Ecology, Density and Distribution of Sitatunga in Central Uganda.

UNIVERSITY OF ALBERTA
QUAECUMQUE VERA

2017 Mid-Season Report

Report Outline and Scope

In 2015, we launched a research project into the ecology of sitatunga (Tragelaphus spekii) in the Mayanja River area of central Uganda, with the following objectives and methods:

1. Estimate home range and composition of vegetation within the home range of adult sitatunga. Methods include capture of adult sitatunga and tracking via GPS collars. Data from tracking is supplemented by a mark-resight study using digital photography.

2. Estimate density of adult sitatunga in the Mayanja River area of central Uganda. We use the digital photography data from Objective 1 and camera traps to develop a spatially explicit capture recapture (SECR) model of population density.

3. Document dispersal and large-scale population structure via development of single nucleotide polymorphism (SNP) genetic library.

In 2015 and 2016, research activities occurred during the rainy season of April – August. It is possible that sitatunga behaviour changes during the dry season, which would alter trends noted in data collected for objectives 1 and 2. Thus, in order to understand more aspects of sitatunga ecology, we needed to perform the same research activities during the dry season. In 2017, we began data collection in February to determine any difference in sitatunga detections during the dry season. We are also continuing data collection through August 2017. As field work is ongoing at this time, this interim report highlights the progress and data collection efforts during January – May 2017. Analysis and results of the data we collected will be included in the 2017 Annual Report. References and details about methods are available in the 2016 Annual Report.

Statement of Study Area Conditions

On the Mayanja River, early 2017 was dryer and hotter than in recent years (R. Okori and P. Symington, pers. comm.). In late January and early February, a substantial portion of the papyrus (Cyperus papyrus) dominated wetland burned due to the dry conditions and adjacent shoreline charcoal production. The fire events consisted of one large scale fire which burnt wetland from shoreline to shoreline, and several smaller fires that did not traverse the entire width of the wetland. The burnt areas comprised all or part of the cut lanes for three road machans and up to six river machans. Burned areas were reduced to bare ground and blackened stubble, which we assume is unsuitable for sitatunga. However, we placed trail cameras in some burnt areas to determine if sitatunga or other animal species use this habitat for foraging or other purposes. We also performed vegetation measurements in the burned areas during the weeks and months following the fire to ascertain recovery of species diversity and vegetative cover.

Wetland Recovery from Papyrus Fire 2017

FEBRUARY 14 2017

MARCH 2 2017

MARCH 31 2017

In addition to the fire, the dry conditions led to a retraction of water within the river channel. Thus, areas used as water access points for livestock in previous years were unsuitable for this purpose in early 2017. In addition, the drought conditions led to dieback of normal foraging areas for cattle. Whereas in previous years we did not observe cattle entering into the lanes cut open for sitatunga, in 2017 we observed cattle actively entering unburnt sitatunga machan lanes to eat papyrus and other plants, and perhaps to access water. Previous research into sitatunga habitat and behaviour (IN KENYA?) indicated that sitatunga avoid areas used by cattle, and that sitatunga move to wetland interior during dry seasons. The extreme conditions during early 2017 offered a unique opportunity to test these hypotheses, and underscore the importance of data collection during different conditions

Year-to-date Activities

Please note: Field data collection is still underway until August 2017. Full results from this field season will be included in the 2017 Annual Report. The figures below are not complete, as some camera traps are still deployed and other data has yet to be compiled. In most cases, in this section the report summarizes field efforts from February – May 2017.

We deployed 28 trail cameras in 12 areas to detect sitatunga use of interior wetlands, shoreline wetlands, and forest adjacent to wetlands. To date, the cameras have recorded activity for 1196 trapping days.

We used 14 viewing platforms (machans) as primary image capture locations, and we have performed over 80 machan visits as part of the Mark Resight study

To date, we have recorded 149 encounters with sitatunga from trail cameras and mark-resight attempts.

We have completed 18 vegetation surveys, including measurements of vegetation species diversity and height of hiding cover. This includes repeated surveys in burnt areas during their recovery. It also includes six sitatunga feeding areas.

We have contacted and begun collaboration with Dr. James Kalema, a botanist at Makerere University, Kampala, Uganda, to assist in identification of wetland plants encountered during vegetation surveys and in preparation of manuscripts regarding the vegetation data.

Use of the area by Uganda Wildlife Safaris has resulted in the collection of additional genetic samples from harvested bulls.

Planned activities for 2017

All aspects of the field study – camera traps, mark resight, vegetation surveys, and genetic sample collection – will continue in the Mayanja River area until mid-August 2017.

With the support and cooperation of Uganda Wildlife Authority (UWA) veterinary staff, we will attempt to capture adult sitatunga to place GPS tracking collars on them during July of 2017.

PhD candidate Camille Warbington will perform laboratory analysis of genetic samples, compilation of genetic library, and analysis of results during Fall Term 2017 at the University of Alberta.

We will recruit an undergraduate researcher to aid in identification and verification of sitatunga individuals from pictures taken during 2015-2017.

Once identification of sitatunga individuals is complete, we will update the SECR model with the new data and construct alternate models to see what best fits the data.

PhD candidate Camille Warbington will present an oral presentation of results of part of the sitatunga study at The Wildlife Society's Annual Conference, to be held in Albuquerque, New Mexico, USA in September 2017. This presentation will focus on sitatunga use of different parts of the wetland during the three seasons of study, which include a flooding event (in 2016) and the fire event from early 2017. Camille will also present a poster regarding the preliminary results of the SECR model (these results were included in the 2016 Annual Report)

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