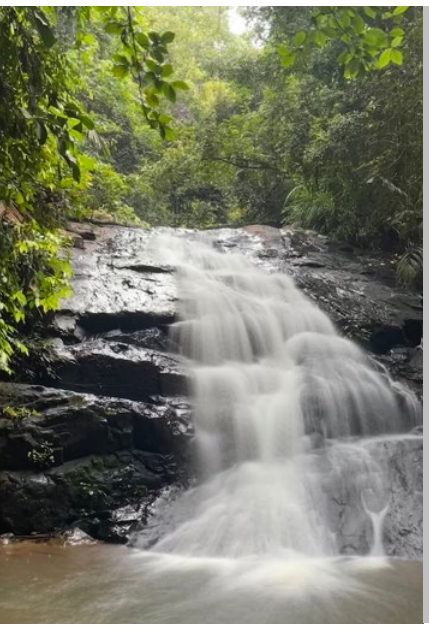

DEVELOPING STRATEGIES TO IMPROVE METT SCORES AND OVERALL MANAGEMENT EFFECTIVENESS IN SELECTED MALAYSIAN PROTECTED AREAS

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ABSTRACT

Effective management of protected areas (PAs) is essential for ensuring long-term sustainability and conservation of biodiversity and ecosystem services. In this study, we assess the management effectiveness of select PAs in Malaysia using the Management Effectiveness Tracking Tool (METT). The METT scores were analysed for sites across different IUCN management categories (Categories I, II and V). The analysis determined the variations in the overall METT scores and element scores within and across each management category. Common strengths and weaknesses in the management of the sites were identified across the PAs as well as the most common and major threats across these sites which were 'biological resource use and harm' and 'natural system modifications', respectively. Based on the findings, strategies are proposed to improve the overall management effectiveness and subsequently, the METT scores, including with enhanced research and monitoring and robust stakeholder engagement. The findings underscore the importance of robust management frameworks and continuous monitoring to ensure the effectiveness of PA management.

Keywords: protected area management effectiveness, Management Effectiveness Tracking Tool, METT-4, PAME assessment

INTRODUCTION

Protected areas (PAs) serve as the last frontier for wildlife and flora conservation; as high value conservation areas and for preservation of endemic species (Le Saout et al., 2013; Stoll-Kleemann & Job, 2008; Stolton et al., 2015). PAs also contribute to human well-being through the preservation of the natural environments that provide various ecosystem services benefiting mankind (Ma et al., 2020). While the establishment of PAs has been emphasised in international conventions and policies since the 1900s, there has been less emphasis on understanding the actual efficacy of established PAs (IUCN, 2010). Various global biodiversity frameworks starting from the Convention on Biological Diversity (CBD) Programme of Work on Protected Areas (PoWPA) in 2004 (Secretariat of the Convention on Biological Diversity, 2004), the Aichi Biodiversity Targets in 2011 and subsequently, the Kunming-Montreal Global Biodiversity Framework in 2022 have emphasised not only the establishment of protected and conserved areas but also the management effectiveness of the established sites, bringing more prominence to improving the overall effectiveness of PAs globally (Maney et al., 2024; Xu et al., 2021).

Since the creation of its first PA, the Chior Wildlife Reserve in 1903 (KATS, 2019a), Malaysia has gazetted more than 500 PAs, albeit in varying sizes, encompassing more than 13 per cent of terrestrial and 3 per cent of marine areas (KATS, 2019a). As one of the 12 most biodiverse countries in the world, Malaysia's effort in PA establishment towards conserving its rich biodiversity (KATS, 2019b; KATS, 2020) is commendable. Malaysia has also considered the effectiveness of PA management by way of Protected Area Management Effectiveness (PAME) assessments to reduce the occurrence of 'paper parks' (Dudley & Stolton, 1999). This is evident with the adoption of the National Policy on Biological

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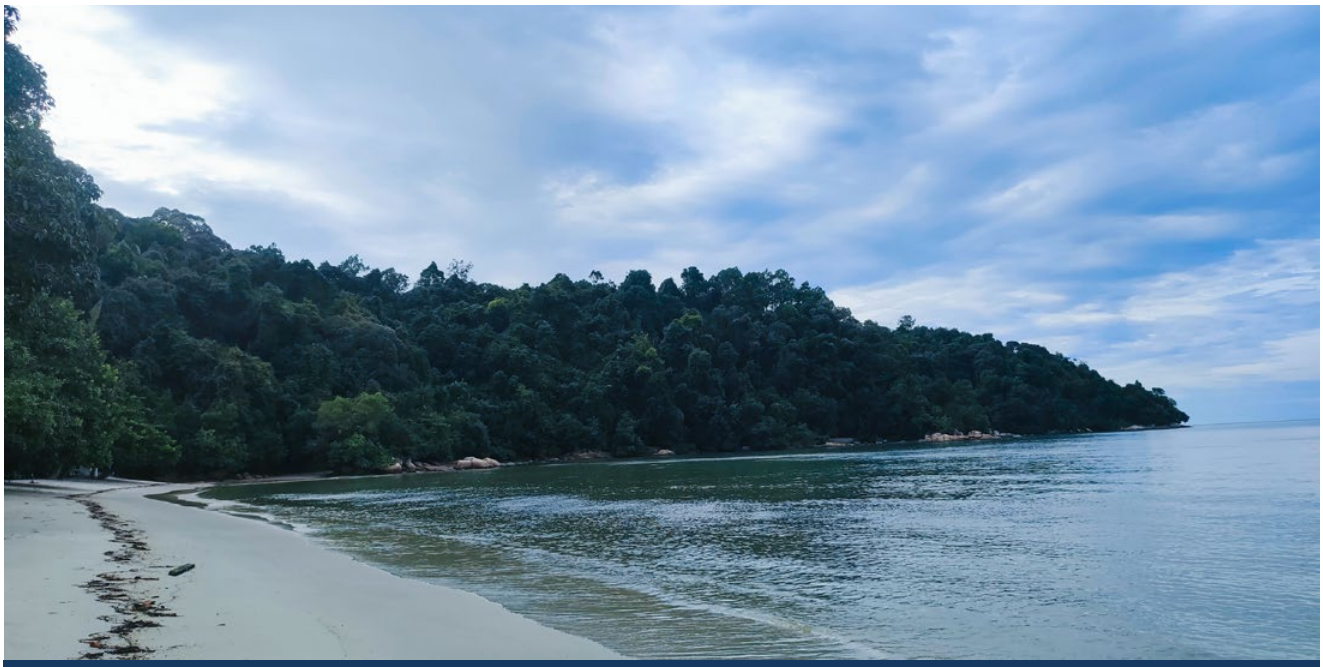

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Diversity 2016–2025 and its subsequent revised version, 2022–2030, which contain specific actions to enhance the management effectiveness of Malaysia's PAs (NRE, 2016; NRECC, 2023). The Malaysian Government has also directed more funding towards incentivising PAs by way of Ecological Fiscal Transfer (EFT), where the fund allocation criteria include PA hectarage and performance (NRECC, 2023).

