Swift Boxes in Church Bell Towers

Adapted from a document provided by Alistair Whybrow, Kingsteignton, Devon, an average bellringer for 44 years and a swift enthusiast!

Natural History of Swifts

Swifts are amazing, supreme aerialists, that spend almost all their life in the air feeding on airborne insects and are known to reach heights of over 9000 feet (about 2743 metres) and the Asian subspecies of the common swift have been observed migrating at 18,700 feet (5,700 metres) over Ladakh in the Himalayas.

They feed, drink, mate and sleep on the wing, and only land to breed. For this reason, it is very easy to help conserve them as all they need is a suitable box attached or in the eaves of buildings to breed in.

A young swift will spend its first two or three years in constant flight before it nests, covering over 52,000 miles migrating between Europe and Southern Africa.

Once they have found a nesting site and partner, they generally stay paired up for life which on average is about 9 years. The pair separate once they finish breeding and reunite the following year, typically producing a single brood of two chicks a year.

Common swifts (*Apus apus*) are a colonial bird but are fierce defenders of their own nest site with some colonies known to be centuries if not millennia old. Examples of these are in the western wall of Jerusalem or the Roman aqueduct in Segovia, Spain that has over 2000 swifts nesting between the cracks of the stones that make up the aqueduct.

Swifts are also an ancient animal, with a fossilised bird found in Germany estimated to have lived over 49 million years ago, with little difference to today's swifts.

The fossilised remains of a swift found in Germany. Photo © Ulrich Tigges.

Because they never land, and are so fast (fly at about 50mph), swifts are very hard to study. There's still much to learn, but with the miniaturisation of data tags more and more fascinating information is being discovered about the lives of these amazing aeronauts.

Decline of UK Swifts

Swifts nest in nooks and crannies and naturally nest in hollows (such as old woodpecker nests) in old trees or cracks in cliffs. However, as natural sites declined due to forest clearance they took to nooks and crannies in the eaves of buildings. These sites are disappearing as modern buildings don't have them, while older buildings which hosted swifts, as they get renovated, lose them so swifts have nowhere to breed.

In the last 20 years the UK population has declined by over 50%. Swifts are now red listed on the Birds of Conservation Concern meaning they are under threat of extinction in the UK.

Church Belfries

Towers were used in mediaeval times by the Italians to attract swifts to nest in them so that the young could be taken for food. Some towers have now been restored and are used for conservation purposes such as the Torre il Castellaro, in the Regional Park of Sassi di Roccamalatina, Modena, Italy. It houses some 300 historically restored swift nest places as part of a protected breeding project.

Torre il Castellaro, in the Regional Park of Sassi di Roccamalatina, Modena, Italy. © Mauro Ferri

It was realised that British church towers are very similar to these old Italian swift towers. Experimental projects by Action for Swifts were carried out to see if swifts would use boxes installed behind the belfry louvres and yes, these have proved successful.

Church towers also have additional advantages compared to installations on houses such as secure ownership, high level access (so little threat from ground dwelling predators) and little disturbance.

A swift project also has other uses in that it can be exploited to the advantage of not only the swifts but also to humans. If nest box cameras are used, people can see a species in close proximity that they would not normally be seen close up. This adds interest to bell practices and Sunday services as people see their swifts arrive, progress through their breeding season (including the tragedies) and finally depart.

> (It can also be the nudge to add a camera to the belfry above the bells with the monitor in the ringing chamber and in the church. This allows new ringers to see the bells in action, the effect they have when they pull the rope, the purpose of the stays and is an incentive to keep the belfry maintained as well as providing a way of recruiting new ringers who may become curious by the bell ringing shenanigans....)

Surprisingly despite the noise levels and frequencies, swifts don't mind church bells ringing. From nest box cameras they have been observed to jump slightly on the first strikes but are otherwise totally unfazed by the bells.

The basic dimensions of a church swift box are a sealed box with a floor area of around 400cm^2, a height of up to 10cm, an oblong or obround entrance 2.8cm high and 6.5-7.5cm long and with a nest concave attached to the floor at the furthest end from the entrance.

