

## REASSESSMENT OF TROPICAL PARULA SUBSPECIES IN BAJA CALIFORNIA SUR

MARSHALL J. ILIFF, 282 Perham St., West Roxbury, Massachusetts 02132; miliff@aol.com

RICHARD A. ERICKSON, LSA Associates, 20 Executive Park, Suite 200, Irvine, California 92614; Richard.Erickson@lsa-assoc.com

MARK J. BILLINGS, 3802 Rosecrans St., PMB #334, San Diego, California 92110; markjbillings@yahoo.com

**ABSTRACT:** Three records of the Tropical Parula (*Parula pitiayumi*) from southern Baja California Sur in the 1920s have long been considered to represent the endemic Socorro Island subspecies *graysoni*. After discovering an adult female Tropical Parula in the same area in May 2006 that did not appear to be *graysoni*, we examined specimens and the literature, finding that the two 1920s specimens are not *graysoni* but most consistent with subspecies *insularis*, occurring primarily on Nayarit's Tres Marias Islands. The pattern of yellow on the throat, distinct white wing bars, and distinct white tail spots preclude *graysoni*; the relatively small white tail spots and longer tarsi and tails suggest *insularis* rather than *pulchra* of mainland western Mexico.

The Tropical Parula (*Parula pitiayumi*) is a widespread neotropical warbler that breeds from southern Texas to South America but rarely occurs as a vagrant outside its regular range. In the United States, *P. p. nigrilora* strays casually to the Edwards Plateau, Big Bend, and the Davis Mountains of Texas (Lockwood and Freeman 2004). There are three records of apparent *P. p. pulchra* from southeastern Arizona: Madera Canyon 14 July–13 September 1984; Miller Canyon 22 June–14 July 2001; Cave Creek Canyon 16–23 June 2006 (Arizona Bird Committee data, M. M. Stevenson pers. comm.). Northwestern Texas has two well-documented records: Buffalo Gap, Taylor County, 13 May 1998 and Lubbock, Lubbock County, 18 May 2003 (photographed, M. W. Lockwood pers. comm.). The farthest-flung records are from Louisiana (at least five records; Dunn and Garrett 1997), Ft. Collins, Colorado (apparent *nigrilora*; 18 June–4 July 2004; photographs in Wood et al. 2006), and the Gila River Bird Area, New Mexico (within the Gila National Forest between Redrock and Cliff), 30 April 2005, the last a single-observer sighting not reviewed by the New Mexico Bird Records Committee but well-documented with a written description (Williams 2005, S. O. Williams III pers. comm.). Two specimens and an additional sight record from Baja California Sur have been attributed to the island endemic *P. p. graysoni* (Lamb 1925) and also treated as vagrants. Our discovery of a Tropical Parula in Baja California Sur in May 2006 and our efforts to determine that bird's subspecific identity eventually led us to reconsider and reidentify the earlier specimens as apparent *P. p. insularis*, most closely associated with the Tres Marias Islands, off Nayarit in western Mexico.

### 2006–2008 RECORD FROM BAJA CALIFORNIA SUR

On 19 May 2006 we found and photographed a Tropical Parula at Todos Santos, a small town on the Pacific coast near the southern tip of the

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Baja California Peninsula (Figure 1; another photograph in *N. Am. Birds* 60:468). The parula did not associate with other birds and seemed to prefer the middle levels of large guamúchil trees (*Pithecellobium dulce*) at the edge of a cleared pasture. Given the late spring date, and knowing of previous records from the area, we hoped to discover another adult or fledglings that would indicate breeding. Despite much effort and playing recorded songs of the Northern Parula (*Parula americana*), we found no other individuals.

Identification to species was straightforward; both Iliff and Erickson had seen Tropical Parulas of various subspecies on numerous previous occasions. Although the bird at Todos Santos was superficially similar to the Northern Parula, the lack of white eye arcs, the yellow malar region, and the clear yellow breast eliminated that species. Photographs showed that the bird was an adult (after second year) on the basis of the color and lack of contrast in the primary coverts and supported by the shape of the rectrices (P. Pyle pers. comm.). The bird's sex and subspecific identity were more difficult to determine.

