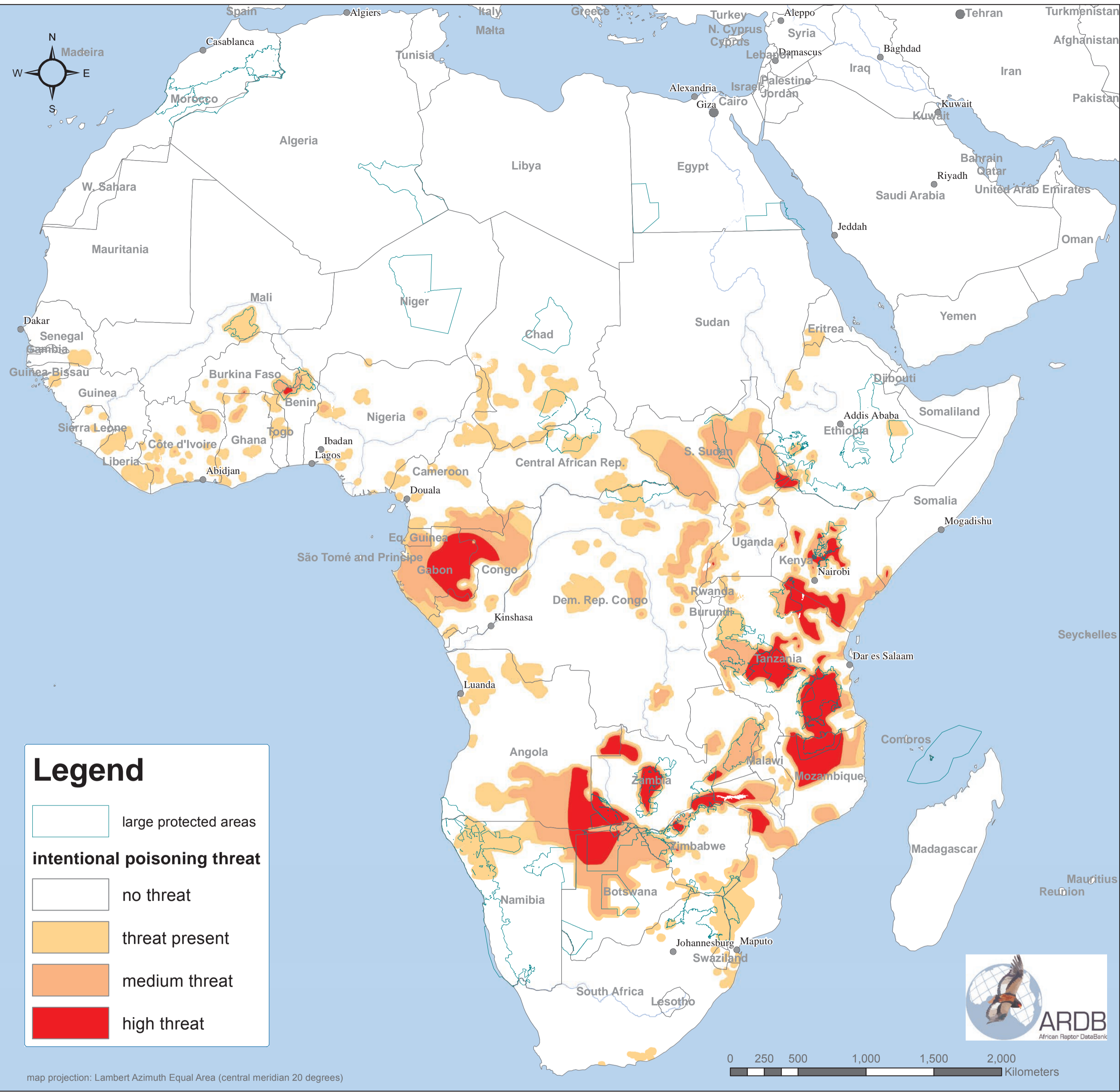


threat map: intentional poisoning



Legend

- large protected areas
- intentional poisoning threat**
- no threat
- threat present
- medium threat
- high threat

map projection: Lambert Azimuth Equal Area (central meridian 20 degrees)

