Tufts UNIVERSITY

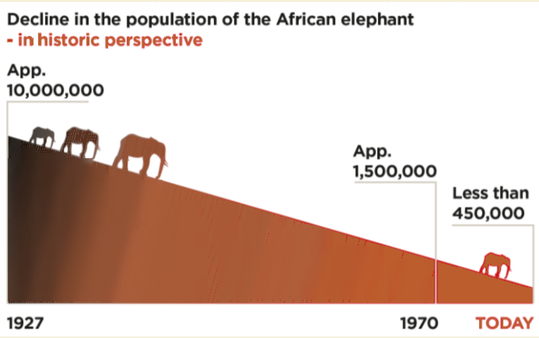
Cummings School of Veterinary Medicine

96 Elephants a Day :

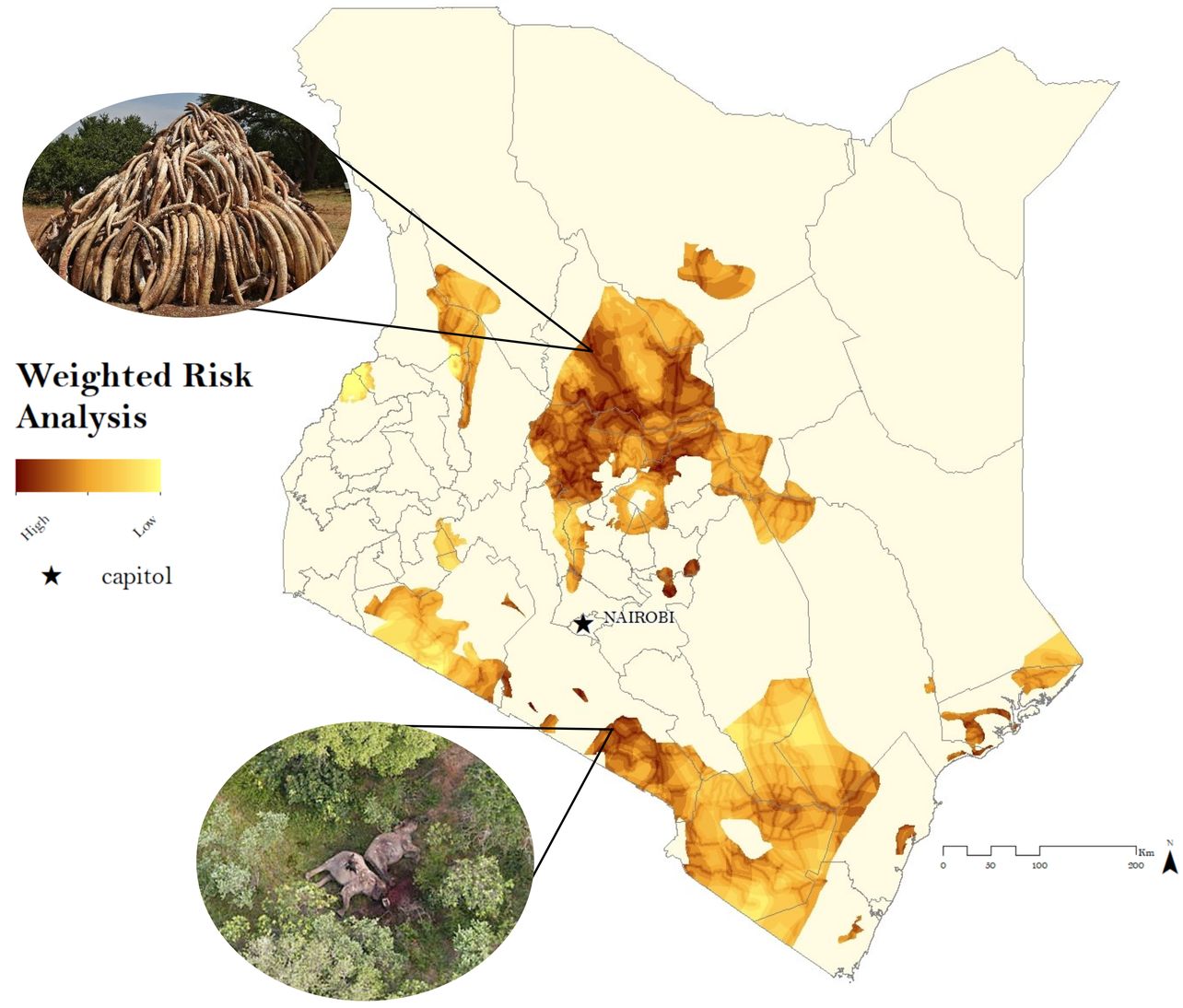
A Risk Analysis of Elephant Poaching in Kenya

Every 15 minutes...

