LEAD

Integrated Threat Reduction

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Integrated Threat Reduction

To the stalwarts:
This document is dedicated to those who work tirelessly, often in the shadows, for the protection of nature. To the rangers on the frontlines, the conservationists in the field, and the communities who stand as guardians of our shared heritage.

You are the lifeblood of conservation, and this framework is a testament to your efforts. May it support and strengthen your work as you continue to safeguard the natural world for generations to come.

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1 EXECUTIVE SUMMARY

Integrated Threat Reduction (ITR) is a comprehensive framework designed to transform how organisations approach wildlife protection and threat management. By integrating three operational tiers—reactive, proactive, and preventive—ITR provides a structured pathway for addressing threats at every stage, from immediate response to long-term prevention.

This document is a practical guide for conservation professionals, law enforcement agencies, and other stakeholders responsible for safeguarding protected areas. It introduces the SARA decision-making process (Scan, Analyse, Respond, Assess) as a versatile tool for both rapid and strategic decision-making, ensuring that teams can adapt to diverse operational demands.

Key elements of ITR include enhancing real-time reactive responses, using data-driven analysis for proactive interventions, and targeting root causes through preventive measures. The framework emphasises efficiency, ethical practice, and evidence-based approaches, helping organisations allocate resources effectively and achieve measurable impact.

Whether combating poaching, mitigating human-wildlife conflict, or addressing emerging environmental threats, ITR equips teams with the framework needed to create safer, more resilient ecosystems. By implementing this framework, organisations can move beyond isolated incident management to a holistic model that anticipates and disrupts threats before they escalate, setting the foundation for sustainable conservation success.

How to use this document

This document serves as both a strategic guide and an operational manual for implementing ITR. It is structured to support users at all levels, from field teams to organisational decision-makers, offering practical insights to enhance wildlife protection efforts.

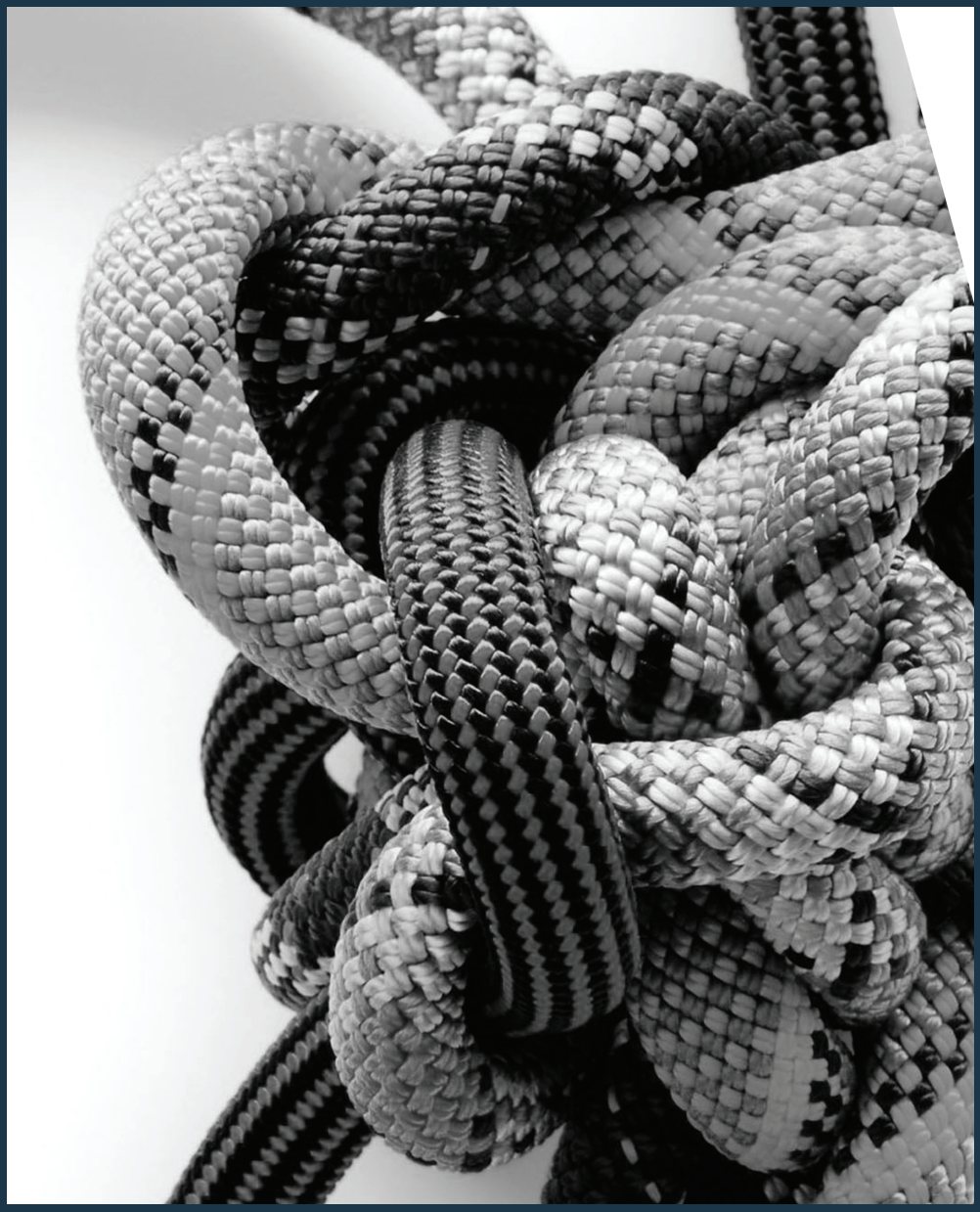
1. **Understand the framework**: begin by familiarising yourself with the three-tiered approach of ITR: reactive, proactive, and preventive operations. These tiers are interconnected and build on each other to create a holistic threat reduction strategy.
2. **Adapt to your context:** tailor the guidance provided to the specific challenges and resources of your organisation. The examples and strategies outlined can be adjusted to suit different threats, environments, and organisational capacities.

3. **Implement the SARA Process:** use the SARA process (Scan, Analyse, Respond, Assess as a foundation for operational planning. The document demonstrates how SARA can be applied across all three tiers of ITR, enabling both rapid and strategic decision-making.
4. **Build capacity step by step:** start with strengthening reactive operations, which form the foundation for more advanced proactive and preventive measures. Follow the recommended progression to enhance your organisation's capabilities over time.
5. **Leverage tools and resources:** utilise the case studies and examples provided to address threats effectively. Integrate these into training and assessments to create a data-driven and adaptive approach to operations.
6. **Assess and learn:** incorporate assessment as a continuous process. Use the guidance on meaningful metrics and after-action reviews to evaluate the impact of your operations and refine strategies based on evidence.
7. **Collaborate and innovate:** work with partners, community members, and stakeholders to create sustainable solutions. The document highlights the importance of collaboration, especially in proactive and preventive operations, to address root causes and build resilience.
8. **Plan for the long term:** refer to the preventive operations chapter for strategies to address root causes. Use this as a roadmap for creating lasting impact beyond immediate threat reduction.

By following this structured approach, organisations can systematically build their capacity to manage threats, improve operational outcomes, and contribute to a body of evidence about what works in wildlife protection.

We value your feedback

At LEAD Conservation, we recognise that continuous learning is essential for effective threat reduction and organisational growth. Just as we encourage organisations to reflect and refine their practices, we strive to do the same. If you have suggestions, insights, or experiences that could improve this document, we would love to hear from you. Your feedback not only helps us enhance the guidance we provide but also contributes to a shared understanding of what works in conservation. Please get in touch with us to share your thoughts and help us make this framework even more impactful.



2

WHAT IS ITR?

Integrated Threat Reduction (ITR) combines reactive, proactive, and preventive strategies to address threats. This chapter explores how this framework ensures effective and sustainable conservation.

2 WHAT IS ITR?

2.1 Reactive – Proactive – Preventive

Integrated Threat Reduction (ITR) provides a tiered framework for law enforcement and conservation agencies tasked with safeguarding protected areas. It establishes a clear progression for improving threat management capabilities, beginning with enhanced reactive threat mitigation, advancing through proactive threat reduction, and culminating in a state of preventive threat management. To be clear, ITR can be applied to threats an organisation is mandated to reduce including human activities such as illegal hunting, charcoaling, fires, and encroachment, as well as threats to communities caused by wildlife such as crop damage and livestock depredation. The three tiers complement one another, and can be implemented simultaneously, ensuring a comprehensive and sustainable approach to threat reduction.

ITR is a multi-tiered approach that breaks event chains to reduce threats. The crime script below shows a generic timeline for a threat event, including the preparation, pre-activity, activity, and aftermath. Reactive operations are largely focused on the activity and aftermath of a wildlife protection threat, but looking at the timeline, it becomes clear there are many more opportunities to disrupt the chain before harmful activities occur.

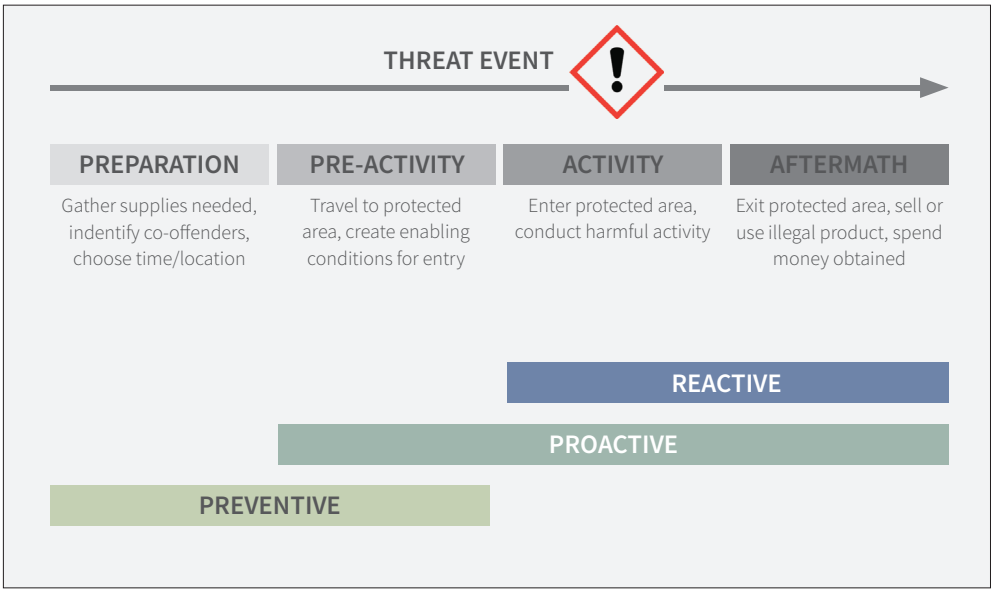


Figure 1: Stages of a threat event

Crime scripting is a useful tool for unpacking the chain of events for a specific threat incident.

Rather than focusing on the incident in isolation, such as the killing of an animal, the script tells a story about the steps necessary at each stage to be successful. Understanding this chain of events helps identify weak points that could be exploited by reactive, proactive, and preventive operations.

Proactive approaches look for ways to disrupt the pre-activity phase, but also ways to be in the right place at the right time during the activity and aftermath. Preventive operations go a step further, focusing on the preparation and pre-activity phases, which in essence tries to stop the crime script before it starts, or before the harmful activity begins. A thoughtful combination of the three tiers provides the greatest coverage across this chain of events, ultimately influencing the decision-making process of individuals to reduce motivations, remove opportunities, and make the risks outweigh the benefits.

The diagram below gives another way to interpret the three tiers of ITR. This shows that reactive operations are broad and cover most threat types, while proactive and preventive operations focus on more specific threats. The reasoning for this is simple, threats are driven and facilitated by different factors, making it difficult to be proactive or preventive generally. For example, proactive patrolling for charcoal burning will look very different than proactive patrolling for bushmeat hunting with snares. As this document discusses, using a framework to help you identify, analyse and respond to threats, promotes the effective use of resources.

