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Forest related malaria outbreak and its containment in Southern Sri Lanka

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A malaria outbreak took place in army camps located in the Yala National Park along the Menik river and Kumbukkan oya in 2009 and extended up to 2011. Case investigations revealed that all patients reported from Yala had been infected in the Yala jungle itself. It further revealed that during the peak biting hours of the vector (i.e. dusk to late night and dawn), most of the patients had been engaged in their duties in the jungle in the vicinity of the Menik river. Some had gone on roster duty to Kumbukkan Oya. Parasite surveys done by the Anti Malaria Campaign were gradually increased and in 2010, blood films were taken from 68.8% of soldiers in the army camps. Compliance for treatment was 100% in 2010 and 2011. New malaria cases were diagnosed without delay using rapid diagnostic test kits. Though a few rains were experienced in May 2010, dry weather prevailed up to October and a heavy density of *An. culicifacies* was found in pools in the river Menik. The highest densities were recorded in Talgasmankada and Warahanamankada areas and the lowest in the Yala camp area. Although there was heavy larval breeding in pools in the river, the indoor resting density of *An. culicifacies* was low while the outdoor human landing rate was high. In 2010 October, after larviciding with Temephos and space spraying with Deltacide, both *An. culicifacies* larval density and human landing rate were greatly reduced.

Table 1- Behaviour of major and secondary malaria vectors in Yala jungle - 2010

Entomological aspect	<i>An. culicifacies</i>					<i>An. subpictus</i>				
	Feb	May	Sep	Oct	Dec	Feb	May	Sep	Oct	Dec
Vector breeding (no. of larvae per 100 dips)	7.8	12.7	13.1	2.3	0.0	0.0	24.1	0.0	0.0	16.7
Indoor resting (no. of mosquitoes per room)	0.5	0.75	0.71	0.04	0.0	0.0	1.3	0.0	0.0	0.2
Human landing rate (no. of mosquitoes per man hour)	0.9	3.3	6.02	0.4	0.5	0.0	0.0	0.0	0.0	0.0

After conducting awareness programmes for the army staff, the use of repellents was increased. As a result of all these integrated control measures, the incidence of malaria cases was greatly reduced in Yala, while the last case was reported in August 2011. Detection of the behaviour of both the human and vector mosquito is of prime importance in the control of a malaria outbreak. Vector control measures should be based on these behavioural patterns. Integration of all aspects, early diagnosis and prompt treatment, compliance with treatment and partnerships with other sectors are important in controlling a malaria outbreak.

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