



# Report of Monitoring and Assessment of Desert Locust in Africa and Asia

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## Desert Locust Monitoring and Loss Assessment in Yemen

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as MODIS in the US, and Sentinel series in EU), and self-developed models and algorithms for Desert Locust monitoring and forecasting, the research team constructed the 'Vegetation pests and diseases monitoring and forecasting system', which could regularly release thematical maps and reports on Desert Locust.

This report focuses on the dynamics of desert locust monitoring and loss assessment in Yemen. The remote sensing monitoring results showed that, in September 2022, the desert locusts in Yemen were mainly distributed in the west. The total damaged vegetation area was 74.3 thousand hectares. Compared with August 2022, the newly damaged vegetation area was 65.3 thousand hectares, including 14.1 thousand hectares of cropland, 7.5 thousand hectares of grassland, and 43.7 thousand hectares of shrub. Affected by rainfall, the vegetation gradually increased in the Red Sea coastal area of Yemen. It is expected that locusts in western Yemen will migrate westward to the Red Sea coast and reproduce from mid-to-late October to November. This period is an important harvest season for crops in Yemen. It is still necessary to continue to pay attention to the dynamics of the desert locust disaster in Yemen to prevent repeated losses to its agricultural and pasture production. The specific research results are as follows.

In September 2022, locusts continued to mature in western Yemen. The total damaged vegetation area was 74.3 thousand hectares, including 14.7 thousand hectares of cropland, 8.7 thousand hectares of grassland, and 50.9 thousand hectares of shrub (Figure 1). This study also used Sentinel-2 satellite remote sensing data to monitor the desert locust damage

in the severely affected vegetation areas in Western Yemen (Figure 2). The data acquisition time is September 2022, and the spatial resolution is 10 m. The study area is in eastern Al Hudaydah, 41.4 kilometers from Al Hudaydah in the west and 69.6 kilometers from Zabid in the south. The vegetation types include cropland, shrub, and grassland, with a total area of 92.15 thousand hectares, including 44.02 thousand hectares of cropland, 35.58 thousand hectares of shrub, and 12.55 thousand hectares of grassland. The monitoring results showed that the damaged area of vegetation in the study area was 2.56 thousand hectares, accounting for 2.78% of the total study area. Among them, cropland was the largest damaged area with 1.12 thousand hectares, followed by shrub with 0.88 thousand hectares, and grassland was affected with 0.56 thousand hectares, accounting for 2.54%, 2.47%, and 4.46% of the total area of cropland, shrub, and grassland in the study area, respectively.

The comprehensive analysis shows that vegetation gradually increases in the Red Sea coastal areas of Yemen due to sufficient rainfall. From mid-to-late October to November 2022, locusts in the area will continue to immigrate and lay eggs to reproduce. This period is an important harvest season for crops in Yemen, and continuous monitoring of locust dynamics is needed to ensure agricultural production and food security in Yemen.