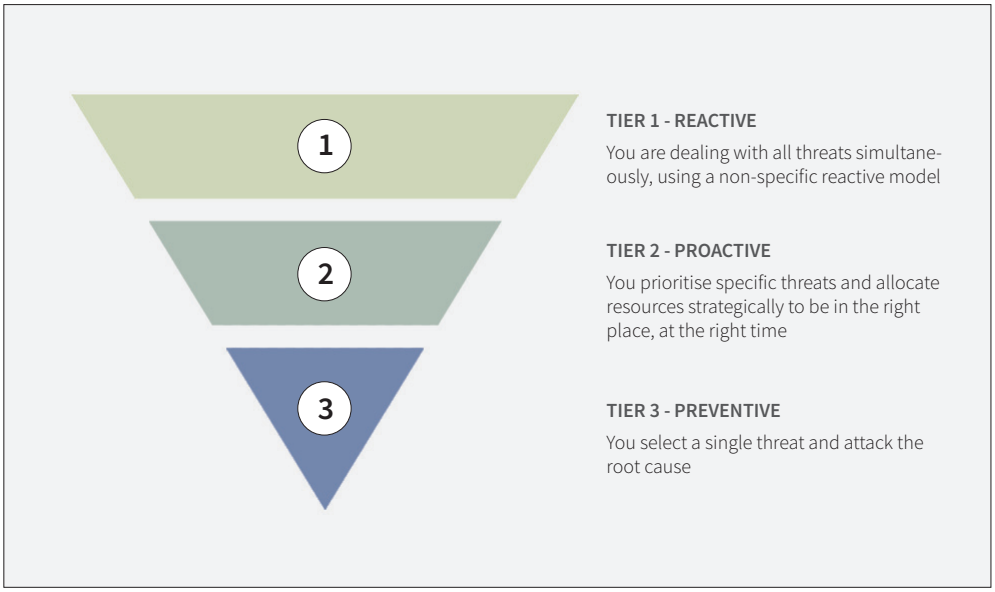


Figure 2: The 3 tiers of ITR

The three tiers of ITR show that reactive operations address a broad range of threats, while proactive and preventive operations target specific threats. This is because different threats require tailored approaches. For example, proactive measures for charcoal burning differ from those for bushmeat hunting. A structured framework supports effective threat management and resource allocation.

Start with improving reactive operations. The foundation of ITR lies in strengthening an organisation's capacity to effectively react to threats. This tier is crucial, as it forms the baseline of operational effectiveness. By improving response mechanisms, such as communication protocols, rapid deployment procedures, and the coordination of field personnel, organisations ensure they are well-prepared to deal with immediate and emerging threats, such as poaching, illegal encroachment, and human-wildlife conflict.

Move towards proactive operations. Once reactive capabilities are well-established, ITR advocates for the development of proactive threat reduction strategies. In this tier, the focus shifts from responding to threats as they occur, to actively identifying and mitigating potential risks before they manifest. This requires the implementation of information-led operations, threat forecasting, and focused enforcement actions. By anticipating patterns of criminal behaviour and identifying vulnerable areas or times, field teams can engage in targeted operations aimed at disrupting threats, making them more difficult and less rewarding. In the proactive tier, organisations get better at deploying the resources they have.

Stop threats before they start. The third tier of ITR is preventive operations, which focus on addressing the root causes of threats in a protected area. Building on the reactive and proactive tiers, preventive measures aim to reduce or eliminate the drivers of illegal activities that threaten ecosystems and communities. These interventions may include awareness raising in local communities, adapting policy frameworks, and creating alternative livelihoods for individuals responsible for the threat. Solutions are based on a deep understanding of the social, economic, and environmental factors that drive and facilitate threats. Preventive operations reduce the need for continuous reactive and proactive interventions over time, ensuring long-term stability and conservation success. The preventive tier often requires organisations to build new capabilities within their team, find additional resources for the tailored intervention, and collaborate with stakeholders to access expertise and implement a holistic response.

ITR develops and refines the operational capabilities of an organisation. Knowing that many organisations focus on reactive operations, with limited capacity to run proactive or preventative operations, ITR focuses on building the capacity of teams gradually over time. In other words, rather than requiring large investments up front, ITR instead aims to refine the capabilities of available resources through training, coaching, and mentorship. This enables organisations to progress from one tier to the other over time, allowing them to acquire additional resources as needed, but also to improve the capability and capacity of resources they already have.

Source: LEAD Conservation

2.2 Key elements for ITR-based operations: reactive, proactive, and preventive

As a conservation organisation, there are key elements you will need to implement reactive, proactive, and preventive operations. Some of these elements are required from the beginning, while others can be developed over time. These lists should not be interpreted as 'need to have' and 'nice to have'; all of the elements are critical for ITR. These elements are listed below, with a short explanation of how they support the implementation of ITR.

Required Elements to Begin

Vision and mission

Why it matters	You need to be able to clearly articulate your conservation vision and mission to help determine which threats are the most important to reduce.

Legal madate

Why it matters	You need to have the legal authority to reduce threats in your landscape with operations including law enforcement, community programmes, and research.

Personnel and fixed assets

Why it matters	You need to have a workforce that can execute operations and fixed assets such as vehicles, equipment, and facilities that support operations.

Financial resources

Why it matters	You need to have sustained financial resources to run operations over an extended period. ITR and it's robust monitoring, evaluation and learning (MEL) framework can help in this.

Collaborative mindset

Why it matters	You need to be open to working with communities and other stakeholders in the landscape to improve your information position and diversify your response options.

Information systems

Why it matters	You need to have information systems that capture data about threats, wildlife populations, and communities to answer the 5Ws & 1H of specific threats in order to measure impact.

Required elements that can be developed over time

Adaptive management of operations

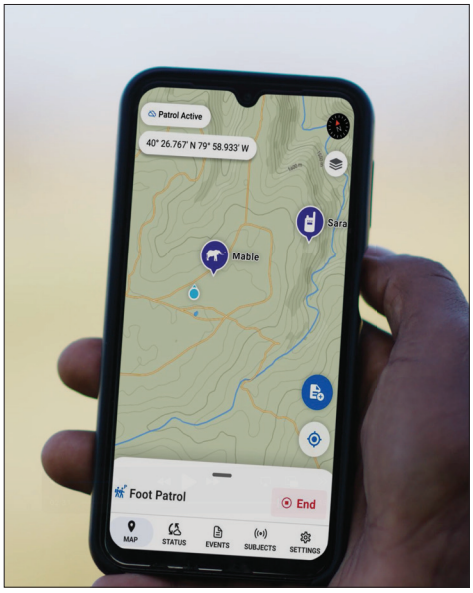
Why it matters	Your organisation will need to adopt a culture that supports adaptive management whereby operations are guided by feedback loops and lessons learned.

Internalised training

Why it matters	Adaptive management requires training to ensure your personnel are competent in new or updated protocols and methods of operations.

Analytic capacity

Why it matters	ITR uses data and analysis to improve operations in all three tiers; you will need analysts to make this happen.



Source: LEAD Conservation

Source: EarthRanger

Source: LEAD Conseravtion

Source: Wiki Commons

2.3 SARA: A framework for fast and slow decision-making

Given the complexity of wildlife protection, it is useful to have a decision-making framework that guides operations at the individual, team, and organisational levels. Remember that decision-making in conservation is not only happening at these different levels, but also at very different time scales. ITR recognises the importance of a framework for fast and slow decision-making that works across all levels of an organisation.

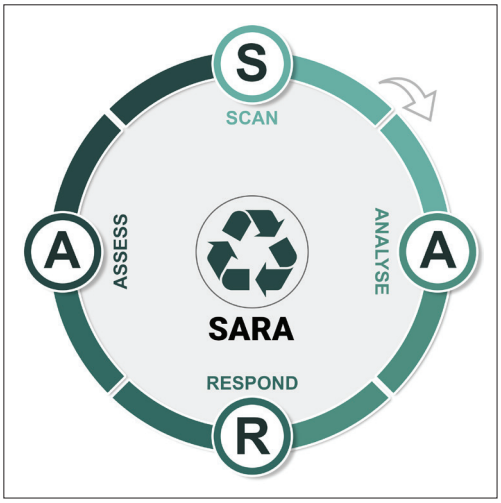
Take for example a ranger in the field responding to a bush fire, he or she will need to rapidly make decisions to not only control the fire but also keep themselves safe in this dangerous and evolving environment; this is fast decision-making. At the other end of the spectrum, a protected area manager is likely to make decisions that impact operations across much longer time frames, especially when it comes to decisions about resource management, budgets, and deployments; this is slow decision-making. In both instances, a decision-making framework helps structure the thinking of these individuals, enabling them to synthesize the available information, evaluate different courses of action, and ultimately chose the best option.

There are several different decision-making frameworks used in conservation including, but not limited to: Open Standards for the Practice of Conservation, Strategic Foresight, Systemic Conservation Planning, Structured Decision Making, and Evidence-Based Practice. More recently, the SARA process, scan-analyse-respond-assess, has been used in wildlife protection operations, especially for threat mitigation. Each of these frameworks provides a stepwise approach for understanding conservation problems, developing solutions, and determining their impact. They are typically used over extended timeframes, making them suitable for slow decision making. For fast decision making, the OODA loop, observe-orient-decide-act, has been used in some operations, however many organisations do not have a framework for real-time decision-making.

In this document we will use SARA as the decision-making framework of choice given its proven success for reducing crime and disorder in policing operations, as well as its recent success in wildlife protection. Moreover, we believe this framework can easily be adapted to fast and slow decision-making, making it relevant for reactive, proactive, and preventive operations.

Figure 3: The SARA process

This image illustrates the SARA process—Scan, Analyse, Respond, Assess—in a circular framework.



If your organisation already uses a decision-making framework other than SARA, that does not preclude you from ITR. It simply means you will need to consider how your framework can be adapted to the different tiers, as well as the different time frames. The table below shows how SARA can be applied across the tiers to mitigate a snaring problem.

Figure 4: Applying SARA across the tiers

This table illustrates how the SARA process could be applied to a snaring problem, differentiated across the three operational tiers of reactive, proactive, and preventive operations.

	REACTIVE	PROACTIVE	PREVENTIVE
	Removing a snareline	**Patrol** planning for snaring problem	**Response** planning for snaring problem
SCAN	Search protected area for illegal activity	Determine which snaring problem is causing the most harm	Determine which snaring problem is causing the most harm
ANALYSE	Identify signs of snaring; determine type and quantity	Identify when and where snaring is concentrated and compare this to current patrol schedules	Answer the 5Ws & 1H to determine what drives and facilitates the problem
RESPOND	Follow snare removal SOP	Update patrol schedules to target areas and times when snaring is most likely to occur	Implement response that targets the root cause of the problem
ASSESS	Confirm threat has been removed	Measure the impact of new patrol schedule on levels of snaring and encounters with hunters using snares	Measure the impact of the response on the snaring problem
	Less than 1 hour	3-6 months	6-12 months

Scanning: Build situational awareness

Threat reduction starts with situational awareness. Situational awareness is the ability to identify and comprehend relevant information about threats in a specific environment. Whether you are a ranger on patrol or a security manager overseeing operations, having good situational awareness is critical for making informed decisions. Each person in an organisation will build situational awareness in different ways, and for different reasons, but their awareness will be linked. Take for example a ranger team on patrol that encounters a fresh elephant carcass. They will use their training to look for ongoing threats and collect evidence at the crime scene. Good situational awareness helps them stay safe, identify leads, and build a case. Moreover, the information they collect and transmit to the operations room starts to form situational awareness at a higher level. The operator will combine real-time reports with historical information, such as data about previous carcasses found, hunting signs, and ranger team movements, to improve their understanding of the situation. For both members of the wildlife protection team, situational awareness builds a foundation for what to do next.

Situational awareness is a core component of ITR. Building good situational awareness requires competent personnel that know how to identify relevant information and are equipped with tools to collect and share this information. Patrol data collection systems such as SMART and EarthRanger are excellent examples of how the situational awareness of patrol teams can be shared with the wider organisation in-real time, but also stored and used for strategic planning with respect to proactive and preventive operations.

Other examples of ways to build situational awareness include, but are not limited to:

- Aerial patrols/surveillance (including the use of drones)
- Vehicle or watercraft patrols
- Reports from community members
- Camera trapping
- Biological monitoring activities

Figure 5: Aerial assets

Aerial assets, like gyrocopters, provide rapid coverage and a unique vantage point, enhancing detection during reactive operations.

Source: Josh Clay

Putting this in the context of the SARA decision-making framework, situational awareness is the foundation of the scanning phase. Observations, both historical and in real-time, help teams identify and prioritise threats, leading them into the analysis phase where they start to interpret threats and find solutions. This is true for fast decisions during reactive operations, as well as for slow decisions when conducting strategic planning for proactive and preventive operations.

Figure 6: Applying scanning across the tiers

This table illustrates how the scanning phase of the SARA process is applied across the tiers.

REACTIVE	PROACTIVE	PREVENTIVE
Situational awareness focuses on rapidly perceiving and understanding events as they unfold such as encounters with offenders, firefighting, and problem animal control.	Situational awareness focuses on the use of historical data to identify threat concentrations and rank their severity.	Situational awareness focuses on breaking broad threat types into specific problems.

SO WHAT?

