

Summer Observations of Pacific Wrens Likely Breeding in Colorado

Mike Britten, Jeff Connor, and Kurt Fristrup

On 20 June 2015, while participating in the Rocky Mountain National Park (RMNP) “summer solstice bird count,” we (Mike and Jeff) heard a “stub-tailed wren” singing continually near Calypso Cascades in Wild Basin, Boulder County. The song had a ventriloquial quality amid the roar of the Calypso Cascades. We were not able to see the bird well even though we searched for it from 6:30 to 7:00 A.M. MDT. We caught brief glimpses of the bird moving mouse-like among the moss-covered boulders and downed trees in old-growth, mixed-conifer habitat. We saw it fly once (to a new singing perch); it was immediately followed by a second small dark bird that likely was a second stub-tailed wren.

While neither of us had experience identifying Pacific Wrens (*Troglodytes pacificus*), we both thought it was likely a Pacific Wren because the song was very high pitched, buzzy, and long (5–8 seconds) and sounded similar to Pacific Wren recordings we had heard. We recorded the song using our smartphone video application and reported this in the count tally as a probable Pacific Wren.

Mike revisited the site on 23 June 2015 (5:22–7:30 A.M. MDT) and heard a wren singing constantly from arrival until 7:00 A.M. It sang once more at 7:15 A.M. During this visit, Mike saw the bird

several times and had a good look as it moved along a large moss-covered log. It was obviously a small and dark stub-tailed wren. Mike made several recordings of the song using the video capability of his camera (Canon PowerShot SX40HS). Mike revisited the site again on 28 June 2015; a



Fig. 1. Photograph of a Pacific Wren (*Troglodytes pacificus*) in Wild Basin in Rocky Mountain National Park, Boulder County, Colorado.

wren was singing when he arrived at 5:45 A.M. and sang steadily through 7:15 A.M., when he left. Mike finally got very good looks, took several photos, and made additional audio/video recordings.

Overall, the bird was dark rufous brown with darker (almost black) barring, especially underneath and toward the tail (Fig. 1). The wings were barred dark brown (almost black) and rufous buff color with the buffy barring lightest on the outer primaries. The tail was short and barred dark brown (almost black) and buffy. It had a single row of small white flecks just above the wings. The throat was not distinctly paler than the rest of the underparts. The bird had a distinct buffy supercilium. The bill was relatively straight, short, and brownish (darker above than below). The eye was dark. The legs appeared long for the size of the bird and were flesh colored.

Kurt converted the audio files into sonograms (Figs. 2 and 3). We shared the video files, photographs, and sonograms with Dr. David Toews, lead author of the Birds of North America (BNA) species account for Pacific Wren (Toews and Irwin 2012) and with Dr. Sallie Hejl and Jennifer Holmes, two of three coauthors of the BNA species account for the Winter Wren (Hejl et al. 2002). All agreed this documentation is consistent with identification of the Colorado bird as a Pacific Wren.

Kurt performed a cursory quantitative analysis of some Winter and Pacific Wren songs downloaded from xeno-canto.org to confirm the expert identifications of the Calypso Cascades wren songs. Measurements of the median and lower and upper quartile frequency values

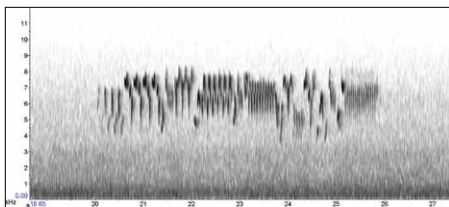


Fig. 2. Sonogram of a Pacific Wren (*Trogodytes pacificus*) song in June 2015 in Wild Basin, Rocky Mountain National Park, Colorado.

