey

Since 1945, it is estimated that Guernsey has lost up to 90% of its Swift nest sites because of modern building practices. Since 2003, I have been involved with Swifts mainly through making nestboxes. In that year, I was asked to help save a small colony of Swifts, after a new roof had been fitted on Delisle Chapel. I made 10 boxes, two chambers in each, and these have been a success. The Swifts are still returning ten years on, whereas all the other sites of new boxes, even ones fitted at old sites where Swifts used to be, have yet to be taken up.

Working with Edward Mayer, of Swift Conservation UK, Steven Fitt of the RSPB and Dick Newell of Action for Swifts, I am trying new methods of encouraging Swifts back, for example, by playing sounds and by trying out different construction designs.

An example of successful intervention is in 2011, when a Swift colony was under threat because of the demolition of some old "Bouet" houses. Alerted by concerned residents, I contacted the demolition contractor, who stopped immediately. The Housing Association allowed a six-week delay, and agreed to provide alternative accommodation for the Swifts. The Building Contractor then fitted the 50 nests onto the houses already built next door. A bonus is that the Surveyors, Architects, and Builders have booked a seminar, so I can up-date them on how modern building practices can take account of the needs of wildlife**.**

Swift projects in County Mayo, Ireland

Lynda Huxley, Swift Conservation Ireland

County Mayo, located on the West coast, is the third largest of Ireland's counties (5,586 km²) with a population of 125,000. The county is mostly rural. The new Bird Atlas shows a decline in Swifts in Ireland and the UK. Ireland has historically not been a very wealthy country and so development pre-1995 was modest. However, from 1995 to 2008, Ireland went through years of rapid economic growth with a boom in the construction industry. This resulted in large scale demolishing and renovation of old buildings. During this time undoubtedly many Swift nest sites were lost. The economy has been in recession since 2008 with a massive slump in the construction industry. There is now a window of opportunity to raise awareness and recover some of the ground for Swifts in Ireland.

Nest box Project: I had heard about Micheál Casey's project in Tubbercurry, County Sligo, and read about Brian Cahalane of SaveOurSwifts' work in Northern Ireland. In 2012, I sought funding to erect nestboxes at the College where I work (GMIT, Castlebar). In 2014, momentum is growing nationally with nestbox projects in several locations and I have plans for more in County Mayo.

Securing Traditional Sites: the Swift population in Mayo is currently very vulnerable, so it is important that as many 'traditional' nesting sites as possible are secured. In the three main county towns that I have surveyed over the past two years I have found that Swift numbers are small. In Castlebar, there are just 20 pairs with the stronghold being GMIT where we have seven known pairs in a 'traditional' site and potentially three more pairs in the 12 nest boxes provided. With cameras in all boxes this year we will know how many breeding pairs we have in the boxes.

Raising Awareness: the "Save our Swifts" booklet was produced with help from Action for Swifts to raise awareness among children and adults.

Town surveys: I will continue to survey the rest of the county towns in Mayo. "Swift champions" are identified in each town to keep an eye on the buildings where Swifts are nesting.

Guidelines for County Officials: one very important element has been meeting with the architects, planners, engineers and environmental officers who are responsible for the towns in Mayo.

Swift preservation in south-eastern Poland during the last seven years

Kazimierz Walasz, Malopolska Ornithological Society, Kraków, Poland

In 2007, we contacted the Ministry of the Environment about catering for swifts in renovated buildings by requiring developers to get permission from the Regional Director of Nature Protection and to observe the law regarding protection of existing colonies and to provide nesting places. A major problem is that the regional directorates are understaffed and often unaware of the scale of loss of nest accommodation as a result of renovation work. It is for this reason that success depends heavily on the work of volunteers.