Situational awareness lies at the heart of threat reduction. If a hunter lays a snare in the bush and no one finds it, does it really exist? Detecting and monitoring threats over time is critical for developing mitigation strategies. By improving the ability of your teams to detect individual incidents, and monitor collections of threats over time, you will be better able to focus the analysis and response phases.

• • •

Analysis: Understand the threat's context, drivers, and facilitators

Analysis turns awareness into understanding. Just because you know a threat exists, does not mean you know what to do about it. Analysis, driven by the 5Ws & 1H, who-what-when-where-why-how, is the critical step between knowing what is going wrong, and knowing how to respond. Take for example a ranger team responding to an elephant moving towards community farmland. When they arrive on scene, they will know the elephant is a threat to community property, but they will need to analyse the situation carefully to achieve a peaceful outcome. Before developing a plan of action, they will interpret the behaviour of the animal and community members, analyse the immediate environment, and reflect on previous experiences. The team may only have a matter of minutes to move from awareness to understanding, emphasizing the importance of having well-trained, competent personnel.

More time means deeper analysis. The scenario above is an example of reactive decision-making, where analysis happens quickly with real-time information. Moving into proactive and preventive work, the analysis phase is longer, as you start to unpack a collection of incidents rather than dealing with them one at a time. For example, you might review all crop damage reports to look for patterns in time and place, and perhaps even the types of crops and farmers involved. Here you would start looking for proactive and preventive responses to the problem, that move beyond how to chase animals away from crops. This requires time, as well as competent personnel who can dive deeper into the threat's drivers and facilitators.

Deeper analysis means more response options. Quick analyses will help you chose the correct standard operating procedure to follow. Slower, deeper analyses will start to shine light on other response options, such as strategic deployments, community programmes, or infrastructure development (i.e. fences to protect crops). Deeper analysis often requires combining multiple sources of information to help you piece together the 5W & 1H puzzle. As you start to understand more about the threat, you begin to find weak points that can be exploited to break the chain of events. You will need to find a balance between quick analysis cycles for reactive operations, and slower, deeper cycles for proactive and preventive operations. Remember that taking your foot off the gas to spend a bit more time analysing a threat will help you respond more strategically, and ultimately use resources more efficiently.

Figure 7: 5W1H across the tiers

This table illustrates how each tier of ITR—reactive, proactive, and preventive—rely on different pieces of information related to the 5Ws and 1H of a threat.

PHASE	WHO	WHAT	WHEN	WHERE	WHY	HOW
REACTIVE		✓	✓	✓		
PROACTIVE		✓	✓	✓		✓
PREVENTIVE	✓	✓	✓	✓	✓	✓

Each tier of ITR draws on different information sources to answer the 5Ws and 1H. In the reactive phase, real-time situational awareness may only include information about the threat (what), and when and where it is happening. The proactive phase might add information about who is involved and the modus operandi (how), while preventive work, which looks for root causes, will include information about the why. The information sources required to answer these questions will be diverse, and some will take much more time to collect than others. This is why the analysis phases of proactive and preventive operations require more time but ultimately produces more response options.

Figure 8: Applying analysis across the tiers

This table illustrates how the analysis phase of the SARA process is applied across the tiers.

REACTIVE	PROACTIVE	PREVENTIVE
Analysis focuses on understanding the immediate environment based on real-time observations and previous experiences.	Analysis focuses on finding patterns to predict when and where the next incident will happen.	Analysis focuses on finding the root cause of threats.

SO WHAT?

Analysis is what turns situational awareness into situational understanding. By taking time to piece together different sources of information about a threat, you are better able to choose the best response. While jumping into action may seem like the only option, it rarely is.

• • •

Response: Right time, right place, right people, doing the right things.

Choose the right response based on your analysis. At the end of the analysis cycle, you will have developed several response options to choose from. For reactive operations, this may be a limited number of standard operating procedures (SOPs) that match the context of the threat. For proactive and preventive operations, it is likely you will have developed a larger response menu and will need to narrow it down to one or two activities. In either case, you want to ensure what you do to reduce the threat directly targets the drivers, facilitators, and opportunity structures uncovered by your analysis. You will reflect on what has worked in the past to reduce a similar threat, also considering previous failures. No matter the type of operation the goal is simple; you want to have the right people, in the right place, at the right time, doing the right things.

Communication and coordination make or break response implementation. Once you have decided what to do, communicating this to team members, different levels of the organisation, and external stakeholders is critical. The speed and frequency of communication will differ between operation types. For example, the ranger team responding to crop raiding will communicate quickly and frequently with one another during the operation, providing updates to the operations room as the situation unfolds over a matter of minutes or hours. A team working on a proactive or preventive approach to the crop raiding problem will have a longer timeframe, as they prepare and implement the new approach. No matter the operation, having clear lines of communication, and well-defined roles and responsibilities is critical for making it work. This is especially true when operations involve multiple teams with different leadership or external stakeholders. In short, do not let a good plan be ruined by poor communication and coordination.

Figure 9: Planning. Coordination. Action.

The command centre facilitates real-time analysis, coordination, and planning to ensure effective responses to emerging threats.

Source: Big Life Foundation

Adaptively manage the response. Threats will change as you start implementing your response. Adaptively managing the response requires competent personnel that can identify shortcomings of the response and implement corrective actions. In reactive operations this will be a short cycle that will largely be controlled by a team leader on the ground. In proactive and preventive work, the process will take more time and will be guided by several information feeds that track the response, including debriefings with field teams involved with implementation. Adjustments and refinements are not an indicator of failure, but rather a positive sign that your team is able to introduce new information into their decision-making.

Figure 10: Applying responses across the tiers

This table illustrates how the response phase of the SARA process is applied across the tiers.

REACTIVE	PROACTIVE	PREVENTIVE
Response focuses on using the correct SOP or course of action to stop the threat in real time.	Response focuses on deploying resources strategically to be in the right place at the right time.	Response focuses on interventions and programmes that target the root cause of a threat.

SO WHAT?

There are no silver bullets in wildlife protection. Response development led by an analysis of the threat improves your chances of success. Communication, coordination, and adaptation are critical elements of response planning and implementation to ensure teams achieve the intended effect.

• • •

Assessment: Did it work and what did we learn?

Evidence building is a key component of ITR. The assessment stage of SARA is when your team will begin to ask, 'Did it work?'. Without this stage, you will not be able to determine the impact of your operations. Critically reflecting on responses you implement in all ITR tiers is important for determining what works, what fails, and why. In the reactive tier, after-action reviews can be used to dissect individual operations, identifying what went well and what could be improved. The proactive and preventive tiers have longer review windows, that include monitoring threat levels over time. Evidence building, such as the development of case studies, is useful for your organisation to determine if interventions should be scaled up or replicated, but also for external stakeholders looking to learn from your experience.

Evidence building is important for decision-making, securing resources, and improving morale. Evidence about what works greatly improves your ability to find the right tool for the job. Moreover, robust evidence about the impact of responses gives you a foundation to stand on when asking for money, equipment, and personnel. Finally, evidence building improves confidence within an organisation by showing personnel that activities are not done for the sake of doing them, but rather are part of a process to understand what works. In short, evidence building is much more than a scientific exercise, it is a pathway to success.

Measuring impact requires meaningful metrics. Wildlife protection operations, especially those rooted in law enforcement, have often focused on effort over impact, relying on metrics such as the number kilometres patrolled, patrol coverage as a percent of the total protected area, and arrests. While these are important to monitor, they only provide insight as to what you did to reduce threats…not if threats declined. Impact can be measured in the short-, medium-, and long-term, as some changes will only be observable after extended periods of time, such as a wildlife population recovery. The text box on the next page gives an example of how meaningful metrics could be applied to different responses for reducing snaring.

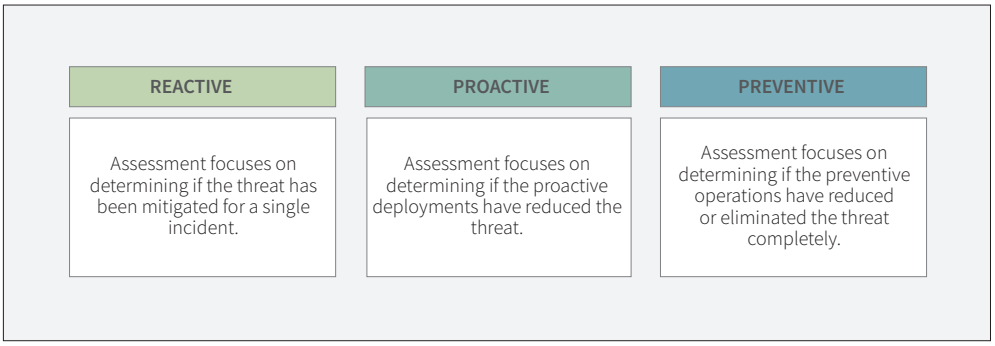


Figure 11: Applying assessment across the tiers

This image is a structured table illustrating how the assessment phase of the SARA process is applied across the tiers.

Figure 12: Moving beyond effort: An example of meaningful metrics

This table highlights meaningful metrics for addressing bushmeat snaring, comparing reactive and proactive responses. It shows how metrics like ranger training, patrol focus, detection rates, and snare removal can measure effort, impact, and long-term threat reduction effectiveness.

Problem: Snaring for bushmeat by local hunters for sale to local restaurants

	REACTIVE	PROACTIVE
RESPONSE	Improve tracking skills of patrol teams	Focus patrols in areas and times known for snaring
EFFORT	# of rangers trained # of kilometers patrolled	% of patrols deployed into 'hot' areas & times # of kilometers patrolled (focused)
IMPACT	% of fresh spoor detections resulting in arrest (increases after training)	% of patrols encountering hunters (higher than normal patrol) % of patrols encountering fresh spoor (higher than normal patrol)
IMPACT ON THREAT	# of snares detected per 10 km of patrol* > decreases over time	
IMPACT ON WILDLIFE	# of target species* > increases over time	

**Applies to both reactive and proactive interventions*

Data triangulation improves the measurement of meaningful metrics. Measuring the impact of your operations on threat levels, human behaviour, and wildlife populations will require data from different sources. Building these diverse information flows into operations can be done without overburdening teams, and you may in fact already be collecting what you need but have not combined them for impact measurement. ITR emphasizes the fact that these flows need to directly benefit teams collecting the information, as this will improve the quality of the data and ensure it is not seen as a fruitless task for operations.

SO WHAT?

Knowing what works helps improve operations. 'We've always done it this way' is not a valid strategy. Building assessment into operations ensures you continually refine procedures and determine which strategies are worth scaling up and which ones should be discontinued. Doing what works improves effectiveness, efficiency, and morale.

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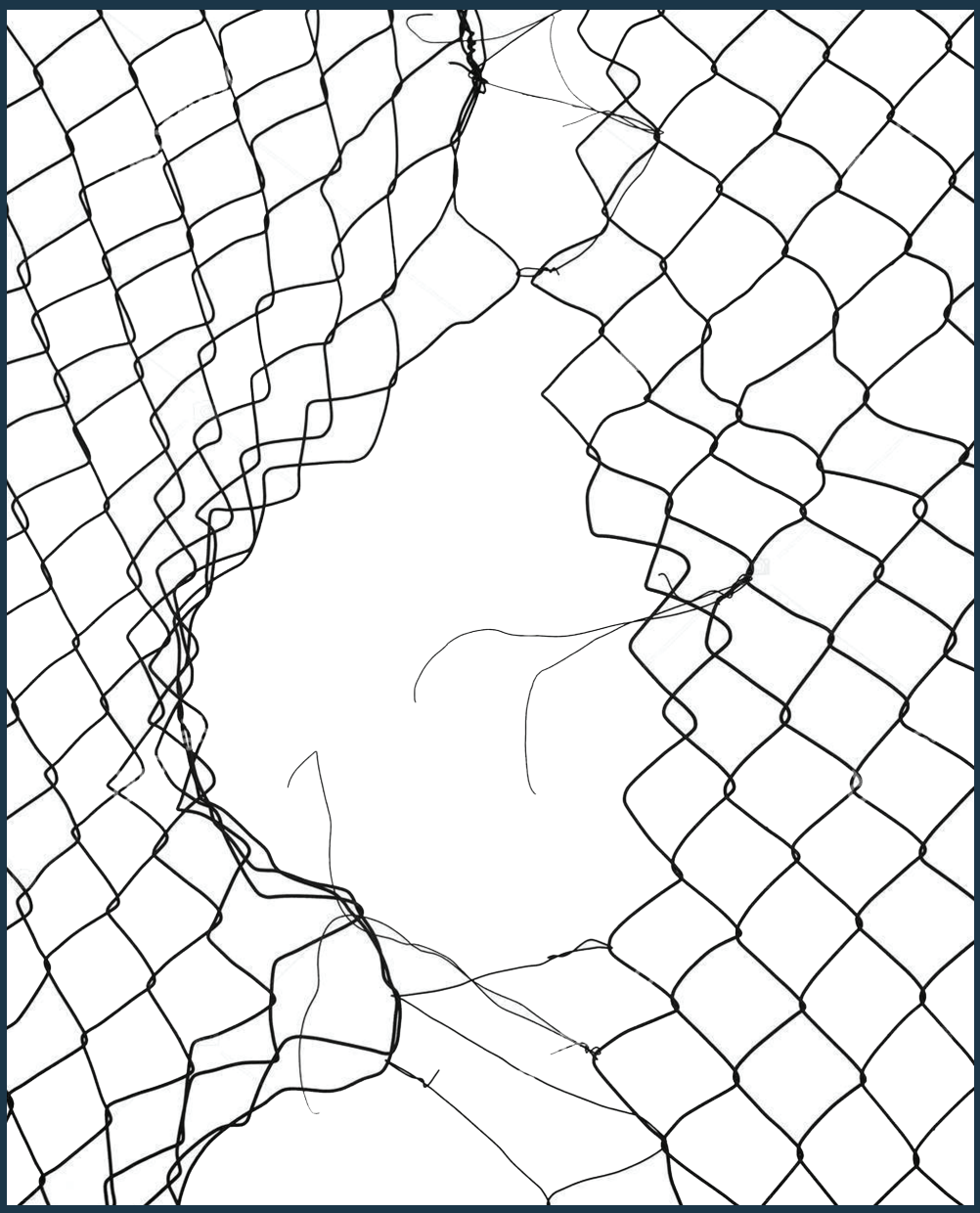

