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# Distribution and status of tortoises and freshwater turtles in South Sudan

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## Background and synthesis

## Study area and methods

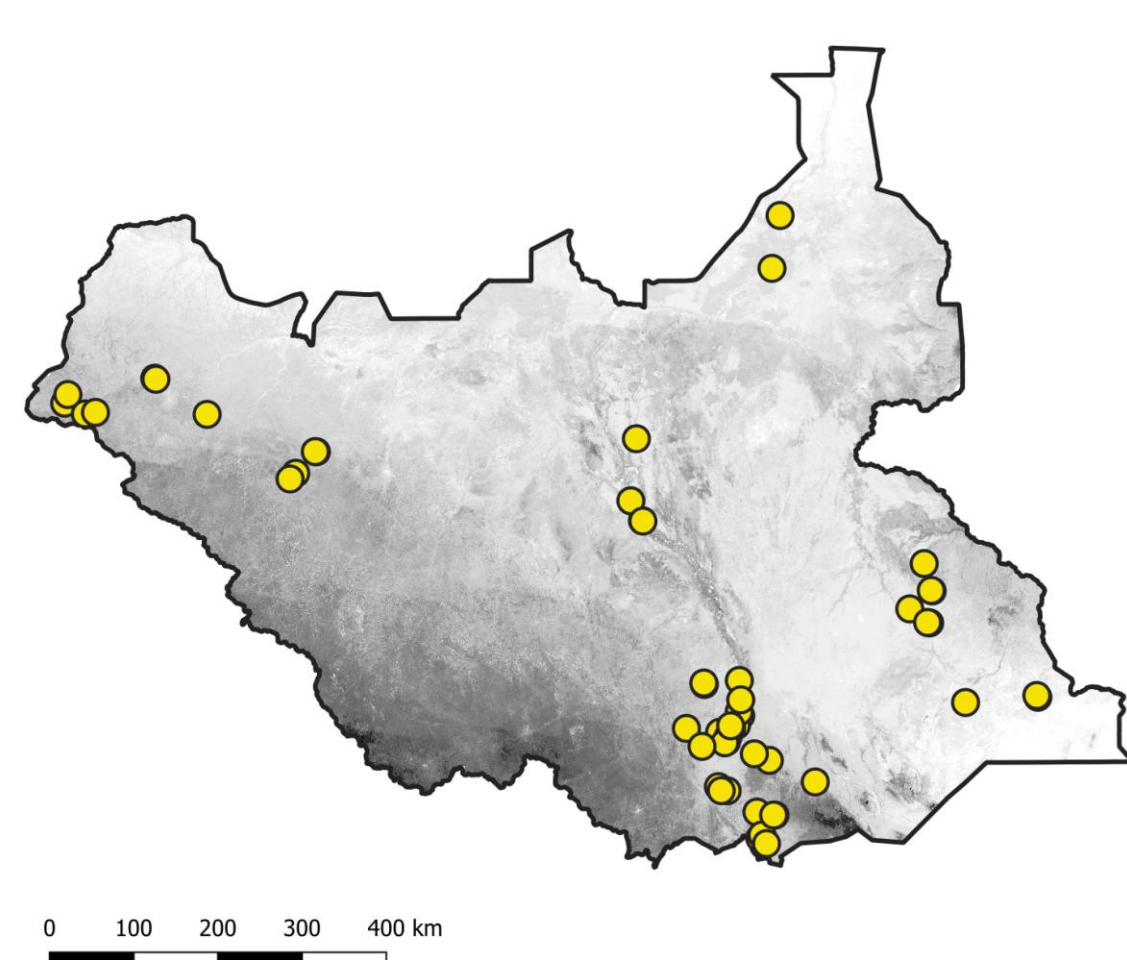
Due to a prolonged civil war (1983-2005 and 2013-2020), the republic of South Sudan, which was officially born in 2011, has been one of the least investigated nations of the continent in terms of chelonian diversity, distribution, ecology, and conservation. Since 2017, this nation has been subjected to careful chelonian field investigations, which have allowed us to clarify the current distribution and status of the diversity of tortoises and freshwater turtles within the country. Including historical (pre-2017) records, we have now recorded the presence of nine chelonian species in South Sudan: three Trionychidae (*Cyclanorbis elegans*, rediscovered in 2017 after having been considered possibly extinct; *Cyclanorbis senegalensis* and *Trionyx triunguis*, both widespread and common); two Pelomedusidae (*Pelusios adansonii* and *Pelomedusa schweinfurthi*, widespread and common); and five Testudinidae (*Stigmochelys pardalis*, very common in the southeast; *Kinixys belliana*, abundant in the south; *Kinixys nogueyi*, very rare and recorded only from a narrow forest area in the extreme west; *Kinixys erosa*, very rare and recorded only from a few rainforest sites along the southern border with Uganda). In terms of species richness, the White Nile hydroshed basin is the main hotspot for South Sudan, with its upper (southern) reaches from Juba to the southern border with Uganda being the richest area for chelonian diversity, and therefore the most important area for turtle-oriented protected areas planning.

