

2024 ICM

Problem F: Reducing Illegal Wildlife Trade



Illegal wildlife trade negatively impacts our environment and threatens global biodiversity. It is estimated to involve up to 26.5 billion US dollars per year and is considered to be the fourth largest of all global illegal trades.^[1] You are to develop a data-driven 5-year project designed to make a notable reduction in illegal wildlife trade. Your goal is to convince a **client** to carry out your project. To do this, you must select both a client and an appropriate project for that client.

Your work should explore the following sub-questions:

- Who is your client? What can that client realistically do? (In other words, your client should have the powers, resources, and interest needed to enact the project you propose.)
- Explain why the project you developed is suitable for this client. What research, from published literature and from your own analyses, supports the selection of your proposed project? Using a data-driven analysis, how will you convince your client that this is a project they should undertake?
- What additional powers and resources will your client need to carry out the project? (Remember to use assumptions, but also ground your work in reality as much as you are able.)
- If the project is carried out what will happen? In other words, what will the measurable impact on illegal wildlife trade be? What analysis did you do to determine this?
- How likely is the project to reach the expected goal? Also, based on a contextualized sensitivity analysis, are there conditions or events that may disproportionately aid or harm the project's ability to reach its goal?

While you could limit your approach to illegal wildlife trade, you may also consider illegal wildlife trade as part of a larger complex system. Specifically, you could consider how other global efforts in other domains, e.g., efforts to curtail other forms of trafficking or efforts to reduce climate change coupled with efforts to curtail illegal wildlife trade, may be part of a complex system. This may create synergistic opportunities for unexpected actors in this domain.

2024 ICM 问题 F: 减少非法
野生动植物贸易



非法野生动植物贸易对我们的环境产生负面影响，并威胁到全球生物多样性。据估计，它每年涉及高达265亿美元，被认为是全球所有非法贸易中的第四大非法贸易。您将开发一个数据驱动的 5 年项目，旨在显着减少非法野生动物贸易。您的目标是说服客户执行您的项目。为此，必须为该客户端选择客户端和适当的项目。

您的工作应探讨以下问题：

- 谁是你的客户？该客户实际上可以做什么？（换句话说，你的客户应该拥有实施你提出的项目所需的权力、资源和兴趣。
- 解释为什么您开发的项目适合该客户。从已发表的文献和您自己的分析中，哪些研究支持您拟议项目的选择？使用数据驱动的分析，您将如何说服您的客户这是他们应该承担的项目？
- 您的客户需要哪些额外的权力和资源来执行该项目？（记住要使用假设，但也要尽可能多地将你的工作建立在现实中。
- 如果项目被执行，会发生什么？换言之，对非法野生动植物贸易的可衡量影响是什么？你做了什么分析来确定这一点？
- 项目达到预期目标的可能性有多大？此外，基于情境化的敏感性分析，是否存在可能不成比例地帮助或损害项目实现其目标的条件或事件？

虽然您可以限制对非法野生动植物贸易的处理方式，但您也可以将非法野生动植物贸易视为更大复杂系统的一部分。具体而言，您可以考虑其他领域的其他全球努力，例如，减少其他形式贩运的努力或减少气候变化的努力，以及减少非法野生动植物贸易的努力，如何成为复杂系统的一部分。这可能会为该领域的意想不到的参与者创造协同机会。

If you choose to leverage a complexity framework in your solution, be sure to justify your choice by discussing the benefits and drawbacks of this modeling decision.

Additionally, your team must submit a 1-page memo with key points for your client, highlighting your 5-year project proposal and why the project is right for them as a client (e.g., access to resources, part of their mandate, aligns with their mission statement, etc.).

The judges will specifically be looking for creativity in the selection of the client and in the selection and justification of appropriate modeling processes used throughout the analysis. They will also be looking for exposition that both (1) establishes strong connections between the client and the proposed project and (2) draws clear and direct ties between the data analysis and the design of the proposed project.

