Project Update: December 2016

While African wolf was discovered in 2011 based on maternally inherited mitochondrial DNA and later confirmed from genome wide sequencing, two questions remains critical. First, whether there is Eurasian golden jackal (*Canis aureus*) in Africa or all the former golden jackal populations are entirely African wolf remains uncertain. African wolf was formerly confused with the golden jackal (*Canis aureus*) and remain elusive for centuries. Second, the new discovery of African wolf was not supplemented by morphometric data. This project aim to resolve these two research questions.

From 64 newly generated nucleotide sequences sampled from several African countries including Ethiopia, Southern Sudan, Egypt and western Africa collected from pellet samples, blood and skin samples collected from museum, we did not find a single Eurasian golden jackal-like haplotype in Africa. While further research in sampling more individuals is needed, it is likely that the Eurasian golden jackal never crossed the Red Sea to Africa and the former range of golden jackal may be considered for the range of the new African wolf (Fig 1). By running discriminant analysis on the 52 morphological characters for 65 individuals, 31 dental and 22 cranial measurements, we have showed African wolf is distinctive from Eurasian golden jackal. More detail information will be available with a paper which is currently under revision.

African canids in particular the African wolf (*Canis lupaster*), Black backed jackal (*Canis mesomelas*) and striped jackal (*Canis adustus*) seemed to segregate in distinctive pattern all avoid the tropical rain forest of Africa (Fig 1; Fig 2). Our study extends on the phylogenetic analysis of the African jackals that results a significant genetic distance across population comparable with distance in between different species. Details of the results and analysis will be posted to the Rufford website once the paper is published which is currently under revision.

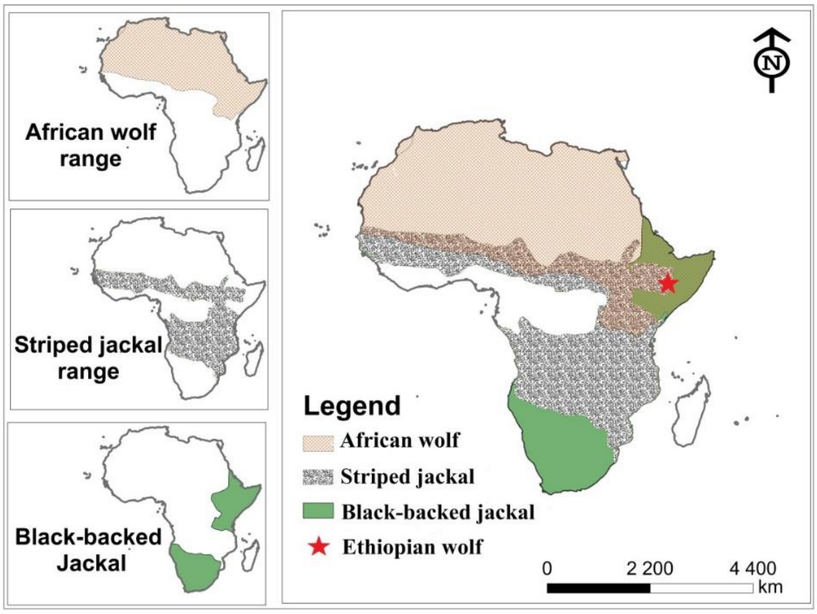

Fig 1. African canids distribution (Reconstructed from shape file of canids distribution from IUCN red list of endengered speceis).

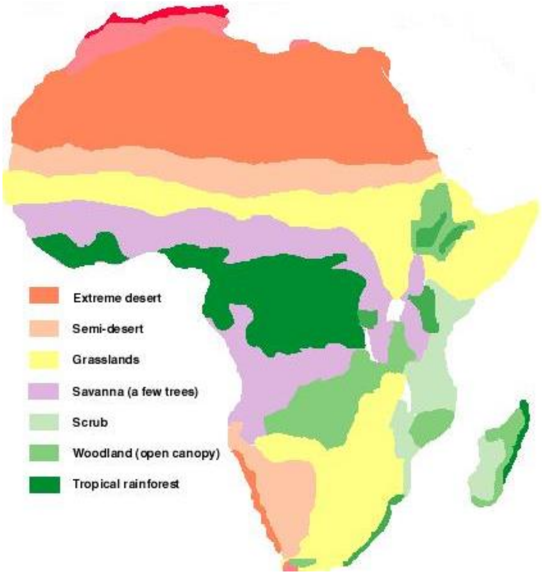

Fig 2. Canids of Africa avoid tropical rain forest, and segregated in the rest of the African countries (Fig 1)

The African Suidae family include giant forest hog (*Hylochoerus meinertzhageni*), red river hog (*Potamochoerus porcus*), bushpig (*Potamochoerus larvatus*) and warthog species (*Phacochoerus aethiopicus* and *Phacochoerus africanus*).