The Management Effectiveness Tracking Tool (METT) is one of the most widely used PAME tools globally (Stolton et al., 2019) and has been regularly updated as PA management challenges and management responses develop. The current version, METT-4, (Abidin et al., 2022; Stolton et al., 2021) is a comprehensive assessment that is recommended to be carried out at intervals of one to two years. The METT assessment scores provide a quick indicator of the relative management effectiveness of different sites. This is especially useful for PA management agencies that manage multiple sites and for higher-level PA managers who can utilise this broad indicator to understand the overall status of the sites under their management. However, the *METT Handbook* and other related studies (Stolton et al., 2021; Stolton et al., 2019) warn against the use of the METT score as a 'pass' or 'fail' and instead recommend understanding the results in terms of the six elements (Context, Planning, Input, Process, Output and Outcome) of the IUCN World Commission on Protected Areas (WCPA) Framework (Hockings et al., 2006).

In this paper, we aim to enhance the overall management effectiveness of selected PAs in Malaysia with a focus on the following objectives: (a) review the current state of PA management effectiveness in Malaysia by establishing the initial management effectiveness status for selected sites via METT scores; (b) identify the current challenges and deficiencies in management effectiveness within the selected sites; and (c) develop strategies to improve METT scores and overall management effectiveness in selected sites.

Study Area

Malaysia consists of Peninsular Malaysia (West Malaysia), Sabah and Sarawak (together referred to as East Malaysia), and is found between the latitudes and longitudes of 01–07°N and 100–119°E. Malaysia is characterised as having a tropical rainforest climate (Peel et al., 2007) with average temperatures between 26°C and 28.7°C and average annual rainfall of 2,400 mm (Tang, 2019).

Sixteen PAs in Peninsular Malaysia, Sabah and Sarawak were assessed using METT-4 (Figure 1). These sites are managed by various PA management agencies and are categorised into different IUCN PA management categories due to the differences in the management objectives and permitted activities within the sites. The IUCN management categories for the 16 PAs are listed in Table 1. See Supplementary Online Material 1 for detailed information on the sites.

As many of the PAs in Malaysia have yet to undertake any management effectiveness assessments, this study serves to establish a baseline of the sites' management effectiveness and to identify management needs.

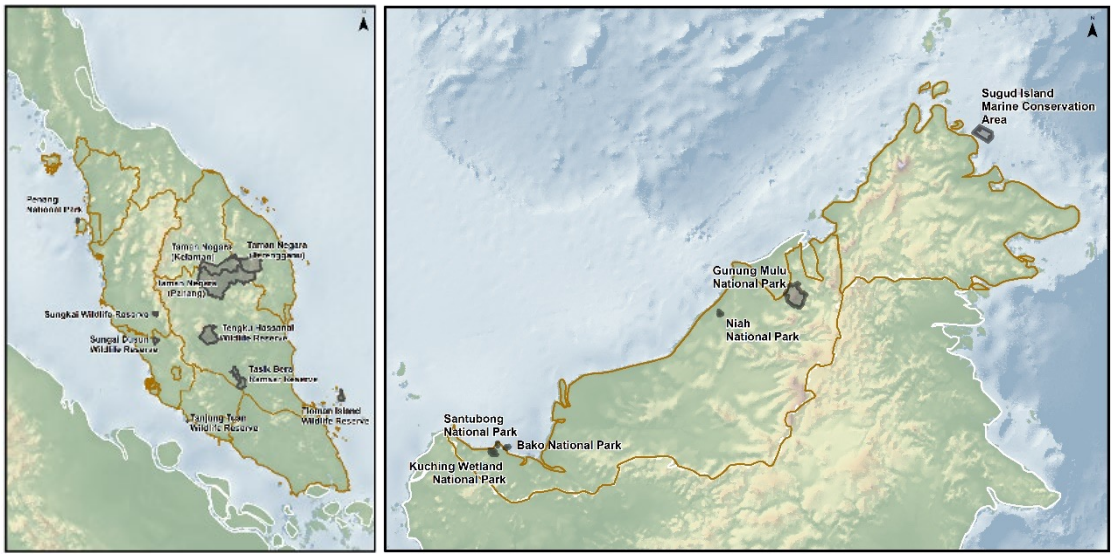

Figure 1. Map of the 16 PAs assessed in Malaysia (Source: Base map © ESRI, 2012)

Table 1. PAs assessed in Malaysia and their IUCN management categories

Sites	IUCN Management Category
Peninsular Malaysia	
Tengku Hassanal Wildlife Reserve Tioman Island Wildlife Reserve Sungkai Wildlife Reserve	Category Ia
Sungai Dusun Wildlife Reserve	Category Ib
Pahang National Park Terengganu National Park Kelantan National Park Penang National Park	Category II
Tasek Bera Ramsar Site Tanjung Tuan Wildlife Reserve	Category V
Sarawak	
Bako National Park Kuching Wetlands National Park Mulu National Park Niah National Park Santubong National Park	Category II
Sabah	
Sugud Island Marine Conservation Area	Category II

METHODOLOGY

Data collection consisted of a series of workshops involving the staff from the 16 PAs. The workshops included an introductory session on PAME, the evaluation tools available in the PAME process as well as an introduction to the METT. Following this, the PA staff were trained in conducting the PAME assessment, especially in the use of the METT.

The data collected from the workshops including the METT assessment scores were then analysed to identify the prevalent threats, common challenges and successes across the 16 PAs to understand the PA management norms across Malaysia. Quantitative data such as the METT scores for the sites were analysed and visualised using graphical representation. In this paper, violin plots are used to visualise the METT score distribution across the different IUCN management categories. We have also followed the METT-4 templates, in using spider charts to visualise the element scores for the sites across the IUCN management categories, as each METT-4 question corresponds to a specific IUCN-WCPA Framework

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element. These charts provide detailed breakdown of the gaps and strengths of the individual sites within each IUCN management category.

Common threats based on the frequency of the specific threat across the 16 assessed PAs and the major threats, based on the aggregate scoring of the threat extent and severity, across the assessed PAs were also identified and were then visualised in a graphical representation. See Supplementary Online Material 2 for the detailed methodology.

