

Glass eels were sampled in two estuaries of French Polynesia (Tahiti and Moorea islands) from 2009 to 2017. Three species were identified by morphological measurements (*Anguilla marmorata*, *A. megastoma* and *A. obscura*). Our results revealed a difference in the species composition between Moorea and Tahiti. The recruitment of eels is seasonal and occurs between November and March during the rainy season, with peaks in December and January. The recruitment size of glass eels was analyzed for the three species. We found a difference between the sizes at recruitment between Tahiti and Moorea. Overall, using a negative binomial GLM, we show that rainfalls, waves' direction, light and temperature were key factors for glass eel recruitment in French Polynesia.