3

REACTIVE OPERATIONS

Reactive operations form the first tier of Integrated Threat Reduction, focusing on rapid, real-time responses to emerging threats. This chapter explores how well-trained teams, dynamic decision-making, and refined SOPs work together to mitigate threats effectively, ensuring immediate resolution and building a foundation for long-term operational success.

3 REACTIVE OPERATIONS - REAL-TIME RESPONSE

Reactive operations are the first tier of ITR. In this tier, your organisation will be responding to threats in real-time as they unfold. The objective of reactive operations is to target individual incidents, resolving them as quickly and peacefully as possible. You will not be trying to target the root cause, or plan strategic deployments, but instead focus on stopping the threat then and there. Here, you will use SARA for fast decision-making, as you will not have extended periods of time to conduct a deep analysis for developing courses of action. Your operations will be targeting the activity and aftermath stages of the crime script, in an attempt to reduce the impact of the threat as it happens.

Reactive Operations: Implement mitigation strategies in real-time as a threat unfolds.

We refer to this tier as real-time response because you will be dealing with threats as soon as they are detected. Unlike proactive and preventive operations, the reactive tier involves fast decision-making whereby personnel will need to quickly analyse situations on the ground, develop a course of action, and implement the response. Communication and coordination in reactive operations are extremely important, to ensure personnel and resources are deployed rapidly where they are needed. The sections below explain how the SARA cycle guides reactive operations and helps build evidence about what works.

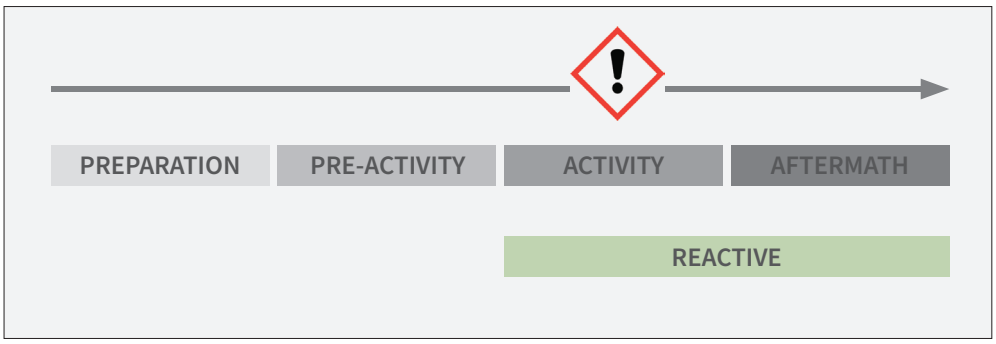

Figure 13: The focus of reactive operations

This figure shows reactive operations target the activity and aftermath phases of a crime script.

3.1 Threat detection: What is happening?

Reactive operations start with detection. Mounting a response requires knowing that a threat exists. Detection can be done in variety of ways, but ranger teams are likely to be your main 'sensors'. This emphasises the importance of having well-trained teams that know how to identify signs of threat. You will also want to consider how you patrol, for example using observation posts and fence line patrols to detect illegal entries, rather than relying on chance encounters alone.

Adding specialised skills to teams, such as tracking, will improve their detection capabilities. Altering the environment by creating detection zones and track traps in key places also improves detection, as will providing teams with equipment such as binoculars and night vision. The point is simple, getting good at detecting threats will improve your ability to respond.

Technology and communities can improve detection capabilities. Beyond ranger teams, you will want to consider other sensors that could alert you to threats. For example, technology such as trail cameras, smart fences, or even CCTV in strategic locations, can provide you with around-the-clock detection capabilities. Combined with other forms of technology such as aerial patrols, you begin to move beyond a sole reliance on ranger teams. Moreover, you may also find that members of the public are willing to provide information about threats, expanding your web of protection.

Figure 14: Camera trapping

Camera traps, like Panthera's V5 camera trap, offer discreet, continuous monitoring, capturing crucial evidence and aiding in the early detection of illegal activities.

Source: Panthera

Collecting and sharing information when threats are detected is critical. When a threat is detected, it is very important to record this information and share it through the proper channels. On the one hand this enables you to monitor threats over time, and eventually use that data in the proactive and preventive tiers of ITR for strategic planning. On the other hand, by communicating this information to an operations room, you bring additional people into the know, making it easier to analyse the threat and develop a response that goes beyond the single ranger team on site.

3.2 Real-time analysis: What is likely to happen next?

Combine experience with real-time information to understand the situation. Once a threat has been detected field teams will need to move quickly from the scanning to analysis phase. There will not be extended periods of time for the analysis, but good training will ensure teams combine as many sources of information as possible to understand the situation. This will include on-scene observations, information sent from the operations room, and personal experience from similar situations in the past. For example, the first team on site to a bush fire will start to assess the size of the fire, weather conditions including wind speed, the presence or absence of firebreaks, and combine this with information from the ops room about additional resources available for a response. This helps the team move from detecting a threat, to developing possible courses of action for mitigation.

Use analysis to predict what will happen next. A major part of the analysis phase in reactive operations is trying to determine how the threat is evolving, and how it will change when you implement a response. Continuing with the fire example from above, the team might register that the fire is relatively small when they arrive, but strong winds and dry vegetation mean it is going to grow quickly. In communication with the ops room, this helps the organisation better understand the amount of people and resources needed to effectively combat the fire.

Figure 15: Bush fires

Field personnel fighting bush fires. Developing an SOP for these types of events, which requires wider coordination outside of your own organisation, makes roles and responsibilities clear during an emergency.

Source: Wiki Commons

3.3 Develop a course of action: What should you do?

Well-rehearsed SOPs are the foundation of reactive operations. When dealing with threats in real-time, standard operating procedures (SOPs) help field teams move quickly from analysis to response. SOPs not only tell teams what they should be doing, but also lay out well-defined roles and responsibilities, making it clear how to communicate and coordinate across different levels of the organisation. Rehearsing SOPs in a training environment ensures teams will be prepared for real-world threat mitigation. Developing SOPs takes time and energy, but pays dividends during implementation because responses are rolled out more efficiently and consistently.

Training in dynamic risk assessment complements SOPs. Knowing that SOPs may not be able to capture the full context of every threat event, field teams should also be prepared to think on their feet. When something falls outside of the scope of an SOP, competence in dynamic risk assessment enables personnel to develop a course of action tailored to the situation. By conducting scenario-based training, you will ensure your teams have access to a non-consequential learning environment that helps hone their skills. Quickly developing courses of action outside of an SOP can be risky, so it is important to train people how to do this while reflecting on the potential negative consequences of their actions. Well-practiced tactics and techniques provide building blocks for tackling unique threats.

Figure 16: Tactics and techniques

Well-trained tactics and techniques form the building blocks for dealing with unique or immediate threats.

Source: LEAD Conservation

3.4 Reassess the situation: Did it work?

Assessing the impact of your response is critical. After implementing the appropriate SOP, you will want to determine the impact of your efforts. In reactive operations, this will be much easier than in proactive or preventive operations because you will be looking at a single incident. Has the threat been mitigated? If not, what needs to be done next? Coming back to the bush fire example, putting the fire out or ensuring it is contained means you have addressed the threat. If the fire continues to grow, you will know your efforts did not have the intended impact meaning you may have to scale up your response. In reactive operations, success is achieved when the threat is no longer present.

After-action reviews lead to SOP refinement. Once you have confirmed the threat is gone, you will want to step into the next phase of your assessment, which is a critical reflection on how well the SOP worked. Here, you will compile an after-action review (AAR) with field teams that dissects the operation, trying to determine what went well and what could be improved. If the response included the operations room, you would include them in the AAR as they had a different vantage point and role during the incident response. The AAR will help you identify failure points, either in systems or training, that can be adapted to ensure the next time you implement the SOP, it works even better. This process of continual learning will make sure your SOPs get better over time, adapting to changing threat conditions, the availability of new resources, and additional capabilities within the teams. Remember, just because something is 'standard' does not mean it cannot be improved.

Figure 17: After-action reviews

After-action reviews (AAR's), will help bring out any lessons-identified which in turn will lead to the continuous improvement of SOPs, tactics and techniques.

Source: LEAD Conservation

Adapt training to lessons learned. AARs are not only good for identifying how SOPs can be improved but will also help you identify training deficiencies. For example, you might realise the SOP is solid, but some members of the organisation have not practiced it enough, which led to failures in communication and coordination during an incident. For example, the AAR might show you that the first ranger team on the scene misjudged the severity of the fire, leading to an insufficient deployment of additional personnel. This type of feedback helps you and your trainers prioritise content for refresher trainings and select the right personnel to be trained. Going a step further, you might start to plan trainings around the seasonality of a threat, such as a fire season, to make sure teams are up to speed on the SOPs before the start using them regularly.

SO WHAT?

Reactive operations are likely to be a large proportion of your wildlife protection efforts. Before you move into proactive and preventive work, you need to make sure your teams can deal with threats effectively in real-time. The data and communication systems you refine in the reactive tier, and the internalised training capacity you build, enable your organisation to move into proactive and preventive work more easily. As you get better at detecting and responding to individual incidents, you start to build a body of information that helps you respond to the collection of incidents with deeper analysis. By incorporating after-action reviews into your reactive operations, you begin the process of becoming an organisation capable of adaptively managing operations, which again sets you up for success in the proactive and preventive tiers.

