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# USAID LESTARI

## LESSONS LEARNED TECHNICAL BRIEF

### SMART PATROLS AND PROTECTED AREA MANAGEMENT

FEBRUARY 2020



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# BACKGROUND

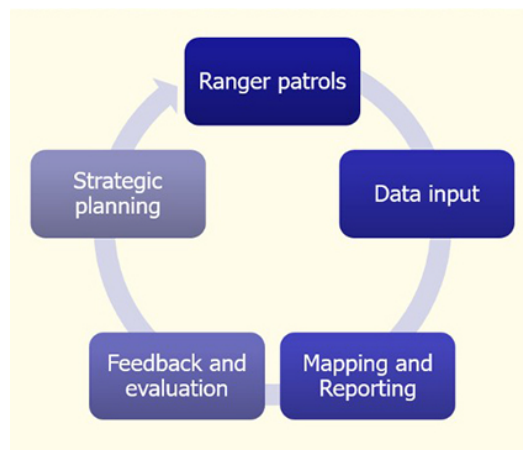
Protected areas are the cornerstone of biodiversity conservation in Indonesia. They must be well-managed if the country is to meet its Aichi Target commitments under the Convention of Biological Diversity. Ranger patrols are an essential part of protected area management and have therefore been a central part of the USAID LESTARI strategy towards enhancing protected area effectiveness. In support of this, LESTARI has significantly invested in the development and implementation of the Spatial Monitoring and Reporting Tool known as SMART.

SMART has been specifically designed as an adaptive management system for protected areas (Figure 1). It goes beyond just data collection and analysis by assisting conservation managers to better monitor, evaluate and adaptively manage their patrolling activities. In Indonesia, the introduction of SMART has been led by the Ministry of Environment and Forestry (MoEF) and it is being used to enhance management effectiveness through the 'resort-based management' (RBM) approach, which channels resources to the resort level - the smallest administrative unit.

Over the past five years, SMART-RBM systems have become fully operational in 31 protected areas in Indonesia, including in all of the LESTARI-supported Landscapes. The operation of each system is performed by the protected area's Technical Implementation Unit, and in some instances involves project and/or NGO assistance. At the national level, coordination of these systems is performed by the MoEF SMART Task Force, which was set up under a 2016 decree.

This brief presents five years of LESTARI (2015-2020) technical assistance to protected area authorities in establishing and operating SMART-RBM in the project-supported landscapes in Aceh, Central Kalimantan and Papua. It describes the project partnership achievements in increasing ranger patrol effort to reduce the primary drivers of biodiversity loss and deforestation, and reflects upon the lessons learned, with recommendations made for the future direction of this key aspect of protected area management.

**Figure 1. The adaptive management system used for informing the SMART patrol strategy.**



# APPLYING SMART-RBM IN THE LANDSCAPES

## Achieving Widespread Replication

LESTARI provided support to the establishment of SMART-RBM systems in six protected areas: Sebangau National Park (NP) and Bukit Baka Bukit Raya NP in Central Kalimantan; Lorentz NP and Cyclops Nature Reserve in Papua; and, Gunung Leuser NP and Singkil Wildlife Reserve in Aceh, plus Aceh Forest Management Units 5 and 6. Collectively, these landscapes cover 1,769,308 ha of mineral soil forest and 773,616 ha of peatland and comprise two UNESCO World Heritage Sites, two ASEAN Heritage Parks and one Biosphere Reserve.