From 2009 the legal obligation on the directorates to regulate building renovations was strengthened, but it has made little difference, except in the Silesia, Małopolska, Mazowsze and Wielkopolska region where

Regional Directorates of Nature Protection and volunteers react quite successfully in protection of swifts. Typically Swifts make use of crevices and ventilation holes in old buildings. A serious problem concerns the modern materials that are being used to insulate buildings: cellulose fibre, granulated polystyrene foam and granulated stone wool, We have picked up Swifts with stone wool in their eyes and nostrils and/or sticking to their feathering. The dust particles from the insulation may also be harmful to birds.
We therefore try to ensure that Swifts do not enter or nest in spaces where these materials are used by [1] preventing access by putting grids over ventilation holes; [2] installing external or internal nest boxes, preferably before the insulation is done.

Current state of protection of Swifts in Poland

Dawid Zyskowski, Green Federation GAJA/Szczecin, Poland

The current status of Common Swift (*Apus apus*) in Poland is unknown because of lack of reliable data on population trends. The only available data from Common Birds Survey suggest that Swift numbers are increasing, but this conflicts with evidence of decline in the availability of nest sites because of thermoinsulation and other construction works. We believe that both estimates are imprecise, inaccurate and unreliable, leaving the population status of Common Swift in Poland an open question. Despite that, protection measures must be continued to save existing colonies from destruction, but in order to maximize compensation and mitigation measures, any scientific approach towards them must be scientific rather than intuitive.

Thursday 10th April

Swifts IN THE ARTS

The Swift as a literary icon

Charles Foster, University of Oxford, England

As David Lack observed, literary references to Swifts, at least until the 20th century, are scarce. There are, however, numerous references to swallows and martins. Swifts appear occasionally in ancient Sanskrit literature, including the *Rig Veda* itself, but it was the English naturalist Gilbert White who appears to have catalysed the interest of naturalists in Swifts. His observations are repeatedly recycled. It took longer for Swifts to appear in poetry and fictional prose. This paper identifies eight themes in such writing: aspiration, joy, restoration of order, the elemental/divine, evil, violence, distance/inaccessibility, and vulnerability/accessibility, illustrating those themes by reference to writers including Ted Hughes, John Dryden, R.S.Thomas, Shira Twirsky-Cassel, Janet Andrews, John Glenday, Derek Ramsay, Ron Williams, Randle Mainwaring, Hugh David Loxdale, Dominic O'Sullivan, Anne Collie, Peter Fish and various Sanskrit texts.

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Swifts: an appreciation using my own sketches

Jonathan Pomroy, Wildlife Artist, England

My interest in Swifts stems right back to primary school where I vividly recall seeing them screaming above our heads as we played outside. As I developed as an artist I began to study Swifts by sketching them. I always try to sketch from the moving bird, even when sketching from the nest camera. I have now filled several sketchbooks just on Swifts, recording their behaviour through the summer, but perhaps more importantly enjoying watching them and depicting their remarkable form in pencil, watercolour and oil paint. My love of observing and painting skies often combines with Swifts during their time here.

Swift WELFARE

Study of dystrophic feathers observed in Common Swift (*Apus apus*) caused by improper management using phase contrast imaging and histological evaluation

Stefano Pesaro, Official Veterinarian, Liberi di volare/Trieste, Italy

In avian medicine, studies of pathological events of the integument system focus on the feathers with parasitic damage, discolouration and dystrophic alterations. The most common feather alterations and pathologies are described in birds bred in captivity. In contrast in wild birds the studies are very rare with exception of description of the fault bars, correlated with environmental stress factors. Common Swifts (*Apus apus*) appear to be very susceptible to incorrect diet, especially where feather development is concerned. We investigated the macro-and microscopical alterations observed in altered wing feathers obtained from young Swifts after a period of improper feeding management, using phase contrast imaging

and histological evaluation. Histologically, the most important alterations included necrosis and hyperplasia of epithelial cells in the basal and intermediate epithelial layers of the calamus, with calamus distortion, uneven, thick and irregular. The feather pulp was characterized by myxoid tissue without infiltration of inflammatory cells. In this group of birds, rarely, basophilic nuclear and cytoplasmic inclusions, of unknown origin, were detected in epithelial cells. The most relevant alterations, observed by phase contrast microscope, were characterized by a reducing of length of calamus with a variability of thickness and shape in cortex and the calamus shows a lot of alterations in the residual vascular structures. We concluded that the morphological observation of feathers, especially the calamus region, through the phase contrast examination is particularly useful for assessing all superficial and spatial feathers abnormalities. Even if for the moment the causes of most of these specific morphological modifications are unclear, incorrect diet appears to be the most probable**.**

