Report of Monitoring, Early Warning and Assessment of Desert Locust

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Desert Locust Monitoring and Loss Assessment in Eritrea, Saudi Arabia and Yemen (June 2024)

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.

The remote sensing monitoring results showed that, in June 2024, desert locusts were primarily found in the western region of Eritrea, the northern inland and western coastal areas of the Red Sea in Saudi Arabia, and the western region of Yemen. These areas experienced significant threats to vegetation, impacting 10.1 thousand hectares, 14.4 thousand hectares, and 29.8 thousand hectares, respectively. It is anticipated that, over the next two months, increased cyclone activity will bring abundant rainfall in western Eritrea and Yemen. This will create favorable conditions for desert locusts to lay eggs and reproduce, leading to an increase in their numbers. Meanwhile, locusts within Saudi Arabia are expected to migrate southward to the inland areas of Yemen, resulting in a decrease in the locust population within Saudi Arabia. This period is the main growing season for cereal crops in Yemen and the main planting and growing season for cereal crops in Eritrea and Saudi Arabia. Continuous monitoring of the desert locust dynamics is essential to prevent recurrent losses in agricultural and pasture production. The specific research results are as follows.

■ 1. Desert Locust Monitoring and Loss Assessment in Eritrea

In June 2024, desert locusts were primarily found in the western inland regions of Eritrea,

where abundant rainfall fostered robust vegetation growth. These favorable conditions facilitated the egg-laying and reproduction of desert locusts, leading to a further increase in their population. The monitoring results showed that in June, the total damaged vegetation area in Eritrea was 10.1 thousand hectares, including 4.6 thousand hectares of grassland and 5.5 thousand hectares of shrub (Figure 1), accounting for 0.09% and 0.42% of the total area of grassland and shrub, respectively. Gash Barka experienced the most extensive impact, with 7.7 thousand hectares of vegetation affected, followed by Anseba, with 1.4 thousand hectares. Additionally, Semien Keih Bahri had 1.0 thousand hectares affected.

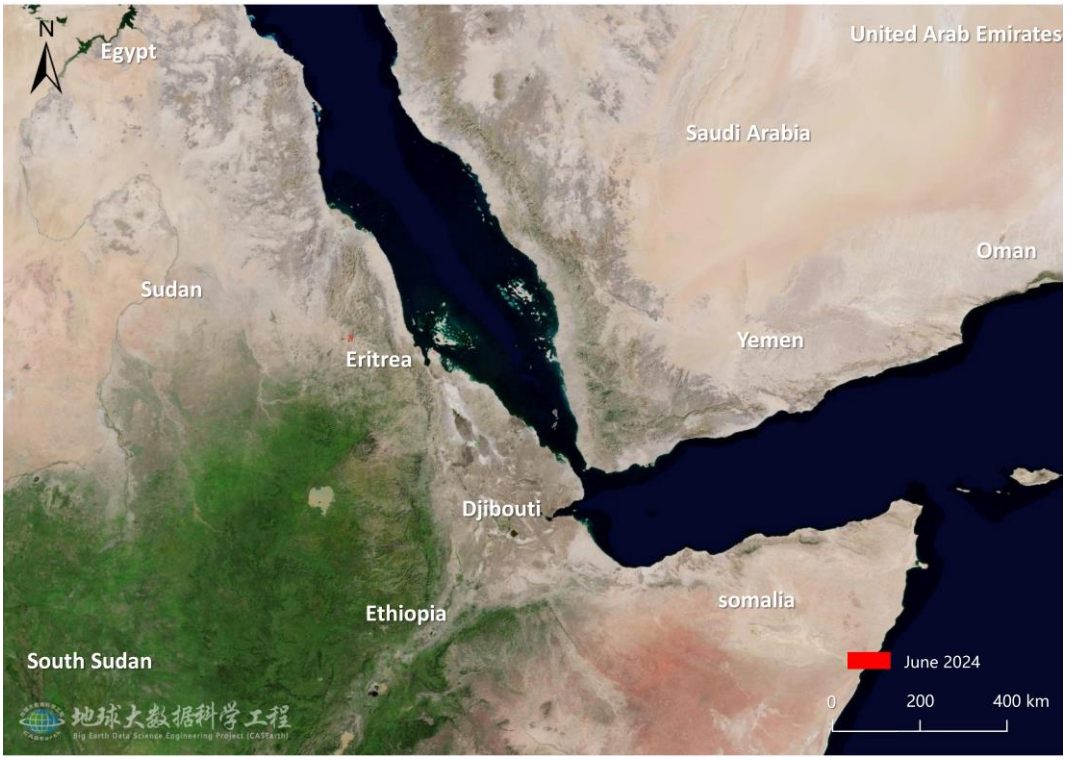

Fig.1 Monitoring of Desert Locust damage in Eritrea (June 2024)

