

The First Record of Cave Swallow (*Petrochelidon fulva*) in British Columbia.

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Introduction and Distribution

The Cave Swallow (*Petrochelidon fulva*) is a locally common species that breeds in southeastern New Mexico, Texas, Florida, the Greater Antilles, and portions of Mexico (Turner and Rose 1989, Strickler and West 2011). This species breeding distribution is patchy throughout its range (Strickler and West 2011). There are 6 subspecies of the Cave Swallow (Gosselin 2000, Clements *et al.* 2017). The Cave Swallows found in Northern Arizona to New Mexico, southern Texas and in Tamaulipas in northeast Mexico are of the subspecies (*Petrochelidon fulva pallida*) (Gosselin 2000, Clements *et al.* 2017). In southern Mexico, it is found from northern Yucatán Peninsula and interior valley of Chiapas (*Petrochelidon fulva citata*) (Clements *et al.* 2017). The Cave Swallows found in the Caribbean have many subspecies (Clements *et al.* 2017). The subspecies found in Puerto Rico (*Petrochelidon fulva puertoricensis*) (Clements *et al.* 2017). The subspecies found in Cuba and Isle of Pines (*Petrochelidon fulva cavicola*) (Clements *et al.* 2017). The subspecies found in Jamaica (*Petrochelidon fulva poeciloma*) (Clements *et al.* 2017). The subspecies found in Hispaniola and Gonâve Island is the nominate (*Petrochelidon fulva fulva*) (Clements *et al.* 2017).

The Cave Swallow nests in southeastern New Mexico and western Texas through the Edwards Plateau, locally to coastal Texas, with concentrations from Austin (Arnold 2001). In Mexico, this species is recorded breeding in states of Chihuahua, Coahuila, San Luis Potosí, Chiapas, Yucatán, and Quintana Roo (Howell and Webb 2010). The Cave Swallow also breeds in south Florida in southeastern Miami-Dade County only (Florida Fish and Wildlife Conservation Commission 2003). The Cave Swallow also breeds in the Greater Antilles and is common on Puerto Rico (Raffaele *et al.* 1998), on Hispaniola where it is found island-wide, from sea level to 1640 m (Latta *et al.* 2006), and on Cuba where the species is found island-wide, and on Isle of Pines (Garrido and Kirkconnell 2000).

Although most populations are resident, birds found breeding in the United States generally move south for the winter (Strickler and West 2011). The Cave Swallow nests and roosts primarily in caves, which it often shares with bats, although breeding colonies also form in sinkholes and under bridges, culverts, or other similar structures (Strickler and West 2011). In Mexico, several small colonies are known to breed in ancient Mayan wells and ruins (Strickler and West 2011). Since the mid-1980s, the Cave Swallow has undergone a dramatic range expansion north into Texas, and has locally colonized south Florida (Strickler and West 2011). In each of these cases, invasion of new territory has been facilitated by the adoption of bridges

and culverts for nesting, with new colonies often springing up along highways (Strickler and West 2011).

Nest structure is variable among populations, varying among populations, varying in shape from an open cup to a semi-enclosed bowl (Strickler and West 2011). Females are largely responsible for incubating eggs, although both parents share equally in feeding the nestlings (Strickler and West 2011). Birds at the northern edge of the range have at least two, and sometimes three, clutches each season (Strickler and West 2011). Although this species is potentially vulnerable to disturbance when nesting, particularly at night, its numbers are expanding in North America and key colonies appear to be stable (Strickler and West 2011). Pesticide contamination could be a problem for the Cave Swallow in some agricultural areas of the southwestern United States and Mexico, although farming does provide these birds with sources of water and insect foods (Strickler and West 2011).

In twentieth century, the Cave Swallow has expanded north into United States, first appearing in Florida as a vagrant in March 1890 (Scott 1890d) and first nesting there in 1987 (Smith *et al.* 1988c). The first records from Texas occurred in 1910 (Bishop 1910b), with nesting confirmed in 1914 (Thayer 1914c); the first record and first nesting colony from New Mexico was found in 1930 (Johnson 1960b). The Florida breeding population remains limited to Dade County, but is expected to expand northward (Robertson and Woolfenden 1992a). The Texas population, once largely restricted to the Edwards Plateau area of south-central Texas (Wolfe 1956), had reached Big Bend region by at least 1968 (Wauer and Davis 1972). Since that time, the species has moved into non-cave sites and has occupied many bridges and culverts as far as El Paso County in extreme western Texas (Lockwood *et al.* 1990, Lasley and Sexton 1992b). This expansion may have been facilitated by the presence of Barn Swallows nesting at bridges and culverts (Kosciuch *et al.* 2006a). Elsewhere in Texas, the Cave Swallow has followed highway bridges down through southern Texas to areas 240–320 km from the Edwards Plateau, and eastward to the Louisiana-Texas border (Purrington 1999). The Cave Swallow is now widespread along Interstates 10 and 20 in west Texas, and as far north as the Concho Valley area west of San Angelo (Palmer 1988a, Lasley and Sexton 1991c, Arnold 2001).

