

Supplementary material

Table S1. Rate of advance (RA) of golden mussel in watersheds of South America.

Year of Finding	RA (Km/year)	Hydrographic basin	Direction of advance of the mussel	References
1998	171	Paraguay river	Against the current ^a	[33,35]
2001	030	Uruguay river	Against the current	[37]
2006	- -	Upper Paraná river (Paranaíba river)	Against the current	[89]
1999	240	Middle and lower Paraná river	Against the current	[36]
2003	250	Lower Paraná river	Against the current	[37]
2011	245	Upper Paraná river (Grande river)	Against the current ^a	[27,33]
2011	477	São Francisco river	In favor of the current ^a	[27,33]
2015	473	Middle and lower São Francisco river	In favor of the current ^a	[16]
2017	200	Lower São Francisco river	In favor of the current	<i>This study</i>

^a calculated rate not made by the authors (distance covered/years).

Table S2. Sampling details and Haplotypes Codes for mitochondrial cytochrome c oxidase subunit I (*Cox1*) gene for the golden mussel *Limnoperna fortunei*. n, sample size in different populations; nh, number of haplotypes; \$ 2,160 specimens in Asia (735) and South America (1,425) identified (Haplotypes Codes); ^{ss} haplotypes' identity, according to [44] and [47]; & reference doesn't describe collection site or Latitude/Longitude; black - exclusive haplotype of Asia; blue - haplotype present in Asia and South America; red - exclusive haplotype of South America; *bold italic* - haplotypes identified in this study; bold - haplotypes observed continentally in South America; *T.S.* - this study; **larvae and adults*; **not described by the authors or haplotypes with another acronym (=100% similarity); ***sequences (<99.6% similarities); HPP - Hydroelectric Power Plant; HPR - Hydroelectric Power Reservoir.

