

1 Reconstructing Ecological Niche Evolution via Ancestral State

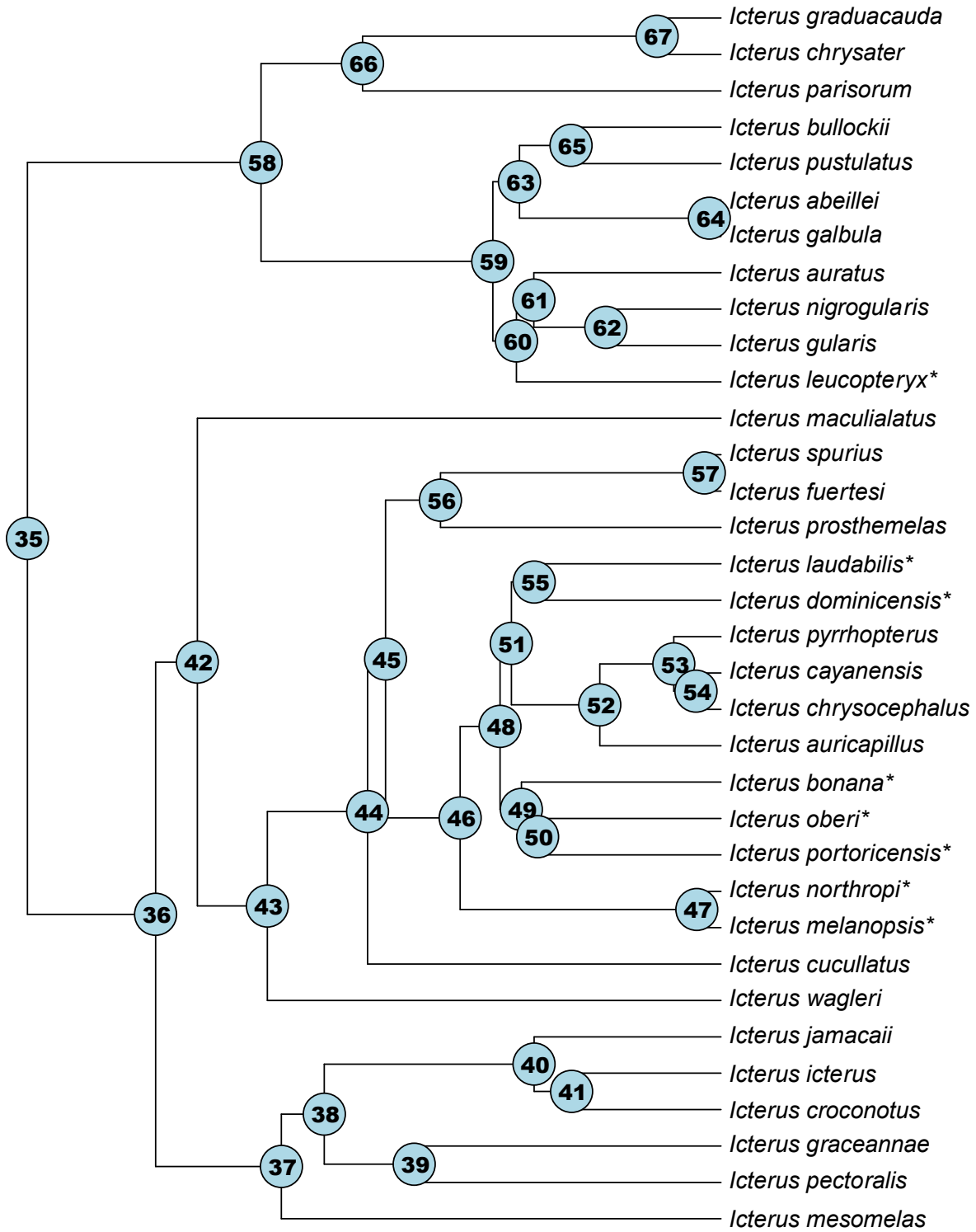
2 Reconstruction with Uncertainty Incorporated

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4 Supplementary Tables and Figures

