Qeios

Peer Review

Review of: "Aedes Distribution and Meteorological Effect on Ovitrap Index in Coastal Area of Besut, Terengganu: An Entomological Study"

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This study provides valuable insights into *Aedes* species distribution and its relationship with meteorological factors. The topic is relevant to public health, and the dataset is interesting, as ovitraps were monitored for 52 weeks, allowing for a long-term assessment of mosquito abundance and environmental influences. However, there are some important aspects that need to be improved:

- **Statistical analysis:** The use of Pearson's correlation to assess the relationship between meteorological factors and the Ovitrap Index may not be appropriate, as the data follow a time series and are not independent. Therefore, a more suitable approach could be time series analysis or generalized additive models.
- **Clarity and readability:** Some parts of the manuscript contain grammatical errors and unclear phrasing, affecting readability. Careful proofreading and revision would improve clarity.
- **Figures and tables:** There is an imbalance between the length of the text and the amount of figures and tables. The information from at least one figure and one table can be given in the text, instead.

Based on my review, I believe the manuscript, in its current form, is not yet suitable for publication, as it requires major revisions, especially in the analytical approach. However, the dataset is solid, and with appropriate statistical treatment and improvements in clarity, the study could make a valuable contribution to the knowledge of mosquitoes in the coastal area of Besut.

In the following, I outline specific errors and suggestions for improvement, point by point, throughout the manuscript:

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Title:

- Consider adding “the” before “coastal” to ensure grammatical correctness.

Summary:

- **Line 1:** Introduce a space between “Introduction:” and “*Aedes.*”
- **Lines 2-3:** Clarify that ovitraps measure the abundance of reproductively active female *Aedes* mosquitoes, rather than overall *Aedes* density.
- **Line 4:** Use the plural form of “factor.”
- **Line 7:** Specify whether the study was conducted in urban, peri-urban, or rural areas within the Besut district.
- **Line 13:** Introduce a space between “Results:” and “*Aedes*.”
- **Line 14:** Introduce a space between “*Aedes*” and “*aegypti*,” change “were” to “was” to match the singular subject *Aedes aegypti*, and italicize the species name.
- **Lines 15, 18, 19**: Italicize the scientific names to follow scientific writing conventions.

Introduction:

- **Paragraph 1, line 3:** The sentence “They have become the primary vectors for the transmission of these diseases” is redundant given the previous one. Consider omitting or integrating the idea into the first sentence for clarity.
- **Paragraph 2, line 1:** To avoid repetition of *Aedes* in “Adult *Aedes aegypti and Aedes albopictus*,” consider shortening to *“Ae.”* or “*A.*”, if the journal allows it.
- **Paragraph 2, line 5:** Change “defined” to “characterized” for better clarity.
- **Paragraph 3, line 7:** Change “demonstrate” to “show,” which is more appropriate here, especially because you did not conduct an experimental study.
- **Paragraph 3, lines 9-12:** The last two sentences repeat the relationship between vector density and virus amplification during the rainy season. Removing one would avoid redundancy and improve conciseness.
- **Paragraph 4, line 1:** Ovitraps measure oviposition activity rather than *Aedes* density directly. This activity serves as an indirect indicator of *Aedes* abundance. Reword to reflect this distinction. Also, since “Ovitraps” is plural, the verb should be “are” instead of “is.”
- **Paragraph 5, line 1:** The preposition “between” is incorrect here; use “on” instead.

Materials and Methods:

- **Paragraph 1, last line:** “Should dengue outbreak is not well-controlled” is grammatically incorrect. Instead, write “should a dengue outbreak not be well-controlled” or “if a dengue outbreak is not well-controlled.”
- **Paragraph 3, first line:** Before describing the setting and collection procedure, a brief description of ovitraps would be helpful. Also, change “were as follow” to “were as follows.”
- **Paragraph 3, item 3:** Typographical error: “collected” should be “collected.”
- **Paragraph 3, items 4 and 5:** It is unclear why these actions were done twice. Clarify the purpose of the second identification step (item 5).
- **Paragraph 3, item 6:** “Well done” is unclear in this context. Consider using “completed” or “finalized.”
- **Paragraph 4, first line:** If referring to a data record, “analysis form” is correct; otherwise, use “analysis from.”
- **Paragraph 5, line 3:** “Meanwhile” usually indicates simultaneous events. In this case, “whereas” or “while” would be more appropriate. Additionally, the data involve the same ovitraps across different weeks, making the observations non-independent and likely exhibiting temporal dependence. Since Pearson correlation assumes independence, its use is inappropriate. Time series analysis methods would be more suitable.

