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Breeding of White-fronted Swift *Cypseloides storeri* in Michoacán, Mexico

by Eric G. Horvath

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SUMMARY.—White-fronted Swift *Cypseloides storeri* is a poorly known species whose nest has not been described. Here I provide details of two nests, found in June 2022 near Tacámbaro, Michoacán, Mexico. The data from two breeding sites, each at a waterfall with a single nest, indicate that the breeding season commences at the start of the rainy season. I inspected the contents of one nest which held a single nestling; this coincides with clutch information for other *Cypseloides*. Both nests were in the spray zone near vertically falling water and were protected from above by a rock roof. Photographs of adults at the nest show that the diagnostic facial marks are brighter than illustrated in field identification guides.

White-fronted Swift *Cypseloides storeri* is one of the least known Neotropical swifts, having been described as a new species in the early 1990s from four skins taken in the mountains of south-west Mexico (Navarro *et al.* 1992). The holotype was collected in the Sierra de Atoyac, Guerrero, whilst the other three were taken near Salto Santa Paula, Tacámbaro, Michoacán. Since then, little has been learned about the species, with most published information on identification rather than its life history. Howell *et al.* (1997) discussed in-flight identification and Howell (1999) hypothesised that the species nests in May–July. Photographs of White-fronted Swifts in flight have been published (Sharpe *et al.* 2017) and can be seen on eBird. Sharpe *et al.* (2017) reviewed the meagre data on status and distribution.

Eight species of *Cypseloides* swifts are recognised. Of these, nests are known for six species, all sited at or near waterfalls (Areta *et al.* 2020). Hitherto no breeding data have been reported for *C. storeri*, which prompted me to search for the species' nest. Central and southern Mexico exhibits a well-defined rainy period in May–October (Hastenrath 1967). I searched during the rainy season, as that is when other tropical *Cypseloides* nest (Marín & Stiles 1992, Biancalana 2015, Areta *et al.* 2020). I chose to search in the vicinity of Tacámbaro, Michoacán, because Howell (1999) and Sharpe *et al.* (2017) recommended the area as the best place to look for *C. storeri*. Here, I report the first breeding information for the species, including a partial description of nest structure and placement, and timing of the breeding season.

Methods

I searched for nesting swifts at five potentially suitable sites with waterfalls within 15 km of Tacámbaro, Michoacán, on 27 June–1 July 2022. I looked during daytime by carefully scanning for nests on cliffs near and behind waterfalls using binoculars and a telescope. At each waterfall I attempted to thoroughly scan all possible nest sites, which required viewing from several vantage points. Nests were photographed using an iPhone attached to the telescope's eyepiece. Estimates of distance near inaccessible nests were made by using known wing length of adult swifts (mean wing chord 136.6 mm; Navarro *et al.* 1992) as a gauge in photographs. At all sites, I observed from a distance to avoid disturbing

adults on the nest. In one case, I climbed to a nest to inspect its contents when the adult was away from the nest.

Results

At two of the potential sites I photographed nesting adult White-fronted Swifts (Figs. 1–5).

Site 1. Salto Santa Paula, Tacámbaro (elevation 1,720 m; 19°23'N, 101°46'W). This site is a large waterfall with two tiers. Trees and shrubs are present, but these do not cover the waterfall. The upper tier is a non-vertical (80°) cascade apparently lacking suitable nest sites, whilst the lower tier has a c.25 m vertical drop of water with multiple protected niches nearby. On 27 June 2022 one White-fronted Swift nest was found halfway down the lower tier (Fig. 1). The nest was c.1 m from the main flow of falling water, in a dry area surrounded by wet, algae-coated vertical rock. It was sited on a small horizontal ledge under a large rock roof, c.8 cm from the nest rim to the rock roof. Vegetation partially obscured my view of the nest from some places and vertically falling water obstructed it from others. Two adults were present. The nest was inaccessible and I could not see into it. At dusk (20.00 h) on 28 June 2022, two adult White-fronted Swifts were present, one sitting in the nest and the other perched vertically 0.3 m away (Fig. 2). On 1 July, at 09.00 h, I observed two adults roosting side by side at the nest (Fig. 3). White-naped Swifts *Streptoprocne semicollaris* were also observed at this site. On 28 June 2022 at dusk, two adult *S. semicollaris* were roosting together on the upper tier, and two adults were roosting separately on a vertical wet rock wall at the base of the spray zone on the lower tier. None of the *S. semicollaris* was at a nest.

Site 2. Salto de Agua, Yoricostio, 12 km north of Tacámbaro (2,220 m; 19°31'N, 101°40'W). The site is under a closed canopy of pines and oaks, with a single c.20 m waterfall, starting as an angled cascade and ending in a vertical drop, with multiple observation points. On 30 June 2022 I surveyed the entire site thoroughly. One nest of White-fronted Swift (Figs. 4–6) was discovered 2.7 m above the plunge pool in the spray zone 0.5 m from the main flow of falling water. The nest was in a crevice and protected by a rock roof 7 cm above the nest. It was not hidden by vegetation but was obscured by a curtain of vertically falling water. The nest was a shallow cup, c.8 cm across the rim, c.2 cm interior depth, principally comprised of wet moss but also brown pine needles. An adult was present at the nest continuously from 13.30 h to 15.40 h when it flew off. I then inspected the nest contents; it contained a single small chick, recently hatched, which I estimated to be two days old. One nest of *Streptoprocne semicollaris* was also discovered and photographed. It contained a single nestling that was half adult size. Two adults were in attendance, identified by their plumage. The White-naped Swift nest comprised green moss and brown pine needles, and was on a ledge on vertical rock 5 m above the plunge pool, under a small rock overhang 2 m from the main flow of falling water (Fig. 6).