**Figure 2. SMART patrol being conducted in the coastal and large swamp forest section of Lorentz National Park.**

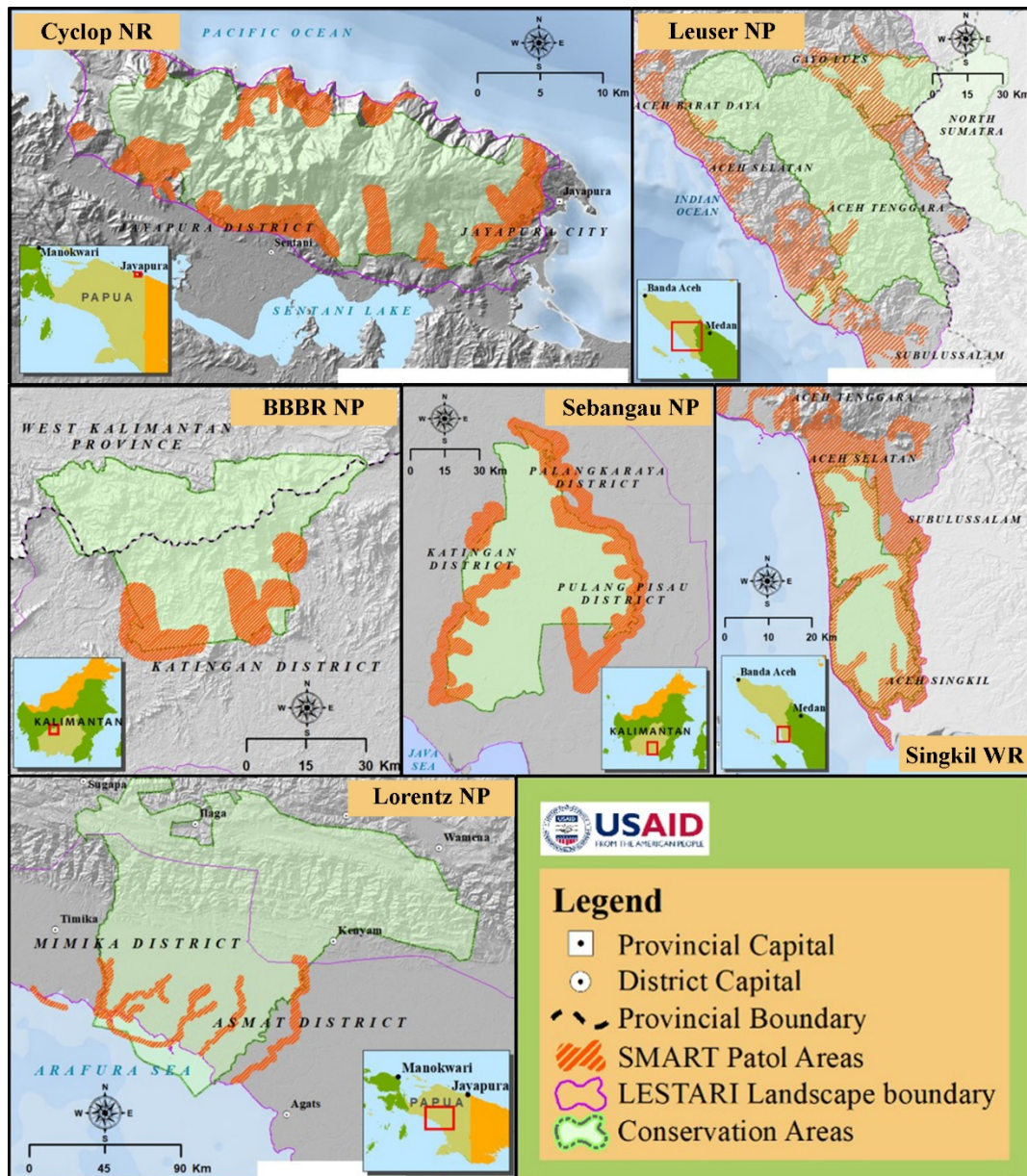


During the project, 27 MoEF-led ranger teams consisting of 201 personnel were assigned from the national park partners, Natural Resource and Conservation Agency (*BKSDA*), provincial Forestry Agency (*Dinas Kehutanan*), local communities and NGOs (Figure 2). The MoEF Forestry Training Centre (*PUSDIKLAT*) trained all personnel in the SMART-RBM system using its three accredited training modules for rangers, database operators and strategic planners. The ranger teams, their coordinators and database operators were then mobilized to conduct biodiversity monitoring, threat mitigation and protected area boundary mapping and analysis.

