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PS-5 Influence of photoperiod and temperature in the regulation of gonadal development of the sapphire devil *Chrysiptera cyanea* in subtropics

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The sapphire devil *Chrysiptera cyanea* is a reef dwelling damselfish and has spawning season from May to August in Okinawan waters. It is not known how this species perceive and utilize environmental factors to exert reproductive performance. The present study was aimed to examine the effects of photoperiod and temperature on initiation of ovarian development of the sapphire devil during two months from December to January, the non-reproductive season. Photoperiod regimes used in the present study were the conditions of light (L) for 10 hours and darkness (D) for 14 hours (LD10:14), L for 12 hours and D for 12 hours (LD12:12), and L for 14 hours and D for 10 hours (LD14:10). Temperature was set at 25 or 31 °C. When the fish were reared in 60-liter aquaria under these artificial conditions, an increase in gonadosomatic index (GSI) occurred within 15 days in the fish reared under condition of LD14:10 at 31 °C and within 30 days at 25 °C. At day 45, the fish reared at 25°C had higher GSI than those at 31°C. Histological observations revealed that their ovaries contained oocytes at various types of yolk stages. The photoperiodic regime of LD12:12 had moderate effects on GSI and gonadal development. Some ovaries of the fish contained oocytes at yolk-laden stages. On the other hand, little effect of photoperiod on GSI was observed in the fish reared under condition of LD10:14, in which the ovaries was exclusively occupied by immature oocytes at the peri-nucleolus stages and showed similar conditions to the initial control. These results demonstrate that photoperiod is the most important environmental factor and that its length (long-day length) plays a role in initiating and maintaining gonadal development in the sapphire devil. In addition, it is possible that temperature has effects on initial acceleration of the gonadal development in this species.