

1 Reconstructing Ecological Niche Evolution via Ancestral State

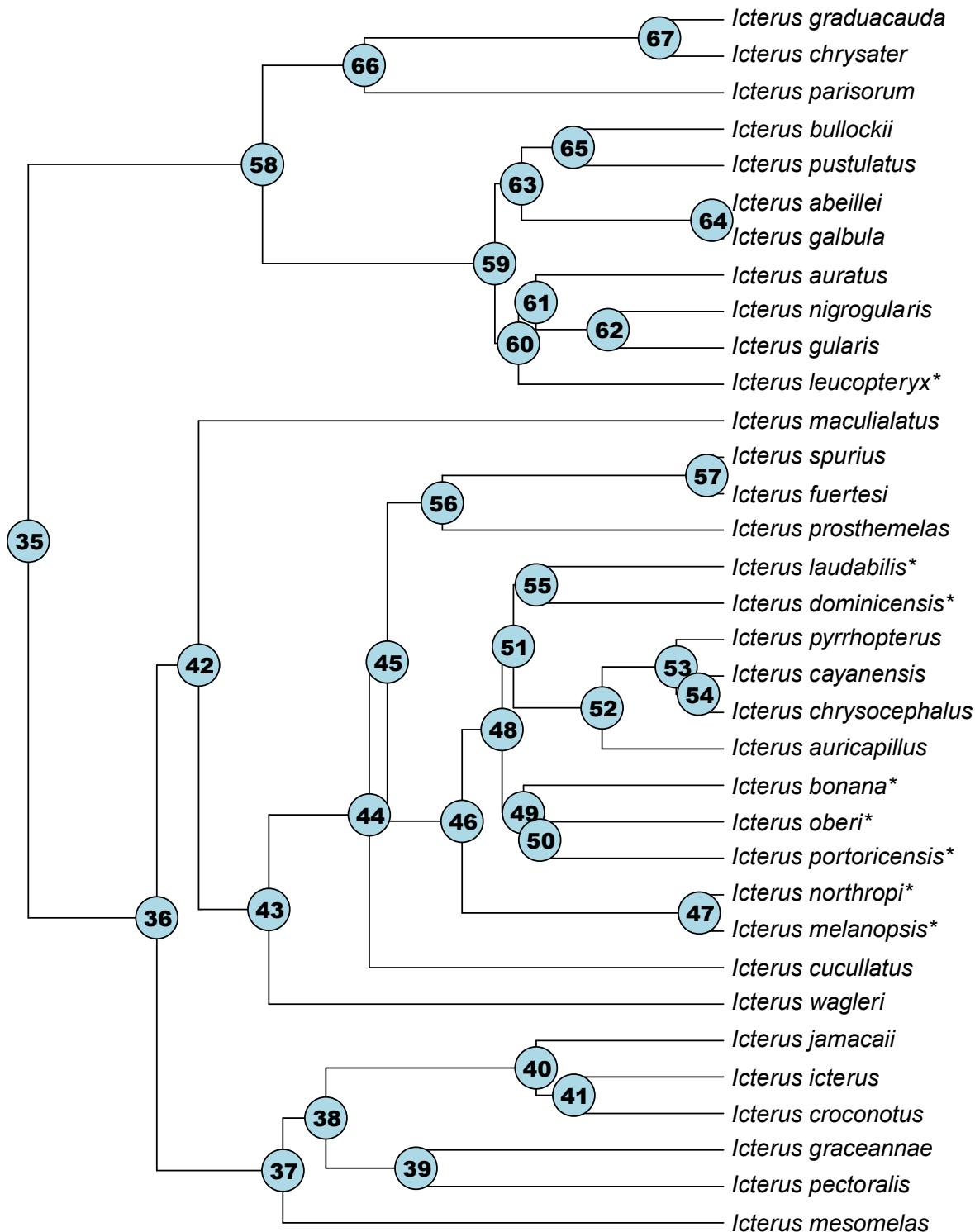
2 Reconstruction with Uncertainty Incorporated

