

Table S4. Result of population assignment algorithms STRUCTURE and GeneClass for 19 populations of mussels.

Name	STRUCTURE (K=5)					GeneClass Assigned to species					GeneClass Assigned of individuals to origin region										
	Clusters																				
	1	2	3	4	5	<i>M. platensis</i>	<i>M. chilensis</i>	<i>M. edulis</i>	<i>M. galloprovincialis</i>	<i>M. trossulus</i>	ARG30, ARG73, ARG9, IPL, SAO, BCA, COM, MDP	PMD	UBC, PZC, PAR	IRD	LGF	CAM	ORI	NZA	AKAR	KKAT	
ARG30	30 (100%)					30 (100%)					30 (100%)										
ARG73	29 (96.67%)	1 (3.33%)				29 (96.67%)	1 (3.33%)				29 (96.67%)		1 (3.33%)								
ARG9	30 (100%)					30 (100%)					30 (100%)										
IPL	29 (100%)					29 (100%)					29 (100%)										
PMD	8 (29.63%)	1 (3.7%)	1 (3.7%)	17 (62.96%)		10 (37.04%)	1 (3.7%)	4 (14.81%)	12 (44.44%)		2 (7.4%)	24 (88.9%)				1 (3.7%)					
SAO	19 (100%)					19 (100%)					19 (100%)										
BCA	34 (100%)					34 (100%)					34 (100%)										
COM	35 (100%)					35 (100%)					35 (100%)										
MDP	36 (100%)					36 (100%)					36 (100%)										
UBC	1 (3.45%)	28 (96.55%)				1 (3.45%)	28 (96.55%)				1 (3.45%)		28 (96.55%)								
PZC		30 (100%)					30 (100%)						30 (100%)								
PAR		33 (100%)					33 (100%)						33 (100%)								
IRD	1 (3.33%)		29 (96.67%)			1 (3.33%)		29 (96.67%)			1 (3.33%)		29 (96.67%)								
LGF			27 (100%)					27 (100%)					27 (100%)								
CAM				29 (100%)					29 (100%)						26 (89.65%)	3 (10.35%)					
ORI				29 (100%)					29 (100%)						1 (3.45%)	28 (96.55%)					
NZA				27 (100%)					27 (100%)								24 (88.9%)	3 (11.1%)			
AKAR				30 (100%)					30 (100%)										30 (100%)		
KKAT					28 (100%)					28 (100%)											28 (100%)

GeneClass

Assigned PMD individuals to study populations after removal PMD sample from baseline populations

IPL	ARG30	PZC	IRD	LGF	CAM	ORI
9(33.33)	1 (3.7%)	1 (3.7%)	4(14.81%)	5(18.52)	7(25.93)	