The New Mexico population is largely restricted to the Guadalupe Mountains of Eddy County and the surrounding lowlands (West 1988). Sightings in September 1992 in Doña Ana County north of El Paso, Texas, probably indicate a natural range expansion into that area. Birds at this site were first noted nesting in 1993 (Williams 1993c). One or 2 individuals summered at a Cliff Swallow (*Petrochelidon pyrrhonota*) colony in Tucson, Arizona, for several years, between 1979–1987, with a pair nesting in 1983; a Cave Swallow x Cliff Swallow pair in 1985 was unsuccessful (Strickler and West 2011).

The migration movements of the Cave Swallow are not well understood. There is some seasonal movement in Caribbean birds and the Florida population leaves for the winter (Robertson and Woolfenden 1992a). The populations in Texas, New Mexico, and Cuban are largely migratory (Garrido *et al.* 1999, American Ornithologists' Union 1983). Since the mid-1980s, some Texas birds regularly winter in the southern half of the state (Lasley and Sexton 1991c). The timing of migrating Cave Swallows is not well known. The Carlsbad Caverns, New Mexico, population varies depending on local weather conditions which is true for other migratory populations (Strickler and West 2011). From 1970 through 1993, the arrival dates at Carlsbad Caverns were as early as January 21 and as late as March 8; with the mean arrival date February 13 (Strickler and West 2011). Departure dates from 1981–1992 ranged from October 28 to November 10 with the mean departure date November 5 (Strickler and West 2011). The Florida population typically departs by mid-September and arrives in January (McNair and Post 2001). The migration routes of the Cave Swallow are currently speculative. There are specimens from the migration period that were both identified as the subspecies (*P. f. pallida*) with one coming from Costa Rica on June 6, 1932 (Smith 1934a), and Curaçao October 6, 1952 (Voous 1983b). There are good sight records from Panama between the months of February and March which are unknown to the subspecies level (Ridgely and Tudor 1989). There are well documented sight records and specimens from two large roosts in El Salvador from October to December 1994 (Komar 1997), and from small flocks of the subspecies (*P. f. pallida*) apparently wintering on the coast of Georgia and South Carolina in December 2004 and from November-February 2006 (Post 2008a).

After nesting and prior to departure, Cave Swallows spend more and more time each day away from the nesting area (Baker 1962a, West 1988). They range widely over the area, with dispersal to other active colonies (West 1991). Near Carlsbad Caverns in New Mexico, birds roost in sorghum fields (*Sorghum vulgare*) in August and early September (West 2006). Most hatch-year birds depart first. Banding studies at Carlsbad Caverns have re-trapped birds from other sites in southeastern New Mexico as far as 30 km away, and from a site in West Texas 240 km to the south–southeast (Strickler and West 2011).

Two communal large winter roosts have been observed in El Salvador, near the coast (Komar 1997); similar behavior when entering winter roosts (Komar 1997) and breeding caves (Selander and Baker 1957). In winter, about 30 minutes prior to sunset, 5000-8000 birds feed in a loose group above agricultural fields (Strickler and West 2011). At sundown, the flock begins to tighten, flying in circles of decreasing size and increasing height over the fields; then birds break off into small groups and descend to roost in the crops (Strickler and West 2011). Cave Swallows have been observed in flocks above fields of sorghum and sugar cane (*Saccharum*

officianarium), and have also been observed sleeping in sugar cane fields (Strickler and West 2011). Winter roost sites likely change, as fields are harvested over the winter (Strickler and West 2011). Birds are noisy up to dusk, but silent when entering the roost, perhaps to discourage predators (Strickler and West 2011).

