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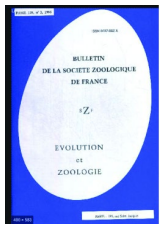

First data on the breeding biology of Barn Swallow, Red-rumped Swallow and House Martin in Corsica Island

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Abstract — This study presents the first data on the breeding biology of three swallow species in Corsica. Breeding parameters of the Barn Swallow and of the House Martin are consistent with data from other Mediterranean populations, showing relatively early breeding that precedes summer drought. In contrast, the Red-rumped Swallow continues breeding during the hottest and driest months. Although seemingly best adapted to Mediterranean summer aridity, its range and population size in Corsica have remained largely unchanged for several decades, unlike the other two species.

Keywords — Breeding, Barn Swallow, *Hirundo rustica*, House Martin, *Delichon urbicum*, Red-rumped Swallow, *Cecropis rufula*, Corsica

Premières données sur la reproduction des Hirondelles rustique, rousseline et de fenêtre en Corse

Résumé — Cette étude présente le premier jeu de données sur la reproduction de trois espèces d'hirondelles en Corse. Les données pour l'Hirondelle rustique et l'Hirondelle de fenêtre s'insèrent parfaitement dans le corpus des connaissances des deux espèces en Méditerranée ; leur reproduction s'y interrompt au début de l'été, en relation avec la sécheresse. L'Hirondelle rousseline enregistre le plus grand nombre de cas de reproduction au cours d'une même saison et paraît être mieux adaptée que les deux autres au climat estival méditerranéen. Mais cet avantage ne se concrétise pas par un accroissement de sa répartition ni de son effectif qui n'ont guère changé depuis plusieurs décennies, alors qu'ils ont augmenté chez les deux autres espèces.

Mots-clés — Reproduction, Hirondelle rustique, *Hirundo rustica*, Hirondelle de fenêtre, *Delichon urbicum*, Hirondelle rousseline, *Cecropis rufula*, Corse

Introduction

Considerable information is available on temporal changes in the distribution of breeding birds in the western Palearctic (KELLER *et al.*, 2020), but recent data on breeding biology particularly regarding phenology or demographic parameters such as clutch size—remain scarce. Such data require labor-intensive protocols and are often neglected by contemporary academic research. However, because of their coloniality and anthropophilic behavior, which facilitate field data collection, several species of the family Hirundinidae were the subject of sophisticated studies on behavior and ecology during the 20th century (e.g. BROWN, 1986; BRYANT, 1975; MØLLER, 1992), as well as numerous regional studies on breeding biology (summarized in CRAMP, 1988; TURNER & ROSE, 1989).

Four Hirundinidae species breed in Corsica: the Barn Swallow (*Hirundo rustica*), the House Martin (*Delichon urbicum*), the Red-rumped Swallow (*Cecropis rufula*), and the Crag Martin (*Ptyonoprogne rupestris*). Their distribution is fairly well known (THIBAULT & BONACCORSI, 1999), but population estimates are available only for the House Martin (THIBAULT *et al.*, 2024) and the Red-rumped Swallow (PIACENTINI, SEGUIN & THIBAULT, in prep.). While breeding studies are abundant in the British Isles and central and northern Europe, they are rare in the Mediterranean (except Algeria and Spain) and were entirely lacking for Corsica.

We focus on the first three species; sample sizes for the Crag Martin being too small. Our aim is to describe breeding parameters (nesting sites, breeding period, clutch size and brood size) of these three sympatric swallows in northern Corsica, addressing three questions: (1) what are the differences between the reproductive parameters of the three species of swallows, (2) do reproductive parameters align with Mediterranean gradients, and (3) do the species differ in their phenological response to Mediterranean aridity?

Methods

Corsica (42°09’ N, 9°05’ E) is the third largest Mediterranean island (8,722 km²), with peaks exceeding 2,000 m and six major habitat types (Lower, Mid-, Upper Mediterranean, Montane, High Mediterranean, and Alpine). Study sites were in the northern part of the island, within the Lower Mediterranean zone at altitudes below 700 m, the driest climatic areas (DELBOSC *et al.*, 2014).