Your PDF solution of no more than 25 pages total should include:

- One-page summary sheet that clearly describes your approach to the problem and your most important conclusions from your analysis in the context of the problem.
- Table of Contents.
- Your complete solution.
- One-page memo to your client.
- Reference List.
- [AI Use Report](#) (if used).

Note: There is no specific required minimum page length for a complete ICM submission. You may use up to 25 total pages for all your solution work and any additional information you want to include (for example: drawings, diagrams, calculations, tables). Partial solutions are accepted. We permit the careful use of AI such as ChatGPT, although it is not necessary to create a solution to this problem. If you choose to utilize a generative AI, you must follow the [COMAP AI use policy](#). This will result in an additional AI use report that you must add to the end of your PDF solution file and does not count toward the 25 total page limit for your solution.

References

[1] Wildlife Conservancy Society. (2021). *Why Should we Care about Wildlife Trafficking?*
Retrieved from <https://wildlifetrade.wcs.org/Wildlife-Trade/Why-should-we-care.aspx>

Glossary

Client: The actor who will be implementing the proposed project. They may be official actors (governmental or quasi-governmental) or unofficial actors (Non-Governmental Organizations).

Illegal Wildlife Trade: smuggling, poaching, and capture or collection of endangered species, protected wildlife, or the derivatives/products of these species

如果选择在解决方案中利用复杂性框架，请务必通过讨论此建模决策的优点和缺点来证明您的选择的合理性。

此外，您的团队必须为您的客户提交一份 1 页的备忘录，其中包含要点，突出您的 5 年项目提案以及为什么该项目适合他们作为客户（例如，获得资源、部分任务、是否符合他们的使命宣言等）。

评委们将特别关注客户的选择以及在整个分析过程中使用的适当建模过程的选择和论证的创造力。他们还将寻找（1）在客户和拟议项目之间建立牢固联系和（2）在数据分析和拟议项目设计之间建立明确和直接联系的阐述。

总页数不超过 25 页的 PDF 解决方案应包括：

- 一页摘要表，清楚地描述了您解决问题的方法以及您在问题上下文中分析得出的最重要结论。
- 目录。
- 您的完整解决方案。
- 给客户的一页备忘录。
- 参考列表。
- AI 使用报告（如果使用）。

注意：完整的 ICM 提交没有具体的最小页面长度要求。您最多可以使用 25 页来完成所有解决方案工作以及要包含的任何其他信息（例如：图纸、图表、计算、表格）。接受部分解决方案。我们允许谨慎使用 ChatGPT 等 AI，尽管没有必要为此问题创建解决方案。如果您选择使用生成式 AI，则必须遵循 COMAP AI 使用策略。这将导致一个额外的 AI 使用报告，您必须将其添加到 PDF 解决方案文件的末尾，并且不计入解决方案的 25 页总页数限制。

引用

[1] 野生动物保护协会. (2021). 我们为什么要关注野生动物贩运？

取自 <https://wildlifetrade.wcs.org/Wildlife-Trade/Why-should-we-care.aspx>

词汇表

客户：将实施拟议项目的参与者。它们可以是官方行为者（政府或准政府），也可以是非官方行为者（非政府组织）。

非法野生动植物贸易：走私、偷猎、捕获或收集濒危物种、受保护野生动植物或这些物种的衍生生物/产品

Use of Large Language Models and Generative AI Tools in COMAP Contests

This policy is motivated by the rise of large language models (LLMs) and generative AI assisted technologies. The policy aims to provide greater transparency and guidance to teams, advisors, and judges. This policy applies to all aspects of student work, from research and development of models (including code creation) to the written report. Since these emerging technologies are quickly evolving, COMAP will refine this policy as appropriate.

Teams must be open and honest about all their uses of AI tools. The more transparent a team and its submission are, the more likely it is that their work can be fully trusted, appreciated, and correctly used by others. These disclosures aid in understanding the development of intellectual work and in the proper acknowledgement of contributions. Without open and clear citations and references of the role of AI tools, it is more likely that questionable passages and work could be identified as plagiarism and disqualified.