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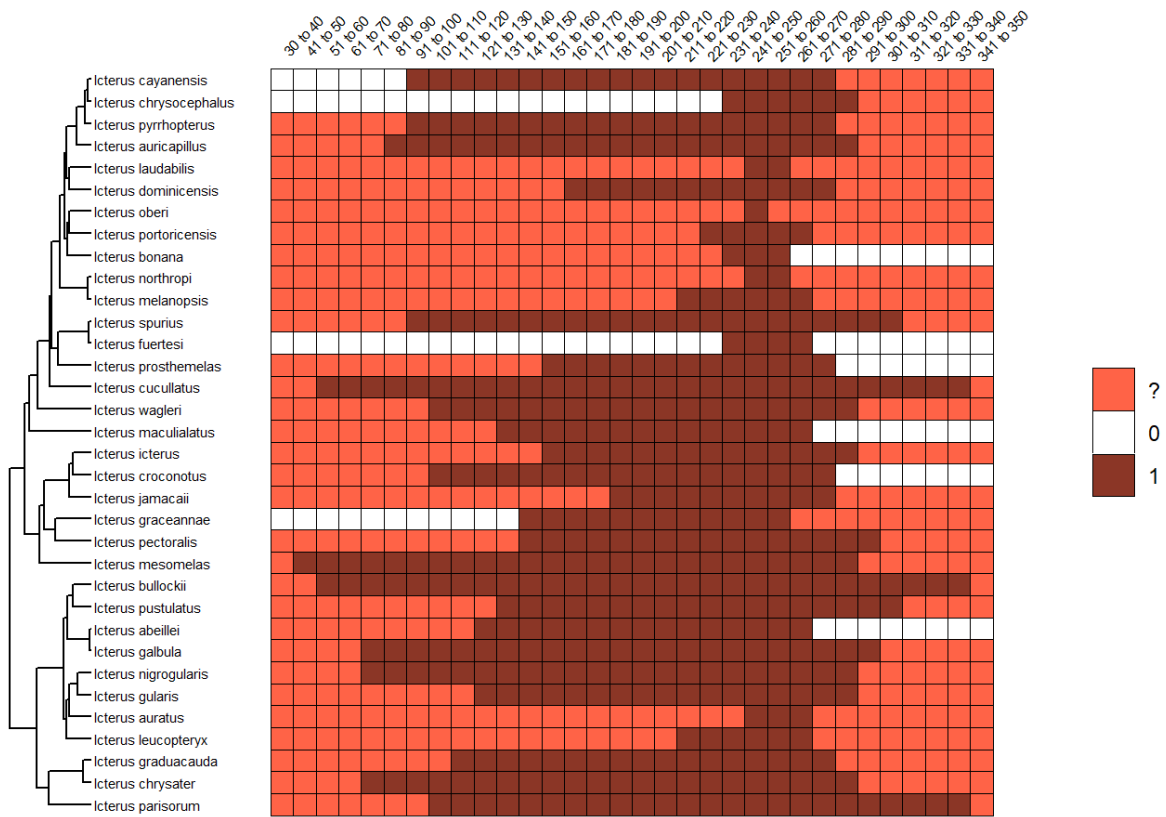
6 **Supplementary Figure 1. Phylogeny of *Icterus orioles* (Powell et al. 2014) used in our**  
 7 **analyses.** Node labels correspond to row labels in Supplement 7 Figures 3-6. Asterisks denote  
 8 narrow-range Caribbean island endemics.



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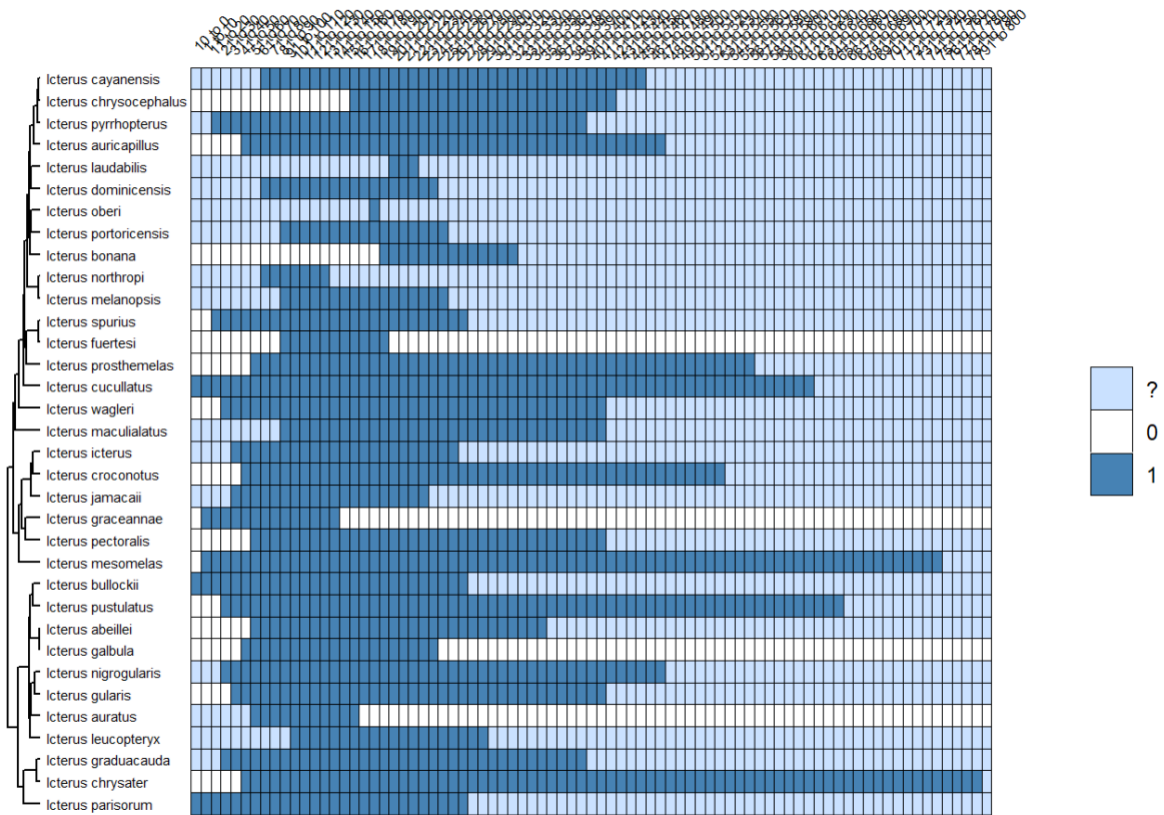
10 **Supplementary Figure 2. Bin-based coding of annual mean temperature niche for New**  
 11 **World Orioles (*Icterus spp.*).** Phylogenetic relationships (Supplemental Figure 1) plotted on left  
 12 side of figure. Dark red cells in a given row indicate bins that are inferred to be part of a species'  
 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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