

## Sexual dimorphism in morphometric characteristics of cocktail wrasse

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### Introduction

Protogyny is known in 14 families of fishes, 11 of which inhabit coral reef areas. The wrasses (Labridae) comprise a large and well-known family of coral reef fishes that exhibit sequential hermaphroditism. The purpose of the present investigation was to examine the allometric growth patterns of several morphometric characteristics, including those used commonly to distinguish sexes of cocktail wrasse, *pteragogus aurigarius* (Richardson) and to assess their effectiveness in discriminating between males and females.

### Materials and Methods

From April to October 1993, cocktail wrasse were collected by longlines near Cheju Island, Korea. Measurements were taken (to the nearest 0.1 mm) with vernier callipers from freshly sampled individuals. Sixteen measurements were recorded including: *Ls*, HALAA, HL, DALAV, DALAA, DALPA, DALPD, DALAD, BD, LFDF1, LFDF2, DADPD, DACPC, HPABC, HPDBC, and HAABC. Sex and maturity of each individual were determined using external morphology, body colour, internal gonad inspection and gonad squash preparations.

The Mann-Whitney *U*-test (Zar, 1984) was used to compare the 15 measurements with standard length by sex. After log transformation, each measurement was regressed with the log standard length by sex. Regression coefficients were compared between sexes by ANCOVA (Zar, 1984).

## Results and Conclusion

During the sexual maturation period, June and July, Changes in *Ls* were observed in males, but were less in females. Lee et al. (1992) reported that when the water temperature began to rise, the gonadosomatic index of cocktail wrasses began to increase in May for males and June for females reaching maximum values in June for males and in July for females.

The relationship between five morphometric characteristics, HALAA, HAABC, DALAA, LFDF1 and LFDF2, was significantly different between sexes, in particular LFDF1 and LFDF2 which were highly significant ( $P < 0.001$ ).

The regressions of LFDF1 and LFDF2 were significantly different between sexes ( $P < 0.001$ ). However, only the slope of the LFDF2 regression and *Ls* differed significantly between sexes ( $P < 0.05$ ). In male cocktail wrasse, changes in the first and second spiny rays of the dorsal fin are more pronounced in the breeding season and are not present in sexually immature fish. Sexual dimorphic characteristics in fish structure have been noted in other fishes.

Secondary sexual male characteristics as in cocktail wrasse, are often considered to have evolved through sexual selection to promote success in male-male competition or female choice. It is not possible at present to explain why cocktail wrasse males have longer first and second spiny dorsal fin rays compared to females, because the functional role of spines in reproduction is unknown.

## References

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