Barn Swallow are widespread along the coast, in western valleys, eastern foothills, and Balagne and their populations have increased over the last three decades (obs. pers.). Three sites were studied in 2025: Capra Scorsa (residential area, 21 nests), Pardine (abandoned house, 14 pairs), Barchetta (abandoned village house, 21 pairs).

House Martin are the most abundant species, with number estimated at *ca*. 10,000 pairs and likely increasing (THIBAULT *et al.*, 2024). The studied colony was situated in Ponte Leccia with one hundred nests under eaves of an abandoned electrical transformer. A sample of 79 nests were monitored in 2025.

Red-rumped Swallow has colonized the island in the 1960s (ISENMANN, 2023); breeding population is limited to a few coastal areas, estimated at 20–30 pairs. We monitored 16 nests in 2023, 12 in 2024, and 13 in 2025.

The nests of the three species were individually numbered and monitored weekly from early April to late August, extending until early October for the Red-rumped Swallow. Nest contents were examined using an endoscope (KZYEE-3.5M). For the Barn Swallow colonies, detailed plans at a scale of 1:50 were drawn to estimate distances between nearest nests. Laser distance measurements were carried out using a Leica DISTO™.

Laying and hatching dates for the three species were estimated using published information on incubation and nestling periods (TURNER & ROSE, 1989). In some cases, practical difficulties arose when estimating the number of eggs and nestlings, as these were not always clearly visible on the endoscope monitor. The interpretation of certain reproductive behaviours of the Red-rumped Swallow was based on descriptions and illustrations provided by LOPE REBOLLO (1981) and PRODON (1982). Laying dates are expressed both as day of the year according to the Gregorian calendar and as calendar dates (e.g. 1 = 1 January). In graphs illustrating laying periods, each month was divided into three 10-day intervals. As individuals were not marked, the age of breeding birds is unknown; this limitation precludes assessing the influence of age on multiple brooding and on the seasonal decline in clutch size, two traits known to be age-dependent in females (BAŃBURA & ZIELIŃSKI, 1998).

Aridity was assessed using the Gaussen index ($P < 2 \times T$), where P represents total monthly precipitation expressed in millimetres and T the mean monthly temperature in degrees Celsius (BAGNOULS & GAUSSEN, 1957). Temperature and rainfall data were obtained from the website historique-meteo.net by selecting records from L’Île-Rousse for the Barn Swallow and Red-rumped Swallow study sites, and from Ponte Leccia, the meteorological station closest to the House Martin study site (Table 1a, b).

Table 1a. Gaussen’s index at the L’Île-Rousse meteorological station in 2023–25; values indicating strong aridity are in bold.
Tableau 1a. Index de Gaussen obtenus avec les données de la station météorologique de l’Île-Rousse en 2023-25 ; les valeurs en gras indiquent une forte aridité.

Years	April	May	June	July	August	September
2023	0.42	0.91	0.57	**0.018**	0.48	**0.09**
2024	0.64	0.85	**0.26**	**0.06**	0.34	0.60
2025	1.8	**0.17**	**0.021**	**0.19**	**0.12**	0.38

Table 1b. Gaussen’s index at the Ponte Leccia meteorological station in 2025; values indicating strong aridity are in bold.

Tableau 1b. Index de Gaussen obtenus avec les données de la station météorologique de Ponte Leccia en 2025 ; les valeurs en gras indiquent une forte aridité.

Year	April	May	June	July	August	September
2025	1.9	0.56	**0.08**	**0.12**	**0.18**	0.70

Statistical analyses were performed using the free software ToolDone. Two-tailed ANOVAs were used to test differences among reproductive parameters across the three Barn Swallow study sites; two-tailed *t*-tests were applied to compare first and second clutches in the House Martin; and Fisher's exact tests were used to analyse nest changes between first and second breeding attempts in the Barn Swallow. A boxplot was generated using the software Microsoft Excel to compare the breeding phenology of the three swallows, as well as graphs showing the laying periods. ± indicates the standard deviation.

Results

Barn Swallow

Nest-site characteristics

At Capra Scorsa, nests were separated from one another by several tens of metres and were distributed as isolated units sheltered under porches or within stairwells. Nests were more frequently built on light fixtures (52 %) than attached directly to ceilings (39 %). At the two other sites (Pardine and Barchetta), nests were closely spaced and constructed in corridors and rooms with open access (absence of doors and windows); they were supported against a wall, placed in a corner, or attached to a beam.

