

## PLUMAGE AND SONGS OF A PUTATIVE HYBRID BETWEEN HERMIT AND TOWNSEND'S WARBLERS FOUND IN THE ALBERNI VALLEY, VANCOUVER ISLAND

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**Abstract** — We compared the songs of Townsend's and Hermit warblers with that of a putative hybrid. Only one of four different Townsend's Warbler song types recorded in the Alberni Valley closely matched the putative hybrid's song. This match was so close that differences could not be detected aurally by us, and sonograms were made of the closely matched songs for visual comparison. Playing back a recording of his own song to him brought an immediate reaction by the putative hybrid. Morphologically, the hybrid warbler appeared more similar to a Hermit Warbler in having only a faint yellow wash on the breast and limited flank streaking.

**Key Words:** *Dendroica occidentalis x Dendroica townsendi*, *Dendroica townsendi*, elements, Hermit x Townsend's Warbler, hybridization, kiloHertz, phrases, playback, song, syllables, Townsend's Warbler, Vancouver Island.

The breeding range of Townsend's Warbler (*Dendroica townsendi*) extends "from southern Alaska and southern Yukon south on the coast and islands to northwestern Washington and in the interior to central Oregon, northern Idaho, central-southern Montana, and northwestern Wyoming" (Godfrey 1986:473). By comparison the breeding range of the Hermit Warbler (*D. occidentalis*) is "mainly from southwestern Washington south to northwestern and central eastern California" (*loc. cit.*).

Townsend's and Hermit warblers are considered to be closely related and probably sibling species (Stein 1962; Harrison 1984; Bermingham *et al.* 1992). In those areas of Oregon and Washington where Townsend's and Hermit warblers are sympatric, hybridization is known to take place (Jewett 1944; Morrison and Hardy 1983; S. A. Rohwer unpublished data).

Although reportedly seen at "Burrard Inlet" on 25 April 1884 (Hardy 1947), the only record of Hermit Warbler listed by Godfrey (1986) was a sight record of a singing male at Lost Lake, in the Saanich area of Vancouver Island, on 15 May 1946 (Hardy 1947). An unconfirmed sighting in Thetis Lake Park in 1971 (Taylor 1994) appears to be the next record from Vancouver Island, but several more sightings were reported between 1971 and 1994 (*op. cit.*), of which Taylor considered two as confirmed on the basis of having been seen by more than one person. These recent sightings coincide with a period of apparent expansion of the breeding range in Washington, notably into northwestern parts of that state (Chappell and Ringer 1983).

One of the 1994 sightings considered confirmed by Taylor (1994) was a male that we discovered in the Alberni Valley of Vancouver Island on 18 May 1994. Its face appeared to be pure yellow without black markings. The bib looked all black. The underparts appeared greyish white to us, but others who confirmed the sighting in better light reported seeing a faint

yellow wash below the black bib (B. Gates, D. Marven, K. Taylor pers. comm.). The bird had faint grey streaks along its sides and flanks, suggesting a Hermit-like hybrid. We did not see the back, which tends to be grey in Hermit, green in Townsend's.

Because the nearest zone of intergradation between Hermit and Townsend's warblers is the eastern slope of the Olympic Mountains of Washington (Chappell and Ringer 1983), we corresponded with Sievert Rohwer, Curator of Birds, University of Washington, Burke Museum concerning the identification of this bird. Professor Rohwer (pers. comm.) considered our field notes to indicate that "it is more likely to have been a hybrid than a pure Hermit Warbler." Michael L. Morrison, who reviewed this record for the BCFO Bird Records Committee, also considered that it was more likely a hybrid than a pure Hermit Warbler (Davidson 1995).

Both the yellow wash below the black bib and the limited flank streaking observed on this bird are characteristic of Hermit x Townsend's Warbler hybrids (Morrison and Hardy 1983; Jackson *et al.* 1992), as illustrated in Scott (1987:365).

Bird vocalizations provide important features in species recognition additional to plumage characteristics (e.g. Stein 1962; Catchpole 1979; Spector 1992). Intraspecific variation in bird songs can be considerable (e.g. Borror 1961; Catchpole 1979), and includes more than one song type each in both Hermit and Townsend's warblers (Stein 1962; McNicholl 1980; Morrison and Hardy 1983; Spector 1992). It was the song of the putative hybrid Hermit x Townsend's that attracted our attention. Although the pattern, pitch and quality of the song were similar to Townsend's Warbler songs known to us, it was sufficiently different to arouse doubt about the identity of the singer. We were not able to see the warbler singing at the top of a Douglas Fir (*Pseudotsuga menziesii*) and almost concluded that we were hearing a variation of a song of Townsend's Warbler.

