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

Aerospace Information Research Institute, Chinese Academy of Sciences
Big Earth Data Science Engineering Project (CASEarth)
Key laboratory of Digital Earth Science, Chinese Academy of Sciences
National Engineering Research Center for Agro-Ecological Big Data Analysis & Application
State Key Laboratory of Remote Sensing Science
China Biodiversity Conservation and Green Development Foundation
Sino-UK Crop Pest and Disease Forecasting & Management Joint Laboratory
Key Lab of Aviation Plant Protection, Ministry of Agriculture and Rural Affairs, P.R. China

Desert Locust Monitoring and Loss Assessment in Saudi Arabia

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as MODIS in the US, etc), 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 dynamic updates of desert locust monitoring and loss assessment in Somalia and Saudi Arabia. The remote sensing monitoring results showed that, in October 2023, desert locusts were mainly distributed in northwestern Somalia, affecting vegetation areas of 10.9 thousand hectares. In November 2023, desert locusts were mainly distributed in the northwestern regions and along the northern coast of the Gulf of Aden in Somalia, impacting vegetation areas of 13.2 thousand hectares; and desert locusts were also mainly distributed along the southwestern coast of the Red Sea in Saudi Arabia, causing vegetation damage to 13.9 thousand hectares. It is expected that in the next two months, abundant rainfall is anticipated along the coasts of the Gulf of Aden in Somalia and the Red Sea in Saudi Arabia, creating favorable conditions for the survival and reproduction of desert locusts. Additionally, inland locust swarms are expected to migrate to coastal areas. As a result, the insect population along the Gulf of Aden in Somalia and the Red Sea coast of Saudi Arabia is expected to increase. This period is the main growing season for crops in Somalia, as well as the main growing and harvesting seasons for crops in Saudi Arabia. It is still necessary to pay continuous attention to the dynamics of the desert locust disaster to prevent losses to agricultural and pasture production. The specific research results are as

follows.

■ **1. Desert Locust Monitoring and Loss Assessment in Somalia**

In October 2023, desert locusts in Somalia were primarily concentrated in the northwest region, where there was a decrease in precipitation. This is unfavorable for the survival and reproduction of desert locusts, resulting in a slight reduction in the locust population. The monitoring results showed that in October, the total damaged vegetation area was 10.9 thousand hectares in Somalia, including 1.9 thousand hectares of grassland and 9.0 thousand hectares of shrub (Figure 1), accounting for 0.07‰ and 0.04‰ of the total area of the grassland and shrub, respectively. Togdheer had the largest area of vegetation affected, with 10.0 thousand hectares. Followed by North-West, with 0.9 thousand hectares of vegetation affected.
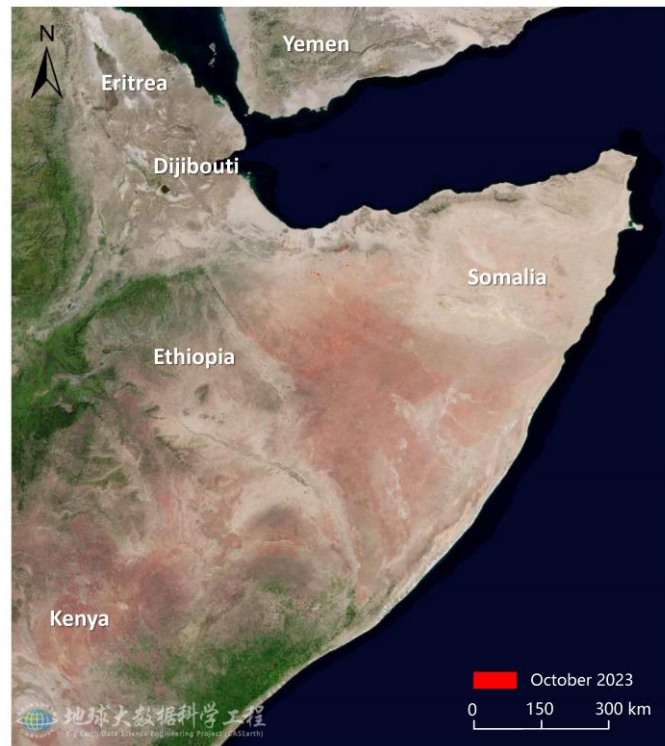
Fig.1 Monitoring of Desert Locust damage in Somalia (October 2023)