Most Mexican and Caribbean populations stay near breeding areas year-round (Am. Ornithol. Union 1998). The Florida populations may winter in the Caribbean; Cuba population is largely migratory but the winter range is unknown (Strickler and West 2011). Northern populations retreat south, but wintering localities are not well known (Strickler and West 2011). The Texas populations were also assumed to move south in the winter, but since the mid-1980s hundreds of Cave Swallows have regularly overwintered in southern Texas (Lasley and Sexton 1991c). Some Cave Swallows of the subspecies (*P. f. pallida*) winter in coastal El Salvador (Komar 1997); others apparently winter along the Atlantic coast of South Carolina and Georgia (Post 2008). The New Mexico populations generally disappear in the winter (West 1988). There is 1 band recovery from San Patricio, Jalisco, Mexico (West 2006), and 1 specimen from Bullenbaai, Curaçao, on October 6, 1952 (Voous 1983b). There are sight records of migrants in Panama (Ridgely and Gwynne 1989) which are likely from this population and are subspecies (*P. f. pallida*).

First noticed by the birding community in the 1990s, Cave Swallows have since staged late fall movements into the northeastern United States, usually peaking from late October through mid-November (Strickler and West 2011). These movements are often associated with fast-moving low pressure systems tracking southwest to northeast, and can 'displace' dozens to hundreds of birds (Strickler and West 2011). Most birds involved are juveniles in their first fall (Strickler and West 2011). Cave Swallows are expanding in both numbers and range across the Southwest, and this expansion likely has something to do with the large number of wandering fall juveniles swept into the Great Lakes Region and the Northeast by these weather systems (Strickler and West 2011).

The peak of extralimital occurrences are in the spring (Mar-May) and in the late autumn (November-December) (McNair and Post 2001). There are regular sightings in northeastern North America during late autumn and may be related to weather patterns (Sullivan and Wood 2005a). The subspecies (*P. f. fulva*) is most often reported along Gulf and Atlantic coasts in the spring migration period (Strickler and West 2011). While the subspecies (*P. f. pallida*) is most often found in the interior year-round and on the Atlantic coast in the fall migration period (McNair and Post 2001). The first of several Nova Scotia records goes back to 1968, but most extra-limital records have been more recent, perhaps reflecting the expanding population and range, perhaps simply more efficient coverage by birders. A large Incursion in 1999 included

records of up to 46 Cave Swallows at once from Michigan east to Quebec and Rhode Island, and south to North Carolina (McNair and Post 2001). A few Cave Swallows have been observed over the same range in most years in late fall with at least 1000 birds recorded in 2004 and 2005 (Sullivan and Wood 2005a, Spahn and Tetlow 2006).

Vagrants have been widely reported from far ranging areas, including Arizona (McNair and Post 2001), Alabama (Imhof 1987b), Bermuda (Wingate 1993), Florida (Pranty 1999b), Georgia (Johnson 2005), Kansas (Patti and Shane 2001), Indiana (Dinsmore and Farnsworth 2006), Louisiana (Imhof 1988), Maryland (McNair and Post 2001), Michigan (McNair and Post 2001), Mississippi (Toups and Jackson 1987), Missouri (Dinsmore and Farnsworth 2006, Easterla 2008), Nebraska (Brown and Brown 1992b), New Jersey (Boyle *et al.* 1990), New York (Boyle *et al.* 1990), N. Carolina (Legrand 1992), Nova Scotia (American Ornithologists' Union 1983), Oklahoma (Grzybowski and Fazio, 2004), Ontario (Weir 1989b), Pennsylvania (Snell 2002), South Carolina (McNair and Post 1999), Virginia (Floyd 2005), Barbados (Norton 1991), Cayman Islands (Bradley 1985b), St. Lucia (Norton 1991), Virgin Islands (American Ornithologists' Union 1983), and Curaçao (Voous 1983b). Most of these records are based on sight records; specimens collected from Alabama (Imhof 1987b), Mississippi (Toups and Jackson 1987), Nova Scotia (American Ornithologists' Union 1983), Ontario (Dinsmore and Farnsworth 2006), and South Carolina (McNair and Post 1999), and diagnostic photos from several other areas.

Along the west coast of North America, the Cave Swallow is an accidental vagrant migrant. There are 11 accepted records for California by the California Bird Records Committee (Hamilton *et al.* 2007, Tietz and McCaskie 2017). There are no records for Oregon (OFO 2016) or for Washington State (Wahl *et al.* 2005, WBRC 2017). In British Columbia, the Cave Swallow is an accidental vagrant migrant with a recent single well photographed record (Levesque *et al.* 2015).

