Field Identification of

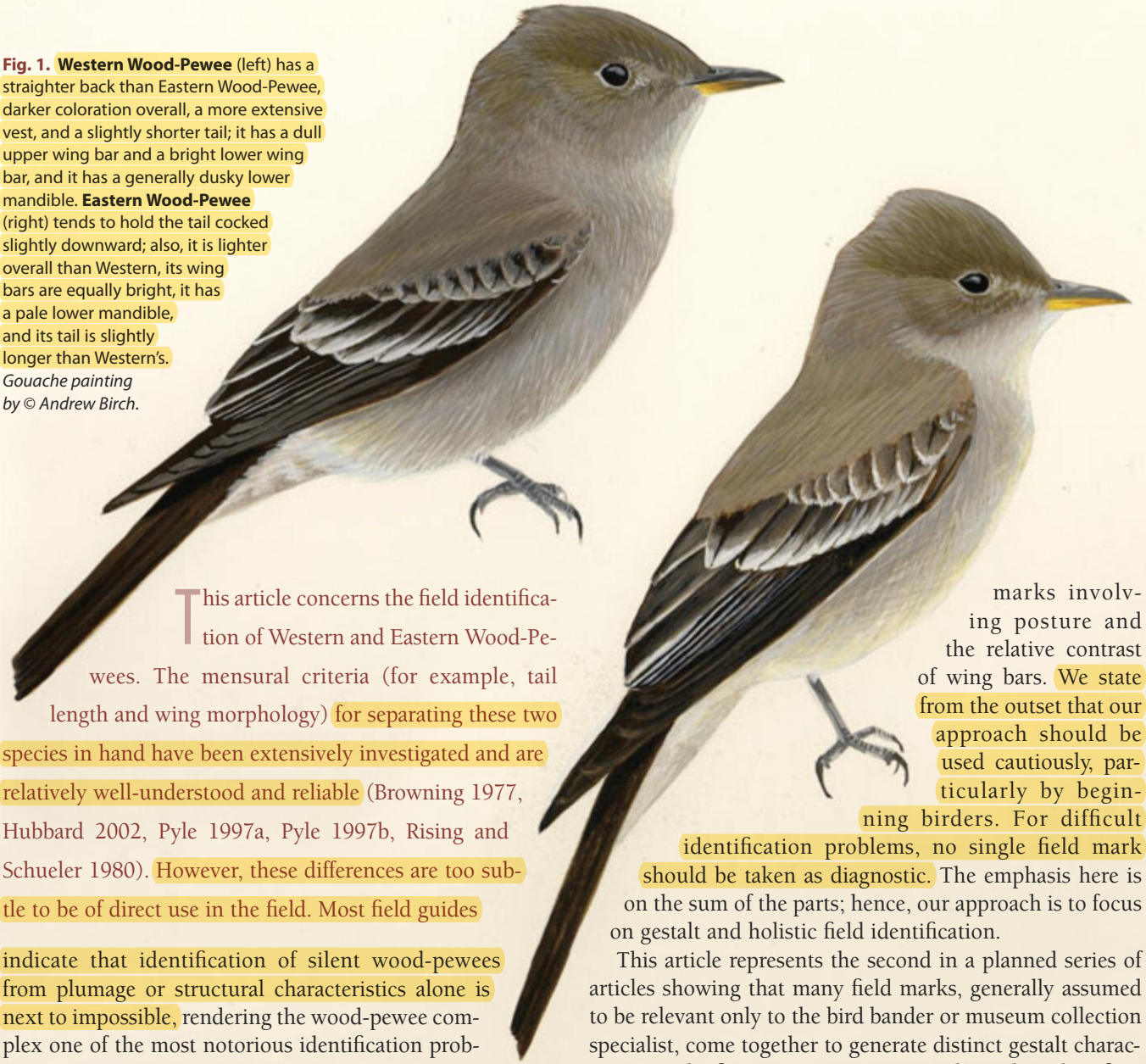


Fig. 1. Western Wood-Pewee (left) has a straighter back than Eastern Wood-Pewee, darker coloration overall, a more extensive vest, and a slightly shorter tail; it has a dull upper wing bar and a bright lower wing bar, and it has a generally dusky lower mandible. **Eastern Wood-Pewee** (right) tends to hold the tail cocked slightly downward; also, it is lighter overall than Western, its wing bars are equally bright, it has a pale lower mandible, and its tail is slightly longer than Western's. *Gouache painting by © Andrew Birch.*