In November 2023, the northwest region and the northern coast along the Gulf of Aden in Somalia experienced abundant rainfall, leading to robust vegetation growth. These conditions were conducive to the laying of eggs and reproduction of desert locusts, resulting in an increase in the locust population in that area. The monitoring results showed that in November, the total damaged vegetation area was 13.2 thousand hectares in Somalia, including 2.7 thousand hectares of grassland and 10.5 thousand hectares of shrub (Figure 2), accounting for 0.01% and 0.05% of the total area of the grassland and shrub, respectively. Compared with October 2023, the newly damaged vegetation area in Somalia was 2.3 thousand hectares, including 0.8 thousand hectares of grassland and 1.5 thousand hectares of shrubs. Sanaag had the largest area of vegetation affected, with 8.2 thousand hectares. Followed by Togdheer, with 4.5 thousand hectares of vegetation affected. The affected areas

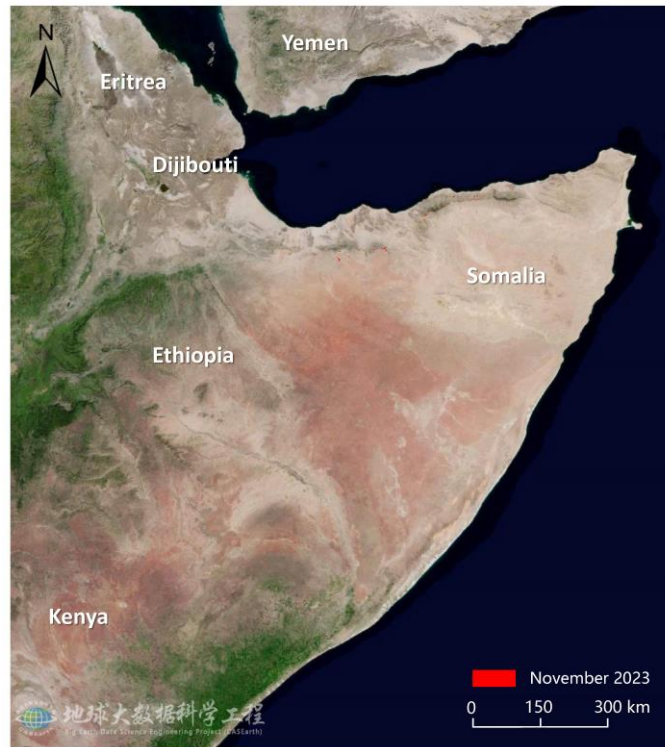of vegetation in North-West was 0.5 thousand hectares.

Fig.2 Monitoring of Desert Locust damage in Somalia (November 2023)