Various aspects of handling Swifts, including the hazards and benefits of ringing adult birds

Gillian Westray, Private Rehabilitator, England

Over many years of rehabilitating Swifts & Hirundines, I have encountered most of the misadventures that can beset a Swift. Detailed records have been kept since 2004 and it is usually possible to determine the cause of the problem or injury. Generally Swifts are only handled by humans under the following circumstances: found by a member of the general public; in the care of a rehabilitator, veterinary practice or Emergency Service; ringing or scientific study.
Without a sound knowledge of the natural history of a Swift and a good degree of common sense the consequences can be fatal. Causes of problems can be roughly divided into three main categories: weather related; inappropriate handling or interference; natural incident

An understanding of these events can give an insight into how our Swifts are faring and how best to assist them. An empathetic rehabilitator should observe: physical effects of the weather; deformities; behaviour; individuality, melanism etc.; types of injuries; failed fledging.

The presentation examined each aspect with photographic examples, data and case studies. A short video illustrated Flick Netting free flying Swifts by leading BTO's Swift ringers followed by an analysis of the data collected. The ringers were not following best practice guidelines but have used this film to promote the method amongst other ringers. A complaint was made, but the Select Committee found that no rules had been broken and the BTO refuse to discuss the matter further in spite of being presented with expert veterinary opinion and evidence of malpractice.

Looking for an optimal hand-rearing Swift protocol

Enric Fusté, Falciotnegre.com, Catalunya

Nestling growth and development requires the integration of a variety of factors: conditions under which the birds are maintained; diet; and the amount of parental care received. Husbandry management needs to take into consideration all the factors which stimulate growth in the wild.

Nestlings in captivity should be fed the same foods the parents would have fed them in the wild. However, duplicating this is a challenging task: there is a limited selection of commercially available insects and they tend to be expensive. Even where it is possible to use insects to feed insectivorous species, diet is often limited to a single insect species. The nutritional composition of commercially produced insects may be inadequate without appropriate supplementation. Cost is usually the limiting factor, which has resulted in the use of alternative diets. The formulation of a diet is extremely complex; a balanced diet requires the precise combination of 45 different nutrients (chemical elements and compounds). Several authors have developed diet formulas where the main components are non-insects or these are combined with insects, and claim good results with nestling passerines.

Research done by the author comparing different insect and non-insect diets revealed how final fledgling weights, feather condition and flight performance on two non-insect diets (rat mince and kibble), were questionable when compared to chicks hand-reared with insect diets and birds raised in the wild. The results were paralleled when comparing two insect-based diets, The optimal diet would be composed of different insect species (crickets, drones, wax moths larvae, flies). A diet based solely on domestic crickets (90%) and large larvae of the wax moth (10%) is used in some rehabilitation centres in Europe specializing in hand-rearing large numbers of Swift chicks, with optimal recovery results. However, the crickets produced commercially are extremely expensive.