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

In June 2024, Saudi Arabia experienced minimal rainfall, creating unfavorable conditions for desert locust oviposition and reproduction. This，Combined with the effects of control actions, led to a decline in the desert locust population in the region. The monitoring results showed that in June, the total damaged vegetation area was 14.4 thousand hectares in Saudi Arabia, including 1.9 thousand hectares of cropland, 5.4 thousand hectares of grassland, and 7.1 thousand hectares of shrub (Figure 2), accounting for 0.86%, 0.27%, and 0.17% of the total area of cropland, grassland, and shrub, respectively. Ha'il experienced the most extensive impacts, with 8.5 thousand hectares of vegetation affected, followed by Jizan, with 3.6 thousand hectares. Additionally, Makkah and Asīr had 1.3 thousand hectares and 1.0 thousand hectares affected, respectively.

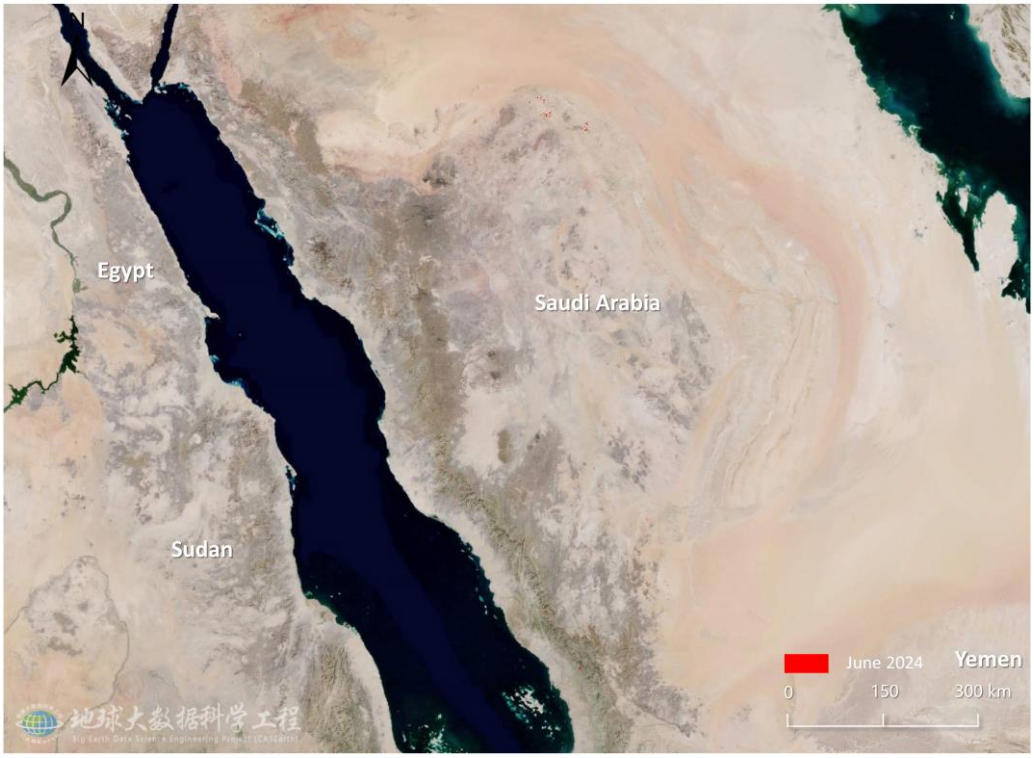

Fig.2 Monitoring of Desert Locust damage in Saudi Arabia (June 2024)

