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PG-4 Divergent fluctuations in zooxanthella genotypes and physiological characteristics in the two species of genus *Pavona*

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The objective of this study is to examine seasonal fluctuations of maximal quantum yield (F_v/F_m), algal density and genotypic clade composition of zooxanthellae in the scleractinian corals, *Pavona divaricata* and *Pavona decussata*. Fragments were collected monthly from the same colonies at the shallow reef for 13 months from Jan. 2005 to Jan. 2006 at Bise, northern Okinawa. The two species showed different responses against seasonal changes of light and sea temperature. The F_v/F_m of *P. divaricata* was stable throughout the year while *P. decussata* showed decrease in the F_v/F_m during warm and cold temperature seasons. Algal density was almost constant during the study period. *P. decussata* was invariably associated with clade C zooxanthellae while genotypic clade composition fluctuated significantly in *P. divaricata*. Three colonies of *P. divaricata* harbored clade D zooxanthellae throughout the year and other seven colonies changed clade type from C to D or vice versa, or had mixed types. When exposed to low or high temperature under normal or high light, *P. divaricata* harboring clade D zooxanthellae showed less damage and faster recovery in PS II than *P. decussata* harboring clade C zooxanthellae. These results suggest that closely related corals that exist sympatrically shows different flexibilities in coral host-zooxanthellae symbiosis. The difference might account for the observed difference in stress susceptibility between the two species of *Pavona*.