

1 Reconstructing Ecological Niche Evolution via Ancestral State

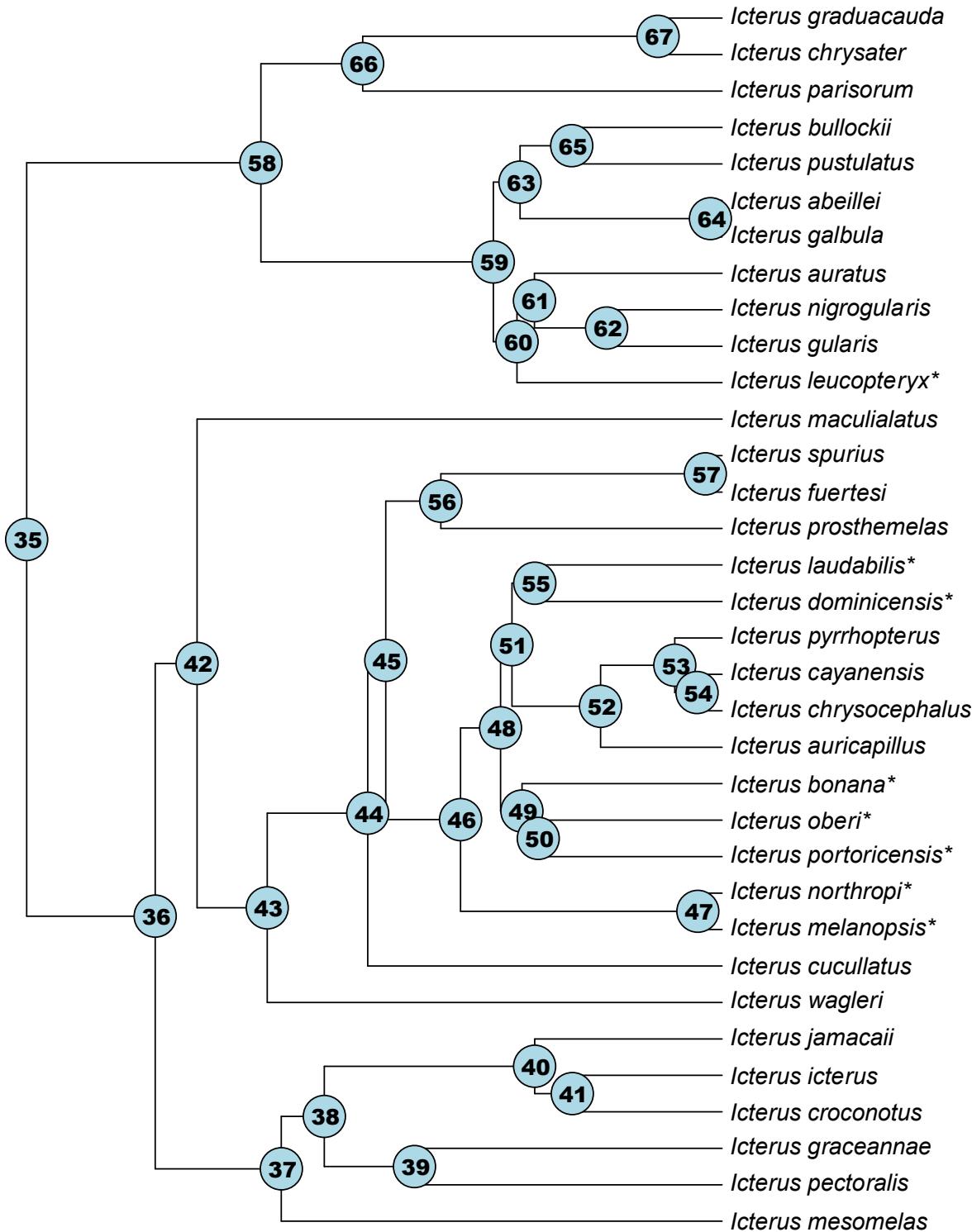
2 Reconstruction with Uncertainty Incorporated

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4 Supplementary Tables and Figures

