BOOK OF ABSTRACTS

6th International Swift Conference

2022 SEGOVIA SWIFT CONFERENCE

www.swiftsegovia2020.com

Foro GeoBiosfera

www.forogeobiosfera.org

SEGOVIA (SPAIN) - MAY 25th - 27th 2022 ▪ #SwiftSegovia2022

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Common Swifts beside the Roman aqueduct of Segovia (Spain).

Photography courtesy of: Ángel Sanz (Segovia)

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Impresión portada: papel reciclado de 300 gramos
Impresión contraportada: papel reciclado de 160 gramos

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Coordinación editorial: ForoGeobiosfera
Depósito Legal: SG 83-2022
Fotografía: contraportada Ángel Sanz, interior portada Alfredo López Herangómez,
interior contraportada cortesía de Fco. Javier Sáez Frayssinet

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#SwiftSegovia2022

After the great success of the 5th International Swift Conference held in 2018 in Tel Aviv, we are happy to introduce Segovia as the host of the 6th International Swift Conference in May 2022, the first to be held on the Iberian Peninsula.

Segovia is located in central Spain (Castilla y León). It has an important cultural and architectural heritage, including the famous Roman Aqueduct. In 1985, Segovia and its Aqueduct were declared a UNESCO World Heritage Site. In addition, it has an important natural heritage, specifically birds and above all - Swifts, which have created a major breeding colony in in this famous historical monument.

In recent years, the city has made great strides in reconciling its architectural and natural heritage, allowing wildlife to continue to co-exist with human inhabitants.

The proximity of Segovia to the capital of Spain, Madrid, ensures easy communication by public transportation. Segovia also has a wide range of hotels and restaurants, which will allow attendees to fully enjoy this beautiful city.

As in previous conferences, the presentations and oral communications will cover topics on the biology of Swifts, migration and geolocation technology, aerodynamics, radar studies, rehabilitation,

conservation and promotion measures, and provides for the presentation of specific projects, including culture and educational projects. We have welcomed contributions based on personal experience as well a scientific research and there will be display of posters and materials.

A Conference Full of Challenges

In 2018, at the 5th biennial meeting in Tel Aviv, the naturalist and researcher from Segovia, Francisco Javier Sáez Frayssinet, the then president of Foro GeoBiosfera, presented the candidacy of Segovia for 2020 with the support of the Segovia City Council. Segovia won and took on the responsibility of hosting this highly specialised meeting.

However, the international situation created by the COVID18 pandemic forced the congress to be postponed first to 2021 and then to 2022, two years of tense waiting.

Fortunately, in January 2022, despite the unstable global situation and many uncertainties, Foro Geobiosfera resumed the organisation of this scientific meeting and the positive response was immediate.

The participants from 2020 maintained their registration and new ones have joined. Sponsoring companies and public institutions such as the Segovia City Council, the Diputación Provincial de Segovia (Provincial Council of Segovia) and the Patronato del Alcázar (Alcazar Board of Trustees), have shown their support and collaboration adding and further increasing the relevance of this event.

Segovian Swifts as a Reference

The presence of Swifts and their breeding grounds have been part of the special character and ambience of Segovia for centuries. They are an essential part of Segovia that needs to be preserved. These birds are a natural complement to the monumental and historical part of the city and as such, add value.

The Aqueduct is home to one of the largest colonies of the Common Swift (*Apus apus*) in Europe. The Segovian Swifts are known throughout the world.

The city is surrounded by nearly four kilometers of ancient walls that provide shelter for an infinite numbers of Swifts, Choughs (*Pyrrhocorax pyrrhocorax*) and raptors.

Segovia and its surroundings are a paradise of biodiversity. The Swifts and red-billed Choughs are

icons of integration between the city´s historic and natural heritage.

Summer visitors include Swallows and Bee-eaters. The winter residents are Cranes, Grebes, Kites, Eagles, Vultures, Hawks and Owls. Our lucky bird watchers can follow them without leaving the city.

We want to thank you all for your trust and patience. You have given us precious hope and support during the organisation of this unforgettable gathering of friends of Swifts.

Conference Committee

Edward Mayer - Swift Conservation, UK
Dr. Mauro Ferri – Festival dei rondoni – Swifts & Fun, Monumenti Vivi, Italy
Organization team Foro GeoBiosfera association:

- Abel Herrero
- Concepción Domínguez
- Cristina Herrero
- Elvira Peñalosa
- Gloria Molina
- Luis Peñalosa
- Teresa Tardío

Other collaborators of the organizing committee team:

- Pablo Salmón (Presenter)

  Pablo Salmón is an Animal Ecologist fascinated by the evolution of life history strategies, physiology, and their intersection and how this could help to understand species persistence under anthropogenic change.

  His research is characterised as integrative and multidisciplinary, cutting across evolutionary theory, physiology, and environmental science as well as across organisation levels, from the organelle to populations. He makes use of physiological and molecular approaches, often derived from biomedical studies, to better understand life history variation and the effects of environmental change on wildlife health and performance.

  Pablo developed his Phd on Lund University, researching the genomic response to urbanisation in birds. Current he is postdoc in the Group of Stream Ecology in Euskal Herriko University and in the Institute of Biodiversity, Animal Health and Comparative
  Medicine in University of Glasgow.
- Rosario Romo (Interpreter translator)

  She has been interpreting and translating for 30 years, working for Spanish public institutions, the European Union and international organisations, and private sector. Specialise in topics relating to the en-

vironment, law and the performing arts. Member of AIIC (International Association of Conference Interpreters).

- Fco. Javier Sáez Frayssinet (Birding guide through the city of Segovia)
- Ángel Febrero (Author congress illustration) Passionate about science and art, he combines detail and rigor in his work, bringing us closer to an always fascinating and aesthetic nature.
- Luis Mena (Congress logo designer) Illustrated specialist in botany
- Sanja Jelaca (Translator)
- David Pastor de la Orden (Design)
- Photos courtesy: Ángel Sanz, Miguel Pascual, Alfredo López and Dave Kilbey
- Volunteers: Miguel Pita, Javier Oria, Jorge Marañón and Javier Sanz
- Virginia Rodríguez
- Laura Esteban

Fotografía: Enrique del Barrio

Program

Pre-Conference Activities

The objective is to increase knowledge about Swifts amongst the general public of Segovia and raise awareness of the importance of the conference.

Friday, 20 May

17:00 Children's creative workshop "Between clouds with Swifts" by the Segovian sculptor, Nieves Estaire.

19:30 Informative talk "The extraordinary history of Swifts" by Gloria Molina, Zoologist.

Place: Casa de la Lectura. Municipal Library (C/ Juan Bravo 11, Segovia)

Saturday, 21 May

19:00 Observation point to see the aqueduct Swifts. Organized by Foro GeoBiosfera

CONFERENCE

Tuesday, 24/5

19:00 Reception and welcome

Wednesday, 25/05

09:00 Reception

09:30 Welcome and introduction to the conference

10:00 **Opening Talk**

- Edward Mayer: "Why Support Urban Biodiversity? Helping Swifts, helping Wildlife, helping Ourselves"

11:00 Coffee break

11:30 **Oral communications**

- Jaap Langenbach & Rick Wortelboer: "The Common Swifts nesting sites – Experience from Swift Towers in The Netherlands"
- Susanna Meyer: "Settlement patterns of Common Swifts *Apus apus* in the church Oberkich in northwestern Switzerland"
- Tim Collins: "A Growing Swift Colony in Cambrdigeshire - the first 18 years"
- Lynda Huxley & Crish Huxley: "Reversing the decline. Swift nest box projects in the West of Ireland: comparing built-in with externally-mounted"
  Rosalina Montes: "Reproductive success of the Collared Swift (*Streptoprocne zonaris*) in south-central Cuba"
- Marcel S. Jacquat: "Observations on the fidelity of the Common Swift to its artificial nesting site"

13:30 Walk to the Acqueduct

14:00 Lunch in Casares Restaurant (Avda. Padre Claret 2, Segovia)

17:30 Guided visit to the Alcazar

Thursday, 26/05

08:30 Reception

09:00 **Plenary conference**

- Dave Goulson: "Averting the insect apocalypse"

10:00 **Oral communications**

- Marco Cucco: "Census of swift colonies in medium-large cities: seven cases from Northem-Italy"
- Lyndon Kearsley & Dick Newell: "The strategies and timing of Eastern Common Swift (*Apus apus pekinensis*) migration between Beijing, China and Africa"
- Volker Voigtländer, V., Bösl, M.: "How to save Swift nest places in historic monuments - an encouraging experience from the roman cathedral of Worms in Germany"

11:00 Coffee break

11:30 **Oral communications**

- Renata Neves Biancalana: "Conservation of Sick's Swifts (*Chaetura meridionalis*) in Southern Brazil: a successful citizen science initiative"
- Montse López Molina: "Administration measures to conserve and protect the protected fauna of the cities in the Barcelona area"
- Elena Muñoz López & Nat Argullós: "Preservation of nesting places, refuges and colonies of Alpine Swifts in the Barcelona metropolitan area in interventions by rural agents in the Barcelona region"
- Thomas Starkmann: "Common Swift (*Apus apus*) in Vienna: status and conservation of nesting sites"
- Francisco Sánchez Aguado et al: "First insights on the breeding biology and migratory pattern of the Common Swift (*Apus apus*) in Segovia (Central Spain) population"
- Francisco Javier Sáez Frayssinet: "Evolution of Swift protection in Segovia"

13:50 Lunch

15:30 **Plenary conference**

- Mauro Ferri: "Swifts in ancient and modern buildings in Italy

  Raising awareness of good practices in their conservation, despite severe challenges"

16:30 **Oral communications**

- Jacques Laesser & Christoph Meier: "Never change a running system - Fidelity to the breeding area, migration route and to the wintering grounds"
- Gert de Jong: "Monitoring Swift nests in Amsterdam will nest boxes safe the population in the old city?"
- Dave Kilbey: Swift Mapper: "A partnership approach to addressing the decline of swifts in the UK through citizen science"

17:30 Coffee break

18:00 Birdwatching around Segovia*

Friday 27/05

08:30 Reception

09:00 **Plenary conference**

- Enric Fusté: "Hand-rearing orphan Swifts: research, protocol, diet and experiences from a prestigious wildlife rehabilitation centre"

10:00 **Oral communications**

- Natalia Pastor: "Squamous metaplasia compatible with hypovitaminosis A in common house martins (*Delichon urbicum*) with conjunctivitis"
- Jacques Laesser: "Adoption as an opportunity for abandoned Swift chicks at the expense of adoptive siblings?"
- Rick Wortelboer: "The Common Swift: what about being the only child?"

