CTMID 2026 Conference
The 2026 International Online Conference on Tropical Medicine and Infectious Disease
1–2 July 2026 | Online
MDPI

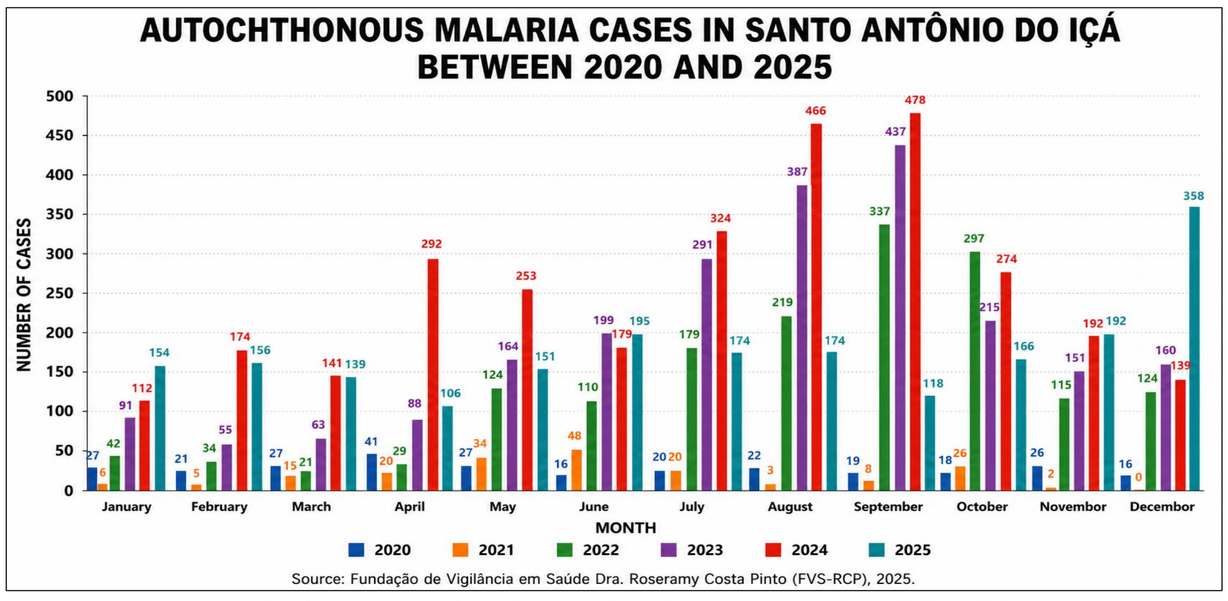
Ecological Aspects of Anopheline, Malaria Vectors, in Endemic Areas of Santo Antônio do Içá, Upper Solimões River, Amazonas, Brazil

Authors: Josinei Silva Nunes[1*]; Keillen Monick Martins Campos[2]; Luandra Gadea[3]; Paola Mesa Arciniégas[4]; Ronildo Baiatone Alencar[5]; Elder Figueira[6]; Myrna Barata[7]; Felipe Arley Pessoa[8]; Claudia María Rios Velasquez[9].

Affiliation: *[1, 3, 4] Programa de Pós-graduação em Biologia da Interação Patógeno Hospedeiro (ILMD/Fiocruz Amazônia), Manaus, Amazonas, Brasil. [2, 8, 9]ILMD-Fiocruz Amazônia, Manaus, Amazonas, Brasil. [5, 6, 7]Fundação de Vigilância em Saúde do Amazonas, Dra. Rosemary Costa Pinto – FVS-RCP, Manaus, Amazonas, Brasil.*

INTRODUCTION & AIM

Malaria remains an important public health problem in the Brazilian Amazon, where transmission results from the dynamic interaction among *Plasmodium* spp., the human host, and *Anopheles* spp. vectors in the municipality of Santo Antônio do Içá, AM (SAI), where malaria transmission occurs year-round.



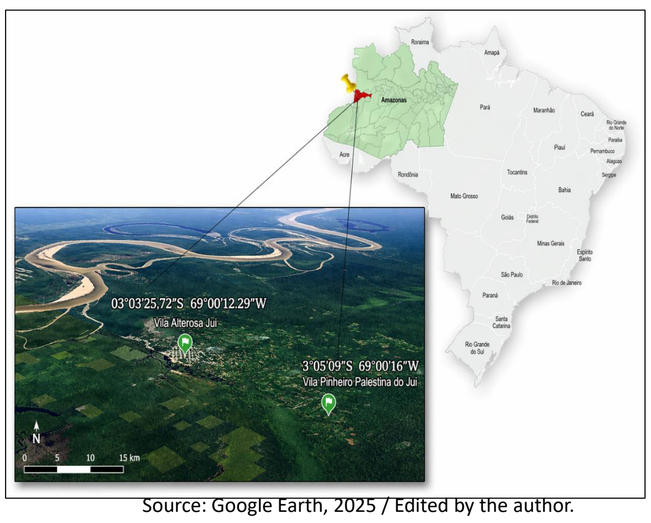
Annual malaria case samples in Santo Antônio do Içá, Amazonas, from 2022 to 2025.
Fonte – MS /SIVEP-Malária, 2026.

However, mosquito populations fluctuate over time due to various factors. Therefore, this study evaluated ecological and behavioral factors of anophelines in two endemic riverside communities from SAI, aiming to understand the local transmission dynamics.