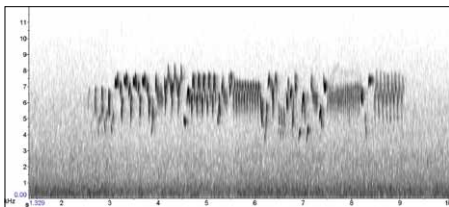


Fig. 3. Sonogram of a Pacific Wren (*Trogodytes pacificus*) song in June 2015 in Wild Basin, Rocky Mountain National Park, Colorado.

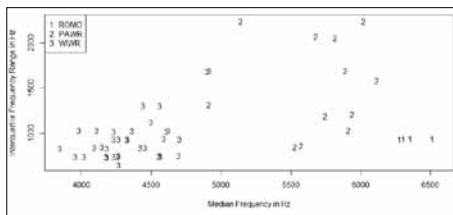


Fig. 4. Comparison of the median frequencies and frequency ranges of Winter Wrens (*Trogodytes hiemalis*), Pacific Wrens (*T. pacificus*), and the June 2015 Rocky Mountain National Park "stub-tailed wren."

were extracted from 34 Winter Wren songs, 12 Pacific Wren songs, and four songs from Calypso Cascades using Raven software (Charif et al. 2004). Fig. 4 illustrates the unusually high median frequency of the Calypso Cascades wrens, which is coupled with a relatively low interquartile bandwidth.

Because this bird was present and singing vigorously on three separate mornings in the latter half of June, and because we saw two wrens the first time, we speculated that this was a breeding occurrence of Pacific Wrens in Colorado.

Taxonomic History and Occurrence of Winter Wren Subspecies

Until recently, Winter Wrens across the Holarctic were considered one species, *T. hiemalis*, with six distinct clades (Drovetski et al. 2004). Genetic analyses of wrens in an area of British Columbia (Toews and Irwin 2008), where breeding *T. h. hiemalis* and *T. h. pacificus* coexist, concluded that the two North American clades represent distinct taxa that have been separated for ~4 million years. The authors saw no genetic evidence of interbreeding in the study area and proposed that the two taxa, which are very similar in appearance, maintain genetic separation by singing distinctly different songs and called them “cryptic species.” Based on this work, the American Ornithologists’ Union split *Troglodytes* wrens into the Pacific Wren (*T. pacificus*) of western North America, Winter Wren (*T. hiemalis*) of eastern North America, and Northern Wren (*T. troglodytes*) of Eurasia (AOU 2010).

Leukering and Pieplow (2010) use the term “stub-tailed wren” to refer to unidentified *T. hiemalis* or *T. pacificus* wrens in Colorado and provide information on correctly identifying these taxa based on plumage and vocalizations. They comment that “A very small number (<5) have been noted singing in the mountains in summer, and we might look for some form to breed in the abundant suitable habitat there,” noting that *T. pacificus* had been recently reported breeding in Arizona.

Bailey and Niedrach (1965) reported ~37 total records of Winter Wren for Colorado, including three specimens (two September and one October specimen, no sub-specific identity given). They noted that both *T. pacificus* and *T. hiemalis* have been described and conclude that “the two subspecies probably migrate through or winter in eastern counties.” They considered the only four summer records (all in July) as “open to doubt” and likely to be misidentifications of House Wrens, possibly short-tailed birds of the year.

Andrews and Righter (1992) reported the Winter Wren as a “rare fall migrant and winter resident on eastern plains; most records are

near the edge of the foothills.” They noted there are 10 summer records from the mountains but that they are undocumented and provided no further information.

We accessed Colorado Bird Records Committee records for *T. pacificus* and *T. hiemalis* (<http://coloradobirdrecords.org/> July 2016). There were 23 reports; 14 were accepted by the Committee. Three reports were summer reports; one from Brainard Lake west of Ward (21 June 2000) and two from RMNP (one from Wild Basin [17–25

Table 1. eBird records of *Troglodytes pacificus*, *T. hiemalis*, and *T. pacificus/hiemalis* in June, July, and August in Colorado.

