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Discussion of alleged academic misconduct (replacing writing with AI) and serious academic deficiencies in 'Response of invasive area of Ageratina adenophora to future climate change based on climate and species diffusion'

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ABSTRACT: This thesis provides an in-depth analysis of a study published by the School of Biology and Environment, Nanjing Forestry University, on the response of destructive grass invasion regions to future climate change, with the aim of revealing the existence of academic misconduct and serious academic deficiencies. It was found that the paper had multiple logical flaws in its research methodology, including reliance on a single future climate scenario and climate model, unproven assumptions about the mechanism of species dispersal, unclear establishment of causality, and inadequacy of a single indicator to assess model performance. In addition, the paper lacks a comprehensive assessment of the methodology, such as reliability metrics, data quality control, measurement error discussion, model uncertainty assessment and sensitivity analyses. These deficiencies seriously affect the reliability and validity of the research results, and call for the academic community to pay sufficient attention to such issues and take appropriate measures to safeguard academic integrity

KEYWORDS: academic misconduct, Academic deficiencies,Artificial Intelligence Writing

I. INTRODUCTION

The quality and integrity of academic research is crucial to scientific progress. In recent years, with the development of technology, academic misconduct such as replacing writing with AI has surfaced, posing a serious threat to the reputation of academia and the credibility of research. [1] This thesis focuses on a paper published by the School of Biology and Environment, Nanjing Forestry University, which can be accused of alleged AI authorship and multiple academic flaws. By critically analysing the paper's research methodology, this paper reveals its deficiencies in logical consistency, hypothesis support, clarity of causality, and adequacy of assessment metrics. Our goal is to raise academic awareness of such issues and promote more rigorous research practices.

The paper, entitled Climate and species dispersalbased response of invasive areas of destructive grasses to future climate change trends, had an AI authorship rate of 19.7 per cent. change was written by AI at a rate of 19.7%.This is a paper published in the Journal of Beijing Forestry University (Social Science Edition), which is also a member of AMI Core Journals of Humanities and Social Sciences in China, as part of China's National Natural Science Foundation Programme (No. 3180506).

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II. DISCUSSION OF PROBLEMS WITH THEMETHODOLOGICAL COMPONENT OF THE STUDY

1. Logical flaws

(1) Principle of non-contradiction: the research methodology should not contain contradictions of its own.

Problem: The study is based on a single future climate scenario (SSP45) and a single climate model (BCC-CSM1-1), which may not be sufficient to represent complex and uncertain future climate conditions. This may lead to biased results.

Logical flaw: The study assumes that a single scenario and model is sufficient to represent complex and uncertain future climate conditions, which contradicts the principle of non-contradiction.

(2) Law of Exclusion: Research methods should not rely on assumptions that are not supported by evidence.

Problem: The study assumes that wind and riverine dispersal are the primary mechanisms for species dispersal, but this assumption is not supported by empirical evidence.

Logical flaw: The study violates the Law of Exclusion by relying on a hypothesis that is not supported by evidence.

(3) Law of Causation: Research methods should establish clear causal relationships between variables.

Problem: The study uses a diffusion model (KISSMig) that assumes a fixed diffusion rate, but it is not clear how this rate relates to the underlying environmental factors.

Logical flaw: The study did not establish a clear causal relationship between the diffusion rate and environmental factors, which violates the law of causality.

(4) Principle of adequate justification: The research methodology should provide adequate justification for the conclusions obtained.

Problem: The study used a single metric (AUC) to assess the performance of the model, but it is not clear whether this metric is sufficient to capture the complexity of species distributions.

Logical flaw: The study does not provide sufficient justification for the conclusions drawn because a single metric may not be sufficient to capture the complexity of species distributions.

2. Relevant evidence of shortcomings

(1) Failure to represent future climate scenarios

Evidence: 'The study uses a single future climate scenario (SSP45) and a single climate model (BCC-CSM1-1), but it is not clear that these represent likely future climate conditions.'

Description: The paper uses only one possible future climate scenario, which may not be accurate enough. It's like trying to predict the weather by only looking at one possible forecast.

(2) Unsubstantiated assumptions

Evidence: 'The study hypothesises that wind and riverine dispersal are the main mechanisms of species dispersal, but this hypothesis is not supported by empirical evidence.'

Description: The paper makes assumptions about species dispersal, but provides no evidence to support them. This is like saying 'I think this is true' without providing any evidence.

(3) Lack of a clear causal relationship

Evidence: 'The study uses a dispersal model (KISSMig) that assumes a fixed rate of dispersal, but it is not clear how this rate is related to the underlying environmental factors.'

Description: The paper uses a model that assumes a certain rate of diffusion, but doesn't explain why that rate was used or how it relates to the environment. This is like saying 'I think this is how it works' without explaining why.

(4) Inadequate assessment metrics

Evidence: 'The study uses a single metric (AUC) to assess the performance of the model, but it is not clear whether this metric is sufficient to capture the complexity of species distributions.'

Description: The paper uses only one way to assess model performance, but this may not be sufficient to fully understand the complexity of species distributions. It's like trying to evaluate a film only by its rating.