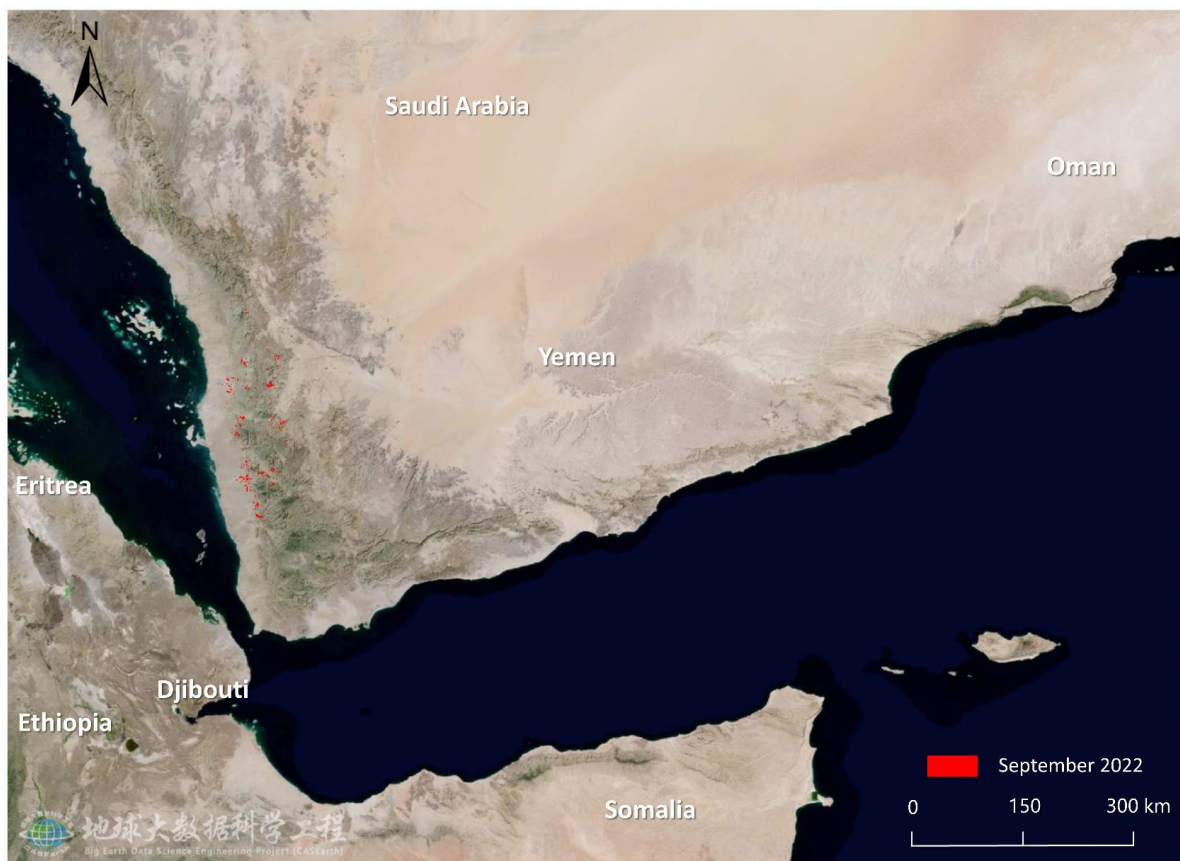


Fig. 1 Monitoring of Desert Locust damage in Yemen (September 2022)

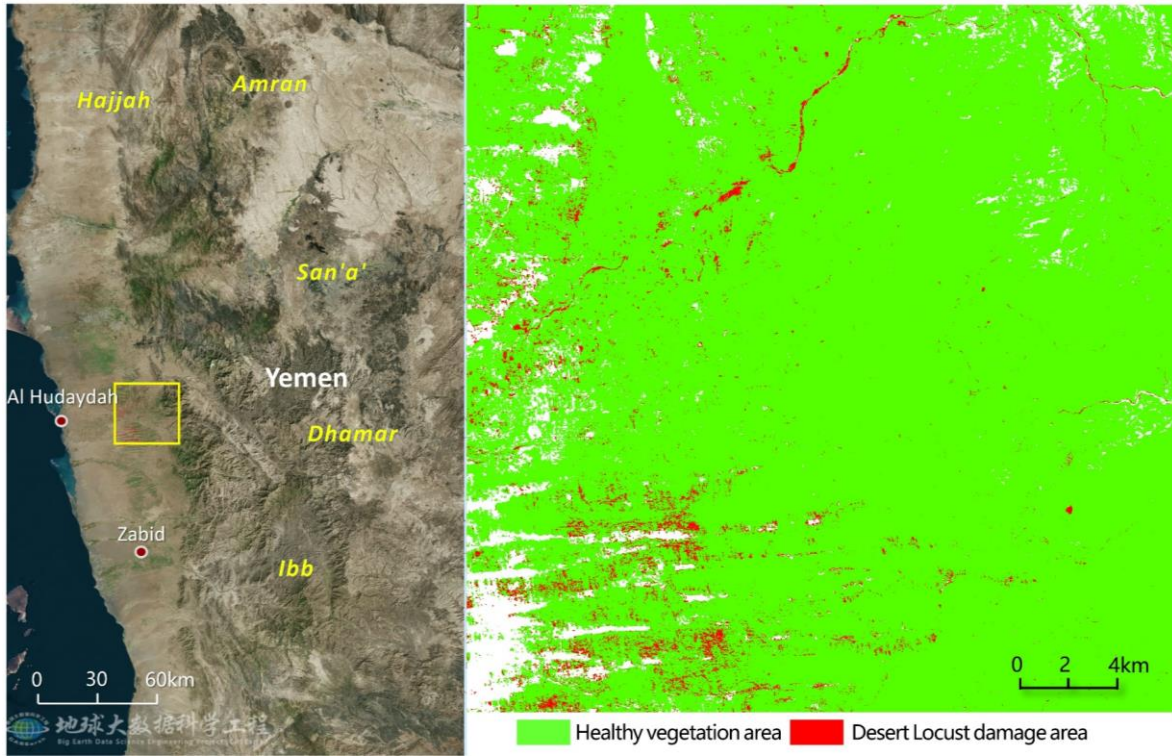


Fig. 2 Monitoring of Desert Locust damage in the key damage area of Yemen based on Sentinel-2 images (September 2022)

This report was released by Professor Wenjiang Huang's and Associate Professor Yingying Dong's research team in Aerospace Information Research Institute, Chinese Academy of Sciences.

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