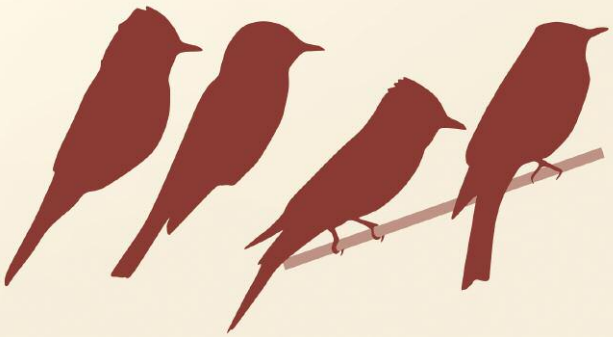
This article concerns the field identification of Western and Eastern Wood-Pewees. The mensural criteria (for example, tail length and wing morphology) for separating these two species in hand have been extensively investigated and are relatively well-understood and reliable (Browning 1977, Hubbard 2002, Pyle 1997a, Pyle 1997b, Rising and Schueler 1980). However, these differences are too subtle to be of direct use in the field. Most field guides indicate that identification of silent wood-pewees from plumage or structural characteristics alone is next to impossible, rendering the wood-pewee complex one of the most notorious identification problems in North American ornithology (see Floyd 2006).

We discuss here a set of criteria that can aid in the detection of an out-of-range wood-pewee (Figs. 1 & 2). Some of the criteria have been previously and extensively discussed (for example, voice, plumage color, mandible color, and extension of the tail beyond the wingtips), but are reviewed here for completeness. We add suggestions for new field marks involving posture and the relative contrast of wing bars. We state from the outset that our approach should be used cautiously, particularly by beginning birders. For difficult identification problems, no single field mark should be taken as diagnostic. The emphasis here is on the sum of the parts; hence, our approach is to focus on gestalt and holistic field identification.

This article represents the second in a planned series of articles showing that many field marks, generally assumed to be relevant only to the bird bander or museum collection specialist, come together to generate distinct gestalt characteristics. The first in our series was on dowitcher identification (Lee and Birch 2006). We believe firmly that gestalt, often said to consist of "general impression, size, and shape," is a powerful tool for field identification when used judiciously. However, gestalt identification is an abstract concept that is difficult to quantify or convey in words. Many subtle structural and plumage features are not particularly useful to birders because they cannot be quantified in the

Western & Eastern Wood-Pewees

Fig. 2. **Western Wood-Pewee** (left two) usually has a classic wood-pewee look because it has a more vertical posture and a straighter back-and-tail profile. **Eastern Wood-Pewee** (right two) often holds its tail down below the extension of the primaries and back, giving a different profile. *Illustration by © Cin-Ty Lee.*



field or they are too technical; in *combination*, however, these subtle differences create distinct gestalts that can be perceived in the field with enough experience. Humans have an innate (albeit possibly suppressed) ability to appreciate gestalt, as evidenced by our recognition of friends and kin by their faces, body shapes, postures, and behaviors. An excellent overview of this take on gestalt-based bird identification is provided by Karlson and Rosselet (2007).

Voice

Voice is the most reliable criterion for identifying wood-pewees. This criterion is treated in nearly all field guides, and we reiterate it here for completeness. According to Sibley (2000), the song of Western is a "burry, nasal whistle *DREE-yurr* or *breerrr* or *breeee* with a distinctive rough quality." Eastern's songs are "plaintive, slurred, high, clear whistles, *PEEaweee* and *peeyoooo*; also short, upslurred *pawee* (given by migrants), downslurred *peeaaa* and others." However, one recurring problem, particularly for overzealous birders in the West, is that Western also emits a soft uprising whistle, similar enough to the Eastern's *pawee* to cause confusion (K. L. Garrett, personal communication). Thus, caution must still be used in identifying wood-pewees by song. As for calls, there are subtle differences. Western gives a "flat, sneezy *brrt* or *dup*," whereas Eastern gives a "flat, dry *chip* or *plit*" (Sibley 2000), but extensive familiarity is needed to separate these calls.

