

**Differences between Black Rockfish (*Sebastes schlegeli*) and Hwanghae Rockfish (*S. koreanus*)**

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**Introduction**

Rockfishes are a very diverse group in term of size, habitat, and distribution. The scorpionfishes of *Sebastes* are the largest genus in the family Scorpaenidae with about 100 species, throughout the world. Generally, the ovoviviparous season for the fish starts in May and continues through to June in the South and West Sea of Korean Peninsula. Among the scorpionfishes of *Sebastes*, black rockfish (*Sebastes schlegeli*; BR) is an economically important marine fish species that belongs to the family Scorpaenidae, and the order Perciformes. The Hwanghae rockfish (*Sebastes koreanus*; HHR) is a new scorpionfish species that belongs to the family Scorpaenidae, and the order Perciformes (Kim and Lee. 1994). In the present study, to elucidate the genetic distances and differences between rockfish species, we performed a clustering analysis of BRs and HHRs collected in Gunsan of the West Sea. In addition, genetic variability, species-specific markers, and region-specific markers in oysters and lobster have been assessed by molecular biological methods (Klinbunga et al., 2000; Park, et al., 2005). The present study was undertaken to confirm that the species relationships identified by RAPD analysis are consistent with previously obtained data using morphological affinities.

**Materials and methods**

Black rockfish (*S. schlegeli*) and Hwanghae rockfish (*S. koreanus*) were obtained from the West Sea off Gunsan in Korea. The muscle tissues of the rockfishes were collected in sterile test tubes, which were immediately placed in liquid nitrogen and stored until needed. RAPD-PCR was performed using two DNA Thermal Cyclers (Perkin Elmer Cetus, Norwalk, CT, USA; MJ Research Inc., Waltham, MA, USA). The levels of relatedness among different individuals of the BR species (BLACKROCK 01 ~ 11) and HHR species (HWANGHAE 12 ~ 22) were generated according to the bandsharing values and similarity matrix. A hierarchical clustering tree was constructed using similarity matrices to generate a dendrogram, which was facilitated by the Systat version 10 software (SPSS Inc., Chicago, IL, USA).

**Results and summary**

In this study, seven oligonucleotide primers generated a total of 884 loci in the BR species, and 632 in the HHR species, with a DNA fragment size ranging from 150 to 2,200 bp. A RAPD primer generated an

average of 11.5 amplified bands per sample, ranging from 7.3 to 15.5 loci in this rockfish species. We have identified two specific loci (lanes 2 and 7) of 400 bp in the BR species, generated by the decamer primer OPB-06. The 180 bp (lanes 4, 6, 7 and 11) and 200 bp loci (lanes 7 and 9) produced by the primer OPB-14 were identified as being unique to individual BR species. Regarding individual results, individuals of the BR species exhibited comparatively lower bandsharing values than did fish of the HHR. The dendrogram, generated by seven reliable primers, indicates three genetic clusters: cluster 1, cluster 2 and cluster 3. The longest genetic distance was found to exist between individuals in the two populations, between individuals no. 07 of BR species and no. 22 of HHR species (0.517). If the PCR-based molecular research is in parallel with their morphological characters, it will be the possibility of doing the species discrimination which is all the more accurate. Two rockfish species can be clearly distinguished, especially by their morphological characters.

**Table 2. The number of unique loci to each species and number of shared loci by the two species obtained using 7 primers in black rockfish (*S. schlegeli*) and Hwanghae rockfish (*S. koreanus*).**

Item Primer \ Species	No. of unique loci to each species		No. of shared loci by the two species
	Black rockfish	Hwanghae rockfish	Two species
OPA-06	44	11	22
OPA-15	0	22	33
OPA-16	44	44	44
OPA-20	33	11	44
OPB-06	55	0	0
OPB-10	55	0	0
OPB-14	33	0	22
Total no.	264	88	165
Average no. per primer	37.7	12.6	23.6

## References

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