Results:

- **Paragraph 1, line 1:** The first sentence seems more appropriate for the Materials and Methods section. You might consider integrating it into the next sentence (e.g., ‘the majority of *Aedes* spp. found were *Aedes aegypti* (2383 captures in 3120 ovitraps, 52%)′).
- **Paragraph 1, line 3:** Replace “area” with “premises” to better reflect the context, which distinguishes between indoor and outdoor locations.
- **Paragraph 2, line 1:** Replace “density” with “prevalence” or eliminate the words between brackets, as the way you defined the Ovitrap Index suggests that it is more an indicator of prevalence rather than *Aedes* density. Additionally, replace “with” with “and” for grammatical accuracy (between the Ovitrap index *and* meteorological factors).
- **Paragraph 2, line 2:** The phrase “heavily dependent” implies a strong causal relationship, which may not be appropriate in an observational study. You might consider a softer phrasing, such as “appeared

to be influenced by", to reflect the observational nature of the data. Additionally, consider removing the word "level," as it does not add new information and the meaning remains clear without it.

- **Paragraph 2, line 3:** "Information" is an uncountable noun, so "were" should be replaced with "was". Additionally, "demonstrated" may not be the best choice here, as you did not conduct an experimental study—"provided" or "presented" might be more appropriate.
- **Paragraph 2, lines 1-3:** The paragraph coincides with quite a long sentence, which repeats information about the correlation with temperature twice. Consider rephrasing it to simplify. You could write one sentence about the significant correlation, specifying whether it was positive or negative, and another about the correlation with rainfall, even though it was not statistically significant.

Discussion:

- **Paragraph 1, line 1:** Replacing the phrase "was found as a dominant species" with "was the dominant species" for clearer and more natural phrasing.
- **Paragraph 1, lines 1-2:** Rephrasing the phrase "it is well-documented in a previous local study that..." to "A previous local study documented that...," as "It is well-documented" is redundant here. Notice that mentioning the study itself implies documentation.
- **Paragraph 1, line 2:** Since you are referring to two species, "was found" should be pluralized to "were found."
- **Paragraph 1, line 3:** Clarify the word "current." It is unclear whether it refers only to the present study or to this study along with other current studies. If you are referring only to this study and previous ones, you might consider rephrasing it as "Both our study and previous research."
- **Paragraph 1, line 4:** Use "one- or two-story" instead of "one or two storey" to maintain consistency with American English throughout the paper.
- **Paragraph 1, line 4-6:** Consider moving the last two sentences of the paragraph to the Materials and Methods section, as they describe the study area rather than discuss the results.
- **Paragraph 2, line 1:** Revise "predominant larvae species" to "the predominant larval species" for grammatical accuracy, as an adjective is needed here instead of a noun.
- **Paragraph 2, lines 2-7:** The paragraph repeats information about *Aedes aegypti*'s breeding sites multiple times. Consider rephrasing to avoid redundancy.
- **Paragraph 2, line 3:** Consider replacing the species name with "These" to avoid repetition, as it was already mentioned in the previous sentence.

- **Paragraph 3:** This paragraph contains a lot of specific numerical results, which might be more suitable for the Results section. Consider summarizing the key findings here and focusing on their interpretation and comparison with previous studies.
- **Paragraph 3, line 1:** You should specify whether the correlation between temperature and the Ovitrap Index was positive or negative for clarity. However, the correlation analysis that you had applied is not appropriate for this dataset.
- **Paragraph 3, lines 1-3:** Rephrase the sentence for clarity. For example, "...the highest Ovitrap Index (27%) was observed within the temperature range of 30°C - 32°C, along with the highest number of *Aedes* spp. (n=155), *Aedes aegypti* (n=86), and *Aedes albopictus* (n=74)."
- **Paragraph 3, line 4:** Clarifying that Rozilawati et al. (2006) determined the optimal temperature range for the survival and development of *Aedes albopictus* larvae, not *Aedes* in general.
- **Paragraph 3, lines 5:** Replace "larvae" with "larval," as it is used as an adjective here.
- **Paragraph 3, lines 8:** Specify that Marinho et al. (2016) conducted their study with *Aedes aegypti* in Brazil, not *Aedes* in general or in Asia. Additionally, replace the word "supports" (singular) with "support" (plural), as Marinho et al. (2016) refers to multiple authors.
- **Paragraph 4, lines 1:** Consider varying the way the paragraphs are introduced to avoid repetition of the phrase "From our study." Additionally, rephrase the first sentence to indicate that no significant correlation was found between rainfall and the Ovitrap Index, rather than stating that there was a "weak correlation."
- **Paragraph 4, lines 1-7:** Given that no significant correlation was found between rainfall and the Ovitrap Index in your study, it would be helpful to acknowledge that these results differ from those of other studies that have reported a significant relationship. You may want to explore the literature further, as other studies might not have found an association either. Including such references could strengthen your discussion. However, remember that Pearson correlation does not apply here because you have a time series dataset.