3

4 Supplementary Tables and Figures

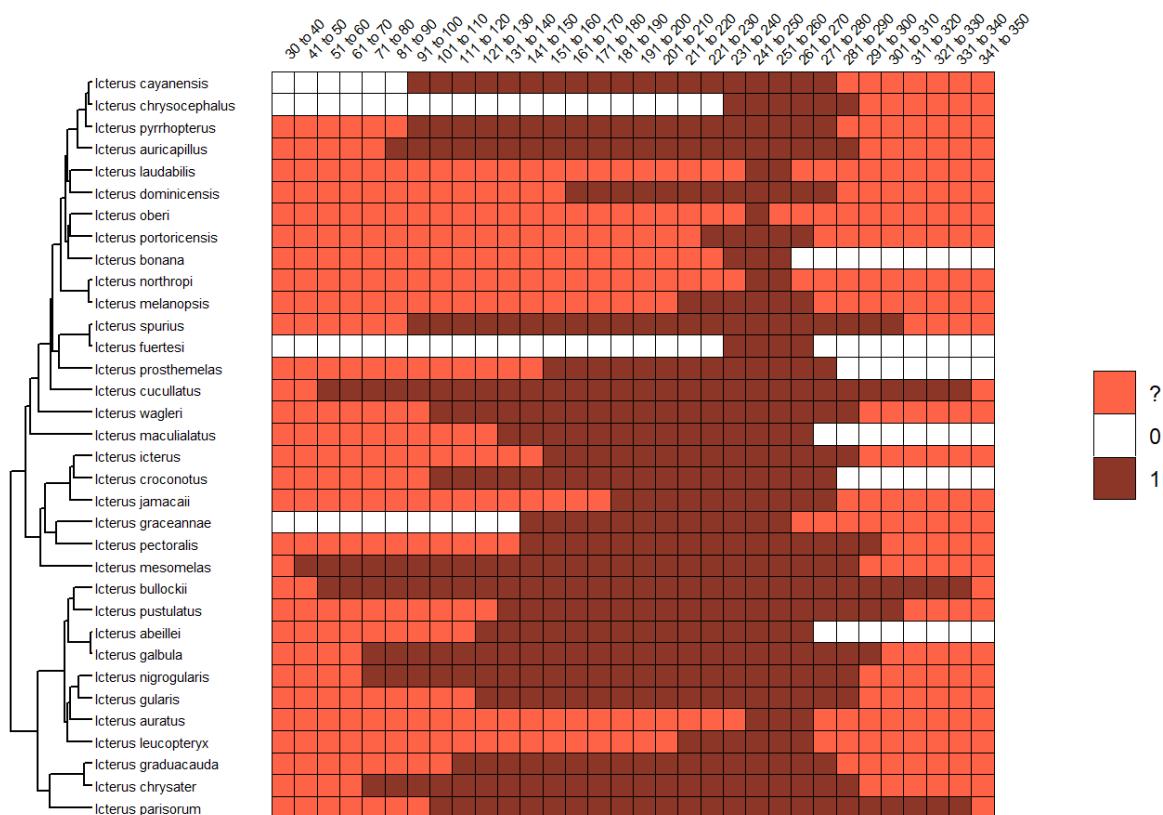
5

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.



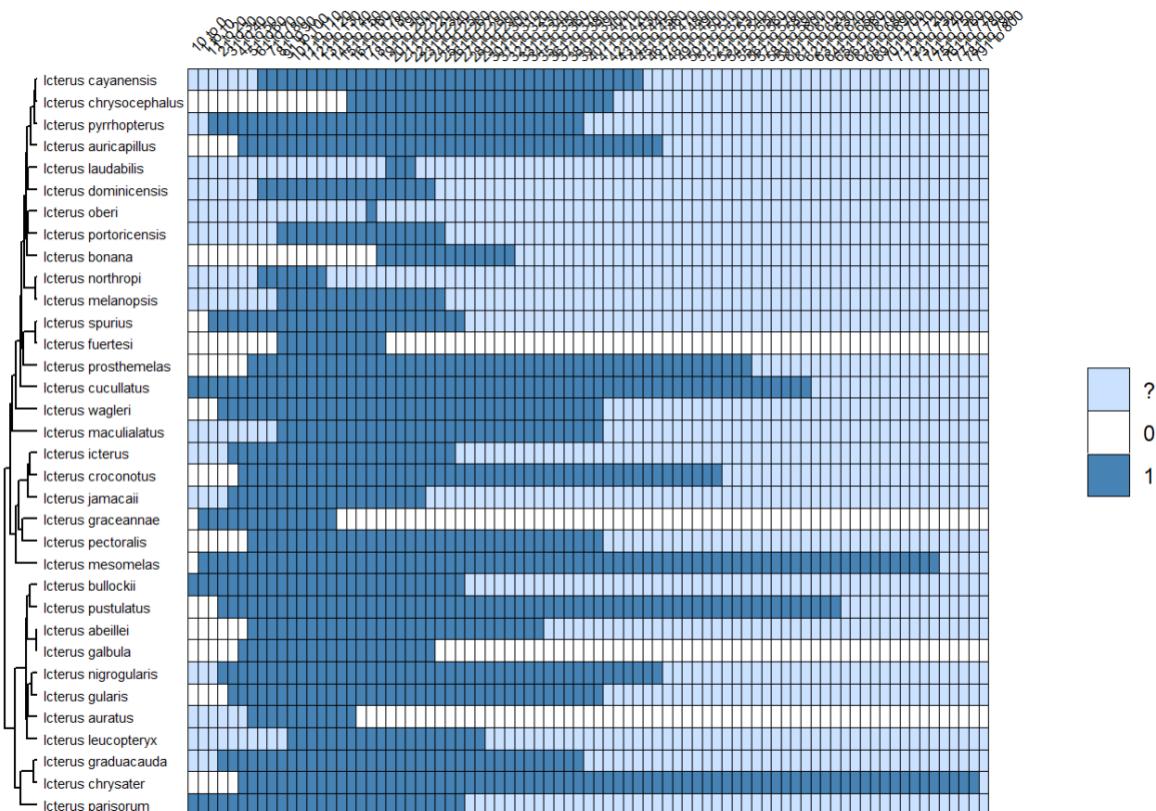
10 **Supplementary Figure 2. Bin-based coding of annual mean temperature niche for New**
 11 **World Orioles (*Icterus* spp.).** Phylogenetic relationships (Supplemental Figure 1) plotted on left
 12 side of figure. Dark red cells in a given row indicate bins that are inferred to be part of a species'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

16



17
18

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).



25
26
27

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.

31

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

32
33

34

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

54
55

56 Supplementary Table 3.

57 Maximum likelihood

58 reconstruction table of New

59 World oriole mean annual

60 temperature niche. First

61 column shows values

62 obtained using median

63 occurrence value; table cells

64 bolded and boxed indicate

65 which bin encompasses that

66 value. Cell colors indicate

67 bin score; “suitable” (1); dark

68 gray, “unsuitable” (0): wi

69 “unknown” (?): medium

70 gray. Numbered rows

71 indicate reconstruction

72 ancestral nodes

73 corresponding to

74 Supplementary Figure 1

15

16

77

78

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.

Supplementary Table 5. Maximum likelihood reconstruction table of New World oriole

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.

Numbered rows indicate reconstructions of ancestral nodes corresponding to numbers in

92 Supplementary Figure 1.

93

94