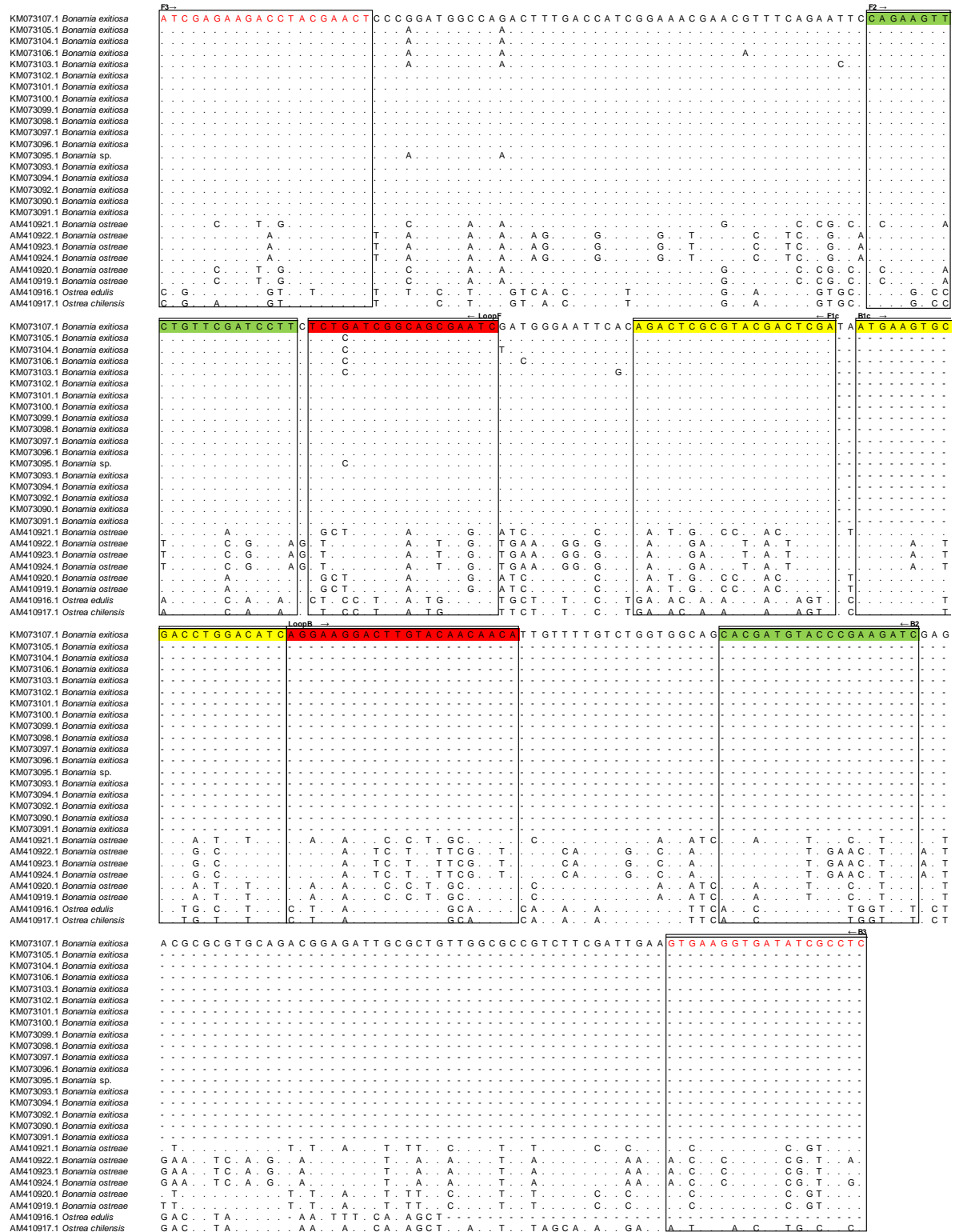


**Figure S1.** Nucleotide alignment of partial gene sequences of the *actin* and *18S rRNA* genes of bonamia species, their oyster hosts, and other haplosporidian sequences available in GenBank (accessed in March 2022). The LAMP primers binding sites are highlighted as follows: outer primers F3 and B3 coloured in red; inner primers FIP (F1c + F2) and BIP (B1c + B2) boxed in yellow and green; and loop primers LoopF and LoopB boxed in red.

