

Online Supplementary Material

ONLINE TABLE 1. Localities and specimen numbers for four *Manacus* and seven other outgroup piprid species examined in this study. Specimen numbers refer to the institutional frozen tissue catalogs of the United States National Museum of Natural History (USNM), the Louisiana State University Museum of Zoology (Baton Rouge; LSUMZ), the Field Museum of Natural History (Chicago; FMNH), and the Academy of Natural Sciences (Philadelphia; ANSP). Individuals denoted by an asterisk were included in Brumfield and Braun (2001).

Taxon	Population locality	Specimen numbers
<i>M. candei</i>	1) Costa Rica: prov. Limón; 11 km by road W of Guapiles	LSUMZ 16157*,16282*
	2) Panama: prov. Bocas del Toro; N bank Río Teribe	USNM 1920*,1924*
<i>M. vitellinus</i>	3) Panama: prov. Bocas del Toro; Valiente Peninsula	USNM 1251*
	4) Panama: prov. Colón; Soberania National Park	USNM 1858*,1862*
<i>M. aurantiacus</i>	5) Panama: prov. Chiriqui; 12.5 km by road N of Puerto Armuelles	USNM 2313*,2315*
<i>M. manacus</i> (west of Andes)		
<i>M. m. bangsi</i>	6) Ecuador: prov. Esmeraldas; Alto	ANSP 2394*,2407*

	Tambo	
<i>M. m. leucochlamys</i>	Ecuador: prov. Esmeraldas; El Placer	LSUMZ 12013*,12029*
<i>M. manacus</i> (east of Andes)		
<i>M. m. interior</i>	7) Peru: depto. Loreto; 157 km by river NNE of Iquitos	LSUMZ 2583*,2678*
<i>M. m. expectatus</i>	8) Peru: depto. Loreto; S Río Amazonas	LSUMZ 4910*
<i>M. m. guttuosus</i>	9) Paraguay	USNM 9770,9771
<i>M. m. manacus</i>	10) Guyana	USNM 9197,11782
<i>Antilophia galeata</i>	Bolivia: depto. Santa Cruz	LSUMZ 13815*
<i>Chiroxiphia pareola</i>	Peru: depto. Loreto; 5 km N of Amazonas	LSUMZ 6864*
<i>Corapipo leucorrhoea</i>	Panama: prov. Darién; about 6 km NW of Cana	LSUMZ 2085*
<i>Pipra mentalis</i>	Panama: prov. Bocas del Toro; Cayo Agua	USNM 1084*
<i>P. fasciicauda</i>	Peru: depto. Madre de Dios	FMNH 4316*
<i>Dixiphia pipra</i>	Guyana: Essequibo; Waruma River	USNM 5013*
<i>Lepidothrix suavissima</i>	Guyana: Essequibo; Waruma River	USNM 5065*

ONLINE TABLE 2. Summary of model parameters used in the maximum likelihood and Bayesian analyses.

Dataset	Model	Base frequencies ^a	ti/tv ratio	Rate Matrix ^b	pinv	α
Without outgroups						
β a3	HKY	0.1884, 0.2692, 0.2468	5.0185	-	-	-
β f7	GTR	0.3220, 0.1952, 0.1787	-	1.0×10^{-5} , 1.4×10^6 , 1.0×10^{-5} , 9.2×10^6 , 1.1×10^7	-	-
rho2	HKY	0.1694, 0.2988, 0.3028	4.8×10^{36}	-	-	-
ODC67	TVM	0.2954, 0.1633, 0.1903	-	1.0×10^{-5} , 3.5×10^6 , 1.0×10^{-5} , 2.3×10^{10} , 3.5×10^{10}	-	-
TGFB5	K81	equal	-	1.0, 1.5037, 1.0×10^{-5} , 1.0×10^{-5} , 1.5037	-	-
With outgroups ^c						
β a3	HKY + I	0.1923, 0.2654, 0.243	1.7357	-	0.6934	-
β f7	GTR + Γ	0.3214, 0.1941, 0.1823	-	4.2, 7.1, 1.45, 6.80, 15.2	-	0.3502
rho2	HKY + I	0.1706, 20.991, 0.2997	3.9259	-	0.8103	-
ODC67	GTR + I + Γ	0.2891, 0.1681, 0.1954	-	1.0×10^{-5} , 5.8, 1.0×10^{-5} , 1.4, 2.6	0.7521	0.7051
TGFB5	K81 + I	0.2500, 0.2500, 0.2500	-	1.0, 1.5, 1.0×10^{-5} , 1.0×10^{-5} , 1.5	-	-

^a Order of base frequencies is: A, C, G

^b Order of rate matrix is: A to C, A to G, A to T, C to G, C to T

ONLINE TABLE 3. Likelihood ratio tests in divergence population genetic IM analysis between Model I (3 parameters; $\theta_1=\theta_2=\theta_A$ and $m_{1\rightarrow 2}=m_{2\rightarrow 1}$) and Model II (6 parameters; $m_{1\rightarrow 2}=m_{2\rightarrow 1}$). Significant improvement of fit determined by X^2 test (df = 3; X^2 critical value = 7.81).

