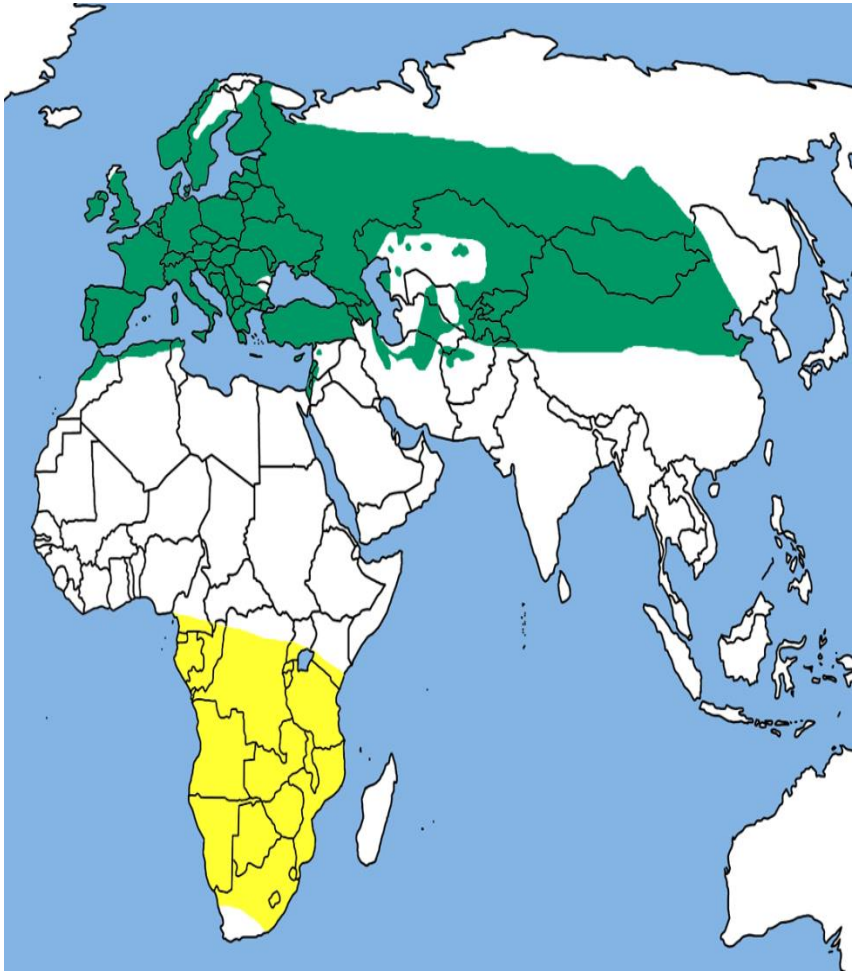
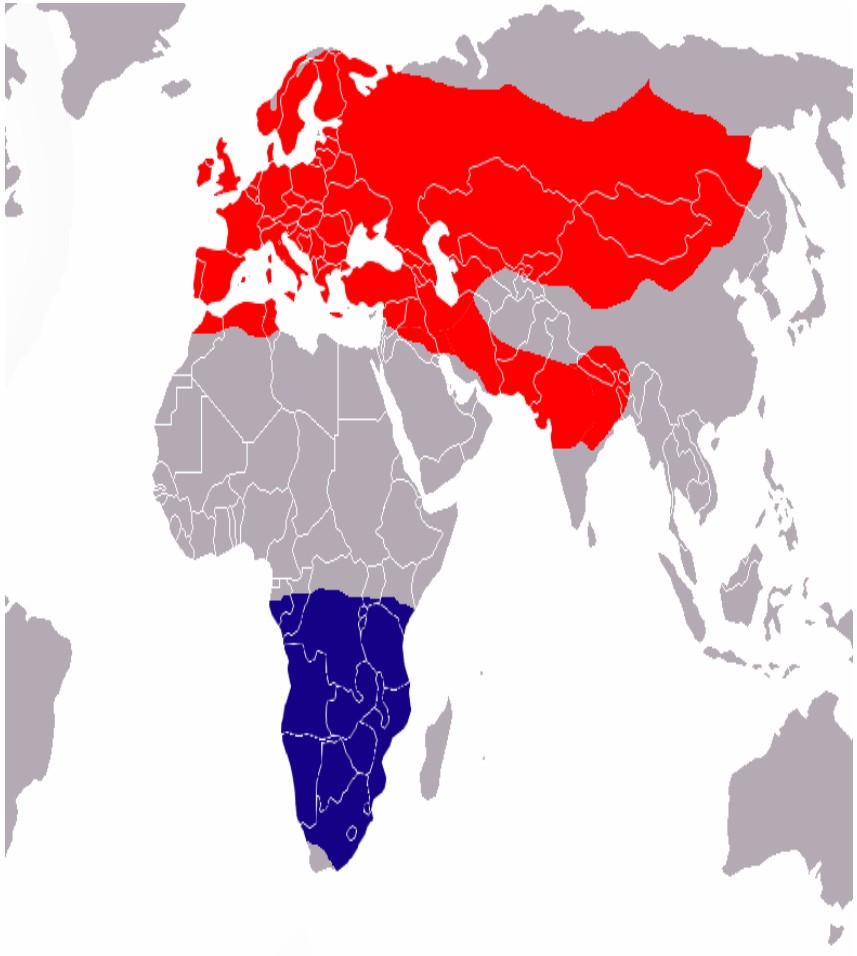
An overview of Apus apus-and Apus apus pekinensis

Swifts have been around for about 50 million years!

