

Data management investments for wildlife health

In an era of mass extinction, ¹ protected areas exist to safeguard unique and diverse wildlife and flora and foster crucial ecosystem services ². However, human encroachment, land-use change, illegal activities, feral domestic animals, and expansion of communities settled nearby or within their boundaries ³⁻⁷ not only threaten the core mission of protected areas, but they are also associated with extraction, pollution, and the creation of human-wildlife-livestock interfaces.

These processes expose wildlife to physical, chemical, and biological sources of disease presenting a direct morbidity and mortality burden and potentially exacerbating other survival pressures on vulnerable species or populations, threatening the core mission of protected areas. For example, snaring is a major cause of wildlife mortality in Southeast Asia ⁸⁻¹¹, poisoning is the leading known cause of disease events in wildlife reported by country focal points (2008-2018) in the World Organization of Animal Health's database ¹², and pathogen transmission from livestock to wildlife has caused the extirpation of iconic species in protected areas ¹³. Paradoxically, while wildlife health monitoring is recognized as critical it is rarely practiced ¹⁴⁻¹⁶ because of barriers ranging from expertise to governance to funding ¹⁵⁻²⁰.

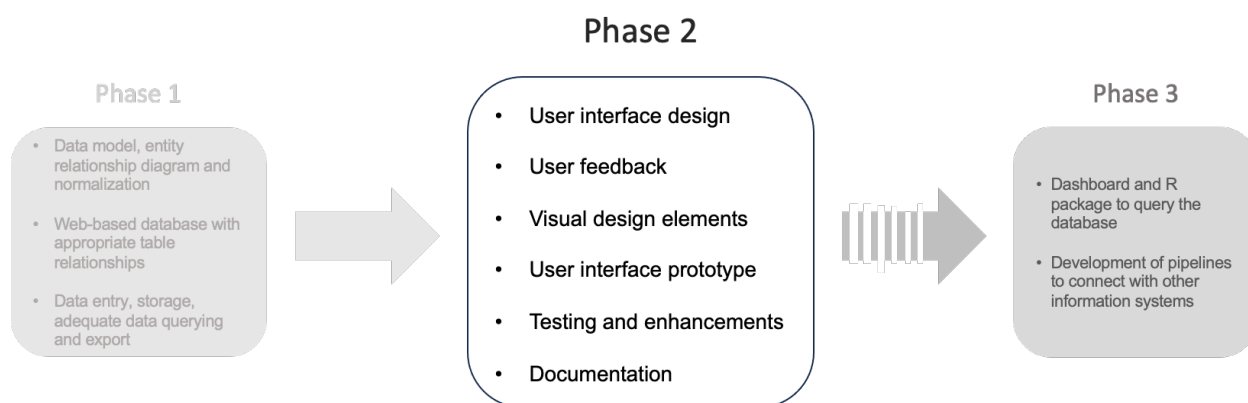
Data management is one barrier that can be acted on now. Data management systems and harmonization of information supporting comparability across different temporal and spatial scales are foundational pillars of wildlife health surveillance ^{15,17,18,20-34}, however, standards for registering wildlife health data and systems to manage this information have historically been absent or they have been inadequately implemented ^{16,17,33,35,36}. For example, we found that while sick, injured, and dead wildlife are encountered in protected areas they are not necessarily documented when found during patrols, and when recorded, the methods can vary widely. The Wildlife Conservation Society's (WCS's) experience managing protected areas around the globe confirms this reality. Recently, the World Organisation of Animal Health found that 53% (55 out of 103) of countries either do not record wildlife morbidity/mortality data or record them on an unreliable information system (papers or spreadsheets) ¹⁶. As a result, effective collection, analysis, and response to wildlife health data remain uncommon or deficient ¹⁴⁻¹⁶ leaving fundamental gaps in wildlife conservation.

In response to this reality, the WCS - Health Program is working at the international, national, and protected area levels to support the establishment and improvement of wildlife health surveillance systems based on best practices. For example, we are actively working on the inclusion of standards, the adaptation and provision of technology tools for the adequate management and collection of wildlife health data, and the assessment of data quality and basic descriptive analysis.

As part of these objectives and based on more than two decades of experience at the frontline of wildlife health surveillance, the WCS - Health Program is developing a secure, sustainable, web-based, and open-source database to appropriately manage wildlife health surveillance data from different sources and support their harmonization when collected using different field methodologies. We expect that the availability of this unique no-cost database will promote wildlife health surveillance development and improvement globally. The database is designed to support best practices in data management and collection, foster the involvement and participation of key actors in wildlife conservation, and integrate with other existing data management platforms relevant to protected area management, such as the Spatial Monitoring and Reporting Tool (SMART) and Earth Ranger. The database will support protected areas and

other actors within national wildlife health surveillance systems to build intelligence, to provide the chance to properly respond to conservation threads, and to assess trends over time.

Supported by WCS's - Conservation Technology, we have completed the first phase of the database development and we are currently working on the second phase. A summary of the database development is provided below:



An overall budget for the second phase is provided in the table below:

	Goal	Due date	Budget
Database Phase 2 ¹	User interface design and wireframing (\$2k)	December 30th, 2024	\$20k
	Incorporation of user feedback into interface design and wireframing (\$2k)		
	Visual design - finalizing colors, typography, icons, and other visual element (\$2k)		
	User interface prototype (\$8k)		
	Testing and iterative enhancements (\$2k)		
	Product finalization (\$3k)		
	Development hand off and documentation (\$1k)		

¹ The costs cover both internal WCS ConsTech staff and external developers. Internal WCS ConsTech staff will manage the developers, continue to develop the core information architecture, translate business needs into technical requirements, oversee the development of documentation and testing, configure systems and where more efficient, take on other tasks from the external consultants. We expect the total internal costs will be between \$9k and \$12k

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