In addition, further analysis was carried out on the prioritised "Actions to Improve Management" to develop evidence-based strategies which could enhance the overall PA management efficacy in Malaysia and subsequently, improve the METT scores achieved by each site. Ethical and technical considerations are important in this study, especially to ensure the confidentiality of sensitive information on the sites. Therefore, we do not share the actual METT scores obtained by the individual PAs in this paper.

RESULTS AND DISCUSSION

Analysis of overall METT scores and METT element scores

The analysis of the overall METT scores and the METT element scores for the individual sites within each PA category for the 16 sites assessed gives valuable information on the trend of management effectiveness within various IUCN management categories. Overall, these 16 sites showcased varying levels of management effectiveness with some similar gaps in the METT management elements found across the categories and sites (Figure 2).

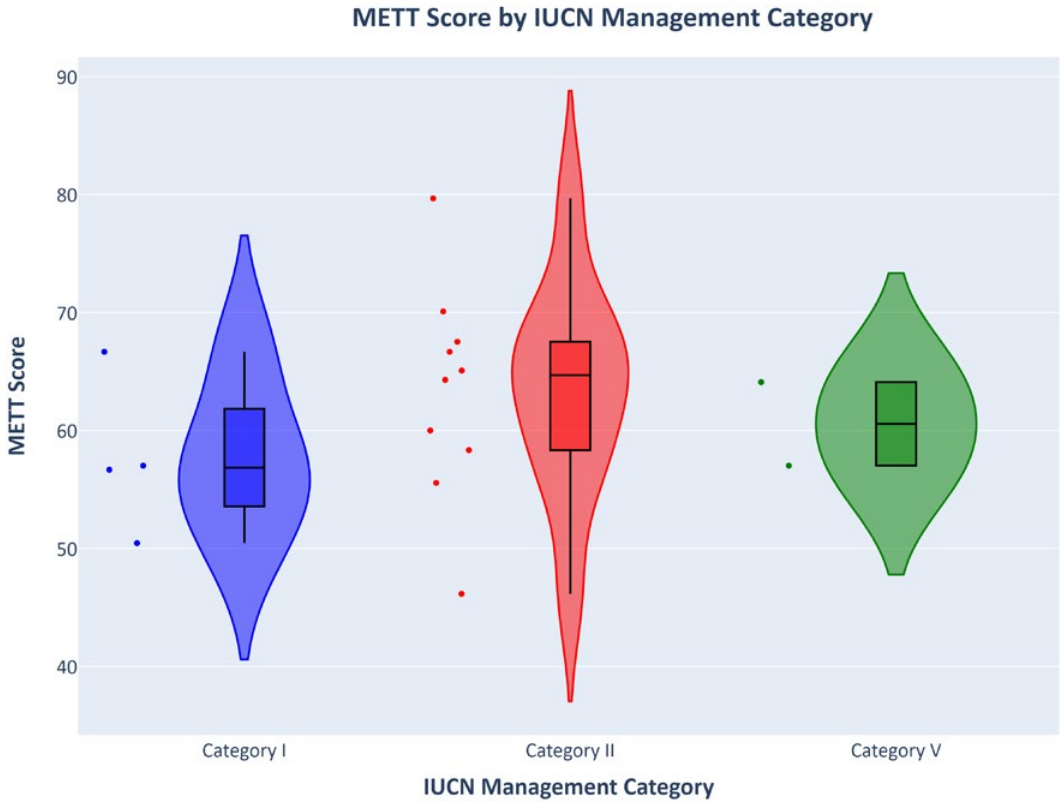

Figure 2. Violin plot visualising the distribution of METT scores achieved by the sites assessed within specific IUCN management categories. The violin plots are overlaid with box plots to denote the median (line within the box), interquartile range (black box) and outliers (points beyond the whiskers). The points (in blue, red and green) show the METT score distribution across each category.

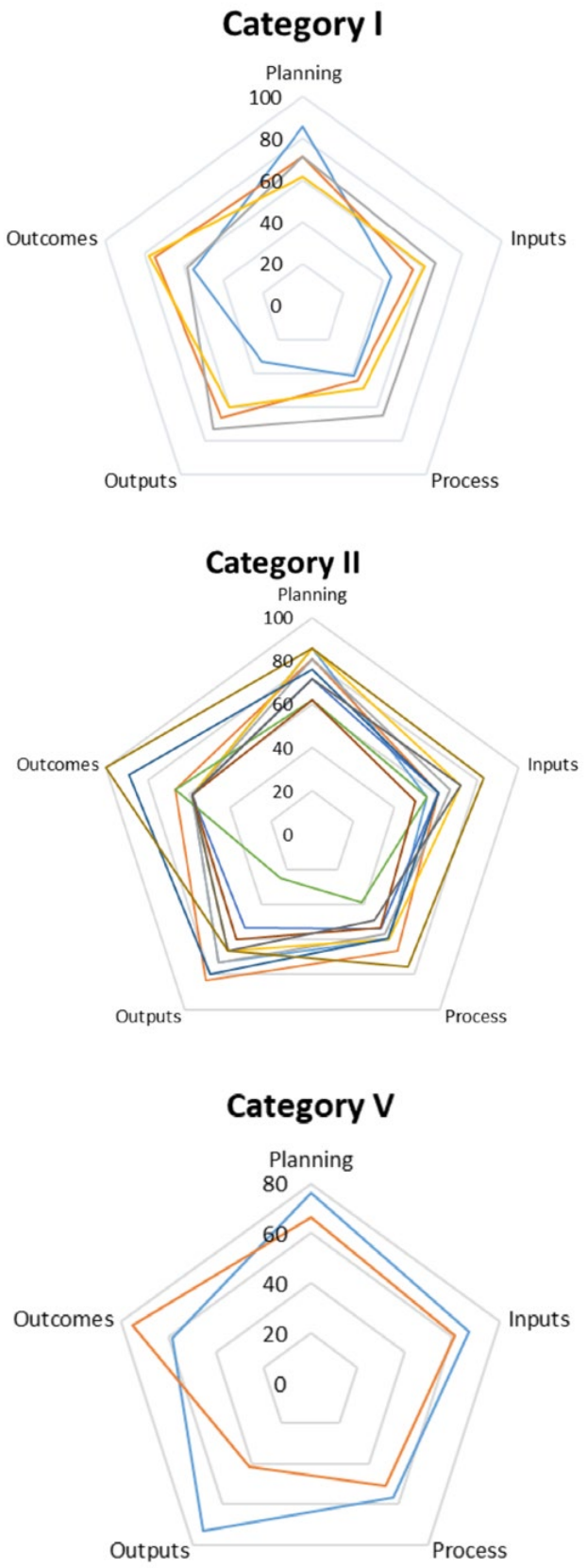

Figure 3. Spider charts denoting the METT element score results for 16 Malaysian PAs by IUCN PA management categories. Each coloured line within the spider charts denotes the METT management element scores of the individual Malaysian PA that was assessed.