11:00 Coffee break

11:30 **Oral communications**

- Francisco Amorós: "What kills Swifts wich die? An approaching of the main causes of death in these birds"
- Ángel Velasco et al: "Common Swift (*Apus apus*) rescue campaigns in Toledo (central Spain) a successful citizen science initiative"
- Jaroslaw Majkusiak: Day and Night with the Swifts
- Lyndon Kearsley et al: "The aeroecology of atmospheric convergence zones: the case of Pallid swifts"
- Tyson Lee Holmes et al: "Birds with multiple homes. The annual cycle of the Pallid Swift (*Apus pallidus brehmorum*)"
- Milo Manica: "How do Swifts select their urban habitat? A citizen science program to try and find answer in the province of Varese, Italy"
- Michael Helm, Drew Schwitters & Diane Yorgason-Quinn: "Vaux's Happening-14 Million and Counting"

14:00 Lunch

15:30 **Oral communications**

- Renata Neves Biancalana: "When the dead talk: Swift specimens in scientific collections can help us understand their biology and evolution"
- Evert Pellenkoft: A Swift's eye view: there is more to it than meets our eye
- Elena Moreno Portillo: Plastics is in the air, how might it affect Swifts?
- Giuliana Pulvirenti: APUS & CO TRACKER: a project that combines environmental education, wildlife conservation and population data collection in Citizen Science.
- Eugenia Parisi: Rondoni Campigliesi/Swifts of Campiglia – involving a community in caring for its Swifts
- Sarah Gibson: Swifts & Us: the Life of the Bird that sleeps in the Sky

17:30 Coffee break

18:00 **Oral communications**

- Francesco Mezzatesta: "Gruppo Rondoni (Italia) in action in Parma and other Italian towns"

- Franco Sacchetti: “Dove i rondoni vanno a dormire” (Where swifts go to sleep)

19:00 Presentation of candidatures and vote for the location of the conference in 2024

19:15 Closing ceremony

21:00 Congress dinner

Saturday 28/05

9:00 **Visit to Hoces del Duratón Natural Park.**

Hoces del Duratón Natural Park is located to the northeast of Segovia, downstream from the town of Sepúlveda. In this area the river Duratón is embedded in a deep canyon, which insome places reaches more than 100 metres in depth. The gorge contains great archaeological and historical richness which adds to the interest and beauty of the landscape.

In the high rocky cliffs that surround the gorges, almost 250 pairs of Griffon Vultures nest,as well as a good number of Egyptian Vultures, Golden Eagles and Peregrine Falcons.

The natural values of the area are enhanced, both historically and artistically, by the Romanesque Hermitage of San Frutos, caves with Bronze Age engravings and the architectural complex of Sepúlveda.

Asociación Vultour Naturaleza

Sunday 29/05

9:00 Birdwatching trip “Vulture´s Hide”

Visit “Mirador de los Buitres” (Vulture’s Hide) El Espinar (Segovia)

Birdwatching tour to “Mirador de los Buitres” near the feeding areas of the carrion birds in El Espinar, Segovia.

From here you will be able to observe and enjoy the necrophagous birds that come to the feeding areas and see one of the greatest events of the Iberian fauna, the “Feast of the Vultures” from a hide located in the village of El Espinar (Segovia), within the Biosphere Reserve and National Park of the Sierra de Guadarrama.

The tour takes place in the Special Protection Zone for Birds “Campo Azálvaro-Pinares de Peguerinos”, a natural area protected by the Natura 2000 Program.

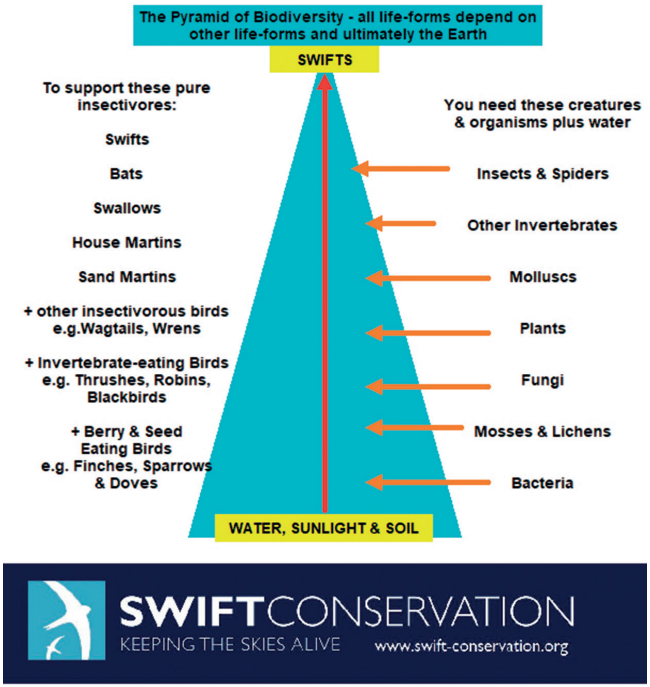
Asociación Colectivo Azálvaro

Plenary lectures

"Why Support Urban Biodiversity? Helping Swifts, helping Wildlife, helping Ourselves"

Edward Mayer

Swifts are the perfect flagship species for promoting conservation in the built environment. They are spectacular, Europe's fastest bird in level flight, and a bird that flies continuously for most of the year. Deforestation beginning in classical times drove these amazing birds from the trees (where they had bred in old woodpecker holes) to our villages, towns and cities where they thrived, living in holes and gaps in our houses until the modern era, when our buildings became impenetrable to them and to many



other beneficial bird and bat species. But with our cities now supporting greater biodiversity than the surrounding countryside, the time has come to realise and exploit the potential of our built environment for ensuring the survival of many species that would otherwise become extinct. Edward Mayer's talk will concentrate on the profound benefits to humans, as well as to wildlife, of "greening" the built environment and supporting wildlife within it, and will provide details of how to create habitat for a wealth of attractive and beneficial species, Swifts included, within our modern towns and cities.

Biography

In 2003 Edward Mayer pioneered an approach to preserving the future of the Common Swift *Apus apus* through advice, talks and the encouragement of volunteer action. Having realised that Swifts were in decline in the area he lived in, he tried to find out the reasons.

These turned out to be the replacement of roofs and the insulation of old houses, which blocked the holes where the Swifts had lived.

He studied the efforts of Swift experts in Germany, and began by creating "London's Swifts" an internet-based advice service focusing on how to preserve existing nest sites and create new provision within London.

It was such a success that the Royal Society for the Protection of Birds asked him to make it a national service and "Swift Conservation" was born. It soon started to receive appeals for help from enthusiasts abroad, so Edward widened its scope to cover Europe too.

Edward first became fascinated by Swifts at the age of six when he saw these amazing birds flying above his home. He has been in love with them ever since.

He worked for a number of Government agencies and for twelve years was head of the department managing the property, infrastructure and facilities of the Tate Gallery.

As Swifts are now almost wholly dependent on holes in buildings for nesting, his work provided Edward with invaluable knowledge for helping Swifts by giving him the expertise for practical discussions with builders, architects, and those responsible in government for planning, biodiversity policy and the conservation and restoration of old buildings; all of whom can have a great influence on the survival of Swifts.

"Swift Conservation" supplies advice via its web site and Edward has also given over 350 talks and training sessions to architects, urban planners, developers and natural history societies. Free leaflets and nest box designs are available, as well as recordings of Swift calls for attracting the birds to new nest sites. Edward also provides tailored advice on specific projects and on the setting up of local groups to support Swifts.

Edward masterminded the installation of Swift nest places throughout the site of the 2012 London Olympics and also helped run four of the biennial International Swift Conferences, the first two in Berlin and the latter two in Cambridge in the UK and Tel Aviv in Israel.

www.swift-conservation.org
edward.mayer@swift-conservation.org

"Averting the insect apocalypse"

Dave Goulson

We are in the midst of the 6th mass extinction event, with extinctions occurring faster than at any time in the last 65 million years. 'Bioabundance' is in decline, with recent studies showing that insects in particular seem to be disappearing fast. For example, recent evidence from Germany found that the biomass of flying insects fell by 76% in the last 26 years. Insects are fascinating, beautiful, and vitally important; without them ecosystems would grind to a halt. If insect declines continue it will have profound consequences for mankind and for our planet, for insects make up the bulk of life on land, and perform numerous vital roles in ecosystems: they are food for many other organisms including a great many bird species, they control pests, pollinate, recycle nutrients, and much more. I will explain the main drivers of insect declines, which include habitat loss, intensification of farming practices, pesticides, the spread of disease, light pollution and climate change. I will also suggest how we should tackle this crisis, first by turning our gardens and urban areas into oases for life, and second by fundamentally changing the way we grow food.

Biography

Dave Goulson is Professor of Biology at University of Sussex, specializing in bee ecology. He has published more than 290 scientific articles on the ecology and conservation of bumblebees and other insects. He is the author of Bumblebees; Their

Behaviour, Ecology and Conservation, published in 2010 by Oxford University Press, and of the Sunday Times bestseller A Sting in the Tale, a popular science book about bumble bees, published in 2013 by Jonathan Cape, and now translated into fourteen languages. This was followed by A Buzz in the Meadow in 2014, Bee Quest in 2017, and The Garden Jungle in 2019. Goulson founded the Bumblebee Conservation Trust in 2006, a charity which has grown to 12,000 members. He was the Biotechnology and Biological Sciences Research Council's Social Innovator of the Year in 2010, was given the Zoological Society of London's Marsh Award for Conservation Biology in 2013, was elected a Fellow of the Royal Society of Edinburgh in 2013, and given the British Ecological Society Public Engagement Award in 2014. In 2015 he was named number 8 in BBC Wildlife Magazine's list of the top 50 most influential people in conservation.

Affiliation: School of Life Sciences, University of Sussex, d.goulson@sussex.ac.uk

"Hand-rearing orphan Swifts: Research, Protocol, Diet and Experiences from a Prestigious Wildlife Rehabilitation Centre."

Enric Fusté

Many orphaned birds are transferred to wildlife rehabilitation centres for attention every year. Swift orphans represent an important number of admissions in rehabilitation centres in Europe. In 2019, Torreferrusa Wildlife Rehabilitation Centre (Barcelona) received more than 4000 individuals, similarly other rehabilitation centres increased admission numbers massively, CF Aiguamolls (Girona) received >500 or CF Vallcalent (Lleida) >1000. The extreme heat episode which occurred that summer caused an increase of the young jumping from the nests due to the high temperatures. Surely climate change may be the reason of these more frequent episodes, and more than ever we should be ready to help all those orphans, not only swifts but hundreds of other species such as House Martins. These altricial species, both nestlings and fledglings, are dependent on their parents, thus requiring hand-rearing for survival. 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. 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 orphans. 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 totally questionable when compared to chicks hand-reared with insect diets and birds raised in the wild. Therefore the practice of recommending the use of non-insect diets when hand-rearing insectivores should be discontinued and a pure insectivorous diet should be adopted. The optimal diet would be composed of different insect species (crickets, mealworms, giant mealworms, cockroaches, wax moths larvae, flies). We are observing with concern how the saturation of the official rehabilitation centres makes orphan swifts likely be delegated to unskilled hands, putting their recovery at risk. There are also dangerous ideas such as fostering in wild nests, totally

contraindicated if not conducted under precise monitoring, as the opposite may affect the wild broods. It is clear that there is no simple solution, but as far as possible professionals should take charge or encourage motivated people to acquire the necessary knowledge to support the rehabilitation centres in such busy periods. The value of a applying protocols proven to be optimal, have also been vindicated by observations of hand-reared swifts several years after their rearing.