These observations indicate a high degree of plasticity in both nest-site selection and inter-nest distances (see Tables 2, 3).

Across all three sites, 13 nest changes were recorded for 51 breeding attempts. The frequency of nest changes did not differ significantly between the low-density site (Capra Scorsa) and the two high-density sites (Pardine and Barchetta) (Fisher's exact test, $p = 0.71$).

Table 2. Location of Barn Swallow nests at the Capra Scorsa site.

Tableau 2. Emplacements des nids d'Hirondelle rustique sur le site de Capra Scorsa

Situation	n
on pillar	1
sheltered against beam	1
under ceiling without support	3
under the ceiling (in a corner)	3
under ceiling (stairwell)	3
on a light fixture	12
Total	23

Table 3. Distances between active Barn Swallow nests at the three study sites (in meters) and nest-switching rates between first and second breeding attempts.

Tableau 3. Distances entre les nids actifs d'Hirondelles rustiques et taux de changement de nids entre les premières et les secondes reproductions dans les trois sites étudiés.

Sites	distances to the nearest nest	n	nest changes between first and second breeding
Capra scorsa	28±11.8	13	2/13
Pardine	1.72±0.92	9	2/9
Barchetta	3.17±1.67	15	9/29

Phenology

Breeding extended from early April to late July. Only one of the 12 periods considered accounted for 15 % of all laying events (Figure 1).

Demographic parameters

Up to three successive breeding attempts were recorded, although the third attempt was marginal.

Table 4 presents data from the three study sites to assess whether they can be pooled.

ANOVA results showed no significant differences among sites for the main reproductive parameters (see Table 5), therefore the data can be pooled (see Table 6).

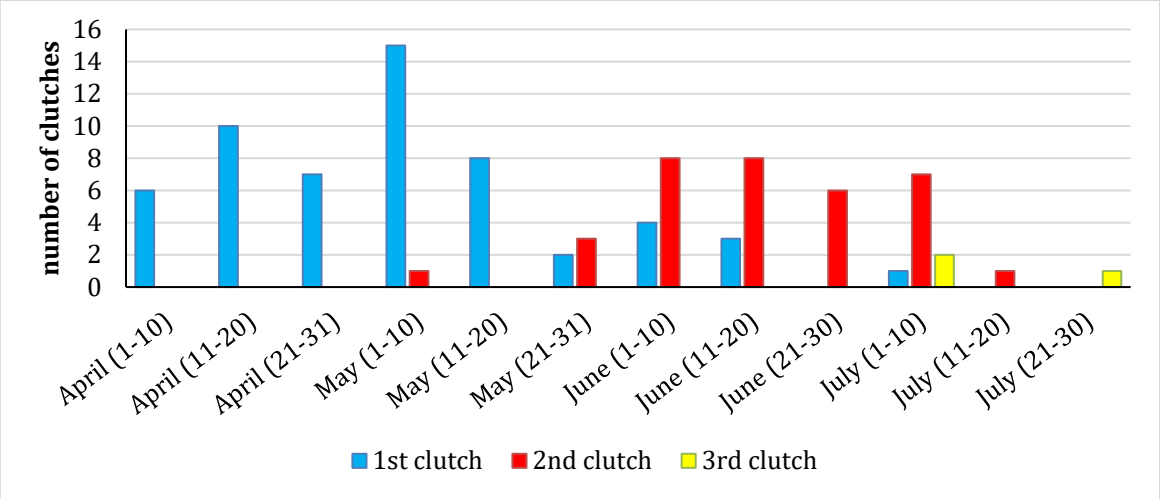

Figure 1. Distribution of first, second, and third clutches of Barn Swallow (expressed as %, n=93).
Figure 1. Distribution des premières, secondes et troisièmes pontes chez l'Hirondelle rustique (exprimée en %, n=93).

Table 4. Data on clutch and brood sizes at the three Barn Swallow study sites.
Tableau 4. Données sur les grandeurs des pontes et des nichées d'Hirondelles rustiques dans les trois sites étudiés.