Conclusion and recommendations:

- **Paragraph 1, line 1:** Rephrase the beginning of the sentence to "The *Aedes* species identified in Kuala Besut were..." in order to make it clearer and grammatically correct.
- **Paragraph 1, lines 1-2:** Consider rephrasing the second sentence of the paragraph to "*Aedes aegypti* was the dominant species, predominantly breeding outdoors," to make it clearer.
- **Paragraph 1, line 2:** Add the article "an" before "important" to sound more natural.

- **Paragraph 2, line 2:** Consider removing the word “therefore,” as the idea that mosquitoes breed in standing water is already implied.
- **Paragraph 2, line 3:** Use “Community involvement” instead of “Involvement of the Community” to make the sentence clearer and more direct.
- **Paragraph 2, lines 3-4:** Consider rephrasing “identifying and eliminating potential breeding sites are important as well” to “identifying and eliminating breeding sites is also important” to make the sentence more formal and fluent.
- **Paragraph 2, lines 5-6:** Specify where biological control methods, such as introducing fish or mosquito-eating insects, would be implemented. Since *Aedes* mosquitoes mainly breed in artificial containers like buckets and tires, it is unclear how these methods would be applied in such environments.
- **Paragraph 2, lines 7-8:** Providing an example of control strategies that could be adapted in response to climate change would help clarify how vector control measures might be modified to address changing environmental conditions.

Figures:

- **Figure 1:** This figure is not necessary. You can report this information directly in the text.
- **Figure 2:** Since this is a bar graph, you need to include the Y-axis with labels and values, either as percentages or the number of mosquitoes. Additionally, the epigraph could be more specific (e.g., “Abundance and percentage of *Aedes spp*. inside and outside premises in Kuala Besut coastal area”).
- **Figure 3:** There are several aspects that could be clarified to improve its readability:
  - The X-axis is labeled with numbers from 1 to 52, which, based on the text, seem to represent weeks. However, this is not explicitly stated in the figure. Add a label to clarify this.
  - The Y-axis includes values, but since it is not labeled, it is unclear whether it represents temperature, rainfall, or the Ovitrap Index. Since the values could be compatible with any of these variables, specify which one is being shown.
  - The units of temperature and rainfall are not indicated. Additionally, it is unclear whether the temperature values represent daily or weekly means and whether the rainfall values are means or cumulative totals. Provide this information for better clarity.
  - If two Y-axes were added—one on the left for temperature values and one on the right for precipitation values (as commonly used in climographs)—the values currently placed directly on the curves could be removed, making the figure easier to interpret.

- In the epigraph, replace “between the Ovitrap index with temperature and rainfall” with “between the Ovitrap index and temperature or rainfall” for grammatical accuracy and greater clarity, since the figure presents two separate relationships—one between the Ovitrap Index and temperature, and another between the Ovitrap Index and rainfall.

Tables:

- **Table 1, header of column 1:** In statistical terminology, “parameters” usually refer to population values, while the values in this table come from a sample. You might consider using “statistics” instead for greater precision.
- **Table 1, header of column 2:** Clarify whether the average temperature values represent weekly averages.
- **Table 1, header of column 3:** Clarify whether the average rainfall values represent weekly averages.
- **Table 1, epigraph:** The table presents four different values in relation to temperature and rainfall, but the epigraph refers to the variable Ovetrap index. You might revise the epigraph to make it more accurate. Additionally, replace “between ... with temperature and rainfall” with “between ... and temperature or rainfall.”
- **Table 2:** This table is not necessary. You can report this information directly in the text.

Declarations

Potential competing interests: No potential competing interests to declare.