

## ***Anopheles dirus*: breeding sites in rural Lao PDR and the role in the zoonotic malaria**

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*Anopheles dirus* is a mosquito species belonging to Leucosphylus group of subgenus *Celia*, which often plays important roles in malaria transmission in forested environments of South East Asia. Since this species, like other members of the group, is known to prefer primates as the blood source, it is probably the main vector of *Plasmodium knowlesi* in the Indochina Peninsula. Here I present two topics related to this vector.

### (1) Breeding of *Anopheles dirus* in water-filled bomb holes remained near Lao-Vietnam border

Eastern part of Savannakhet Province of Lao PDR had been attacked heavily by American bombs in late 1960s because of the Ho Chi Minh trail. Numerous bomb craters are still remains and some of them hold water in the rain season. In 2007, the rapid malaria survey by Eco-Health project (RIHN, Kyoto) found two water-filled bomb holes contained *A. dirus* larvae. Additional surveys on bomb holes in 2010 confirmed 8 out of approximately 400 holes contained *A. dirus* larvae. Possible environmental determinants of *A. dirus* breeding will be discussed.

### (2) Loss of "anthropo-prophylaxis" as a possible explanation for the strange pattern in sporozoite rate observed in Khanh Phu

In the previous symposium in Kyoto, Dr. Nguyen Tuyen Quang reported an interesting tendency that malaria patients decrease while sporozoite - positive mosquitoes do not decrease in Khan Phu. For a possible explanation for this strange trend, I developed a simple simulation model that considers human, monkey, human malaria, monkey malaria, and a common vector (*A. dirus*). I will show that under certain sets of parameters, protection of human against mosquito result in decrease of human malaria and increasing risk of monkey malaria infection.