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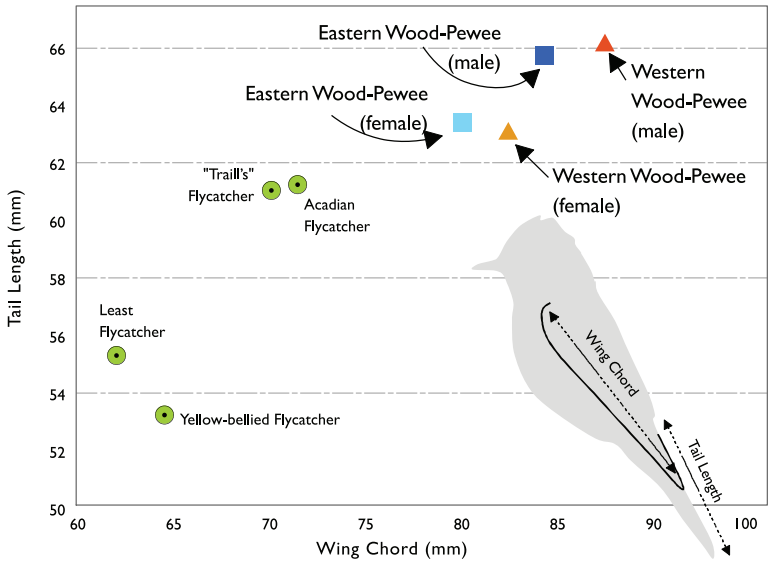

Fig. 3. Tail length vs. wing chord length (in millimeters) using data from Rising and Schueler (1980) for wood-pewees and Pyle (1997a, 1997b) for Least, Acadian, Yellow-bellied, and "Traill's" (Alder and Willow) Flycatchers. *Data analyzed by Cin-Ty Lee; figure by Kei Sochi.*

Structural Differences: Dimensional vs. Dimensionless Field Marks

There are no distinct differences in the sizes of the wood-pewees, but there are differences in wing chord (distance from tip of primaries to shoulder) and tail length for a given sex (Phillips et al. 1966, Pyle 1997a, Pyle 1997b, Rising and Schueler 1980). Phillips et al. (1966) suggested that Western has a slightly shorter tail and longer wing chord than Eastern. This difference can be seen in Fig. 3, where we have plotted data from Rising and Schueler (1980), Pyle (1997a), and Pyle (1997b). Due to sexual dimorphism in size (males are larger), however, these mensural differences are too subtle to distinguish in the field. We refer to these types of mensural characters as **dimensional field marks** because they require measurement units, for example, inches or centimeters. They are primarily of use only when a bird is in the hand or when there is a convenient reference for scale.

Here, we focus on quantifying proportional field marks, which we term **dimensionless field marks** because proportional field marks involve the ratio of one mensural character to another and therefore do not have units (that is, dimensions). Dimensionless field marks can also be described as "conservative" field marks in the sense that one does not need a scale bar to use them. For example, the relative protrusion of the head on Cooper's and Sharp-shinned Hawks can be diagnostic even if the hawk is soaring alone in an empty sky where there are no reference points for scale. A more quantitative description of dimensionless field marks is given by Floyd (2005).

In this context, we now reexamine Fig. 3. Although sexual dimorphism results in near overlap in wing chord length and tail length between the two species, there is an appreciable difference between the *ratio* of tail length to wing chord. This ratio appears to be independent of sexual dimorphism, suggesting that Eastern has a greater tail-length-to-wing-chord ratio than Western.

The greater tail length to wing chord ratio of Eastern indicates that Eastern might have a proportionately longer tail than Western. This distinction has also been suggested by Phillips et al. (1966) and Hubbard (2002), using the concept of "tail clear," which is the distance between the tip of the tail and the tip of the uppertail coverts. To confirm these ideas, we examined wood-pewee specimens ($n \sim 100$) at the Harvard Museum of Comparative Zoology. Qualitatively, it can be seen in Fig. 4 that the ratio of the primary extension (PE ≡ distance from primary tip to tertials) to the tail extension (TE ≡ distance from primary tip to tail tip) is greater for Western than Eastern. The PE/TE ratio for Eastern is generally equal to or less than 1, whereas the PE/TE ratio for Western is approximately 1. These observations are again consistent with all previous suggestions that Eastern has a proportionately longer tail.