The red river hog is widely but patchily distributed through the West and Central African rainforest belts, from Senegal in the west, throughout the Guinea-Congo forest to at least west of the Albertine Rift (Fig 3). bushpig (*Potamochoerus larvatus*) has a wide distribution range in Africa from Ethiopia to many countries down to South Africa and recorded as least concern by IUCN (Seydack, 2008). Its close relative, red river hog (*Potamochoerus porcu)* is also widely, but patchily, distributed through the West and Central African rainforest belt where there is no confirmed record in Sudan and Chad (Reyna et al., 2016). These two species are allopatric and their ranges are contiguous in some places (Fig 3). Kingdon (1979) assumed that introgression had occurred between the red river hog and the bushpig, because he thought that East African populations of *Potamochoerus* show features intermediate between the two taxa.

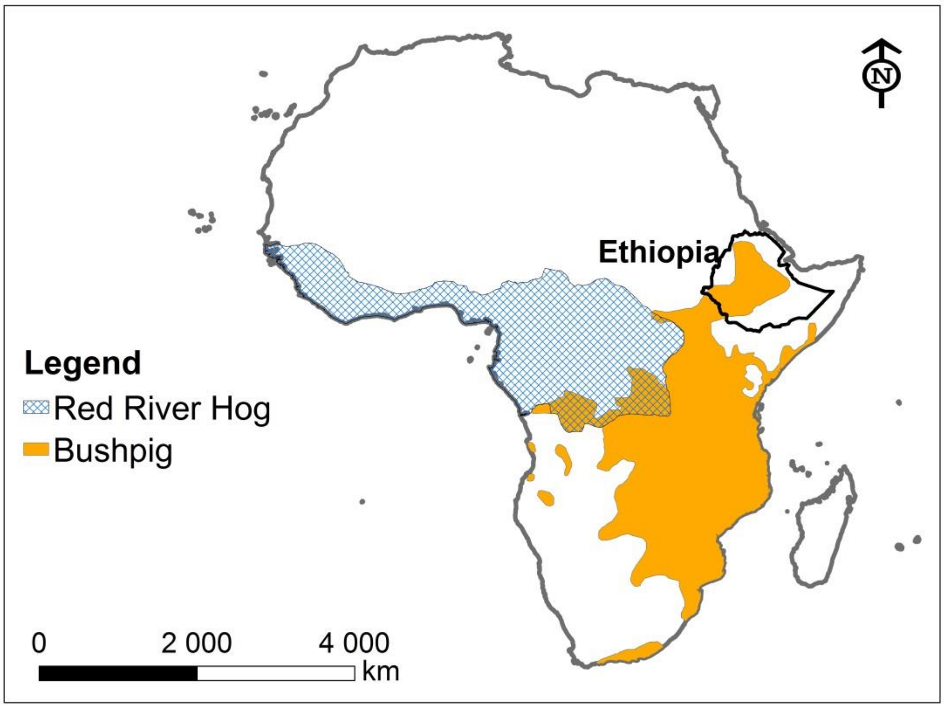

Fig 3. Distribution pattern of Red river hog and Bushpig in African continent.

Bushpig has at least three subspecies are known white-faced bushpig (*Potamochoerus larvatus hassama*) which is found in Ethiopia and southern Sudan, Somali bushpig (*Potamochoerus larvatus sonzaliensis*) and southern bushpig (*Potamochoerus larvatus koiropotamus*). No subspecies was known for the red river hog.

Ethiopia is home for four species of the suidae family, giant forest hog *Hylochoerus meinertzhageni*, bushpig *Potamochoerus larvatus*, and warthogs *Phacochoerus aethiopicus* and *Phacochoerus africanus*. Here for the first time, we documented the Ethiopian bushpig is cryptic species which doesn't belong to the bushpig. The mitochondrial DNA showed that they are closer to the red river hog species while the nuclear DNA showed it is rather closer to the bushpig species (Fig 4 and Fig 5). It is possible that the Ethiopian bushpig is hybrid of the red river hog and bushpig during the past. Our sampling over 200 individuals at five localities of Ethiopia (Fig 6) showed the cryptic species is not limited to a specific place, but the entire population of the bushpig in Ethiopia is in fact different. Genomic DNA analysis is underway and details of the results will be published at the Rufford website in the near future.