2025	number of clutches per nest	clutch size 1	mean laying calendar date 1	brood size 1	n	clutch size 2	mean laying calendar date 2	brood size 2	n
CapraScorsa	1.6	5.2	07-may	4	19	4.4	18-june	2.7	12
Pardine	1.57	5.3	07-may	3.4	14	3.9	18-june	2.6	7
Barchetta	1.8	4.9	05-may	3.55	16	4.4	16-june	2.7	15

Table 5. Results of comparative tests of Barn Swallow reproductive parameters at the three study sites.
Tableau 5. Résultats des tests comparatifs des paramètres reproducteurs d'Hirondelle rustique dans les trois sites étudiés.

	F-statistic	*p* value
number of breeding	0.7925	0.99
clutch size (first breeding)	0.5371	0.99
chick size (first breeding)	0.8300	0.99
fledging date (first breeding)	0.0219	0.99
clutch size (second breeding)	0.9541	0.99
nesting size (second breeding)	0.0089	0.99
fledging date (second breeding)	0.1078	0.99

Table 6. Pooled data on the parameters of first, second, and third breeding of Barn Swallow at the three study sites.
Tableau 6. Données regroupées sur les paramètres des premières, secondes et troisièmes reproductions de l'Hirondelle rustique dans les trois sites d'étude

	mean	±	n
Breeding attempt 1			
clutch size	5.10	1.11	50
mean laying date (day of year, calendar date)	126, 6 May		55
brood size	3.68	1.45	53
Breeding attempt 2			
clutch size	4.29	0.94	34
mean laying date (day of year, calendar date)	168, 7 June		34
brood size	2.68	1.70	34
Breeding attempt 3			
clutch size	4	0	4
mean laying date (day of year, calendar date)	190, 9 July		3
brood size	2.75	1.89	3

House Martin

Nest-site characteristics

Nests in the studied colony formed a continuous row beneath the eaves of the electrical transformer. Between late February–early March and May, nests were restored or rebuilt at the locations marked by remains of nests from previous years.

Phenology

First and second clutches showed a bimodal distribution, extending from the third week of April to the third week of July; only one nest produced three clutches (Figure 2).

Demographic parameters

Data from the two breeding attempts of the House Martin are presented in Table 7. Clutch size was significantly higher in the first breeding attempt than in the second (*t*-test, Q_obs = 8.78, $p < 0.0001$).

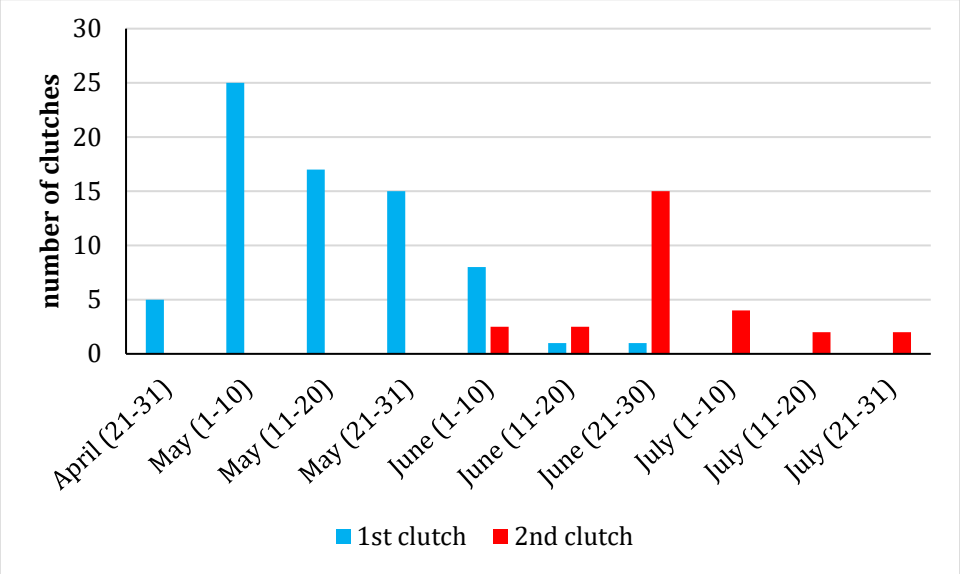

Figure 2. Distribution of first and second clutches of House Martin (expressed as %, n=114).

Figure 2. Distribution des premières et secondes pontes chez l'Hirondelle de fenêtre (exprimées en %, n=114).