Concerns about the poor results observed in non-insect diets led CRFST to make a drastic change in

insectivore diet protocols. The mealworm diet was used in the breeding season 2010 and onwards as a base diet for the hand-rearing of Common Swift, Alpine Swift and other insectivorous birds. The results for the 2010 season using the mealworm diet show a significant increase in final weights and also on survival rates when compared to 2009, where the diet was based on Kibble cat food, and over 2008 and prior years where the diet was rat mince. The mealworm diet showed a survival rate nearly 30% higher than for the two previous non-insect diets. As for final weights, there was an average increase of 5 grams (adult weights around 40g) with a remarkable increase of 7g for the youngest chicks. Importantly, the increases were parallel in all clinical categories, including acute severe cases. We therefore recommend that the use of non-insect diets when hand-rearing Common Swifts is discontinued and a pure insectivorous diet is adopted. Mealworms could be a very good alternative when crickets cannot be used

Swift Rescue Initiative in Uzbekistan

Elena Abdulleva & Pavel Karabaev (presented by Jake Allsop)

This is an initiative under the aegis of the Uzbekistan Society for the Protection of Birds. The primary aim of the Initiative is the rehabilitation of rescued Swifts, though other species have been taken into care as required. Activities include: disseminating information; taking rescued birds into care; carrying out rehabilitation procedures; and releasing the birds back into the wild.

In the first three years of the operation, 2011-2013, 77 Swifts were taken in, of which 37 were successfully rehabilitated and released back into the wild. Other rescued species included Swallow, Quail, Scops Owl and Hobby.

The Rescue Initiative team have had to learn rehabilitation skills, such as handling, diet, medication, and finding food sources. Constraints include: difficulty of finding a guaranteed food supply and sourcing medicines; work load (lack of helpers); lack of local professional help; lack of sponsorship or guaranteed funding.

The team is grateful to various European colleagues for their support and their advice.

Update on bird protection in Uzbekistan

Oleg Kashkarov, Uzbekistan Society for the Protection of Birds (UzSPB), Uzbekista

The UzSPB has 250 members, three branches and five student birdwatching clubs at State Universities. The Society has identified 51 important bird areas (IBAs), and created Action Plans for non-protected IBAs and for several endangered bird species.

There is a Save Swifts local group in Uzbekistan (the Rescue Initiative described above). Birds usually come to the group from local veterinary clinics or pharmacies. There are legal constraints on the work of the group. In particular, they live in a rented flat, but it is illegal to keep and treat a lot of birds in a flat. Also, voluntary group activists have no legal right to treat animals, while veterinary surgeons have no wish or expertise to treat wild creatures. These factors, combined with a lack of sponsorship or funding makes the group particularly vulnerable.

Using resources provided by the Birdlife International Spring Alive project, the group has been able to produce promotional literature, including a leaflet and poster Save Swifts and How to tell a Swift from a Swallow. The group has also participated in the Spring Alive activities programme.

POPULATION MONITORING

The Belfast Swift survey

Hayley Sherwin, RSPB, Northern Ireland

The Belfast Swift City Project aims to help protect and increase Swift colonies within the city. It involves a multi-faceted approach through scientific survey, education and community engagement. The survey highlights 'hot spots' where targeted advice can be delivered to protect existing colonies and promote artificial nests where colonies are at risk or have capacity to expand.

22 years of monitoring nest entrances of Common Swifts in Noordwijk

Hein Verkade, Noordwijk, The Netherlands

Since 1993 all the nest entrances of Common Swifts have been counted in Noordwijk-Binnen, a village in the Netherlands with about 13,000 inhabitants. During that period the population fluctuated between 148 and 172 pairs. Large colonies concentrated in one building are disappearing and the distribution is becoming more diffuse. Parallel to this development the percentage of birds breeding in buildings build after The Second World war increased from 5% in 1993 to 38% in 2013. The number of nest entrances under tiles decreased steadily but increased behind gutters and in wall cavities.
Common Swifts are very faithful to their nest places but if necessary they are skilful in discovering and flexible in accepting new breeding places.
The availability of nest-places is not the main explanatory factor for the demography of the Common Swift in Noordwijk-Binnen**.**

Point counts: a methodology for indexing the relative abundance of breeding Swifts

Will Peach, RSPB, England

The absence of a validated survey method to assess changes in abundance of breeding Swifts is hampering monitoring and conservation efforts. We propose to assess the validity of point counts of low flying Swifts as a means of indexing changes in the relative abundance of breeding Swifts within a defined geographical area. We hope to trial this method in 2014 in localities where actual breeding densities are known through nest site monitoring. We hope that Swift enthusiasts with good knowledge of local breeding numbers will help us test and refine the proposed point count method.

