

The transmission of *Plasmodium falciparum* was studied in relation to the incidence of severe malaria infections at Sokoke and Kilifi town, Kilifi District, Kenya. Intensive mosquito sampling during a one-year period yielded *Anopheles gambiae* s.l., *An. funestus*, and *An. coustani*. *Anopheles gambiae* s.l. was the predominant vector, comprising 87.9% and 97.9% of the total anophelines collected in Sokoke and Kilifi town, respectively. The proportion of *An. gambiae* s.l. with *P. falciparum* sporozoite infections was 4.1% (20 of 491) in Sokoke and 2.2% (3 of 138) in Kilifi town; no infections were detected in *An. funestus* or in *An. coustani*. Entomologic inoculation rates indicated that residents were exposed to only 8.0 infective bites per year in Sokoke and 1.5 in Kilifi town. Transmission was detected during only six months in Sokoke and three months in Kilifi town despite low-level, year-round vector activity. The yearly incidence of severe *P. falciparum* infections in children, 1-4 years of age was 24.1 per 1,000 in Sokoke and 4.2 per 1,000 in Kilifi town. Monthly patterns of transmission corresponded closely with the incidence of severe infections. At these sites on the coast of Kenya, the spatial and temporal incidence of severe malaria infections is associated with low-level *P. falciparum* transmission by vector populations