At its simplest a nest concave is a hole of around 8cm diameter cut in a piece of suitable material such as wood around 1cm deep and serves to keep the eggs in the nest while incubated. The swifts will add material they gather from the air to the concave and cement it in place with their spit.

Modifications can be made to boxes such as removable backs to enable access such as to add feathers to the boxes before the swifts arrive back or if people want to clean the boxes out at the end of the season or to gain access to nest box cameras.

Material used to construct nest boxes is mainly 1.2cm thick marine grade plywood due to the ease of supply, working and durability. Other durable materials are available such as UPVC (used for soffit facias) and ResCom® Cellular Magnesia Cement board.

Location of Belfry Boxes

Swift nest boxes are usually located behind the louvres of belfries but if other openings exist on a tower these could be used too.

As louvres are usually backed by wire or wood boarding to keep birds out of the belfry, provision needs to be made so that swifts can access the boxes. This is usually by cutting a small hole the size of the entrance to the nest box.

It is very important to ensure that the tower is swift proof apart from entrances to the boxes as swifts will explore any access points and can become trapped if they manage to gain access apart from into the boxes.

Holes greater than about 1cm high by 1cm width need to be blocked.

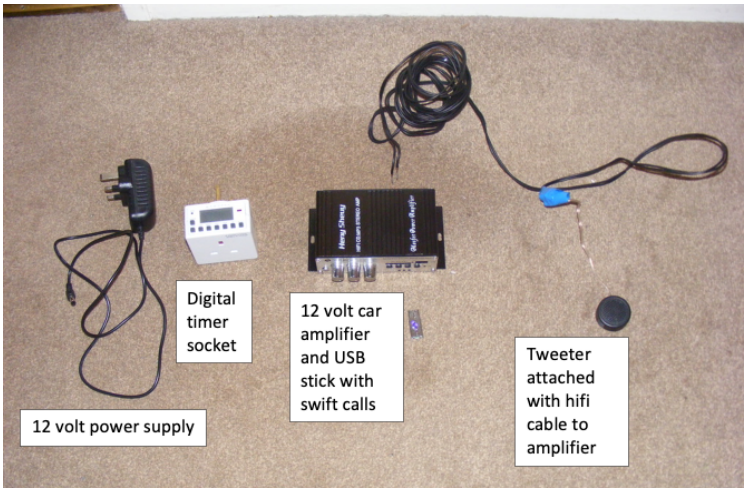
Louvre types shouldn't affect boxes but the shallower the angle of the louvre the more chance that pigeons or other birds may rest on them. As swifts enter at high speed and in no particular pattern it shouldn't be a problem, although interaction has been seen between a pigeon and swift where the swift aggressively defended their box entrance - the pigeon looked a bit bemused. Steep angled louvres are ideal and very steep louvres could have bottom entrance boxes fitted rather than at the front.

Bury St Edmunds in Suffolk doesn't have louvres but instead has wooden lattice work. Box entrances were constructed that protruded through the lattice. Initially there was poor occupancy but after some modifications to the entrances (they were made more diamond shaped) swifts quickly took up occupancy. Further information is given at https://actionforswifts.blogspot.com/search?q=bury+st+edmunds.

Swift Calls

To make swifts aware of nest boxes and speed up the colonisation swift calls need to be played in the boxes using a timed caller. Swifts looking for breeding sites respond to calls by investigating their source and if finding suitable accommodation will repeatedly fly at the site to check it out and eventually will enter and take up occupation, (they are called 'bangers' because of this behaviour).

A swift caller is made of 6 parts: a timer socket (digital ones have the advantage that they retain the timings in the event of a power cut and allow a wide range of timings), a 12 volt power transformer, a mechanism for generating the swift calls such as a 12 volt powered car amplifier or a TF card U disk MP3 Format decoder, the swift calls on some kind of electronic memory device such as a USB stick or memory card, and finally a small speaker called a tweeter which is normally inserted into one of the boxes.