Is it possible to get an agreeable estimate of Swift numbers? Some views on counting Swifts in the Netherlands

Evert Pellenkoft, Amsterdam Swift Conservation Group, The Netherlands

A Swift way for peace

Amnonn Hahn, Friends of the Swifts, Israel

With Yoshi Leshem: A Swift way for peace - This is after our long ago idea to use Swift activities as a bridge to connect people of different religions. We have started this idea several years ago and it sparked in our last Swift Welcome Ceremony in Jerusalem**.**

TALKS PREPARED BUT NOT GIVEN

Conservation and study of the Alpine Swift colony of the bell tower of Locarno, Switzerland

Lidia Mermoud, SOS Uccelli Selvatici, Switzerland

With currently about 40 individuals, the bell tower of Locarno City is the home of an important colony of Alpine Swift (*Tachymarptis melba*) in the South of Switzerland (Italian spoken region) and at the moment is the biggest colony with a conservation project in a public building. The Alpine Swift is a priority species for conservation in Switzerland (national and regional level), and also included in the «Emerald Network» list of species (Bern Convention). This colony was previously threatened due to protective measures against pigeons and when the situation was discovered in 2008 many nests were already destroyed and the few remaining confined spaces left room for only five broods. It also often happened that individuals remained trapped in the tower, which didn't offer them safe conditions.

The project purposes are: - to maintain and promote the existing colony of Alpine Swift (restoring old nests and creating new nest units); - to study the colony fluctuation and breeding success; - to create a nursery for

Alpine Swift nestlings fallen from their nest, like the cases of the Tower and Castle of Baden, or the historic Church of Zug (Switzerland); - to promote environmental education and ecotourism in the city, by making known the existence of the three species of Swifts to the public ("educational itinerary" with informative panels revealing the life and habits of the Swifts).

In 2010 a long-term project was established to study the colony, to implement measures of security and protection and to create conditions for the colony to increase. The Municipality of Locarno supported the project by providing materials and a workingman. Works started making the tower safer for the Swifts and then creating new nest units inside (20 nestboxes with place for 40 couples). Each nest unit was designed and adapted according to the tower conditions and the space available. These nests were already busy in the spring of 2011: six couples nested in permanently placed nest boxes and four in temporary nest boxes. In the last years several chicks and adults have been ringed and the colony has been monitored. The proposal for an "educational itinerary" dedicated to the three species of Swifts present in Locarno, was also sustained by the Municipality, which financed the panels dedicated to the Swifts. It is hoped that the itinerary can be implemented in short time.

The project implementation and maintenance has been possible thanks to voluntary work and financial support from the Municipality and various organizations: *AVIURB* (Ecology and conservation of wild birds in built environment, Locarno, Switzerland) *SOS UCCELLI SELVATICI* (Association for the rehabilitation and protection of wild birds in South Switzerland) '

Nest orientation in the Common Swifts: the University Museum Tower colony

Dr Thaís Martins, Cornwall College Newquay ***thais.martins@cornwall.ac.uk***

Nest microclimate can affect parental costs of reproduction and nestling development, so conservation needs data on nest orientation preference. The University Museum tower colony in Oxford offers a natural experiment as it has the same number of available nests facing due north, south, east and west (40 nestboxes each). In addition nest take in the last 49 years has shown a significant preference for birds to settle on the East side (Anova on the average number of nests occupied per side in the last 49 years, $F_{3,192}$=3.58, P=0.015, Overall pers. comm.). This study used close monitoring during laying (1988 to 1991) and measurement of temperature during laying within nestboxes (1991) to address why there may be a preference. During laying in 87-91, nests were monitored daily for laying date, egg weight and measurement of eggs. In 1991, temperatures were recorded continuously for 24 hours during one week of laying on 21 nests (3 x 7 days) facing all directions. These measurements were taken using an electronic balance (Ohaus, 0.001g accuracy), and Vernier calipers (0.001mm accuracy).