- Eocypselus rowei.
- Found in Wyoming.
- 12 centimetres from head to tail.
- Around 50 million years old
- Evolutionary precursor to swifts and hummingbirds.
- Scaniacypselus fossil in Senckenberg Museum Frankfurt - Scanish Swift – 49 million years old. *Photo Ulrich Tigges.*
- The story here is more about avian classification rather than details of swift evolution.
- Reptiles to birds to modern birds!
- Around 100 species of swift.

Apus apus and Apus apus pekinensis
Very widespread distribution





Apus apus ‘HABITAT’ IS “AIR”

- IT’S ALL ABOUT FLIGHT!
- Look at the length of the wings-
- Unlike most birds - e.g. sparrowhawk in woodland -

  IT’S NOT LIMITED BY SPECIFIC HABITAT REQUIREMENTS!
- aerial plankton feeder
- A bird of the air!
- The Non Stop bird!

Adapted at a molecular level. A powerful and finely tuned engine

- 100% Type 1 muscle fibres – packed with mitochondria
- Energy source is fat – more efficient than <u>high octane fuel!</u>
- Same as Humming birds which are also Type 1
- Swifts like Jets refuel in mid air!

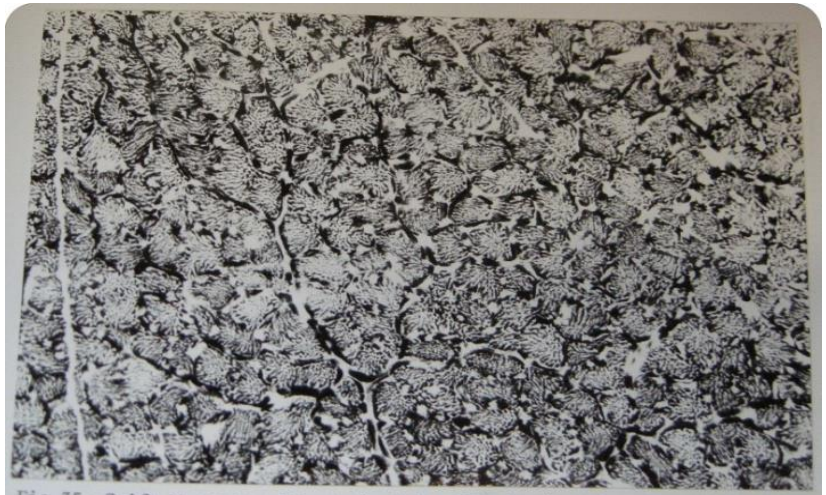


Fig 35 Swift M. pectoralis stained for SDH showing homogeneous exclusively type 1 fibre composition X 288.

Non Stop life in the air brings some unavoidable consequences!

- Swallow can perch-passerine.
- Feeds its fledged young – swift does not.
- Builds its nest with mud. Swifts in cavity
- Swallow preens when perched.
- Can get Calcium and minerals from the ground.
- Swallow roosts. Swift sleeps on wing.
- Convergent evolution – species are not related.
- Swift Torpor. Swallow not.
- Totally different ball game.
- Very different life strategies!
- Researches need to be aware of this!
- Many of the characteristics of the swift are the inevitable result of its evolutionary path.

Swifts inspire!- they get under your skin and sometimes on it!

- The stone masons tribute!
- -and the poets- Ted Hughes ***--"a bolas of three or four wire screams jockeying across each other on their switchback wheel of death." --***

Swifts capture the imagination.

Health Warning! - It can become an addiction!

Apus apus pekinensis distribution

Apus apus and Apus apus pekinensis wintering areas 2010 to 18.

- Same species- 2 races
- One went North East
- One went North West
- Wintering areas overlap
- A320