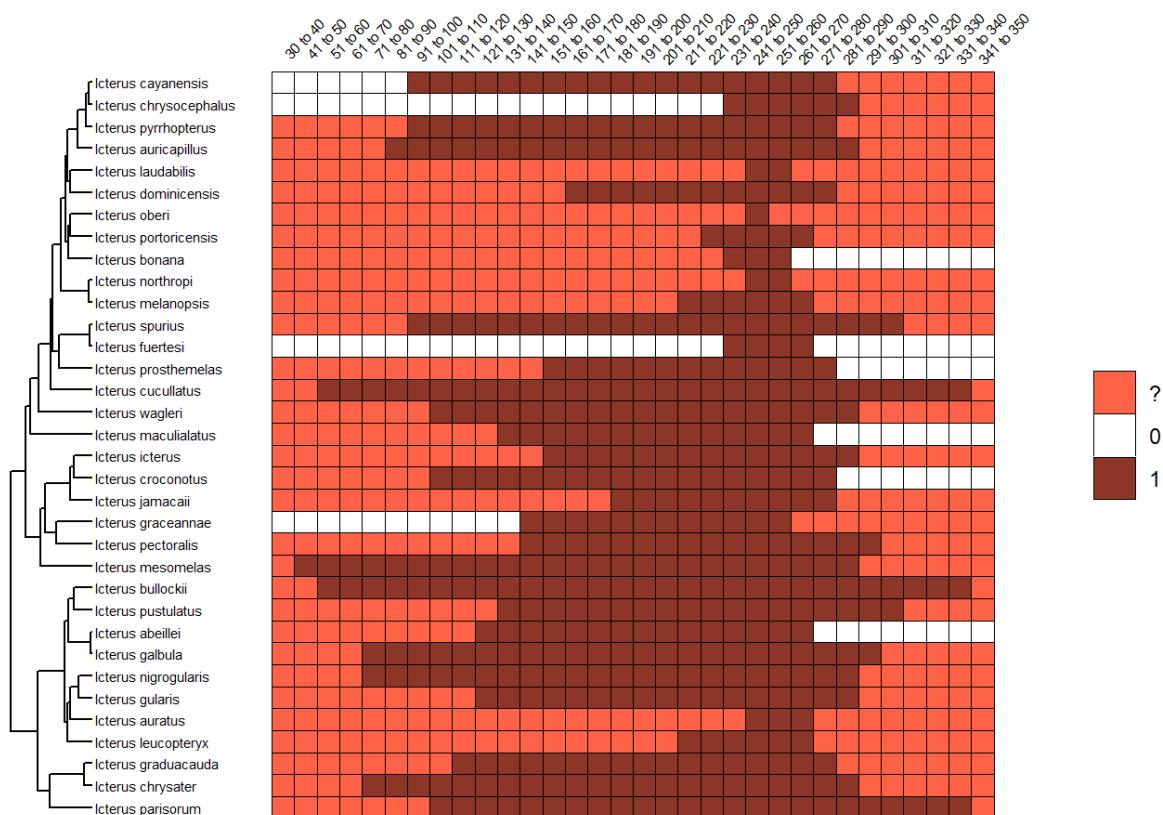
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6 Supplementary Figure 1. Phylogeny of *Icterus* orioles (Powell et al. 2014) used in our
7 **analyses.** Node labels correspond to row labels in Supplement 7 Figures 3-6. Asterisks denote
8 narrow-range Caribbean island endemics.



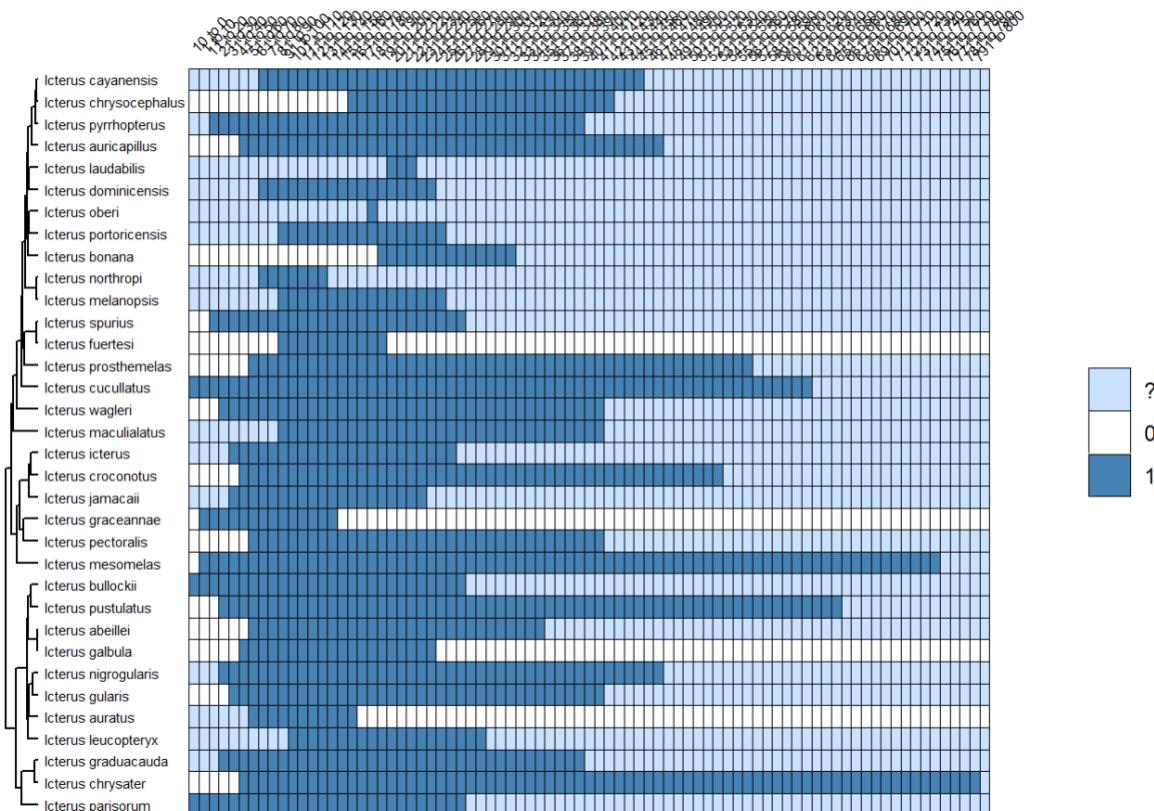
10 **Supplementary Figure 2. Bin-based coding of annual mean temperature niche for New**
 11 **World Orioles (*Icterus* spp.).** Phylogenetic relationships (Supplemental Figure 1) plotted on left
 12 side of figure. Dark red cells in a given row indicate bins that are inferred to be part of a species'
 13 fundamental niche (1). Pale red cells contain values at the unknown periphery of a species'
 14 fundamental niche (?). White cells are inferred to be values outside a species' fundamental niche
 15 (0).