Biography

BSc (Hons) Animal Biology and Conservation. University of East London - UK

MSc Wild Animal Biology. Royal Veterinary College/Zoological Society of London - University of London – UK

Member of the Royal Society of Biology

Earlier work and research at the Centre de Fauna Torreferrussa - Barcelona.

Currently working as a rehabilitator at the Centre de Fauna Aiguamolls de l'Empordà - Girona.

Regular collaborations with different centres in the UK, Germany and Poland.

Devoted to wildlife rehabilitation, particularly in the husbandry of orphaned birds and mammals.

First interest in rearing Swifts, as a Master's thesis project, comparing its growth in a rehabilitation

centre with wild chicks, revealing disturbing results. Subsequently, further research on different diets was conducted, which led to the implementation of a new optimal diet and improvements in the protocol in the wildlife rehabilitation centres in Catalonia.

The results have been presented internationally at conferences and symposiums, and published in the Journal of Zoo and Aquarium Research published by EAZA (European Association of Zoos and Aquaria).

Fusté E., Obon E. and Olid L. Hand-Reared Common Swifts (Apus apus) in a Wildlife Rehabilitation Centre: Assessment of Growth Rates under Different Diets, Journal of Zoo and Aquarium Research, 2013

https://www.jzar.org/jzar/article/view/33

To continue outreach, continues to attend conferences and seminars to expose the consequences of malpractice in the husbandry protocol for swifts and other insectivores.

Development www.falciotnegre.com website (Common Swift in Catalan language) where extensive husbandry information is provided, as well as contacts of professional rehabilitators from different countries. Always interested in expanding this list as much as possible.

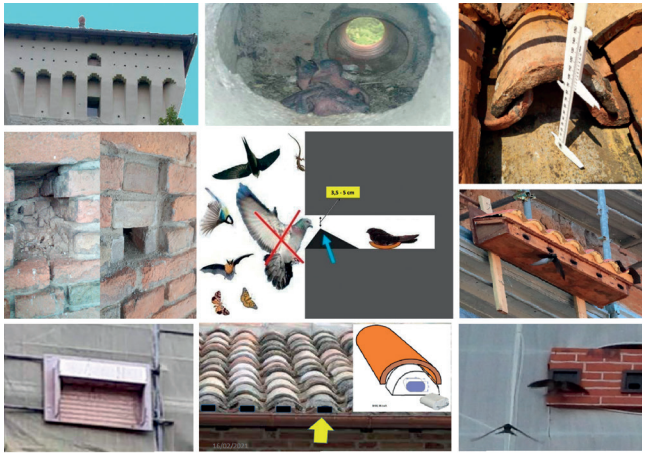
Also a lot of interesting information on the Facebook profile,: www.facebook.com/FalciotApusapus

"Swifts in ancient and modern buildings in Italy. Raising awareness of good practices for their conservation, despite severe challenges"

Mauro Ferri

Since Middle Ages, in Italy Swifts became so common in buildings that people began to lure them into artificial nests embedded in walls, aligned in tens to hundreds, to exploit fledgling Swifts as food, and this continued until the middle of the 20th century ceasing just before modern laws. Swifts also learned to use subsequent architectural styles of building, but coppo tiled roofs remain the most common sites for them, while scaffolding holes are their most spectacular nesting habitat. Unfortunately, the growing number of urban Pigeons has favored drastic solutions consisting above all in the closure of the wall and roof hollows, often with the burial of live animals (Pigeons, Swifts, Bats, Geckos ...) and in the perpetual exclusion of biodiversity, despite a centuries-old peaceful coexistence. A small group of friends got together, and after initial favourable results (2007) in support of Swifts during building restorations, we started to spread awareness for Swifts as flag species for the biodiversity

in buildings, organizing and encouraging Swift festival events (2012-2019) and sharing any useful experience to counter the exclusion and/or the killing of Swifts, assembling a wide repertoire of good practice suitable for ancient and modern buildings. Our direct experiences and those shared from other groups, even from other countries, can be consulted on our web pages and in our Facebook group, with over 30 downloadable documents and about 170 case studies and related topics in favor of three species of Swifts and with a growing number of cases concerning house martins, swallows, jackdaws etc. This increases the interest on the part of designers, homeowners, contractors, and municipalities, but unfortunately, in the absence of obligations and unitary action by the associations, the recent (2020-2023) decor and thermal adaptations have triggered more than 139.000 construction sites that are worsening the situation for animal welfare and biodiversity.



Biography

Mauro Ferri is a veterinarian, with a 20 years career in game and fishing management followed by 11 years in the Veterinary Service of the Local Health Agency till his retirement. With 35 years of interest in historical artificial nests built in Italy for swifts and sparrows since the Middle Ages until 20th Century, he transferred this interest in the conservation of swifts in monuments and contemporay buildings. Author and coauthor of articles on these topics (2011-2020), since 2012, he has started an intense campaign of awareness for Swifts with a few friends, all swift experts, The litte society Festival dei rondoni Swifts & Fun – Monumenti Vivi, aims to share good practices useful for Swifts and for biodiversity protection in buildings during maintenance and restoration works, aiming to counter a widespread Pigeon-phobia by transforming “living monuments and buildings” in “dead walls”.

rondonecomune@gmail.com
Associazione Monumenti Vivi; www.momumentivivi.it, www.festivaldeirondoni.info; Rondoni e Monumenti Vivi (Facebook)
Italy

Oral Communications

"Common Swift *(Apus apus)* rescue campaigns in Toledo (central Spain): a successful citizen science initiative"

Ángel Velasco1,*, Selena Ávila[1], Rubén Buenache[1], Raúl Santiago[2], Itziar R. Urbieta[1]

1 Department of Environmental Sciences, University of Castilla-La Mancha, Avda. Carlos III, 45071 Toledo, Spain.

2 Agrupación Naturalista Esparvel. Av. del Río Boladiez, 65, 45007 Toledo, Spain.

* Correspondence: angel.vgarcia@uclm.es

The Common Swift (*Apus apus*) is a migratory bird with unique physiological adaptations. Its life cycle is entirely aerial, except for nesting. The studied Swift population spends its reproductive period in the province of Toledo (Central Spain) during May-August, nesting in small cracks and hollows in tall buildings and other constructions. Given their aerial nature, the chicks that fall from the nests are not fed by their parents, so a large

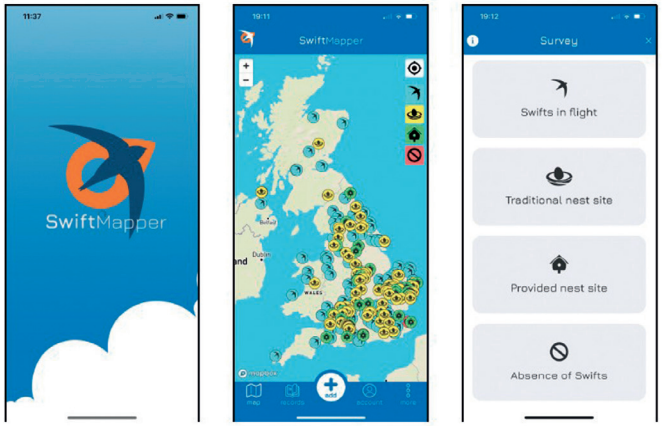
proportion of young individuals are lost for this reason.

This study describes the work of the Swift Rescue Network of Toledo, which is a citizen science initiative to address this issue. Groups of volunteers have been trained to raise grounded Swifts at home. First, we present results for three rescue campaigns (2019, 2020, 2021). The network has raised and released an average of 120 swifts per year. Secondly, we analyse the meteorological conditions (temperature records and heat waves) recorded in Toledo during these campaigns to explore their potential relationship with high numbers of grounded chicks. Results showed a relationship between high temperature peaks (both maximum and minimum) and an increase in the number of Swifts falling from their nests. This may be due to the excessive heat within the nesting hollows (usually of stone or brick), causing either excessing movement as heat-avoidance behaviour, resulting in accidental falls, or active fleeing from scorching surfaces.

"Swift Mapper. A partnership approach to addressing the decline of swifts in the UK through citizen science"

Dave Kilbey

Swift Mapper is an exciting new app and website-based project designed to assist with the conservation of Swifts within the UK. Whilst data on Swifts have been collected in the UK for many years there have been several significant problems limiting both the recording and use of these data for conservation purposes, namely:



1. Data has been inaccessible to key end users, and not presented in a fashion suitable for use
2. No agreed standard for Swift data has been established between interested parties leading to:

a) Datasets not being interoperable
b) Key data on Swifts not being collected by some projects
c) The proliferation of data collection schemes on a local scale leading to data silos.

3. No app has existed to enable real-time recording in the field.

Swift Mapper has addressed these issues by:

1. Creating a website/data visualisation system designed to focus on the requirements of high priority data users. These include local authority planners, architects, ecologists and developers. Swift Mapper provides an intuitive and powerful map interface to allow each user to discover, explore and download data on swift nest sites in their area. This will facilitate the provision of suitable mitigation to protect breeding swifts during building development and refurbishment.
2. Agreeing a data standard for the UK among key stakeholders.
3. Developing a citizen science focused app, which enables anyone to quickly and easily add records of Swifts from across the UK.

Central to the success of Swift Mapper is the strong emphasis on collaboration between organisations focused on conserving swifts and engagement with those at the coal face of Swift conservation. It is a partnership between:

- The RSPB – the UK's largest nature conservation charity
- Natural Apptitude – a company specialising in the creation of software for the collection and mapping of biological data.
- Swift Local Network – a network of groups working to conserve swifts at a regional level in the UK and beyond.
- Swift Conservation – A voluntary organisation providing advice on how to help Swifts since 2003.

"Plastics in the air ¿How might it affects Swifts?"

Elena Moreno Portillo

Plastic has reached every environment in the world. Its effects are well studied in sea and land, but little is known about how it affects aerial species. Swifts are very disconnected from humans most of their lifetime so, it is hard to imagine how our plastic waste can affect them but we have some emerging evidence, and we are going to find out more.

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“Preservation of nesting places, refuges and colonies of alpine swifts in buildings in the Barcelona metropolitan area in interventions by rural agents in the Barcelona region”

Elena Muñoz López and Nat Argullós Romera

Different practical cases of intervention by rural agents in Barcelona are presented, which involve the monitoring of works and projects that affect the nesting of these species. The way to proceed is explained, both to preserve the life of these birds and to preserve the nesting sites and refuges. Different situations and examples of compensation in cases of destruction of nesting sites are presented.

“Rondoni Campigliesi/Swifts of Campiglia – involving a community in caring for its Swifts”

Eugenia Parisi

Campiglia Marittima is a small Tuscan hill town. During the spring and summer, its medieval centre houses a colony of over a thousand Common Swifts that arrive for the breeding season. Although locals have always been well aware and fond of the Swifts’ presence, no dedicated attention was given to the colony until 2017 when I started my Rondoni Campigliesi / Swifts of Campiglia project.