**A) *Bonamia exitiosa* *actin* gene alignment.**



## b) *Bonamia ostreae* actin 1 gene alignment.

AM410921.1 <i>Bonamia ostreae</i>	T T C T T C A A C G A A C T G A G A G T C	G C C C C C G A A G A G C A C C C C G T C C T C C T C A C C G A G G C A C C G C T C A A T C C C A A A G C C
AM410922.1 <i>Bonamia ostreae</i>		
AM410923.1 <i>Bonamia ostreae</i>		
AM410924.1 <i>Bonamia ostreae</i>		
AM410920.1 <i>Bonamia ostreae</i>		
AM410919.1 <i>Bonamia ostreae</i>		
KM073107.1 <i>Bonamia exitiosa</i>		
AM410916.1 <i>Ostrea edulis</i>		
AM410918.1 <i>Ostrea chilensis</i>		
AM410917.1 <i>Ostrea chilensis</i>		

AM410921.1 <i>Bonamia ostreae</i>	A A T C G C G A G A A G A T G A C T C A G A T C A	G T T C G A G A C C T T C A A C A C C	C C C G	G G A T G T A C G T C G C C A T C C A A	G C G G T C
AM410922.1 <i>Bonamia ostreae</i>					
AM410923.1 <i>Bonamia ostreae</i>					
AM410924.1 <i>Bonamia ostreae</i>					
AM410920.1 <i>Bonamia ostreae</i>					
AM410919.1 <i>Bonamia ostreae</i>					
KM073107.1 <i>Bonamia exitiosa</i>					
AM410916.1 <i>Ostrea edulis</i>					
AM410918.1 <i>Ostrea chilensis</i>					
AM410917.1 <i>Ostrea chilensis</i>					

AM410921.1 <i>Bonamia ostreae</i>	C T C T C C C T	C T A C G C G T C C G G A A G A A C C	A C	G G A A T C G T C T T G G A C T C	G G A G A T G G C G T C A G C C A C A C C	G T C C C G
AM410922.1 <i>Bonamia ostreae</i>						
AM410923.1 <i>Bonamia ostreae</i>						
AM410924.1 <i>Bonamia ostreae</i>						
AM410920.1 <i>Bonamia ostreae</i>						
AM410919.1 <i>Bonamia ostreae</i>						
KM073107.1 <i>Bonamia exitiosa</i>						
AM410916.1 <i>Ostrea edulis</i>						
AM410918.1 <i>Ostrea chilensis</i>						
AM410917.1 <i>Ostrea chilensis</i>						

AM410921.1 <i>Bonamia ostreae</i>	A T C T A C G A A G G A	T A T G C C C T T C C	T C A C G C C A T T C T G A G A T T G G A C A T
AM410922.1 <i>Bonamia ostreae</i>			
AM410923.1 <i>Bonamia ostreae</i>			
AM410924.1 <i>Bonamia ostreae</i>			
AM410920.1 <i>Bonamia ostreae</i>			
AM410919.1 <i>Bonamia ostreae</i>			
KM073107.1 <i>Bonamia exitiosa</i>			
AM410916.1 <i>Ostrea edulis</i>			
AM410918.1 <i>Ostrea chilensis</i>			
AM410917.1 <i>Ostrea chilensis</i>			