Table 7. Data on first and second clutches of House Martin.

Tableau 7. Données sur les premières et secondes pontes d'Hirondelle de fenêtre.

	mean	±	n
Breeding attempt 1			
clutch size	4.33	1.09	76
brood size	2.3	1.07	76
mean laying date (day of year, calendar date)	135, 15 May		
Breeding attempt 2			
clutch size	3.1	0.62	41
brood size	1.37	1.24	41
mean laying date (day of year, calendar date)	178, 27 June		

Red-rumped Swallow

Nest-site characteristics

Nests were generally dispersed, ranging from tens of metres to several tens of kilometres apart. However, at one locality (L'Ozari), five pairs were recorded in 2023–2024 and four pairs in 2025 within an area of approximately 100 hectares, with inter-nest distances ranging from 60 to 508 m (see Table 8). Although Red-rumped Swallows typically breed separately from other swallows, 1–2 pairs were observed at L'Ozari within a loose colony of Barn Swallows (21 pairs), and two pairs within a loose colony of House Martins (52 pairs).

Regarding the location of active nests recorded during 2023–2025, slightly less than half (41 %) were situated in urbanized areas, all on human-made structures. The majority of active nests were found under bridges and in abandoned, isolated buildings, exceeding the number of nests located within urban areas (houses in villages and residential areas) (see Table 9).

Table 8. Distances between active Red-rumped Swallow nests at L'Ozari in 2024–25 (in meters).

Tableau 8. Distances entre les nids actifs d'Hirondelle rousseline à L'Ozari en 2024-25 (en mètres).

	Belambra	Pump station	Capra Scorsa	Terrasses I01
Pump station	480			
Capra Scorsa	470	354		
Terrasses I01	414	508	192	
Terrasses M01	467	497	161	60

Table 9. Types of nesting substrates used by Red-rumped Swallow.
Tableau 9. Types de substrats utilisés par l'Hirondelle rousseline pour établir son nid.

Year	stone/concrete bridge	abandoned or isolated building	inhabited area (village houses and residential buildings)	other (burial vault in a cemetery)	total
2023	4	6	5	1	16
2024	2	3	7	0	12
2025	1	7	5	0	13
total	7	16	17	1	41

Phenology and demographic parameters

The earliest observations at breeding sites occurred in early April. Most birds had disappeared by September, although some continued to use nests at night until September–October, with the latest observation recorded on 1st November 2025. Laying occurred between mid-April to early September (Figure 3). First and second clutches showed a bimodal distribution. A few pairs settled very late in the season, with a first clutch laid in July–August, which was not necessarily a replacement clutch (e.g., Capra Scorsa 2023, 2025). Following a breeding failure, reproduction could occur in the same nest or in another nest constructed within less than two weeks. Demographic parameters for each of the three breeding attempts are presented in Table 10.

