Pacific-slope Flycatcher
Empidonax difficilis
Order
PASSERIFORMES
– Family
TYRANNIDAE
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- Articles
- Multimedia
- References

Articles

Sounds

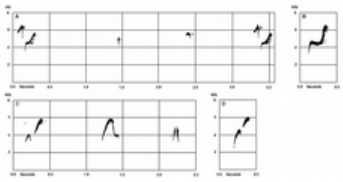

Figure 3. Vocalizations of Pacific-slope (A and B) and Cordilleran (C and D) flycatchers.

Vocalizations

Development

No information. Kroodsma (1984) showed that song in Alder (*E. alnorum*) and Willow (*E. traillii*) flycatchers is innate; this may be true also for other *Empidonax* flycatchers.

Vocal Array

Only males sing. Vocal inventory for Pacific-slope Flycatcher based on 477 h recording of 7 breeding pairs on Queen Charlotte Is., British Columbia; descriptions of notes and calls based mainly on same study (Ainsley 1992). Vocal array of Cordilleran Flycatcher presumed very similar.

Pacific-slope Flycatcher. Song. Figure 3A . Typical Advertising Song usually comprises 3 distinctive syllables repeated so that determination of the first syllable is difficult: *ps-SEET ptsick seet* ! (Davis et al. 1963), or . . . *TSEE-wee* . . . *pttuck* . . . *tseep* . . . (Whitney and Kaufman 1986). On sonograph, each of song's 3 syllables include 1–3 elements. Description of song by Davis et al. (1963) and Ainsley (1992) use syllable sequence given here; Johnson (1980) describes song sequence beginning with *seet* ! (listed here last).

First syllable heard as 2-part *ps-SEET* but appears as 3 elements on sonogram: short (<25 ms), low-amplitude (and often faint on sonograms), low-frequency (4–5 kHz) element that begins with rapid rise and slowly declines. Second element about 75 ms, begins at 6–7 kHz, rises to about 8 kHz, then abruptly drops to 5–6 kHz; on sonogram this element has a rounded, convex peak (in contrast to a concave shape in Cordilleran Flycatcher). Third element longest (about 160 ms), begins at about 4 kHz, rises to 5 kHz, and rises again to 6.5 kHz. Second syllable heard as *ptsick* and comprises 2 elements on sonogram: First element similar to first syllable's first element and second element similar to first syllable's second element but higher frequency (about 5.5 kHz), higher amplitude, and longer (about 30 ms). Third syllable heard as *seet* ! and appears on sonogram as single high-frequency (about 7 kHz), slightly rising (to about 7.5 kHz) element of about 100 ms duration. See Table 1 for frequency measurements of song components of different populations.

Syllables sometimes omitted or replaced by Position Notes (see below). During rapid singing, interval between “songs” becomes as brief as interval between syllables within song so that sequential songs merge together. Representing these song components as “ *S* ” for *ps-SEET*, “ *T* ” for *ptsick*, and “ *E* ” for *seet* !; Male Position Note (see below) as *“p”* and brief break in phrasing as “-”, one song sequence recorded in Monterey Co., CA, is as follows: *p - p - p S T - E - p S T E - E - S E - S E - S p S T E p - S T E - S E - S p S T - E S E p - S E - p - S E S - p - S p S T E - p - p - p - E S E - p - S E S E - p - S T E E - p - S T E E* (Davis et al. 1963: 344; see also comments of Johnson 1980: 61, 63; Ainsley 1992: 6). Measured transition probabilities between song syllables, based on 9 samples of >5 min singing from each of 7 males on Queen Charlotte Is., British Columbia (Ainsley 1992), listed (if probability >0.25) as fol-lows: from *ps-SEET* to *ptsick*, 0.61, or to *seet* !, 0.29; from *ptsick* to *seet* !, 0.96; from *seet* ! to *ps-SEET*, 0.84; from Male Position Note to *ps-SEET*, 0.42, or to Male Position Note, 0.43.

Dawn Song. Song (see above) sung early in day at rapid rate with interval between songs as brief as interval between song components (Johnson 1980). No information on specifics of dawn singing.

Male Position Note; *Pee-ist* Call. Figure 3B . Primarily by male. Single, strongly up-slurred note: *pee-IST* (Davis et al. 1963, Ainsley 1992), *peWEAP* ! (Whitney and Kaufman 1986) or rising whistle *pawee* ! (Bailey 1983). Single, slurred, ascending note *peweat* ! or *pseeyeap* ! Sonogram shows this call similar to last element of song’s *ptsick* syllable (Davis et al. 1963, Ainsley 1992). This call is most useful character and primary means to identify Pacific-slope Flycatchers and Cordilleran flycatchers within core range of each species, but not in interior Northwest (see Geographic variation, below). The “usual form of the coastal male Position Note [on sonograph is a] . . . briefly-rising component; then a longer section that drops, is steady, or rises in pitch; and finally a steeply-sloped, rising element that covers several kilohertz. The great similarity of notes from this coastal series [of recordings from Santa Barbara, CA, to Vancouver, British Columbia] is impressive” (Johnson 1980: 68).

Female Position Note; *Tsip* Call. Only by female. *Tsit* (Davis et al. 1963) or *tsip* (Ainsley 1992); brief note between 6 and 7 kHz (Johnson 1980); very similar to *seet* ! syllable of song but 0.5–1.0 kHz higher in frequency, about 100 ms in length; begins descending by 0.5–1.0 kHz in frequency to about 7 kHz and remaining constant or rising to beginning pitch (Ainsley 1992).