The aim of the project is to encourage residents, tourists and the town council to appreciate and value the remarkable privilege of hosting such a spectacular Swift colony, to give visibility to it and, most importantly, to encourage everyone to take responsibility for its conservation.

Inspired by a fortuitous encounter with RSPB Swift Volunteer Catherine Day and helped at first by Edward Mayer of 'Swift Conservation' and Mauro Ferri of 'Festival dei Rondoni', I gave my project a name and a logo and created a Facebook page. Thanks to local support and to valuable contributions from swift experts I have been able to organise a range of activities, including:

- A yearly street festival focused on visual presentations by experts;
- Swift photographic exhibitions;
- Installation of a Swift nest box at the local school;
- Children's Swift-related events;
- Installation of artistic ceramic swifts as urban decoration;
- Installation of a permanent informative 'Swift Walk' signposted with the project's logo;
- Local production of the 'Rondolci' biscuits.

Over the years, these initiatives have had the much hoped-for success of bringing Campiglia's Swifts and their amazing lifestyle to the attention of an increasing number of people. The challenge now is to gain the council's support in encouraging professionals in the building industry to adapt some of their existing practices and also to introduce new ones aimed specifically at the conservation of swift nesting sites.

As I write this in April 2022, what started as the initiative of a single person has become the joint adventure of an association. Hopefully, this will give us more strength and facilitate our relationship with local institutions.

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"A Swift's eye view: there is more to it than meets our eye"

Evert Pellenkoft

Although we will never know what a Swift really sees we can make an educated guess with the help of behavioural observations and conclusions from anatomical descriptions of the working or capacity of its eye. Analogies with other aerial daylight hunters

like raptors and swallows can be made as well as comparisons with our own vision as a reference. Graham Martin wrote The Sensory Ecology of Birds OUP 2017. He argued that a bird is a bill, not a wing, guided by an eye. In evolution bird senses are being moulded and refined primarily by the sensory challenges of foraging. Finding food and to notice threats like predators are crucial to its survival.

Birds like swifts have exceptional vision, which enables them to survive and navigate the world in such a unique way. However, it is now recognised that avian behaviour is guided by information drawn from many different senses which are then used in integrated and complementary ways to answer the many different sensory challenges posed to the swift by aerial environments and particular tasks in a so called sensory ecology.

Understanding how sensory information is used by birds has important applications in conservation, such as providing vital insights into why birds are prone to collisions with structures like power lines and wind turbines. A sensory ecology approach can suggest how these problems can be mitigated.

Just as we do, each animal lives in its own self-centred sensory world and it is trapped in a particular reality, the product of its own evolutionary history, even though they often share the same environment

Even when we are skydiving or parasailing our aerial perception differs widely from the Swift

With more knowledge of its eye you will have some insight into the world of Swifts and you will regard them with a new sense of wonder and respect."

"Gruppo Rondoni (Italia) in action in Parma and other italian towns"

Francesco Mezzatesta (Natour biowatching)

The "Italy Swift Group" works as coordination of other local groups in various towns. The main purpose is to inform both local administrations and citizens on the importance of protecting the holes which are the - breeding sites of Swifts in Italian old towns and to promote concrete actions for their conservation. In addition to the magnificent work carried out from other groups in particular in Trieste, Milano and Modena but also in other regions of northern Italy, that other colleagues will talk about during the conference, the "Italy Swift Group" takes Parma (Emilia-Romagna city) as an example for other italian towns.

1. ENVIRONMENTAL EDUCATION IN THE PRIMARY SCHOOL.

Swifts, Swallows and House Martins have been presented in the primary schools. To protect swifts we believe it is important to explain the morphological and behavioral differences between the three species (examples of presentation at primary schools).

2. CENSUS OF COLONIES BY STUDENTS OF THE HIGH SCHOOLS.

After a first input given by a presentation at the "Liceo Ulivi", some classes led by Professor Andrea Beseghi have begun to carry out amazing work listing the breeding Swifts. In Parma they counted 55 colonies. For three years, 228 students and 6 teachers were employed in 43 outings.

3. ADOPTION BY MUNICIPALITIES OF CHANGES TO BUILDING REGULATIONS.

This is the most difficult area of our work but also the most important. Examples of this are: Campo nell'Elba (LI), Rio Elba (LI), Marciana (LI), Acireale (CT). However, the next step will be even more difficult because once the changes to the plans have been approved, we need to ensure they are enforced by the public institution.

4. INVOLVEMENT OF MUNICIPALITY AND TECHNICIANS IN CONCRETE ACTIONS.

The involvement of the City council and technicians engaged in various restorations, resulted in a Conference organized in 2018 by all the environmental societies. The aim was to adopt municipal legislative measures to protect breeding sites by modifyng the restoration actions. Examples of a new kind of restoration are S. Francesco Church and the Old Hospital. In addition, artificial nests have been temporarily placed on the scaffolding. They have been occupied in a percentage of 50%. In addition a total 300 + 200 putlog holes have been reopened thus providing 500 new Swift breeding sites.

The "Italy Swift Group" has acted in different places in addiction to Parma (Emilia R.): isola d'Elba (Toscana), Casale Sulsile (Veneto), Acireale (Sicilia), Sorbolo (Emilia), Compiano (Emilia R.)

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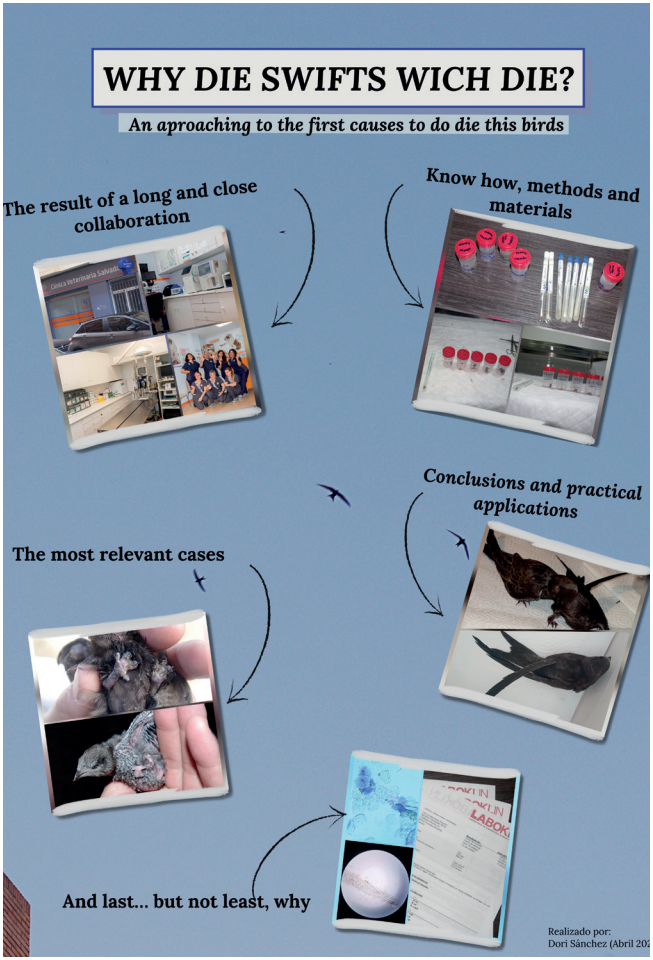
“What kills Swifts wich die? An approaching to the main causes of death in these birds”

Francisco Amorós

We tell a curious story that, in all probability, would never have started without the intervention of “casuality”. In twenty nine (2009), a great friend of the swifts wrote and distributed a letter in which, with great sadness, he informed many people about the lack of financial investment that would allow them to better understand the causes of mortality in the swifts. One of those people heard the message and decided to take this great challenge involving and share this “dream” with other people.

Under this title we present a brief presentation about the findings of the study carried out from the year twenty eleven (2011) to twenty twenty one (2021). For ten (10) years we developed an exhaustive activity, making a great effort to know what were the reasons why swifts in rehabilitation or recently arrived from their route migration died. This was achieved by performing detailed necropsies, collecting organs and samples that were then subjected to histopathological analysis and other microbiological tests. The presentation contains a summary of the method and the materials used in this research, the statistical data on the most frequently found findings are collected, the most relevant cases, the practical applications...



Professionals from 2 Spanish veterinary clinics and several external laboratories whose main task

was to carry out histopathology and microbiology studies have collaborated in this extensive work over time. In addition, we must mention the University of Murcia in whose facilities a particular study was carried out on toxins in tissues of a house sparrow (*Passer domesticus*).

In summary: 10 years, 30 cases, more than twenty 25 professionals and a great financial effort for an ambitious project whose information and conclusions are presented at this conference.

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"Evolution of swift protection in Segovia"

Francisco Javier Sáez Frayssinet

The population of Swifts in Segovia is perhaps one of the largest in Spain, due to the opportunities the city offers for nesting and also for feeding due to its proximity to the natural environment

Declared a UNESCO World Heritage Site in 1985, Segovia's old town offers many opportunities for birds, bats, and other species to find refuge and nest in its walls and historic buildings, including its well-known Roman aqueduct.

Restoration work on many buildings and structures had unfortunately resulted in the plugging and destruction of cavities suitable for bird nesting, although such actions involving the destruction of protected bird nests are prohibited by law.

The different regulations and laws for the protection of wildlife at the state, regional and municipal levels, and especially the PEAHIS (special plan for the historic spaces of the city of Segovia) that sets the guidelines for building in the city will be discussed.

The approval of the PEAHIS has meant an important advance, although not enough, for taking ac-

tions in terms of conservation and enhancement of biodiversity in the urban environment.

There are a number of buildings and structures undergoing restoration where our recommendations have been implemented.

We also highlight some innovative initiatives carried out in privately owned buildings.

The positions on our proposals and actions of different organisations such as the military institution, the bishopric, local and autonomous administrations and private owners will also be described.

Finally, the effects of recent changes in "local ecology" on biodiversity, populations of swifts and other birds will be described.

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"First insights on the breeding biology and migratory pattern of the Common Swift *(Apus apus)* in Segovia (Central Spain) population"

Francisco Sánchez Aguado[1], Álvaro E. Casaux[1], Esteban Casaux[1], Alberto Díez Herrero[1], Sara González[1], Javier Llorente[1], Susanne Åkesson[4], José Manuel de los Reyes-González[5], Ana Bermejo[2,3] & Javier de la Puente[2,3]

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Many basic aspects of the Common Swift biology remain still unknown well into the 21st century.

We aimed to address some yet unresolved questions through studying individuals from one of the most emblematic and important breeding colonies in Spain, the ancient Roman Aqueduct of Segovia (Central Spain). To this end, we deployed a standardized annual population monitoring programme. We captured, ringed and measured individuals in an accessible section of the Segovia Aqueduct every year following a standardised protocol. In addition, some individuals were equipped with ultra-light biologger devices, including light-level geolocators, nano-GPS and barometric pressure sensors.

