```
            111111233334445555556666667888888899
            355568423891260122334467780122458993 4
            212764963610753439255746983434453183 9      allele group
syn./non.   snnnsnsnsnnnnsnnnnnnsnnnnnnnnnnsnsnsn
H allele    CAAGTGCGATTCATCTGGGGCACATGTGTGACGCGTA

12740       ........................A..AT.......        M3/M3
14002       ........................A..AT.......        M3/M3
14794       ........................A..AT.......        M3/M3
14796       ........................A..AT.......        M3/M3
14798       ........................A..AT.......        M3/M3
15876       ........................A..AT.......        M3/M3
15877       ........................A..AT.......        M3/M3
15878       ........................A..AT.......        M3/M3
15879       ........................A..AT.......        M3/M3
15880       ........................A..AT.......        M3/M3
15881       ........................A..AT.......        M3/M3

16798       ........................A..AT.......        M3/M3
16799       .............Y...........R..WK.......        M3/H
16800       ........................R..WK.......        M3/H
16801       ........................A..AT.......        M3/M3
16802       ........................A..AT.......        M3/M3
16803       ........................A..AT.......        M3/M3
16804       ....................SW...A..AT.......        M3/P
16805       ........................A..AT.......        M3/M3
16806       .............Y...........R..WK.......        M3/H
16807       ........................A..AT.......        M3/M3

13193       .....AT.G...........GT...A..AT.......        Sp/Sp
13194       .....AT.G...........GT...A..AT.......        Sp/Sp
14495       ........R.KS..S..K.KSWMWWW..AT.......         P/other
14496       .....AT.G...........GT...A..AT.......        Sp/Sp
14545       .....AT.G...........GT...A..AT.......        Sp/Sp
14550       .....AT.G...........GT...A..AT.......        Sp/Sp
14554       .....AT.G...........GT...A..AT.......        Sp/Sp
15607       Y....AT.G.KS..S..K.KGTMWWW..AT.Y.....        Sp/other
15608       .....RY.R...........GT...AY.AT.......        Sp/P
15609       .....RY.R..S........GT...A.RAT.......        Sp/other
15854       .....AT.G...........GT...A..AT.......        Sp/Sp
15865       .....AT.G...........GT...A..AT.......        Sp/Sp
15869       .....AT.G...........GT...A..AT.......        Sp/Sp
15882       .....AT.G...........GT...A..AT.......        Sp/Sp
15898       .....AT.G...........GT...A..AT.......        Sp/Sp
16076       .....AT.G.KS..S..T.T..ATAK..WK.Y.Y..R       2BB/other
16077       .....AT.G...........GT...A..AT.......        Sp/Sp
16138       .....AT.G...........GT...A..AT.......        Sp/Sp
16139       .....RY.G.KS..S..K.KSWMWWW..AT.Y.....        Sp/other
16140       Y....AT.G.KS..S..K.KSWMWWW..AT.Y.....        Sp/2BB
16394       .....RY.............GT...A..AT.......        Sp/P
16395       .....AT.G...........GT...A..AT.......        Sp/Sp

13318       ....................GT...A..AT.......         P/P
13322       ....................GT...A..AT.......         P/P
13323       ....................GT...A..AT.......         P/P
13326       ....................GT...A..AT.......         P/P
13327       ....................GT...A..AT.......         P/P
13331       ....................GT...A..AT.......         P/P
13333       ....................GT...A..AT.......         P/P

11402       ....G...............GT...A..AT.......         P/P
11403       ....G...............GT...A..AT.......         P/P
11407       ....................GT...A..AT.......         P/P
11411       ....................GT...A..AT.......         P/P
11412       ....................GT...A..AT.......         P/P
11495       .T..................GT...A..AT.......         P/P
11496       ....................GT...A..AT.......         P/P
```

Haplochromis xenognathus

Haplochromis cf. 'green dentex'

Platytaeniodus degeni

Haplochromis sp. 'stone'

