

POSTER PRESENTATION

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The longevity of *Anopheles sundaicus* in a small area: Nongsa Pantai Villages, Batam City, Indonesia

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Background

Mosquito lifespan is one component of the lifetime transmission potential of an individual mosquito. The length of life or lifespan (longevity) of an adult *Anopheles* may affect its power of transmitting malaria [1]. This study was to analyze the longevity of *Anopheles sundaicus* in small area, Nongsa Patai Village, Batam City, Indonesia.

Method

Research used time trend design which investigated within 3-4 months (July-October) in Nongsa Pantai Sub-villages, Nongsa Pantai Village, Batam City, Indonesia. The estimation of *An. sundaicus*'s longevity used a formula based on the Parous Rate and its gonothropic cycle, that is the duration of time the mosquito matures its eggs [2]. The gonothropic cycle of *An. sundaicus* is 3 days.

Results

The life span (longevity) of *An. sundaicus* in Nongsa Pantai Village ranged from 7.22 to 9.39 with 8.39 in average as shown in Table 1.

Anophelines go through four stages in their life cycle: egg, larva, pupa, and adult. The first three stages are aquatic and last 5-14 days, depending on the species and the ambient temperature. The female *Anopheles* is not immediately infective after taking a blood meal and the parasite requires a period of time within the mosquito for its development to an infective stage. The period is termed the extrinsic incubation period [3]. A mosquito needs at least two feedings to complete one transmission cycle [4]. This parameter is strongly dependent on actual air average temperature. It may range from 8 days at 31°C to 22 days at 20°C (the mean value commonly used reaches 15 days). In Berlin, [5] probable extrinsic incubation time 21-24 days calculated for *P. falciparum* [2]. Theoretically, the time required for malaria transmission is at least 13-24 days under control of local temperature and humidity. That can be described as follows: 4-14 day for development from egg to pupae, and the extrinsic incubation period (EIP) ranged 8-10 days assuming the mosquito takes a blood meal directly from an infected person. The longevity of *An. sundaicus* in this area might transmit malaria when

Table 1 The estimation of longevity of *An. sundaicus* in Nongsa Pantai Village, Batam City, Riau Islands Province during July-October

Observation (month)	Porous rate	Gonothropic cycle (days)	p**	Longevity (days)
July	0.66	3	0.8707	7.22
August*	0.70	3	0.8849	8.41
September	0.71	3	0.8921	8.76
October	0.72	3	0.8962	9.12
Mean	0.695	3	0.8857	8.39

*The average of PR in July and September is 0.70%; **p = daily survival rate; equivalent with square root of proportion of female gravid.

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the longevity within the 4 month period ranged from 8 days to 10 days and might be the mosquitoes died because of insecticide residual spraying as a vectors control applied.

Conclusion

The longevity of *An. sundaicus* in coastal area Nongsa Pantai was below the minimum range for the completed life cycle and extrinsic incubation period (EIP).

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