Every 15 minutes an African elephant (*Loxodonta africana)* is poached for its tusks. This works out to about 96 elephants killed per day for the trade of ivory. African elephants are found throughout the continent of Africa and are listed as vulnerable on the IUCN Red List with less than 450,000 individuals left in the wild today. Poaching is considered an organized crime in which those involved are armed and dangerous, posing great threat to the individuals working to combat the illegal killing of elephants.



Some methods that have been successful in conserving elephants and reducing human conflict include the implementation of guard stations and increased patrol to deter poachers and respond to poaching incidents. However, in order to continue deploying patrol and placing guard stands, an analysis of areas at risk is needed for maximum efficiency and impact. This risk analysis shows which regions of Kenya, within elephant range, are most at risk for poaching events to occur to further reduce the amount of elephants being poached for their ivory. The analysis can be used to support recommendations for further actions to be taken in areas where risk is elevated.



Methods

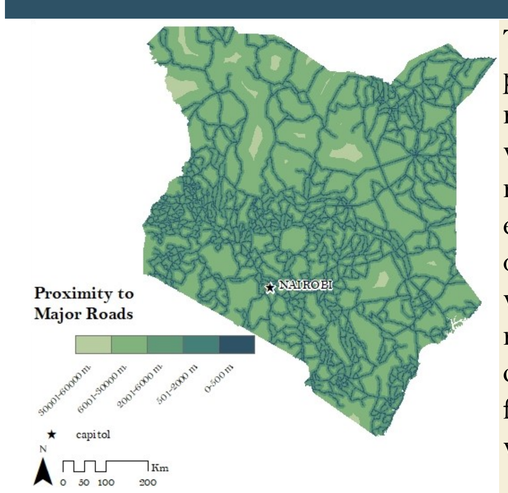
A final weighted risk analysis was performed to identify areas in Kenya that African elephant are at high risk of poaching. To identify areas of high risk, six factors that contribute to the rate at which poaching is occurring were analyzed. Euclidean distance was run on major roads, protected land and water bodies which were then reclassified into risk categories 1 (low risk) to 5 (high risk). Elevation was reclassified and overlaid with hill shade, then major towns was reclassified after running kernel density. Finally, elephant range was reclassified into possibly extant and extant. The final map shows a gradient of risk for poaching within elephant range.

Final Map

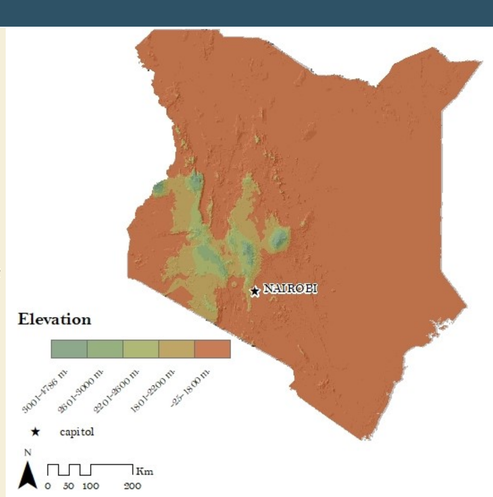
Each risk factor was given the following weight in the raster calculator to produce the final risk analysis:

15% Major Roads	15% Major Towns
20% Protected Land	20% Elevation
20% Water Bodies	10% Elephant Range

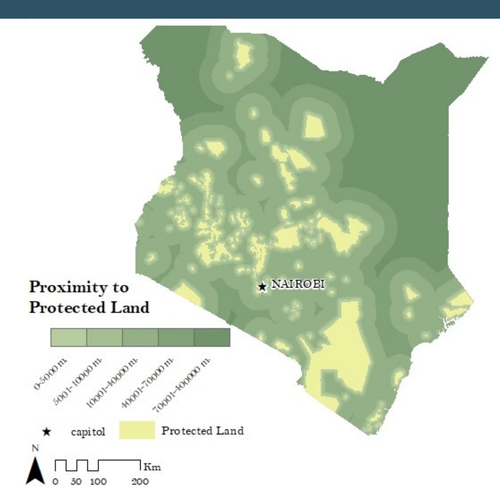
Risk Factors



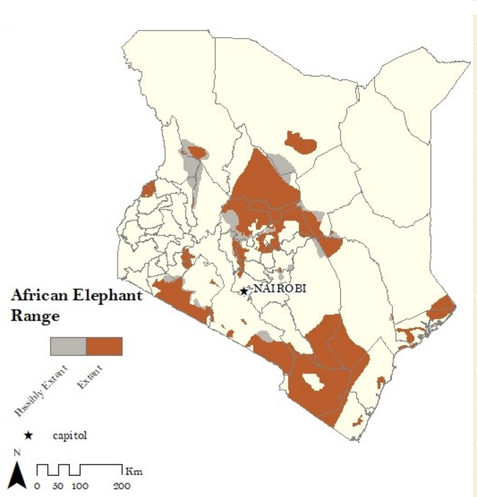
The majority of poachers travel by roadway; therefore, areas within 500 meters of a road are of high risk for elephant poaching to occur. Euclidean distance was run on roads and reclassified into five categories, highest risk for poaching being within 500 m. of a road.