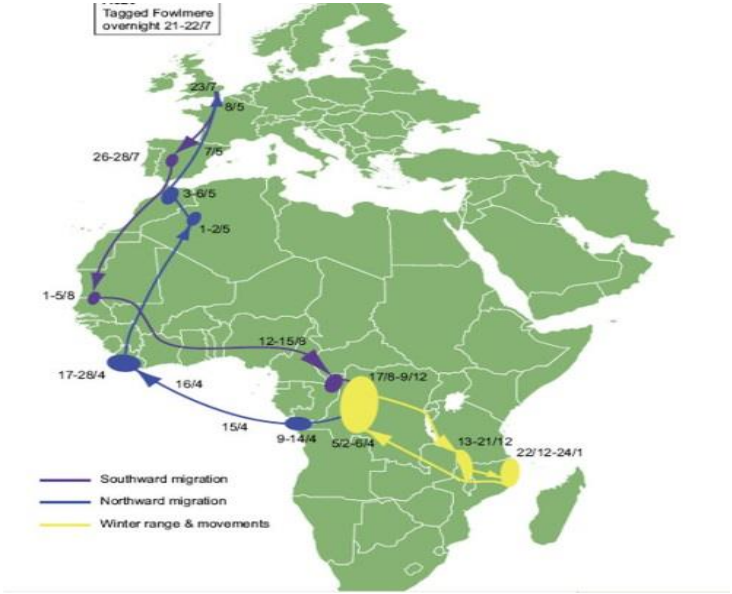
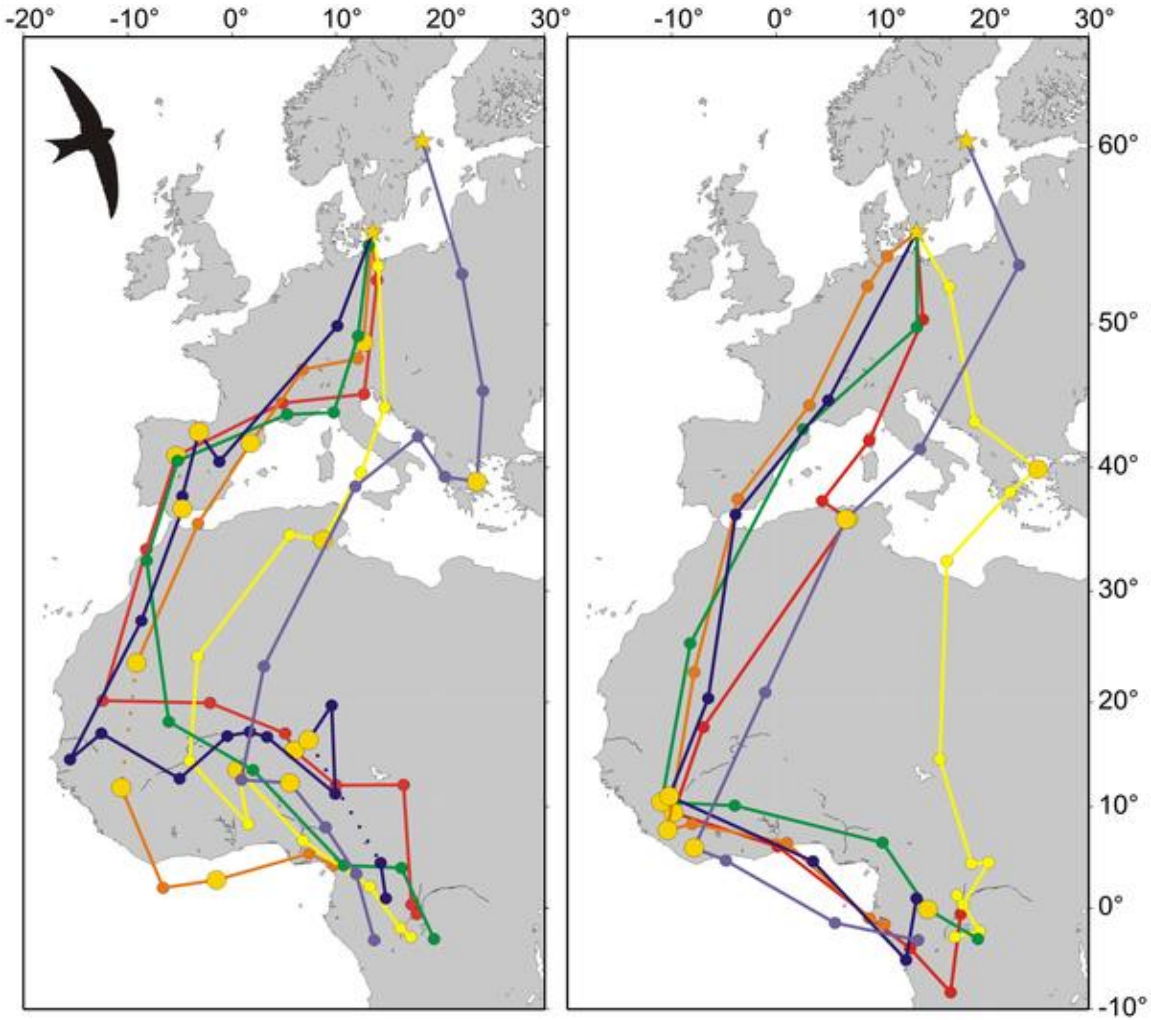
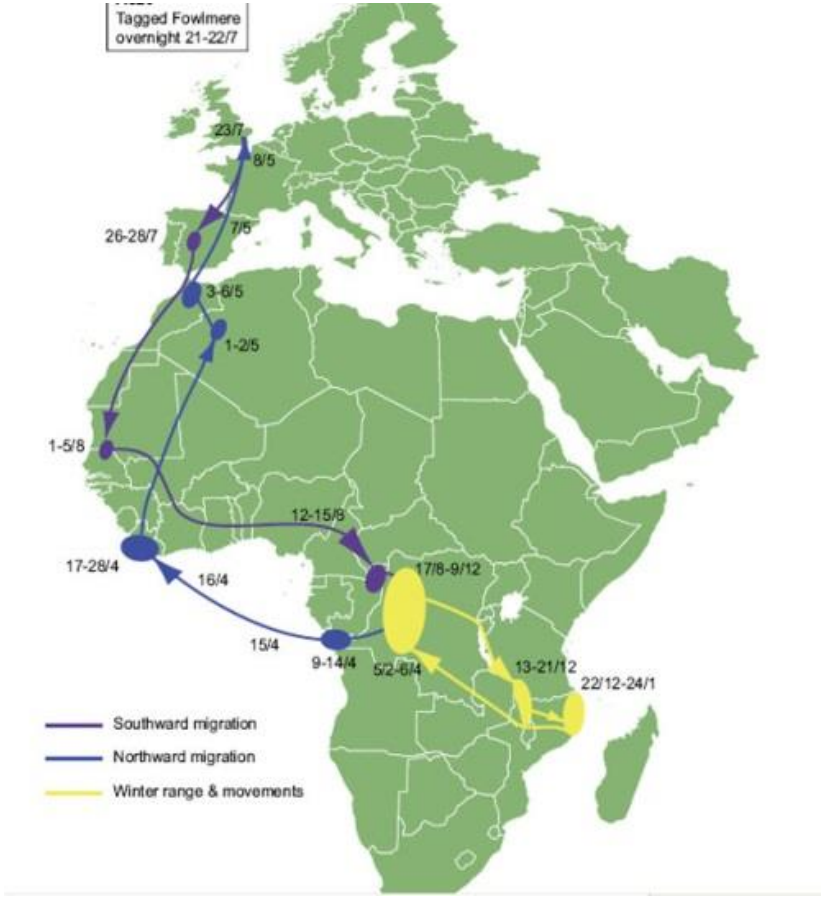