The violin plot produced (Figure 2) shows distinctive patterns in the score distributions across the different IUCN management categories. From the analysis, the three categories display violin plots of differing widths which signifies differences in the management effectiveness of the sites. The widest section of the violin plot represents a higher probability of sites within that category obtaining a similar range of METT scores.

Based on the violin plot, Category I sites exhibit a relatively narrow distribution of scores which could imply that the management undertaken across sites within this category is quite similar. This is consistent with the findings from the spider chart of METT element scores for PAs in Category I (Figure 3). With the exception of one outlier, PAs in this category have similar moderate scores for most elements and some gaps in the Process element. From these analyses, there are several possible interpretations for the similar results across sites including similar management policies, consistent and stable funding or relatively similar age of the site with well-established management practices (Dudley et al., 2007; Nugraha et al., 2024).

Sites that were categorised as Category II showcased the narrowest distribution of METT scores and the median score for the sites was the highest among all categories (Figure 2). There is a clear variability in the scores achieved by the individual sites with some sites achieving relatively high scores and some with lower scores which may imply variability in the sites' available resources, such as funding or available staffing to undertake management. The analysis of the spider chart for Category II (Figure 3) supports this as the sites had variable scores (moderate to high) for the element Input which includes METT questions on the sufficiency of resources (budget, staffing, etc.). Additionally, some PAs with a high influx of tourists may have additional plans or policies in place to manage issues or threats related to tourism (Bhuiyan et al., 2013) and may even benefit from increased resources to manage the tourism aspect (Chan, 2015). However, as seen from the spider chart, there is high variability in the Outcomes of the sites which could possibly be a reflection of the tourism management in concert with conservation of the site, with some sites being better prepared to mitigate the impacts from tourism activities than others.

There was also a diverse range of METT scores achieved by sites in Category V, resulting in the widest distribution of scores (Figure 2). This could possibly be due to the differences in the management capacity across the sites resulting from governance issues, resource availability, differences in the PA size and even the identification of

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site-specific threats (Hockings et al., 2006; Leverington et al., 2010). The spider chart analysis of the sites in Category V (Figure 3) also shows variable scores of the METT elements, especially for the Outputs and Outcomes elements. This indicates that there is a marked difference across the sites in undertaking management actions through implementation of the sites' management plans or work plans and in meeting their respective conservation goals. For example, a site assessed under Category V has some limitations in its governance structure, in that one of its co-managing agencies does not have enforcement powers within the site which could lead to the site being unable to undertake effective enforcement activities and in the long run, fail to achieve the site's conservation goals. Ideally, the METT assessment should be conducted collaboratively with all the relevant partners to ensure the responses provided are comprehensive, however, this was not the case. Further investigation is required to determine if this was a potential factor that contributed to the lower METT score or if there are other underlying factors.

Exploring the strengths and weaknesses in protected area management in Malaysia

The strengths and weaknesses of the PAs were assessed and analysed qualitatively by looking at the scores that each site obtained for the METT questionnaire (Figures 4 and 5). The top ten METT questions with the highest score (score of three) and lowest scores (score 0/1) for most of the PAs were identified to assess and evaluate the performance of the PAs, and the METT management element that each question corresponds to was identified to understand the management areas that need to be strengthened.

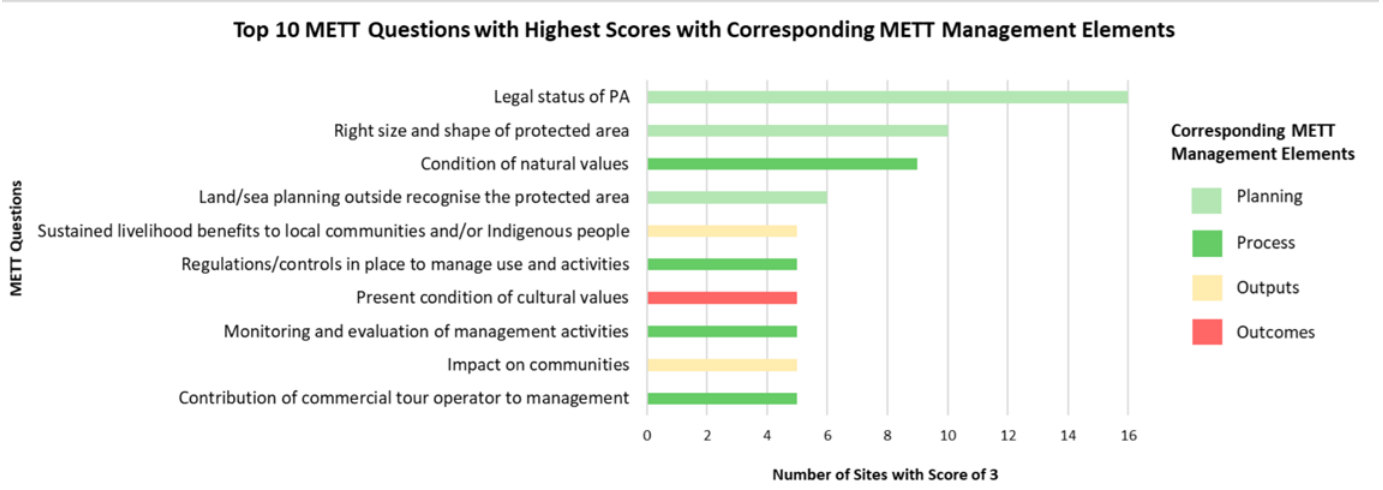


Figure 4. Top ten METT questions with the highest score across the 16 sites assessed