Fig. 4. Comparison of **Western** (3 at left) and **Eastern** (3 at right) **Wood-Pewee** skins from the Harvard Museum of Comparative Zoology. Note that the ratio of primary extension (PE) to tail extension (TE) is greater for Western than for Eastern. *Photo by © Cin-Ty Lee.*

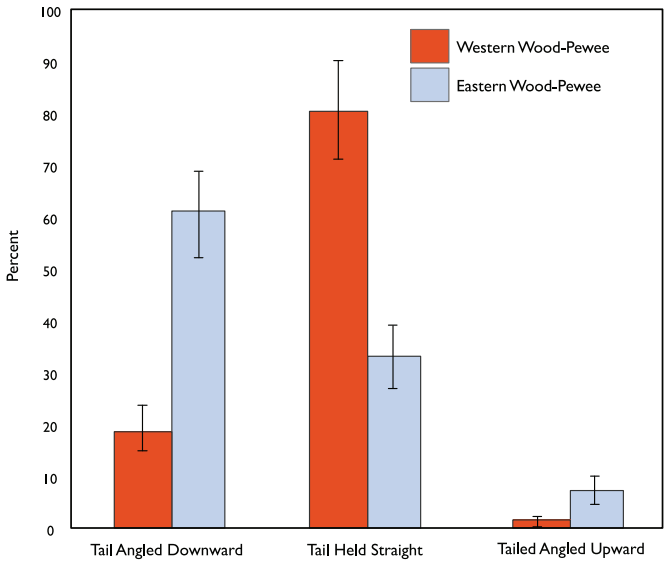

Fig. 5. Percentage of photographs (horizontal axis) of Eastern and Western Wood-Pewees that fall into the three categories of tail posture: angled downward, held straight, and angled upward. Eastern tends to hold its tail downward more often than Western, which prefers to hold its tail straight in line with the back. *Data analyzed by Cin-Ty Lee; figure by Kei Sochi.*

Quantifying Dynamic Field Marks: Gestalt

We now explore whether the structural differences described above are manifested in recognizable postural or behavioral differences in the field. We refer to posture and behavior as *dynamic field marks* because they are useful only on live birds. The challenge is how to quantify dynamic field marks.

Based on several decades' worth of collective experience observing wood-pewees on the Pacific, Atlantic, and Gulf coasts, we increasingly suspected that Easterns and Westerns often hold their tails at different angles. From personal experience, we noted that in the West, there is relatively little confusion between Western Wood-Pewee and *Empidonax* flycatchers. However, in the East and along the Gulf Coast, Eastern Wood-Pewees are often misidentified as Willow or Alder Flycatchers.

Our experiences with Eastern and Western Wood-Pewees led us to hypothesize that the two species hold their tails differently, possibly due to subtle differences in wing and tail length. Western has the classic wood-pewee look—that is, a relatively vertical and straight-backed profile in which the tail is directly in line with the back and primaries (Figs. 1 & 2). In contrast, Eastern often cocks its tail slightly downward so that the tail is not in line with the primaries and back profile (Figs. 1 & 2). As a consequence, Eastern often has a more *Empidonax*-like appearance than the classic wood-pewee-look of Western.

To test our hunch, we compiled 150 random photographs of both wood-pewee species. We assumed that these photographs could be taken as random snapshots of wood-pewees and that they therefore represented an unbiased representation of gestalt. We categorized each photo into one of three categories: tail angled downward, tail straight, and tail angled upward. Our results are shown in Fig. 5. In 80% of the photographs, Westerns hold their tails completely straight. In contrast, Easterns hold their tails angled away from the back or primaries 67% of the time (60% down, 7% up). Since photographs only represent snapshots of dynamic field marks, the very fact that a difference in gestalt can be quantified from photographs suggests that, in the field, these gestalt features might be even more distinctive.

Fig. 6. Side-by-side comparison of **Western** (left) and **Eastern** (right) **Wood-Pewees** from the Harvard Museum of Comparative Zoology. Note the brighter wing bars in Eastern compared to Western. In particular, note that the two wing bars on Eastern are equally bright, whereas on Western the upper wing bar is much duller and fainter than the lower wing bar. Note also the tendency of Eastern to have a paler lower mandible and lighter underparts, whereas Western tends to have a darker lower mandible and darker underparts. *Photo by © Cin-Ty Lee.*