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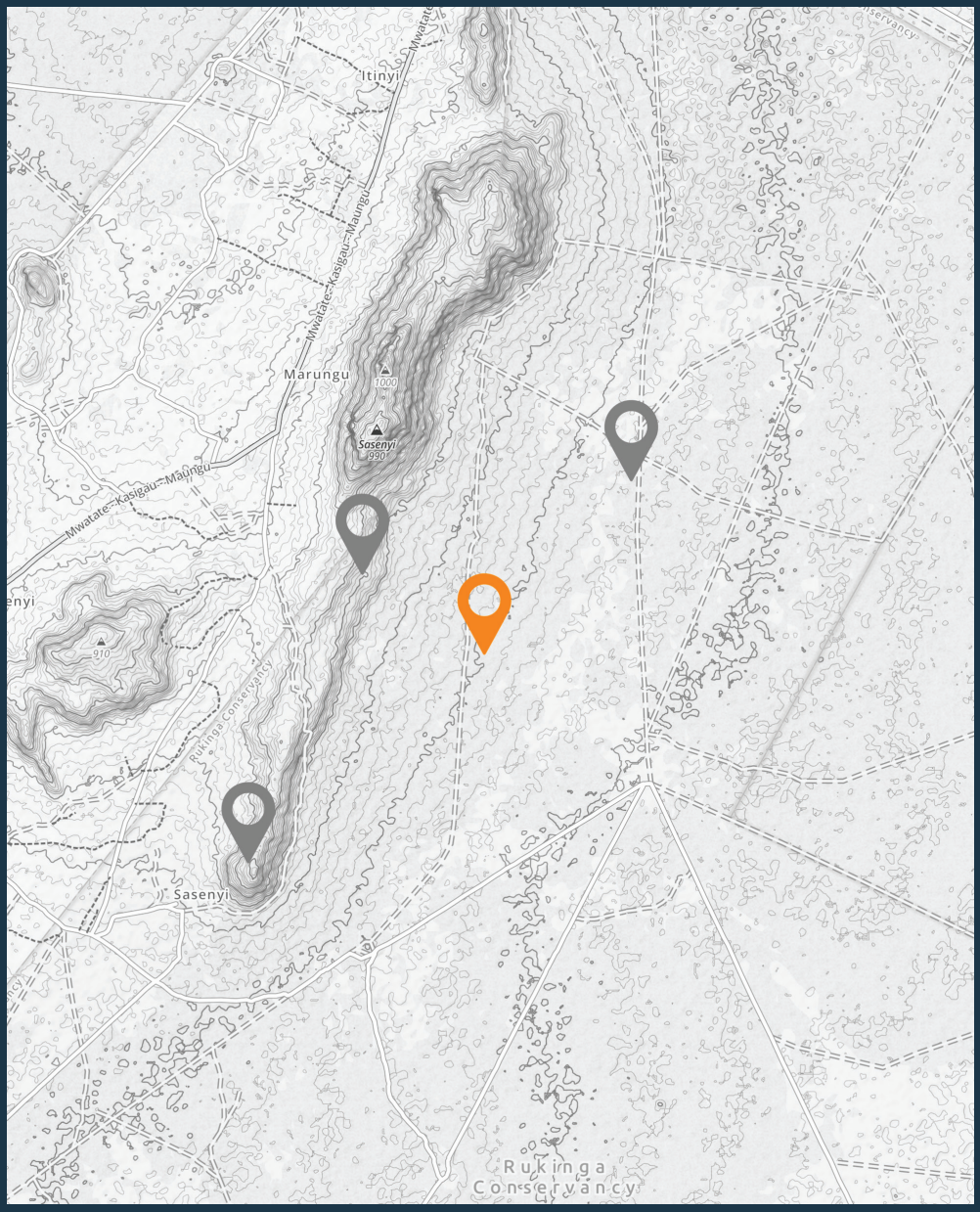

4

PROACTIVE OPERATIONS

Proactive operations, the second tier of Integrated Threat Reduction, leverage data and analysis to deploy resources strategically, disrupting threats before they manifest. This chapter explores how pattern recognition, targeted interventions, and community collaboration enable organizations to anticipate and mitigate threats, building efficiency and long-term impact.

4 PROACTIVE OPERATIONS– DATA-DRIVEN DEPLOYMENTS

Proactive operations are the second tier of ITR. They build on the systems and skills developed during the reactive tier to start deploying resources more strategically. In proactive operations you will start targeting the pre-activity phase of the crime script, as well as the activity and aftermath. The objective of proactive operations is to identify threat patterns based on when and where they occur and allocate resources accordingly. You will use SARA for proactive operations. The cycle will go over a longer period than in reactive operations. Rather than completing the cycle in a matter of minutes or hours, you will now complete it over a period of weeks or months. This is because you will not be responding to individual incidents, but rather a collection of incidents, meaning you will need more time to collate and analyse data before mounting a response.

Proactive Operations: Use analysis to strategically allocate assets for threat reduction.

Your main objective in proactive operations is to deploy your resources more effectively. We refer to this tier as 'right place, right time, right people' because here you are anticipating when and where threats will occur and building interventions around this. Formulating your response requires good communication and coordination across the organisation. This ensures field teams, analysts, and decision-makers are involved with the planning and execution of the response. Proactive operations also involve community engagement initiatives, which start to bring education and awareness to communities linked to the threat. Community collaborations are aimed at nudging social norms towards more pro-conservation behaviours but may also produce new insights and information for strategic deployments.

Figure 18: The focus of proactive operations.

This figure shows proactive operations target the pre-activity, activity, and aftermath phases of a crime script.

4.1 Prioritise threats

Proactive operations rely on information for success. A threat assessment summarises all threats in the landscape, their impact on the ecosystem and focal species, and ranks their importance. The assessment will describe the 5Ws and 1H of different threats, looking for overlap across different threat types. This assessment enables your organisation to establish a baseline for threats and set priorities that help you decide which threats to respond to first. The threat assessment will be specific to your site but set within the national and global trends that may impact your area of operation. For example, you might consider how international markets for ivory increase rewards for elephant hunting while infrastructure development such as new roads increases accessibility; both impact the environmental backcloth in which you operate.

Figure 19: Data collection is key

Data collection in the field is crucial for proactive operations as it provides the foundation for informed, data-driven decision-making.

Source: LEAD Conservation

Use forecasting in your threat assessment to keep on top of threats as they emerge and evolve. Forecasting helps you start thinking about threats before they materialise and reach destructive levels. Take for example changes in migration and agricultural practices around a protected area. If there is an emerging trend of people selling or leasing their land for farming, in an area where agriculture has not been common, the threat forecast would show this is likely to cause more deforestation and human-wildlife conflict (HWC) over time. This has the potential of reducing community support for conservation activities and increasing retaliatory killings. So, while HWC and retaliatory killings may not be a priority threat now, it is likely these issues will become something the organisation will have to deal with more frequently in the future.

Proactive operations need to be focused. Knowing that the 5Ws & 1H will vary from one threat to another, you will want to choose a specific threat type before moving into the analysis phase. This does not mean you will only try to reduce one threat, rather it means you will break apart threats one at a time. For example, you might determine that charcoaling and bushmeat hunting with snares are the most important threats to tackle in your ecosystem. You would make sure your team has enough time to analyse each threat and develop a tailored response.

4.2 Analyse threat information to find patterns & intervention points

Proactive operations disrupt the threat early in the crime script. You are not looking to remove the root cause of the threat you have chosen, as that is prevention, but rather intervene as early as possible to reduce the success rate. This means you will start looking at how to stop the threat before it manifests inside the protected area. For example, you may decide to focus on early detection at known entry points along the boundary to intercept hunters before they are able to lay snares. Or, with human-wildlife conflict, you might strategically deploy rangers when crops are most likely to attract elephants to reduce damage. Getting ahead of the curve relies on pattern recognition, clear briefings for operations, and identifying ways to adapt during after-action reviews.

Proactive operations rely on pattern recognition. Threats are likely to concentrate in time, space, and even the individuals involved. If you 'concentrate on the concentrations', you will be able to use your limited resources more effectively for threat reduction. The 80:20 rule is an excellent diagnostic tool for determining which people, places, and times need the most attention. Also known as the Pareto Principle, this rule of thumb states that 80% of outcomes are generated by 20% of causes. For example, you might find that 80% of your snaring problem is around 20% of your waterholes. If you can reduce the threat in these concentrations, your impact on the overall problem is likely to be greater than trying to address it across the entire landscape.

Analysing criminal opportunity structures helps proactive operations. When people think about threat reduction, they often forget the role of opportunity structures. While understanding what motivates individuals is important, even the most motivated person will be unsuccessful unless they have access to opportunities for success. For example, with illegal hunting, a person will be looking for opportunities to travel to the area undetected, enter the protected area, and eventually lay snares where animals are concentrated. No matter their motivation, any person hunting with snares will require these opportunities to be successful. This means that if you stop focusing on who is involved, but rather how they commit

the offense, you can find ways to remove these opportunities or make them more difficult to exploit. In this example, you may deploy regular patrols at entry points to identify incursions and into areas based on concentrations of the target species.

Understanding the role of community members is a key element of proactive operations. Try to determine how community members are involved. Communities are diverse, meaning blanket statements across communities, or even within them, are likely to be counterproductive. Do not forget that most community members will not be involved or affected by the threat; human-wildlife conflict is a clear exception to this rule. Once you know how community members are connected to the threat you will be able to establish the type of relationships needed to make them collaborators in your threat reduction efforts.

Figure 20: Patrolling based on patterns

Using data to guide patrols enables proactive disruption early in the crime script. By focusing on key entry points and vulnerable areas at optimal times, patrols can achieve maximum effectiveness and efficiency in their operations.

Source: LEAD Conservation

4.3 Mount a response: right people, right place, right time

Develop courses of action (COAs) that maximise your ability to disrupt the crime script. At the end of the analysis, you will have more information about the 5Ws & 1H of the threat. You may not know everything, but you will have identified concentrations and patterns that can be exploited. The team(s) that will implement the response will interpret the analysis from an operational perspective and develop two or three courses of action (COAs). These COAs are not yet planned in detail, but rather give multiple options to tackle the same threat. These options may focus on law enforcement deployments but could also involve community programmes you already have. Develop a list of pros and cons for each COAs with all relevant personnel. You will then rank them in relation to the required effort, resources needed, and likelihood of success. The final step is to choose a COA and move into the planning phase.

Figure 21: Community involvement

Engaging with communities is essential for understanding their diverse roles in addressing threats. Collaboration builds the trust and relationships needed for effective threat reduction efforts.

Source: Mara Elephant Project

Proactive work requires careful planning. Unlike reactive operations, the goal of proactive work is to use what you know about a threat to build a strategic response for dealing with multiple incidents in the future. Here you are dealing with incidents collectively, rather than one at a time. In the COA planning phase, you analyse time frames and coordinate the role subunits will have in achieving the overall plan success and important milestones or phases in the response. You also consider so-called 'what-if's', proactively anticipating the way the threat may evolve in response to the intervention. Understanding that monitoring the threat throughout the intervention is critical, you implement a list of information requirements – i.e. meaningful metrics - that help monitor the progress of the plan and its impact on the threat. Testing the plan in a rehearsal-of-concept helps you find gaps in the COA prior to execution.

Deploy and adaptively manage your proactive response.. Once all individual components of the plan have been synchronised and briefed, you deploy the response. Individual components are monitored for success and their effect on the desired end state. This monitoring helps track the response implementation and provides feedback loops for adaptive management. After-action reviews are used to capture lessons-identified. You will also proactively search for opportunities or challenges, for example unintended consequences of your approach, to more effectively or efficiently achieve success.

Figure 22: Feedback loops

After-action reviews - like a hot debrief - are an excellent time to capture lessons-identified.

Source: LEAD Conservation

4.4 Measure impact

Use meaningful metrics to determine the impact of proactive operations. In the assessment phase you will want to determine if your response is reducing the problem. While feedback loops will help you adaptively manage the operation, meaningful metrics will help you determine how levels of the threat change over time. For example, your operational plan might be working perfectly, but the threat is not going down. This means you have missed something in your analysis of the threat and need to develop a new course of action. You will also look for displacement, to make sure you have not simply moved the problem from one place or time to another.

Use what you learn to create best practice guidance. By combining operational feedback loops with meaningful metrics about the threat, you will start to develop evidence about what works and why. This information helps you determine if you want to scale up the course of action to disrupt the threat in other areas or if it can be used for other threat types with similar context. Moreover, this process helps you identify implementation failure points so they can be avoided in future operations. In essence, your best practice guidance is a recipe book that helps you match threats with solutions, including step-by-step guidance on how to roll out interventions.

SO WHAT?

Proactive operations build on the understanding of threats developed during the reactive tier. Here you begin to lean into the analytic capacity of your team, to start looking for options beyond real-time response. By digging deeper into the threat, you find patterns and concentrations that can be exploited strategically by field teams. You adjust your thinking about responses from the incident level, to dealing with a collection of incidents, including those that are likely to happen in the future. This tier reduces your reliance on reactive operations and prepares the team for moving into preventive work. The data-driven nature of proactive operations begins to show the value of collecting information during operations, and highlights information gaps you will need to fill to understand root causes of the threat. In this tier you improve the planning capacity of the organization, making it better prepared for preventive work. Your impact assessments are now at the course of action level, rather than individual SOPs, improving your knowledge about what works to reduce specific threats, rather than how to deal with them when they appear.

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5

PREVENTIVE OPERATIONS

Preventive operations, the third tier of Integrated Threat Reduction, focus on identifying vulnerabilities and reducing risks before they escalate into tangible threats. By addressing root causes and strengthening resilience, preventive operations lay the groundwork for sustained security and operational success.

5 PREVENTIVE OPERATIONS - PULLING LEVERS

The third tier of ITR is preventive operations, which builds on capacity developed in reactive and proactive operations. Preventive operations are aimed at stopping the threat before it starts by targeting root causes of the problem. These interventions focus on the preparation and pre-activity phases of the crime script.

Preventive Operations: Use in-depth analysis and holistic responses to prevent threats by addressing the root cause of a problem.

We refer to this tier as pulling levers because here you will be looking for intervention options that remove opportunities and motivations by altering the social and physical environment. With prevention, your goal is either reduce motivation to zero, or simply make it nearly impossible to be successful. In most cases this cannot be achieved with law enforcement alone, so you will work with other departments and partners to find the right levers to pull, and the right people to pull them.