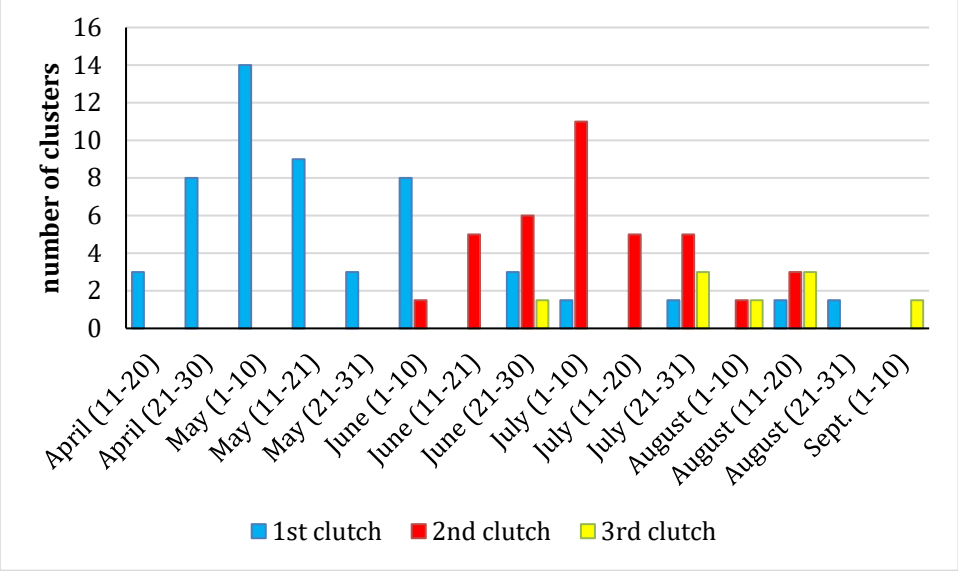

Figure 3. Distribution of first, second, and third clutches of Red-rumped Swallow (expressed as %, n=66).
Figure 3. Distribution des premières, secondes et troisièmes pontes chez l'Hirondelle rousseline (exprimée en %, n=66).

Table 10. Data on first, second and third clutches of Red-rumped Swallow.
Tableau 10. *Données sur les premières, secondes et troisièmes pontes d'Hirondelle rousseline.*

	mean	±	n
Breeding attempt 1			
mean laying date (day of year, calendar date)	145, 25 May		
clutch size 1	4.42	0.95	26
brood size 1	2.36	1.51	36
Breeding attempt 2			
mean laying date (day of year, calendar date)	189, 8 July		
clutch size 2	3.62	0.64	26
brood size 2	2.62	1.17	26
Breeding attempt 3			
mean laying date (day of year, calendar date)	217, 5 August		
clutch size 3	3.33	0.52	6
brood size 3	2.71	0.49	7

Discussion

What are the differences between the reproductive parameters of the three species of swallows ?

Barn Swallow's laying begins in early April and is distributed across April (25 %), May (31 %), and June (31 %). House Martin's laying is concentrated in May–June, with more than half of the clutches laid in May. Regarding to Red-rumped Swallow, laying is spread throughout spring and summer, continuing until early September (Figure 4). Mean clutch sizes were highest in Barn Swallow compared to those of House Martin and Red-rumped Swallow (see Table 11).

Table 11. Summary of reproductive data for the three swallow species studied in Corsica.
Tableau 11. Résumé des données sur la reproduction des trois hirondelles en Corse.

	Barn Swallow	House Martin	Red-rumped Swallow
number of breeding/nest	x=1.6±0.6, n=56	x=1.54±0.53, n=79	x=2.0±0.7, n=34
studied sample (first breeding)	56	79	34
sample with two breeding	30 (54 %)	41 (52 %)	20 (59 %)
sample with three breeding	4 (7 %)	1 (1.3 %)	7 (21 %)
calendar dates of first and last clutches	4 April-22 July	23 April-22 July	15 April-5 September
mean clutch sizes	x=4.74 ±1.10, n=88	x=3.94±1.06, n=117	x=3.95±0.89, n=58
clutch sizes range	2-7	1-6	3-6
mean nesting sizes	x=3.26. ±1.63. n=91	x=1.97±1.21, n=117	x=2.49±1.31, n=69
nesting sizes range	1-5	1-5	1-5

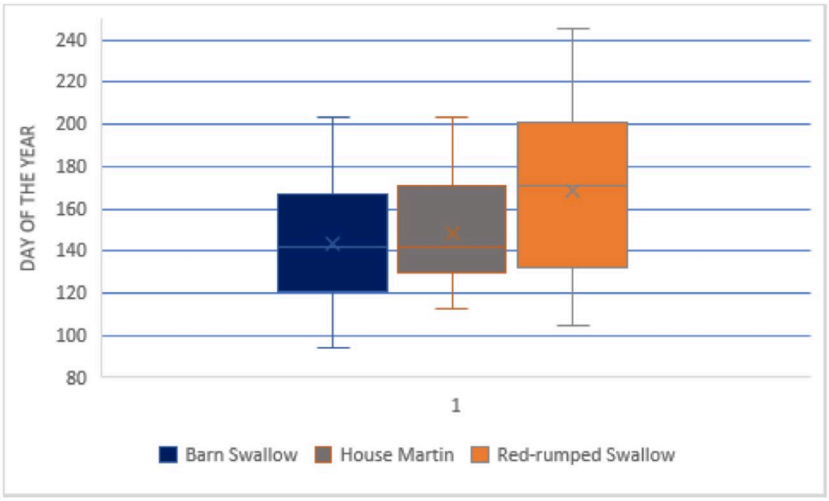

Figure 4. Boxplot comparing laying dates of Barn Swallow, House Martin, and Red-rumped Swallow (expressed as day of the year).
Figure 4. Boite à moustaches comparant les dates de pontes de l'Hirondelle rustique, de l'Hirondelle de fenêtre et de l'Hirondelle rousseline.