## c) *Bonamia 18S rRNA* gene alignment.

MZ305451.1 <i>Bonamia ostreae</i>	G G T G A G A C T A A C T T A T G C G A A	A G C A T T C A C C A A G C G T G T T T T C T T T A A T C A A G A A C T A A A G T T G G G G G A T C G A A G
JN040832.1 <i>Bonamia ostreae</i>		
JN040831.1 <i>Bonamia ostreae</i>		
JQ936481.1 <i>Bonamia ostreae</i>		
AF262995.1 <i>Bonamia ostreae</i>		
AF192759.1 <i>Bonamia ostreae</i>		
JF831802.1 <i>Bonamia exitiosa</i>		
JF495410.1 <i>Bonamia exitiosa</i>		
JF831804.1 <i>Bonamia sp.</i>		
JF495408.1 <i>Bonamia sp.</i>		
JF831803.1 <i>Bonamia sp.</i>		
AY542903.2 <i>Bonamia sp.</i>		
GQ366703.1 <i>Bonamia sp.</i>		
AF337563.1 <i>Bonamia sp.</i>		
DQ312295.1 <i>Bonamia sp.</i>		
KC578009.1 <i>Bonamia sp.</i>		
EU016528.1 <i>Bonamia sp.</i>		
DQ356000.1 <i>Bonamia perspora</i>		
AY449710.1 <i>Minchinia tapetis</i>		
KY522823.1 <i>Minchinia sp.</i>		
KY522821.1 <i>Minchinia sp.</i>		
FJ518816.1 <i>Minchinia mercenariae</i>		
MK070859.1 <i>Haplosporidium sp.</i>		
AY449712.1 <i>Haplosporidium parasite</i>		
MK070858.1 <i>Minchinia mytili</i>		
MT311215.1 <i>Haplosporidium carcini</i>		
DQ653412.2 <i>Haplosporidia sp.</i>		
U20858.1 <i>Haplosporidium costale</i>		
DQ458793.1 <i>Haplosporidium edule</i>		
EF165631.1 <i>Minchinia sp.</i>		
HQ176469.1 <i>Haplosporidium raabei</i>		
AY449711.1 <i>Minchinia chitonis</i>		
KJ534587.1 <i>Haplosporidium patagon</i>		
MN104247.1 <i>Haplosporidium pinnae</i>		
U20319.1 <i>Minchinia terebinis</i>		
M2666334.1 <i>Haplosporidium costale</i>		
AY449713.1 <i>Haplosporidium lusitanicu</i>		
HQ285783.1 <i>Haplosporidia sp.</i>		
M2666335.1 <i>Haplosporidium costale</i>		
MT367896.1 <i>Haplosporidium pinnae</i>		
U19538.2 <i>Haplosporidium nelsoni</i>		
AB080597.1 <i>Haplosporidium nelsoni</i>		
MT311214.1 <i>Haplosporidium cranc</i>		
X74131.1 <i>Haplosporidium nelsoni</i>		
DQ219484.1 <i>Haplosporidium montforti</i>		
MK142774.1 <i>Haplosporidium pinnae</i>		
MF621965.1 <i>Haplosporidium sp.</i>		
KT861000.1 <i>Pelagophyceae sp.</i>		
MW695753.1 <i>Uncultured_eukaryote</i>		

	F2 →										← LoopF									
	A	C	G	A	T	C	A	G	A	T	C	A	G	A	T	C	A	G	A	T
MZ305451.1 <i>Bonamia ostreae</i>																				
JN040832.1 <i>Bonamia ostreae</i>																				
JN040831.1 <i>Bonamia ostreae</i>																				
JQ936481.1 <i>Bonamia ostreae</i>																				
AF262995.1 <i>Bonamia ostreae</i>																				
AF192759.1 <i>Bonamia ostreae</i>																				
JF831802.1 <i>Bonamia exitiosa</i>																				
JF495410.1 <i>Bonamia exitiosa</i>																				
JF831804.1 <i>Bonamia</i> sp.																				
JF495408.1 <i>Bonamia</i> sp.																				
JF831803.1 <i>Bonamia</i> sp.																				
AY542903.2 <i>Bonamia</i> sp.																				
GQ366703.1 <i>Bonamia</i> sp.																				
AF337563.1 <i>Bonamia</i> sp.																				
DQ312295.1 <i>Bonamia</i> sp.																				
KC578009.1 <i>Bonamia</i> sp.																				
EU016528.1 <i>Bonamia</i> sp.																				
DQ356000.1 <i>Bonamia perspora</i>																				
AY449710.1 <i>Minchinia tapetis</i>																				
KY522823.1 <i>Minchinia</i> sp.																				
KY522821.1 <i>Minchinia</i> sp.																				
FJ518816.1 <i>Minchinia mercenariae</i>																				
MK070859.1 <i>Haplosporidium</i> sp.																				
AY449712.1 <i>Haplosporidium</i> parasite																				
MK070858.1 <i>Minchinia mytili</i>																				
MT311215.1 <i>Haplosporidium carcini</i>																				
DQ653412.2 <i>Haplosporidia</i> sp.																				
U20858.1 <i>Haplosporidium costale</i>																				
DQ458793.1 <i>Haplosporidium edule</i>																				
EF165631.1 <i>Minchinia</i> sp.																				
HQ176469.1 <i>Haplosporidium raabei</i>																				
AY449711.1 <i>Minchinia chitonis</i>																				
KJ534587.1 <i>Haplosporidium patagon</i>																				
MN104247.1 <i>Haplosporidium pinnae</i>																				
U20319.1 <i>Minchinia teredinis</i>																				
MZ666334.1 <i>Haplosporidium costale</i>																				
AY449713.1 <i>Haplosporidium lusitanicu</i>																				
HQ285783.1 <i>Haplosporidia</i> sp.																				
MZ666335.1 <i>Haplosporidium costale</i>																				
MT367896.1 <i>Haplosporidium pinnae</i>																				
U19538.2 <i>Haplosporidium nelsoni</i>																				
AB080597.1 <i>Haplosporidium nelsoni</i>																				
MT311214.1 <i>Haplosporidium cranc</i>																				
X74131.1 <i>Haplosporidium nelsoni</i>																				
DQ219484.1 <i>Haplosporidium montforti</i>																				
MK142774.1 <i>Haplosporidium pinnae</i>																				
MF621965.1 <i>Haplosporidium</i> sp.																				
KT861000.1 <i>Pelagophyceae</i> sp.																				
MW695753.1 <i>Uncultured_eukaryote</i>																				