Various observers looked unsuccessfully for the bird from July 2006 to January 2007, but Iliff saw and photographed an apparent female Tropical Parula at the same location on 4 March 2007 (Figure 2). It frequented a large guamúchil within about 40 m of the trees used in May 2006. Comparison of photographs taken in the two years revealed no differences, and we consider the bird seen in March 2007 most likely the same individual as in May 2006. It was seen again on 14 March 2007 by Richard E. Webster and 8 April 2007 by Peter A. Gaede and Kurt A. and Cindy Radamaker, always in the same grove of trees. Billings and Erickson could not find the bird on 14 July 2007, but on 21 March 2008 Steven G. Mlodinow saw it in the exact same area.

These observations make the fourth record of the Tropical Parula for the Baja California Peninsula and for the state of Baja California Sur. Remarkably, Chester C. Lamb (1925) was responsible for all three prior records: a probable male collected at Todos Santos 3 November 1923, one seen at El Oro (about 35 km north-northeast of Todos Santos) 5 February 1924, and an adult female collected at Todos Santos 23 July 1924 [specimens now at the Field Museum of Natural History (FMNH), Chicago; Figures 3, 4]. Lamb (1925) reported that both specimens represent *graysoni*, and the statement by the AOU (1998) that the *pitiayumi* group (including all subspecies except *graysoni*) is "casual in southern Baja California" is without foundation. The AOU (1998) included *graysoni* as casual to Baja California Sur as well but prophetically cautioned that "confirmation of these records is needed." We asked Thomas S. Schulenberg to examine and photograph those specimens. The Todos Santos specimens had been identified as *Parula graysoni* by Louis B. Bishop and confirmed by Harry C. Oberholser (Lamb 1925, Schulenberg pers. comm.). The former specimen was not identified to sex originally but was identified as a "male adult" by a later examiner, perhaps Bishop (Schulenberg pers. comm.).

The only other report of the Tropical Parula in Baja California Sur, of an adult female at Isla Espíritu Santo, off La Paz, 22 June 1999 (Carmona et al. 2005; R. Carmona pers. comm.) was not documented. Through 2007, at least 11 Northern Parulas have been found in southern Baja California

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Figure 1. Tropical Parula at Todos Santos 19 May 2006. This view shows the relatively bright underparts, bold wing bars, well-defined greenish back, and extensive yellow throat which all combine to eliminate *Parula pitiayumi graysoni*. Discrimination of *P. p. insularis* and *pulchra* would require better photographs of the undertail.

Photo by Marshall J. Iloff

Sur between January and April, and one was at Miraflores on 14 July 2006 (*N. Am. Birds* 60:583).

### SUBSPECIES OF THE TROPICAL PARULA

The Tropical Parula has 14 currently recognized subspecies (Regelski and Moldenhauer 1997, Dunn and Garrett 1997), eight of which occur in North and Middle America, five in Mexico.

The dull *inornata* ranges from southern Veracruz and Chiapas to northern Honduras and is distinctive in that it is comparatively pale and typically lacks wing bars (Regelski and Moldenhauer 1997, Dunn and Garrett 1997).



Figure 2. Tropical Parula at Todos Santos 4 March 2007. In this view the white on the underside of rectrix 6 shows well and is quite restricted, indicating *P. p. insularis*. The rather faint wash of cinnamon on the flanks is visible. The lack of a dark mask was more easily seen in the field and suggests a female, but the white in the tail is extensive enough that it may be a male.

Photo by Marshall J. Iloff

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*Parula p. nigrilora*, the subspecies most familiar to North American birders, is resident east of the Sierra Madre Oriental from northern Oaxaca north to southernmost Texas. It is a brightly colored and well-marked subspecies, with extensive white in the tail, bold white wing bars, extensive bright yellow on the throat and underparts, a fairly bright orangish wash across the central breast (brightest in adult males), and prominent black lores in adult males. Its counterpart in western Mexico is *pulchra*, which is similar but has a well-defined wash of buff or cinnamon on the flanks, is larger and longer tailed, and has more extensive white tips to the greater secondary coverts (Dunn and Garrett 1997). It is resident on the coastal slope of the Sierra Madre Occidental from southern Oaxaca north to central Sonora (Howell and Webb 1995), and this subspecies presumably accounts for the three summer records of vagrants to southeastern Arizona (M. M. Stevenson pers. comm.).

