

Table S2 List of microsatellite loci used, with information about the repeat motif, primer sequences, annealing temperature (Ta) and reference where it has been published.

Locus	Repeat motif	Primer sequence (5'-3')	Ta	Reference
Acit1	(AG) ₁₁	F: AAA TGA GTT CAG CGA TGG CTG AG R: TGC ACA TCA TGT CCG CCG AAC A	49	Noack <i>et al.</i> 2000
Acit2	(GT) ₃₅	F: GGC ACT GAG GAT TTA TAT TAC AGG R: GAG GTC CAG CTG AGA ACA GGG	52	Noack <i>et al.</i> 2000
Acit3	(GT) ₃₂	F: CTT AAG GTG TAC CTG CTT AGC R: GAG TGG GAA GAC AGA TGT TGA GG	51	Noack <i>et al.</i> 2000
Acit4	(GT) ₂₂	F: CCT TCC TAC TAG TTA GTC TTT CAC R: CAC ATA GCA CAG TGC ATT CAC CC	49	Noack <i>et al.</i> 2000
Acit6	(AGC) ₈	F: GCC GCA CCC TCA TTA TCC TCA C R: GTG ACT CCA ACG TGT AGC TTC C	52	Noack <i>et al.</i> 2000
Unh002	(CA) ₂₃₋₄₃	F: TTA TCC CAA CTT GCA ACT CTA TTT R: TCC ATT TCC TGA TCT AAC GAC AAG	52	Kellog <i>et al.</i> 1995
Unh011	(TG) ₁₅	F: TTC TCT CCA ACA TCA GTG R: CAC AGA TGA GAG CAG ACT T	55	Mckaye <i>et al.</i> 2002
Unh012	(GT) ₃₉	F: GCT GTA GCC CTC TTT AGT G R: ACC ATG AAG ATA AAA CTT CA	55	Mckaye <i>et al.</i> 2002
Unh013	(TG) ₃₄	F: TTC TTA CAC ATG CCT CAC R: AAC CGC TAT GAA CTT TCA	55	Mckaye <i>et al.</i> 2002
TmoM7	(CA)AA(CA) ₁₀	F: CTG CAG CCT CGC TCA CCA CGT AT R: CAC CAG ATA ACT GCA CAG CCC AG	48,50	Zardoya <i>et al.</i> 1996
Abur28	(AC) ₈ (CA) ₆	F: CGAAGCGCTTTAGTGTTTC R: CATCGCTCAGCTTTCTCCTC	55	Sanetra <i>et al.</i> unpubl.
Abur45	(TG) ₄₃	F: AGCAGTGGATGTGGCAGAG R: TACAGGATGTGCCCCTCTC	55	Sanetra <i>et al.</i> unpubl.
Abur82	(CA) ₄₆	F: ACAAAGAGCATGCACAAATG R: CAGGAGACACAGTGGGAGATG	55	Sanetra <i>et al.</i> unpubl.
Abur151	(TG) ₂₅	F: GTGAATGTGTGAGCGTGTCC R: CAGATGCAAACAGCTCGAAG	55	Sanetra <i>et al.</i> unpubl.
BurtKit	(TG) ₄₃	F: GAT CTG GAG AAT ATG CAC CTG GA R: ATC ACT CTT GTG GAT GGT TGG AG	55	Salzburger <i>et al.</i> unpubl.

1 **Table S3** Results of the Bayesian inference of number of populations within the Midas Cichlid. Posterior probabilities are shown for
2 two models, one that assumes a fixed number of populations ($\Pr[K=i]$) and another that assumes a variable number of populations
3 ($\Pr[K=i | X]$), where X: Observations, K: Number of populations, Alpha: Parameter of Dirichlet process. **A.** Analysis including all
4 populations. **B.** Analysis including only the populations in the large lakes.
5 **A.**

i	$\Pr[K = i X]$	$\Pr[K = i]$
1	0.0000	0.0017
2	0.0000	0.0118
3	0.0000	0.0393
4	0.9913	0.0849
5	0.0086	0.1344
6	0.0000	0.1666
7	0.0000	0.1689
8	0.0000	0.1442
9	0.0000	0.1059
10	0.0000	0.0681
11	0.0000	0.0388

