Analysis of Recent Locust Invasion on Northern Kenya's Rangelands

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Key words: Remote sensing; Risk management; Desert locust 1; Rangelands 2; Keyword 3

SUMMARY

ANALYSIS OF RECENT LOCUST INVASIONS ON NORTHERN KENYA'S RANGELANDS

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ABSTRACT

In the recent past, the Horn of Africa has witnessed an upsurge in desert locust invasions. In Kenya, the invasions raised major concerns over massive food insecurity, socioeconomic impact and livelihood loss caused by the recurring invasions. The aftermath of these infestations has been particularly detrimental to the pastoralist communities of Northern Kenya, who are reliant on rangelands for their livestock sustenance. This paper describes a study that was geared towards tracing desert locust movement patterns from 2020 to 2021 and determining the vegetation damage using remote sensing techniques; MODIS and Sentinel 2 imagery was used. The analysis therein utilized Google Earth Engine (GEE) to compute the Normalized Difference Vegetation Index (NDVI) for the counties studied. The NDVI values were used to assess vegetation cover changes that occurred throughout 2020 and early 2021 when northern Kenya was hit by its first and second wave of desert locust invasions. Using Turkana, Marsabit, Wajir, Mandera, as the study counties, the NDVI analysis indicated a general decline of vegetation before and after invasion. To establish a

baseline for comparison, NDVI values from 2018, when climatic conditions closely resembled those of 2020, were used as a reference. The results demonstrate a clear correlation between locust invasion events and vegetation degradation, underscoring the substantial impact on grazing lands which are key to the livelihood of the pastoralists of northern Kenya. The study concludes that NDVI analysis is a scalable methodology for monitoring past desert locust invasions and the damage caused as a result. The study recommends the need for collective responsibility across bordering countries and increased surveillance in order to more effectively document future locust invasions and their effects.