Do reproductive parameters align with Mediterranean gradients?

Barn Swallow

Breeding sites

In northern Europe, Barn Swallows preferentially nest on buildings associated with livestock (MØLLER 1983). In Corsica, where livestock is largely free-ranging, Barn Swallows breed in houses (under construction, abandoned, or occupied), barns, and isolated buildings ; thus, their presence is independent of livestock, as is also the case in North Africa and the Near East (TURNER, 1994; SAKRAOUI *et al.*, 2005).

Phenology

A geographical cline is evident in laying dates, which are earlier in the Mediterranean and Near East than in the northern Palearctic: early March to June in Iraq (AL-RAWY & GEORGE, 1966); predominantly from March (55 % of clutches) to July in Extremadura (Spain) (de LOPE REBOLLO, 1983); from March in the Madrid region (more continental), with most clutches in May (PAVÓN & MEDINA, 2007-08); and in Algeria, first clutches occur between early April and mid-June (SAKRAOUI *et al.*, 2005). Laying dates recorded in Corsica fall within this Mediterranean timeframe.

Number of clutches

In Algeria (SAKRAOUI *et al.*, 2005) and Extremadura (de LOPE REBOLLO, 1983), most pairs produce two clutches, with some producing three locally in Extremadura (de LOPE REBOLLO, 1983). Mean values recorded in Corsica are similar to those in Algeria, with a slightly lower proportion of second clutches and a marginal occurrence of a third clutch.

Clutch size

No latitudinal cline is observed in the western Palearctic for either first (MØLLER, 1984) or second clutch sizes (SAKRAOUI *et al.*, 2005). Data from Corsica fall within the upper range of the Palearctic (HÉMERY *et al.* 1979) and are comparable to those from Spain (de LOPE REBOLLO, 1983, PAVÓN & MEDINA, 2007-08), Algeria (SAKRAOUI *et al.*, 2005), and Iraq (AL-RAWY & GEORGE, 1966).

House Martin

Breeding sites

No natural-site breeding has been recorded in Corsica (THIBAULT & BONACCORSI, 1999), although a few cases exist in Provence (IBORRA, 2009).

Phenology

In northern Mediterranean regions, such as Provence, first clutches occur in early May, with most laid by the end of the month; second clutches are completed by the end of July (IBORRA, 2009). In Extremadura, return to breeding sites begins in early February, with a few early clutches, but most laying occurs from the first week of March to the end of May (PAJUELO *et al.* 1992). In northeastern Algeria (at a similar latitude to Extremadura), egg-laying occurs from 6 April to 5 July, with mean first-brood laying dates in early May (HAMLAOUI *et al.*, 2016; KHALED *et al.*, 2021, LAHLAH *et al.*, 2006). In Corsica, the mean date of first clutches is 15 May, with 79 % laid during that month, approximately one to two weeks later than in Algeria and later still than in Extremadura, but earlier than in central and northern Europe, where laying begins in May–June (HAMLAOUI *et al.*, 2016).

Number of clutches

In Extremadura, over half of pairs produce a second clutch (57 %, 358 nests), and only 6 % a third clutch (PAJUELO *et al.*, 1992). In Algeria, less than half of breeding pairs produce second broods (LAHLAH *et al.*, 2006). In Corsica, the proportion of first and second clutches is comparable to Extremadura, with third clutches marginal.

Clutch size

Mean clutch size is 4.1 eggs in Extremadura (PAJUELO *et al.*, 1992), 3.64–4.19 eggs in northeastern Algeria (HAMLAOUI *et al.*, 2016), and 3.94 eggs in Corsica. Mean first-clutch size in Algeria (4.71 eggs) does not vary significantly among years or localities (LAHLAH *et al.* 2006) ; in Corsica, it is 4.33 eggs, within the range of central European populations (4.2–4.7 eggs) (LAHLAH *et al.*, 2006; HAMLAOUI *et al.*, 2016). Clutch size varies more with year and locality, even among relatively close sites, than with latitude.