County	Identified as	Location	Date	#	Notes
Boulder	<i>T. pacificus</i>	Lower Wild Basin	7/9/2015	1	"Singing male."
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Ouzel Falls	7/7/2015	1	"...foraging and singing..."
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/3/2015	1	"Singing at Calypso Cascade"
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/10/2015	1	
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/12/2015	1	
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/3/2016	1	Singing
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/9/2016	1	Singing
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/10/2016	1	
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/12/2016	1	
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/17/2016	1	Singing
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/20/2016	1	Singing
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/22/2016	1	Singing
Boulder	<i>T. pacificus</i>	Rocky Mountain NP--Wild Basin area	7/24/2016	4	Singing bird and "...a female tending two fledglings."
Boulder	<i>T. pacificus/hiemalis</i>	Rocky Mountain NP--Ouzel Falls	7/2/2014	4	Singing bird with "...three baby wrens right next to it, hopping and creeping around on a large downed log."
Pitkin	<i>T. pacificus/hiemalis</i>	Snowmass	8/25/1987	1	Note: record from before <i>T. pacificus</i> recognized as a species.
Summit	<i>T. pacificus/hiemalis</i>	Lily Pad Lake trail	8/28/2012	1	
Boulder	<i>T. hiemalis</i>	Calypso Fall/Wild Basin	7/24/2001	1	"Single Wren singing it's heart out." Note: record from before <i>T. pacificus</i> recognized as a species.
Boulder	<i>T. hiemalis</i>	Rocky Mountain NP--Ouzel Falls	7/29/2001	1	Note: record from before <i>T. pacificus</i> recognized as a species.
Larimer	<i>T. hiemalis</i>	Rocky Mountain NP--Glacier Gorge/ Loch Vale	7/2/2012	1	"Singing."
Boulder	<i>T. hiemalis</i>	Rocky Mountain NP--Ouzel Falls	7/4/2014	1	"Heard singing at very close range."

July 2011] and one from along the trail to Black Lake [2 July 2012]). These three reports were accepted by the Committee as *T. hiemalis*.

We downloaded eBird observation records of *T. pacificus*, *T. pacificus/hiemalis*, and *T. hiemalis* for North America on 14 July 2016 (<http://ebird.org/ebird/explore>). On 24 March 2017 we downloaded subsequent 2016 *T. pacificus* observations for Colorado. Table 1 summarizes June, July, and August records for these taxa for Colorado. Seventeen of the 20 total observations are from the Wild Basin/Calypto Cascades area in RMNP. Two records include observations of an adult(s) with fledglings: the 2 July 2014 observation submitted by Bill Rowe, and the 24 July 2016 record submitted by Christian Nunes. Another noteworthy record is of a singing *T. hiemalis* in Glacier Gorge (also in RMNP) about 10 km north-northwest of Calypso Cascades reported by Kathy Mihm Dunning.

Table 2 summarizes June, July, and August eBird Pacific Wren observations in Colorado, Arizona, New Mexico, South Dakota, Utah, and Wyoming through July 2016. These records document breeding in Arizona (Oak Creek Canyon on the Mogollon Rim), South Dakota (Ward Draw in the Black Hills), and Utah (Wasatch Mountains).

Habitat and Locations for the Pacific Wren

The Wild Basin wren occurred along Cony Creek at Calypso Cascades at approximately 2,774 m elevation. The Creek flows down a

Table 2. eBird records of Pacific Wren (*Troglodytes pacificus*) in June, July, and August in Colorado, Arizona, New Mexico, South Dakota, Utah, and Wyoming. Records retrieved 14 July 2016.