From spring 2017 to summer 2021, which encompassed 12 fieldwork sessions, we captured and ringed a total of 157 different individuals, and deployed a total of 39 devices. Results from data gathered include information about biometry, body condition, and population size trend of this breeding population. Moreover, the use of cutting-edge biologging devices also helped us to unveil the local spatial ecology, daily routines, annual migration routes and phenology, wintering and stop-over areas, and annual return rate, providing new important insights on this charismatic population.

Our results represent a first yet important step to better understand the biology of one of most important populations of the Common Swift in Europe, which may contribute to improving conservation strategies.

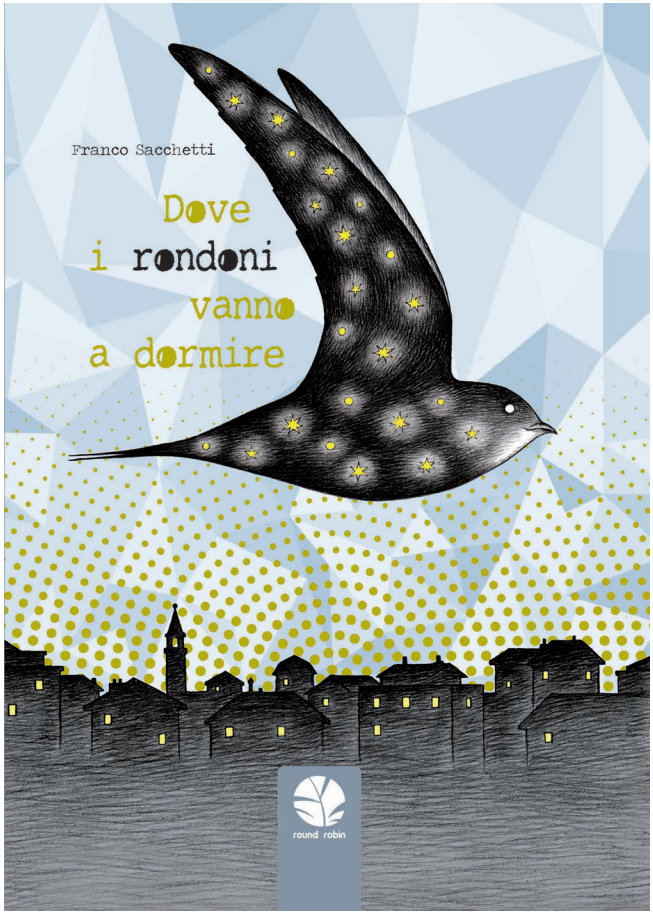
Book Presentation

"Dove i rondoni vanno a dormire" (Where swifts go to sleep)

Franco Sacchetti

This book is the first graphic novel dedicated to Swifts, a narration that sits between the dimensions of the novel, reportage and naturalistic essay. Its aim is to present a view of the world which is not centred on humankind but seek to make readers aware that we share our planet with millions of other living species and owe respect to all of them, especially if they live in or near our own homes. This book aims to offer information to all those who find Swift fledglings fallen from the nest or who have colonies of these birds in their houses, mentioning the extraordinary activism of individuals and associations fighting for the preservation of biodiversity all over Europe, just like Zoe, the young protagonist of this book,

together with her family. She finds a Swift fledgling fallen from a nest and learns how to nourish it and eventually give it back to the sky. This story teaches readers, especially younger ones, about the natural history of these birds, their centuries-old relationship with human settlements and the critical situations which have recently reduced their numbers in our towns.



The book was printed in Italy in early 2019, by "Round Robin editrice" in collaboration with "Monumenti Vivi", "Festival dei Rondoni – Swift and Fun" and "Asoer" (Association of the Ornithologists of Emilia-Romagna) associations, and after a successful 40 presentations tour all over Italy, it is going to be printed again this year in a 2nd edition. It is an innovative editorial product pinpointing the commitment for the safeguard of urban biodiversity, and a useful tool for all European associations involved in swift conservation.

"Monitoring of the breeding Swift population in Amsterdam"

Gert de Jong

Following a census of Swift nests in Amsterdam (2013-2017), the city was monitored yearly (2017-2021) to determine status of the population. Urban areas were stratified by year-of-construction and the same methodology was used: finding as many nests as possible, based on observation of Swifts flying in and out of nest entrances, listening for Swift sounds inside buildings and searching for fecal sacs under nest entrances. Emphasis was

placed on delivering a similar observation effort, for comparability of data. Bias due to changing observers and weather differences between years is discussed.

So far (2017-2021) the pre-war areas (built before 1940) were monitored and trends in each neighbourhood determined. The majority of pre-war neighbourhoods showed stable numbers of breeding pairs, a positive trend in view of the decline in the swift population since the 1970s. An increase of breeding pairs in nest boxes was observed. Numbers in nest boxes in pre-war areas doubled in 5 years, from 104 (7 % of total breeding pairs) to 206 (13%). Consequently, 'natural' nest site availability (in roofs and walls) may still be decreasing in the old city, the population partly moving into available nest boxes. Possible causes of trends and some details of successful nestbox projects are discussed. Monitoring in postwar areas in the next years will show trends in the total Swift population in Amsterdam. Since breeding numbers in postwar areas increased in recent decades, the population might currently be stable or possibly increasing. The question is posed: is there a difference in trends in neighbourhoods with and without nestboxes, which may point to nest site availability limiting the Swift population?

Nest sites in Amsterdam continue to be registered by the city and shared with the public through an online map, to improve awareness.

"APUS & CO TRACKER: a project that combines environmental education, wildlife conservation and population data collection in citizen science"

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Every year during the spring and summer seasons hundreds of Common (*Apus apus*) and Pallid (*Apus pallidus*) Swifts come to Sicily (IT) to breed. Several census studies and conservation projects have been successfully conducted in Northern Italy (ie: "Monumenti Vivi", "Swifts & fun" festival, "SOS rondoni" in Milan, "Liberi di volare" in Trieste), however data about populations and nesting sites on the island are lacking. Moreover, it is important to note that there is an increasing pres-

sure on Swifts due to several factors such as: the (accidental or intentional) destruction of nesting cavities during building renovations (these interventions have been recently encouraged with financial incentives in Italy), the lack of knowledge and awareness among citizens and local Institution about environmental and wildlife protection laws, extreme meteorological events and climate change, the use of pesticides and pollution. Apus & Co Tracker is a project that aims to fill this void acting on several fronts:

• environmental education: spreading information about these (and other) species, as well as the legal and ethical aspects related to the management of wildlife in urban areas,

• data collection: collecting population data in Citizen Science through a dedicated web-app, specifically developed to engage the general population and young people, with a catchy and easy to use, but yet informative, interface, and a geolocalization software to map nesting sites, colonies and findings of fallen Swifts [https://apustracker.com/]

• wildlife conservation: promoting conservation interventions and public awareness

A pilot study was conducted in Sicily from June to October 2021; on the basis of this experience some reflections and future perspectives will be discussed.

Keywords: citizen science, data collection, environmental education, web-app, common and pallid swifts

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"Common Swift nesting sites – Experience from Swift Towers in the Netherlands"

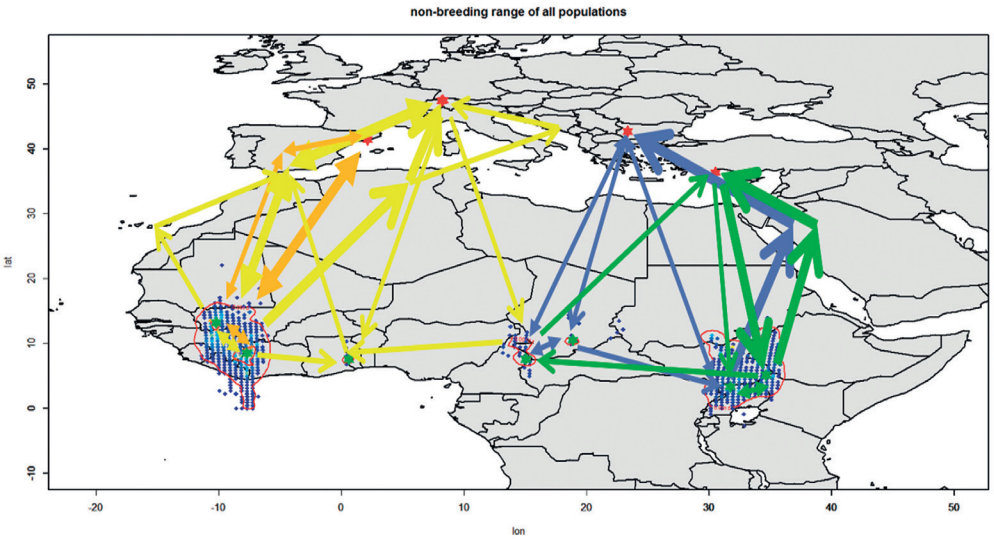
Jaap Langenbach & Rick Wortelboer

Swift Towers are a popular way of offering nesting space to Common Swifts in towns and cities. Different building plans are used and towers are situated in different localities. But what about the success of these Swift towers (?). They are swiftly build but are the as speedily inhabited by nesting Swifts? What are the facts from Dutch sites? Building plans, building costs and nesting success are described and compared among the 13 Dutch nesting towers that were built from 2012-2019. What does work and what does not?

“Never change a running system - Fidelity to the breeding area, migration route and to the wintering grounds”

Jacques Laesser & Christoph Meier

Migratory birds have fascinated us humans for centuries, among other things because they so persistently follow a fixed annual sequence. This becomes obvious when they appear in the breeding area at the same time every year, even though it sometimes still snows there. However, the birds can rely on their “experience”, which usually leads them to warm climes and bring them back most of the time to the very same nest where they bred the year before. How this “experience” is actually revealed to the birds remains largely a mystery. Our project on the migration behaviour of the Alpine Swift *Tachymarptis melba* should help us to understand how individuals use their personal “experience” during an annual cycle. It helps us to understand that Alpine Swifts are very loyal to their habitat and have a high life expectancy of up to 20 years. Accordingly, each individual returns to its nesting site again and again, and we can trace its flight routes over several years thanks to geolocator data. Initial data now show that birds of the same breeding colony follow different migration routes but remain true to the individual routes in broad lines every year and also repeatedly visit the same wintering areas. Thanks to this finding, it is possible to guess how changes in the environment could affect this species.



“Adoption as an opportunity for abandoned Swift chicks… at the expense of adoptive siblings?”

Jacques Laesser
Swiss Ornithological Institute

Numerous nestlings of Swifts are handed over to care centres every summer, especially during hot days. An efficient and inexpensive method to save these young birds is to place them as adoptive birds in occupied nests. However, the available food must be shared with an additional nestling, unless the adoptive bird does not become competitive enough, which leads to the failure of the adoption. What costs do the siblings have to expect? I investigated whether the size difference between the adoptive birds and the siblings has an influence on the growth of the adoptive birds. In addition, I examined how the growth of the siblings evolves after the addition of an adoptive bird in comparison with control broods.

The growth of the third primary is measured and modelled. A relative growth to the expected value is used to compare the different categories of birds taken their development into account.