## Increasing Patrol Effort

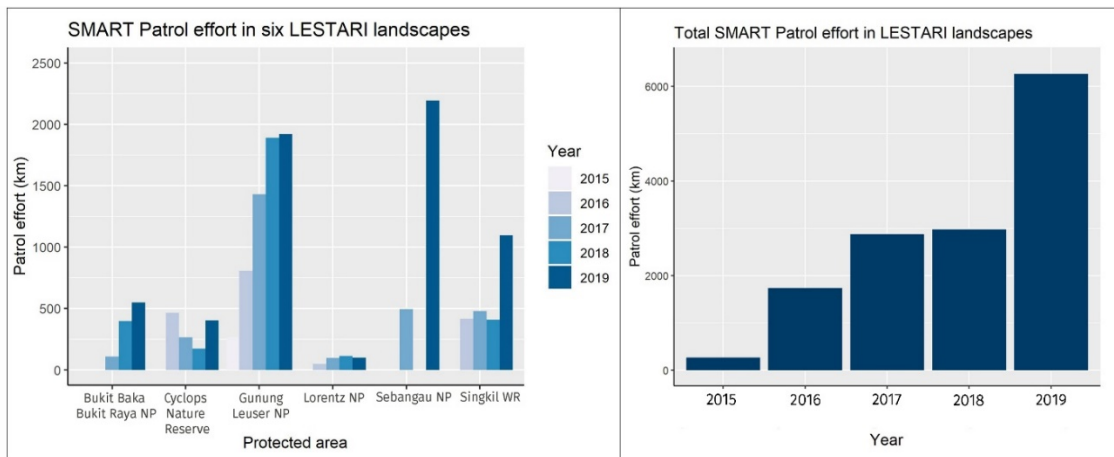
Over the project, field data collected from the 27 ranger teams were fed into their respective SMART databases, from which patrol and threat locations were mapped over space and time. This information was used to strategically plan future patrol sites to target at-risk areas and elicit greater on-the-ground impact. For all landscapes combined, the LESTARI-supported ranger teams conducted 576 patrols over 14,125 kilometers, thereby providing protection to critically important forest habitat for the Sumatran tiger, Asian elephant, Sumatran rhino, Bornean orangutan, Sumatran orangutan and an immeasurable wealth of other biodiversity (Figure 3).

Figure 3. Distribution of SMART patrol effort in the six LESTARI-supported landscapes from 2015 to 2019.



By 2017, all of the LESTARI-supported Landscapes had fully operational SMART patrol teams, which by 2019 had increased their combined patrol effort by 118%. As an example, the patrol effort in Bukit Baka Bukit Raya NP increased from 108 kilometers in 2017 to 549 kilometers in 2019. Furthermore, high levels of patrol effort (>1000 km walked per year) were achieved in Sebangau NP, Gunung Leuser NP and Singkil Wildlife Reserve.

**Figure 4. Increasing SMART patrol effort in the six landscapes from 2015 to 2019.**



## Reducing Biodiversity and Forest Threats

At the inception of LESTARI, the international conservation community was calling for accelerated action to tackle the “Southeast Asia snaring crisis” that has been decimating wildlife populations in forest landscapes across the region, including Indonesia. Detecting and destroying snare traps from the LESTARI Landscapes was therefore a conservation imperative (Figure 5). Since 2015, the project-supported teams have destroyed 584 snare traps, although this varied amongst landscapes and over the years presenting no clear temporal pattern. The Papua landscapes had poaching rates that were tenfold higher than those in the Aceh landscapes. However, by the end of the project, Cyclops Nature Reserve was noteworthy for having the largest decrease in poaching rates (as measured by snare trap encounters/patrol effort) and in Lorentz NP these rates had dropped to a much lower level. The project has made a positive contribution across all of the landscapes, but there is clearly more work to do and the ensuring the continuation of the SMART patrols is vital.