MZ305451.1 <i>Bonamia ostreae</i>	<b>SGAATTGACGGAAGGG</b>	C A C	<b>CAC- AAGTTGTGGAGCCTG</b>	CGGCTTAATTTGATTCAACACGGGAAAACTTACCA <b>GG</b>
JN040832.1 <i>Bonamia ostreae</i>				
JN040831.1 <i>Bonamia ostreae</i>				
JQ936481.1 <i>Bonamia ostreae</i>				
AF262995.1 <i>Bonamia ostreae</i>				
AF192759.1 <i>Bonamia ostreae</i>				
JF831802.1 <i>Bonamia exitiosa</i>			A	
JF495410.1 <i>Bonamia exitiosa</i>			A	
JF831804.1 <i>Bonamia sp.</i>			A	
JF495408.1 <i>Bonamia sp.</i>			A	
JF831803.1 <i>Bonamia sp.</i>	A		A A A	G A
AY542903.2 <i>Bonamia sp.</i>			A	
GQ366703.1 <i>Bonamia sp.</i>			A	
AF337563.1 <i>Bonamia sp.</i>			A	
DQ312295.1 <i>Bonamia sp.</i>			A	
KC578009.1 <i>Bonamia sp.</i>			A	
EU016528.1 <i>Bonamia sp.</i>			A	
DQ356000.1 <i>Bonamia perspora</i>			A	G
AY449710.1 <i>Minchinia tapetis</i>		C	C	
KY522823.1 <i>Minchinia sp.</i>		T A	A	T
KY522821.1 <i>Minchinia sp.</i>		T A	A	T
FJ518816.1 <i>Minchinia mercenariae</i>		T A	A A	T
MK070859.1 <i>Haplosporidium</i> sp.	A		C A	C
AY449712.1 <i>Haplosporidian parasite</i>		A	T A	N
MK070858.1 <i>Minchinia mytili</i>		A A	A	C
MT311215.1 <i>Haplosporidium carcini</i>		A	C	C
DQ653412.2 <i>Haplosporidia</i> sp.		A	C A	G
U20858.1 <i>Haplosporidium costale</i>			C	C
DQ458793.1 <i>Haplosporidium edule</i>			C G	T G G
EF165631.1 <i>Minchinia sp.</i>	T		C	C
HQ176469.1 <i>Haplosporidium raabei</i>			C A	T
AY449711.1 <i>Minchinia chiltonis</i>			C	A
KJ534587.1 <i>Haplosporidium patagon</i>			C	C
MN104247.1 <i>Haplosporidium pinnae</i>			C G	C
U20319.1 <i>Minchinia teredinis</i>		G A	T G C	C
MZ666334.1 <i>Haplosporidium costale</i>				C
AY449713.1 <i>Haplosporidium lusitanicu</i>		A	C A	C
HQ285783.1 <i>Haplosporidia</i> sp.	T		C	C A
MZ666335.1 <i>Haplosporidium costale</i>			C	C
MT367896.1 <i>Haplosporidium pinnae</i>			C G	C
U19538.2 <i>Haplosporidium nelsoni</i>	A		C A	C
AB080597.1 <i>Haplosporidium nelsoni</i>	A		C A	C
MT311214.1 <i>Haplosporidium cranc</i>		A A	T G	A
X74131.1 <i>Haplosporidium nelsoni</i>	A	C	C	C
DQ219484.1 <i>Haplosporidium montforti</i>			C G A	C
MK142774.1 <i>Haplosporidium pinnae</i>			C	C
MF621965.1 <i>Haplosporidium</i> sp.			C G	C
KT861000.1 <i>Pelagophyceae</i> sp.	A		C G A	C
MW695753.1_Uncultured_eukaryote		T T	G	C A