Figure 23: The focus of preventive operations

This figure shows preventive operations target the preparation and pre-activity phases of a crime script.

5.1 Get specific to make prevention work

Focus on a specific threat to make prevention work. Research and practice show that preventive operations work best on focused, well-defined threats. Rather than looking at a threat such as 'bushmeat hunting', you will want to develop a problem statement guided by the 5Ws & 1H; snaring of ungulates in Sector A, during the dry season, by local community members for sale at local pubs. Prevention requires specificity because the drivers and facilitators of a threat can vary greatly across contexts, making it hard to identify root causes.

Choose a threat that causes significant damage. Preventive operations are going to require more time, effort, and resources than proactive or reactive work. With this in mind, be sure to choose a threat that has caused significant damage over the years or is an emerging threat that is likely to get worse. As you try to determine the root cause of a threat, you are going to need various data sources and partnerships

to conduct your analysis and mount a response, this costs time and money. Pouring additional resources into a problem that does not cause much harm, or is not a recurring issue, is not the best way to approach preventive operations. Save your efforts for significant threats that are still problematic despite reduction attempts with reactive and proactive operations.

Partners contribute information, expertise and resources to preventive operations. In the preventive tier, you will quickly realise the importance of partnerships to achieve impact. No matter how good and well-resourced your organisation is, you will not have everything you need. This is especially true when it comes to information about your problem and the resources and expertise required to implement a holistic response. In the scanning phase of SARA, you should identify and open discussions with partners that care about reducing the threat. This will ensure they feel included from the beginning and thus will be more open to working with you in the analysis, response, and assessment phases.

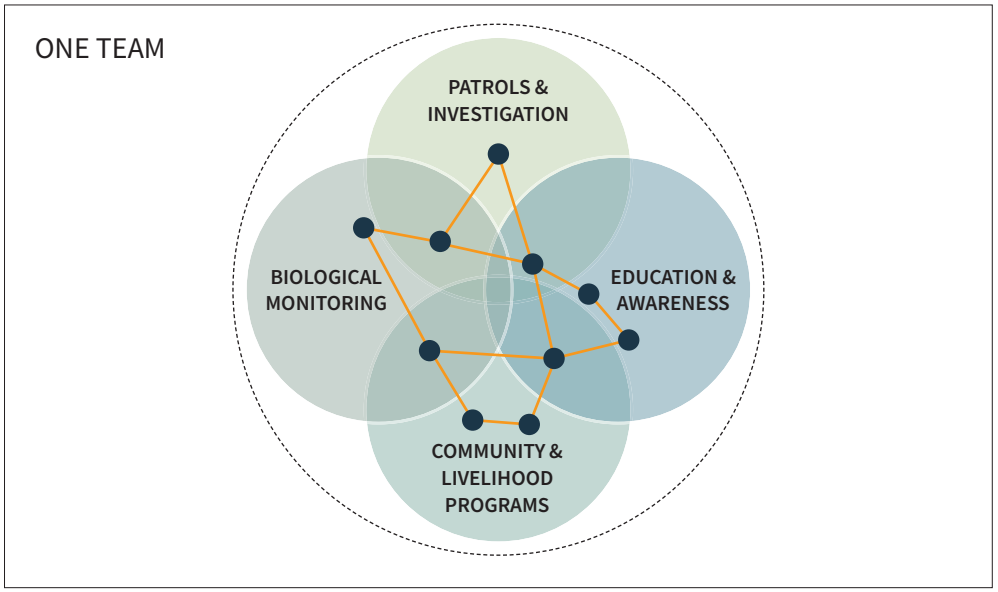


Figure 24: Collaboration between teams

This figure shows how multiple teams might be combined for preventive operations. This will enable them to leverage their information, expertise, and programs to create a holistic response.

Adapted from Lemieux et al. (2022) Problem Analysis for Wildlife Protection in 55 Steps.

5.2 In-depth problem analysis: Answer the 5Ws & 1H

Preventive operations look for the root cause of a threat. This means answering 'why' people are driven to engage in this behaviour is a foundational piece of your analysis. What is motivating people to get involved? What social and environmental factors are facilitating the problem? Determining what drives and facilitates a problem helps you think about prevention options that go beyond law enforcement. You will also start to see the kinds of partnerships you will need to start addressing these root causes.

Diverse information is needed to determine the root cause of a threat. In the early stages of your analysis, you will want to critically reflect on what you know about the problem and what is unknown. From there you will need to consider how knowledge gaps could be filled, either by obtaining information from a partner or collecting it yourself. It is critical to communicate these information requirements across the organisation to ensure personnel know what to be looking for and how to collect it. Filling knowledge gaps during the analysis phase ensures your response is not developed on assumptions or incomplete information.

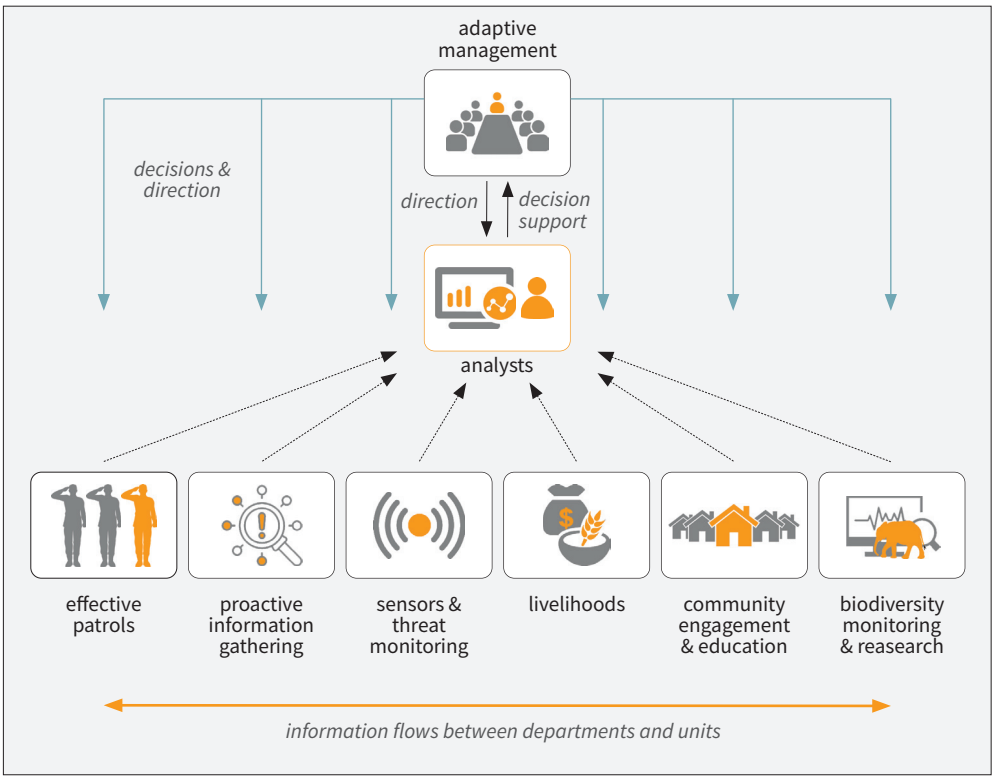


Figure 25: Information and direction for adaptive management

This figure shows how different information flows can be combined by analysts to support decision makers.

Adapted from a slide designed by Jonathan Hunter (WCS).

Wildlife protection data is often biased; find ways to confirm findings and assumptions. During your analysis it is likely you will be using data that is either incomplete or unverified. For example, patrol data is an excellent source of information about a threat, but it only tells you about patrolled areas. The threat might also exist in unpatrolled areas, but you will not know until you go there. To strengthen your analysis, use diverse data sets that help you triangulate information about the threat. For example, surveys of local markets where bushmeat is sold, camera trap imagery, and interviews with rangers or community members, are all excellent data sources to combine with patrol information to better understand a threat and how it is evolving. Triangulation is also important during the assessment phase of preventive operations to rule out alternative explanations for threat reductions observed.

When the only tool you have is a hammer…all your problems start to look like nails. Driven by analysis, prevention work will help you identify which tools are needed to address the root cause of a problem. For example, if hunters are driven by a need for income, unless you fill that gap in a family's finances, a hunter is unlikely to stop, even if the risk of detection increases. In this case, targeted, alternative livelihood programs for known hunters are more likely to get them to stop than law enforcement alone. When doing prevention work you will often find your organisation does not have the right tool for the job…and that is ok. You will start to look for partners who have the resources and expertise you need to address the root cause of the problem.

Using and creating evidence is crucial for making prevention work. During the analysis and response development phases of SARA, it is critical to determine if there is evidence available that can help you understand what others have done to reduce similar threats. Evidence, such as research and case studies, can help you avoid pitfalls others have experienced and saves time looking for solutions. While the evidence base for many wildlife protection issues is limited, every little bit can help your decision-making process. Moreover, as you do preventive operations of your own, make sure to build evidence yourself, that can be shared internally or externally, to support others working in wildlife protection.

Preventive operations require strong communication and coordination. Knowing that prevention is likely to include numerous external stakeholders, and various divisions with your organisation, good communication and coordination is critical. Consider establishing regular meetings for the 'working group' that has been formed to reduce the threat. These meetings will ensure people stay up to date on progress, as well as provide them with opportunities to contribute information, expertise, and ideas. This will help avoid stumbling blocks during the response phase where stakeholders may be reluctant to get involved if they do not understand why certain decisions have been made.

Figure 26: Regular communication with stakeholders

Preventive operations require regular communication with stakeholders to keep everyone informed of their roles, duties, and progress made.

Source: SORALO

5.3 Target the root cause: Reduce motivations & opportunity

Prevention moves beyond the capabilities of normal operations. Your analysis is likely to reveal that the drivers and facilitators of the threat cannot be targeted with law enforcement alone. This will be especially true if the reason people are involved with the threat is poverty, food security, or other social issues beyond your control. As you develop a response plan, it is important to think outside the box and identify intervention options that go beyond your current capabilities. Here you will start to identify potential partners and resources you will need to implement an intervention that targets the root cause. A multi-pronged approach that combines proactive law enforcement work with targeted social services is one way to complement your ongoing proactive work with new prevention options.

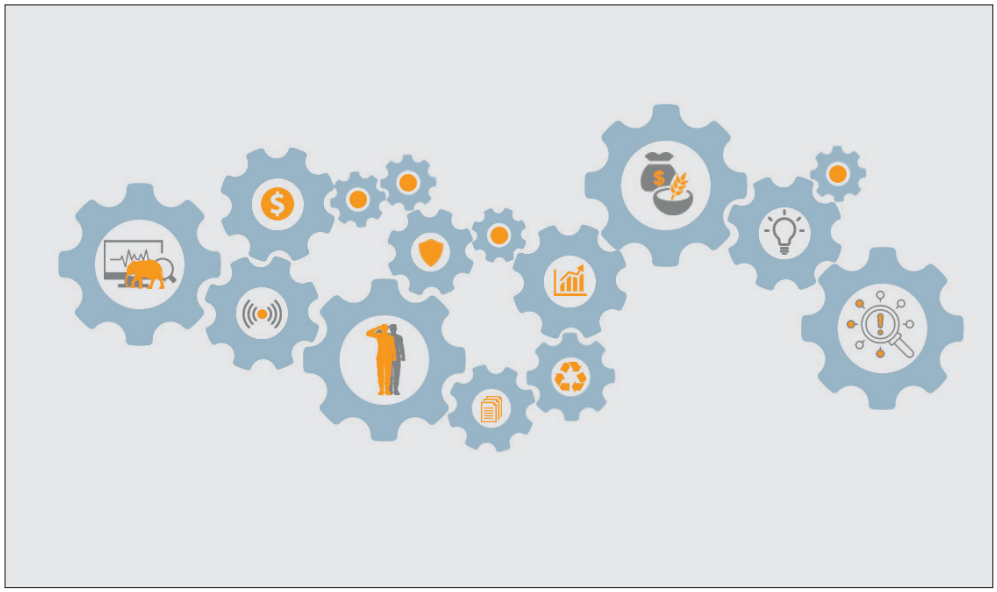


Figure 27: Prevention does not happen in isolation

This figure shows how multiple programmes or projects might be connected to a prevention effort that combines law enforcement, biological monitoring, and alternative livelihoods.

Do what you do best and let others do the same. Preventive operations work best when competent personnel implement specific portions of the tailored response plan. For example, community engagement work should be done by those with experience and training in how to raise awareness, develop alternative livelihoods, or roll out a health initiative. The same is true of law enforcement work, this needs to be implemented by competent personnel who can do the job safely, effectively, and ethically. A great response plan can be undermined by poor implementation. Look for partners that are not only motivated to help, but have the right knowledge, skills, attitudes and personal attributes (KSAPs). Moreover, critically reflect on the ability of your organisation to implement portions of the plan and step back from activities where you lack experience or expertise.