Data was collected, in the years 2017-2021, at several sites in the Republic of South Sudan, a landlocked country in East-Central Africa. Our study area is flat with occasional isolated large hills, and contains numerous rivers and lakes.

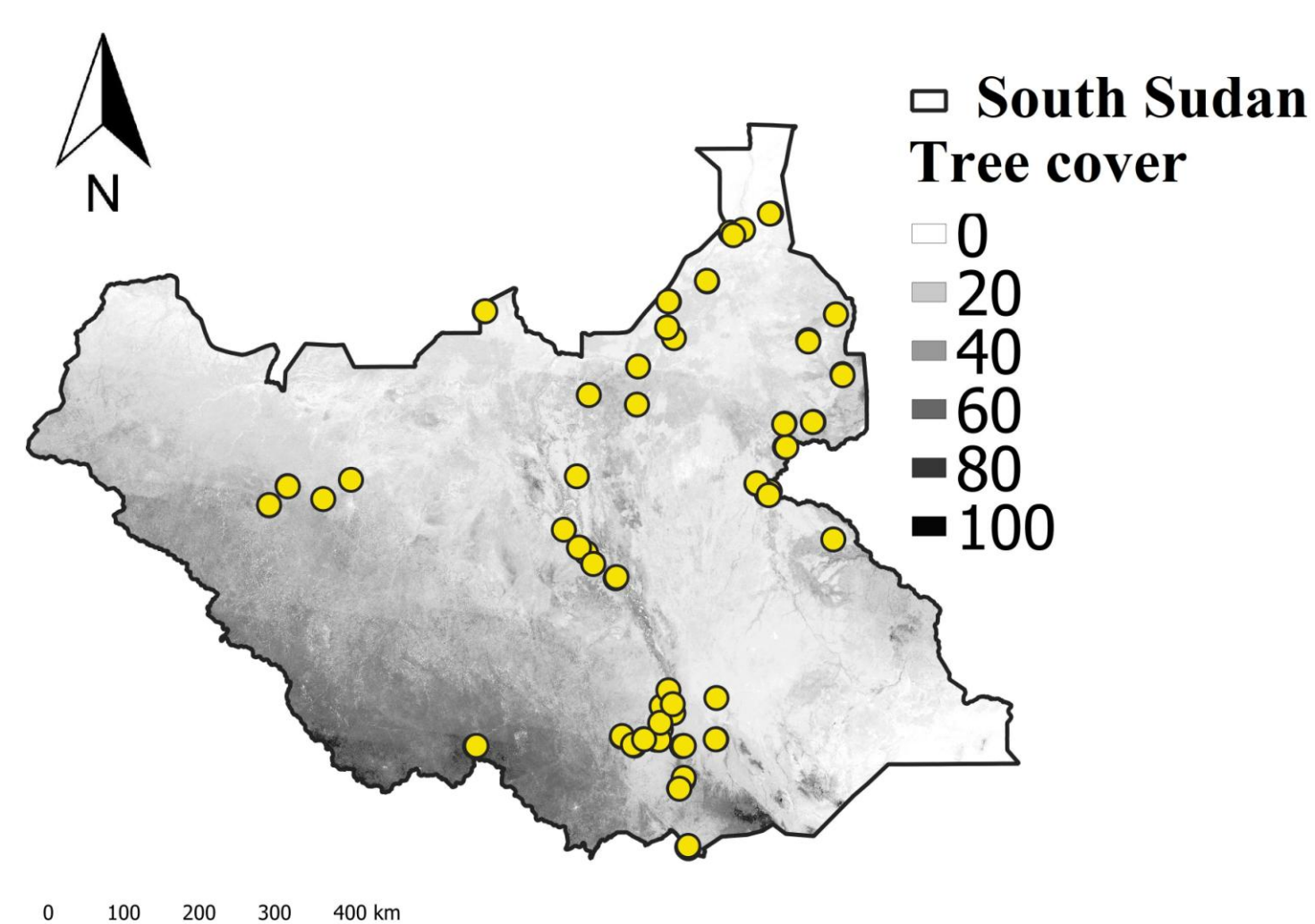
A team of three-four field researchers searched for turtles and tortoises from 0700 – 1800 hr., in both terrestrial and aquatic habitats. Field surveys for terrestrial species consisted of slowly walking along randomly selected, separate, line transects within the main habitat types (forests, savannahs, bushlands). Freshwater species were mostly captured by hoop traps, randomly placed in apparently suitable sites. Each trap, constructed using fine mesh was approximately 120 to 180 cm in length, had a hoop diameter of about 91 cm, and was baited with fish and inspected daily during the field days. We also examined the fishers' nets and the fish markets to locate additional turtle individuals. All turtles and tortoises trapped/captured in the field were identified to species and sexed, measured for carapace and plastron length and then released unharmed in the capture site. Pre-2017 records were also examined and presented herein.