■ 3. Desert Locust Monitoring and Loss Assessment in Yemen

In June 2024, desert locusts were primarily distributed in the western coastal and inland regions of the Red Sea in Yemen, where abundant rainfall and favorable vegetation growth provided conducive conditions for locust oviposition and reproduction. The monitoring results showed that in June, the total damaged vegetation area was 29.8 thousand hectares in Yemen, including 5.3 thousand hectares of cropland, 7.1 thousand hectares of grassland, and 17.4 thousand hectares of shrub (Figure 3), accounting for 1.07%, 0.18%, and 0.32% of the total area of cropland, grassland, and shrub, respectively. Al Hudaydah experienced the most significant impact, with 9.4 thousand hectares of vegetation affected, followed by San'ā, with 9.0 thousand hectares. Additionally, the affected areas in Al-Mahrah, Ta'izz, Hadramawt, and Hajjah were 4.1 thousand hectares, 3.7 thousand hectares, 2.1 thousand hectares, and 1.5 thousand hectares, respectively.

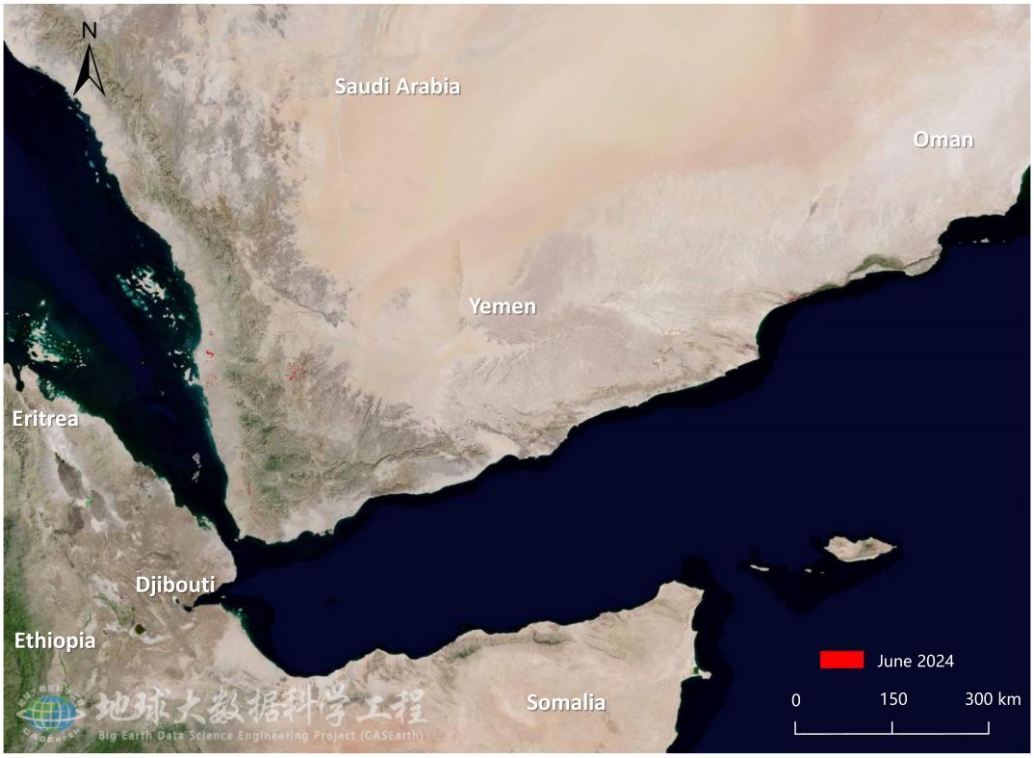

Fig.3 Monitoring of Desert Locust damage in Yemen (June 2024)

The comprehensive analysis shows that, in the next two months, increased cyclone activity will lead to abundant rainfall in western Eritrea and Yemen, creating favorable conditions for desert locusts to lay eggs and reproduce, resulting in an increase in their numbers. Meanwhile, locusts within Saudi Arabia are projected to migrate southward to the inland areas of Yemen, causing a decrease in the locust population within Saudi Arabia. This period is the main growing season for cereal crops in Yemen and the main planting and growing season for cereal crops in Eritrea and Saudi Arabia. Continuous monitoring of the desert locust dynamics in Eritrea, Saudi Arabia and Yemen is essential to prevent repeated losses in agricultural and pasture production.

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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