Solving the problems does not require the use of AI tools, although their responsible use is permitted. COMAP recognizes the value of LLMs and generative AI as productivity tools that can help teams in preparing their submission; to generate initial ideas for a structure, for example, or when summarizing, paraphrasing, language polishing etc. There are many tasks in model development where human creativity and teamwork is essential, and where a reliance on AI tools introduces risks. Therefore, we advise caution when using these technologies for tasks such as model selection and building, assisting in the creation of code, interpreting data and results of models, and drawing scientific conclusions.

It is important to note that LLMs and generative AI have limitations and are unable to replace human creativity and critical thinking. COMAP advises teams to be aware of these risks if they choose to use LLMs:

- **Objectivity:** Previously published content containing racist, sexist, or other biases can arise in LLM-generated text, and some important viewpoints may not be represented.
- **Accuracy:** LLMs can ‘hallucinate’ i.e. generate false content, especially when used outside of their domain or when dealing with complex or ambiguous topics. They can generate content that is linguistically but not scientifically plausible, they can get facts wrong, and they have been shown to generate citations that don’t exist. Some LLMs are only trained on content published before a particular date and therefore present an incomplete picture.
- **Contextual understanding:** LLMs cannot apply human understanding to the context of a piece of text, especially when dealing with idiomatic expressions, sarcasm, humor, or metaphorical language. This can lead to errors or misinterpretations in the generated content.
- **Training data:** LLMs require a large amount of high-quality training data to achieve optimal performance. In some domains or languages, however, such data may not be readily available, thus limiting the usefulness of any output.

在COMAP竞赛中使用大型语言模型和生成式AI工具

这项政策的动机是大型语言模型（LLMs）和生成式人工智能辅助技术的兴起。该政策旨在为团队、顾问和评委提供更大的透明度和指导。本政策适用于学生工作的各个方面，从模型的研究和开发（包括代码创建）到书面报告。由于这些新兴技术正在迅速发展，COMAP将酌情完善这一政策。

团队必须对他们使用 AI 工具的所有情况开诚布公。一个团队及其提交越透明，他们的工作就越有可能被其他人完全信任、欣赏和正确使用。这些披露有助于理解智力工作的发展和对贡献的正确承认。如果没有对人工智能工具的作用进行公开和明确的引用和参考，有问题的段落和作品更有可能被认定为抄袭并被取消资格。

解决问题不需要使用人工智能工具，尽管允许负责任地使用它们。COMAP认识到生成式人工智能作为生产力工具的价值LLMs，可以帮助团队准备提交；例如，在总结、释义、语言润色等时，为结构产生初步想法。在模型开发中，有许多任务需要人类的创造力和团队合作，而依赖人工智能工具会带来风险。因此，我们建议在将这些技术用于模型选择和构建、协助创建代码、解释模型的数据和结果以及得出科学结论等任务时要谨慎。

需要注意的是，LLMs生成式人工智能有局限性，无法取代人类的创造力和批判性思维。COMAP建议团队在选择使用LLMs以下方法时注意这些风险：

- 客观性：以前发布的内容包含种族主义、性别歧视或其他偏见可能会出现在生成的文本中 LLM，并且可能无法代表一些重要的观点。
- 准确性：LLMs可以“产生幻觉”，即产生虚假内容，尤其是在其领域之外使用或处理复杂或模棱两可的主题时。他们可以生成在语言上但在科学上不合理的内容，他们可能会弄错事实，并且它们已被证明可以生成不存在的引文。有些人LLMs只接受过特定日期之前发布的内容的培训，因此呈现出不完整的画面。
- 语境理解：LLMs不能将人类的理解应用于一段文本的上下文，尤其是在处理惯用语、讽刺、幽默或隐喻语言时。这可能会导致生成的内容出现错误或误解。
- 训练数据：LLMs需要大量高质量的训练数据才能达到最佳性能。然而，在某些领域或语言中，这些数据可能不容易获得，从而限制了任何输出的有用性。

Guidance for teams

Teams are required to:

1. **Clearly indicate the use of LLMs or other AI tools in their report**, including which model was used and for what purpose. Please use inline citations and the reference section. Also append the Report on Use of AI (described below) after your 25-page solution.
2. **Verify the accuracy, validity, and appropriateness** of the content and any citations generated by language models and correct any errors or inconsistencies.
3. **Provide citation and references, following guidance provided here.** Double-check citations to ensure they are accurate and are properly referenced.
4. **Be conscious of the potential for plagiarism** since LLMs may reproduce substantial text from other sources. Check the original sources to be sure you are not plagiarizing someone else's work.