The two remaining Mexican subspecies are island taxa. *Parula p. insularis* is fairly close in appearance to *pulchra* but has a longer tail on average and slightly more restricted white tail spots (Ridgway 1902, Dunn and Garrett 1997; see below). It is nearly endemic to the Tres Mariás Islands off central Nayarit (360 km east-southeast of Cabo San Lucas), where it is one of the most common breeding landbirds (Stager 1957, R. A. Hamilton pers. comm.). Stager (1957) pointed out that “there appears to be considerable movement by this species between the island group and the adjacent mainland of Nayarit.” Hellmayr (1935) described the range of *insularis* more extensively as “Tres Mariás islands and coastal region of western Mexico from Labrados, Sinaloa, to San Blas, Nayarit.” At the Moore Laboratory of Zoology (MLZ), Occidental College, Los Angeles, there are six specimens of the Tropical Parula from San Blas taken by Lamb in March 1948. Four of these are labeled *pulchra* × *insularis* (MLZ 47899, 47895, 47907, 47911; see Table 1) and two appear to be typical *insularis*. We reassessed the identification of these birds and found them intermediate in measurements and plumage scores between series of *insularis* and *pulchra*; we concur that they most likely represent hybrids. Presumably some individuals of *insularis* disperse to the mainland in winter, but it is not clear whether *insularis* breeds on mainland Nayarit. The hybrids cited above may have originated from mainland pairings of *insularis* with *pulchra* but could have come from mixed pairs on the Tres Mariás Islands as well. The extent and geography of the introgression between these two taxa begs further study.

The last subspecies, *graysoni*, is endemic to Socorro Island in the Revillagigedo group, about 450 km south-southwest of Cabo San Lucas. Other than the purported Baja California Sur records, it is not known away from Socorro, where it is the most abundant bird (Wehtje et al. 1993, Rodríguez-Estrella et al. 1994). Also known as the Socorro Warbler (e.g., Lamb 1925) or Socorro Parula (Howell and Webb 1995), *graysoni* variously has been considered a species in its own right (Ridgway 1902, AOU 1957), a subspecies of the Tropical Parula (AOU 1998), or even possibly a close relative or subspecies of the Northern Parula (Dunn and Garrett 1997:209). It is by far the most distinctive of the four northerly Tropical Parula subspecies, being most like *insularis* but overall duller and with a fairly long tail, with white in the outer rectrices restricted to a narrow patch at the distal end of the

**Table 1** Taxonomically Informative Measurements<sup>a</sup> of Two Subspecies of the Tropical Parula from Western Mexico

	<i>n</i> <sup>b</sup>	Tarsus <sup>c</sup>	Tail	R6 white (shaft) <sup>d</sup>	R6 white (margin) <sup>d</sup>	R5 white (shaft) <sup>d</sup>	R5 white (margin) <sup>d</sup>	R4 <sup>d</sup>
♂ <i>insularis</i>	6	17.3–18.6 (18.0, 0.4)	45–50 (47.8, 1.7)	6–8 (6.8, 1.2)	11–17 (14.5, 2.1)	0–3 (0.5, 1.2)	0–17 (12.2, 6.2)	1–2 (1.2, 0.4)
♀ <i>insularis</i>	3 <sup>e</sup>	17.5–18.2 (17.9, 0.6)	45–47 (46, 1.4)	0 (0, 0)	9 (9, 0)	0 (0, 0)	13 (13, 0)	1 (1, 0)
unsexed <i>insularis</i>	1	17.6	49	0	12	1	11	1
♂ <i>insularis</i> × <i>pulchra</i>	1 <sup>f</sup>	17.0	42	0	8	1 (trace)	1 (trace)	0
♀ <i>insularis</i> × <i>pulchra</i>	3 <sup>f</sup>	17.3–17.6 (17.4, 0.2)	42–45 (44.7)	0–5 (1.7, 2.9)	9–12 (10.3, 1.5)	0 (2 w/ trace)	14 (2 others w/ trace)	0–1 (0.7, 0.6)
♂ <i>pulchra</i>	39 <sup>g</sup>	15.1–17.0 (16.1, 0.4)	38–44 (41.0, 1.38)	7–15 (11.7, 1.9)	10–24 (17.2, 3.1)	5–11 (8.1, 1.9)	10–20 (14.8, 2.4)	2–8 (4.2, 2.5)
♀ <i>pulchra</i>	23 <sup>h</sup>	14.6–16.7 (14.6, 0.5)	37–42 (39.1, 1.41)	6–12 (9.5, 1.5)	8–16 (13.3, 2.0)	2–9 (6.4, 2.0)	5–15 (12.1, 2.4)	1–4 (2.3, 0.9)
♂ FMNH 176050	1	17.1	46.1	5.0	11.5	0	8.6	0
♀ FMNH 176051	1	18.2	43.6 <sup>i</sup>	3.9	12.8	0	10.5	0

