

Misidentifications in citizen science bias the phenological estimates of two hard-to-identify *Elaenia* flycatchers

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Appendix S2: Identification of Chilean and Small-billed Elaenias

The Chilean Elaenia (*Elaenia chilensis*) and Small-billed Elaenia (*Elaenia parvirostris*) are extremely similar in appearance and identification of these species often requires special training and/or extensive field experience. The song is the best cue for identification, however they can still be differentiated through a combination of features when song-based identification is not an option.

With the aim to provide a useful tool for the field identification of Chilean Elaenia and Small-billed Elaenia, here we provide a detailed description of the appearance of each species with identification cues (see also Figure S1). The information provided below is a summary of the current information from the literature (Belton 1985, Ridgely & Tudor 1994, Straube 2013, Pyle *et al.* 2015, Pearman & Areta 2020), improved and validated with our training. Nonetheless, it is important to mention that most features provide subtle differences between species, also with strong variation among individuals of the same species (because of phenotypic variations, molt stages or feather wear; see Figure S2). For this reason, identification must be based on an image built by the integration of all features outlined below, rather than by analyzing features separately.

Species descriptions

Chilean Elaenia (*Elaenia chilensis*)

Medium-size Elaenia. **Adult:** Pale olive to grayish overall, including sides of chest, which contrast modestly to the color of the back. Head often shows a slight crest giving the impression of a triangular shape. A large V-shaped white coronal patch is diagnostic for identification,

however, this is not always visible (see Figure S2 A and C); note that Small-billed Elaenia can exhibit some white on crown under certain circumstances (e.g. stress). Wings are pointed because of a longer projection of the primary feathers. Two whitish and broad wing bars (never three noticeable wing bars). Wing bars often contrast with blackish wing covers, but this varies in relation to molt or feather wear. In most cases, individuals show a clear-cut dark gap between the lowest wing-bar and the whitish edging in secondaries; this gap is seldom present in Small-billed Elaenia and often the secondaries exhibit a continuous greenish edging contacting the lowest wing-bar. Bill often looks rather straight. **Juveniles:** Abundant from January to June (Pyle *et al.* 2015). Browner overall coloration than adults, especially in the back. Wing bars are buffy not whitish. Lack a white coronal patch (this is important), and the shape of the head is either rounded or slightly triangular (but not as prominent as in adults). The lower mandible is bright orange (similar to *Lathrotriccus euleri*, or some *Empidonax*); this coloration in the lower mandible can persist even in young adults (see Gorosito *et al.* 2020).

Small-billed Elaenia (*Elaenia parvirostris*)

Medium-size Elaenia. **Adults:** Olive back, with pale grey underparts including chest and whitish throat. The chest coloration contrasts more markedly to the coloration of the back, helping discriminate from Chilean Elaenia. The greyish belly is a useful feature to differentiate from the co-occurring Large Elaenia (*E. spectabilis*), Yellow-bellied Elaenia (*E. flavogaster*) and Southern-scrub Flycatcher (*Sublegatus modestus*), that have quite extensive yellow bellies; note however, that some Small-billed have a yellowish abdomen but never extensive. Head shape in this species is often rounded causing the bird to look “small-eyed”, and a smallish white coronal patch is present but visible only rarely (e.g., when excited). Bill is short but variable, although usually slightly downcurved. The presence of a third wing bar is perhaps the most important feature for differentiation from Chilean, but it is not always visible. Also, wing covers are often brownish, not blackish, and therefore provide less contrast to the wing bars. Wing tips are often rounded, never as pointed as in Chilean, due to the shorter primary projection of Small-billed. The clear-cut dark gap between lowest-wing bar and secondary edging is lacking or reduced in most individuals. **Juveniles:** Overall coloration reminds of juvenile Chilean Elaenia, but more grayish rather than brownish. Also it lacks orange lower mandible and dark gap between lowest-wing bar and secondary edging. A small third wing bar is often visible (see Figure S2 I).

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Figure S1. Cues for identification of Chilean Elaenia (*Elaenia chilensis*) and Small-billed Elaenia (*E. parvirostris*). Photos were taken from the Macaulay Library (ML, www.macaulaylibrary.org). A) Adult Chilean Elaenia, Pio Marshall, ML108211551, Villarrica, Araucanía, Chile, 7 February 2016; B) juvenile Chilean Elaenia, Hal and Kirsten Snyder, ML204320101, Ushuaia, Tierra del Fuego, Argentina, 4 February 2015; C) adult Small-billed Elaenia, Adrien Mauss, ML33836461, San Clemente del Tuyú, Buenos Aires, Argentina, 12 December 2014; and D) juvenile Small-billed Elaenia, Amed Hernández, ML199745351, El Soldado, Lavalleja, Uruguay, 11 January 2020. The background of photos was deleted for practical purposes. For a more detailed description of each species see Appendix S1 and Figure S2.