Chrrip Call. Harsh *chrrip*, *prrit*, or *chrrr* usually given singly in displacement actions but may be given in longer series in chases of other flycatchers (Davis et al. 1963). Repeated elements of 2 types with frequencies 1.5–7.0 kHz: 1 element type 15 ms in length with 75 ms intervals showing sharp rise (2–3 kHz) and decline (1.5–2 kHz); another element type 10 ms in length with 10 ms intervals showing rise in frequency up to 5 kHz and sharp decline up to 3 kHz in frequency (Ainsley 1992).

Ti-ti-ti Call. Call given few seconds or up to 1 min; 2 types of elements with 40–120 ms intervals, 1 type similar to *seet* ! of song, about 6.6 kHz; another type between 2 and 5 kHz similar to first type of *chrrip* (Ainsley 1992).

Weet-weet-weet Call. Usually 3 repeated elements, each about 100 ms in length showing slight rise in frequency to about 3.0 kHz, with 120-ms interval between each element (Ainsley 1992).

Seet, or *Zeet*, Call. Similar in frequency, duration, and structure to song’s *seet* ! syllable (Ainsley 1992). *Seet* used as alarm note (Sakai 1988). Alarm note described by Davis et al. (1963) as sharp *tsit*, similar to Female Position Note (see above) but louder; given by both sexes.

Chicks give *sip* similar to adult *tsip* or song’s *seet* ! (but of less amplitude) and very soft rasp similar to *ti-ti-ti* vocalizations (Ainsley 1992).

Cordilleran Flycatcher. Song. Figure 3C . *ps-SEET ptsick seet!* Very similar to song of Pacific-slope Flycatcher (see above) with differences mostly evident in

analysis of sonograms. The frequency sequence of *ptsick* syllable described as "high-low" for Cordilleran Flycatcher (rather than as "low-high" as in Pacific-slope Flycatcher; Johnson 1980). Song of Cordilleran Flycatcher otherwise similar to Pacific-slope Flycatcher but of slightly lower mean frequency, smaller spread in frequency, and slightly longer duration (see Table 1). Measurable differences on sonograms include longer duration of *ps-SEET* syllable in song (0.241–0.257 s compared to 0.202–0.227 s in Pacific-slope Flycatcher [measurements by N. K. Johnson; Queen Charlotte Is. value 0.291 s by D. T. J. Ainsley]) and overall slightly lower pitch (3.9–4.6 kHz [compared to 4.9–5.6 kHz for Pacific-slope Flycatcher] and mean frequency of *seet!* syllable 5.1–5.7 kHz [compared to 5.9–6.4 kHz for Pacific-slope Flycatcher]; Johnson 1980; see also Ainsley 1992; see Table 1).

Male Position Note. Figure 3D . Call about same pitch range as Pacific-slope Flycatcher, but sharply 2-syllabled with second note higher: *pit-PEET* ! (Whitney and Kaufman 1986); rising whistle *wee- eee* ! (Bailey 1983); or *squeet* ! (Zimmer 1985). This describes *E. o. hellmayri* within its core range (central Nevada east to Rocky Mtns. and south); call much more variable in populations of Northwest interior (see Geographic variation, below).

Female Position Note. Not different from Female Position Note of Pacific-slope Flycatcher.

Other notes and calls not catalogued; probably similar or identical to corresponding calls of Pacific-slope Flycatcher. Also gives contact/alarm note similar to Pacific-slope, a sharp *seet* ! This call possibly sharper than Pacific-slope (National Geographic Society 1999).

Geographic Variation
Where ranges of species approach and overlap (interior Northwest), song becomes more similar; middle notes approach but do not overlap (Johnson 1980). Male Position Note rela-tively uniform over most of range of both species, but Cordillerans from interior Northwest may give 2 or 3 types of calls, some similar to Pacific-slope (see Distinguishing characteristics, above). Cordilleran Flycatchers in central Oaxaca give 2-part male Position Note as do birds to the north, but emphasize the first note; second note shortened, subdued, and faint (Johnson 1980). Male Position Note of Pacific-slope Flycatchers breeding on Channel Is. (*E. d. insulicola*) differ from mainland Pacific-slopes in typically lacking initial component and emphasizing only steeply rising ending (Johnson 1980). Male Position Note of Pacific-slope Flycatcher similar between s. Baja California and west coastal U.S. populations (Howell and Cannings 1992).

Female Position Note shows no apparent difference throughout range of either species or, even, between both species. "No obvious differences are seen between notes from the Channel Islands, the California coast, the Volcanic Plateau region, the far-interior Rocky Mountains of the United States, or the mountains of Mexico south to central Oaxaca" (Johnson 1980: 70–71).

Phenology
Song within Western Flycatcher complex given commonly during early phases of nesting cycle, but after pair formation sings only at day-break; if female of mated pair is lost, male begins more frequent singing "either within the hour after death of his mate or during the following morning" (Johnson 1980: 67). Sex-specific location notes given "abundantly on the nesting territory, occasionally during migration, and infrequently on the wintering grounds" (Johnson 1980: 10).

Daily Pattern
See Phenology, above.

Places Of Vocalizing
From perches in trees.

Repertoire And Delivery Of Songs
See Vocal array, above.

Social Context And Presumed Functions
“Day-time singing” of Pacific-slope Flycatcher appears to function primarily in attracting mates; only occasionally performed by mated males, ceases with pair formation, resumes if mate is lost; Dawn Song continues through nesting period (Davis et al. 1963).

Nonvocal Sounds

Audible bill-snap mentioned in agonistic encounters of Pacific-slope Flycatcher (Davis et al. 1963).

Behavior Food Habits

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