State	# unique observations	Location(s)	Year(s)	Notes
CO	13	1 location – Wild Basin, Rocky Mountain NP	2015	These observations are all from July in the same area.
AZ	4	2 locations – Oak Creek Canyon and Woods Canyon Lake	2015	Breeding documented at Oak Creek Canyon.
NM	1	1 location – Santa Fe NF	2010	Two birds.
SD	9	4 locations – Ward Draw, Hell Canyon, Long Draw Rd., Pacific Wren Trail	2007–2015	Breeding documented at Ward Draw.
UT	21	11 locations – Big Cottonwood Canyon, Millcreek Canyon, City Creek Canyon, Lamb's Canyon, Bowman Fork Trail, Smith and Morehouse Res., Dry Canyon, SE of Wallsburg, Noblett's Creek Trail, Teasdale, Zion NP	1997–2015	Breeding documented at several sites.
WY	2	2 locations – Cascade Canyon and Two Ocean Lake, Grand Teton NP	2008, 2015	

steep north-facing slope, creating a loud roar (note the low frequency noise in the sonograms) even past peak runoff in July. As described earlier, the area is a jumble of moss-covered boulders and downed trees and the forest is old-growth, mixed-conifer. The area where we first heard the bird singing includes a small wetland with standing water.

In July 2015 Mike also hiked to Black Lake in RMNP, listening and looking without success for wrens in the area that Dunning reported a singing *T. hiemalis* on 2 July 2012. The habitat was also old-growth conifer forest on a north-facing slope with abundant boulders and downed trees, and with a small stream nearby. Elevation at this site is ~3,050 m. In 2011, the year before Dunning's report, a wind storm caused a massive blowdown, which left few standing trees.

Toews and Irwin (2012) describe *T. pacificus* use of old-growth forest structures, including snags, root masses, downed trees, and the bases of large standing trees for nesting, foraging, and roosting. They note that this association with old-growth forest is unique among North American wrens. They also say that breeding territories are primarily found along rivers and streams (at least in the Pacific coast range of *T. pacificus*). They give an elevation range of sea level to 3,788 m (in the Sierra Nevada Mountains, citing Small 1994). The Wild Basin habitat for Pacific Wrens matches the habitat described by Toews and Irwin well.

The Utah eBird reports are primarily from the Wasatch Range east of Salt Lake City (~six canyon locations). There is also a 1 June 1997 report from Teasdale, Utah, and a July report from Zion National Park. The South Dakota summer reports are from two or three locations in the Black Hills (Hell Canyon, Ward Draw, and a general location just east of Hell Canyon). Three of the Arizona observations, including a breeding observation, are from Oak Creek Canyon south of Flagstaff; the only other summer observation from Arizona is from Wood's Canyon Lake about 80 km southeast of Oak Creek Canyon. The two Wyoming summer observations are from Grand Teton National Park.

Conclusion

It seems likely, based on documentation of stub-tailed wrens over multiple years that includes observations of singing adults and fledglings, that *T. pacificus* breeds at Wild Basin in RMNP. It also seems possible, based on older records of Winter Wrens in summer in Colorado, that there is a small *T. pacificus* population in the Colorado Front Range and other ranges breeding in old-growth, mixed-conifer forest along mountain streams. It is possible that *T. pacificus* once oc-

cupied a broader range in the interior western United States during colder times and that the small scattered populations in the Front Range, Black Hills, Tetons, Wasatch Range, and Mogollon Rim are relict populations.

The National Audubon Society considers both Winter and Pacific Wrens as “climate threatened” species (National Audubon Society 2015). Interestingly, the climate suitability models in the Audubon Society report show slightly increasing climate suitability for Pacific Wren in summer and winter in the mountains of Colorado, Utah, and Wyoming from 2000 through 2080. Regardless of model predictions, breeding Pacific Wrens in Colorado may be threatened by rapid climate change and related factors (e.g., increased risk of wildfire in old-growth, mixed-conifer forests).

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Mike Britten, Ecologist, National Park Service Rocky Mountain Inventory and Monitoring Network, Fort Collins, CO

Jeff Connor, Biologist (retired), Rocky Mountain National Park, Estes Park, CO

Kurt Fristrup, Bioacoustical Scientist, National Park Service Natural Sounds and Night Skies Division, Fort Collins, CO