

Project Update: June 2018

Introduction

Ruvu-South Coastal Forest Reserve forms one of the most important coastal forests in Eastern Africa coastal belt. The reserve habitat is comprised of dry, scrub and riverine Zanzibar-Inhambane forest mosaics. The reserve provides important habitat for most endemic and endangered fauna and flora species. This project activity was conducted to assess conditions of ecological habitat as well as the population size of endangered bird Sokoke pipit. The activity involved surveying forest floor conditions, assessing destruction from human activities, biodiversity values and the levels of resource use and disturbances. Bird survey was also conducted to identify their current population, distribution as well as their territories. The report presents project activity aim and objectives, study area, tools and methods which were used, field survey results as well as way forward.

Aim and Objectives

The aim of the project activity is to assess the distribution of endangered Sokoke pipit bird and ecological habitat conditions.

Study area

The project activity was conducted at Ruvu-South Coastal Forest Reserve. According to BirdLife (2012), the reserve is 30,633 ha in area, mosaic of forest, woodland, thicket, swamp and grassland in Kisarawe district, Coastal region in eastern Tanzania. It lies 6°53'S to 7°03'S and 38°46'E to 39°02'E at 120 – 260 m asl, 45 km from largest commercial city Dar es Salaam. A total 1404 ha equivalent to 5 % in 39 sample grid plots were surveyed during this project activity.

Methods

To assess ecological habitat conditions, bird distribution and population size, the project team adopted survey protocol based on National Forest Inventory protocol (2009). Total of nine tagged line transects were established 900 m from each other and sample plots of 50 x 30 m were laid at 400 m along tagged transects. Each plot were laid 5 m to 50 m inside the forest boundary in order to avoid disturbance at the boundary. Project team surveyed a total of 39 plots in the west-southern part of the reserve extending to north east. Selection of the survey area was based on Hansen dataset (2017), which indicated undisturbed *Brachystegia* forest woodland in the selected area. A total 1404 ha equivalent to 5 % in 39 sample grid plots were surveyed during this project activity. Plots were oriented from west to east and coordinates of each plot were recorded using GPS device with x20 resolution. Location and position of the vegetation plots are indicated in the figure 1 below.