<sup>a</sup>In millimeters; ranges, with means and standard deviations in parentheses.<sup>b</sup>Since tails and tarsi were damaged in some specimens, the number of specimens measured varies.<sup>c</sup>Measured from the last (distal) visible scale before the toes emerge to the bend at the intertarsal joint (often the end of the bare region).<sup>d</sup>Rectrix white measured along shaft and outer margin does not include edges, but rather measures from first point of widening from an edge.<sup>e</sup>One specimen lacked its tail.<sup>f</sup>Specimens at MLZ (see specimen numbers in text).<sup>g</sup>Number of specimens for tail; for tarsus 46, for white in tail 34.<sup>h</sup>Number of specimens for tail; for tarsus 26, for white in tail 17.<sup>i</sup>Tail somewhat worn, so measurement may not reflect full tail length.



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Figure 3. Side view of specimens of the Tropical Parula from Todos Santos, Baja California Sur. Upper, collected 3 November 1923 (FMNH 176050); lower, female collected 23 July 1924 (FMNH 176051). Note the buff flanks and fairly broad wing bars on both birds.

Photos by Mary Hennen



Figure 4. Ventral view of specimens of the Tropical Parula from Todos Santos, Baja California Sur (male upper, female lower). In this view both birds show extensive yellow on the throat and significant white in the tail, eliminating *P. p. graysoni*. The white in the tail is not extensive enough for *P. p. pulchra*.

Photos by Mary Hennen

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inner web, narrower and more poorly defined wing bars, olive-gray flanks, less blue-gray upperparts, and the yellow below paler and more restricted (Figure 5). In contrast to those of *insularis*, adult males lack black in the lores (Ridgway 1902, Dunn and Garrett 1997, K. L. Garrett pers. comm.). Dunn and Garrett (1997) also pointed out that in *graysoni* the blue-gray along the sides of the lower throat projects inward to restrict the yellow throat, a feature typical of the Northern Parula. From below, the yellow throat of *graysoni* appears to have parallel sides, whereas on all other subspecies of the Tropical Parula the edges of the yellow throat widen toward the breast, giving the throat a triangular appearance.

## IDENTIFICATION OF THE BIRDS IN BAJA CALIFORNIA SUR

We first suspected that the individual we found in 2006 would prove to be *graysoni*, given its dull appearance and the reports by Lamb (1925). Review of the literature and examination of specimens, however, confirmed that our bird was not *graysoni* because of its broad yellow throat, conspicuous white tail spots, and fairly bright and well-defined wing bars. The wash of buff along the flanks appears to eliminate the geographically unlikely *nigrilora*, and *inornata* is eliminated by the strong wing bars and relatively bright plumage. The only two remaining candidates are the other two subspecies that are geographically probable: *insularis* and *pulchra*. Although we thought that the dull plumage suggested *insularis* more than *pulchra*, we investigated the question further.