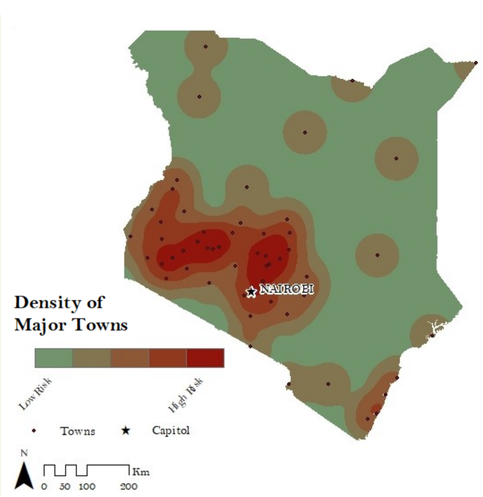
Lower elevations are easier for elephants to maneuver and more accessible for poachers. To show different elevation throughout Kenya, the digital elevation model was reclassified into five categories and overlaid with hill shade. Low elevations, -25-1800 m., are of highest risk.



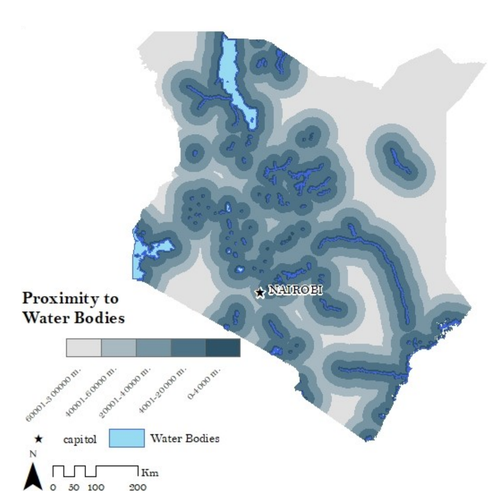
Elephants near park boundaries are at lower risk of being poached than those farther from protected areas. Euclidean distance was run on protected land and reclassified to show five risk categories, the most susceptible to poaching being 7,001-40,000 meters from protected areas.



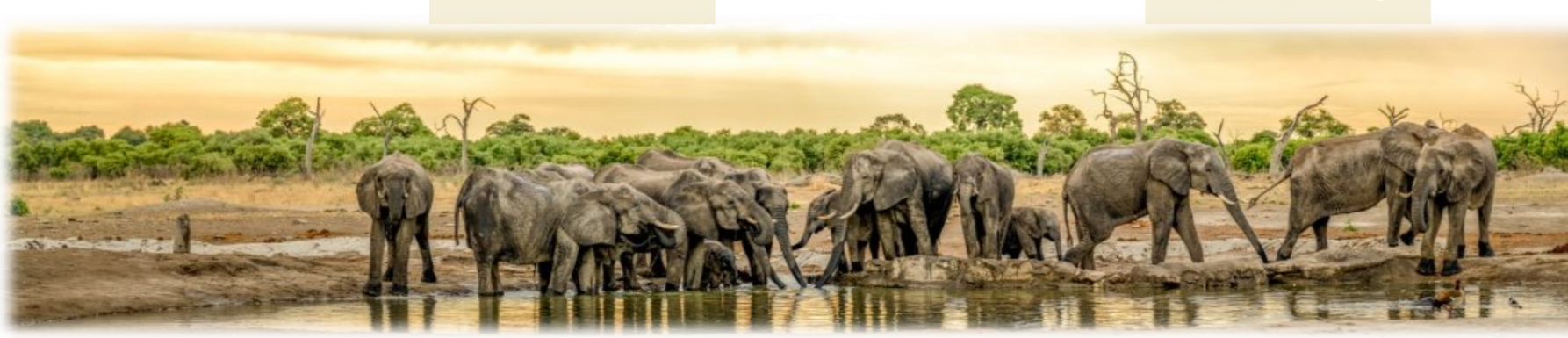
African elephant range is primarily in central and southern Kenya. This map shows areas where they are known to be resident (orange) and areas where African elephants are thought to be resident (grey). This elephant range map was reclassified to differentiate between these two zones.



Poaching is highest around areas with high tourist activity and human traffic; because of this, Kernel density was run on major towns to show areas of highest risk for elephant poaching and reclassified into five categories of risk. Areas closest to towns are of high risk for elephant poaching.



Access to water is vital for elephants as they can drink as much as 200 liters per day. Risk of poaching near water sources was mapped using Euclidean distance and reclassified into five risk categories, showing highest risk of poaching within 4,000 meters of a water source.



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Projection: Africa Lambert Conformal Conic

Data Sources: WRI, ESRI, GADM, IUCN, DIVA-GIS, World Pop, Open Africa, Virgo GIS

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