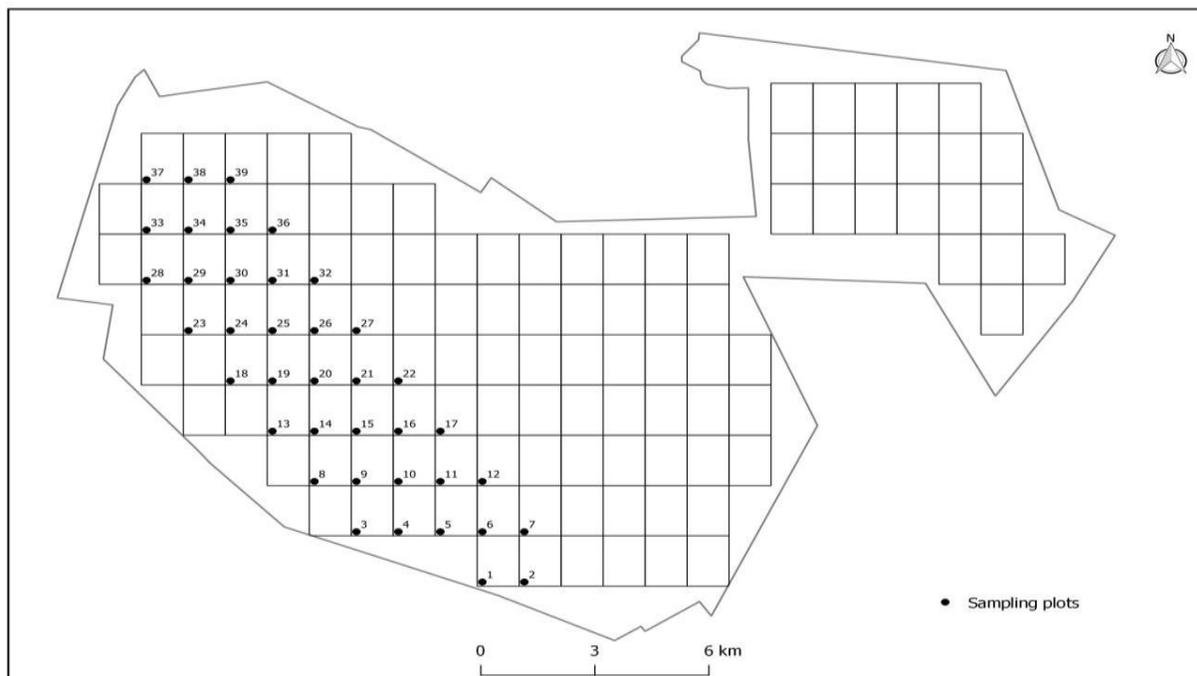


Fig. 1: Location of Vegetation Sample Plots

In each sample plot, information about forest floor conditions, forest gaps and signs for forest disturbances were assessed. *Brachystegia* woodland and forest cover were assessed and recorded in each plot. These are the forest trees provide important niche associated with endangered *A. sokokensis*. Also bird census were done through travelling along permanent established line transects each day for 2-3 hours every day from 7:00 am. This is the recommended time in which bird vocalization are at the peak for most birds, thus ensures high visibility and detectability. Territory Mapping was also done in order to produce a detailed map of the distribution so as to link bird distribution with habitats.

Results and discussion

During this project activity, the assessment of ecological habitat conditions as well as current distribution of critically endangered Sokoke pipit (*Anthus sokokensis*) and its population were studied. This section presents results on ecological habitat conditions as well as population of the Sokoke pipit bird.

Ecological Habitat Conditions

Habitat conditions were assessed based on the level of forest disturbances indicated by the number of incidences of anthropogenic activities such as tree cutting, fire damage, charcoal making, clearings, roads/paths and cultivation. Survey team recorded a total of 201 disturbance events in total along all 13 transects. The most disturbed area being the southern site of the forest. Tree cutting events were observed at highest frequency rate than others followed by fire damage incidence. We recorded both old cut and fresh cut trees and this number excluded naturally dead and fallen down trees. The result indicates continual deforestation of forest trees du

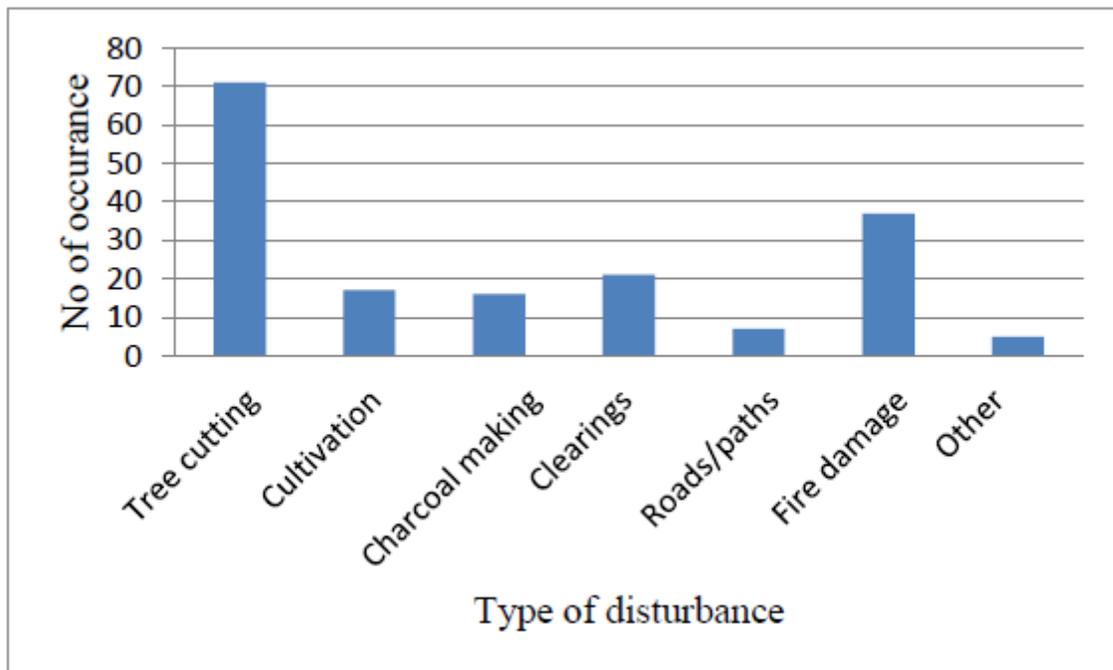


Fig. 2: Forest disturbance incidences in Ruvu South Coastal forest

As indicated in Figure 2, fire damage was observed to be the second most frequent forest disturbance type to be observed. Plots 6, 10, 11, 12 and 17 were affected mostly by fires incidences.