## Results and Conclusions on Conservation Status

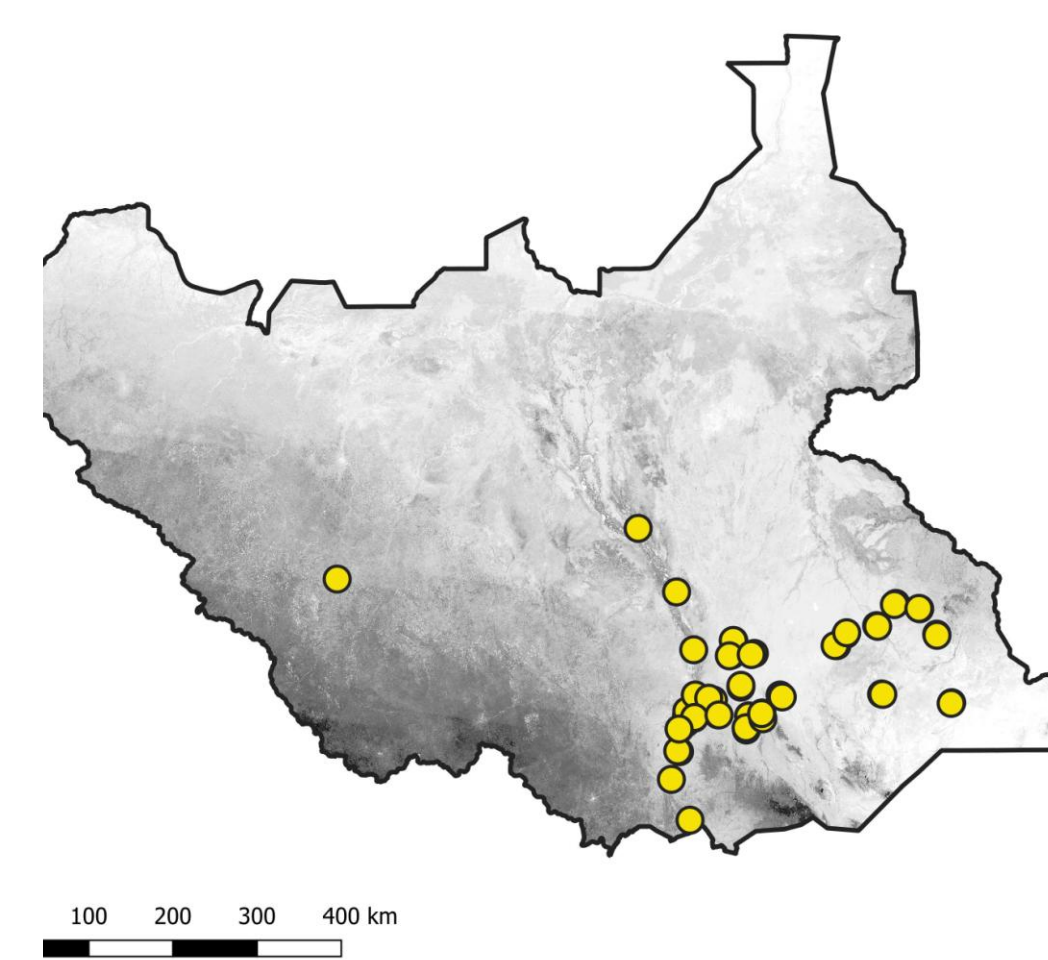
*Pelomedusa schweinfurthi*



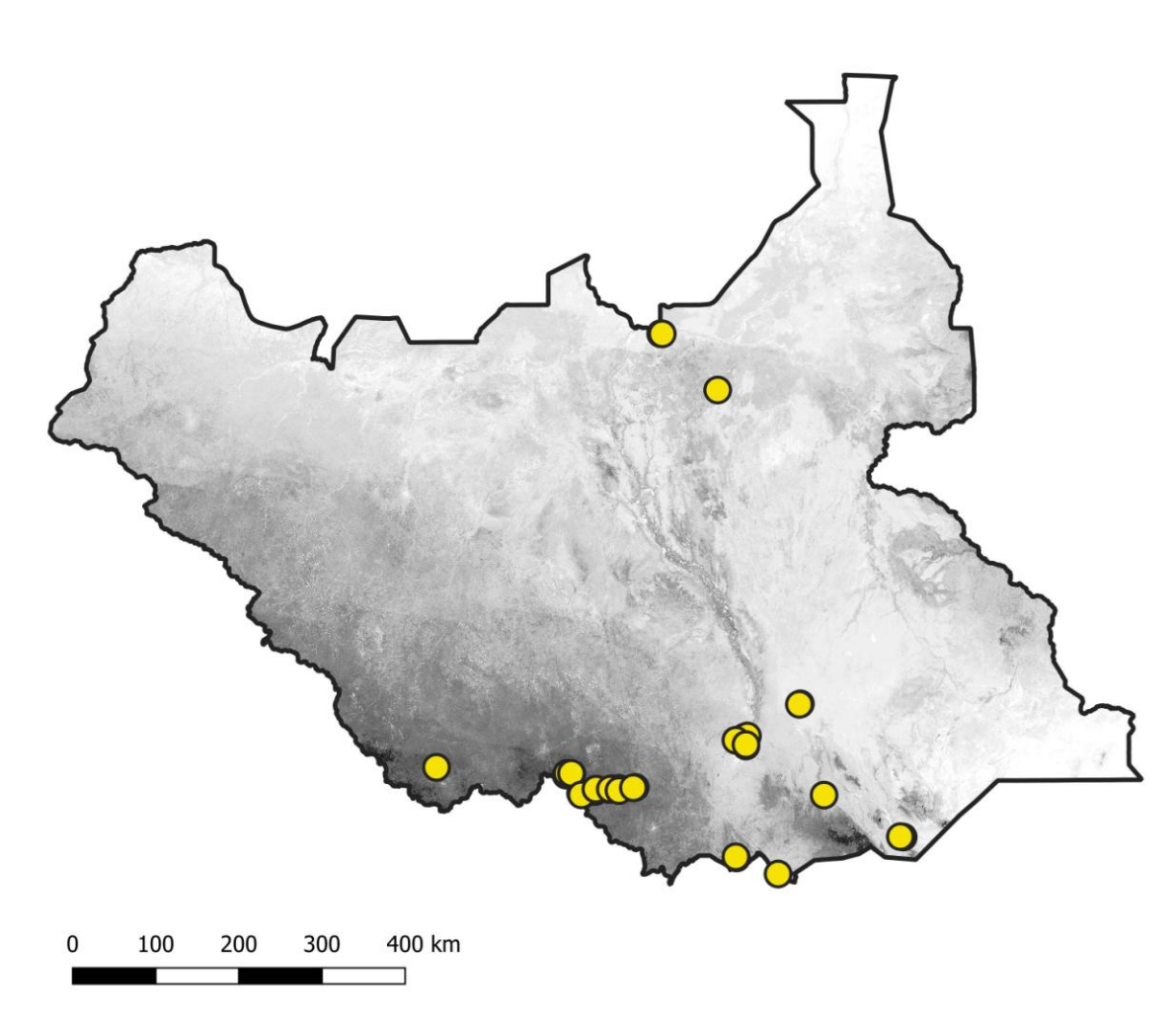
*Pelusios adansonii*



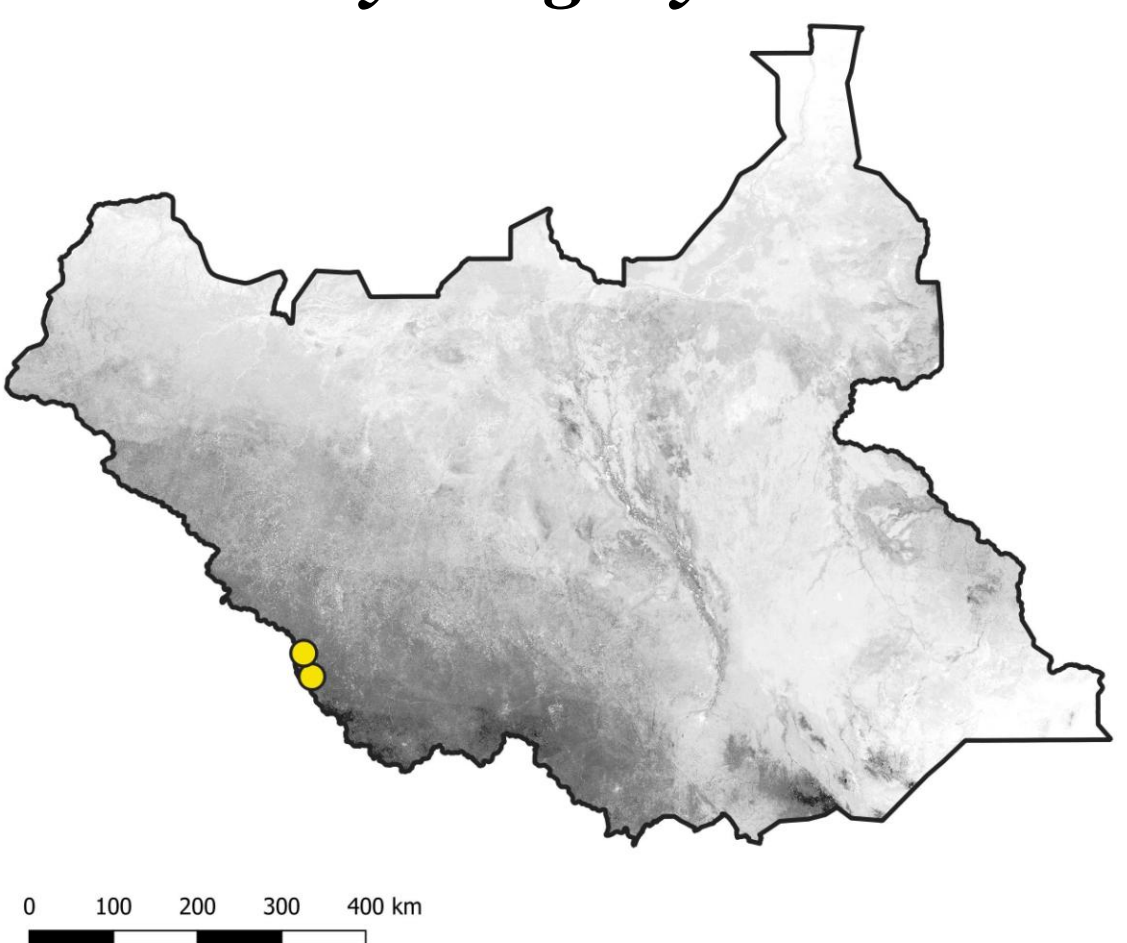
*Stigmochelys pardalis*



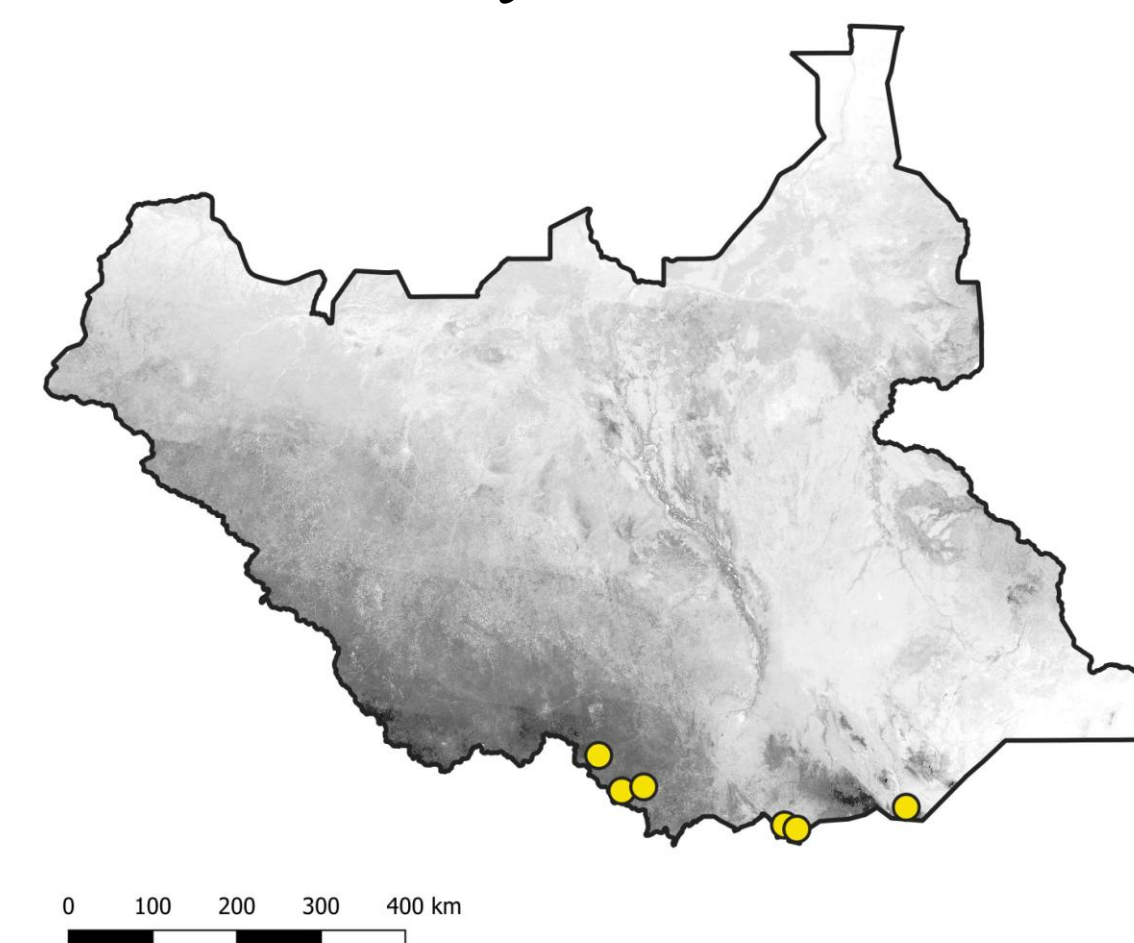