ID	Collection site and Country (Latitude; Longitude)	mtDNA			Ref.
		n ^s	nh	Haplotypes Codes ^{ss}	
Asia					
TW1	Sun Moon Lake, Taiwan (23.842°; 120.872°)	26	3	<i>Lfm03</i> , <i>Lfm08</i> , Lfm19	[45]
TW2	Shiandau, Fusing Township, Taiwan (24.806°; 121.252°)	28	2	<i>Lfm03</i> , <i>Lfm08</i>	[45]
JP1	Daido intake station, Yodo River, Japan (34.745°; 135.551°)	20	4	<i>Lfm03</i> , <i>Lfm09</i> , Lfm20–21	[45]
JP2	Yahagi River, Toyota, Japan (35.112°; 137.194°)	23	4	<i>Lfm09</i> , Lfm20–21, <i>Lfm27</i>	[45]
JP3	Lake Ohshio, Tomioka, Japan (36.223°; 138.876°)	30	6	<i>Lfm09</i> , Lfm20–21, <i>Lfm27</i> , Lfm28-29	[45]
JP4	Oshio, Japan (36.225°; 138.878°)	8	5	<i>Lfm09</i> , <i>Lfm15</i> , Lfm20, Lfm21, <i>Lfm27</i>	[65]
JP5	Nagara, Japan (35.078°; 136.693°)	6	3	<i>Lfm09</i> , Lfm20, <i>Lfm27</i>	[65]
JP6	Lake Ohshio, Gunma, Japan (36.223°; 138.876°) &	1	1	Lfm20**	[59]
JP7	Japan (36°; 138°) &	1	1	<i>K01 (=Lfm09)**</i>	10
JP8	Hirakata, Yodo River, Japan (34.810°; 135.625°)	20	3 (3)	<i>K01(=Lfm09)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP9	Katata, Lake Biwa, Japan (35.115°; 135.924°)	20	3 (3)	<i>K01(=Lfm09)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP10	Chomeiji, Lake Biwa, Japan (35.167°; 136.059°)	20	3 (3)	<i>K01(=Lfm09)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP11	Fujigasaki, Lake Biwa, Japan (35.499°; 136.175°)	6	3 (3)	<i>K01(=Lfm09)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP12	Kawasami, Lake Yodo, Japan (35.531°; 136.190°)	20	3 (3)	<i>K01(=Lfm09)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP13	Aburashima, Ibi River, Japan (35.143°; 136.667°)	20	4 (4)	<i>K01(=Lfm09)</i> , <i>K02(=Lfm27)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP14	Aburashima, Nagara River, Japan (35.147°; 136.671°)	20	4 (4)	<i>K01(=Lfm09)</i> , <i>K02(=Lfm27)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP15	Makai, Kiso River, Japan (35.250°; 136.689°)	20	4 (4)	<i>K01(=Lfm09)</i> , <i>K02(=Lfm27)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP16	Fusoucho, Yahagi River, Japan (35.113°; 137.193°)	20	3 (3)	<i>K01(=Lfm09)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP17	Koshiozu, Lake Koshiozu, Japan (34.606°; 137.097°)	20	4 (4)	<i>K01(=Lfm09)</i> , <i>K02(=Lfm27)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP18	Myougou, Ure River, Japan (34.997°; 137.656°)	20	4 (4)	<i>K01(=Lfm09)</i> , <i>K02(=Lfm27)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP19	Ohmine, Lake Akiba, Japan (34.974°; 137.827°)	20	4 (4)	<i>K01(=Lfm09)</i> , <i>K02(=Lfm27)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP20	Minamigoka, Lake Ohshio, Japan (36.225°; 138.878°)	20	3 (3)	<i>K01(=Lfm09)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP21	Midono, Lake Takenuma, Japan (36.237°; 139.022°)	20	4 (4)	<i>K01(=Lfm09)</i> , <i>K02(=Lfm27)</i> , <i>K03(=Lfm20)</i> , <i>K04(=Lfm21)**</i>	[47]
JP22	Matsudo, Edo River, Japan (35.787°; 139.892°)	20	7 (6)	<i>K04(=Lfm21)</i> , <i>K05(=Lfm11)</i> , <i>K07(=Lfm03)</i> , <i>K08(Lfm37)</i> , <i>K10(=Lfm29)</i> , <i>K11(=Lfm11)</i> , <i>K12(=Lfm12)**</i>	[47]
JP23	Tobarisshinden, Lake Tega, Japan (35.865°; 139.995°)	20	6 (5)	<i>K04 (=Lfm21)</i> , <i>K05 (=Lfm11)</i> , <i>K06 (=Lfm21)</i> , <i>K07(=Lfm03)</i> , <i>K08(=Lfm37)</i> , <i>K09 (=Lfm05)**</i>	[47]
JP24	Nishihozue, Kobai River, Japan (36.251°; 139.996°)	20	5 (4)	<i>K04 (=Lfm21)</i> , <i>K05 (=Lfm11)</i> , <i>K07 (=Lfm03)</i> , <i>K08(=Lfm37)</i> , <i>K13(=Lfm03)**</i>	[47]
JP25	Toride, Tone River, Japan (35.891°; 140.057°)	20	6 (5)	<i>K04 (=Lfm21)</i> , <i>K05 (=Lfm11)</i> , <i>K07 (=Lfm03)</i> , <i>K08(=Lfm37)</i> , <i>K12(=Lfm12)</i> , <i>K21 (=Lfm11)</i> , <i>K18**</i>	[47],11