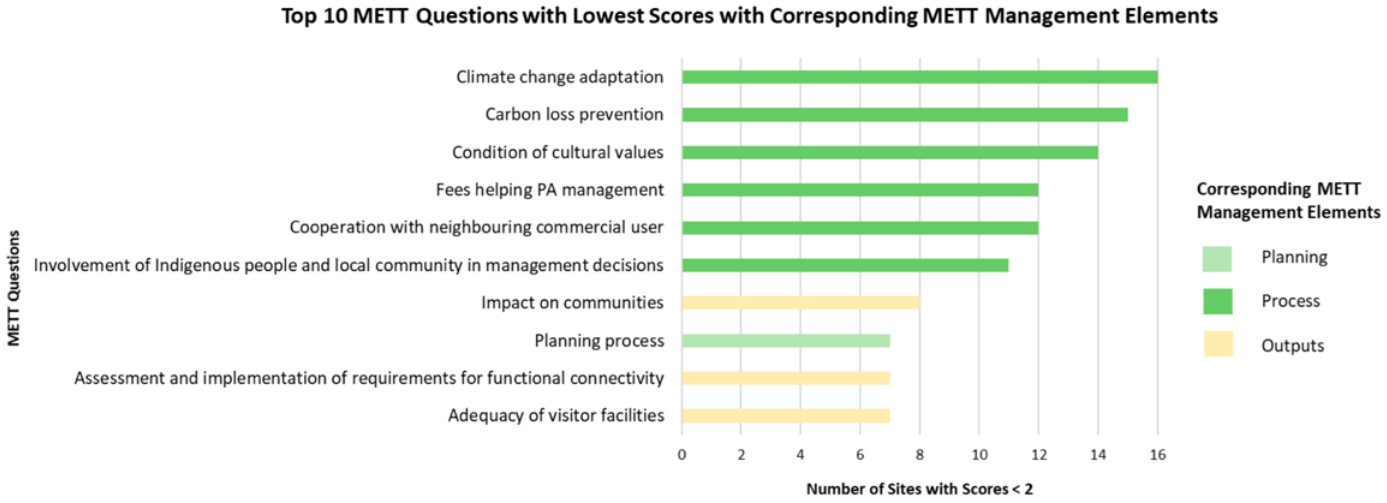


Figure 5. Top ten METT questions with the lowest scores across the 16 sites assessed

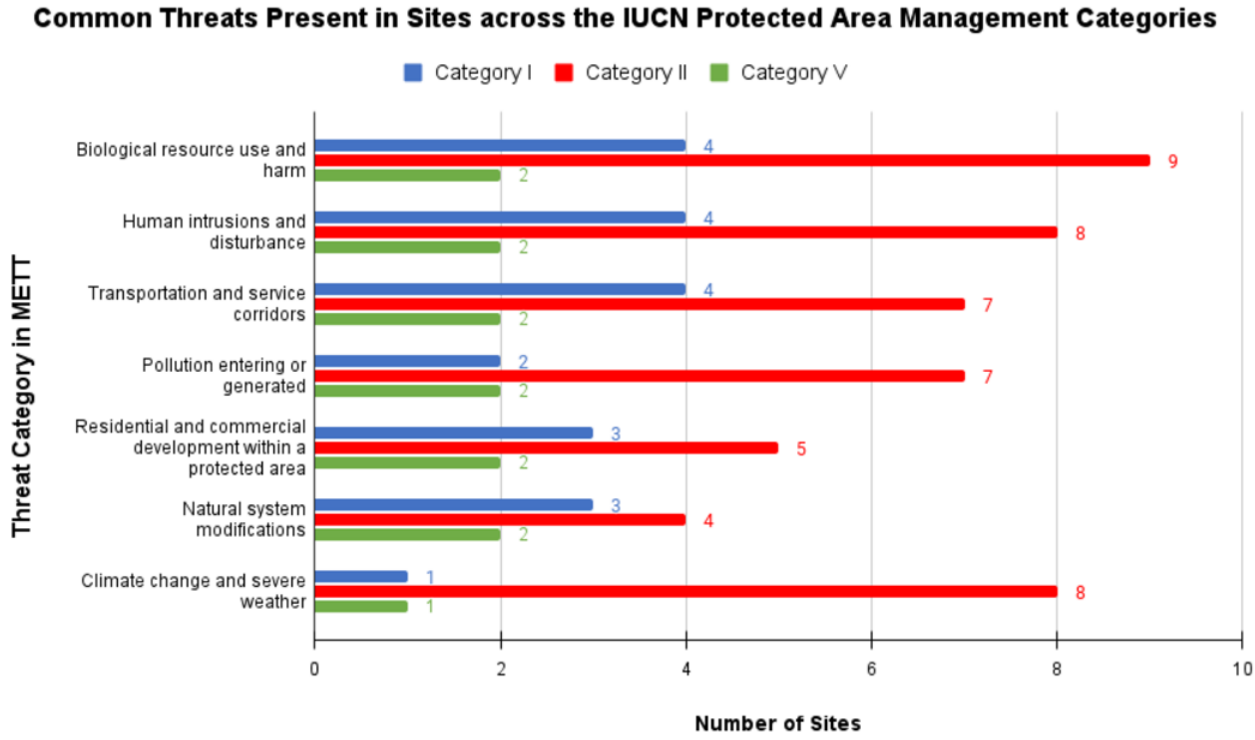


Figure 6. Common threats identified across the 16 PAs assessed in Malaysia categorised by the IUCN PA management categories

The analysis of the METT-4 questionnaire identified certain common strengths across the PAs assessed (Figure 4). In general, most of the METT questions under the Planning element were generally scored well. One of the aspects in which all sites were able to obtain the highest score was the legal status of the PA under the Planning element. This is due to Malaysia only designating a site as a PA once it has undergone legal gazettement (Bakar, 2018; NRECC, 2023). Therefore, all the sites that undertook the METT assessment were able to score well due to the sites being formally gazetted and recognised as PAs by the Malaysian government. The higher scores for METT questions under the Planning element indicates that these PAs have sufficient legal framework, appropriate boundaries and are recognised as PAs in external land use planning (Hockings et al., 2006; Stolton et al., 2021).

Figure 5 shows the common challenges across the PAs based on the lowest scores in the METT questionnaire. Based on the analysis, the questions under Process and Outputs elements generally scored lower with major gaps in climate change adaptation, PA fees and community engagement. The main challenge faced by many of the PAs in Malaysia was the climate change adaptation