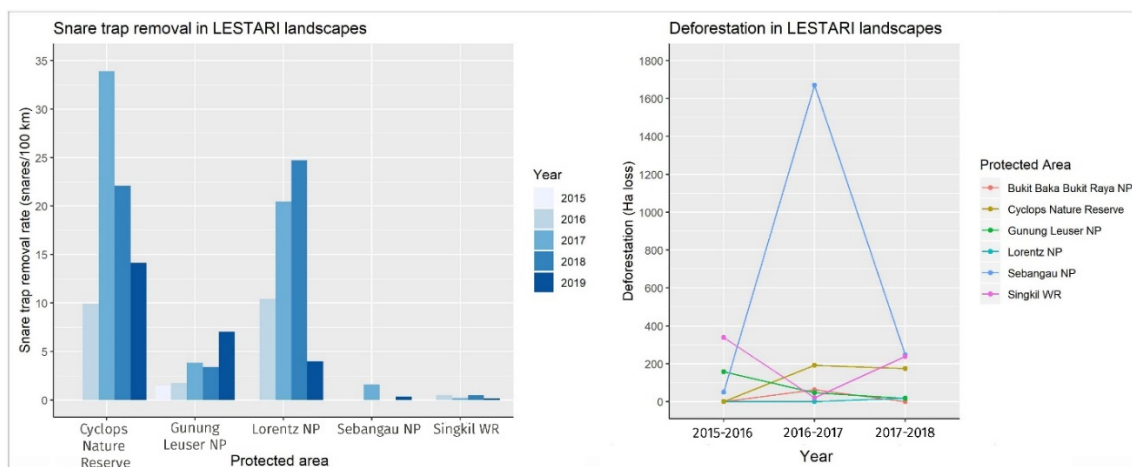
**Figure 5. Forest ranger with tiger and prey snares removed from a patrol in the Leuser Landscape.**



Forest clearance and degradation is the other primary driver of biodiversity loss in Indonesia and also a significant contributor to greenhouse gas emissions. To address this threat, the ranger teams detected and reported 1,124 illegal logging points and 1,119 encroachment incidents to government partners (Figure 6). Uniquely for Bukit Baka Bukit Raya NP, illegal gold mining presented itself as a threat.



**Figure 6. Tackling the dual threats to biodiversity, as measured by snare trap removal rates (left), and forest, as measured by deforestation rates (right), in the LESTARI-supported landscapes.**



A compelling example is provided by the Bukit Baka Bukit Raya NP management authority that successfully stopped illegal mining through its SMART patrol efforts, which were partly supported by LESTARI. The mining initially occurred outside of the park at its border, but began to slowly expand inside the park. So, from 2017-2019 the 3 ranger teams conducted 24 patrols that covered 1,053 kilometers and stopped 15 illegal gold mining operations. The continued presence of rangers in the field and the confiscation of mining equipment resulted in zero mining being recorded in 2019 (Figure 7).

**Figure 7. Illegal gold mining equipments confiscated by a patrol team.**



## Supporting METT in the Landscapes

To assess protected area performance, MoEF has adopted the Management Effectiveness Tracking Tool (METT), a score-based system with 30 assessment parameters that integrate all six elements of the IUCN-World Commission on Protected Areas Framework. These elements are: context; planning; inputs; process; outputs; and, outcomes. The METT scores enable park managers and project implementers to identify needs, constraints and priority actions to improve protected area performance. It provides a mechanism for monitoring progress towards more effective management over time and has been applied to the entire Indonesian protected area network of 398 sites for the years 2015 (baseline), 2017 and 2019. To boost effectiveness, MoEF set a minimum target score of 70%.

For the protected areas located in the LESTARI-supported landscapes, support was provided for METT trainings for park staff and technical assistance to conduct the assessments. From 2015 to 2017 to 2019, there was an average METT score increase from 57% to 68% to 74%, with the highest scores being achieved by the better resourced national parks over the wildlife and nature reserves (Table 1). The greatest increases were from Cyclops Nature Reserve and Rawa Singkil Wildlife Reserve.

**Table 1. Summary of METT scores for protected areas supported by LESTARI (Data source: <http://mett.ksdae.menlhk.go.id/>).**

Protected Area	METT Score (%) Per Year		
	2015	2017	2019
Gunung Leuser National Park	67	71	71
Rawa Singkil Wildlife Reserve	55	66	81
Sebangau National Park	62	73	77
Bukit Baka Bukit Raya National Park	64	74	79
Lorentz National Park	52	60	68
Cyclops Mountain Nature Reserve	43	61	71