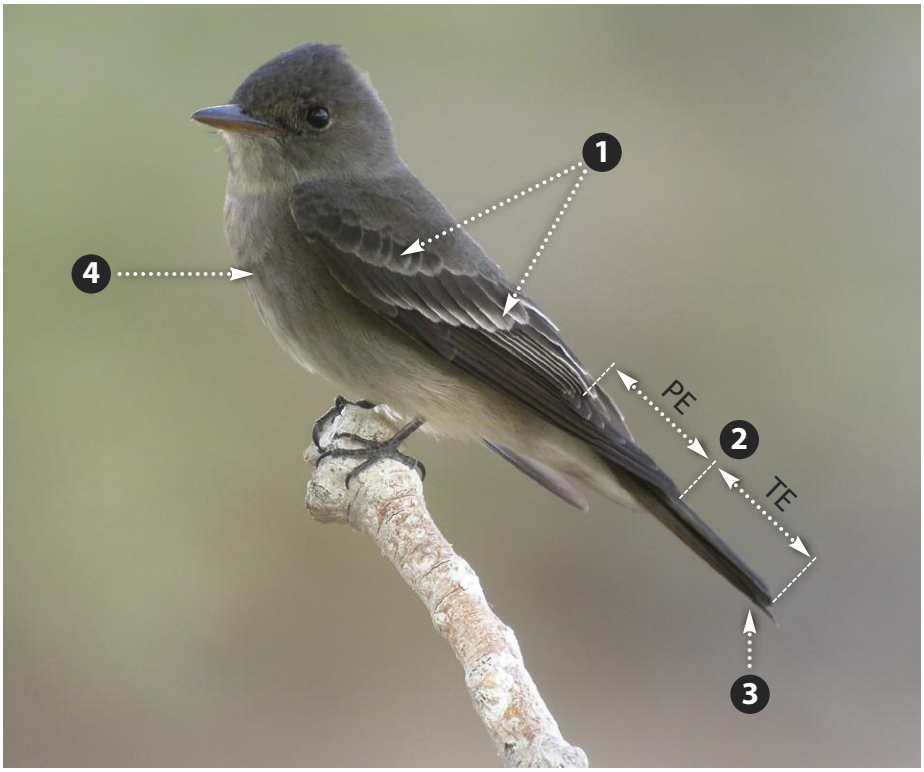

Fig. 7. *Kern County, California; May 2004. © Cindy Chow.*

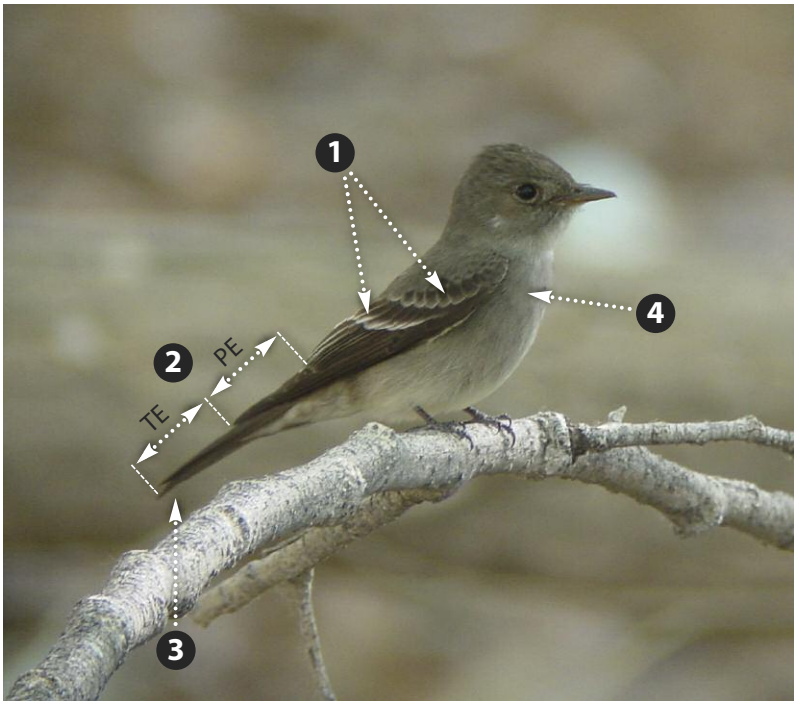

Fig. 8. *Orange County, California; May 2006. © Cindy Chow.*

Western Wood-Pewees are shown in Figs. 7 & 8, above. On both birds, note the following: (1) low-contrast upper wing bar; (2) approximately equal primary extension and tail extension; (3) tail held in line with the back and primaries; and (4) relatively dark underparts.