0 250 500 1,000 1,500 2,000 Kilometers



METHODS:
 We used three datasets as inputs for our analysis: the latest African Elephant range map (known and possible range) from the African Elephant Status Report 2016 (Thouless et al. 2016); data on elephant mortality from Monitoring the Illegal Killing of Elephants (MIKE) Database at CITES; and Africa's major poaching hotspots revealed by genetic assignment of large seizures of elephant ivory (Wasser et al. 2015). Geographic assignments from the latter publication were digitized from the graphics published with this article. It should be noted that the median accuracy of these assignments is considered to be within 300km of source. So the geo-referencing can only be regarded as accurate to this crude resolution. We conducted a density analysis of these data points measuring the sum of assignments within a radius of 100km. This was then reclassified on a scale of four to represent threat levels: 0 = no threat, 1 = threat present, 2 = medium threat, 3 = high threat. For the MIKE data we summed values at each MIKE site for the period 2011-2015 and calculated the density of illegally killed elephants for these sites. MIKE sites do not cover the entire range of African elephants so we converted the sites to points and conducted an inverse distance weighting map to show how the density of illegally killed elephant varies across the whole continent. We then clipped this Africa-wide dataset to the possible elephant range map. Again, we reclassified these density values into four classes of threat level: 0 = no threat (0 - 0.000000993), 1 = threat present (0.000000993 - 9.029), 2 = medium threat (9.029 - 21.115), 3 = high threat (21.115 - 60.498). We obtained a final representation of intentional poisoning threat by taking the maximum value from the overlay of the two methods (MIKE map and Wasser et al. map). For more details on methods, a discussion of caveats on this map including the possibility of rhino poaching being associated see our mapping methods document.

CREDITS: Coordination: Ralph Buij (Wageningen University & Research), Corinne Kendall (North Carolina Zoo), Ara Monadjem (University of Swaziland). Data collation: Lutfur Rahman & Lou Luddington (Habitat Info). Analysis & map production: Rob Davies (Habitat Info). Finance: The vulture surveys, data gathering and habitat and threat modeling were funded by the following organisations through Wageningen University & Research (which also contributed resources): Dutch Ministry of Economic Affairs, WWF-Netherlands, UNEP-CMS Raptors MoU, North Carolina Zoo, Fondation LePal Nature, Quagga Foundation, Stichting Vogelpark Avifauna, Stichting Koninklijke Rotterdamse Diergaarde, Detroit Zoological Society, and Stichting Wildlife. Through The Peregrine Fund this project benefited greatly from access to the ESRI Grant Scheme. Data on vultures were contributed or facilitated by the following individuals: Yilma D Abebe, Hichem Azafzaf, Laila Bahaa El Din, Neil & Liz Baker, Clive R Barlow, Keith Bildstein, Claire Bracebridge, Andy Branfield, Erik & Asaph Brohaugh, Joost Brouwer, Chris Brown, Evan Buechley, Ralph Buij & Barbara Croes, Andre Botha, Mike Cadman, Alazar Daka Rufo, Rob Davies, Maria Diekmann, Nina Farwig, Oliver Fox, Toby Galligan, Beckie Garbett, Ashwell Glasson, Roi Harel, Stratton Hatfield, Ohad Hatzofe, Joseph Heymans, Constant Hoogstad, Mawdo J Jallow, Walter Jubber, Gregory Kallenecker, Adam Kane, Chris Kelly, Alan & Meg Kemp, Corinne Kendall, Holger & Claire Kolberg, Bernard & Antje Madden, Glyn Maude, John Mendelsohn, Mike McGrady, Ara Monadjem, Campbell Murn, Ran Nathan, Karin Nelson, Stoyan Nikolov, Darcy Ogada, Steffen Oppel, Louis Phipps, Bram Plot, Thomas Rabeil, Sascha Rosner, Lizanne Roxburgh, Volker Salewski, Andrea Santangeli, Dana Schabo, Orr Spiegel, Lindy Thompson, Simon Thomsett, Dirk van Stuyvenberg, Rien van Wijk, Munir Virani, Tim Wacher, Kerri Wolter (VULPRO) and numerous other African Raptor Databank observers; and by the following organisations: AFRICAN RAPTOR DATABANK, AFRICAN IMPACT, BIRDLIFE INTERNATIONAL & NATURESERVE, BIRDLIFE BULGARIA (BSPB), BIRDLIFE TUNISIA (AAO), BOISE STATE UNIVERSITY, CITES (MIKE DATABASE), ENDANGERED WILDLIFE TRUST, HAWK CONSERVANCY TRUST, HAWK MOUNTAIN SANCTUARY, INTERNATIONAL UNION FOR CONSERVATION OF NATURE (AFRICAN ELEPHANT DATABASE & REDLIST MAPS), ISRAEL NATURE & PARKS AUTHORITY, NATURAL HISTORY MUSEUM (TRING), MOVEBANK, NIOKOLO-KOBA CITIZEN SCIENCE PROJECT, NORTH CAROLINA ZOO, RAPTOR'S BOTSWANA, RARE AND ENDANGERED SPECIES TRUST, ROYAL SOCIETY FOR THE PROTECTION OF BIRDS, TANZANIAN BIRD ATLAS, THE PEREGRINE FUND, UNIVERSITY OF UTAH, VULPRO, WEST AFRICAN BIRD DATABASE, WILDLIFE ACT AND WILDLIFE CONSERVATION SOCIETY.