**COMAP will take appropriate action
when we identify submissions likely prepared with
undisclosed use of such tools.**

Citation and Referencing Directions

Think carefully about how to document and reference whatever tools the team may choose to use. A variety of style guides are beginning to incorporate policies for the citation and referencing of AI tools. Use inline citations and list all AI tools used in the reference section of your 25-page solution.

Whether or not a team chooses to use AI tools, the main solution report is still limited to 25 pages. If a team chooses to utilize AI, following the end of your report, add a new section titled Report on Use of AI. This new section has no page limit and will not be counted as part of the 25-page solution.

Examples (this is *not* exhaustive – adapt these examples to your situation):

Report on Use of AI

1. OpenAI *ChatGPT* (Nov 5, 2023 version, ChatGPT-4)
Query1: *<insert the exact wording you input into the AI tool>*
Output: *<insert the complete output from the AI tool>*
2. OpenAI *Ernie* (Nov 5, 2023 version, Ernie 4.0)
Query1: *<insert the exact wording of any subsequent input into the AI tool>*
Output: *<insert the complete output from the second query>*
3. Github *CoPilot* (Feb 3, 2024 version)
Query1: *<insert the exact wording you input into the AI tool>*
Output: *<insert the complete output from the AI tool>*
4. Google *Bard* (Feb 2, 2024 version)
Query: *<insert the exact wording of your query>*
Output: *<insert the complete output from the AI tool>*

团队指南

团队必须：

1. 在报告中明确指出人工智能工具的使用LLMs或其他工具，包括：
使用了模型以及用于什么目的。请使用内联引文和参考文献部分。此外，在 25 页的解决方案后附加 AI 使用报告（如下所述）。
2. 验证内容的准确性、有效性和适当性以及语言模型生成的任何引用，并纠正任何错误或不一致之处。
3. 按照此处提供的指导提供引文和参考文献。仔细检查引文，确保它们准确无误并被正确引用。
4. 请注意抄袭的可能性，因为LLMs可能会复制大量文本
来自其他来源。检查原始来源以确保您没有剽窃他人的作品。

当我们发现可能使用此类工具未公开使用此类工具准备的提交内容时，COMAP将采取适当的行动。

引文和参考文献说明

仔细考虑如何记录和引用团队可能选择使用的任何工具。各种风格指南开始纳入引用和引用人工智能工具的政策。使用内联引文，并列出 25 页解决方案的参考部分中使用的所有 AI 工具。

无论团队是否选择使用 AI 工具，主要解决方案报告仍限制在 25 页以内。如果团队选择使用 AI，请在报告末尾添加标题为“AI 使用报告”的新部分。此新部分没有页数限制，不会计为 25 页解决方案的一部分。

示例（这并非详尽无遗 – 请根据您的情况调整这些示例）：

人工智能使用报告

1. OpenAI ChatGPT（2023年11月5日版，ChatGPT-4）
Query1: <插入您在 AI 工具中输入的确切措辞>输出: <插入 AI 工具的完整输出>
2. OpenAI Ernie（2023 年 11 月 5 日版，Ernie 4.0）
Query1: <将任何后续输入的确切措辞插入 AI 工具>输出: <插入第二个查询的完整输出>
3. Github CoPilot（2024 年 2 月 3 日版）
Query1: <插入您在 AI 工具中输入的确切措辞>输出: <插入 AI 工具的完整输出>
4. Google Bard（2024年2月2日版）
查询: <插入查询的确切措辞>输出: <插入 AI 工具的完整输出>