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19 **Supplementary Figure 3. Bin-based coding of annual precipitation niche for New World**
20 **Orioles (*Icterus* spp.).** Phylogenetic relationships (Supplemental Figure 1) plotted on left side of
21 figure. Dark blue cells in a given row indicate bins that are inferred to be part of a species'
22 fundamental niche (1). Pale blue cells contain values at the unknown periphery of a species'
23 fundamental niche (?). White cells are inferred to be values outside a species' fundamental niche
24 (0).



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28 **Supplementary Table 1. Summary of New World oriole (*Icterus* spp.) occurrence data used**
29 **in ecological niche characterizations.** For migratory taxa (marked with an “x”), “Number”
30 reflects species’ breeding range occurrences.

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Species	Migratory	Number
<i>Icterus abeillei</i>	x	572
<i>Icterus auratus</i>		1224
<i>Icterus auricapillus</i>		796
<i>Icterus bonana</i>		40
<i>Icterus bullockii</i>	x	57978
<i>Icterus cayanensis</i>		472
<i>Icterus chrysater</i>		4818
<i>Icterus chrysocephalus</i>		37
<i>Icterus croconotus</i>		1263
<i>Icterus cucullatus</i>	x	19458
<i>Icterus dominicensis</i>		509
<i>Icterus fuertesi</i>		38
<i>Icterus galbula</i>	x	180004
<i>Icterus graceannae</i>		485
<i>Icterus graduacauda</i>		2369
<i>Icterus gularis</i>		8130
<i>Icterus icterus</i>		1026
<i>Icterus jamacaii</i>		545
<i>Icterus laudabilis</i>		146
<i>Icterus leucopteryx</i>		743
<i>Icterus maculialatus</i>		318
<i>Icterus melanopsis</i>		771
<i>Icterus mesomelas</i>		2605
<i>Icterus nigrogularis</i>		3298
<i>Icterus northropi</i>		111
<i>Icterus oberi</i>		89
<i>Icterus parisorum</i>	x	6599
<i>Icterus pectoralis</i>		2085
<i>Icterus portoricensis</i>		1163

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35 Supplementary Table 2.

36 Maximum parsimony

37 reconstruction table of New

38 World oriole mean annual

39 temperature niche. E

40 column shows values

41 obtained using median

41	obtained using median	
42	occurrence value; table cells	
43	bolded and boxed indicate	
44	which bin encompasses that	
45	value. Cell colors indicate bin	
46	score; “suitable” (1); dark	
47	gray, “unsuitable” (0); white;	
48	“unknown” (?); medium	
49	gray. Numbered rows	
50	indicate reconstructions of	
51	ancestral nodes	
52	corresponding to numbers in	
53	Supplementary Figure 1.	
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56 Supplementary Table 3.

57 Maximum likelihood

58 reconstruction table of New

59 World oriole mean annual

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67 bin score; “suitable” (1); dark

68 gray, “unsuitable” (0): wi

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70 gray. Numbered rows

71 indicate reconstruction

72 ancestral nodes

73 corresponding to

74 Supplementary Figure 1

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79 **Supplementary Table 4. Maximum parsimony reconstruction table of New World oriole**
80 **annual precipitation niche.** First column shows values obtained using median occurrence value;
81 table cells bolded and boxed indicate which bin encompasses that value. Cell colors indicate bin
82 score; “suitable” (1); dark gray, “unsuitable” (0): white; “unknown” (?): medium gray.
83 Numbered rows indicate reconstructions of ancestral nodes corresponding to numbers in
84 Supplementary Figure 1.

87 **Supplementary Table 5. Maximum likelihood reconstruction table of New World oriole**
88 **annual precipitation niche.** First column shows values obtained using median occurrence value;
89 table cells bolded and boxed indicate which bin encompasses that value. Cell colors indicate bin
90 score; “suitable” (1); dark gray, “unsuitable” (0): white; “unknown” (?): medium gray.
91 Numbered rows indicate reconstructions of ancestral nodes corresponding to numbers in
92 Supplementary Figure 1.

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