Red-rumped Swallow

Breeding sites

All active nests studied during the period 2023-2025 in Corsica were on anthropogenic structures. The only natural-site nesting was recorded in the early 2000s in a granite boulder field near the sea (Propriano : Cécile Jolin, pers. comm.). The number of active nests under bridges and in abandoned, isolated buildings, although declining, still exceeded that in urban areas (houses in villages and residential areas). Nesting in corrugated metal pipes, known from other regions, was also observed in Corsica, but prior to the study period.

In France, the species is absent from natural sites in Provence, where it nests on human-made structures (bridges, small farm buildings, etc.) (HUIN & DURANT, 2009), although a small population in Minervois (Hérault) breeds in caves (RUFRAY *et al.*, 2002). In Spain, whereas 56 % of nests were in rocks five decades ago, almost 100 % are now on anthropogenic substrates (bridges, culverts, abandoned buildings), potentially facilitating the species' range expansion (de LOPE REBOLLO, 1980; TELLA *et al.*, 2024). In Languedoc and Provence, Red-rumped Swallow sometimes nests alongside other swallow species, with nests of multiple species closely adjacent. In Corsica, at one site (Toccone), three species (Rock Martin, Barn Swallow, and Red-rumped Swallow) nested sequentially in the same hamlet, but not during the same year; at another site (pumping station), Barn Swallows were absent during the study period, and Red-rumped Swallows occupied their nests, modifying them (raising the structure and installing a tunnel). In the Var region (Provence), HUIN & DURAND (2009) reported 10–13 pairs over 290 ha, a density close to the maximum observed in Corsica.

Phenology

Breeding phenology closely matches that in Extremadura (de LOPE REBOLLO, 1980), with laying spread

across spring and summer, and relatively high proportions of clutches in May, June, and July (>20–25 % each month).

Fecundity

The proportion of second clutches is lower in Corsica (see Table 11) than in Extremadura [first clutches, n = 65; second clutches, n = 56 (86.2 %), third clutches, n = 14 (21.5 %) (de LOPE REBOLLO, 1980, 1981)]. Similarly, mean clutch and brood sizes are significantly higher in Extremadura (see Table 12). However, these data dated from the 1970s, a period of substantial population and range expansion in the Iberian Peninsula, which may have been accompanied by higher fecundity. Contemporary data would be important to validate the comparison.

Table 12. Comparison of mean clutch and brood sizes of Red-rumped Swallow between Extremadura and Corsica.
Tableau 12. Comparaison des grandeurs moyennes de pontes et de nichées de l'Hirondelle rousseline en Estrémadure et en Corse.

	clutch size	nesting-size	references
Extremadura	x=4.30±0.92, n=135	X=3.30±1.58, n=135	de LOPE REBOLLO (1981)
Corsica	x=3.95±0.89, n=58	x=2.49±1.31, n=69	this work
tests	t=2.48, df=111, *p*=0.015	t=3.89, df=162, *p*=0.00015	

Do the species differ in their phenological response to Mediterranean aridity ?

During the breeding period of these three swallows, aridity indices calculated from meteorological data at the Île-Rousse station [Barn Swallow sites (2025) and Red-rumped Swallow sites (2023–2025)] were highest in July across the three years (see Table 1a), and in June, July, and August 2025 at Ponte Leccia (House Martin site) (see Table 1b). The reproductive characteristics of Barn Swallow and House Martin align well with those known from other Mediterranean populations, showing relatively early breeding that precedes the summer drought which begins in July. In contrast, Red-rumped Swallow continues breeding during the hottest and driest months, as observed elsewhere in the Mediterranean (TURNER & ROSE, 1989). Although this species appears to be the best-adapted of the three species to summer aridity, its distribution and population size in Corsica have remained largely unchanged for several decades, unlike the other two swallow species.

This different status may be explained by its relatively low fecundity compared to populations in the Iberian Peninsula, and by a certain degree of geographic isolation—i.e., distance from potential source populations that could sustain immigration (North Africa, Iberian Peninsula, Balkans, and Turkey: ISENMANN, 2023). Therefore, its presence in Corsica may be constrained both by biogeographical factors (limited immigration due to source isolation) and demographic factors (low fecundity).

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