Figure 1. Migration tracks of swifts.



Åkesson S, Klaassen R, Holmgren J, Fox JW, Hedenström A (2012) Migration Routes and Strategies in a Highly Aerial Migrant, the Common Swift Apus apus, Revealed by Light-Level Geolocators. PLOS ONE 7(7): e41195. https://doi.org/10.1371/journal.pone.0041195
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0041195

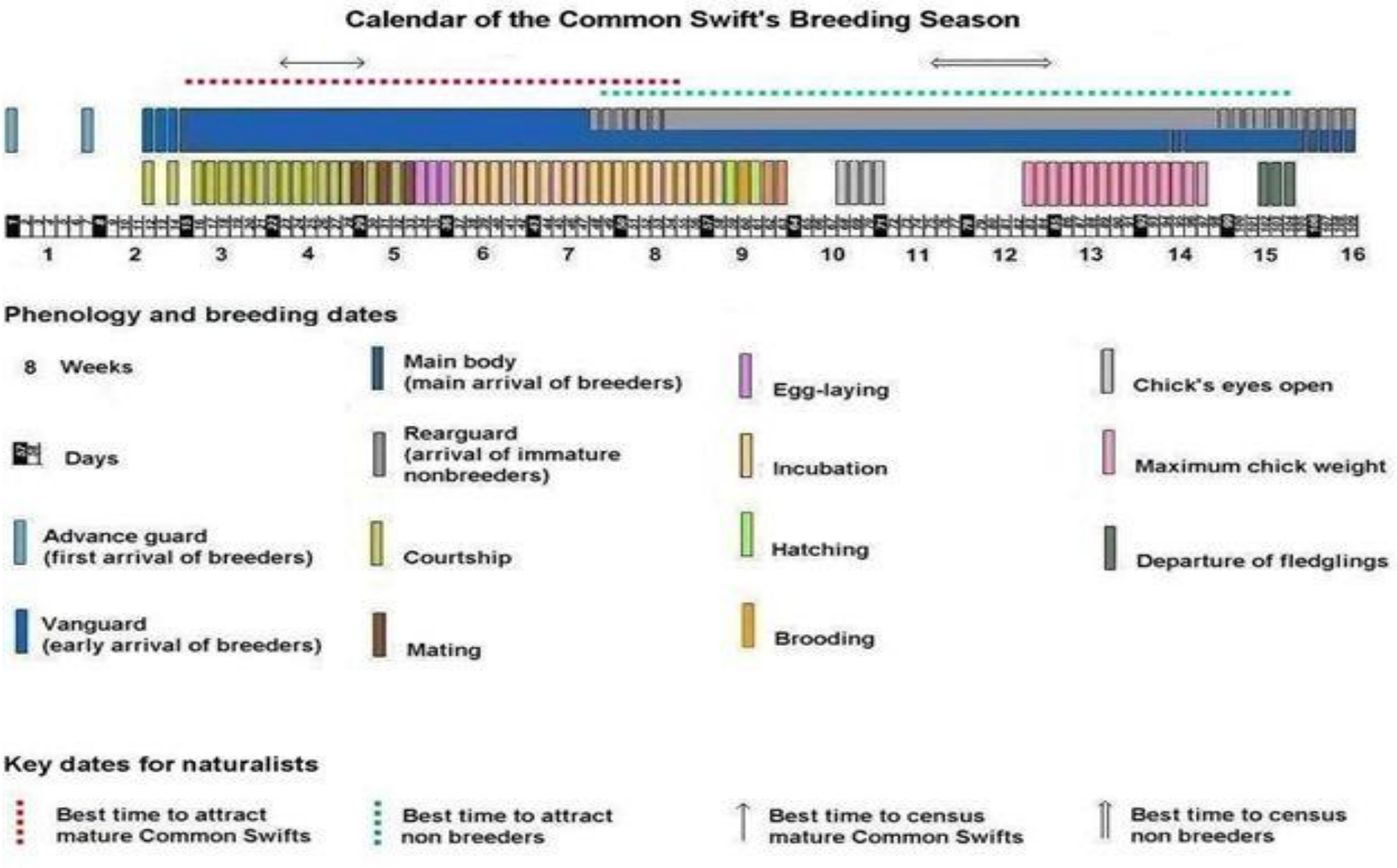
Example of RSPB GPS 2016 and BTO 2012 Geologger migration routes