JP26	Amimachi, Lake Kasumigaura, Japan (36.043°; 140.232°)	20	6 (4)	K04 (=Lfm21), K05 (=Lfm11) , K06 (=Lfm21), K08(=Lfm37), K11(=Lfm11), K17(=Lfm11)**	[47]
JP27	Sakae, Lake Inba, Japan (35.821°; 140.251°)	20	4 (4)	K04 (=Lfm21), K05 (=Lfm11) , K07 (=Lfm03) , K08(=Lfm37)**	[47]
JP28	Sawara, Lake Tone, Japan (35.902°; 140.505°)	20	5 (5)	K04 (=Lfm21), K05 (=Lfm11) , K07 (=Lfm03) , K08(=Lfm37), K09 (=Lfm05)**	[47]
JP29	Ga, Lake Tonamisakaura, Japan (35.901°; 140.610°)	20	4 (4)	K04 (=Lfm21), K05 (=Lfm11) , K07 (=Lfm03) , K08(=Lfm37)	[47]
KR	Korea Institute of Water and Environment, Korea (36.401°; 127.413°)	20	3	Lfm11 , Lfm21, Lfm26	[45]
CH1	Lake Poyang, China (29.185°; 116.014°)	41	4	Lfm03, Lfm11 , Lfm24–25	[45]
CH2	Pengxi River, Yunyang County, China (30.948°; 108.680°)	22	3	Lfm03, Lfm11 , Lfm30	[45]
CH3	Xiongjiang, Minqing County, China (26.327°; 118.744°)	44	9	Lfm02, Lfm03 , Lfm06, Lfm11–12, Lfm27 , Lfm31–33	[45]
CH4	Luohe River, Zhejiang Province, China (28.878°; 121.165°)	30	6	Lfm03, Lfm11 , Lfm21, Lfm35, Lfm36–37	[45]
CH5	Xizhijiang, China (23.030°; 114.518°)	9	8	Lfm03, Lfm11, Lfm15, Lfm36, Lfm38, Lfm41, Lfm42, Lfm43	[28]
<i>South America</i>					
SOB	Sobradinho HPP, Brazil (-9.404°; -40.815°)	30	8	Lfm03, Lfm11, Lfm15, Lfm36, Lfm38, Lfm39, Lfm41, Lfm42	[28]
VIF	Ilha das Flores, Brazil (-10.454°; -36.531°)	18	4	Lfm02, Lfm03, Lfm04	T.S.
BGM	Brejo Grande marina, Brazil (-10.454°; -36.531°)	19	3	Lfm02, Lfm03, Lfm04	T.S.
MRS	Mouth of the São Francisco river, Brazil (-10.439°; -36.426°)	19	5	Lfm01, Lfm02, Lfm03, Lfm04	T.S.
CO	Corumbá, Brazil (-18.997°; -57.654°)	29	5	Lfm01, Lfm02, Lfm03, Lfm04, Lfm05	[44-46]
COR	Corumbá, Brazil (-19.006°; -57.680°)	19	11	Lfm01, Lfm02, Lfm03, Lfm04, Lfm05, Lfm06-09, Lfm10, Lfm38	[28]
VOL	Volta Grande HPP, Brazil (-20.029°; -48.219°)	30	10	Lfm01, Lfm02, Lfm03, Lfm05, Lfm06-09, Lfm10, Lfm38	[28]
IGA	Igarapava HPP, Brazil (-20.781°; -51.633°)	31	10	Lfm02, Lfm03, Lfm04, Lfm05, Lfm06-09, Lfm10, Lfm15	[28]
JUP	Jupia HPP, Brazil (-20.781°; -51.633°)	16	9	Lfm02, Lfm03, Lfm04, Lfm05, Lfm06-09, Lfm10	[28]
ROS	Rosana HPP, Brazil (-22.594°; -52.878°)	14	2	Lfm03, Lfm05	[28]
POR	Porto Primavera HPP, Brazil (-22.495°; -53.016°)	32	3	Lfm02, Lfm03, Lfm39	[28]
BAR	Porto Hidroviário Bariri (-22.155°; -48.746°)	28	10	Lfm02, Lfm03, Lfm04, Lfm05, Lfm06-09, Lfm10, Lfm38	[28]
BON	Barra Bonita HPP, Brazil (-22.513°; -48.746°)	31	3	Lfm03, Lfm36, Lfm38	[28]
RB	Rio Baía, Alto Rio Paraná, Brazil (-22.686°; -53.253°)	27	5	Lfm01, Lfm02, Lfm03, Lfm04, Lfm05	[44-46]
IT1	Itaipú HPR, Brazil (-25.408°; -54.590°)	32	6	Lfm01, Lfm02, Lfm03, Lfm04, Lfm05-06	[44-46]
IT2*	Itaipú HPR, Brazil (-25.408°; -54.589°)	51	4	Lfm01, Lfm02, Lfm03, Lfm04, Lfm05	[48]
IT3	Itaipú HPP, Brazil (-25.409°; -54.606°)	25	2	Lfm03, Lfm05	[28]
IRB	Iguassu river basin, Brazil (-25°; -54°) &	1	1	Lfm01***	[40]
CX1*	Salt. Caxias HPR, Brazil (-25.420°; -52.114°)	49	2	Lfm03, Lfm05	[48]
CX2	Salt. Caxias HPP, Brazil (-25.543°; -53.496°)	34	3	Lfm02, Lfm03, Lfm05	[28]
OS*	Salt. Osório HPR, Brazil (-25.536°; -53.009°)	28	2	Lfm03, Lfm05	[48]
PQ	Iguassu National Park, Brazil (-25.600°; -54.393°)	58	3	Lfm02, Lfm03, Lfm05	[48]
YR	Yabebiry River, Misiones, Argentina (-27.297°; -55.543°)	27	5	Lfm02, Lfm03, Lfm04, Lfm05	[44-46]
MAC	Machadinho HPP, Brazil (-27.523°; -51.784°)	20	10	Lfm02, Lfm03, Lfm04, Lfm05, Lfm06-09, Lfm10, Lfm15	[28]
YD	Yaciretá Dam, Brazil, Paraguay and Argentina (-27.471°; -56.704°)	34	4	Lfm01, Lfm03, Lfm04, Lfm05	[44-46]
PR	Paraná River, Santa Tecla, Corrientes, Argentina (-27.605°; -56.385°)	26	6	Lfm01, Lfm02, Lfm03, Lfm04, Lfm05, Lfm06	[44-46]
BAL	Balsa Barreto, Brazil (-29.864°; -51.718°)	15	10	Lfm02, Lfm03, Lfm04, Lfm05, Lfm06-09, Lfm10, Lfm38	[28]