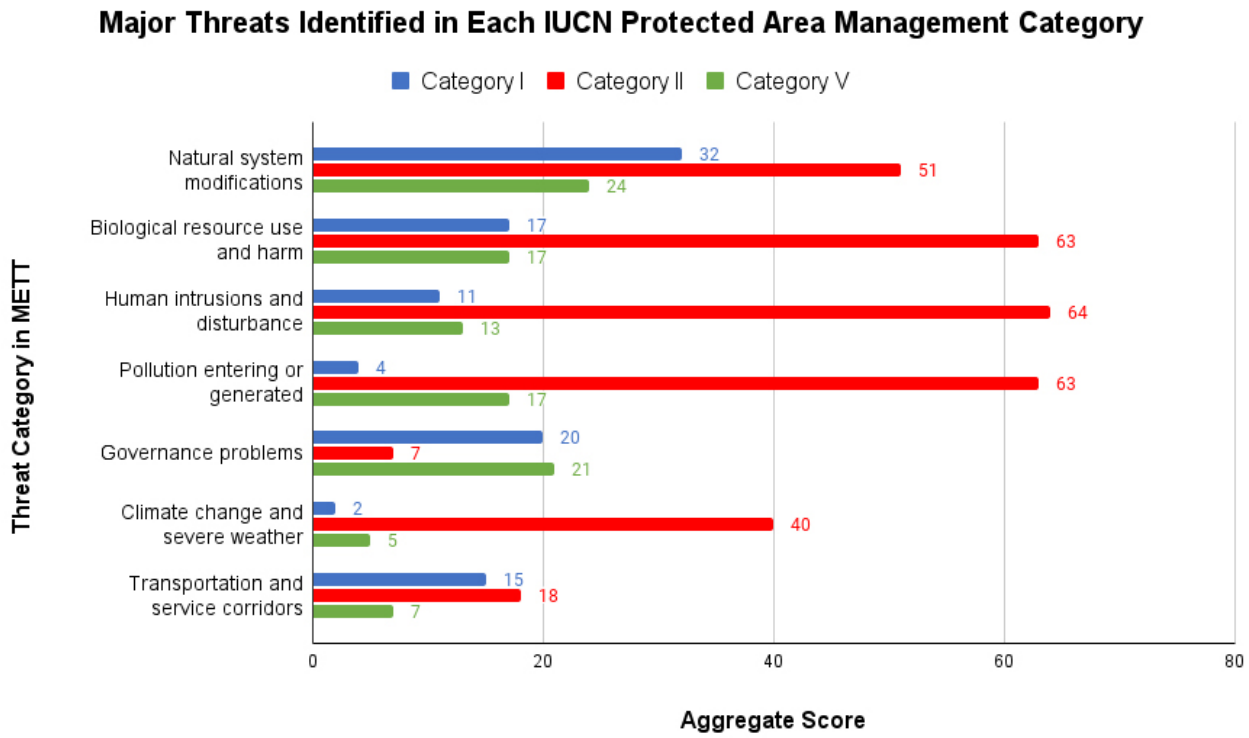


Figure 7. Major threats identified using aggregate scores across the 16 PAs assessed in Malaysia categorised by the IUCN PA management categories

aspect because it has not been considered as a traditional threat for terrestrial PAs possibly due to a lack of understanding of its long-term impacts. Climate change impacts on terrestrial habitat occur quite incrementally (Pierrehumbert, 2002), therefore this leads PA staff to assign less priority to mitigating these impacts (Schneider & Kuntz-Duriseti, 2002). There is a definite need for enhanced understanding and skills to recognise the climate change impacts and subsequently, establish climate change monitoring protocols specific to their sites and develop adaptation plans to mitigate the effects.

Common and major threats across PAs in Malaysia

An analysis of the threats found in the 16 PAs determined distinct differences in the common and major threats across the IUCN PA management categories (Figures 6 & 7).

Overall, the most common threat across all management categories is biological resource use and harm with the exception of one site in Category II. This threat category includes threats such as wildlife poaching, logging and illegal resource extraction, which is one of the most prevalent threats to PAs in Malaysia (Mohd-Azlan & Lawes, 2011; Rayan & Linkie, 2015) and across the world (de Matos Dias et al., 2020). Based on the METT assessments undertaken, we found that while this threat category was present in 15 out of 16 assessed PAs, only two sites received low scores (score 0/1) for METT Question 3 (PA regulations/controls) and six sites received low scores for Question 17 (Protection systems) which are questions relevant for threat management and mitigation. This is an indication that the protection system at the majority of these sites is effectively implemented to manage biological resource use and harm and minimise the threat impact. To manage this threat, the sites carry out regular enforcement patrols as well as integrated patrols (*Ops Bersepadu Khazanah* in Malay) involving multiple enforcement agencies which has been effective in reducing wildlife crimes in Malaysia (Bernama, 2023).

Besides common threats, the analysis also determined the major threats using aggregate scores of the threat extent and severity across the PA categories (Figure 7). The major threat identified under PA Category I and Category V is natural system modifications such as habitat clearing/destruction, while the major threat for Category II is human intrusions and disturbance which includes unsustainable tourism. Analysis of the METT data shows that though natural system modifications and human intrusions and disturbance are identified as major threats across the assessed PAs, five sites scored highly (score of 3) for Question 33 (Threats being addressed) and only three out of 16 assessed sites received low scores. This points to most of these sites being able to manage threats well while a small number of sites might benefit from targeted interventions to

mitigate and minimise the threat impacts. It is equally important for the sites to address the root cause of this threat and give importance to effective land use planning (Question 4) to ensure land use planning surrounding the PA is aligned with the PA management objectives.

Strategies to improve overall management effectiveness and METT scores

Other than a few of the key existing strategies outlined in the previous section, improving the efficacy of the PAs in Malaysia and improving the sites' METT scores requires a few comprehensive strategies.

Enhancing research and monitoring outcomes

One of the most important strategies to improve the METT score is to enhance ecological research and monitoring that specifically contributes to improving the understanding of the site's outcome (Rodrigues & Cazalis, 2020; Zhang et al., 2017). This will improve the robustness of the existing monitoring activities, especially in the development of monitoring protocols for key indicator species within the site and addressing the sites' research gaps such as climate change impacts and adaptations. The need for this strategy is highlighted by the METT assessment undertaken which shows six sites scoring low on METT Question 9 (Resource inventory), suggesting that these sites lack the necessary data and information for effective site management. While the majority of the sites scored medium on Question 19 (Research) with most sites engaged in some form of habitat/species monitoring activities, these often lack robust scientific methods and would be actions and practices that are easily undertaken by rangers. This was evident when most sites could only complete the detailed assessment on species and habitat based on their best estimates without any available data. Modern technologies can also be explored for use under this strategy to optimise resources (financial and human resources) while enhancing management practices (Dalton et al., 2021; Gonzalez et al., 2016; Jiménez López & Mulero-Pázmány, 2019; Lahoz-Monfort & Magrath, 2021). There is also a need for the sites to look beyond their routine tasks and to work towards enhancing conservation outcomes to achieve their management objectives. This could include developing robust thresholds and performance measures (Hilton & Cook, 2022) in order to improve the overall management effectiveness of the site.