The relative growth of adoptive birds is on average lower than that of other chicks. However, it approaches the expected value when the adoptive bird is larger than its adoptive siblings. Adoptive birds with clearly slower growth are common when they are of similar or smaller size than adoptive siblings. Among one- and two-chick broods, the growth of those with adoptive chicks does not differ from the control broods based on the data.

Chicks from three-chick broods show a similar relative grow like that of adoptive birds, where individuals frequently show a much slower growth. The within nest status of adoptees is comparable to that of the last hatched nestling in three-chick broods, which only receives sufficient food if conditions are good and is abandoned in favour of more competitive siblings if conditions are poor. In the case of adoptive nestlings placed in nests with significantly smaller siblings, none of them show a low relative growth rate. The possibility that the additional costs affect the condition of the parents is discussed.

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“Day and Night with the Swifts”

Jaroslaw Majkusiak

One of the main tasks of the swift research project at GMIT Mayo Campus (Galway-Mayo Institute of Technology, Ireland) is capturing 24hour/day video footage from each of the 12 boxes. Each video is then carefully analysed minute-by-minute. Short clip from each day will be then extracted and put together in a form of a “time-lapse”. This will allow the viewer to witness changes that occur in the nest over the course of the breeding season: arrival, incubation period, hatching and growing of the chicks. The presenter will also produce some preliminary findings from the research, such as effects of the weather on feeding frequency, finding nest material, and breeding success of swift in county Mayo, which is the most North Westerly edge of common swift breeding range.

“Reversing the Decline. Swift nest box projects in the West of Ireland: comparing built-in with externally-mounted”

Lynda and Chris Huxley

Ten years (2012-2021) of surveying swift breeding sites and establishing artificial nest box projects in County Mayo, Republic of Ireland, have provided a substantial volume of data on the existing swift population and the impact of the nest box projects. Comprehensive surveys of the whole county (5,586 km2) resulted in a figure of around 300 occupied “traditional” nest sites situated mostly in large towns and villages. It was known that there had been a significant decline in the number of breeding swifts in County Mayo and that loss of traditional nest sites had occurred over the previous few decades. Establishing nest box projects was initiated at the same time and has progressively led to a total of 263 potential artificial nest sites in boxes throughout the county. Initially, nest boxes were mounted externally on suitable public buildings such as the Galway/Mayo Institute of Technology and schools, leading to a total of 155 such nest sites. In 2015, the first built-in boxes were established in the Town Hall

in Westport, since when a total of 108 nest sites have been built into new public buildings.

Occupancy of these 263 nest sites reached 70 in 2021, demonstrating an increase in occupied nest sites in County Mayo of around 23%. This appears to confirm that nest sites were the limiting factor for breeding swifts in County Mayo and that providing new, artificial nest sites has reversed the decline in the population. Comparison of the speed with which swifts occupy externally-mounted boxes and built-in boxes suggests strongly that the latter are more effective in attracting swifts to new sites.

Swift Conservation Ireland
www.swiftconservation.ie

"The strategies and timing of Eastern Common Swift *(Apus apus pekinensis)* migration between Beijing, China and Africa."

Lyndon Kearsley & Dick Newell

Between 2014 and 2017 we deployed a number of light level data loggers, GEOLOCATORS on Common Swifts of the eastern race 'pekinensis' at the Summer Palace Heritage site in Beijing China.

This in partnership with Beijing Normal University, Sun Yat-sen University (Guangzhou, China), Lund University (Sweden), China Bird Watching Society, Birding Beijing and Action or Swifts.

Given that this colony is situated at the extremity of the Swifts eastern range we asked if these Asian breeders could also migrate to Southern Africa and if so how would they deal with geological barriers between these two points.

The Tibetan plateau including the whole Himalayan chain between Indo-China and the Kazakh Tian Shan range in the north forms a formidable 7000 metre high barrier. Most of the world's major deserts lay dotted along the various possible routes.

Initial geolocator data, including multiyear data for the same individuals, proved that these birds do indeed journey to South Africa each autumn making one of the world's longest migrations for a land bird.

SI Figure 16. Images of the **a)** nesting locations and **b)** pallid swift (*Apus pallidus*) outfitted with NanoFix PathTrack GPS logger and visual observations of a flock of *Apus pallidus* far out at sea. *pallidus* flock of an estimated 250 individuals observed 60-80m above an exploration vessel ~93 k he Senegal coast (15 00' 04'' N, 18 13' 56'' W, 8 November 2015, 14:58 - 15:10h UTC, Wind N Beaufort F3, no significant cloud cover). **d)** A detailed observation of an individual within the floc

However, geolocators are unable to provide both latitude and longitude data during the month-long autumn and spring equinox periods when daylength is the same at all latitudes, just the periods when the Swifts transit Africa. This and other questions such as adverse or assisting winds, flight altitudes, interpretation of stopovers or indeed hold-ups, along with strategies and timing in Equatorial Africa remained unanswered. Recent innovation and miniaturization in GPS loggers allowed us to deploy a number of these new units in 2016. Here we present new insights into these birds´aerial journeys across multiple continents and habitats.

"The aeroecology of atmospheric convergence zones: the case of Pallid swifts"

Kearsley, Lyndon; Ranc, Nathan; Meier, Christophe; Pacheco, Carlos; Henriques, Pedro; Elias, Gonçalo; Poot, Martin; Williams, Andy; Costa, Luis; Helsen, Philippe; Hufkens, Koen,

Speaker: Lyndon Kearsley

Trans-Saharan migratory bird species encounter large scale seasonal atmospheric convergence zones, where opposing monsoon and continental

air masses meet. These macro-scale atmospheric conditions determine local weather, influence migratory and foraging behaviour and seasonal bird survival rates. Here, we investigate the flight behaviour of Pallid swifts (*Apus pallidus*), a small aerial insectivore, in relation to non-breeding seasonal atmospheric conditions using state-of-the-art GPS logged data. Our analysis shows two novel diurnal flight patterns which suggest that Pallid Swift prey on insects concentrated along frontal convergence zones, in particular the continental Inter-Tropical Convergence Zone (ITCZ) and a coastal sea-breeze front. Resource use therefore seems not only contingent on the abundance of insects, but also favourable atmospheric conditions. Persistence of Swifts in wintering feeding grounds might therefore depend on the prevailing atmospheric conditions and their concentrating effects on insects rather than solely the vegetation state and co-dependent insect populations. Migration events within, to and from, the non-breeding season foraging locations might not only be guided by a decline in vegetation as a common metric for prey availability, but also by shifting wind directions and their concentrating effects.

This paper describes Pallid Swifts feeding and local ranging in the Sahel in Autumn and their later selection and use of coastal regions in West Africa during their mid winter period (December through February) including a diurnal (daily) coastal routine, making long flights over the open ocean (up to 100 km from shore). We had suspected this behaviour due to ship-borne observations made in 2015 and with the use of solar powered miniature GPS loggers were able to confirm this hypothesis and offer an explanation.

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"Nocturnal foraging above Lake IJssel: how Common Swifts develop socially a living map, a new hypothesis."

Luit Buurma

In 1979 the Royal Netherlands Air Force started time lapse filming of a raw data screen of the long range air defense radar in Northern Fryslan, The Netherlands (Buurma 1995). Already in the first films a remarkable echo pattern showed up above Lake IJssel circa one hour after sunset, then the echoes disappeared for ca 4 hours until reappearing

ca 1.5 hour before sunrise. After 1980 the remote sensing by a camera was replace by an electronic device, step by step improving thanks to ever faster computers. Meanwhile fieldwork confirmed the identity of the echoes as Common Swifts while the phenomenon became known as the dusk and dawn ascent (Buurma 1996, 2000). When in 2008 the weather radar of the Dutch meteorological institute also detected the typical feature very precise altitude measurements became possible indicating that the Swifts possibly profile the weather while maximizing their perceptual range (Dokter et al 2012). The explanation went into the acquisition of orientation cues. However, in 2016 I finally succeeded in watching and filming the birds at midnight in the light of a torch. They flew low (less than 1 metre) over water apparently catching lake flies (Chironomidae). The combination of three types of radar made it possible to reconstruct in hindsight how the Common swifts learned to exploit Lake IJssel as a feeding arena. I hypothesize that the foraging behavior of the swifts co-evolved with the wind driven flying behavior of the insects. Swifts may socially learn to mentally map the contours of the lake and the accumulation of insects along the dikes. This "living map hypothesis" should evoke further research, especially with respect of the sun radiation during civil twilight. I suggest the application of a bird radar (for example the MAX of ROBIN Radar systems BV) in combination with a heat picture camera.

Nest box – Good address? Occupancy of special nest boxes for Swifts in Prague, Czech Republic

Lukáš Viktora

Special nest boxes for Swifts, installed on walls together with thermal insulation as a compensatory provision to reduce breeding sites loss is widely discussed among responsible bodies in the Czech Republic.

Thousands of nest boxes were placed on buildings in past 15 years, but with no feedback of their effectiveness – until last year. During the project "Nest box – Good address?", led by Czech Society for Ornithology, 314 nest boxes with 1089 breeding chambers were examined. The presentation will introduce main results and outputs of the project.

The project was focused on big block of flats around Prague, where the most apartment houses were insulated in last two decades. In June - July

2019, altogether 122 apartment houses with nest boxes were investigated. In 61 (50 %) of these houses were detected Swift nests. But only 80 nest boxes (25,5 %) and 122, or more precisely 122 breeding chambers (11,2 %) were occupied by Common Swifts and 12 breeding chambers (1,1 %) by another bird species (House Sparrow, Common Starling, Blue and Great Tits). Preference of the nest box types and orientation to the cardinal points was analysed as well.

"Observations on the fidelity of the Common Swift to its artificial nesting site"

Marcel S. Jacquat

Protection des Martinets – Cercle naturaliste des Montagnes neuchâteloises

The specialised literature most often speaks of the great fidelity of Common Swifts to their nesting site in the nest box. We wanted to verify this assertion by analyzing the notes taken over 18 years of ringing juveniles and adults. This results in a somewhat different picture.

Our observations cover the period from 2004 for the oldest managed colony and from 2014 for the most recent. The five colonies are located at altitudes between 900 m and 1030 m in the Swiss Jura and are separated from each other by a maximum of 11 km.

Based on the analysis of 2340 juveniles and 246 adults having been fitted with rings, our findings show that the number of birds checked subsequently is very low. This is no doubt due to our working method, which aims to limit disturbances to only one annual visit.

Nineteen of the 2340 juveniles were controlled as adults in their birth colony, or only 0.81%, while six others (0.25%) were controlled in one of the other four colonies.

Among 246 ringed adults, 89 were checked subsequently (36,18 %). In the same nesting box were found 55 swifts (61,8 %), while 34 had changed nesting box (38,2 %), sometimes moving from one side of the building (south for instance) to the opposite side (north).