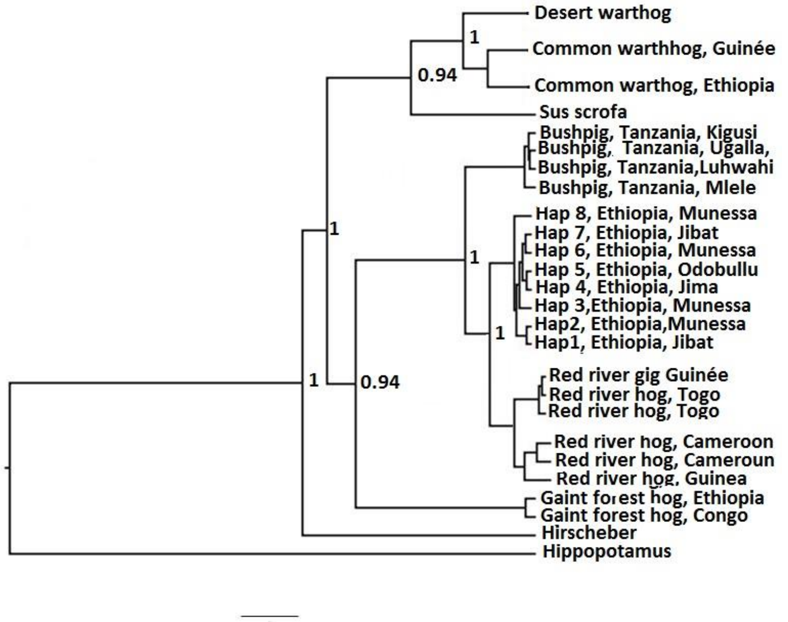

Fig 4. Bayesian phylogenetic reconstruction based on1815 bp (1146 Cytb and 369 bp of 12S, 300 bp of 16 S).

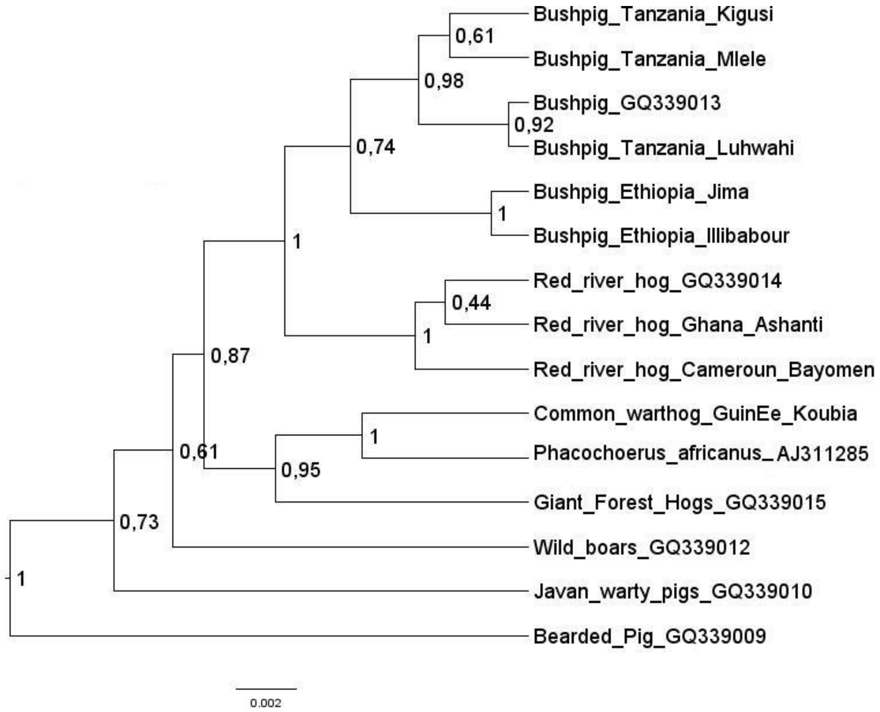

Fig 5. Bayesian phylogenetic reconstruction based on 2000 bp of nuclear DNA.

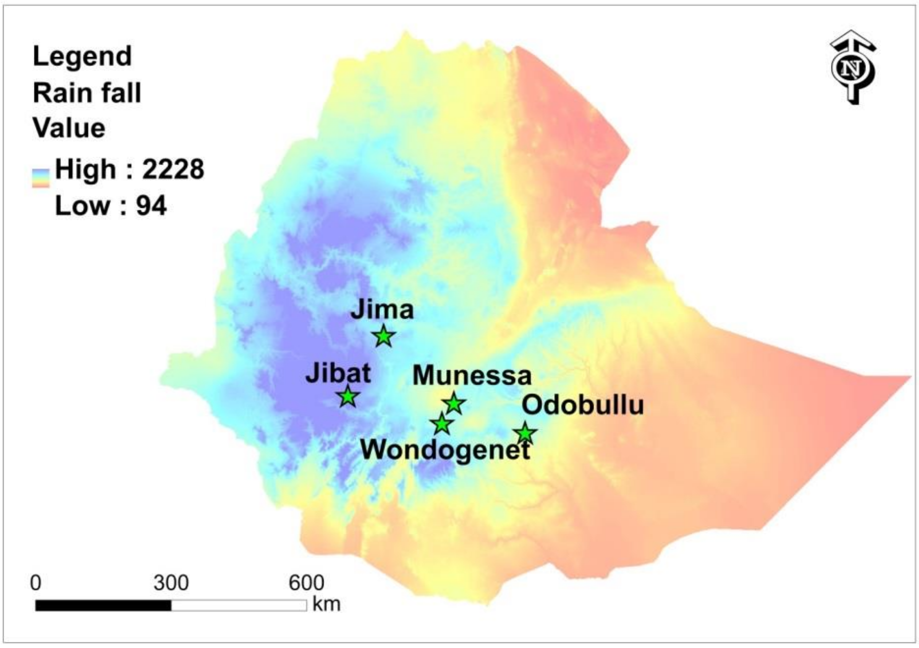

Fig 6. Localities where the cryptic Ethiopian bushpig sampled

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