Spring migrant in Israel. Ulrich Tigges

http://www.commonswift.org/

Swift Calendar -Ulrich Tigges



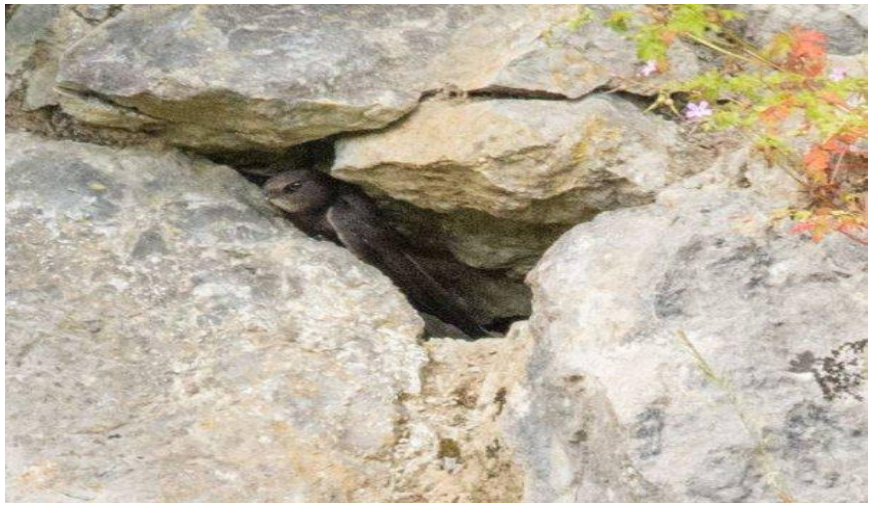
Nest Site Selection in the context of social interactions within a colony.

As well as the established breeders lots of other things are going on in and around a colony -

- In any colony however small - non-breeders arrive.
- These can be 1st 2nd or 3rd year returners
- These birds are prospecting colonies and or nest sites
- Immature birds exhibit banging behaviours – bangers.
- Screaming parties occur from arrival of breeders but become more frequent again, after the relative quiet during incubation and brooding of chicks.
- Always more swifts than there are actual breeders in any colony
- **All part of a highly ritualised social conduct for species!**

Its all about finding, occupying and defending a nest site!

- ***"The discovery of a suitable nesting site is, undoubtedly, the most important event in the life of a Swift"*** - Ulrich Tigges
- Limited availability
- Swifts Achilles heel!
- Compare with House Marten



Once swifts disappear from an area it can be slow process to get them back.

- A vital part of conserving the species is to have anchor tenants to attract other swifts!
- Are any swifts breeding nearby? Swifts like swifts!
- Swift Calls are the nearest thing to a silver bullet!
- But not guaranteed!
- No swifts then more calls needed!