For laying data, Ancovas were carried out on year averages per side (n=5 per side) and controlled for average maximum temperature on laying days. Data were also collected on egg volume (Hoyt, 1979) laying date and clutch size. For temperature data, Anovas were carried out on the nestbox temperature around 2 pm (called highest), the nestbox temperature in the night (called lowest) and the difference between lowest recorded and minimum air temperature recorded on that day.

Birds on the East side seemed to be 'better' birds as egg volume was significantly larger for East side (Ancova; side, $F_{3,11}$=3.63, P=0.046), but non-significant trend for clutch size and laying date. All temperature variables in boxes show that East is cooler on cold days but that there is no difference in warm days (during laying only). However the highest and the lowest temperatures reached inside nest boxes are significantly different per side only for cold laying days (less than 13^{o}C- East boxes being significantly cooler by about a degree). The data suggests that East is preferred because it may be cooler in the summer.

It is known that there may be a relationship between latitude and nest orientation (Burton 2006) with East being preferred at mid-latitudes because of morning sunshine and shade in the afternoon. Interestingly, in Berlin, nestboxes facing North are significantly preferred (Wortha and Arndt, 2004). However weather rather than latitude may play a role as the max-min range in Berlin for the swift breeding period is significantly different from Oxford (Berlin, 21 to 17^{o}C, and in Oxford 17 to 9^{o}C, t-test for max temp: t=3.32; df=19; P=0.004; min temp; t=4.09; df=19; P=0.001).

Temperature data suggest a role in chick rearing as the Tower can get very hot in the summer. However, more micro-climate temperature data are needed. However, success of preferred orientation nests is not always greater (Lloyd and Martin, 2004; Burton, 2006; Goodenough et al, 2008; Butler et al, 2009) and that also seems to be the case in the tower.

Thanks to Simona Wortha and Roy Overall

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PANEL DISCUSSION

The Conference concluded with a plenary question and answer session, chaired by Dick Newell with a panel made up of Susanne Åkesson, Charles Collins, Enric Fusté, Lyndon Kearsley, Edward Mayer, Ulrich Tigges and Gillian Westray.

Theses summaries were prepared by Mandy Mayer

Relocation: the first question to the Panel focused on what happens when a Swift returns from migration and finds its nest site no longer available. The response was that essentially it depends on the location. Birds had been known to try for up to two weeks to get access to their original nest site. Only after trying to get that access would they appear to leave, presumably to look elsewhere. If there were vacant holes nearby there was evidence from certain locations of them using them, so there was always justification for mitigation measures such as nest boxes, when original nest sites had been destroyed.

Ringing: the second question concerned ringing and whether, in the light of the information being gleaned from geo-locators, the time had come to phase out ringing of Swifts. It was argued that ringing could provide information on life span issues and reproduction which, when combined with the tracking data from the geo-locators, were very useful to the survival of the species. However, all agreed that ringing should be highly controlled. The licensing authorities in Holland were currently considering whether ringing protocols for such species needed revising. Charles Collins commented that in the USA the focus was not on recoveries but on gathering as much data as possible on the bird at the time of ringing, on the firm assumption that it would never be seen again. A number of experienced ringers from the UK and elsewhere emphasised the serious and responsible approach of both the authorities concerned and individual ringers known to them. The discussion ended on the note that licensing in the UK should be driven not by numbers of birds ringed but on the quality of data that potentially can be secured – this conclusion received a round of applause from the audience.