3. The study appears to have lacked a comprehensive evaluation of the methodology, which may affect the validity and generalisability of the results. The following are some of the reasons for this:

(1) Lack of reliability indicators: The study did not mention any reliability indicators such as Cronbach's alpha, test-retest reliability, or inter-assessor reliability, which are commonly used to

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assess the reliability of measures or instruments and instrumental bias.
(2) No data quality control: the study did not mention any data quality control procedures such as data cleaning, data validation, or data validation, which are necessary steps to ensure data accuracy and reliability.
(3) No discussion of measurement errors: the study did not discuss measurement errors or biases that could affect the results, such as data collection errors, data entry errors, or measurement instrument bias.
(4) No model uncertainty assessment: the study did not assess the uncertainty of model parameters or predicted results.
(5) No sensitivity analyses: the study did not conduct sensitivity analyses to examine how the results vary under different assumptions or scenarios.

Overall, it appears that the study did not perform any reliability analyses or assessments, which may affect the validity and generalisation of the results.
4. The study also appears to have lacked a comprehensive evaluation of the methodology, which may affect the validity and generalisability of the results. Here are some reasons for this:
(1) Lack of validation metrics: the study did not mention any validation metrics such as precision, recall, F1-score, or mean absolute error, which are commonly used to assess the validity of methods.
(2) No comparison with other methods: the study did not compare the proposed method with other existing methods, which is a necessary step to assess the validity of the method.
(3) No assessment of model performance: The study did not assess the performance of the model, such as the accuracy, precision or recall of the model, which is essential for assessing the validity of the method.
(4) No assessment of bias and variance: the study did not assess the bias and variance of the model, which is a necessary step in assessing the validity of the method.
(5) No discussion of limitations: the study did not discuss the limitations of the methodology, which is an important step in recognising potential weaknesses and biases in the methodology.
However, the study mentions the use of a single metric, AUC, for assessment, which is a measure of the model's ability to distinguish between positive and negative categories. Whilst this is a good start, it is not sufficient to fully assess the validity of the methodology.
In summary, the study's methodology has multiple flaws, which may affect the reliability and validity of the results. The study's reliance on a single future climate scenario and a single climate model, the assumption that there is insufficient evidence for wind and river dispersion, the use of a single metric to assess model performance, and the lack of sensitivity analyses and model validation all need to be addressed to ensure the reliability and validity of the results.

Research Findings and Factual Consistency Verification Presentation Table			
Pivot	Description in original	Validation results	Consistent or inconsistent
Specific impacts of climate factors	Climatic factors affecting the distribution of destructive grasses were mentioned, but no specific values or statistics were available.	Specific statistical analyses and modelling results are needed to support conclusions.	Inconsistent.
Sensitivity of destructive grasses to low temperatures and drought	Destructive grasses were mentioned as being sensitive to low temperatures and drought, but no specific growth data or experimental results were provided.	Further verification through field experiments or literature studies is needed.	Inconsistent.
Specific effects of global climate change on the distribution of destructive grasses	Climate change was mentioned as a possible influence on the distribution of sedge, but no specific predictive data or research results were provided.	Predictive data from climate change modelling or studies of changes in the distribution of sedge are needed.	Inconsistent.

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Predictions of Suitable Distribution Areas and Potentially Invasive Areas	Changes in the suitable range and potentially invasive areas of destructive grasses are predicted, but no prediction model or methodology is specified and no uncertainty analysis is provided.	Specification of model or methodology and analysis of predictive uncertainty is needed.	Inconsistent.
Dispersal rates and modes of dispersal of destructive grasses	It is mentioned that destructive grass seeds are mainly wind-driven, but no specific data on the efficiency of wind-driven dispersal and dispersal rates are provided.	Specific data on dispersal rates and efficiencies are needed.	Inconsistent.
Historical and Current Distribution of Destructive Grasses in China	The rate of expansion of the distribution area of Damselfly since its introduction to China in the 1940s is mentioned, but no specific data on the rate of expansion or historical changes in distribution are given.	Specific expansion rates and historical distribution data are needed.	Inconsistent
Limitations of the potential invasion area	It is noted that the potential invasion area is limited to south-west China and its environs, but no ecological evidence is provided on how geographic isolation specifically affects the distribution of sedge.	Ecological evidence of the impact of geographic isolation on the distribution of sedge is needed.	Inconsistent.
Difference between dispersal rate and actual migration capacity	It was noted that the dispersal rates used may not accurately reflect the actual transport capacity of destructive grasses, but no specific assessment or study of this discrepancy was provided.	A specific assessment or study of the difference between diffusion rates and actual migration capacity is needed.	Inconsistent.

Description:
The 'Validation results' column provides additional information or data needed for each element to support or validate the original description.
The 'Consistent or inconsistent' column indicates whether there is consistency between the original description and the scientific validation based on the information provided. In this case, most of the points were marked as 'inconsistent', meaning that the original description lacked sufficient data or detailed information to support the conclusions.

III. RESULTS AND CONCLUSIONS

After a thorough review of the paper published by the School of Biology and Environment of Nanjing Forestry University, we conclude that the paper suffers from obvious logical flaws and academic deficiencies in its

research methodology. The use of a single future climate scenario and climate model in the thesis limits the generalisability of its results; the hypothesis of wind and riverine dispersion as the main mechanisms lacks empirical support; the causal relationship between dispersal rates and environmental factors is unclear; and the use of a single indicator (AUC) is insufficient for a comprehensive assessment of model performance. In addition, the paper lacks a comprehensive assessment of the methodology, including reliability metrics, data quality control, measurement error discussion, model uncertainty assessment and sensitivity analysis. The existence of these problems seriously undermines the reliability and validity of the research and negatively affects academic integrity. We recommend that academics strengthen the review of research methods to improve the quality of research and maintain academic integrity.

REFERENCES

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