Stakeholder engagement including local communities and Indigenous peoples

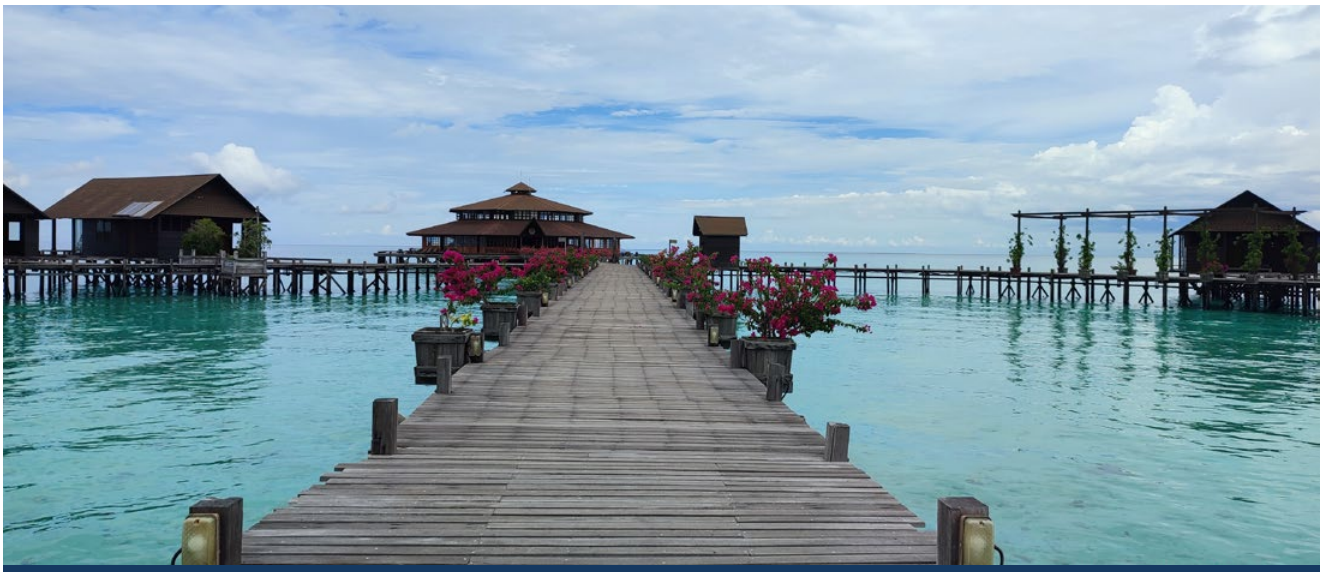
As Question 26 on "cooperation with neighbouring commercial users" and Questions 27 and 28 on "involvement of Indigenous people and local communities in the management decisions" have been identified as common challenges across 12 PAs and 11 PAs, respectively (Figure 5), the sites need to enhance stakeholder engagement effectively, especially in recognising the role of Indigenous peoples and local communities in PA management. Engagement and consultation sessions would be beneficial for the PA management team (Ayivor et al., 2020) and stakeholders to exchange information and build an open relationship. Proactive dialogues with the stakeholders and rightsholders could prevent unnecessary escalation of conflicts or issues and mitigate any reputational and financial risks.

Undertake adaptive management practices

The PA management needs to consider adaptive management (Tony, 2020; Williams, 2011) which can allow for flexibility in addressing any new challenges or threats. Regular evaluation of the current management effectiveness of the site with the use of the METT tool could also be used to develop and adopt adaptive strategies and management (Hockings et al., 2006; Stolton et al., 2021) based on the new challenges or threats that have been identified. An annual review of the sites' METT results would be beneficial to monitor progress of the identified actions to improve management.

Capacity building programmes for PA staff

Capacity building for staff is an essential aspect of enhancing the overall management aspect of the site (Appleton, 2016; Hockings et al., 2006). The analysis of the METT assessment shows that most PAs scored medium (score of 2) for Question 11 (Knowledge and skills), however, this emphasises that there are still some gaps to be addressed for better management of the site. It is crucial for PA staff to undergo trainings and capacity building, including: i) biodiversity monitoring (Appleton, 2016), particularly in enhancing existing monitoring systems or protocols at the site; ii) enforcement activities (Appleton, 2016) by incorporating modern technologies (Dalton et al., 2021); iii) stakeholder management and engagement (Nielsen, 2012), especially in developing and enhancing the necessary skillsets for effective engagement with stakeholders; and iv) Communication, Educational and Public Awareness (CEPA), a skill necessary (Gordon et al., 2021) to optimise engagement with stakeholders.



Sugud Island Marine Conservation Area (SIMCA) © Lavaniadevi G

Staffing optimisation is also crucial in PA management (Appleton et al., 2022; Hockings et al., 2006), especially where there is often a shortage of personnel. Empowering PA staff to be highly skilled and knowledgeable will contribute positively to the overall output and outcomes of the task undertaken, leading to more effective management of the site.

Building a PAME community of practitioners at the national level

There is a need to build a network of PAME practitioners in Malaysia to advocate for the application of management effectiveness assessment at a wider scale for PAs. Such networks are required to i) build the capacity of the staff of different PA managing authorities (at the site-level and headquarters) in conducting the assessment, especially due to the rapid turnover of staff who are transferred to different divisions and sites; ii) support facilitation of the assessment; and iii) provide follow-up support in interpreting and incorporating the findings of the assessment into the management of the site.

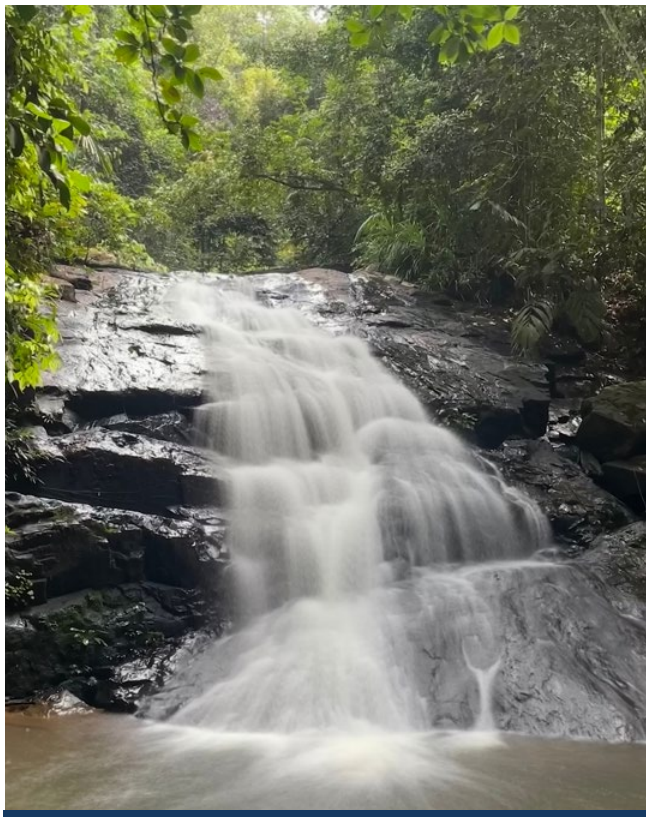
These strategies are focused towards the improvement of PAME and the METT scores in Malaysia, however, it is crucial to also look beyond the country's assessment to contextualise the PAME experience and benefits of METT in other countries in the region. In Southeast Asia, it was found that the PAs that have completed METT were associated with the conservation of more forest cover and carbon stocks (Graham et al., 2021). Similarly, the widespread and repeated usage of METT in Indonesia has shown overall improvement of the METT scores and the management effectiveness of the PAs (Nugraha et al., 2024). These experiences emphasise the importance of undertaking and scaling up efforts in PAME and METT assessments in Malaysia in order to enhance the overall management effectiveness and achieve conservation goals.