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"Census of swift colonies in medium-large cities: seven cases from N-Italy"

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Given worldwide rapid human population growth, resulting in loss of natural habitats and increase of urban areas, it is important to understand how anthropogenic factors affect species presence, and consequently how well species tolerate or adapt to human altered environments. Several Swift species utilize cavities in buildings, towers, churches and other anthropic constructions as nesting sites. However, Swifts are facing pressures related to the recent tendency to close all the holes to hamper their use by pigeons or to reduce thermic dispersions of buildings. To achieve a good management and conservation of urban populations of Swift, detailed maps of building positions and the holes utilized is required. In 2018-2019 we compared the census methods and the effort required to map swift colonies (Common, Pallid and Alpine Swifts) in medium-large cities of NW-Italy. Five medium size cities (Asti, Bergamo, Biella, Novara, Vercelli: 40-120.000 inhabitants) were inspected by small teams (1-3 (8) persons), with walking transects in the historical centre. Each transect was repeated three times during the breeding season. Buildings identified were then mapped drawing on pictures the cavities utilized by swifts (at least three 2-hours sampling in different days). The method allowed the precise localization of an average 31 structures utilized by Swifts (range 17-59). Two large cities (Bologna, Milano: 400-1.400.000 inhabitants) were inspected in a selected portion of the historical centre. In Milano 3 professionals and 10 volunteers of a citizen project were employed, and 60 colonies were localized in a 17 km² area. In Bologna, inspections (1 person) were spent to

map hole positions in 5 historical buildings. The working examples here reported for Northern-Italy show the feasibility of censusing medium-size cities (and parts of large cities as well) by small research teams or citizen science projects. The data collected will be essential to restrict future negative management of Swift nesting sites.

"What do swifts eat and where do they find it"

Mark Smyth

We read in books that Swifts eat insects and, according to Lack, drone honeybees. There is video evidence of a Swift bringing two large yellow underwing moths, Noctua pronuba, to the nest. There is also a photograph of a swift catching a large moth. What do they actually eat?

A few years ago, I decided to try and find out what my Swifts eat by getting their chicks droppings analysed for insect fragments. I had heard about a lady who looks at bat droppings to see what they eat. I contacted here and she agreed. She requested 20 droppings which I collected below my nests when chicks were c21 days old and able to defecate out of the nest entrance. This means the analysis is just a snap shot of what Swifts are feeding their chick. We have a to assume the adults are eating the same insects. A few weeks later the results were back and showed there was enough evidence to show swifts were eating insects from 14 species. Excited by this I decided to send droppings collected from a colony in Belfast. The results showed their diet consisted of 22 insect families. In 2018 I sent samples from a colony in the middle of the countryside. They also ate insects from 22 families. In 2019 two more samples were sent off from two other colonies here in Northern Ireland. Both had insects identified to 16 families. In some cases for all results there wasn't enough evidence to accurately identify insects to any given species.

The project for 2020 was to send droppings from a remote nest site in the west of Northern Ireland which is 32km north west of Lough Erne and 30km east of Lough Neagh.

"14 Years of Vaux's Happenings"

Michael Helm, Drew Schwitters & Diane Yorgason-Quinn

Vaux's Happening has been identifying, rescuing, and publicizing the Vaux's Swift migratory mass roosting sites on the west coast of North America, from the Yukon to Guatemala, since 2008. The number of roosting sites has expanded from about four known sites in the US Pacific Northwest ca 2000 to at least 15 major and many smaller roosting sites in 4 countries. Local citizen scientist counters have documented over 18 million Vaux's Swifts going to roost in the last 28 migrations. We would like to show off our project's unique efforts and findings, including:

- Rare photos and videos of bird behavior, inside roosting sites, and outside
- Conservation and rehabilitation of significant sites
- Expanding scope to Mexico and Central America
- Understanding the heat conservation driver for roosting sites, particularly chimneys
- Multi-year day-by-day roost population data from sites
- Identifying patterns in migration usage, including usage out of spring/fall migration seasons

One of the earliest roost sites identified and preserved is at Monroe Wagner Elementary school in the community of Monroe Washington near Seattle. Starting as a model for how to pilot a preservation project through technical, political, and financial obstacles, it has also become a testbed for new ways to study of the birds' use of mass roosts, helping to reveal some of their secrets.

www.vauxhappening.org

"Which are the urban habitats selected by swifts? A citizen science program try to answer in province of Varese and Bergamo, Italy"

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relli, Grazia Zulian[3], Claudia Iadanza[4], Rebecca Milani[4], Roberto Ambrosini[4], Costante Cavallaro[1], Walter Guenzani[2], Stefania Villa[1]

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With the project "Sulle ali dei rondoni" (On the wings of Swifts) we started a citizen science programme to map the colonies of the three Swift species present in the province of Varese (*Apus apus*, *A. pallidus*, *Tachymarptis melba*). In 2021 about 90 people participated in the project, collecting 819 records from all over province. We trained volunteers to identify swifts and trained them how to conduct fieldwork. They were asked to record the GPS position of the colonies, identify the species, estimate the number of birds in each colony and collect data about the buildings, the orientation of the colonies and other information about the nest site. Each participant completed data sheets in the field which were then sent to the organizers.

Environmental data was collected for each colony to evaluate the criteria used to select nest sites in our urban areas.

In 2022, we are in the second year of the project and are completing the coverage of the territory. The data will be analysed to expand our knowledge about Swift ecology. The information will also be useful when installing artificial nest boxes and in future studies of the urban ecology in our towns and cities.

The project also aims to raise awareness in the community for the need to protect and conserve swifts by involving schools and installing information boards in various localities where there are good numbers of Swifts. It will also provide information for municipalities when considering the steps needed to protect Swifts. At the end of the project a book will be produced using the data gathered.

This project is supported by the European Commission programme: BiodiverCities.

"Administration measures to conserve and protect the protected fauna of the cities in the Barcelona area"

Montse López Molina

Generalitat de Catalunya, as the competent administration in the conservation of protected fauna, carries out different actions, through

the application of the current regulations, to guarantee the conservation of the breeding colonies of protected native fauna that live in the urban environment, specifically in the buildings of cities and towns in the Barcelona area. This work is carried out by the Department of Territory and Sustainability, specifically the territorial services, in coordination with city councils and Rural Agents.

"Squamous metaplasia compatible with hypovitaminosis A in common house martins *(Delichon urbicum)* with conjunctivitis"

Natalia Pastor

During the last two summers, several cases of conjunctivitis affecting common House Martins (*Delichon urbicum*), Barn Swallows (*Hirundo rustica*) and Common Swifts (Apus apus) were reported, with high rates of mortality. Two common House Martins were included in this study. House Martin No. 1 developed bilateral conjunctivitis after 30 days staying at the hospital. TobraDex® eyedrops every 24 hours were administered, but due to unfavorable progression it was euthanized. House Martin No. 2 presented with incipient conjunctivitis in its right eye 46 days after its admission to the hospital, and it was euthanized due to severe lesions in a hindlimb.

Although no significant necropsy findings were noted, histopathological examination revealed squamous metaplasia of the upper respiratory and digestive tracts, and conjunctival epithelium, which was compatible with hypovitaminosis A. Inflammation and bacterial infection were also present, probably secondary to squamous metaplasia. Conjunctival swabs were obtained for bacterial culture. Staphylococcus sp. was isolated from case No. 2 but no pathogenic bacteria grew in case No. 1. Conjunctival cultures in other affected individuals grew a variety of bacteria but not a common pathogen.

Histopathological and microbiological findings suggest a diagnosis of hypovitaminosis A, which would explain the bad prognosis despite the antibacterial treatment applied. Although levels of vitamin A should be analysed to confirm this interpretation, the difficulties derived from the low size and weight of this species make it hardly possible. While trying to further confirm this diagnosis, preventive treatment with vitamins was recommended.

"Conservation of Sick's Swifts *(Chaetura meridionalis)* in Southern Brazil: a successful citizen science initiative"

Renata Neves Biancalana

The breeding habits of Swifts from the genus Chaetura that live in urban environments are often associated with human made structures, such as chimneys. This behavior, in many cases, approximate people and birds, since they become part of each others everyday life for a certain period of time. In South-Eastern Brazil Sick's Swift is a common urban species that frequently uses chimneys to place their nests. Accidents with falling nests and nestlings are common, and mortality in rehabilitation centers is high due to a lack of information and protocols to recover Swift nestlings. In the state of São Paulo, during two consecutive years a successful citizen science initiative has taken place to try to rehabilitate Sick's Swifts nestlings. From November to December 2016 three nestlings were found together with their nest in the bottom of a barbecue grill from a house. They had different stages of plumage. Two nestlings died and one successfully fledged. In November 2017 three nestlings were found in the same place and four nestlings from a neighboring city were brought to a swift rehabilitator. Again, both clutches had nestlings with different plumage development stages. From the seven rescued nestlings, five fledged between the beginning and the end of December 2017. In December 2019 a clutch of 4 nestlings was found in Campinas and the same protocol was implemented, with 3 successful fledglings. Several aspects of the nestlings behavior that have never been reported before were observed. This is the first case of a initiative to rehabilitate Swifts in Brazil and with more investment in education and training, further rescue projects can be implemented in the country.

"When the dead talk: swift specimens in scientific collections can help us understand their biology and evolution"

Renata Neves Biancalana

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Abstract. Scientific collections are more than drawers and cabinets full of old skins and bones. They are in fact databases housing a wealth of information. Skins, skeletons, eggs and nests, along with tags and field journals provide data from species that have been extinct in the wild, or from places that are often

remote and poorly sampled. Swifts are known to be difficult to identify in the field and collecting them is often only possible during opportunistic encounters or during the breeding season, when they are more frequently seen on nests. As a result, swift samples are sparse in scientific collections. More recently, the use of skins in molecular studies has been facilitated by advances in historical DNA extraction methods. Here I'll present how specimens are preserved, two important collections where they can be found – Museu Paraense Emílio Goeldi and the Academy of Natural Sciences of Drexel University – and their importance in studies regarding their biology and evolution.

"The Common Swift: What about being the only child?"

Rick Wortelboer

The Common Swift usually has two to three chicks. These chicks are fed throughout the day. Parents look for food, feed the chicks and rush out to bring more food until late in the evenings. The chicks compete for food and space in the nest. But what about being an only chick? How is life then? How does having only one chick affect the parents' behaviour? Will the abundant food supply affect the length of stay and fledging time of the chick? In this presentation a review will be given of the breeding season of a single Common Swift family seen through the camera inside the nestbox.

"Reproductive success of the collared swift (Streptoprocne zonaris) in south-central Cuba"

Rosalina Montes

Different factor can affect the reproductive success of birds and this can fluctuate between and in the same reproductive season. There is litlle information on the reproduction of Apodidae family member´s, specifically, their reproductive success. The objective of this study was to determine the reproductive success of the White-collared Swift (*Streptoprocne zonaris*) in South Central Cuba. We detected 86 nests from La Batata Cave, Vegas Grandes Waterfall and El Colín Canyon, in Topes de Collantes, Cuba. From each one of them we recorded the height, location (roof or wall), placement (hollow or ledged), nest content, reproductive phase (construction, incubation, chick

feeding, abandonment or failure) and if they were reused. The final success of the reproduction was 63.64%. The achievement of chicks was 0.87 chicks/nest. The main causes of the failure were the collapse of the nest, abandonment of the parents and predation.