Our interpretation is that the classic wood-pewee-like appearance of Western is due to its proportionately shorter tail and longer wing chord, whereas the more *Empidonax*-like appearance of Eastern is due to its proportionately longer tail and shorter wing chord, a combination of features that causes Easterns to cock their tails downward more often (Figs. 1 & 7–10). Although the dimensional and dimensionless field marks are perhaps too subtle to be of direct use in the field, the indirect effects on posture and behavior are profound. Gestalt should never be used as the sole field mark, but it can be used by advanced birders as a powerful aid in detecting a particular wood-pewee species.

Classical Field Marks

We now turn to what we consider to be the classical field marks for distinguishing the wood-pewees. These field marks are based on plumage or bare part coloration and patterning, and are influenced by a number of factors: feather wear, cleanliness, water, lighting conditions, and so forth. Nevertheless, some of these field marks, when taken together, can prove useful. Below, we discuss the prospects and pitfalls of various soft field marks that have been proposed in the literature.

Bill Color

One field mark that is often depicted in field guides is bill color (Fig. 6). There is a general tendency for Eastern to have a largely or completely pale-orange or pale-yellow lower mandible. In contrast, the lower mandible on Western is generally duskier, ranging from pale at the base to completely dark underneath. We emphasize that considerable care must be taken with this field mark. Some Easterns occasionally have dusky lower mandibles extending from the tip and halfway to the base of the bill, overlapping with Western's lower mandible. In addition, some Westerns can have almost entirely pale lower mandibles. We thus caution that this field mark alone is not reliable.

Overall Plumage

There are subtle plumage differences between the two species of wood-pewees, but once again extreme caution should be used because plumage characteristics are so variable, and there is overlap between the two species. The most important differences are as follows.

First, Eastern tends to be paler below than Western. Second, Eastern occasionally appears white below, whereas Western typically appears more dusky below and often has a darker chest or vest. Eastern's upperparts tend to be more yellowish-green than Western's, which tend toward dusky olive. These subtle differences can be seen in the side-by-side comparisons shown in Figs. 1 & 6, but they may be very difficult to distinguish on lone birds except by highly experienced birders. A third feature that has been suggested is that the undertail coverts of Eastern might be slightly whiter and less streaked than Western. However, in our examination of specimens, we found no appreciable difference in undertail covert patterns.