Components of a swift call generator

The advantage of the system is that the call generator can be located near the power supply with a Hi-Fi cable used to connect to the tweeter in a box, the distances involved should not cause problems. Further details are given in:

https://actionforswifts.blogspot.com/p/attraction-call-systems-for-swifts.html and https://actionforswifts.blogspot.com/2020/01/the-swift-micro-caller.html.

If no calls are played it may take far longer for swifts to find boxes if at all.

Once a pair of swifts have adopted one of the boxes in a tower and started breeding, the call system can be turned off as other swifts will also naturally visit the tower with the breeding pair and investigate any vacant boxes. It will do no harm to leave the caller on for further seasons to encourage additional pairs to take up residency, and it is known for a swift pair to nest in the box with an operating speaker.

My own preference is to play calls three times a day with the times used 8:30 to 10:00, 12:00 to 14:00 and 18:00 to 20:30 although some people play them more often or for longer periods.

It is important to be aware of the volume of the calls as it can cause issues. It would be advisable to have them at a level where they blend in with background noise and are not an annoyance to near neighbours. A simple way to do this would be to use an app that identifies bird calls. If standing at the edge of the church yard and the swift comes up as number 2 of the list of birds that has been identified then it is below background noise (this also depends on what other birds are calling at the time). Alternatively, a sonic meter app could be used and when the caller is working the decibels could be checked with anything under 40 decibels at the edge of the yard generally thought to be at background noise level or similar to the noise level when a woodpigeon calls.

Other Species using Swift Boxes

Other Birds

My limited experience with nest boxes in towers is that they are generally not occupied by other small bird species. This may be due to the vulnerability in access due to the lack of cover. However, while observing the louvres of a belfry it is surprising what one sees with a blue tit seen to be using a crevice in the stonework surrounding a belfry louvre at Kingsteignton.

However, on houses it is quite common for other species to take up occupation of swift boxes or use them for night roosting such as sparrows or blue and great tits (swift boxes are considered a universal nest box as so many species can use them) but this is nothing to be concerned about.

Swifts observe where other small birds nest and if they consider it suitable will investigate and if found favourable will oust them or nest after them.

Sparrows are particularly fond of swift nest boxes and will pack them with grass and other material before nesting. When swifts take over a sparrow occupied box they will shuffle around and eject any surplus material as they take up occupancy. There is a potential hazard if the sparrows have brought back string, long hair or other similar material as this can wrap around swifts and cause casualties.

Bees and Wasps

Domestic bees, especially when they swarm, and sometimes the Tree bumblebee (*Bombus hypnorum)* and wasps are known to occupy swift boxes, although domestic bees are the main culprits.

To deter these insects, boxes should be kept small with an internal height no greater than 10cm. The low height means the bees aren't as able to build their combs so making them unsuitable.

Despite the low height, sometimes bees will occupy boxes which can scare nesting swifts away and kill nestlings.

If a swarm does occupy a nest box, the British Beekeepers Association have local beekeepers who will remove them if there is easy access. https://www.bbka.org.uk/find-a-local-swarm-collector is a useful link.

There is a product called Bee Quick (that smells strongly of almonds) that is used by beekeepers to clear combs when collecting honey. This can be used to deter scout bees (they look for a suitable nesting site for a swarm) from boxes. However repeated application can be required if bees are persistent.

Once bees have been removed and if swifts have abandoned boxes, a clean using soda crystals will help get rid of remaining material while over time wax moths will also remove the material.

If a non-intervention policy is used on the boxes a bee colony will not probably survive a winter and a year's brood will be lost by the swifts, with any material naturally breaking down over time.

Maintenance of Bells with Swift Boxes

Swifts are surprisingly tolerant of disturbance and not concerned by their location next to bells.

Once a pair of swifts has returned to their box at the beginning of May, they will recuperate from their migration to reach breeding condition which usually takes about 2 weeks depending on the weather conditions. They will then lay their eggs and start incubation which takes about 28 days with duties shared between the pair.