Haplochromis piceatus

Fig. S2

```
            111111233334445555556666667888888899
            355568423891260122334467780122458993 4
            212764963610753439255746983434453183 9      allele group
syn./non.   snnnsnsnsnnnnsnnnnnnsnnnnnnnnnnsnsnsn
H allele    CAAGTGCGATTCATCTGGGGCACATGTGTGACGCGTA

11500       ....................GT...A..AT.......          P/P
11509       ....................GT...A..AT.......          P/P
11510       ....................GT...A..AT.......          P/P
11515       ....................GT...A..AT.......          P/P
11516       ....................GT...A..AT.......          P/P
11518       ....................GT...A..AT.......          P/P
11520       ....................GT...A..AT.......          P/P
11560       ....................GT...A..AT.......          P/P
11565       ....................GT...A..AT.......          P/P
11568       ....................GT...A..AT.......          P/P

11351       ..............T..........A..ATG......          D/D
11352       ..............Y..........A..ATG......          D/D
11353       ..............T..........A..ATG......          D/D
11374       ..............T..........A..ATG......          D/D
11375       ..............Y...R......A..ATG......          D/D
11377       ..............Y.....SW...A..ATR......          D/D
11378       ................R........A..ATG......          D/D
11381       ..............Y..........A..ATG...R..          D/D
11383       ..............Y.R........A..ATG......          D/D
11386       ................R........A..ATG......          D/D
11534       ...........S..T..........A..ATG......          D/D
11535       ........................A..ATG......          D/D
11536       ....G.........T..........A..ATG......          D/D
14023       ..............Y...R......A..ATG......          D/D
14024       ..............T..........A..ATG......          D/D
14025       ..............Y.R........A..ATG......          D/D

00680       ........................A..ATG...A..          D/D
00681       ........................A..ATG.S.R..          D/D
00697       ........................A..ATG......          D/D
00699       ........................A..ATG...R..          D/D
00700       ..................A......A..ATG......          D/D
00701       ..................A......A..ATG......          D/D
0702        ..................A......A..ATG......          D/D
0703        ..................R......A..ATG......          D/D
0704        ..................A......A..ATG......          D/D
0705        ..................A......A..ATG...R..          D/D
0707        ........................A..ATG...R..          D/D
0708        ..................R......A..ATG......          D/D
0711        ..................A......A..ATG......          D/D
00732       ..................R......A..ATG......          D/D
00733       ...K..............R.........WKR......          D/other
00736       ..................A......A..ATG......          D/D
00737       ................R.R......A..ATG......          D/D
0738        ..................R......A..ATG......          D/D
0740        ..................A......A..ATG......          D/D
0741        ..................A......A..ATG......          D/D
0751        ..................A......A..ATG......          D/D
0752        ..................A......A..ATG......          D/D
1103        ..................R......A..ATG...R..          D/D
1105        ..................R......A..ATG...R..          D/D
1106        ..................A......A..ATG......          D/D
1140        ........................A..ATG......          D/D
01146       ..................R......A..ATG...R..          D/D
01147       ..R...............A......A..ATG......          D/D
01148       ..................A......A..ATG......          D/D
01149       ..................R......A..ATG...R..          D/D
11357       ..................A......A..ATG......          D/D
11365       ..................R......A..ATG...R..          D/D
11390       ..................A......A..ATG......          D/D
13639       ....G.............A......A..ATG......          D/D
```

Haplochromis piceatus

Haplochromis sp. cf. hiatus

Haplochromis sp. cf. ‘supramacrops’

