

Abundance, placement and sexual identity of the epizoic barnacle *Chelonibia testudinaria* relative to the size and species of host turtles in Mabul Island, Malaysia

ABSTRACT

Sea turtles are partners in commensal relationships with a variety of epibionts, including barnacles. The acorn barnacle *Chelonibia testudinaria* is one species commonly found associated with sea turtles and other marine fauna throughout temperate to tropical waters including the Indo-Pacific. We conducted a study to assess the occurrence of this barnacle, relative to host life stage and species in a mixed foraging population of green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) turtles (juvenile, sub-adult, adults (female and male)) in Mabul Island, Sabah, Malaysia (Celebes Sea). Expecting similar relative abundance by life stage, we found instead a significant effect between the combined dependent variables (abundance and size of barnacles) and the life stages of sea turtles in Mabul after controlling for the covariates of size and species of sea turtles ($F(8, 428) = 5.77, P < 0.001, \text{ Pillai} = 0.19$). Among green turtles with barnacles, though adult males had larger barnacles compared with the female turtles, the mean barnacle abundance on adult females (43.4 individuals \pm 5.19 SD) was higher than all other life stages. Most of the barnacles (85.6%; $N = 1931$) were found on the plastron of the sea turtles. The highest number of barnacle reacquisition was found among the juvenile turtles. In assessing the complemental males of the barnacles, we found they were consistently attached to the shells of the larger of the hermaphrodites from each region of the host's body despite average shell-size differences with each region.