Limitation

One potential limitation of this study is that this project had a limited number of study sites with only 16 PAs from across Malaysia, a mere 3 per cent of the total number of PAs in Malaysia, which may impact the findings. We suggest that future studies related to PA management effectiveness assessment in Malaysia incorporate more sites that represent the multitude of ecosystems and biodiversity found here.

Furthermore, there was a noticeable language barrier with the use of English in the METT-4 template and its handbook that may limit the comprehension of the PA staff in understanding and adequately answering the questionnaire. In Malaysia, while both Malay and English are generally used, Malay is the main language used in governmental administration and education, resulting in varied levels of English proficiency among government agencies including the PA management agencies. Although efforts have been taken to adapt and develop a Malaysian METT handbook which provides Malaysian context (Abidin et al., 2022), concerted efforts should be taken to address this language barrier via the development of a bilingual METT assessment template to enable clearer understanding and minimise the risk of misinterpretation of the METT questionnaire.

Another possible limitation of this study is that the self-evaluation of the METT assessment by the PA staff may impact the transparency of the assessment leading to decreased robustness of the evaluation. While METT assessment uses a participatory approach in the



Tengku Hassanal Wildlife Reserve © Munisha Cheng

evaluation, the lack of input from other stakeholders such as the local community and local partners may impact our full understanding of the issues concerning the PA. We suggest that PAME assessments in Malaysia should involve participation from a diverse group of stakeholders to enhance the PAME evaluation and include information and context related to the site from various perspectives.

CONCLUSION

This paper provided a preliminary perspective on establishing the initial status of management effectiveness efforts at the selected site level in Malaysia and the next steps that should be taken in terms of prioritising actions, to improve management or resource allocation that enhance the sites' overall management effectiveness and subsequently, their METT scores. Overall, in this study, the most significant threat within the PAs is natural system modifications. The assessed PAs show tremendous strength in the Planning element, especially in establishing legal status and the appropriate boundaries of the PA. Conversely, the sites are generally weaker in Process elements which indicated a gap in establishing effective implementation of management actions and monitoring practices. The findings from this paper emphasise the importance of having interventions specific to the individual sites when addressing challenges or threats at the site. In general, while PA management agencies in Malaysia have been focusing their efforts on addressing threats and improving overall management effectiveness, the effectiveness of such efforts is relatively not well understood due to the lack of a systematic and structured assessment to track progress of the sites. METT is a useful tool to provide insights into the status of the sites' management efficacy, and therefore, there is an urgent need for the sites to enhance and assess the outcome measurement aspect based on their management practices to determine if the objectives of the site are achieved for the long-term conservation and preservation of biodiversity within the site. However, it is important to note that solely expert-driven METT assessments can be inadequate in encompassing the demands for effective PA management, leading to a need for a robust participatory approach with relevant stakeholders when undertaking PAME assessments.

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SUPPLEMENTARY ONLINE MATERIAL

Supplementary Online Material 1. Detailed study area.

Supplementary Online Material 2. Detailed methodology.

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RESUMEN

La gestión eficaz de las áreas protegidas (AP) es esencial para garantizar la sostenibilidad a largo plazo y la conservación de la biodiversidad y los servicios ecosistémicos. En este estudio, evaluamos la eficacia de la gestión de determinadas AP de Malasia utilizando la Herramienta de Seguimiento de la Eficacia de la Gestión (METT). Las puntuaciones METT se analizaron para los sitios a través de diferentes categorías de gestión de la UICN (Categorías I, II y V). El análisis determinó las variaciones en las puntuaciones globales de la METT y las puntuaciones de los elementos dentro de cada categoría de gestión y entre ellas. Se identificaron los puntos fuertes y débiles comunes en la gestión de los sitios en todas las AP, así como las amenazas más comunes y principales en todos estos sitios, que fueron el «uso y daño de los recursos biológicos» y las «modificaciones del sistema natural», respectivamente. Sobre la base de los resultados, se proponen estrategias para mejorar la eficacia general de la gestión y, en consecuencia, las puntuaciones de la METT, incluyendo la mejora de la investigación y el seguimiento y una sólida participación de las partes interesadas. Los resultados subrayan la importancia de contar con marcos de gestión sólidos y un seguimiento continuo para garantizar la eficacia de la gestión de las AP.

RÉSUMÉ

La gestion efficace des zones protégées (ZP) est essentielle pour assurer la durabilité à long terme et la conservation de la biodiversité et des services écosystémiques. Dans cette étude, nous évaluons l'efficacité de la gestion de certaines aires protégées en Malaisie à l'aide de l'outil de suivi de l'efficacité de la gestion (METT). Les scores METT ont été analysés pour les sites dans les différentes catégories de gestion de l'UICN (Catégories I, II et V). L'analyse a permis de déterminer les variations des scores METT globaux et des scores des éléments au sein de chaque catégorie de gestion et entre elles. Les forces et les faiblesses communes dans la gestion des sites ont été identifiées à travers les AP ainsi que les menaces les plus communes et les plus importantes à travers ces sites qui sont respectivement « l'utilisation et la dégradation des ressources biologiques » et « les modifications des systèmes naturels ». Sur la base des résultats, des stratégies sont proposées pour améliorer l'efficacité globale de la gestion et, par conséquent, les scores METT, y compris avec une recherche et un suivi améliorés et un engagement solide des parties prenantes. Les résultats soulignent l'importance de cadres de gestion solides et d'un suivi continu pour garantir l'efficacité de la gestion des aires protégées.