Once hatched one parent will brood while the other is away collecting food for the chicks. Depending on the weather this could be as little as half an hour to over 4 or 5 hours. When the chicks have developed to the point where they can be left both parents will leave to forage. If there is a shortage of food due to bad weather the chicks can 'shut down' and use their fat supplies to survive until conditions improve after which they will body weight extremely quickly.

After about 6 weeks the chicks are nearly ready to leave and during the last couple of weeks, they will strengthen their wing muscles though various exercises such as press-ups and wing flapping. Near the end of the season the adults will reduce the number of feeds to the point where they do not feed the chicks. The chicks continue to exercise and will also move to the entrance to peer out at the world while adult swifts in the

colony will scream around the nest sites, probably to encourage the chicks to leave the box.

Finally, the young swifts will reach the point where the natural instincts of the pull to be flying, maybe the hunger and encouragement from the colony will make the chicks leave the nest…

As long as the nest boxes are not directly disturbed when occupied there will be no problems to the swifts with normal maintenance to the bells such as oiling bearings, attaching ropes or changing stays.

Swift Projects

Swift projects are wonderful in that they make people talk to each other, make links in communities and even build local and international networks that transcend wealth, political, religious and racial borders. But there are some points which need to be considered before starting on a project.

Church Authorities

It is important to remember that the church will have an Authorised Body with a legal responsibility for the tower and its contents. In the Church of England, this role is usually filled by the Churchwardens and the Parochial Church Council (PCC). There will be similar arrangements in other jurisdictions.

Any project to install swift boxes must be carried out with the full knowledge and agreement of the Church Authority. For the Church of England, in particular, the Faculty Jurisdiction Rules apply. The faculty process exempts churches from listed building consent and conservation area consent that could apply elsewhere. The rules are too complex to go into here, but it is sufficient to note that 'The introduction of bird boxes' appears in List B (Section B.1 (19)). Works in List B require the Archdeacon to be consulted to confirm that a faculty is not needed. The Archdeacon will take advice before giving notice that the proposals may be undertaken without a faculty or advising that they require a full faculty application. While this simplifies things, the Churchwardens will be needed to make the necessary application. They may also wish to involve the Church Architect.

Also note that any church member or volunteer undertaking the role of carrying out the attachment of boxes should be covered by the Church insurance for any accident or damage providing that they are acting with the authority of the PCC and are suited and capable of undertaking such a task. For additional advice please see the guidance on the Ecclesiastical Insurance website:
https://ecclesiastical.com/risk-management/working-at-height/

Dealing with a Bell Installation

In many cases, swift boxes in a tower will be installed by – or with the cooperation of – church bell ringers. If this is **not** the case, and if the boxes are to be installed within the chamber containing the bells, even if they are not regularly rung, it is important that an experienced bell ringer should be consulted and ideally involved in the work. The reasons are:

- The bells must be in the 'down' position during the installation and servicing of the swift boxes.
- Moving across a bell frame can be hazardous, even with the bells down, with many opportunities for trips and slips.
- Care is needed to avoid damage to wheels and stays – they should not be used as handholds or support for heavy equipment.
- The swift boxes must be well clear of the moving parts of the bells.
- Care must be taken to remove tools and spare pieces of wood after the work, as they may work loose and fall into the bells.
- Note also that, if the swift boxes are installed in the intermediate room below the bells, all parts of that installation must be kept clear of the bell ropes.

Timescales for Swift Projects

Unlike installing nest boxes for small birds (where use within a single or a couple of years is considered normal), a swift project is on a totally different timescale. Occupation of boxes within 5 years of installation where a caller is used is considered exceptional with timescales of 10 years or beyond considered normal. Examples are Taunton School Somerset where boxes were used after 7 years and Sutton Bridge church Lincolnshire where a pair occupied a box 5 years after installation. Sometimes projects beyond 10 years don't work with the longest known a house project that after 11 years has had no success.