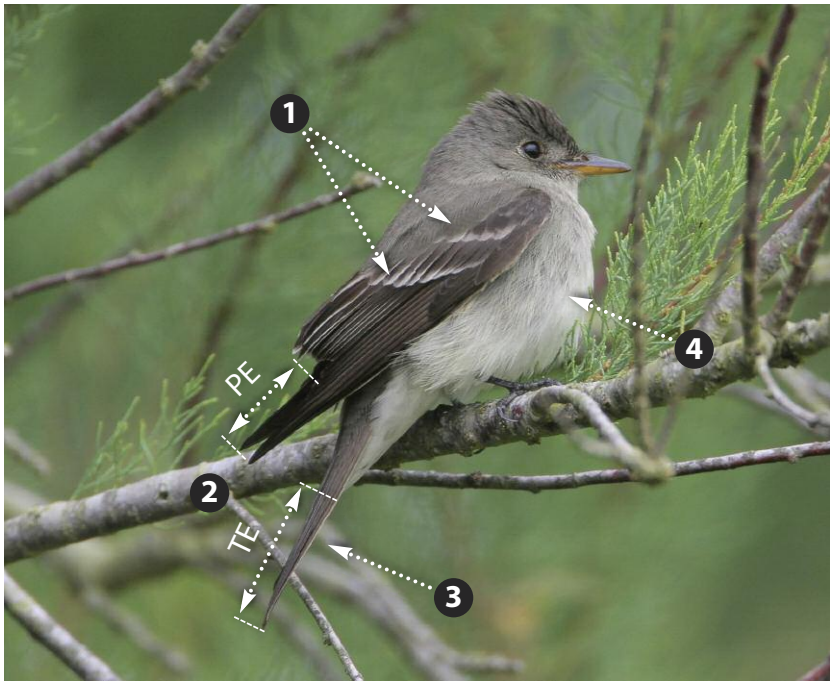

Fig. 9. *Brazoria County, Texas; April 2007. © Greg Lavaty.*

Wing Bar Pattern

A more reliable plumage field mark is the relative contrast between the upper wing bars (the tips of the median secondary coverts) and the lower wing bars (the tips of the greater secondary coverts). The potential of this field mark is hinted at in *The Sibley Guide* (Sibley 2000), but as far as we know it has not been considered in any other field guides. We have found in our museum and field studies that this feature does indeed hold (Figs. 1 & 6–10). In Western, the upper wing bar tends to be fainter than the lower wing bar, and often it is not even noticeable. In Eastern, the upper and lower wing bars are of equal brightness—and equal contrast with respect to the rest of the wing. Moreover, the wing bars on Eastern are generally brighter than even the lower wing bar on Western. The stronger wing bars on Eastern give more of an *Empidonax* look than in the case of Western, partly explaining why wood-pewees in the East are more often confused with *Empidonax* flycatchers than in the West.

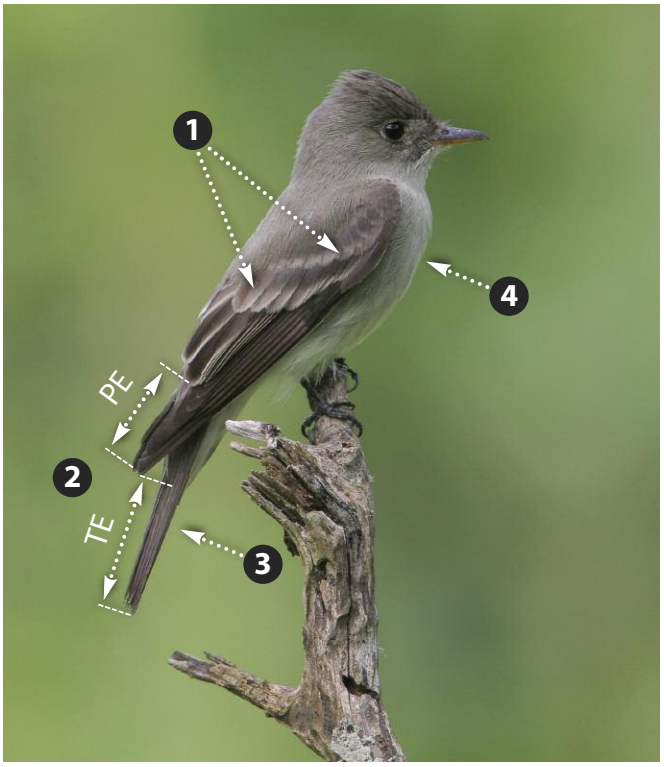

Fig. 10. *Brazoria County, Texas; May 2005. © Greg Lavaty.*

Eastern Wood-Pewees are shown in Figs. 9 & 10, above. On both birds, note the following: (1) relatively high-contrast upper wing bar; (2) tail extension greater than primary extension; (3) tail cocked below a line running along the back and primaries; and (4) relatively light underparts.

Juvenal Plumage

Overall, the plumage differences discussed above also hold for juvenal plumage. In juvenal plumage, however, the wing bars on both species tend to be brighter and buffier. Thus, before identifying an unknown wood-pewee, it should first be aged. Adults almost never have buffy wing bars, so the presence of buffy wing bars indicates juvenal

plumage. Juvenal Eastern wing bars are buffier and brighter than juvenal Western's. In addition, juvenal Eastern tends to have brighter and buffier edges to the tertials than does Western.

Summary

We have provided an overview of new and existing field marks for the field identification of wood-pewees. Most importantly, we emphasize two new field marks, one of them relating to posture, the other having to do with relative contrast of wing bars. These field marks can be used as aids in detecting an out-of-range wood-pewee. Below, we list the field marks in decreasing level of reliability:

1. Voice/song (most reliable)
2. Contrast between upper and lower wing bars
3. Ratio of primary extension to tail extension (PE/TE)
4. Gestalt (tail angle)
5. Lower mandible coloration
6. Overall coloration of underparts and upperparts

Acknowledgments

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Glossary

- **Dimensional Field Mark.** A field mark that varies with size and hence dimension of a bird, for example, wing chord length, rectrix length, bill length.
- **Dimensionless ("Conservative") Field Mark.** A field mark that is based on proportions and therefore is independent of size. Dimensionless field marks can be quantified using ratios, for example, the ratio of tail length to wing length.
- **Dynamic Traits.** Field marks associated with or affected by movement, for example, posture and behavior.

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