Arrival is a very special time of the year! - Ted Hughes again -

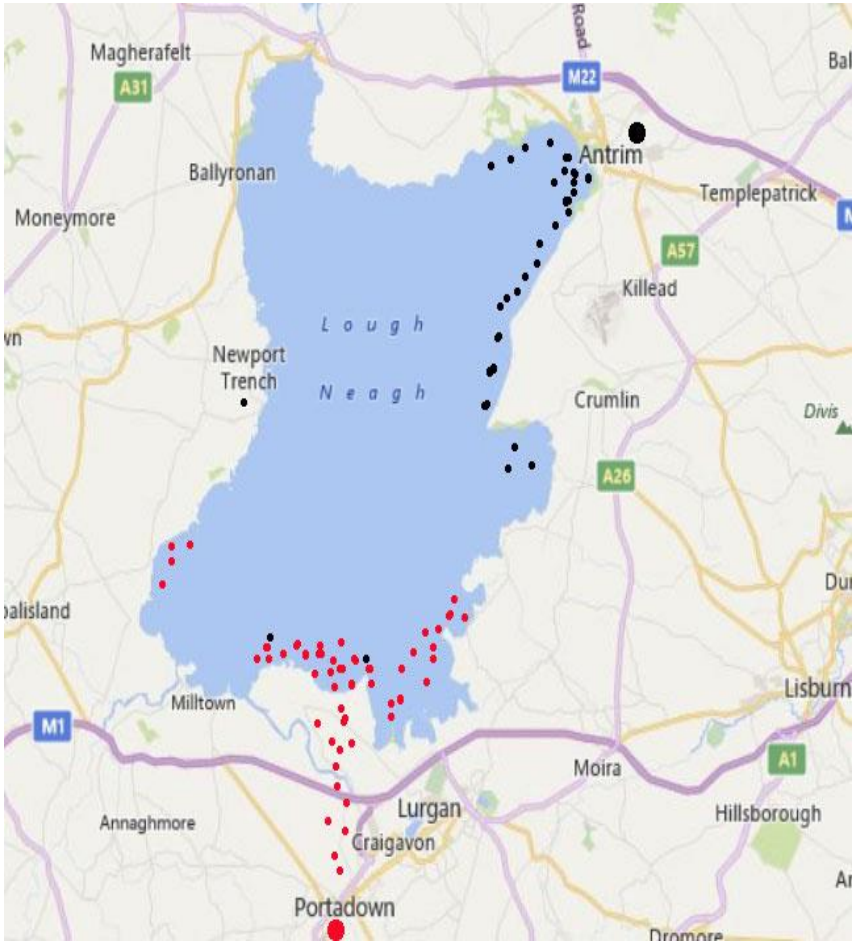
- ***"They've made it again/ Which means the globe's still working . . ."***
- ***---"****Fifteenth of May.*
  Cherry blossom. The swifts
  Materialize at the tip of a long scream
  Of needle. 'Look! They're back! Look!' And they're gone
  On a steep Controlled scream of skid" ------

Main locations for swift population change from “anywhere” to the nest.

- Goes from complete freedom to roam the skies to being tied to the nest site
- Now needs to stay local
- The food supply for the chicks is dependent on weather and nearby habitats to supply insects to the air.

Feeding and breeding- example track Lough Neagh - 2017

- Needs to find food as near the nest as possible.
- Takes advantage of peak Aphids and Chironomids 1st peak in mid summer.
- Feeding behaviour necessitated by weather and growing chicks.
- Once chicks are fledged pressure is off. They can forage more widely.



They are with us to nest, lay their eggs,

And feed their chicks.

Chicks grow rapidly

- By second week after hatching both parents hunt
- Food every hour
- Sometimes within minutes – Lough Neagh – bolus in 2 minutes.

And then the first flight!

- That magic moment each summer – 40 days or so at 40 to 45 grams. Wings 16 cm long.
- ***"Maybe even more important than finding a nest site?"***
- Fly or die!
- The class of 2018 will be airborne!

Clonmacnoise Co. Offaly – a low nest site. - Difficult first flight?

Swift Conservation – What should we do? Is it nest sites, or insects, or what?

Lets look at Insects - Rothamsted Research

- Since 1968 12.2 meter-long suction tubes deployed to <u>monitor agricultural pests.</u>
- Rothamsted Insect Survey. Daily records April to November
- 16 traps -12 in England- 4 in Scotland
- 400 of the 600 aphid species in UK recorded

Total Biomass declines.

- “Between 1970 and 2002 no significant decline in biomass in England .”
- “Catches in southern Scotland, however, declined by more than two-thirds during the same period” WHY?

Ecological Armageddon?

- PLOS One journal – In German NR's flying insect populations have declined by more than 75% over the duration of the 27-year study using Malaise Traps.
- Dramatic plunge in insect numbers and that's nature reserves!

Are declines in Swift primarily linked to loss of Nest Sites, or lack of insects?

- Swift is dependant on insects in the air!-but-
- not concerned if their origin is woodland, grassland, bog, urban, aquatic etc.
- As long as there are flying insects there will be feeding swifts!