*Kinixys belliana*



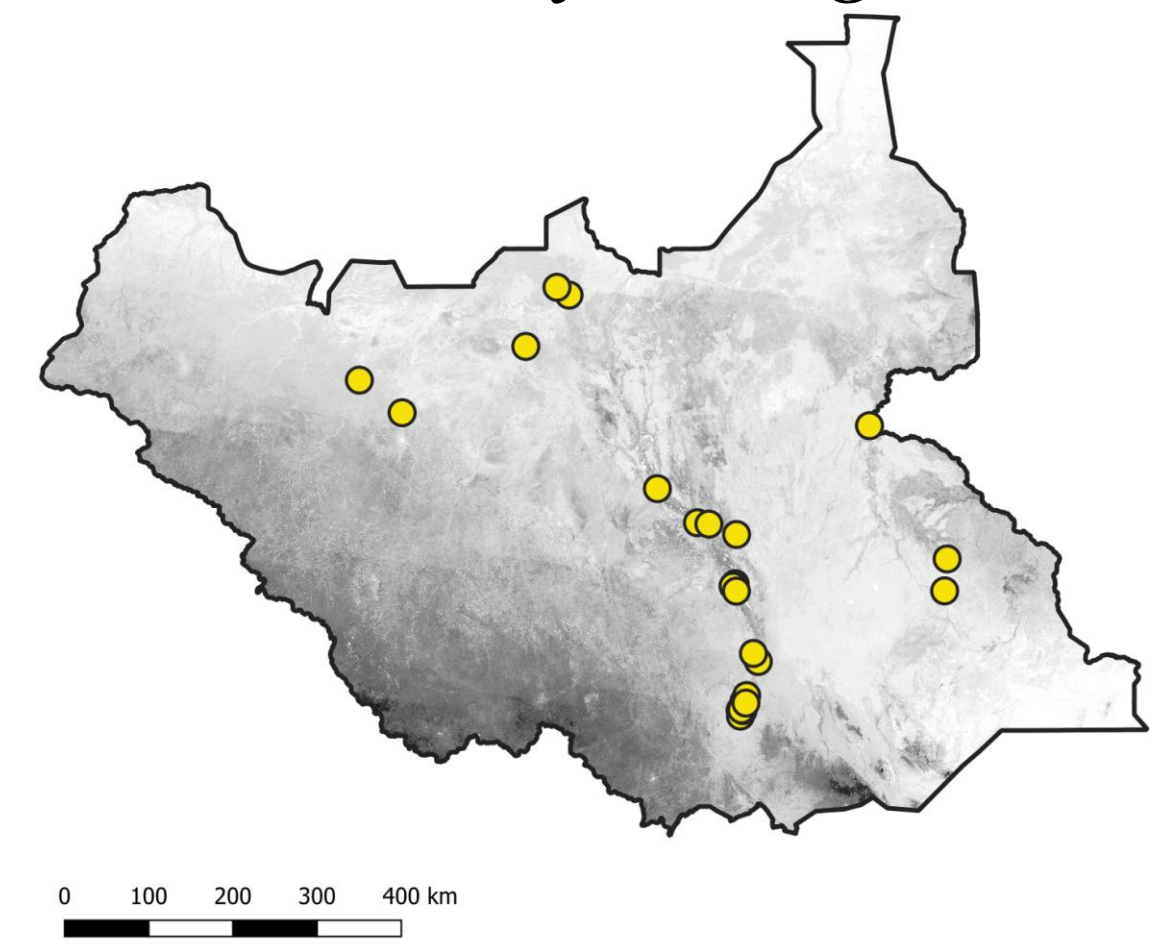
*Kinixys nogueyi*



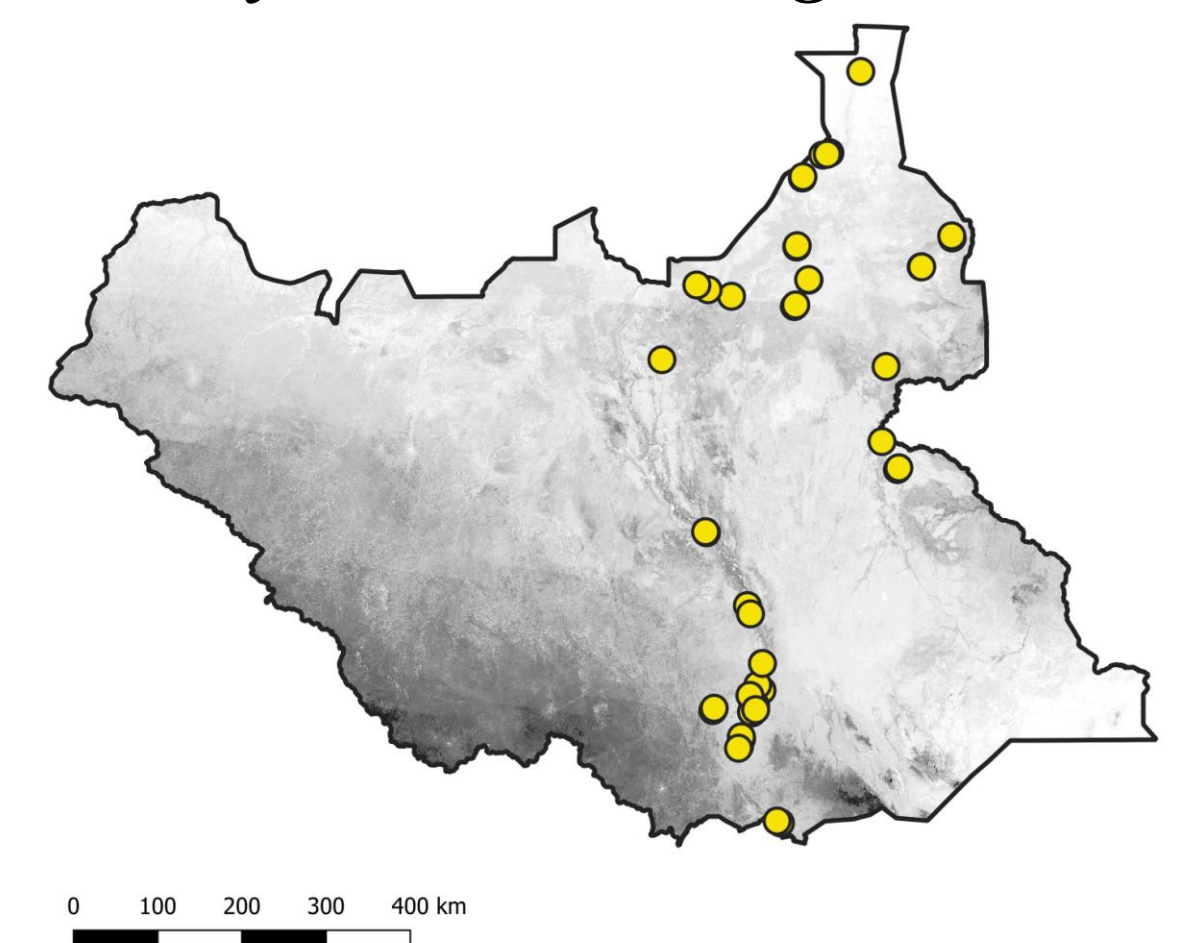
*Kinixys erosa*



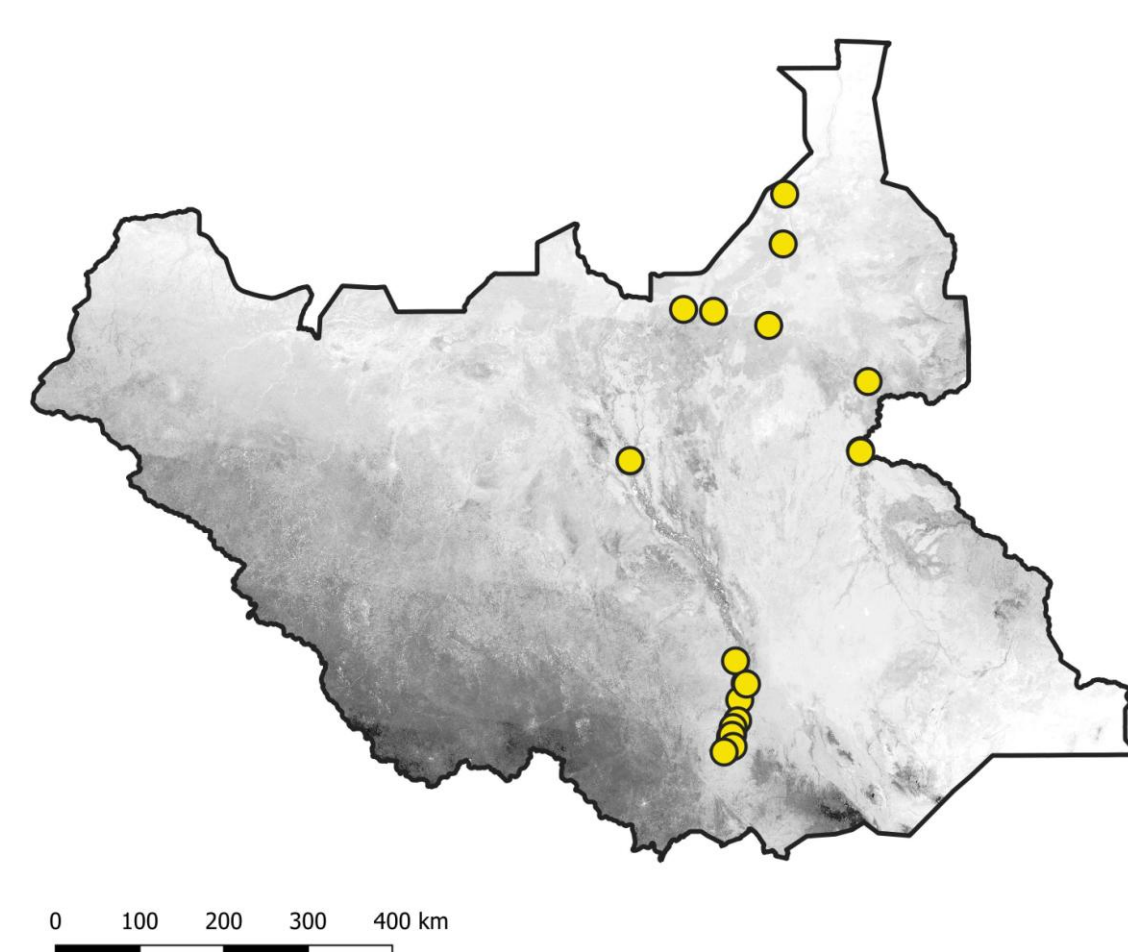
*Trionyx triunguis*



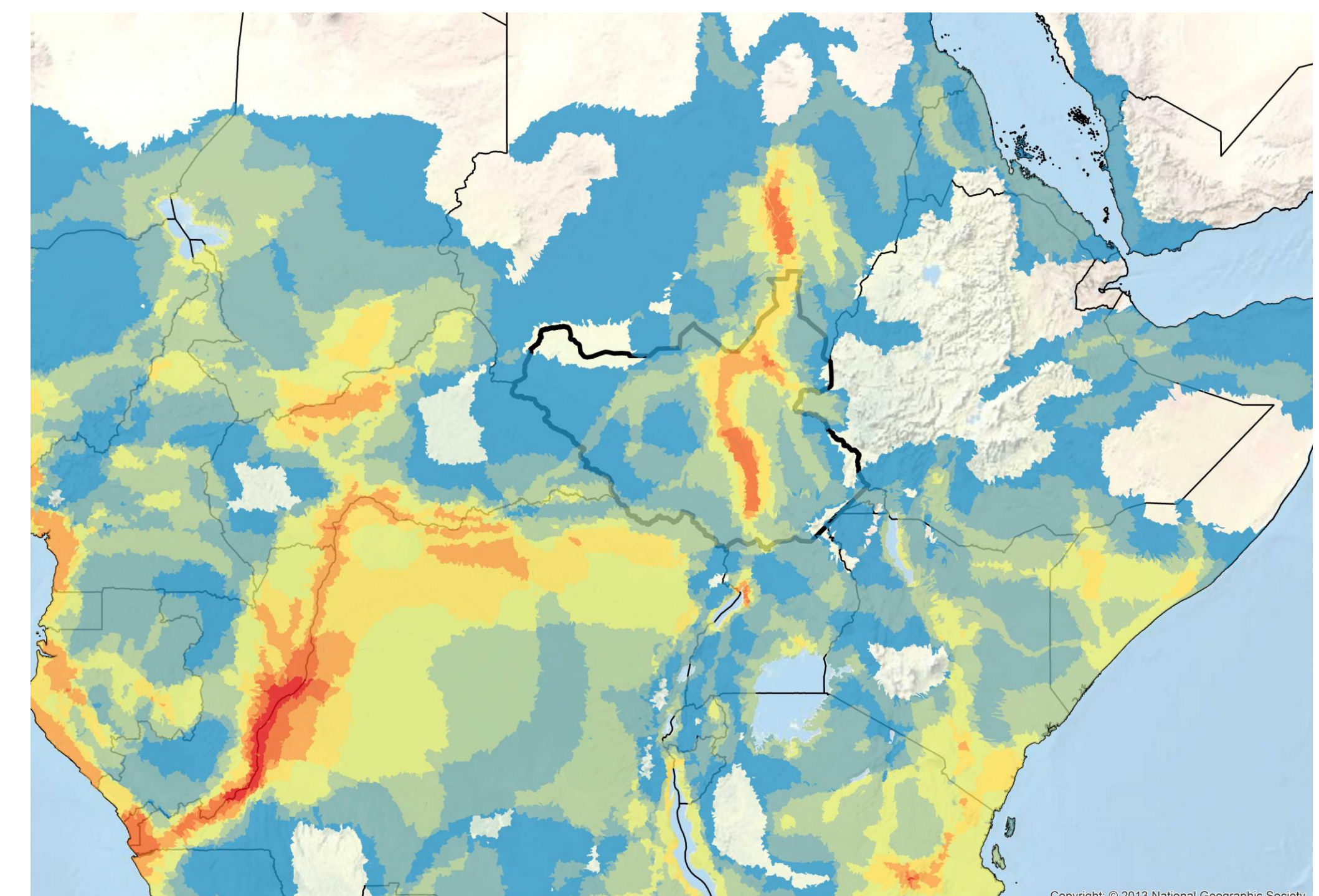
*Cyclanorbis senegalensis*



*Cyclanorbis elegans*



The species richness map for chelonians in South Sudan shows that the White Nile river basin represents the most important area where conservation actions should be preferably conducted. Also the upper Sudd wetlands seem to represent a priority region for turtle and tortoise conservation in the country. It should be however reminded that these maps **collate both recent and historical records**. Therefore, it is possible that several historical sites of presence (for instance of *Cyclanorbis elegans*) cannot be currently confirmed



Based on our preliminary investigations, we consider three species to be Critically Endangered at the national level: *C. elegans* (also globally CR), *K. erosa* (globally EN), and *K. nogueyi* (globally provisionally VU). The other six species are Least Concern at the national level. However, all species are subjected to hunting for domestic consumption as the main threat; habitat loss is still a minor problem for chelonians in South Sudan, although logging and timber and non-timber products extraction may affect the forest species in some localities.