Fig. S2 continued

```
          1111112333344455555666666788888888899
          3555684238912601223344677801224589934
          2127649636107534392557469834344531839      allele group
syn./non. snnnsnsnsnnnnsnnnnnnsnnnnnnnnnnsnsnsn
H allele  CAAGTGCGATTCATCTGGGGCACATGTGTGACGCGTA

00709     ................R........A..ATG......          D/D
00710     ................A........A..ATG......          D/D
00712     ....................SW...A..ATR...R..          D/P
01078     ................R........A..ATG......          D/D
01079     ................A........A..ATG......          D/D
01080     ................R........A..ATG...R..          D/D
01081     .........................A..ATG...R..          D/D
01082     .........................A..ATG.S.R..          D/D
01083     .........................A..ATG......          D/D
01086     ................R........A..ATG...R..          D/D
01130     ....................SW...A..ATR......          D/P
01136     ....................SW...A..ATR......          D/P
01137     .........................A..ATG...R..          D/D
01138     ................R........A..ATG...R..          D/D
01139     ................R........A..ATG...R..          D/D
01141     .........................A..ATG......          D/D
01142     ...............KR........A..ATG......          D/D
01143     ...............WA........A..ATG......          D/D
01145     ................R...SW...A..ATR......          D/P
01297     .........Y......A........A..ATG......          D/D
01302     .W..............R........A..ATR...R..          D/M3
01303     ....................SW...A..ATR......          D/P
01304     .........................A..ATG......          D/D
01305     ................A........A..ATG......          D/D
01306     ................R........A..ATG...R..          D/D
01308     ................R........A..ATG......          D/D
01309     .........................A..ATG......          D/D
01310     ................R........A..ATG...R..          D/D
01485     .........................A..ATG...R..          D/D
01487     .........................A..ATG...R..          D/D
01488     .........................A..ATG...A..          D/D
01489     ................R........A..ATG...R..          D/D
01490     .........................A..ATG...R..          D/D

01076     ...............................G......         Ds/Ds
01077     ...............................G......         Ds/Ds
01282     ...............................G......         Ds/Ds
01283     ...............................G......         Ds/Ds
01285     ...........S........SW.....RWKR......         Ds/other
01286     ...............................G......         Ds/Ds
1287      ...............................G......         Ds/Ds
1289      ...............................G......         Ds/Ds
1290      ...............................G......         Ds/Ds
1291      ...............................G......         Ds/Ds
1292      ...............................G......         Ds/Ds
1294      ................R..............G......         Ds/Ds
1295      ...............................G......         Ds/Ds
1296      ...............................G......         Ds/Ds
1298      ...............................G......         Ds/Ds
1299      ...............................G......         Ds/Ds
01300     ...............................G......         Ds/Ds
```

Haplochromis sp. 'deepwater cinctus'

Haplochromis sp. cf. fusiformis

Fig. S2 continued

```
           111111233334445555556666667888888899
           355568423891260122334467780122458993 4
           212764963610753439255746983434453183 9      allele group
syn./non.  snnnsnsnsnnnnsnnnnnnsnnnnnnnnnnsnsnsn
H allele   CAAGTGCGATTCATCTGGGGCACATGTGTGACGCGTA

11022      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
11023      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
11029      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
13068      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
13070      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
13384      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
13385      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
13388      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
14497      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
14506      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
14508      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
14509      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
14510      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
14977      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
14978      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
15619      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
15620      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
15737      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
15751      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
15752      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16084      T....AT.G.GG..G..T.TSWATAT.RAT.T.....        2BB/other
16085      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16086      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16087      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16088      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16089      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16090      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16091      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16092      T....AT.G.GG..G..T.T..ATAT.RAT.T.....        2BB/2BB
16093      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16237      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16238      Y....RY....S..S.RK.K..MWWW.RATRY.....          D/other
16239      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16240      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16241      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16242      T....ATSG.GG..G..T.T..ATAT..WK.T.....        2BB/2BB
16243      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
16244      T....AT.G.GG..G..K.K..ATAT.AAT.T.....        2BB/2BB
16245      Y....RY....S..SKRK.K..MWWW..ATRY.....        2BB/D
16246      T....ATSG.GG..G..T.T..ATAT..WK.T.....        2BB/other
17285      Y....RY.R.KS..S.RK.K..MWWW.RATRY...Y.          D/other
17286      Y....RY.G.GS..S.RK.K..MWWW..ATRY.....        2BB/D
17287      ............R...R...SW...A..ATR......          D/P
17288      T....AT.G.GG..G..T.T..ATAT..AT.T.....        2BB/2BB
```

Haplochromis sp. 'paropius like'

Figure S2

Alignment of all polymorphic sites of *LWS* from the ten species. The nucleotide sites are shown on the top of the alignment. "n" and "s" indicate nonsynonymous and synonymous sites, respectively. Dots indicate the nucleotides that are identical with those in the top line. The allele groups of each sequence are shown on the right side of the sequences.

Fig. S2 continued