$E[K | X] = 4.0089$
 $\text{Var}[K | X] = 0.0107$
Alpha = 0.9018

6
7 **B.**

i	$\Pr[K = i X]$	$\Pr[K = i]$
1	0.0000	0.3614
2	0.9994	0.3747
3	0.0005	0.1869
4	0.0000	0.0600
5	0.0000	0.0140
6	0.0000	0.0026
7	0.0000	0.0004
8	0.0000	0.0000

$E[K | X] = 2.0008$
 $\text{Var}[K | X] = 0.0055$
Alpha = 0.1580

8

Table S4 Matrix of pairwise *F*-statistics between pairs of localities within **A.** Lake Managua and **B.** Lake Nicaragua. Below diagonal microsatellite data and above diagonal data on mtDNA sequences. Probability values: **P* < 0.05, ***P* < 0.001 (in black), ns, non significant (in red).

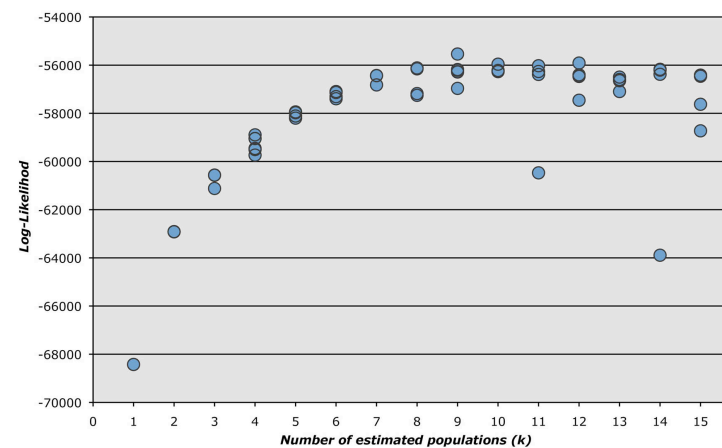
A.

			Momotombo		Mateare	Miraflores		Tipitapa	San Antonio	San Francisco	Tisma Pond
		N	<i>A. citrinellus</i>	<i>A. labiatus</i>		<i>A. citrinellus</i>	<i>A. labiatus</i>				
Momotombo	<i>A. citrinellus</i>	2	0.000	0.044 ^{ns}	0.044 ^{ns}	-0.007 ^{ns}	0.053 ^{ns}	0.020 ^{ns}	0.006 ^{ns}	-0.002 ^{ns}	0.003 ^{ns}
	<i>A. labiatus</i>	27	0.047 ^{ns}	0.000	0.026*	0.035**	0.035*	0.033**	0.026**	0.024**	0.029**
Mateare		11	0.012 ^{ns}	0.193**	0.000	0.009 ^{ns}	0.045**	0.012 ^{ns}	0.015 ^{ns}	0.001 ^{ns}	0.004 ^{ns}
Miraflores	<i>A. citrinellus</i>	104	0.122 ^{ns}	0.245**	0.004 ^{ns}	0.000	0.008 ^{ns}	0.001 ^{ns}	0.008 ^{ns}	-0.001 ^{ns}	-0.003 ^{ns}
	<i>A. labiatus</i>	8	0.039 ^{ns}	-0.002 ^{ns}	0.097 ^{ns}	0.195**	0.000	0.001 ^{ns}	0.009 ^{ns}	0.006 ^{ns}	0.001 ^{ns}
Tipitapa		47	0.008 ^{ns}	0.138**	-0.029 ^{ns}	0.025 ^{ns}	0.079 ^{ns}	0.000	0.004 ^{ns}	0.002 ^{ns}	0.0004 ^{ns}
San Antonio		36	-0.106 ^{ns}	0.040*	0.045*	0.143**	-0.012 ^{ns}	0.041 ^{ns}	0.000	-0.001 ^{ns}	0.002 ^{ns}
San Francisco		104	0.015 ^{ns}	0.136**	-0.033 ^{ns}	0.028*	0.075 ^{ns}	-0.012 ^{ns}	0.051**	0.000	-0.001 ^{ns}
Tisma Pond		65	0.004 ^{ns}	0.148**	-0.034 ^{ns}	0.031*	0.082*	-0.012 ^{ns}	0.052*	-0.011 ^{ns}	0.000