GPS Tags: there was a question about when GPS tags would be available. It was thought that radio tags with satellite functionality might be available in 1-2 years (ICARUS project), GPS tags with a communication function would take longer. The weight of GPS data-loggers with regular fixes, which require recovery, is likely to reduce to 1.5 grams within the next 4-5 years. Currently a 1.2 gm GPS data logger is available but only programmable to take 8 readings at chosen dates over the year; the width though is 15 mm which is too wide to fit dorsally.

Concern was expressed by those with experience of Swifts in laboratory wind tunnels about any increase in the weight and bulk of the systems attached to the birds. Even the current harnesses and data loggers could engender "drag" and could force the birds to make adjustments to adjust their center of gravity to secure flight efficiency which could impact on the birds' survival in harsh weather conditions depending on the model and profile.

Local Groups: there was a call for interest in setting up a web based network for local groups of swift enthusiasts to share experience. Anyone interested was encouraged to contact Chris Mason.

Legal Protection: there was a question as to whether Swifts needed wider legal protection, akin to that protecting Bats in the UK which prevented their nesting sites being destroyed at all times not just in the

breeding season. The point was made that biodiversity protection legislation was more likely to be reduced in the coming years in the UK rather than being strengthened. It would be more productive to put the effort into persuasion and education aimed at preserving existing nest sites and providing mitigation where that was not possible than to fight for more legislation. A colleague from Canada supported this conclusion pointing out that Chimney Swifts have full legal protection for their sites all round year in Ontario but this has not prevented chimneys with Swift populations from being destroyed on grounds of health and safety.

Size of nest boxes: a question about what is the optimum size for a Swift nest box. Erich Kaiser's view was that the smaller the better as the birds will keep these boxes cleaner. In larger boxes chick droppings can get pushed into corners and ignored but in the smaller box the adult birds will find it and eat it. The juvenile birds can still do their press ups even in smaller boxes, after all they must have been able to do them in old woodpecker nest holes in trees when that was their normal breeding environment, before they moved into roofs and gables.

Insect food: Common Swifts are known to eat a huge variety of insects but there was a question as to whether they eat stinging insects. The assumption was that they do not eat such stinging insects as if they did, they would be killed.

Vision quality: in answer to a question about the quality of a Swift's vision, Dick Newell commented that he had looked up this issue recently and found (no reference given) that Swifts had the best eyesight of all birds. In relation to colour vision, a Swift Carer had found a marked preference for brown blankets.

Effects of wind: there was interest in how wind conditions affect the flying abilities of Swifts. Such evidence as existed indicated that they will fly with a tail wind rather than a head wind where possible, and fly low in unfavourable wind conditions.

Scientific input: the comment was made that there was still so much to be learnt about these birds so did we need to try and encourage more scientific research of Swifts. It was pointed out that one way of learning more was to capture the detailed experience of Swift Carers as a lot of Swift behaviour and aspects of their physical condition were on display during the period of rehabilitation.

This related to a further point which emphasised the benefits to be derived from narrowing the link between Citizen Science and Academia; so many Swift enthusiasts now had their nesting Swifts under CCTV observation, that there were excellent opportunities for studying Swifts without any of the risks of interference or behaviour being distorted by the presence of humans.

Return to the birth nesting site: in response to a question Erich Kaiser reported that the highest percentage of first year birds returning to his colony has been 18 nestlings returning out of 120 fledged.

Delegates Photo

This is about half of the delegates to the conference

Appendix

This appendix is derived from notes taken by Mandy Mayer:

- The Swift is designed predominantly to fly efficiently at slow speeds
- It is more efficient in gliding flight than in flight mode
- Lift is generated through both the up and down strokes of the wings not just the down stroke as with passerines
- They do not use Leading Edge Vortex like bats, hummingbirds and bees to give themselves extra lift but twist the wing during the down stroke so as to generate more lift in flight mode
- The mean flight speed is 21m per sec and the top speed 31.1m per sec (the top speed ever measured for a bird) and they perform at their maximum speed in the screaming parties which implies that this is a display flight
- They have been recorded feeding over lakes in the Netherlands at dawn and dusk. They are therefore flying in the dark, at low levels and must be following the insects and just flying with their mouths open
- They fly up at dusk and dawn just as Tuna dive at dusk and dawn
- They will fly with a tail wind rather than a head wind where possible, and fly low in unfavourable wind conditions
- Based on Swedish monitoring, within their lifecycle they spend 19% of their time breeding, 27% migrating and 54% wintering
- Based on geolocator information, birds from the same broad breeding locations seem to make much the same decisions about wintering destinations
- When they change destination within Africa they seem to be tracking insect populations and eruptions
- No evidence that breeding pairs migrate together
- Despite a 38% decline in swifts recorded by the BTO, the birds are not returning to their breeding areas earlier, on the contrary they may be a bit later
- The Congo Basin was not previously thought to be a popular wintering area but geolocators have revealed it as a very important location, as is the stopover in West Africa before heading back across the Sahara
- BTO's Swift geolocator programme highlighted the birds' stopover in Liberia after their flight over the ocean from West Africa, indicating that they are foraging there above the forest canopy. The BTO thinks this stopover is caused by the Intertropical Convergence Zone (ITCZ) where the drought-breaking rains produce bursts of insect availability [Near the equator, from about 5° north and 5° south, the North East Trade Winds and South East Trade Winds converge in a low pressure zone -the ITCZ. Solar heating in the region forces air to rise through convection which results in a plethora of precipitation. The location of the ITCZ varies throughout the year and while it remains near the equator, the ITCZ over land ventures farther north or south than the ITCZ over the oceans due to the variation in land temperatures. The location of the ITCZ can vary as much as 40° to 45° of latitude north or south of the equator based on the pattern of land and ocean. In Africa, the ITCZ is located just south of the Sahel at about 10°, dumping rain on the region to the south of the desert].
- The norm is for Swifts to fledge just before dark
- Their spatial awareness appears to activate from the moment they leave the nest and they can duck and weave immediately between and around obstacles like trees
- There can be significant weight variation in full grown adult birds with examples given of 33g and 46gm
- A carer in the UK had recorded increasing numbers of rescued birds with deformities (usually affecting the eyes and mouth) in recent years perhaps indicating the effect of insecticides

- Swifts do not suffer from the common bird diseases because they are not ground feeders so it is very important that they are not kept in mixed rehabilitation environments and that ringers keep them in clean and separate bags
- Experience in Catalonia is that adults will feed the chicks around every 45 minutes in fine weather and every 3 hours in bad weather. The peak weight of fledglings can be between 41-66g and the fledgling weight 34-56g with an average of 42g
- Adult breeders appear to fly lower in the sky than non-breeders – this may be accounted by breeders being more eager for food and therefore prepared to take higher risks to secure the insects flying at low level
- No definitive way of counting Swifts has yet been decided on and various methods are being employed but there are indications that counting nest sites may produce a more accurate estimate than counting flying birds
- There is supporting evidence for the long-held belief that Swifts are extremely nest faithful but also examples of birds moving in circumstances where they have to. What happens when Swifts find their sites blocked or destroyed seems to depend on the location. There is evidence that they will try for up to 2 weeks to try and get into the old nest site and only then will they seek out a vacant site if it is available nearby. This supports the premise that preserving existing nest sites is the best policy, followed by mitigation nest bricks or boxes
- Experience in the largest and longest standing German Swift colony indicates that smaller boxes are better than larger ones because the adult birds will then find the chick faeces and eat them and thus the box remains cleaner. The chicks do not need a large space in which to practice their “press-ups”. Also, the highest number of nestlings returning to the colony in any one year was recorded as 18 from 120 nests.
- The experience of an English Swift carer is that Swifts have a strong colour sense and will gravitate towards brown as a preferred colour for example as a blanket to sit on