Alternatively, occupation can be rapid such as within a year due to factors such as a lack of nesting sites for an existing large colony, for example at Kingsteignton church Devon or where a swift pair have lost their traditional nest site and are desperate for a new site. Even in what is considered an unfavourable place for swifts, such as a remote, isolated house in the countryside with no nearby existing colony where the chances of swifts using new boxes seems remote, it is known that on turning on a call system swifts appeared within the hour and banged the boxes to see if they were available for occupation.

Examples of Swift Box Installations in Belfries

Kingsteignton Swift Boxes

The seven Kingsteignton belfry boxes were installed in 2018 with the first pair of swifts showing interest the same year, building a nest and returning the following year and successfully raising a chick. Additional pairs have taken up occupation with around 3 to 5 pairs in occupation.

Kingsteignton church boxes have the advantage that there is a large local swift colony (10 to 12 pairs) in an old mill building about 40 yards away. This probably explains the rapid take up of the boxes as maturing birds will be actively looking for new nest sites near the existing colony.

The total number of swifts that have fledged in the six years since the boxes have been installed is 33. Given that the local population is estimated to be around 30 to 40 swifts during vesper flights when they gather together before dark prior to either climbing into the sky to overnight on the wing (it is unknown whether they really 'sleep' on the wing) or return to nest sites, this is a significant contribution.

Kingsteignton Church Swift Nest Boxes								
Year	2018	2019	2020	2021	2022	2023	2024	Total chicks produced
No. of breeding pairs	0	1	2	3	3	5	5	
No. of chick fatalities	0					6? Eggs lost	3? Eggs lost	
No. of chicks fledged	0	1	2	6	8	7	9	33

Other work that has been carried out to the Kingsteignton nest boxes is a reduction in size particularly the height of the boxes to below 10cm to deter bees (not entirely successful), an increase in the number of boxes to 14 and the installation of seven nest box cameras along with cameras in the ringing chamber and belfry.

The nest box, belfry and ringing chamber cameras allow members of the congregation, public and bellringers to see what is going on up in the tower with funding for the installation from Kingsteignton Town Council.

Other installation projects have taken place at:

- Kingskerswell church where 32 boxes have been installed starting in 2020 with completion in 2022 (Covid intervened). These boxes have so far had no interest from swifts although swifts have been seen around the tower. Unlike Kingsteignton there is no large local colony nearby.
- Wolborough church in 2023 had 32 boxes added but no interest was shown although the swift caller failed during the season and swifts were seen in the area. Unlike Kingsteignton there is no large local colony nearby.
- Other churches with swift boxes that are known about in Devon are at Kenton (swifts in residence), Kentisbeare (swifts in residence), Bere Ferrers (no swifts) and Dawlish (no swifts).
- Information on swift boxes at Winchester Cathedral is available here: https://www.hampshireswifts.co.uk/post/winchester-cathedral-update-2024?utm_campaign=d8d7949a-f81a-4ca7-84ba-02b6f93fec01&utm_source=so&utm_medium=mail&cid=f6da2cfa-fbd7-4db7-9e60-4bd610254de7

Other examples of church projects can be found on the Action for Swift Website run by Dick Newell (a leading swift expert):
http://actionforswifts.blogspot.com/search/label/churches

An example is St John's Church, Bury St Edmunds:

- 2010, 3 swift boxes were installed in St John's Church, Bury St Edmunds.
- Despite playing attraction calls every year and swifts showing interest and banging the nest box entrances, by 2015, no boxes were occupied

- July 2016: The box entrances were redesigned were changed and resulted in 2 pairs of swifts raising 2 chicks each.
- July 2017: The number of boxes were increased to 12, all of which showed some evidence of swift activity: 4 had chicks, 2 had eggs and 1 well feathered when last inspected (a sign that a pair is likely to occupy the box).
- July 2018: A further 48 boxes were added bringing the total to 60 boxes. When inspected, the number occupied was 25 - a major increase.
- July 2021: 40 boxes are occupied by swifts!
- June 2024: 58 out of 60 boxes are occupied by swifts!

Maintenance of Swift Boxes

Swift boxes need no maintenance as the material used in the nests breaks down over the winter, moth larvae will eat the feathers and fly maggots will eat the few if any droppings (parents eat the droppings of their youngsters).