Ridgway (1902) provided the best account for differentiating *insularis* from *pulchra*: *insularis* is “Similar to *C. p. pulchra*, but larger; flanks darker,

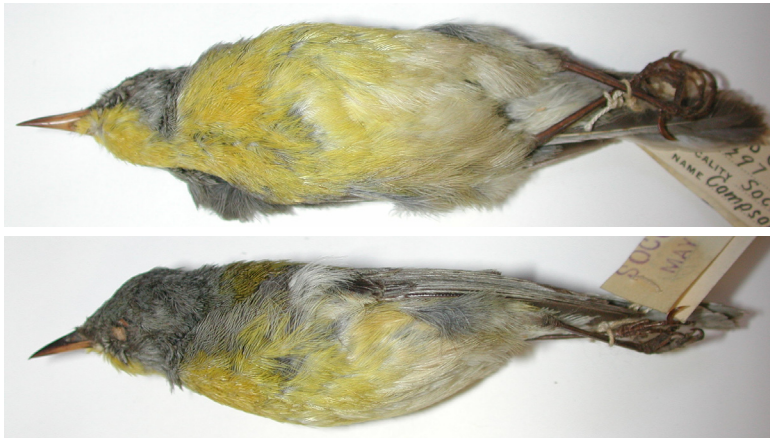


Figure 5. Specimen of *P. p. graysoni* from Socorro I., Mexico, 10 May 1897 (FMNH 24297). Note the blue-gray constriction on the throat, the overall dull appearance, the minimal cinnamon on the flanks, and the near-complete lack of white on the undertail.

Photos by Mary Hennen

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much tinged with grayish and more or less strongly tinged with chestnut; white on wing-coverts more restricted (as in *C. p. nigrilora*); subterminal white spots on inner web of lateral rectrices smaller, present on only one or two, instead of two or three; adult male with lores and orbits not distinctly darker than pileum and auricular region or at least not approaching black." In addition to the characters mentioned by Ridgway, Dunn and Garrett (1997) pointed out the longer tail of *insularis*. Regelski and Moldenhauer (1997) provided no new information on distinguishing *insularis* from *pulchra*, repeating information from Ridgway (1902).

Perhaps because of the small sample sizes (e.g., only four specimens of *pulchra*) on which Ridgway (1902) characterized the subspecies of *Parula pitiayumi*, our measurements of the Baja California Sur specimens do not clearly identify these birds by his criteria. Culmen measurements are outside of the range in Ridgway (1902; Table 2), wing chord is ambiguous, and tail length supports *insularis* for FMNH 176050 ( $\sigma$ ) but not FMNH 176051 ( $\text{♀}$ ). Tarsus lengths support *insularis* for FMNH 176051 but not FMNH 176050. To identify the Baja California Sur specimens, we needed measurements from a larger sample of specimens and to quantify the amount of white in the tail. We visited MLZ and the Natural History Museum of Los Angeles County (LACM) to measure the tails and tarsi on a larger series of specimens: 72 of *pulchra*, 10 of *insularis*, and the 4 hybrids mentioned above (Table 1). We also developed a scoring system to assess the amount of white in the rectrices. For rectrices 6 and 5 (outermost two rectrices) we measured the length of the white along the shaft and that along the feather's inner margin (Table 1); when the feather had a nearly complete white fringe we measured the white only from the point where the fringe began to widen. For the other rectrices, which typically have very little white, we scored three areas for a composite score of white inside of r5: the edge of r4 (0 = no white, 1 = trace, 2 = edge, 3 = strong edge), the interior of r4 (0 = no white, 1 = tiny spot, 2 = small spot, 3 = spot, 4 = white nearly to shaft, 5 = white extending to shaft), and r3 (0 = no white, 1 = edge; only one specimen of *pulchra* had a score for r3). Thus 9 would be the score for a bird with maximal white (although 8 was the highest score we actually recorded) and 0 would be the score for a bird with no white on those feathers. Measurements of culmen length by Ridgway (1902) and Schulenberg (Table 2) varied substantially and did not appear to be a strong character in subspecies diagnosis; we did not measure culmens.

Our measurements of the tail of *insularis* match those of Ridgway (1902), but those of the tarsus are up to 1 mm shorter than his values for both sexes. Our tarsus measurements ranged from 14.6 to 17.0 mm, a somewhat greater range than reported in Ridgway's small sample. For *pulchra*, our measurements reveal that tail length is consistent within the sexes, ranging from 37 to 44 mm, with males' tails averaging 2 mm longer than those of females.