Identification and Similar Species

The identification of the Cave Swallow is covered in all standard North American field guides. This is a medium-sized swallow species (Sibley 2000, Dunn and Alderfer 2011). The Cave Swallow measures 14 cm in length, with a wingspan of 33 cm, and weighs 15 grams (Sibley 2000, Dunn and Alderfer 2011). Males and females are similar in size and weight and not safely separated by plumage (Strickler and West 2011). The largest subspecies occurs in the southwestern United States and adjacent Mexico (*P. f. pallida*) (Clements *et al.* 2016). Smaller birds are found in the Caribbean (*P. f. puertoricensis*, *P. f. cavicola*, *P. f. poeciloma*) and s. Mexico (*P. f. citata*) (Garrido *et al.* 1999). In the context of British Columbia, it is important to rule out any potential Cave Swallow from the commonly occurring Cliff Swallow which breeds all over the province (Campbell *et al.* 1997).

Adult Cave Swallows have a dark cap with a cinnamon forehead patch that is more extensive than the similar Cliff Swallow (Sibley 2000, Dunn and Alderfer 2011). There is a dark line from the cap that extends through the dark brown eyes (Ridgway 1904, Oberholser 1974) to the small dark bill (Sibley 2000). The throat is buffy and extends up onto the auriculars and the nape, setting apart the dark cap (Dunn and Alderfer 2011). The back and tail are dark, with white streaks across upper back (Strickler and West 2011). The crown is the same color, back with a tinge of blue (Dunn and Alderfer 2011). The rump averages a richer cinnamon colour (Sibley 2000, Dunn and Alderfer 2011). The underparts are mostly dull white, as are the sides and flanks which are washed with a grayish- buff in the subspecies (*P. f. pallida*) or a tawny-buff in the subspecies (*P. f. fulva*) (Strickler and West 2011). The legs and feet are horn colour to a dull light-brown (Ridgway 1904, Oberholser 1974c).

Juvenile plumage is held from June through to December (Sibley 2000). Birds in this plumage are much paler overall to adults (Sibley 2000, Dunn and Alderfer 2011). The cinnamon forehead patch is reduced, the chin is whitish, the upper throat and nape pale-buff (Dunn and Alderfer 2011). The feather edges on the wings are lightly edged in buff (Dunn and Alderfer 2011). The rump is like adult bird (Sibley 2000, Dunn and Alderfer 2011). The legs and feet are usually a light pinkish colour (Strickler and West 2011).

The Cave Swallow is very similar looking to Cliff Swallow, but the Cave Swallow has a pale throat vs. a dark in Cliff Swallow, and usually has more strongly colored sides and flanks and often (especially in Caribbean populations) richer rufous-buff rump (Strickler and West 2011). At a distance, Cliff Swallow appears to have an all-dark head, whereas Cave Swallow appears to have a small black cap set off by a broad pale collar and pale face (Strickler and West 2011). Juveniles of both species have variable amounts and patterns of white feathers on forehead and throat; the head pattern is overall less distinct than in adults and can make identification of species difficult (Strickler and West 2011). Juvenile Cliff frequently has pale buff throat through early fall, so beware confusion with Cave at that time of year (Strickler and West 2011).

The voice of the Cave Swallow is similar to that of Cliff Swallow, although calls are seemingly higher in frequency and given more frequently (Strickler and West 2011).

Occurrence and Documentation

The Cave Swallow is an accidental vagrant migrant in British Columbia with a single record of an immature found by Jamie Fenneman, Paul Levesque, and Jeremiah Kennedy at Iona Island Regional Park, Richmond from November 11-15 & 18, 2012 (Levesque *et al.* 2015). The bird was subsequently seen and photographed by many observers from all over British Columbia and

beyond. The Cave Swallow was found feeding over the Outer Pond at Iona Island Regional Park with 3 Barn Swallows (*Hirundo rustica*) (Levesque *et al.* 2015) and was later joined by a Cliff Swallow (P. Levesque Pers. Comm.). This record is consistent with vagrancy records from eastern Canada and the eastern United States where Cave Swallows have mostly occurred from late October through mid-November (Strickler and West 2011). In California, the 11 accepted records have come from all seasons with 3 May records, 1 August record, 1 November record and 5 winter records that span from January 25 through late March and a single bird that wintered until April 6 (Hamilton *et al.* 2007, Tietz and McCaskie 2017). The population of Cave Swallows is rapidly expanding northward in Texas which is likely the progenitor of vagrancy records throughout North America since other populations are stable and not growing (Strickler and West 2011). With further scrutiny given to late swallow flocks from October into December and spring flocks from March to late May, it is possible that there will be future records of Cave Swallow in British Columbia.



Figures 1 & 2: Record #1: Cave Swallow immature at Iona Island Regional Park, Richmond on November 11, 2012. Photos © Peter Candido.



Figure 3: Record #1: Cave Swallow immature at Iona Island Regional Park, Richmond on November 11, 2012. Photo © Peter Candido.

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