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Similarities and divergences of six giant clams *Tridacna maxima* populations from two French Polynesia archipelagoes.

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Remarkable abundance and dominance of the tridacnid clam *Tridacna maxima* occur in several French Polynesia atoll and island lagoons. The rapid development of small-scale *Tridacna maxima* fisheries prompted the French Polynesia Fishery Service to fund in 2002 a multi-disciplinary research program to assess the natural clam stocks and community structures. Population size and structure of four Eastern Tuamotu atolls (Fangatau, Tatakoto, Reao and Pukarua) and two Central Australes islands (Tubuai and Raivavae) have been investigated and compared. Inter-islands and inter-archipelagoes patterns appear. In Eastern Tuamotu atolls, we found that Reao and Pukarua provided very similar community structures, which could be expected given their proximity, and similar isolation, environmental forcing, geomorphology and type of lagoon habitats. Conversely, the couple Fangatau-Tatakoto displayed contrasted structures despite their proximity, that we ultimately explained by differences in habitat structure, degree of aperture to the ocean and temperature variations. Tatakoto located between Fangatau and Pukarua is more similar to Pukarua in terms of community structure and degree of aperture. The two Australes islands also exhibited strong similarities between themselves. However, the Australes community structures differ strongly from the four Tuamotu atoll communities. At this stage, differences between populations are naturally-induced, and can not be assigned to differences in fishery pressure since we can consider that the six stocks are still virtually pristine. We summarize the environmental (island morphology, hydrodynamics, climate and habitats) and ecological factors (densities) that can explain the differences achieved between archipelagoes.