Fortunately, to be sure of our identification, we recorded the song and played it back to entice the warbler into view. Songs were recorded with a Sony D-10 Pro II DAT recorder and a Telinga DAT parabolic microphone Pro III. The warbler reacted immediately and afforded us a good view of its face and underparts. The putative hybrid Hermit x Townsend's Warbler sang a second song, also resembling one of the songs of Townsend's Warbler, when a neighbouring Townsend's Warbler approached the singing hybrid. Both birds switched to a song of a buzzy quality with similar patterns, close in pitch, but not matching the same sound exactly.

The development of bird vocalizations involves both genetics and learning (Catchpole 1979). Young birds learn their songs from their fathers and neighbouring male warblers of the same species, to which they add individual interpretation (Catchpole 1979). They are genetically predisposed to learn conspecific songs, rather than songs of other bird species.

In order to investigate the variability in Townsend's Warbler songs in that part of the Alberni Valley, we travelled along the logging roads accessible to us (McMillan Bloedel Logging Company roads), listening for Townsend's Warblers, recording their songs and playing recorded songs back to lure the singer into view to confirm its identity.

We recorded five songs from four male Townsend's Warblers. These songs were of four distinct types, one of which sounded exactly like the song most frequently sung by the putative hybrid Hermit x Townsend's Warbler. We heard and saw two different Townsend's Warblers sing this song; one was a full-plumaged bird, probably after-second year in age. The other had a female-like yellow throat characteristic of some second-year males (Jackson *et al.* 1992). The latter male had a narrow black band about a centimeter wide across the upper breast below its yellow throat.

In order to compare the songs of the putative hybrid with the sound-alike songs of these two Townsend's Warblers, we transferred the taped songs to an analogue tape and made sonograms on a MacIntosh Computer/Canary System (Figures 1-3). As the sonogram of Figure 3 was extended to help in its analysis, its time scale does not represent real time. Our analysis of the songs follows that proposed by Catchpole and Slater (1995:11). The song as shown in all three figures is composed of two different parts or phrases. The first phrase is composed of a unit of sound, a syllable, repeated two or more times. This syllable is composed of two parts or elements. The first element is a frequency-modulated whistle, ascending from approximately 6 kiloHertz (kHz) to approximately 7 kHz, then descending immediately to slightly above 4 kHz. The second element at approximately 4 kHz is a very short accented whistle. The second phrase is composed of a single sibilant sounding element sung at approximately 6 kHz. The song is approximately 1 1/2 seconds.

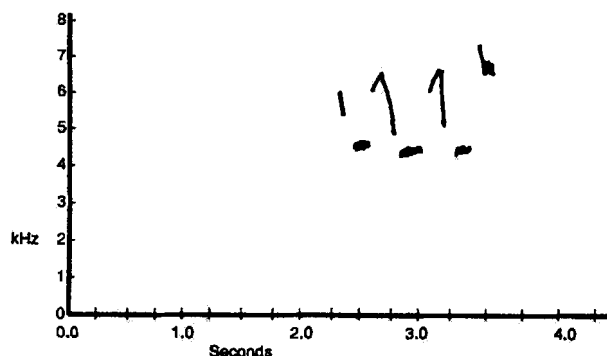


Figure 1. Sonogram of putative hybrid Hermit x Townsend's Warbler song, Toad Lake Logging Road, Alberni Valley. Vertical scale = frequency in kiloHertz; Horizontal scale = time in seconds.

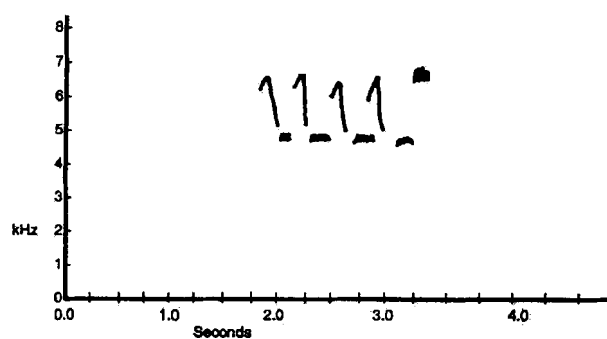


Figure 2. Sonogram of adult Townsend's Warbler song, Long Lake Logging Road, Dickson Lake, Alberni Valley. Vertical scale = frequency in kiloHertz; Horizontal scale = time in seconds.

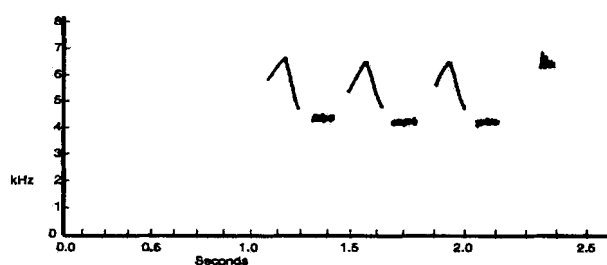


Figure 3. Sonogram of immature Townsend's Warbler song, Toad Lake Logging Road, Alberni Valley, approximately 5 km. south of location of putative hybrid Hermit x Townsend's Warbler. Vertical scale = frequency in kiloHertz; horizontal scale = time in seconds.