	Log(P(DIG, Parameters))	
	Model I	Model II
<i>M. vitellinus</i> X <i>M. manacus</i> (w)	-9.608	-8.897
<i>M. manacus</i> (w) X <i>M. manacus</i> (e)	-55.670	-52.813
Amazonia x Mata Atlantica	-37.428	-36.556
N. Amazon River x S. Amazon River	-14.367	-13.590
W. Negro River x E. Negro River	-24.559	-20.780
<i>M. vitellinus</i> X <i>M. candei</i>	-15.585	-14.141
<i>M. candei</i> X <i>M. aurantiacus</i>	-9.266	-9.656

ONLINE TABLE 4. Likelihood ratio tests between most likely network from unconstrained search and search in which alleles from each of the five OTUs were constrained to cluster together.

	$-\ln L_{\text{unconstrained}}$	$-\ln L_{\text{constrained}}$	$2[\ln L_{\text{unconstrained}} - \ln L_{\text{constrained}}]$	P
$\beta a3$	561.3	611.5	50.3	0.0224
$\beta f7$	946.4	965.3	18.9	0.0323
$\rho h o2$	448.9	455.4	6.5	0.0818
ODC67	736.3	820.8	84.6	0.0054
TGFB5	188.7	199.3	10.6	0.0763

ONLINE FIGURE LEGENDS

ONLINE FIGURE 1. Polymorphic sites within *Manacus* introns. Independently sorting regions for each gene as identified by “4-gamete” test are outlined. SNPs denoted by “0” in outgroups are positioned in deletions. Asterisks in the open columns after a gene represent individuals cloned for that gene.

ONLINE FIG. 1

	β a3	β f7	ODC67	rho2	TGFB5
Consensus	122222	12224444556	1	1	11 122 3333
Maur2313a	733366	7933580047070	71	893	24779 14 938 2555
Maur2313b	403709	8915880840072	82	138	85014 52 130 5159
Maur2315a		GTGCCGTTTTCC	AC	TGG	CGCGA
Maur2315b		---C---G---	-T	---	CT
Mcan1920a		---C---G---	GT	---	GGG
Mcan1920b		---C---G---	G-C	---	AGG
Mcan1924a		---C---G---	GT	---	A-A
Mcan1924b		---C---G---	G-C	---	A-A
Mcan16157a		---C---G---	GT	---	A-A
Mcan16157b		---C---G---	G-C	---	A-A
Mcan16282a		---C---G---	GT	---	A-A
Mcan16282b		---C---G---	G-C	---	A-A
Mman2583a		---C---G---	GT	---	A-A
Mman2583b		---C---G---	G-C	---	A-A
Mman2678a		---C---G---	GT	---	A-A
Mman2678b		---C---G---	G-C	---	A-A
Mman4910a		---C---G---	GT	---	A-A
Mman4910b		---C---G---	G-C	---	A-A
Mman9197a		---C---G---	GT	---	A-A
Mman9197b		---C---G---	G-C	---	A-A
Mman9770a		---C---G---	GT	---	A-A
Mman9770b		---C---G---	G-C	---	A-A
Mman9771a		---C---G---	GT	---	A-A
Mman9771b		---C---G---	G-C	---	A-A
Mman11782a		---C---G---	GT	---	A-A
Mman11782b		---C---G---	G-C	---	A-A
Mman2394a		---C---G---	GT	---	A-A
Mman2394b		---C---G---	G-C	---	A-A
Mman2407a		---C---G---	GT	---	A-A
Mman2407b		---C---G---	G-C	---	A-A
Mma12013a		---C---G---	GT	---	A-A
Mma12013b		---C---G---	G-C	---	A-A
Mma12029a		---C---G---	GT	---	A-A
Mma12029b		---C---G---	G-C	---	A-A
Mvit1251a		---C---G---	GT	---	A-A
Mvit1251b		---C---G---	G-C	---	A-A
Mvit1858a		---C---G---	GT	---	A-A
Mvit1858b		---C---G---	G-C	---	A-A
Mvit1862a		---C---G---	GT	---	A-A
Mvit1862b		---C---G---	G-C	---	A-A
Antilophia		---C---G---	GT	---	A-A
Chiroxiphia		---C---G---	G-C	---	A-A
Corepipo		---C---G---	GT	---	A-A
Dixiphia		---C---G---	G-C	---	A-A
P. fasciicauda		---C---G---	GT	---	A-A
P. mentalis		---C---G---	G-C	---	A-A
Lepidothrix		---C---G---	GT	---	A-A