AMA	Amarópolis HPP, Brazil (-29.946°; -51.893°)	24	2	<i>Lfm03</i> , Lfm06	[28]
DMA	Dom Marco HPP, Brazil (-30.096°; -52.493°)	21	2	<i>Lfm03</i> , Lfm05	[28]
POA1	Jacuí River, Brazil (-29.990°; -51.271°)	1	1	<i>Lfm01</i> **	[65]
POA2	Porto Alegre, Brazil (-34.803°; -57.938°)	31	2	<i>Lfm03</i> , Lfm05	[28]
FE	Federación, Salto Grande Lake, Argentina (-30.992°; -57.915°)	24	6	<i>Lfm01</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05, Lfm07–08	[44]
CA-1	Cayasta, Santa Fe, Argentina (-31.183; -60.080°)	27	6	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05–06	[44]
CA-2	Cayasta, Santa Fe, Argentina (-31.186; -60.033°)	32	4	<i>Lfm01</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05	[44–46]
SG	Salto Grande Dam, Uruguay (-31.195°; -57.905°)	48	8	<i>Lfm01</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05, Lfm09, Lfm10, Lfm11–12	[44–46]
PU	Puerto Luis, Salto Grande Lake, Argentina (-31.257°; -57.907°)	26	7	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05, Lfm11, Lfm18	[44–46]
PEL	Pelotas, Brazil (-31.811°; -52.389°)	31	3	<i>Lfm03</i> , Lfm05, Lfm06	[28]
SA	Setubal Lagoon, Santa Fe, Argentina (-31.635°; -60.681°)	30	5	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05	[44–46]
SO	Sao Gonçalo Channel, Brazil (-31.811°; -52.388°)	34	5	<i>Lfm03</i> , <i>Lfm04</i> , Lfm05–06, Lfm10	[44–46]
UR	Uruguay River, Colon, Argentina (-32.152°; -58.188°)	23	4	<i>Lfm02</i> , <i>Lfm03</i> , Lfm05, Lfm17	[44–46]
RT	Río Tercero Dam, Cordoba, Argentina (-32.213°; -64.473°)	59	6	<i>Lfm01</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05–06, Lfm13	[44–46]
EC	Del Este Channel, Buenos Aires, Argentina (-34.346°; -58.519°)	24	6	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , Lfm05, Lfm07, Lfm14	[44–46]
CR	Carapachay River, Buenos Aires, Argentina (-34.398°; -58.594°)	29	7	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05, Lfm06–07	[44–46]
TI	Lujan River, Tigre, Buenos Aires, Argentina (-34.415°; -58.578°)	24	5	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05	[44–46]
SF	Lujan River, San Fernando, Argentina (-34.428°; -58.552°)	30	5	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05	[44–46]
BA	Buenos Aires city, Argentina (-34.606°; -58.346°)	52	6	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05–06	[44–46]
QU	Quilmes, Buenos Aires, Argentina (-34.716°; -58.214°)	22	4	<i>Lfm03</i> , Lfm05, Lfm06–07	[44–46]
PL	Punta Lara, Buenos Aires, Argentina (-34.782; -58.011°)	21	4	<i>Lfm03</i> , <i>Lfm04</i> , Lfm05, Lfm15	[44–46]
SL	Santa Lucía River, Canelones, Uruguay (-34.522°; -56.494°)	26	5	<i>Lfm01</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05, Lfm10	[44–46]
PLA	La Plata, Argentina (-30.033°; -51.240°)	21	4	<i>Lfm03</i> , Lfm09, Lm15, Lfm27	[28]
MA	Magdalena, Buenos Aires, Argentina (-35.013°; -57.536°)	22	7	<i>Lfm01</i> , <i>Lfm02</i> , <i>Lfm03</i> , <i>Lfm04</i> , Lfm05–06, Lfm16	[45–47]

¹⁰GenBank: FW369972(574 bp); ¹¹GenBank: AB828679 (658 bp); *T.S.* (~555 bp).