We compared the song sung most frequently by the putative hybrid with commercial productions of Townsend's and Hermit warblers (Borror and Gunn 1985; Budney and Kimball 1992). The putative hybrid's song did not match or resemble any of the Townsend's Warbler songs in these productions. However, we found a similar syllable, repeated two or more times, in the first phrase of a Hermit Warbler song shown in the sonogram of song 20D in Borror and Gunn (1985:23). The delivery of this syllable also sounds similar to the delivery of the syllable of the putative hybrid.

The other three types of songs recorded in the Alberni Valley are also sung in the Comox Valley and elsewhere in eastern Vancouver Island (McNicholl 1980). One of these also includes a frequency modulated whistle in the first phrase, a single element with a different delivery. One song appears to be composed of unmodulated whistles with light and heavy accents. The third song recorded fits the common field guide description of being all buzzy and wheezy. The first of these three matches closely song 19E in Borror and Gunn (1985:23). A variation of the putative hybrid's song in the Alberni Valley consisted of three phrases, of which the first matched our other recordings of its song, but the last two differed completely.

The resemblance of the putative hybrid's song in the Alberni Valley to one of the songs of Townsend's Warblers contrasts with the finding by Morrison and Hardy (1983), who found that songs of hybrids in Oregon were all like those of Hermit Warblers. However, since hybrids in Washington sing songs like those of Townsend's Warblers (S. A. Rohwer pers. comm. to M. K. McNicholl 11 July 1995), strays to Vancouver Island might also be expected to sing like Townsend's Warblers.

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#### LITERATURE CITED

- Bermingham, E., S. [A.] Rohwer, S. Freeman and C. Wood. 1992. Vicariance biogeography in the Pleistocene and speciation in North American wood warblers: a test of Mengel's hypothesis. *Proceedings of the National Academy of Science, U.S.A.* 89:6624-6628.
- Borror, D. J. 1961. Intraspecific variation in passerine bird songs. *Wilson Bulletin* 73:57-78.
- Borror, D. J. and W. W. H. Gunn. 1985. Songs of the warblers of North America. Cornell Laboratory of Ornithology, Ithaca, New York and Federation of Ontario Naturalists, Toronto.
- Budney, G. and D. Kimball (producers). 1992. Western bird songs. second edition. Cornell Laboratory of Ornithology, Ithaca, New York.
- Catchpole, C. K. 1979. Vocal communication in birds. Edward Arnold, London.
- Catchpole, C. K. and P. J. B. Slater. 1995. Bird song. Cambridge University Press, Cambridge.
- Chappell, C. B. and B. J. Ringer. 1983. Status of the Hermit Warbler in Washington. *Western Birds* 14:185-196.
- Davidson, G. S. 1995. B.C. Field Ornithologists Bird Records Committee report for 1994-1995. *British Columbia Birds* 5:20-22.
- Godfrey, W. E. 1986. The birds of Canada. Revised edition. National Museums of Canada, Ottawa.
- Hardy, G. A. 1947. Bird notes from Saanich, southern Vancouver Island, B.C. *Murrelet* 28:37-38.
- Harrison, H. H. 1984. Wood Warblers' World. Simon and Schuster, New York.
- Jackson, W. M., C. S. Wood and S. [A.] Rohwer. 1992. Age-specific plumage characters and annual molt schedules of Hermit and Townsend's warblers. *Condor* 94:490-501.
- Jewett, S. G. 1944. Hybridization of Hermit and Townsend warblers. *Condor* 46:23-24.
- McNicholl, M. K. 1980. Songs of MacGillivray's and Townsend's warblers in coastal British Columbia. *Western Birds* 11:157-159.
- Morrison, M. L. and J. W. Hardy. 1983. Hybridization between Hermit and Townsend's warblers. *Murrelet* 64:65-72.
- Scott, S. L. (Editor). 1987. Field guide to the birds of North America. National Geographic Society, Washington.
- Spector, D. A. 1992. Wood-warbler song systems/a review of Paruline singing behaviors. Chapter 6, pp. 199-238 in D. M. Power (Editor). Current ornithology. Volume 6. Plenum Press, New York.
- Stein, R. C. 1962. A comparative study of songs recorded from five closely related warblers. *Living Bird* 1:61-71.
- Taylor, K. 1994. A birders [sic] guide to Vancouver Island. Keith Taylor Birdfinding Guides, Victoria.