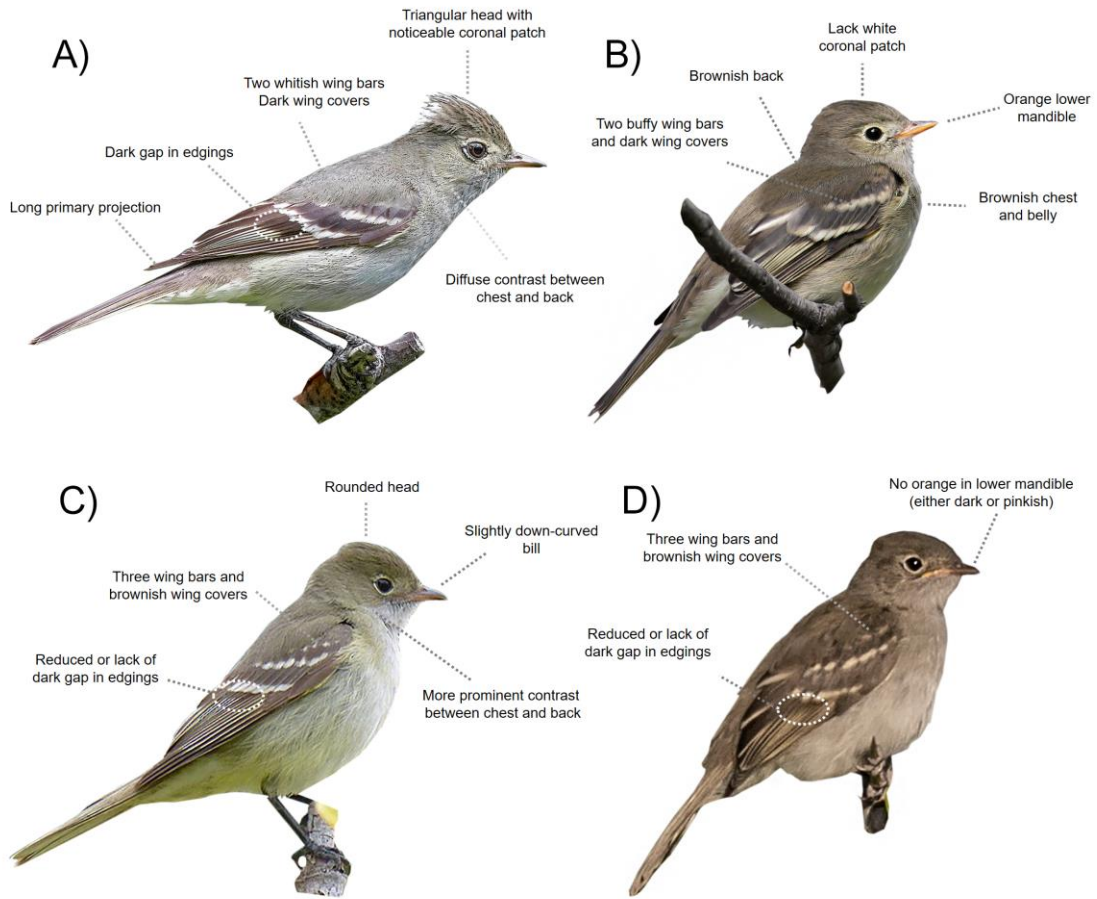


Table S1. Comparative table of identification features for A) adult Chilean Elaenia (*Elaenia chilensis*), B) juvenile Chilean Elaenia, and C) Small-billed Elaenia (*E. parvirostris*) and D) juvenile Small-billed Elaenia. Bold indicate key features. For a more detailed description of each species see Appendix S1 and Figure S2.

Feature	A) Chilean (adult)	B) Chilean (juvenile)	C) Small-billed (adult)	D) Small-billed (juvenile)
Head shape	Triangular	Rounded or slightly triangular	Rounded	Rounded
White coronal patch	Noticeable V-shape	Absent	Often hidden	Absent?
Wing bars	2 whitish wing bars	2 buffy wing bars	2-3 whitish wing bars	2-3 buffy wing bars
Bill shape	Straight	Straight	Slightly down curved	Slightly down curved
Lower Mandible	Pinkish or dark	Orange	Pinkish or dark	Pinkish or dark
Back	Pale Olive	Brownish	Olive	Greyish
Chest	Olive grey	Brownish	Pale grey, contrasting with olive back	Greyish
Primary projection	Often long (pointed wing tip)	Often long (pointed wing tip)	Variable (but often with rounded wing tip)	Variable (but often with rounded wing tip)
Wing covers	Dark	Very dark	Dark or brownish	Dark or brownish
Dark gap in edgings	Often present	Often present	Rarely present. Often lack a dark gap	Rarely present

Figure S2. Comparative photos of Elaenias held at the Macaulay Library (ML, www.macaulaylibrary.org). Top (A-C): adults of Chilean Elaenia (*Elaenia chilensis*), middle (D-F): juveniles of Chilean Elaenia, bottom: two adults (G-H) and one juvenile (I) of Small-billed Elaenia (*E. parvirostris*). Photos were cropped for practical purposes. Photo details (author, catalog number, locality, and date): A) Noah Strycker, ML51754871, Ushuaia, Tierra del Fuego, Argentina, 21 January 2017; B) Luis R Figueroa, ML204932961, Villarrica NP, Araucanía, Chile, 25 December 2016; C) Alec Earnshaw, ML111669271, Parque Provincial Potrero de Yala, Jujuy, Argentina, 10 October 2017; D) Renato Machado de Sobral, ML155014741, Santo André, São Paulo, Brazil, 30 April 2019; E) Patricio Saez, ML259082201, Punilla, Córdoba, Argentina, 20 March 2020; F) Thomas Kallmeyer, ML86493181, Ushuaia, Tierra del Fuego, Argentina, 4 February 2018; G) Jorge Claudio Schlemmer, ML188772911, Reserva Natural Estricta Quebrada de Las Higuieritas, San Luis, Argentina, 16 November 2019; H) Jorge Quiroga, ML196413051, Cerro de la Virgen, Salta, Argentina, 1 January 2020; I) Christopher Rex Prevett, ML202014181, Melo, Cerro Largo, Uruguay, 9 January 2020.