5.4 Build evidence: What works, what fails?

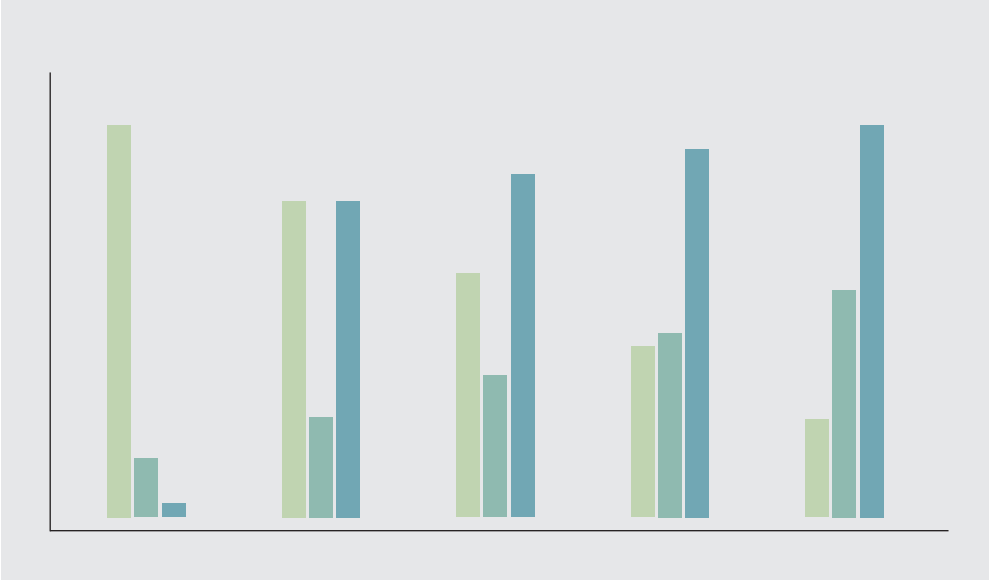
Process evaluations are useful for understanding how an intervention was implemented. Unlike an impact assessment, which determines if the intervention was successful or not, a process evaluation will explore how decisions were made, the role of different personnel within the organisation, and implementation details. This information is valuable for replicating successful interventions and for improving the planning process of other interventions. A process evaluation enables personnel from all levels of the organisation to provide feedback on the operation, which helps highlight strengths and weaknesses of the approach used.

A cost-benefit analysis is an important part of impact evaluation. This helps you determine the cost implications of your response strategy. When it comes to prevention work, you may find that the initial investment is higher than standard operations, but the long-term cost is much lower because of a reduced need for reactive operations. For example, if you are able to prevent snaring in an area, you are likely to have lower patrol and veterinary costs. Cost savings are important to show in the evidence you produce, as this helps your organisation during response planning in the future.

Figure 28: Shifting tiers over time

The graphic on the right shows how your operations targeting a problem, such as snaring, shift over a 5-year period. You begin with a heavy reliance on reactive operations (green), do a bit of proactive work (light blue), but realize that prevention is best suited for the problem (dark blue) and thus end up using this approach more than the others over time.

Adapted from Lemieux et al. (2022) Problem Analysis for Wildlife Protection in 55 Steps.



The mechanism of change is a critical part of preventive operations. Moving beyond, 'did it work', the mechanism of change explains 'how & why it worked'. Preventive operations are aimed at changing behaviour, but how they do this needs to be clearly described should you want to replicate the intervention in a different setting or for a different problem.

Think carefully about what your intervention did. Did you use deterrence to make the behaviour riskier? Remove opportunities to make it more difficult? Or reduce motivation so people are less interested? Or a combination of these? Either way, this information is necessary to help link your intervention to a 'theory of change' that results in a threat reduction. By describing the mechanism, you link the findings of your analysis to the meaningful metrics used for impact evaluation, which helps prove your response caused the threat reduction.

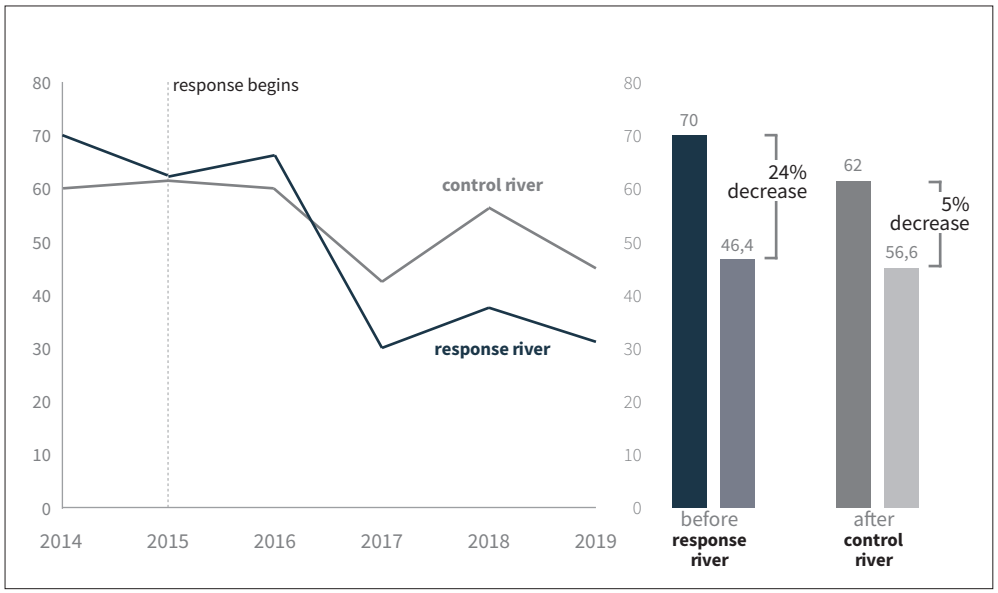


Figure 29: Use controls to assess impact

This figure shows a hypothetical example of how a turtle egg harvesting problem responded to an intervention. The data show that when compared to a control river, with the same problem but no intervention, egg harvesting reduced more where the intervention was deployed. This helps rule out alternative explanations for what caused the drop.

Adapted from Lemieux et al. (2022) Problem Analysis for Wildlife Protection in 55 Steps

For prevention to work, it needs to be sustainable. Preventive operations are the gold standard of threat reduction, but they need to stand the test of time. Solving a snaring problem for 6 months, only to see it come back again is not ideal. During the evaluation of your response, you will want to think critically about how long it will last, and most importantly, what is needed to make it last longer. For example, what happens if an influential community leader drops out of the project? Is there a viable alternative to replace that person? Will they be able to pull the same lever with the same effect? Thinking about sustainability during your response evaluation will help you identify barriers to long-term success and improve the planning of future responses.

Tell a story about success…or failure. Case studies are an excellent way to capture the full cycle of preventive operations from beginning to end. These in-depth reviews of an intervention help readers understand the context of a threat, how it was analysed, the response planning and implementation process, and ultimately, the impact. Case studies are a combination of meaningful metrics that show how a threat changed over time and interviews with key staff and decision-makers that explains how the intervention unfolded. These two information flows help determine if the intervention was successful, or not, and why. Much like case studies in the business world, case studies in threat reduction are useful for training people how to do preventive operations but also provide an evidence base about what works.

SO WHAT?

A gram of prevention is worth a kilogram of cure. When done well, preventive operations greatly reduce the need for reactive and proactive operations. By targeting the root cause of the problem, you hope to eradicate it entirely, or bring it down to levels that do not cause irreversible harm to the ecosystem. To do this, your organisation leans heavily into analysis, incorporating many different sources of information to understand the threat. Partnerships are a cornerstone of prevention efforts, as they improve your information position and response options. This means you build upon the communication and coordination skills developed in the reactive and proactive tiers, extending what you have learned to dealing with external partners. Your impact evaluations are more in-depth in this phase because your response has more moving parts and you are more interested in tracking behavioural change. The evidence you produce about what works and what fails can be documented as case studies, that are useful internally and externally for training and planning future operations. You will invest more time and resources into preventive operations, but in the long run they save you money as the threat disappears.

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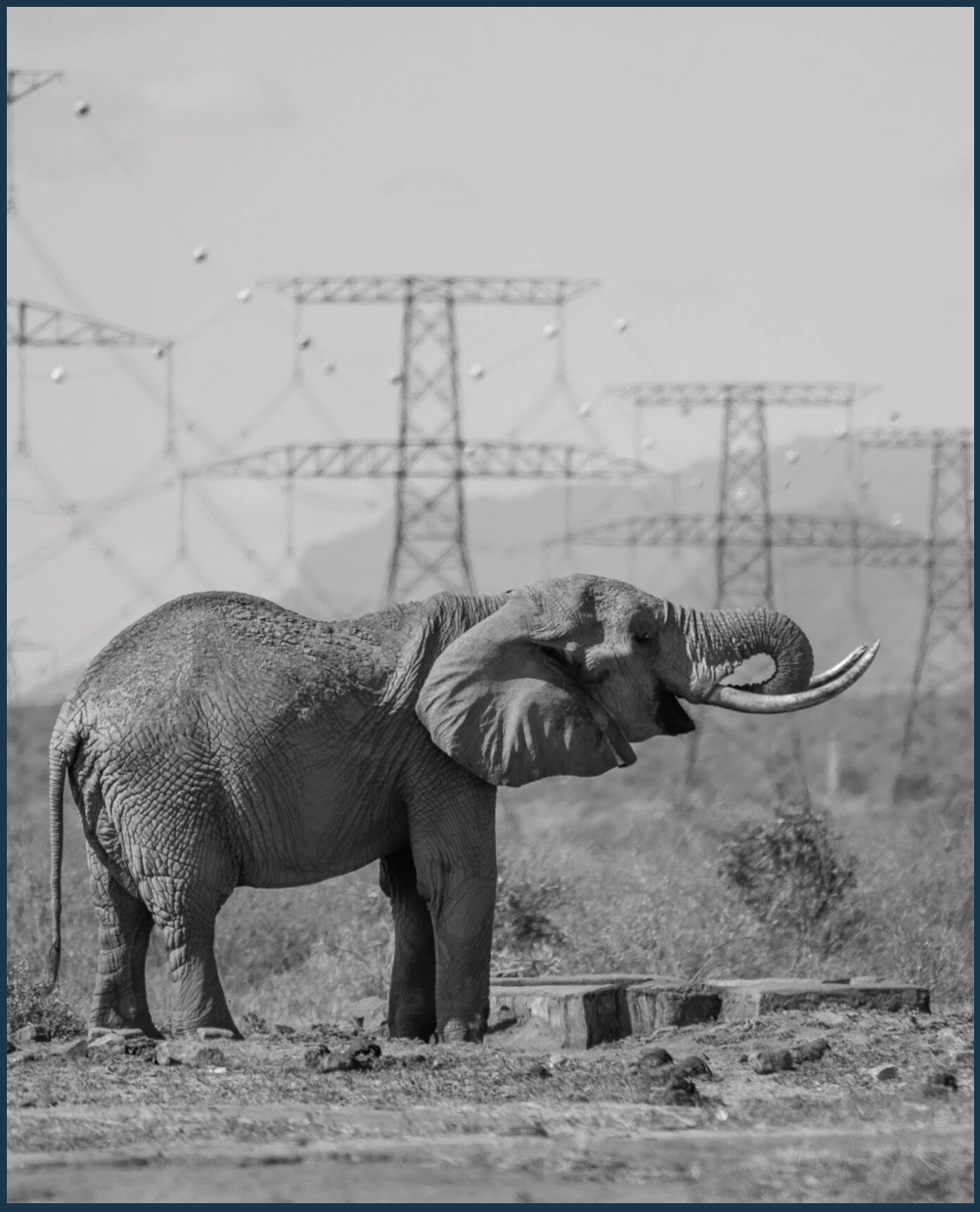


6

THE TIERS IN ACTION: CASE STUDIES FROM THE FIELD

This chapter presents case studies of reactive, proactive, and preventive operations that have been rigorously evaluated. They help show the value of evidence for guiding operations and how the ITR tiers are often complementing one another to strengthen threat reduction efforts.

6 THE TIERS IN ACTION: CASE STUDIES FROM THE FIELD

In this final chapter, we present case studies that show the value of creating evidence across the three tiers of integrated threat reduction. Using examples of threat reduction for human-wildlife conflict and wildlife crime problems, we show how impact assessments enabled organisations to determine if their programs worked. Case studies such as these help decision makers design evidence-based strategies, providing guidance on not only how to address threats, but also measure impact. We provide examples of reactive, proactive, and preventive work that have been rigorously evaluated whether or not the SARA process was used.