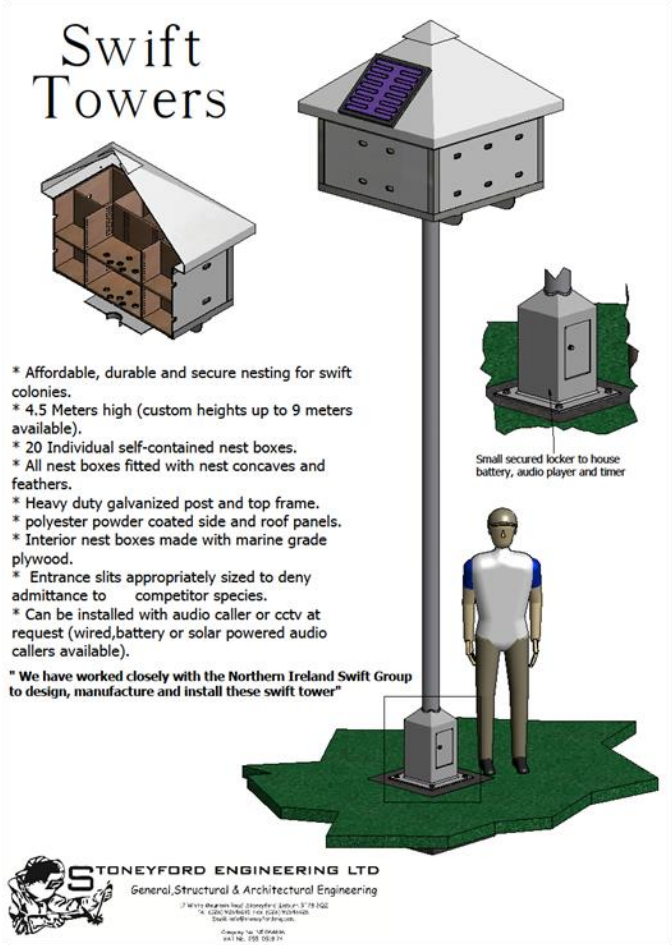
Swift - A Key Indicator species of change?

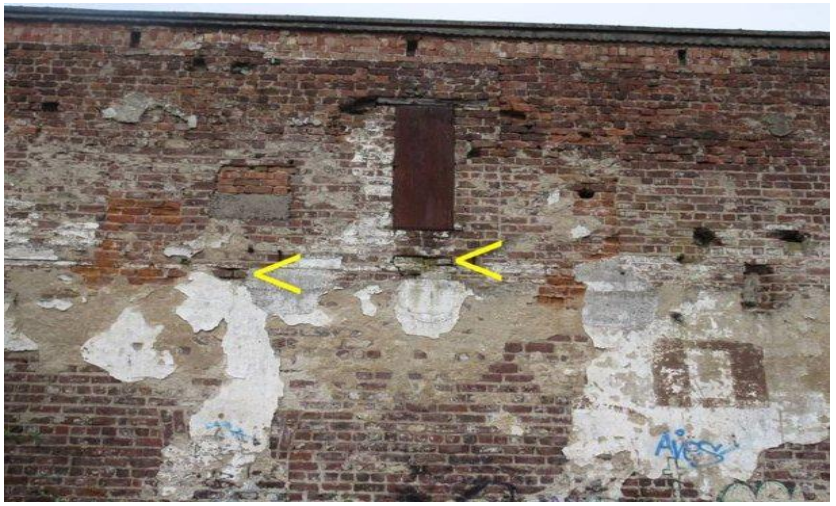
- Maybe, but not of early changes in insect population! - because –
- How do you separate out loss of nest sites effect from any effects due to falls in insect numbers? We need more accurate information.
- The swift in UK probably eats more species of animals (small insects and spiders) than any other bird.
- African diet?
- Likely it will be the last insectivorous species to go!! – if it goes all is lost!
- Good indicator of urban air quality!
- In Ireland are lakes masking insect declines in other habitats?
- Is it a similar story elsewhere?

Loss of nest sites-mills, schools, churches, houses, repairs, etc.

