



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

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## Desert Locust Monitoring and Loss Assessment in Yemen (December, 2022)

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 December 2022, the desert locusts were mainly distributed on the west coast of the Red Sea in western Yemen. The total damaged vegetation area in Yemen was 59.2 thousand hectares. It is expected that in the next three months, the rainfall in western Yemen will decrease, which is unfavorable for the survival and reproduction of the desert locust. The number of locusts in western Yemen will decrease slightly. The important planting season for crops in Yemen will begin in March 2023. It is necessary to continue to pay attention to the dynamics of the desert locust disaster in Yemen to prevent losses to its agricultural and pasture production. The specific research results are as follows.

In December 2022, there was sufficient vegetation in western Yemen, which was favorable for the survival and reproduction of the desert locust, and the number of locusts increased slightly. The monitoring results showed that in December, the total damaged vegetation area was 59.2 thousand hectares, including 9.9 thousand hectares of grassland, and 49.3 thousand hectares of shrub (Figure 1), accounting for 3.44% and 1.23% of the total area of grassland and shrub in Yemen, respectively. Compared with November 2022, the

newly damaged vegetation area in Yemen was 34.9 thousand hectares, including 4.7 thousand hectares of grassland, and 30.2 thousand hectares of shrub. Al-Hudaydah province had the largest damaged area of 50.0 thousand hectares. Then, the affected area of Raimah was 4.6 thousand hectares, and the affected area of Ibb, Ta'izz and Dhamār were 2.5, 1.5 and 0.6 thousand hectares, respectively.

This study also used Sentinel-2 satellite remote sensing data to monitor the desert locust damage in the severely affected areas in Western Yemen (Figure 2). The study area is in southern Al Hudaydah, 13.8 kilometers from Zabid in the northwest and 20.0 kilometers from Maqbanah in the south. The vegetation types include grassland and shrub, with a total area of 49.18 thousand hectares. The monitoring results showed that the damaged area of vegetation was 9.03 thousand hectares, accounting for 18.4 % of the total study area. Among them, the damaged area of grassland was 1.06 thousand hectares, and shrub was 7.97 thousand hectares, accounting for 20.8% and 18.1 % of the total area of grassland and shrub in the study area, respectively.

The comprehensive analysis shows that, in the next three months, rainfall will decrease along the Red Sea coast of western Yemen, for which the condition is not conducive to the survival and reproduction of desert locusts, resulting in a decrease in the number of locusts. However, it is necessary to continue to pay attention to the dynamics of the desert locust disaster in Yemen to prevent the locusts from affecting crop planting in the coming March.

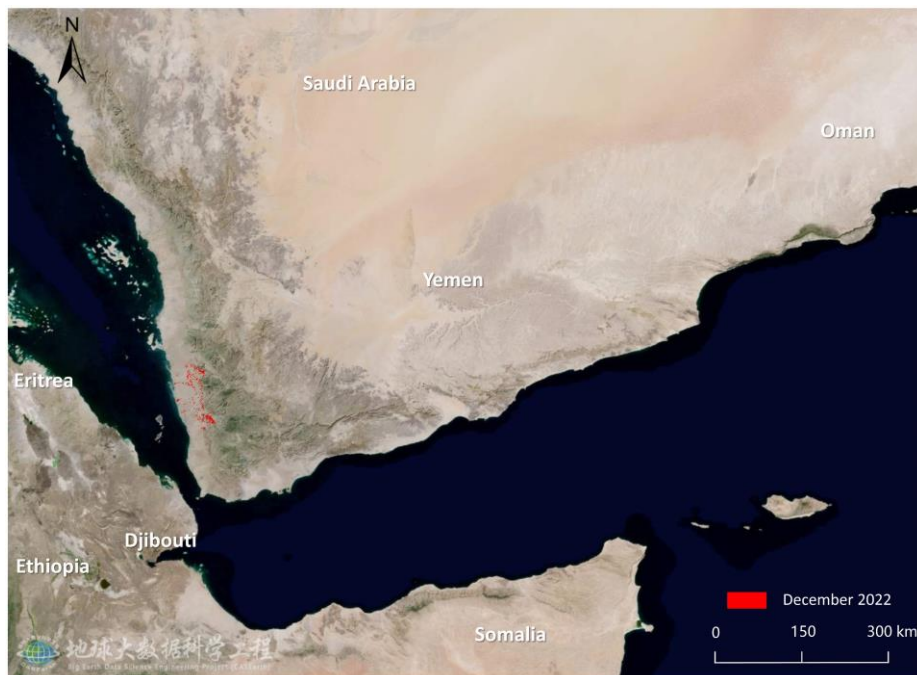


Fig. 1 Monitoring of Desert Locust damage in Yemen (December 2022)

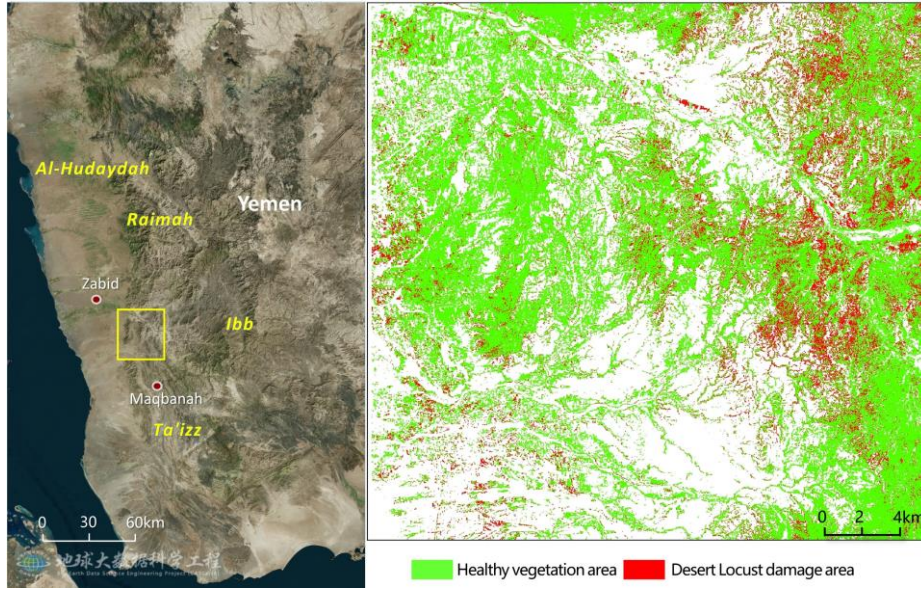


Fig. 2 Monitoring of Desert Locust damage in the key damage area of Yemen based on Sentinel-2 images (December 2022)

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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