In reading the case studies, it becomes evident that some of them blended tiers, which was usually a combination of reactive and proactive work. This reinforces the ideas of ITR, namely that improving reactive capabilities builds a foundation for proactive and preventive work. The lessons learned in each of these studies are useful for organisations implementing ITR as they speak to the need for impact assessments, analytic capacity, partnerships, adaptive management, and holistic solutions. The ability to generate evidence is crucial for improving operations, and when the lessons learned are made public, the global conservation community benefits. A summary of each case study is provided, as well as a QR code that can be used to access the full document.

Vietnam case study

Addressing the Southeast Asian snaring crisis: Impact of 11 years of snare removal in a biodiversity hotspot.

2024, Andrew Tilker, et al.

6.1 Reactive: Evidence on the effect of de-snaring patrols

Removing snares from protected areas is one of the most common forms of reactive operations globally, but does it work? Snaring is a simple and cost-effective way for hunters to capture wildlife in almost any type of vegetation or landscape. In 2024, researchers published an impact assessment of de-snaring operations in two national parks in Vietnam over an 11-year period. Their findings showed that while pulling snares resulted in fewer snares in those areas of the park, snaring levels across the park did not reduce dramatically over time. In other words, you could make snaring less rewarding in the areas you patrolled, but hunters would adjust their patterns and start targeting areas with fewer patrols. Ultimately this meant the potential harm to species remained relatively consistent leading the authors of the study to conclude that de-snaring would only have a sustainable impact on wildlife populations when combined with proactive measures targeting the drivers and facilitators of the problem.

Figure 30: Snares

Snares are sometimes referred to as the "landmines of conservation". Cheap to produce, their indisciminate nature can have a devistating effect on (vulnerable) wildlife populations.

Source: LEAD Conservation

Consider the impact of patrol frequency and informant information on the effect of de-snaring patrols. Another study looking at the effectiveness of snare removal comes from Kerinci Seblat National Park in Indonesia. In this case study, they found the frequency of visits to areas with snaring, not the intensity of patrolling in those areas, was linked to a reduction in snares found over time. In other words, going to a place more regularly was more effective than spending lots of effort there. The impact assessment also showed that de-snaring patrols led by informant information were 40% more likely to find snares than routine patrols. This case study not only shows the impact of reactive de-snaring operations, but the importance of improving reactive operations with informant information. The case study is a useful piece of guidance on no how to think about patrol planning and the effectiveness of patrols.

6.2 The impact of mixing reactive and proactive operations to reduce tiger poaching

How do you protect large pieces of forest with small ranger units? This was the question Panthera-Malaysia and their government counterpart were trying to answer when they looked at threats to tigers in Kenyir, a protected area in Peninsular Malaysia. Their threat assessment showed snaring by different ethnic groups operating in the forest was the most harmful activity threatening the recovery of Kenyir's tigers. The hunters would enter the area to collect gaharu, a scented wood, and lay snares along the ridgelines hoping to catch tigers and other mammals

Kerinci Seblat NP case study

Safeguarding Sumatran tigers: Evaluating effectiveness of law enforcement patrols and local informant networks.

2015, Matthew Linkie, et al.

Figure 32: Snare removal patrol

Information from informers within illegal hunting groups and members of the public can help improve succes rates of de-snaring patrols.

Source: Wildcats Conservation Alliance

during their expeditions, which lasted weeks at a time. Kenyir is a very large, mountainous forest, spanning 1,200 km^2, and there were a limited number of patrol teams available for protection. In essence, they needed to get proactive if they wanted to be in the right place, at the right time, doing the right things.

Using the SARA process, data-driven, adaptively managed operations were able to deter offenders and stabilise tiger populations. The Kenyir team realised they needed to build the capabilities of their team if they wanted to impact the snaring problem. This included improving the reactive ability of patrol teams to identify and age human sign and track active incursions to the camps where hunters were staying. They also invested significantly in communicating and coordinating with the government ranger teams, that would conduct the arrest operations after hunters had been located; another way to improve the reactive capabilities. All of this was backed by analysts that had the skill to conduct after-action reviews, turn field data into meaningful analytic products for operations, and monitor impact on the threat and wildlife populations. This led to proactive deployments into high-risk areas, increasing the likelihood that teams would encounter hhunters in this large swath of jungle. It is an excellent example that shows the value of continuous learning by operational teams, guided by analysis, to achieve meaningful, measurable impact.

Malaysia case study

Using a crime prevention framework to evaluate tiger counter-poaching in a Southeast Asian rainforest.

2023, Wai Yee Lam, et al.

Figure 33: SARA is weatherproof

Field teams in Kenyir take time to adapt their patrol plan based on their observations and assessments on the ground.

Source: Ryan Scott / Panthera

6.3 Evidence for human-wildlife conflict mitigation across the tiers

Human-wildlife conflict (HWC) is a common problem in protected areas where communities and wildlife coexist. Finding ways to reduce threats to the lives and property of community members is a constant struggle as populations grow, land use changes, and weather patterns fluctuate. Reducing the harms of HWC often involves a combination of reactive and proactive measures. This is because unlike wildlife crime, where threats are driven by humans, the 'offender' in HWC is a wild animal, making it harder to initiate interventions targeting the root causes of the unwanted behaviour. That said, when humans are the offender, as is the case with retaliatory killings, there is more room for preventative actions that deal with the root cause of the problem. In this section we highlight three cases of HWC mitigation that give examples of reactive, proactive, and preventive solutions to this problem.

Does chasing lions from community lands keep them away? The first case study comes from Zimbabwe, where the effectiveness of chasing lions, or hazing, was assessed. A reactive approach to the problem, the idea is simple, if lions associate negative experiences with coming into communal lands, they will avoid these areas and look for prey inside the park instead of hunting livestock. Using data from 15 GPS collared lions, the study kept track of when lions were chased away from community protection teams, and how this influenced their behaviour over time. The results were mixed showing that while some lions were impacted by this approach, specifically young male lions, others were not, and in fact showed

Zimbabwe case study

The effectiveness of hazing African lions as a conflict mitigation tool: implications for carnivore management.

2019, Lisanne S. Petracca, et al.

Figure 34: Predation

Preventing livestock predation is a crucial part of maintaining good relationships with communities in and around protected areas.

Source: Wiki Commons

Way Kambas NP case study

Community-based human–elephant conflict mitigation: The value of an evidence-based approach in promoting the uptake of effective methods.

2017, Donny Gunaryadi, et al.

that the majority of chased lions were more attracted to households over time. The study indicated the consistency of chasing lions was an important predictor of reducing depredation events, most likely because this kept the certainty of negative reinforcement high for individual lions. That said, the program did see a decrease in depredation events over time, indicating it was having the intended impact, albeit not as high as intended. The authors suggest combining chasing with proactive measures that separate lions from livestock, such as fencing and boma fortification, is needed to achieve long-term, sustainable gains.

What about chasing elephants to protect crops, does that work? Moving from lions to elephants, the second case study is an example of proactive and reactive approaches to reducing crop damage in Indonesia. In Way Kambas National Park, there was a long-standing problem with elephants raiding community farms. This led to the development of a project whereby community teams were established to chase elephants away from the crops. As part of the proactive planning, watch towers were constructed along well-known paths used by elephants to access the fields of specific villages that had a history of crop raiding. These watch towers were manned by 2-3 community members who would chase away elephants when they came down the path using spotlights and loud noises. In this study, some of the paths were also protected by rope fences with chili grease on them, to determine if this extra layer of deterrent was beneficial. The results showed that community-based protection was able to stop more than 80% of the raids and adding chili to the protection scheme did not improve the effectiveness. The study shows that reactive measures for crop raiding can be highly successful, especially when combined with proactive deployment of guards along established routes.

Figure 35: All along the watchtower

Watchtowers enable communities to see crop raiding elephants before it's too late.

Source: Wiki Commons

Does prevention work on elephants? This case study tested preventive measures to keep elephants from leaving a national park in Mozambique. Unlike the case study from Indonesia, this work relied exclusively on preventive measures, with no reactive or proactive component. Here, the program identified several well-known elephant crossings and put up different types of fences to determine the effectiveness of these methods for repelling elephants. This included beehives, chili, and a beehive-chili combination. They also left some crossings open to determine what would happen if nothing was changed. The results were impressive, showing decreased crossings for all types of fencing, and a 95% decrease in crossings when beehive fences were used compared to no fence at all. This example not only shows the impact of preventive measures, but also a robust way to determine the effectiveness of interventions by using control areas where no intervention is deployed.

Mozambique case study

An experimental test of community-based strategies for mitigating human–wildlife conflict around protected areas

2020, Paola S. Branco M.S., et al.

Figure 36: Beehive fence

Beehive fences are an example of preventive measures used to protect crops.

Source: Wiki Commons

6.4 Alternative products and livelihoods: Prevention can work

How do you reduce demand for wildlife products or the motivation to hunt? The two case studies presented here are award winning examples of preventive operations driven by the SARA process. Both were awarded the prestigious Herman Goldstein Award that recognises excellence in problem solving for reducing crime and disorder. The first award was taking home in 2023 by Panthera, for their Saving Spots programme aimed at reducing demand for leopard skins in traditional ceremonies. The second, in 2024, was awarded to Indonesia's Ministry of Forestry and Tourism and Wildlife Conservation Society's Indonesia programme for their

Saving Spots case study

Saving Spots: Tackling leopard skin trade for ceremonial use in western Zambia.

2022, Submission Report Herman Goldstein Award, Panthera

work on reforming hunters. In both cases the teams picked a specific threat and conducted a thorough analysis to identify solutions that address the root cause. Combined with excellent impact assessments, these are rigorous case studies that show prevention works.

Demand reduction through strong partnerships. The Saving Spots case study shows the importance of community buy-in for reducing the use of wildlife products. In this case, the Lozi people of western Zambia were creating demand for leopard skins so they could be used at an annual festival celebrating the beginning of the rainy season. Each year, the King would get on a boat and float down the Zambezi River, with the help of 200 paddlers, who would wear different types of animal skins, with a strong preference for garments made with pieces of leopard pelts. This was driving the targeted and opportunistic killing of leopards in protected areas in the region. A Lozi senior chief approached Panthera, as he had seen their work with Cartier to create realistic, high-quality leopard skin replicas. In collaboration with the King, a royal decree was made instructing paddlers to only wear fake furs, and Panthera provided access to the 'heritage furs' made by Cartier. This top-down approach from the royal family greatly improved uptake of the fake furs given their cultural significance, while access to a high-fashion retailer ensured the replacements looked and felt real. This is a great example of Panthera working with the right partners to achieve a common goal.

Figure 37: Sticking to tradition

Lozi paddlers on the Royal barge wearing synthetic skins.

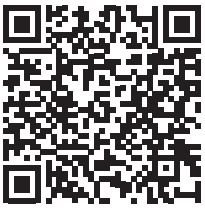
Source: Gareth Whittington-Jones / Panthera

Focused alternative livelihood programs to reduce motivations for hunting. The case study from Indonesia clearly shows how deep analysis of a snaring problem helped find a tailored, lasting solution. After dealing with snaring in a national park for years, the team decided it was time to try reducing the threat with an intervention other than patrolling. The analysis uncovered 5 hunting groups operating in the sector of interest and showed that three of these groups could be approached to discuss alternatives to hunting. The hunters indicated they did not want to hunt, but it was the only way for them to earn a living. It was decided that a small investment in duck farms for leaders of the hunting groups would enable them to stop hunting and in turn, get those who assisted them to stop as well. Combined with focused patrols and awareness raising activities, both examples of proactive work, the national park saw a 90% decrease in snaring within months of the duck farms going live. Patrols showed hunting groups that were not part of the program continued to lay snares, while those with duck farms abandoned hunting, and found additional sources of income to support themselves. This is well-documented example of targeting the root cause, not by giving alternative livelihoods to people living near a protected area, but to those actually involved with the harmful activity.

Indonesia case study

An integrated approach to tackling wildlife crime: Impact and lessons learned from reforming hunters to reduce snaring in a flagship protected area in Sumatra, Indonesia

2024, Submission Report Herman Goldstein Award, Ministry of Forestry and Environment Indonesia



SO WHAT?

These real-world examples offer valuable guidance on planning and executing reactive, proactive, and preventive operations, showcasing how this approach can lead to measurable threat reductions. Furthermore, the case studies highlight the importance of generating evidence; not only internally, to confirm the effectiveness of programmes, but also externally, to provide the global conservation community with actionable insights for response planning. Understanding what has worked to address threats in one context helps decision-makers assess whether a similar approach could address their own wildlife protection challenges. Conducting rigorous evaluations of operations across all three tiers of ITR is essential for organisations to enhance their impact and contribute to the global body of evidence about what works in threat reduction.

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