Even if there are casualties, natural processes break down the remains over the winter with swifts bringing new material in the following spring to nest on the old remains.

The Swift Louse Fly

Swifts have their own louse fly associated with them called *Crataerina pallida*. The louse fly has no wings, attaches itself to the feathers of swifts with its claw like legs, survives by feeding on the blood and goes with the bird on its travels.

They are sometimes seen running over a swift when viewed on nest box cameras.

The louse fly has a fascinating lifecycle too as it lays its eggs in the nest of the swift which overwinter and hatch the following spring once the swift chicks have hatched.

The association between the louse fly and swift is specific and ancient. There is no need to carry out control measures and is not a threat to humans.

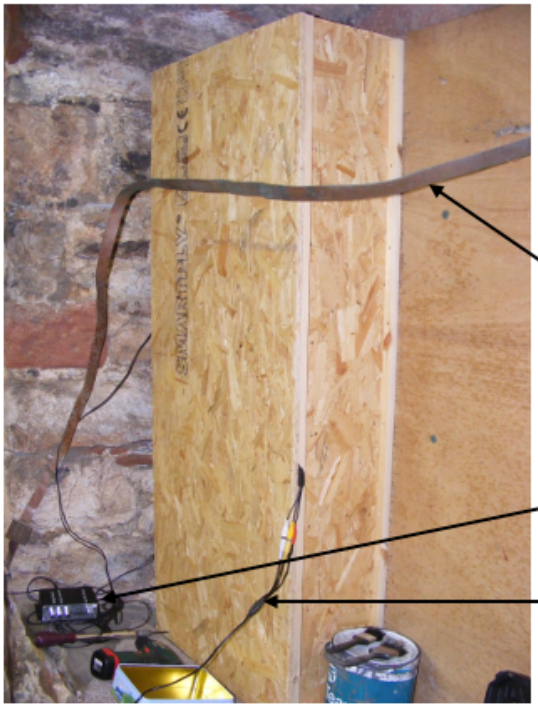
The Swift Local Network

The Cambridge International Swift Conference in 2014 provided a great chance for networking amongst the participants. One result is a Swifts Local Network (SLN) has been set up that has enabled the many UK-based individuals and small groups now working on swift conservation initiatives to share experiences and ideas more easily.

If you are looking for advice, the following website http://actionforswifts.blogspot.com/p/sln.html will enable one to find someone near to you who will be able to either offer advice on swifts or direct you to further sources of information.

Photographs of Swift Boxes

Kingsteignton church boxes installed in 2018. The ramps were installed to help the swifts leave the box as the hole was quite high from the floor. A bell stay is visible lower right.



Kingsteignton church boxes with the back in place and the caller system amplifier can be seen lower left.

Church lightening conductor

Call system amplifier with wire to speaker located in a box.

Nest box camera wires.

A swift nest created by a new pair at the beginning of August after the swifts had left. This means that it is highly likely the nest will be used the following year.

A used swift nest after 8 months. Moths and other insects have meant there is little material left and shows why there is no need to clean out swift nests.

Boxes installed at Bere Ferrers church in an arrow slit as there is not enough space in the belfry.

Double decker boxes on a frame prior to installation at Kingskerswell

4 double decker boxes on a frame installed on the north aspect at Kingskerswell

2 different designs of double boxes used at Kingskerswell

16 nest sites in 2 cabinets installed at Wolborough on the north side of the belfry, 2 other cabinets are installed on the east side.

Wolborough cabinets with backs on.

Box installation at Ashton, Devon.
(Bells are unringable)

Boxes designed for swifts on the left and the box on the right is suited to swifts and bats (the bats use the long narrow slots). The swift and bat box installed on a louvre.

Two swift chicks close to fledging at Kingsteignton.

Disclaimer

Whilst every effort has been made to ensure the accuracy of this information, neither contributors nor the Central Council of Church Bell Ringers can accept responsibility for any inaccuracies or for any activities undertaken based on the information provided.