On the basis of our investigations, we conclude that *insularis* is diagnosable on the basis of the extent of white on the outer three rectrices; diagnosis is supported by the measurements of the tarsus and tail. As reported by Ridgway (1902) and others, *insularis* has much less white in the tail than does



**Table 2** Measurements<sup>a</sup> of Two Specimens of the Tropical Parula from Baja California Sur Compared with Measurements by Ridgway (1902)

	FMNH 176050		FMNH 176051		<i>pulchra</i> <sup>b</sup>		<i>insularis</i> <sup>b</sup>		<i>graysoni</i> <sup>b</sup>	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
<i>n</i>	1	1	3	1	12	6	4	3		
Length	105	111	99.1-101.6 (99.8)	96.5	106.7-115.6 (113)	106.7-109.2 (108.4)	107.9-111.8 (109.7)	110.5-114.3 (112.3)		
Wing chord	55	55	53.3-56.9 (54.6)	51.8	54.1-59.2 (57.4)	53.3-55.4 (54.6)	52.1-53.3 (52.6)	52.1-53.3 (52.8)		
Tail length	46.1	43.6	39.1-43.9 (41)	39.6	45.7-52.6 (48.8)	46-49 (47.2)	46.7-48.3 (47.2)	46.2-47 (46.7)		
Culmen <sup>c</sup>	13.2	12.9	9.6-9.9 (9.7)	—	9.4-10.4 (9.9)	9.6-10.2 (9.9)	9.6-10.2 (9.9)	9.9-10.2 (10.1)		
Tarsus	17.1	18.2	15.5-16 (15.7)	15.7	18.5-19.8 (19)	18-18.5 (18.3)	17.8-19 (18.5)	19-19.3 (19.1)		
Middle toe	9.3	9.1	9.6-10 (9.9)	9.6	9.9-10.4 (10.2)	9.6-10.4 (9.9)	10.7-10.9 (10.8)	9.9-10.7 (10.2)		

<sup>a</sup>In millimeters.

<sup>b</sup>Ranges, with means in parentheses, from Ridgway (1902).

<sup>c</sup>The variation in culmen measurements probably indicates a difference in measurement practice or a typographical error in Ridgway (1902); we were unable to replicate the lengths he reported.

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*pulchra*, although males have somewhat more white than females. *Parula p. insularis* almost never shows more than a trace or a thin edge of white on r4, whereas males of *pulchra* always have and females almost always have a prominent spot of white on this feather. The white on r5 averages less on *insularis* than on *pulchra*, and only on *insularis* (both males and females) does white fail to reach the shaft (white is always more extensive on the distal margin). On r6 of *insularis*, white reaches the shaft on all males but not on females; by contrast, all specimens of *pulchra* that we examined had significant white extending to the shaft. Tarsus and tail measurements proved to be consistent characters for distinguishing *insularis* and *pulchra*; although the difference was as little as 1 mm in some cases, the extremes did not overlap. The four birds labeled as *pulchra* × *insularis* hybrids have intermediate measurements in tarsus, tail, and size of the tail spots, leading us to conclude that their identification is correct. In other features the specimens of *insularis* (and hybrids) closely matched *pulchra*, and we do not consider the subspecies distinguishable by plumage characters other than tail pattern: the wing bars of the two specimens of *insularis* in MLZ were as strong as on many of those of *pulchra*, and the extent of black in the lores and color of the flanks and underparts also overlapped with *pulchra*.