At three of the potential sites, I did not find White-fronted Swift nests, but I was unable to search these areas thoroughly, so no conclusion can be drawn regarding breeding at these locations.

Site 3. Arco de Pedernales, 6.5 km south of Tacámbaro (1,300 m; 19°17'N, 101°48'W). Here a 25 m waterfall has carved an incised canyon lined by cliffs. On 29 June 2022 I surveyed for White-fronted Swift nests but found none. However, I was unable to view all the available potential nest ledges. I found six active nests of White-naped Swifts, two of which contained nestlings one-third of adult size, but the contents of the other four could not be seen. At 19.00 h I observed a flock of swifts foraging on winged termite alates at treetop level above the canyon: 20 White-naped Swifts and three White-fronted Swifts were identified. The white facial markings of the latter were clearly evident.



Figure 1. Salto Santa Paula, Tacámbaro, Michoacán, Mexico, June 2022; nest of White-fronted Swift *Cypseloides storeri* circled (Eric G. Horvath)

Figure 2. Adult White-fronted Swifts *Cypseloides storeri* at nest, Salto Santa Paula, Tacámbaro, Michoacán, Mexico, June 2022 (Eric G. Horvath)

Figure 3. Adult White-fronted Swifts *Cypseloides storeri* roosting near nest, Salto Santa Paula, Tacámbaro, Michoacán, Mexico, July 2022 (Eric G. Horvath)

Figure 4. Adult White-fronted Swift *Cypseloides storeri* on nest, Salto de Agua, Yoricoztio, Michoacán, Mexico, June 2022 (Eric G. Horvath)

Site 4. Arroyo Frio, 6.5 km south of Tacámbaro (1,100 m; 19°16'N, 101°46'W). This site is an artesian spring with waterfalls emanating from a basalt cliff. I scanned for three hours during mid-afternoon on 28 June 2022 but observed no swifts. The available vantage points did not permit me to search the entire area of potential habitat and the dense vegetation



Figure 5. Adult White-fronted Swift *Cypseloides storeri* brooding small nestling in nest, Salto de Agua, Yoricostio, Michoacán, Mexico, June 2022 (Eric G. Horvath)



Figure 6. Salto de Agua, Yoricostio, Michoacán, Mexico, June 2022; left circle shows location of White-naped Swift *Streptoprocne semicollaris* nest, right circle shows location of White-fronted Swift *Cypseloides storeri* nest (Eric G. Horvath)

obscured many possible nest sites that I could not evaluate, but an evening watch might reveal swifts.

Site 5. Cascada de Santa Rosa, 3 km south-east of Tacámbaro (1,400 m; 19°21'N, 101°43'W). The site contains potentially suitable waterfalls, but my 30 June 2022 search was incomplete, and only unidentified swifts were seen in flight.

Discussion

White-fronted Swifts share many of the nest site characteristics and phenology documented for other *Cypseloides*. The single nestling I observed coincides with the known clutch size of one in other *Cypseloides* (Marín & Stiles 1992, Biancalana 2015, Areta *et al.* 2020). The nest was constructed principally of moss. Both nests I found were on ledges of vertical rock walls at waterfalls as is typical of *Cypseloides*. They were in the spray zone of the waterfall and the spray partially obscured the nests from view. Both nests were shielded from above by a rock roof, providing protection from falling water. The breeding period is linked to the start of the rainy season in the region, as is true for other tropical *Cypseloides* (Marín & Stiles 1992, Biancalana 2015, Areta *et al.* 2020).

Identifying White-fronted Swift in flight remains a significant difficulty. Navarro *et al.* (1992) described the salient features as extensive white on the forehead, lores, chin and post-ocular spot in White-fronted Swift vs. its sibling species White-chinned Swift *C. cryptus*, which is largely dark-faced but has a tiny amount of white on the chin (see photos of nesting adults in Panama in Horvath & Bennett 2016). Photos of adult White-fronted Swifts on the nest (Figs. 2–5) illustrate the diagnostic field marks:

(1) white frosting from lores extending across forehead; this is the most prominent field mark and is seen most readily in photos of flying swifts;

(2) white post-ocular spot, which is absent in White-chinned Swift but present in White-fronted Swift and is visible in good photos of flying swifts; it is distinct but not as evident as in Spot-fronted Swift *C. cherriei* (see photographs in Collins 1980, Horvath & Bennett 2016, Muñoz *et al.* 2023);

(3) the chin is extensively white in White-fronted Swift with some white feather edges extending onto the upper throat, whereas White-chinned Swift typically shows only a tiny white spot immediately under the bill. The white chin is hard to see and photograph in the field, and typically requires an eye-level view as the chin colour is often 'lost' in many flight photos of swifts flying overhead due to a lack of contrast.

This study is the first to provide photographs of adults (Figs. 2–5) at the nest. These show that the diagnostic field marks of white forehead, post-ocular spot, and extensive white chin are bright and prominent, unlike the dull markings illustrated in the available guides (Chantler & Driessens 1995, Howell & Webb 1995, van Perlo 2006). This error may derive from the low-contrast photographs of the museum specimens in Navarro *et al.* (1992), which show dull markings. Howell (2004) also described the face markings as 'more striking in life than suggested from specimens'. Understanding that the field marks are conspicuous and well demarcated should assist accurate field identification in the future.

We currently lack sufficient documented records to determine the species' range and seasonality, thus more observations documented with diagnostic photos are a research priority.

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