METHOD

Field collections were carried out between February and October 2025 in the communities of Vila Alterosa Juí (Juí) and Vila Pinheiro Palestina do Juí (Pinheiro), using Protected Human Attraction Technique (PHAT) and manual aspiration methods in intra- and peridomiciliary environments.

Location of the Municipality of Santo Antônio do Içá, Amazonas State, and the location of the study communities, Vila Alterosa Juí and Vila Pinheiro Palestina do Juí.

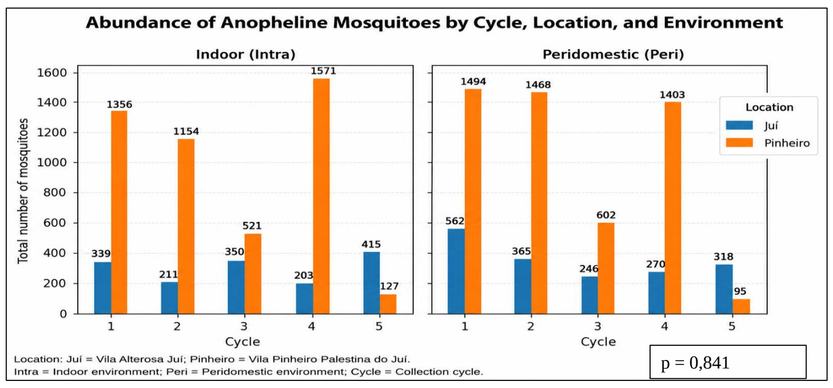


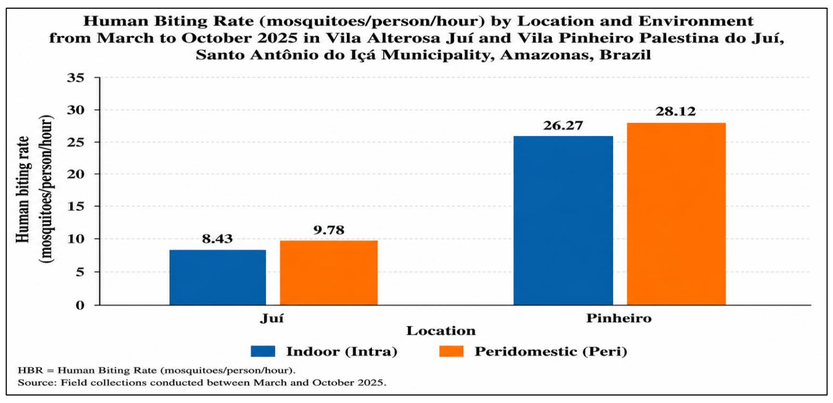
Source: Google Earth, 2025 / Edited by the author.

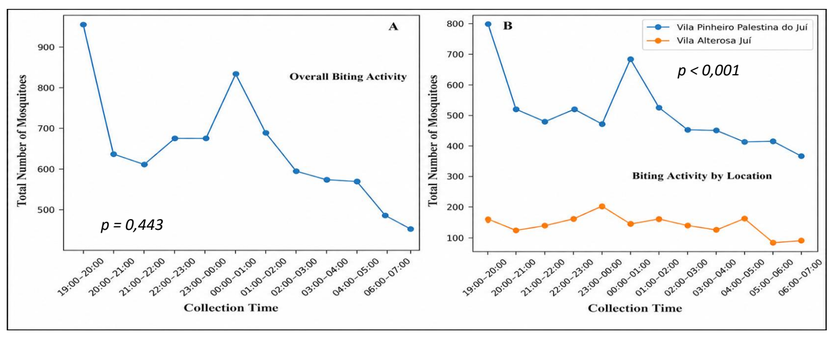
A – Indoor mosquito collection using the Protected Human Landing Catch (PHLC) method;
B – Peridomiciliary mosquito collection using the Protected Human Landing Catch (PHLC) method;
C – Mosquito collection with a manual aspirator in the peridomiciliary environment.

RESULTS & DISCUSSION

- Sampling effort: 720 working hours;
- *Anopheles* collected: 13,070 specimens; being 99.97% *Anopheles darlingi*, confirming its central role in local transmission;
- Vector abundance was higher in Pinheiro, particularly in the peridomiciliary environment, reaching 28.12 mosquitoes/person/hour;
- Hematophagic activity showed a bimodal pattern, with peaks between 7:00 PM and 8:00 PM and between 11:00 PM and 12:00 AM in both studied localities.







Hematophagic activity of Anopheles mosquitoes in the communities of Vila Alterosa Juí and Vila Pinheiro Palestina do Juí, Municipality of Santo Antônio do Içá, Amazonas, Brazil.

Variations in mosquito abundance were associated with temperature, humidity, and the hydrological dynamics of the Içá River, indicating that environmental conditions modulate breeding-site availability and vector population density.

CONCLUSION

- *An. darlingi* is the dominant vector in the studied areas;
- Differences in vector abundance were observed between the communities, despite their geographic proximity;
- Biting activity showed a bimodal pattern, with the 7:00 PM and 8:00 PM period being the most favorable for human-vector contact, an important factor for sustaining transmission;
- River level proved to be relevant to vector population density;
- These findings reinforce the need for continuous entomological surveillance and targeted interventions in higher-risk microareas.

REFERENCES

World Health Organization. World malaria report 2024. Available at: https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2023. Accessed on February 15, 2025.
Ministério da Saúde. SIVEP-MALARIA – Epidemiological Summary. SVS – Health Surveillance Secretariat. Epidemiological Surveillance Information System – Notification of cases in the municipality of Santo Antônio do Içá, Amazonas, 2025.