There was evidence that fire spread were associated with charcoal burning as the team noted various remains and live charcoal kilns as indicated in Fig 3. Personal communication with Kipangeni village leader, one of the villages surrounding Ruvu coastal forest indicated that charcoal making and pole extraction is a one of the major source of income to many families in the village.



Left: Fig 3: Live charcoal kiln in Ruvu forest. Right: Fig 4: Fire damage in Ruvu forest



Fig 5: Tree cutting

Other disturbance events observed which accounted for about eight incidences (4 %) included disturbance due to grazing, encroachment as well as footpath.

From these observations, it is indicative that ecological habitat for fauna and flora species in Ruvu coastal forest reserve is continuing to deteriorate at moderate rate. This findings are similar to reports by IUCN (2012), IPP media (2012) as well as Care Tanzania (2006) who reported on inadequate capacity to manage the forest reserve in terms of funds, equipment compared to big threat towards illegal harvesting. *Brachystegia* woodland and vegetation cover which supports Sokoke pipit are observed to be affected by these human activities as well. The heavy pressure on remaining good forest is contributed by population pressure due to increase in population of the adjacent communities and the surrounding areas like Kibaha and Dar es Salaam, uncontrolled issuing of permits for charcoal production, timber harvesting, and failure of authorities to enforce forest laws.

Survey of Sokoke pipit bird

Survey for the endangered species was conducted to determine current population size of the bird and identify bird's fundamental niche and richness. A total of 28 Sokoke pipit birds were encountered distributed in only five sample plots among all 39 sample plots surveyed.

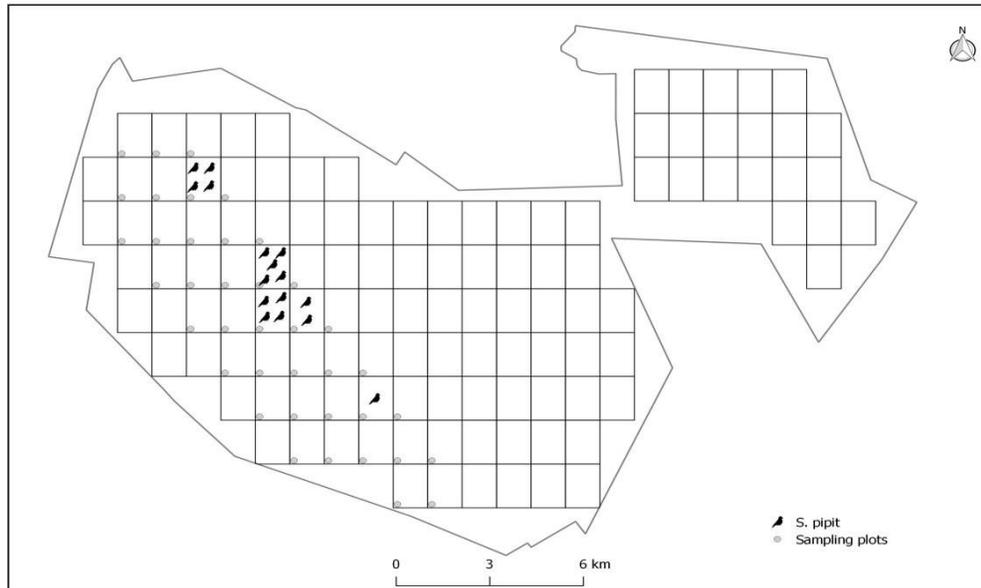


Fig 6: Distribution of S.pipit bird in Ruvu Forest Reserve

As indicated in Figure 6, fundamental habitat for the bird are found in the midst part of the forest where it contains undisturbed *brachystegia* forest cover and adequate litter depth. In sample plot number 26, team recorded highest number of Sokoke pipit individuals in sample plots number 20 and 26 with 8 and 10 individuals respectively. Across all plots surveyed, the mean density of 0.02 birds/ha, with a projected overall bird population estimated at 611 individuals in the entire forest. The density was observed to be higher in the relatively less disturbed *Brachystegia* forest zone than the disturbed ones in the northern part.

Challenges and Way forward

- i The project activity delayed for about 4 weeks due to continuous and heavy rains in April and May 2018 during scheduled field work
- ii Due to available resources and time, we were able to survey only 5 % of the entire forest reserve, more area to be surveyed may be recommended in order to gain comprehensive overview of habitat conditions and distribution of endangered bird species,
- iii I am compiling manuscript indicating project results in details and with guidance from project advisor John Baines, I plan to publish the results soon in the International Journal of Environment Agriculture and Biotechnology (www.ijeab.com).
- iv Community awareness trainings and support of economic groups are underway.