■ **2. Desert Locust Monitoring and Loss Assessment in Saudi Arabia**

In November 2023, the southwestern coastal areas along the Red Sea in Saudi Arabia experienced abundant rainfall, leading to robust vegetation growth. These conditions provided favorable circumstances for the laying of eggs and reproduction of desert locusts, further contributing to an increase in the locust population in that region. The monitoring results showed that in November, the total damaged vegetation area was 13.9 thousand hectares in Saudi Arabia, including 2.3 thousand hectares of cropland, 4.1 thousand hectares of grassland, and 7.5 thousand hectares of shrub (Figure 3), accounting for 1.05%, 0.21%, and 0.18% of the total area of the cropland, grassland, and shrub, respectively. Compared with October 2023, the newly damaged vegetation area in Saudi Arabia was 2.4 thousand hectares, including 0.8 thousand hectares of cropland, 0.6 thousand hectares of grassland, and 1.0 thousand hectares of shrubs. Jizan had the largest area of vegetation affected, with 9.5 thousand hectares. Followed by Makkah, with 2.7 thousand hectares of vegetation affected. The affected areas of vegetation in Asīr and Al Bāhah provinces were 1.1 and 0.6 thousand hectares, respectively.
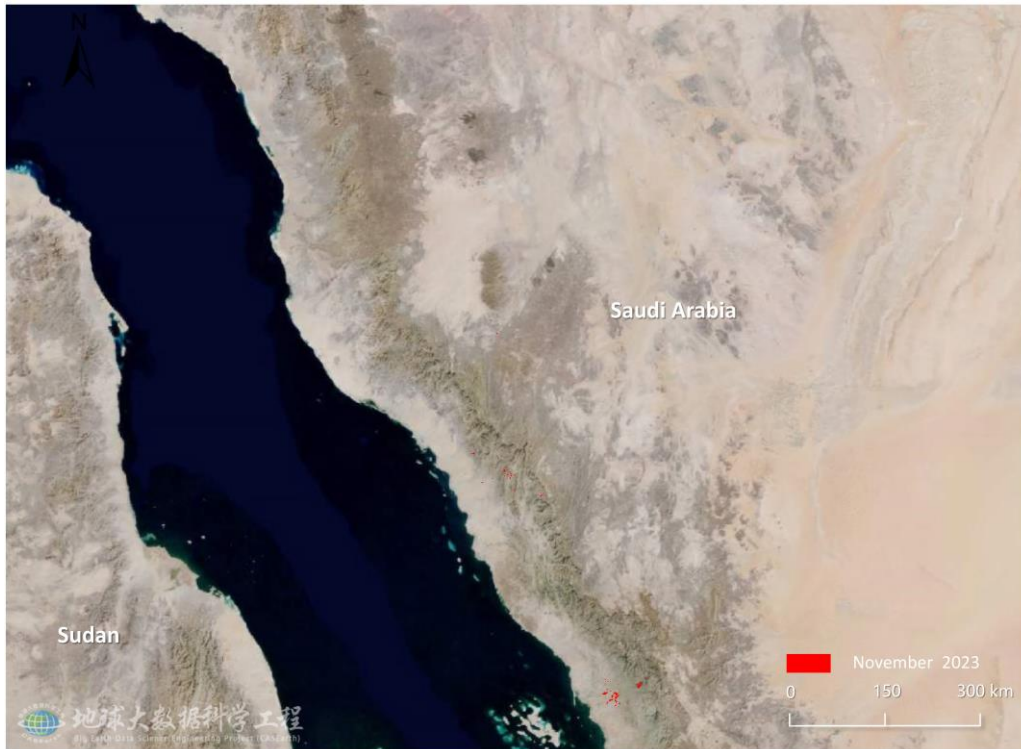
Fig.3 Monitoring of Desert Locust damage in Saudi Arabia (November 2023)

The comprehensive analysis shows that, in the next two months, abundant rainfall is anticipated along the coasts of the Gulf of Aden in Somalia and the Red Sea in Saudi Arabia, creating favorable conditions for the survival and reproduction of desert locusts. Additionally, inland locust swarms are expected to migrate to coastal areas. As a result, the insect population along the Gulf of Aden in Somalia and the Red Sea coast of Saudi Arabia is expected to increase. It is still necessary to continue to pay attention to the dynamics of the desert locust disaster in Somalia and Saudi Arabia to prevent repeated losses to agricultural and pasture production.

Contact Us

Tel: +86-010-82178178   Fax: 010-82178177   Email: rscrop@aircas.ac.cn

Address: No.9 Dengzhuang South Road, Haidian District, Beijing 100094, China

Websites: http://www.rscrop.com / http://desertlocust.rscrop.com   Post Code: 100094