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Book Presentation

"Swifts and Us, the Life of the Bird that Sleeps in the Sky"

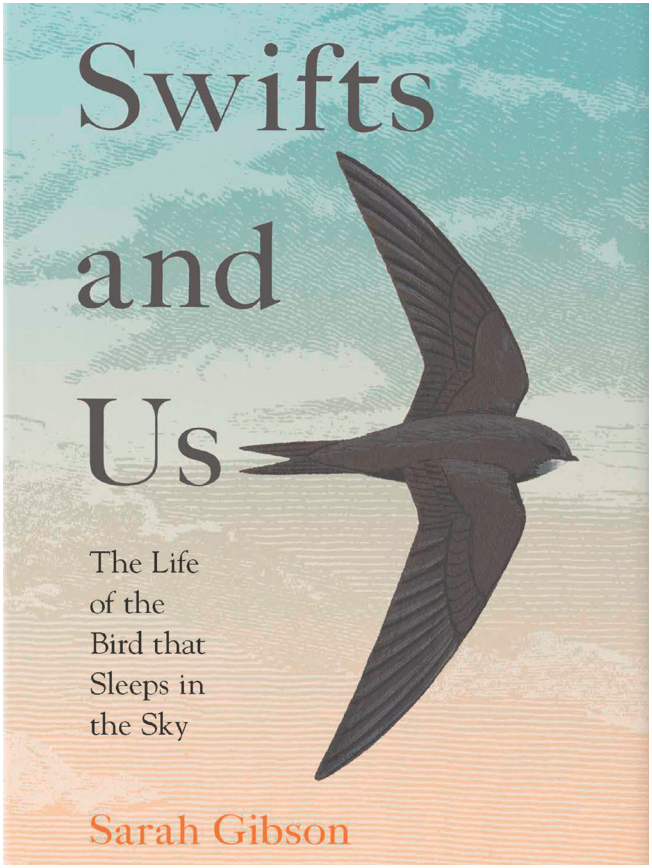
Sarah Gibson

I wrote this book to tell the stories of Swifts and of the people who have studied and sought to conserve them. My intention was to inspire more people to take notice of these awesome birds and to galvanise action that will give them a better chance in the future.

It is a personal journey as I knew very little about Swifts until about ten years ago, when I moved from the countryside into a small town. Most of my working life has been spent in the conservation sector, so I was well-attuned to the problems facing wildlife but not specifically swifts.

There are stories here about people working for Swifts in Switzerland, Italy, Spain and the UK. The determined efforts of individuals to champion swifts were truly heartening: grassroots action that brings a real difference.

I met and interviewed people closely associated with Swifts at the Oxford University Museum. These included Andrew Lack, son of David Lack, author of Swifts in a Tower and Derek Bromhall, who filmed the classic Devil Birds in the tower where Lack had studied them. Roy Overall, ringer of Swifts in the museum for nearly 50 years, told me of his fear not of the craeterina louse fly but of spiders.



It is a story about the seasons, the unfolding natural drama that takes place as spring dissolves into summer and summer ebbs towards autumn. Inevitably, it is also a story of global habitat destruction and degradation, biodiversity loss and fears for the future. Through the Swift, it shows how people need to change the way we run our world for the sake of all nature – and ourselves.

Swifts and Us, the Life of the Bird that Sleeps in the Sky is published by William Collins.

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"Settlement patterns of Common Swifts *Apus apus* in the church Oberkich in north-western Switzerland"

Susanna Meyer
(Naturschutzverein Gilgenberg)

The Common Swift colony in the church «Kirche Oberkirch» in Zullwil (Solothurn canton) is the largest colony in the Laufental-Thierstein region with 59 breeding pairs. Since 2004, in addition to the ringing of the nestlings, regular controls of the adult birds have been carried out. Many of the

adults we caught several times in their lives. This gave us a good overview of this Swift population. The colony comprised of 27% «own», i.e. hatched in the church Oberkirch, 5% of the Swifts were ringed as nestlings in other colonies, the origin of the remaining birds is unknown. The proportion of about a quarter of "philopatric" adult birds is compared to studies in other regions is high. On average, 82% of the breeding adults returned in the following year. This means for first breeders that chances for nesting are limited. Among the first breeders there were regularly as well birds, which were ringed as nestlings. This gives as a chance to know more about their settlement patterns or age at the first breeding attempt. Half of the first recaptures in the church Oberkirch were three years old, 31% were two years old, 1 bird one year

old and 15% four years or older. 70% of the birds successfully raised young on their first breeding attempt. For the two-year-olds, however, this was only half of the birds. Probably not only the experience or age of the first-time breeder played a role for breeding success, but also the age and experience of their partner.

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"Common swift *(Apus apus)* in Vienna: status and conservation of nesting sites"

Thomas Starkmann

Since 2017 the MA 22 (Municipal Department for Environment Protection of the City of Vienna) conducts a study about nesting sites of the Common Swift (Apus apus) in the city of Vienna, Austria. With the help of many volunteers more than 2.000 nesting sites have been mapped at about 800 buildings. Volunteers were first trained at excursions and only nesting sites observations from trained and known citizen scientists were used. Only confirmed entries or exits of a cavity were taken as evidence of breeding activity. In all cases the exact location of the cavities at the building was documented with photographs and the type of nesting site was noted. Additional information was gathered on a computer consulting city map (e.g. for geographic direction) and through GIS analysis (for distance to water bodies and percentage of green space in a radius of 500m).

The density varies largely across the city depending on building structure and the amount of recently renovated buildings. The ecological density can rise to 15,5 breeding pairs/10ha in parts of the city which mainly consists of 4 to 5-storey buildings of the so-called Gründerzeit (1870-1914). The main factor of habitat selection is the availability of favourable breeding sites rather than the distance to water bodies and large green areas (optimal foraging grounds). About 60% of all nesting sites are in types of cavities which are related to damages at the building. It is likely that these buildings will be renovated within the next years.

This study gives the City of Vienna the opportunity to set target-oriented mitigation measures to protect the Common Swift effectively. Additionally, it gives a major boost not only for the conservation of this species and a higher awareness for swifts in general but also for other house-nesting birds and roosting bats.

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"A growing swift colony – the first 18 years"

Tim Collins

Swifts first bred on our house in the English Midlands (Rutland) in 2004, using a nest box erected in 2001. The colony has increased steadily since 2004 with additional boxes attracting additional pairs. A presentation to the Cambridge Conference in 2014 covered the first ten years – during that time there were 49 breeding attempts and 93 chicks fledged. In the eight years since the colony had increased from 9 to 27 breeding pairs and there have now been a total of 203 monitored breeding attempts and more than 460 chicks have fledged.

As trained ecologists we have kept detailed records of all breeding attempts since the first pair bred. The presentation will provide an analysis of the development of the colony:

- The relationship between nest box availability, occupied boxes and nesting pairs,
- Productivity per nesting attempt (with statistical comparisons to other common swift colonies),
- Changes in the fledging times of the young,
- The length of time adults stay after their young have fledged

The colony is noteworthy for having exceptionally high breeding productivity, with more than 2.4 chicks reared per nesting attempt in recent years. The reasons for this success will be explored; they almost certainly relate to a large nearby reservoir that provides a reliable food source during poor weather.

It will conclude with plans to expand the colony both on our own house and to neighbouring homes.

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"Birds with multiple homes. The annual cycle of the Pallid Swift *(Apus pallidus brehmorum)*"

Tyson Lee Homes, Stewart Finlayson, Geraldine Finlayson, Rhian Guillem, Charles Perez, Keith Bensusan y Clive Finlayson

We tracked Pallid Swifts (*Apus pallidus brehmorum*) from a single breeding colony in Gibraltar over two years. Our results show movement of birds between specific regions within the non-breeding geographical area at specific times of the year. The tracking of a single individ-

ual showed remarkable fidelity to the areas visited between years. Furthermore, two Pallid Swifts tracked over the entire eight-month non-breeding period, while in Africa, gave no indication of coming to land, supporting previous findings of an airborne existence in Swifts outside the breeding season. In addition, the crossing of the Sahara Desert to and from breeding grounds is remarkably fast, with one individual crossing it in just over a day. We discuss our findings in the context of bird migration evolutionary strategies.

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"How to preserve Swift breeding sites in historic monuments – an encouraging experience from the Roman cathedral of Worms (D)"

Voigtländer, Volker , M. Bösl

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The alarming decrease of Swift populations in almost all European countries during the last two decades is due mainly to the destruction of their habitual nest sites by roof renovation, thermal insulation measures, demolition of old buildings and "sealing" of historic monuments including castles, churches, city walls and towers – the latter having been ideal Swift breeding places for centuries.

In a large number of European medieval cities the small holes and cavities of these buildings have recently been blocked with cement, stones or wire in the course of renovation, chiefly in order to keep pigeons out. Another aggravating factor for the Swift "housing shortage" is modern architecture with a widespread preference for the "Bauhaus style" with its even, bird-rejecting facades.

We present a successful method of preserving traditional nest sites for Swifts in the famous Roman cathedral of Worms (12th - 14th century). Since 2002 the historic scaffold pole holes in the walls

of this church have been halved in size during its ongoing renovation by the use of specially formed metal clips (s. fig. 1) thus allowing access to Swifts but not to pigeons. Another advantage of these sites deep in the solid stone walls is their relative “coolness”. Consequently nestlings, still unable to fly, are not forced to precociously quit their over-heated home in times of excessive heat waves as had occurred during the summers of 2018 and 2019. We therefore have well-founded hope that the breeding activities of our “Tower Swallows” may go on for further centuries under perfectly protected conditions.

Further examples of bird protection in historic monuments, compatible with preservation regulations, are discussed.

SPECIAL THANKS

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Host association and organizer of the conference: Foro GeoBiosfera

www.forogeobiosfera.org

Foro Geobiosfera was founded in 1985 in Segovia and is an independent non-profit scientific and cultural association. It develops its actions fundamentally in relation to the conservation of the natural environment from a widely multidisciplinary approach, working from a holistic approach to achieve its goals. For this, it has a team of people with a very broad spectrum and a large network of collaborators, bringing together a great diversity of disciplines and interests with experience in the conservation of natural heritage and its values.

Foro GeoBiosfera has the following purposes:

- The investigation of the natural environment and its relationship with humanity, both in its most essential and applied aspects, favoring its dissemination and diffusion among society.

- The conservation, protection, restoration, rehabilitation and enhancement of the natural, cultural, archaeological, geological and architectural heritage.

- The conservation, protection, restoration, rehabilitation and enhancement of biodiversity in urban, rural and natural environments.

- The promotion of sustainable development, integrating environmental values in the planning

and management of the territory, applying research in favor of this objective.

Its main activity in recent years has been environmental rehabilitation in constructions and historic buildings: There are successful and outstanding actions in Segovia such as:

- Juan Bravo Theater
- St. Mark's Fielato
- Wall of Segovia (South Zone of the Alcázar and San Millán)

- Juan Bravo Street (Photo F.Javier Sáez Frayssinet)
- Church of the Holy Trinity...

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