## Key Lessons Learned

- At the national level, SMART has improved coordination and transparency of protected area management. For example, it was used to demonstrate to an IUCN monitoring mission the increased protection effort invested in the three Sumatra UNESCO World Heritage Sites, which included Gunung Leuser NP.
- With SMART embedded within the protected area management system, it has empowered the respective authorities with critical information, such as the location, extent and duration of illegal activities, that in the past was not readily available or easily accessible. The protected area managers now use the SMART-RBM system to undertake reviews of staff patrol performance and identify hotspots of illegal activities in need of increased attention. In return, it has resulted in a significant increase in law enforcement actions.
- Limited human resources are a global challenge for protected areas, including Indonesia. Furthermore, government rangers are often called upon to take on additional duties that detracts from their core activities, such as patrolling. For SMART patrols to have legitimacy, and as part of the LESTARI sustainability strategy, it is essential that patrol teams are led by government rangers. This also means that if a team leader is called away to perform another duty, his position must be temporarily replaced by another government ranger, so it is critical to ensure that sufficient human resources are available.
- Protected areas in different regions in Indonesia have a close connection to the cultural aspects of resident communities. For example, Papua has a traditional structure that requires careful consideration of how the national conservation regulations should match with customary law. Each Papuan tribe consists of clans that have unique societal functions, such as community governance, land use management, maintaining security, and ensuring territorial integrity. Each tribe has agreed upon boundaries that cannot be entered by another tribe without permission. Thus, it is important to both understand and adhere to the local system when designing the SMART patrol system. Here, the project supported the formation of MoEF-Community Partnerships, including Masyarakat Mitra Polhut (MMP) that consisted of members representing the various clans and tribal structure.
- Lorentz NP is Indonesia’s largest protected area and spans very remote, swampy and mountainous areas. Accessibility was therefore always going to be a challenge, but with

the construction of a resort office in the remote location will be an effective way to overcome this challenge. It became the center for launching field activities in this area, thereby increasing patrol effort, and significantly reduced operating costs, notably for travel.

- LESTARI technical assistance for operationalizing SMART in multiple protected areas has leveraged support from other partners working in the same protected areas through engaging them to share field data and coordinate patrols using the same SMART data model. For example, in the Leuser Landscape, data from the 10 LESTARI-supported ranger teams was supplemented by an additional 28 patrol teams that in combination covered the entire forest edge of the 2.6 million hectare forest estate spanning Aceh and North Sumatra.

## Recommendations for Future Support for SMART in Indonesia

- Supporting the establishment of fully operational SMART-RBM systems in six protected areas and two Forest Management Units is an unprecedented project achievement and a testament to the strength of the partnerships formed over the project. Initiating SMART-RBM in a protected area is the critical starting point. However, refreshing and upgrading the knowledge of rangers, data operators and senior strategic planners should continue to be supported so that they can appropriately respond to the changing patterns of threats in these vast landscapes.
- It is vital to ensure a smooth and gradual handover of LESTARI roles and responsibilities to local partners, especially in fully managing the entire SMART patrol system in the protected areas, but also considering its applicability for strengthening Forest Management Units. The capacity building can be continued through PUSDIKLAT but the operation of the SMART systems and, more so, its upgrading, still requires more time with transferring expertise. Additional financial support is needed to maintain patrolling activities. This is a gradual process that will take several years and is dependent on budget prioritization.
- Future support should be directed to assisting the protected area authorities in setting up a system for data management on the MoEF priority species. Thus, the SMART-RBM systems could be used to target species locations, support population recovery and demonstrate achievements against species action plans, such as for helmeted hornbill in the national parks of Gunung Leuser and Bukit Baka Bukit Raya.
- Linking protected area system databases is recommended for better coordination and communication of patrolling results. It will allow performance amongst protected areas to be compared in a quantifiable way, including metrics on patrol effort and threat reduction. This will provide a standardized measure of law enforcement performance, increase transparency and increase accountability.
- In places where strong law enforcement is not the most strategic approach, understanding how customary law can be utilized as part of a persuasive strategy to deter poaching, illegal logging and other destructive activities is recommended. For example, BKSDA Papua designated the Cyclops Nature Reserve resorts to directly reflect the 5 territorial divisions of the Moi, Sentani, Port Numbay, Ormu and Tepera tribes. LESTARI then worked with BKSDA to establish and support all 5 tribes to patrol this protected area.
- For most protected area landscapes, expanding the use of SMART more widely so that it supports an integrated protection approach is recommended for recovering MoEF priority

species and safeguarding their habitat. This approach uses principles of intelligence-led enforcement to optimize the impact of conservation protection by proactively using all available information – overt patrols (i.e. SMART), covert investigations, products from intelligence analysts – to target priority offenders and implement a preventative strategy. This approach is highly applicable to other protected area landscapes in Indonesia.

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