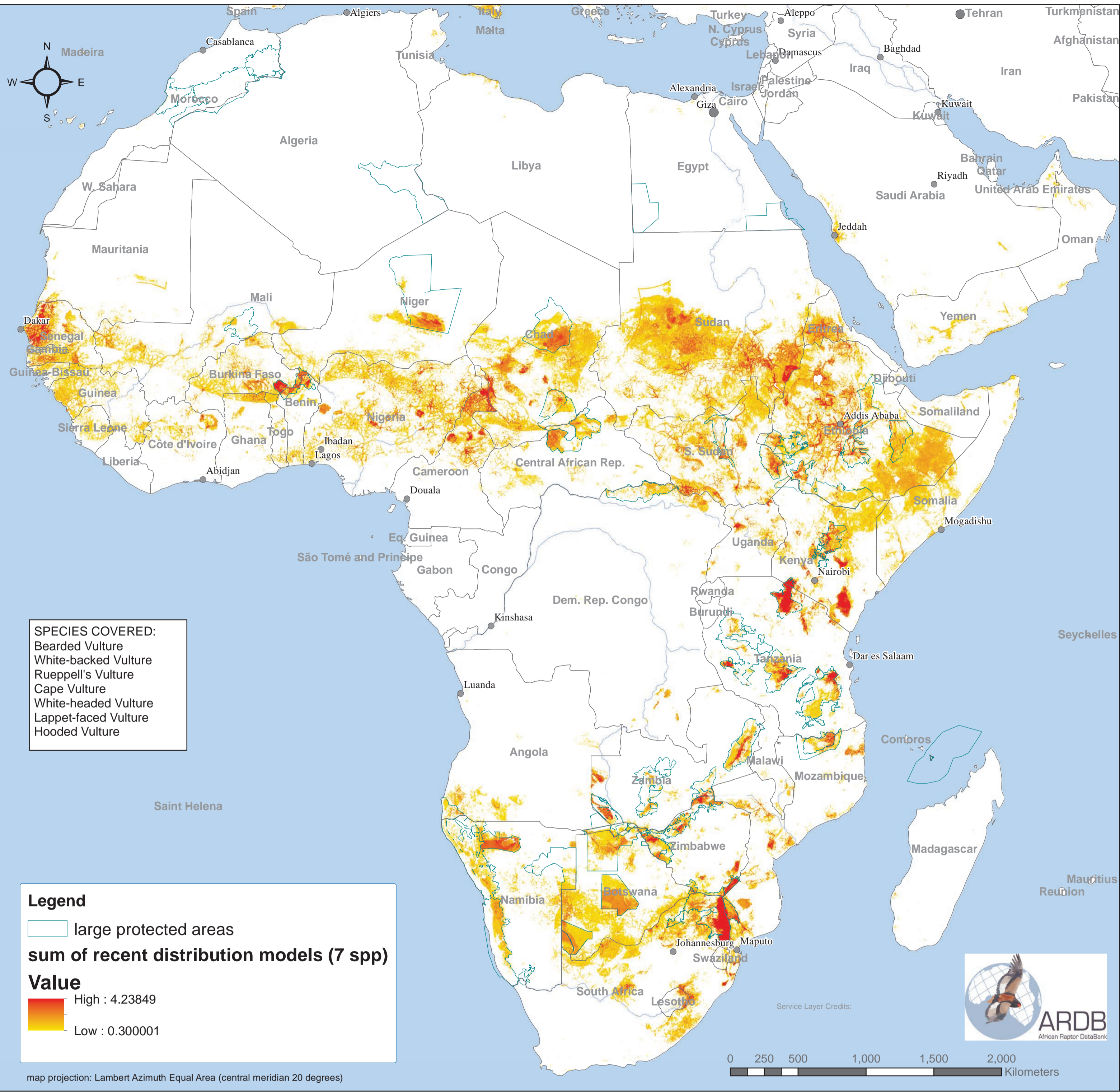


# current strongholds from habitat models



**METHODS:**  
 used another output of the ARDB to help identify habitat strongholds for African vultures notably in areas not visited by observers. Distribution models were developed by the ARDB and refined for this project on African vultures using Maxent software (Phillips et al. 2017). Special efforts were made to update environmental datasets and introduce new anthropogenic datasets that would be ecologically relevant to vultures. In total 97 such datasets were created or refined to span the entire African continent and Arabian Peninsula plus offshore islands at exactly 1km<sup>2</sup> resolution. We projected all data into Lambert Azimuth Equal Area projection using 20 degrees as the central meridian. This projection is best suited for measuring areas and distances at a continent scale. This map shows the sum of models for seven species using recent records together with all environmental and anthropogenic datasets To overcome sampling bias we developed an observer bias dataset by buffering 10km around all the records in the database and around all the roads driven in the surveys data table. Models return values ranging from 0 to 1 representing the likelihood of a species occurring in any cell. We used the value 0.3 approximating the 10 percentile training presence value of most models (Phillips et al. 2017) as a logistic threshold to extract all areas where each species was likely to occur. See methods report for more detail.

**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 Opper, 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 DATABASE, 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.