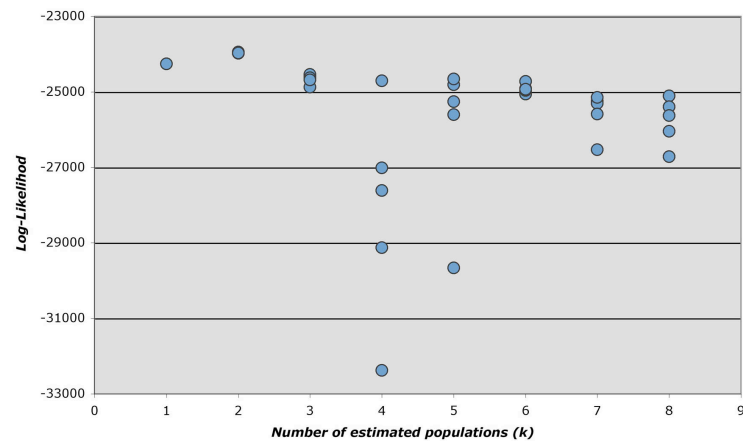
B.

		Isletas		Ometepe		Rivas		Solentiname		River	Las	Tisma	
		N	<i>A. citrinellus</i>	<i>A. labiatus</i>	<i>A. citrinellus</i>	<i>A. labiatus</i>	<i>A. citrinellus</i>	<i>A. labiatus</i>	<i>A. citrinellus</i>	<i>A. labiatus</i>	San Juan	Canoas	Pond
Isletas	<i>A. citrinellus</i>	129	0.000	0.010**	0.003**	0.020**	0.009 ^{ns}	0.033**	0.010**	0.016 ^{ns}	0.011 ^{ns}	0.061**	0.034**
	<i>A. labiatus</i>	264	0.011**	0.000	0.010**	0.021 ^{ns}	0.012**	0.026**	0.016**	0.030*	0.018**	0.078**	0.035**
Ometepe	<i>A. citrinellus</i>	131	-0.001 ^{ns}	0.020**	0.000	0.024**	0.007 ^{ns}	0.033**	0.008**	0.027*	0.006 ^{ns}	0.068**	0.039**
	<i>A. labiatus</i>	7	0.027 ^{ns}	0.029 ^{ns}	0.052*	0.000	0.033**	0.052*	0.032**	0.013 ^{ns}	0.035**	0.131**	0.024*
Rivas	<i>A. citrinellus</i>	17	0.005 ^{ns}	0.016 ^{ns}	0.010 ^{ns}	0.015 ^{ns}	0.000	0.016 ^{ns}	0.022**	0.044*	0.020 ^{ns}	0.107**	0.022*
	<i>A. labiatus</i>	8	0.028 ^{ns}	0.034 ^{ns}	0.036 ^{ns}	0.078 ^{ns}	0.037 ^{ns}	0.000	0.047**	0.090**	0.056**	0.175**	0.036**
Solentiname	<i>A. citrinellus</i>	84	-0.003 ^{ns}	0.017**	-0.004 ^{ns}	0.054 ^{ns}	0.016 ^{ns}	0.039 ^{ns}	0.000	0.020 ^{ns}	0.009 ^{ns}	0.071**	0.044**
	<i>A. labiatus</i>	4	0.114 ^{ns}	0.117 ^{ns}	0.148 ^{ns}	0.022 ^{ns}	-0.001 ^{ns}	0.165 ^{ns}	0.018*	0.000	0.025*	0.162*	0.072**
River San Juan		8	-0.010 ^{ns}	0.017 ^{ns}	-0.017 ^{ns}	0.024 ^{ns}	0.007 ^{ns}	0.005 ^{ns}	-0.005 ^{ns}	0.117 ^{ns}	0.000	0.051**	0.050**
Las Canoas		9	0.411**	0.407**	0.451**	0.408**	0.330**	0.545**	0.467**	0.196*	0.354**	0.000	0.118**
Tisma Pond		65	0.107**	0.130**	0.119**	0.083 ^{ns}	0.079*	0.159*	0.128**	0.097 ^{ns}	0.110 ^{ns}	0.525**	0.000

1 **Figure S1** Plot of log-likelihoods resulting from the clustering analysis with STRUCTURE. A. Analysis including all populations (10
2 replicates). B. Analysis including only the populations in the large lakes (5 replicates).
3 **A.**



4
5 **B.**



1 **Figure S2** Bayesian clustering analysis with the software STRUCTURE based on 15 microsatellites on the samples from the large
2 lakes Managua and Nicaragua, and Tisma Pond. (7,8,9 are Managua *A. citrinellus*, Managua *A. labiatus*, and Tisma; 10, 12
3 Nicaragua *A. citrinellus* and *A. labiatus*).