MZ305451.1 <i>Bonamia ostreae</i>	<b>TCCAGACATAGTAAGGATTG</b>
JN040832.1 <i>Bonamia ostreae</i>	
JN040831.1 <i>Bonamia ostreae</i>	
JQ936481.1 <i>Bonamia ostreae</i>	
AF262995.1 <i>Bonamia ostreae</i>	
AF192759.1 <i>Bonamia ostreae</i>	
JF831802.1 <i>Bonamia exitiosa</i>	
JF495410.1 <i>Bonamia exitiosa</i>	
JF831804.1 <i>Bonamia sp.</i>	
JF495408.1 <i>Bonamia sp.</i>	
JF831803.1 <i>Bonamia sp.</i>	A
AY542903.2 <i>Bonamia sp.</i>	
GQ366703.1 <i>Bonamia sp.</i>	
AF337563.1 <i>Bonamia sp.</i>	
DQ312295.1 <i>Bonamia sp.</i>	
KC578009.1 <i>Bonamia sp.</i>	
EU016528.1 <i>Bonamia sp.</i>	
DQ356000.1 <i>Bonamia perspora</i>	
AY449710.1 <i>Minchinia tapetis</i>	
KY522823.1 <i>Minchinia sp.</i>	G
KY522821.1 <i>Minchinia sp.</i>	G
FJ518816.1 <i>Minchinia mercenariae</i>	G
MK070859.1 <i>Haplosporidium</i> sp.	
AY449712.1 <i>Haplosporidian parasite</i>	C A
MK070858.1 <i>Minchinia mytili</i>	A G
MT311215.1 <i>Haplosporidium carcini</i>	
DQ653412.2 <i>Haplosporidia</i> sp.	
U20858.1 <i>Haplosporidium costale</i>	C
DQ458793.1 <i>Haplosporidium edule</i>	A
EF165631.1 <i>Minchinia sp.</i>	C
HQ176469.1 <i>Haplosporidium raabei</i>	A T
AY449711.1 <i>Minchinia chiltonis</i>	
KJ534587.1 <i>Haplosporidium patagon</i>	C
MN104247.1 <i>Haplosporidium pinnae</i>	G
U20319.1 <i>Minchinia teredinis</i>	C A
MZ666334.1 <i>Haplosporidium costale</i>	C
AY449713.1 <i>Haplosporidium lusitanicu</i>	C A G
HQ285783.1 <i>Haplosporidia</i> sp.	
MZ666335.1 <i>Haplosporidium costale</i>	C
MT367896.1 <i>Haplosporidium pinnae</i>	G
U19538.2 <i>Haplosporidium nelsoni</i>	A
AB080597.1 <i>Haplosporidium nelsoni</i>	A
MT311214.1 <i>Haplosporidium cranc</i>	C A
X74131.1 <i>Haplosporidium nelsoni</i>	A
DQ219484.1 <i>Haplosporidium montforti</i>	G G
MK142774.1 <i>Haplosporidium pinnae</i>	G
MF621965.1 <i>Haplosporidium</i> sp.	C G
KT861000.1 <i>Pelagophyceae</i> sp.	C G
MW695753.1_Uncultured_eukaryote	A T