The two Baja California Sur specimens (Figures 3, 4) clearly are not *graysoni*, as both have moderate amounts of white in the tail, extensive yellow on the throat (not constricted as in *graysoni*), medium buff on the flanks (stronger on male), and are too brightly colored above for that subspecies. The one sexed as a male has a small amount of blackish in the lores, and the female has a faint wash of orange across the central breast; in short, they closely resemble the bird we photographed in 2006 and 2007. Their plumage indicates that the specimens represent either *insularis* or *pulchra*. On the basis of tail pattern we conclude that they are *insularis*; the minimal amount of white on r5 and the inner tail (r4) fall outside of the range of all specimens of *pulchra* ( $n = 62$ ) that we examined. On r6, the white of the male (FMNH 176050) lies at the lower limit for males of *insularis*. That of the female (FMNH 176051) is more extensive than in the three females of *insularis* we measured but matches the lower limit of the males and is well outside the extreme of *pulchra*. Although the tarsus measurement of the female matches *insularis* well, that of the male is intermediate between those of *pulchra* and *insularis*. The tail lengths are more supportive of *insularis*, with the male having a tail length (46.1 mm) well within the range for *insularis* but more than 2 mm longer than the longest tail of *pulchra*. The tail length of the female (43.6 mm) is intermediate but still 1.6 mm longer than in any female of *pulchra* we measured (our sample size for *insularis* was small). Schulenberg (pers. comm.) noted that this bird's tail was worn and the true tail length may have been longer. Thus both specimens match *insularis* better than any other known subspecies of the Tropical Parula. Because some measurements are intermediate, however, we cannot eliminate the possibility that the two specimens represent hybrids or intergrades with *pulchra*.

The Tropical Parula photographed at Todos Santos is not *graysoni*, and its appearance is consistent with *insularis*. In particular, the extent of white visible in the tail in Figure 2 strongly suggests *insularis*. Although only r6 is

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visible in the photograph, the white is minimal and matches the specimens of *insularis* we examined. At LACM, we measured the width of r6 on two specimens of *pulchra* (6.5 and 7 mm; both males) and two of *insularis* (7 mm male, 7 mm female). Therefore we assumed a rectrix width of 7 mm and used Figure 2 to estimate the white in the tail, getting the following values: r6 white along shaft 4 mm, r6 white along edge 6 mm. These measurements compare favorably with our measured values for *insularis* (Table 1). Photographs taken on 19 May 2006 appear to show minimal white on the underside of r6 as well but do not show the tail well enough to be definitive (but we assume that both sightings pertain to the same individual). On the basis of this character, and the precedent for *insularis* in Baja California Sur, we conclude that the bird in 2006 and 2007 was *insularis* as well.

### IMPLICATIONS OF TROPICAL PARULA RECORDS IN BAJA CALIFORNIA SUR

Although most birds endemic to islands have little propensity to wander away from their home island(s), Grayson's Thrush (*Turdus rufopalliatu*s *graysoni*), another Tres Mariás endemic, also moves away from the islands to winter on the adjacent mainland (Phillips 1981, Howell and Webb 1995). Similarly, several published references and a handful of specimens support the occurrence of *insularis* on the Mexican mainland, illustrating its potential to occur away from the Tres Mariás Islands. The four records of the Tropical Parula from Baja California Sur, however, have no seasonal pattern suggesting vagrancy, and their location (clustered northwest of the Sierra de La Laguna) is counterintuitive for vagrants presumably arriving from the southeast. Lamb (1925) speculated that "the taking of these two birds, in the winter and summer of two successive years, would indicate that the species is of more or less regular occurrence in the Cape Region of Lower California. The capture of a specimen in July suggests the possibility of breeding at the point of record." We still consider it at least possible that this region has hosted a small resident population of the Tropical Parula over some or all of the past century.

The Pacific coast of Baja California Sur between the Vizcaíno Peninsula and Todos Santos (i.e., the Magdalena Plain and vicinity) is famous for its cacti draped in mosses and lichens (as near Puerto San Carlos); although rainfall is minimal, condensation of fog on the desert vegetation permits the growth of these mosses and lichens in this "fog desert." It seems that the Todos Santos region is unique in the Cape District in that mosses and lichens can be found on the vegetation here as well, presumably also because of condensation of Pacific moisture. Indeed, Todos Santos may be the only area in Baja California Sur with such growth on trees (pers. obs.), as fairly lush stands of *Pithecellobium dulce*, palms, planted avocados (*Persea* sp.), and *Citrus* grow around the town. Both the Northern and Tropical Parulas depend on certain bromeliads and Spanish moss for their nests (e.g., *Usnea* in the northeastern U.S. and *Tillandsia* in the southeastern U.S.; Dunn and Garrett 1997), and it seems that the occurrence of the Tropical Parula in this region of Baja California Sur could be tied to the growth of these lichens.

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