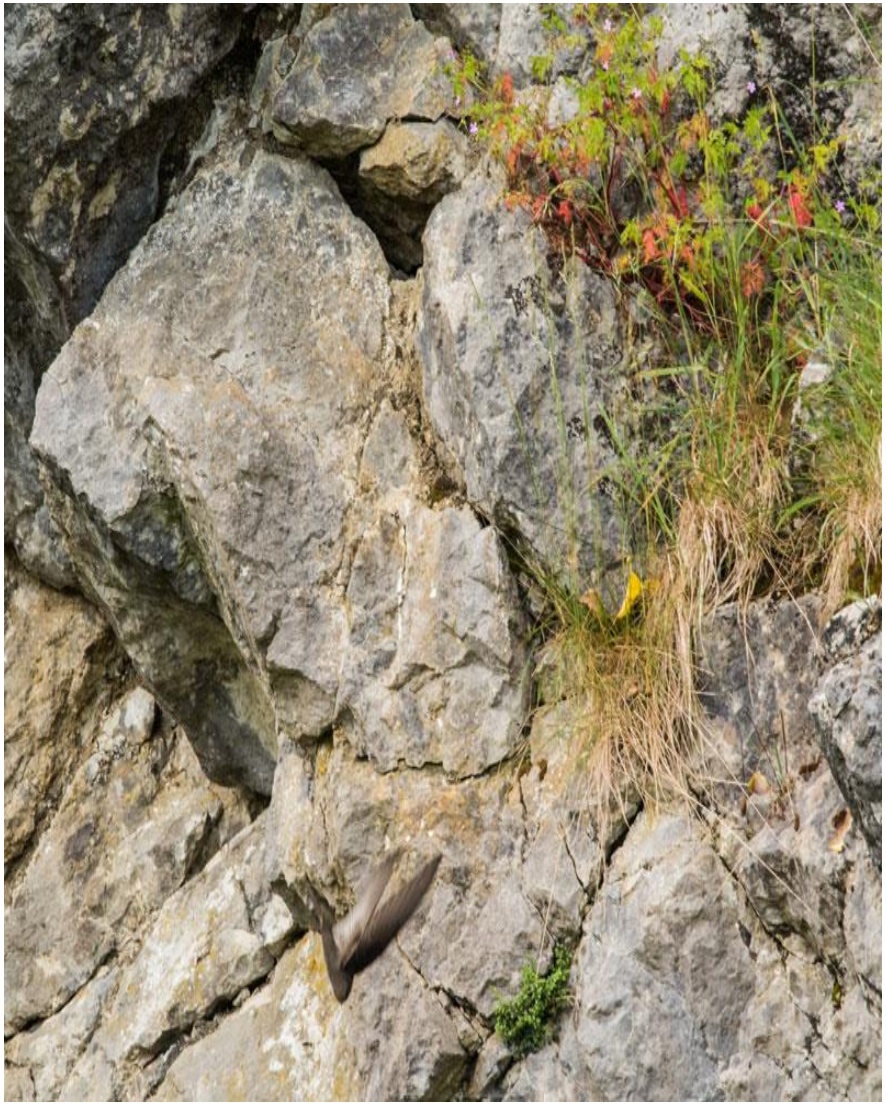
Keep existing colonies and provide new cavities!

Cliffs, Nest Boxes, Towers, Walls, Bricks. CAVITIES!





It’s the cavity!

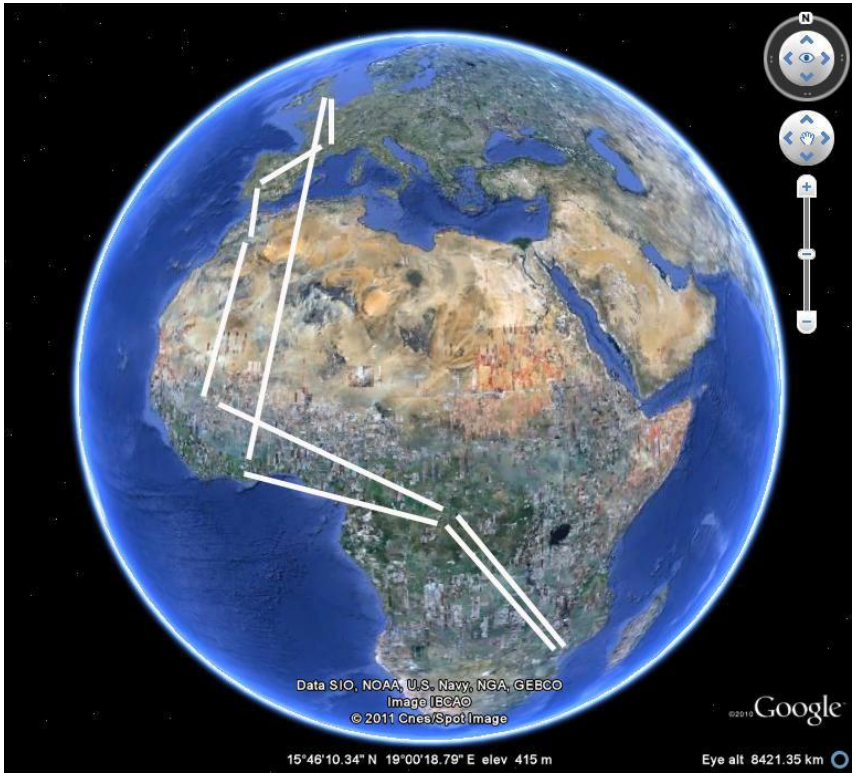


Overall Global message is “Conserve existing sites and create new ones”!

- Is the swift safe?
- As long as there are insects and cliffs.
- How many do you want?
- **Do you want the spectacle?**
- The greater the numbers the greater the spectacle!

And here is the spectacle! – The boys are back in town!

Swifts as a unifying force for conservation and nations.



- ***"They've made it again/ Which means the globe's still working . . ."***
- ***"They swat past hard fletched, veer on the hard air, toss up over the roof and are gone again"***

Back to roam across the African continent

END – 3 Fantastic Websites!

- www.swift-conservation.org/
- http://actionforswifts.blogsp
- http://www.commonswift.org/