



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 (December 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 December 2024, desert locusts were primarily distributed along the central Red Sea coastal and northern inland areas of Eritrea, the southern Red Sea coastal areas of Saudi Arabia, and the Red Sea, Gulf of Aden coastal areas, and western inland regions of Yemen. These areas experienced significant threats to vegetation, impacting 20.5 thousand hectares, 22.8 thousand hectares, and 31.0 thousand hectares, respectively. It is anticipated that, over the next two months, locust numbers in the central Red Sea coastal areas of Eritrea will continue to increase due to the migration of locusts from Sudan and abundant rainfall in the region. Additionally, increased rainfall in the Gulf of Aden and Red Sea coastal areas will promote robust vegetation growth, creating favorable conditions for desert locust survival and reproduction. Locusts in Saudi Arabia and Yemen are expected to migrate toward the coastal areas and carry out small-scale winter breeding, leading to further increases in locust numbers. This period marks the main growing and harvest seasons for food crops in Saudi Arabia. Therefore, continuous monitoring of desert locust dynamics is essential to prevent recurrent losses in agricultural and pastoral production. The specific results are as follows.

1. Desert Locust Monitoring and Loss Assessment in Eritrea

In December 2024, Eritrea experienced abundant rainfall and robust vegetation growth. Combined with the migration of desert locusts from inland Sudan, the locust population within Eritrea continued to increase, primarily distributed along the central Red Sea coastal and northern inland areas. Monitoring results showed that desert locusts affected 20.5 thousand hectares of vegetation in December, including 5.6 thousand hectares of farmland, 7.1 thousand hectares of grassland, and 7.8 thousand hectares of shrubland (Figure 1), accounting for 1.28%, 0.15%, and 0.59% of the total areas of farmland, grassland, and shrubland, respectively. Compared to November, the affected vegetation area increased by 3.7 thousand hectares, including an additional 1.3 thousand hectares of farmland, 1.3 thousand hectares of grassland, and 1.1 thousand hectares of shrubland. The Semien Keih Bahri region experienced the most extensive damage, with 10.2 thousand hectares affected, followed by the Dehub region with 6.4 thousand hectares. The Anseba and Gash-Barka regions were also impacted, with 2.7 thousand hectares and 1.2 thousand hectares of vegetation affected, respectively.

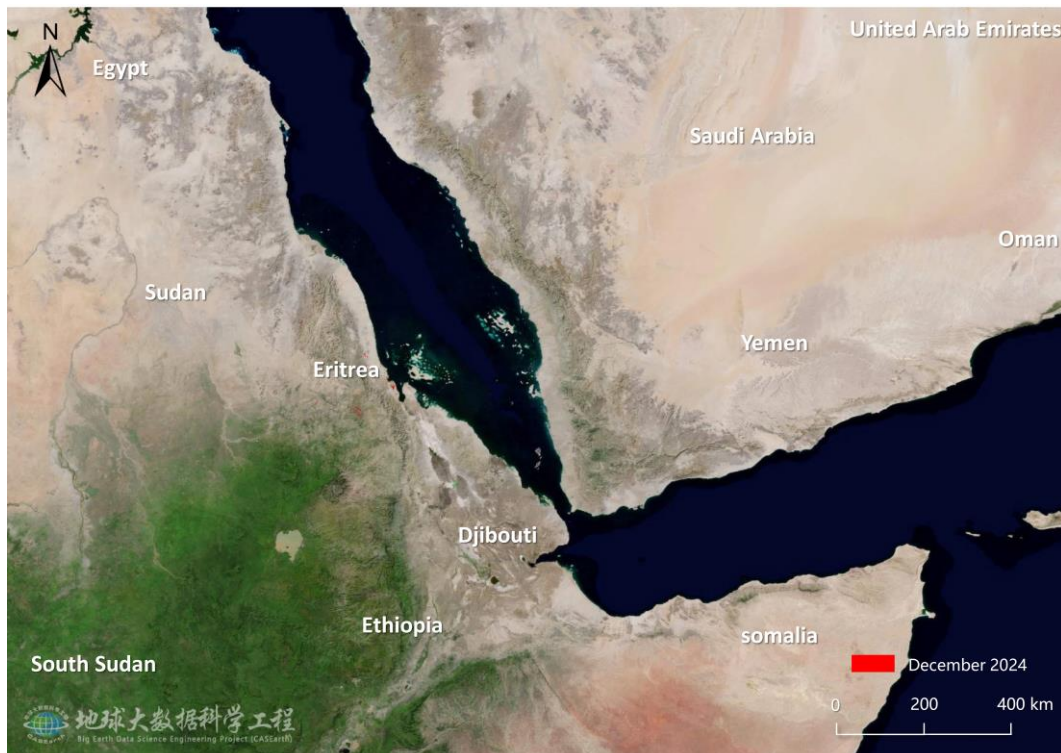


Fig.1 Monitoring of Desert Locust damage in Eritrea (December 2024)

2. Desert Locust Monitoring and Loss Assessment in Saudi Arabia

In December 2024, the southern Red Sea coastal areas of Saudi Arabia experienced abundant rainfall, creating favorable conditions for desert locust egg-laying and reproduction, which led to an increase in locust numbers. Monitoring results indicated that desert locusts affected 22.8 thousand hectares of vegetation in December, including 5.4 thousand hectares of farmland, 6.8 thousand hectares of grassland, and 10.6 thousand hectares of shrubland (Figure 2), accounting for 2.46%, 0.34%, and 0.26% of the total areas of farmland, grassland,

and shrubland, respectively. Compared to November, the affected vegetation area increased by 3.7 thousand hectares, including an additional 1.2 thousand hectares of farmland, 1.1 thousand hectares of grassland, and 1.4 thousand hectares of shrubland. The Makkah region experienced the most extensive damage, with 10.7 thousand hectares affected, followed by the Jizan region, with 6.3 thousand hectares. The Al Bahah and Asir regions were also impacted, with 4.0 thousand hectares and 1.8 thousand hectares of vegetation affected, respectively.

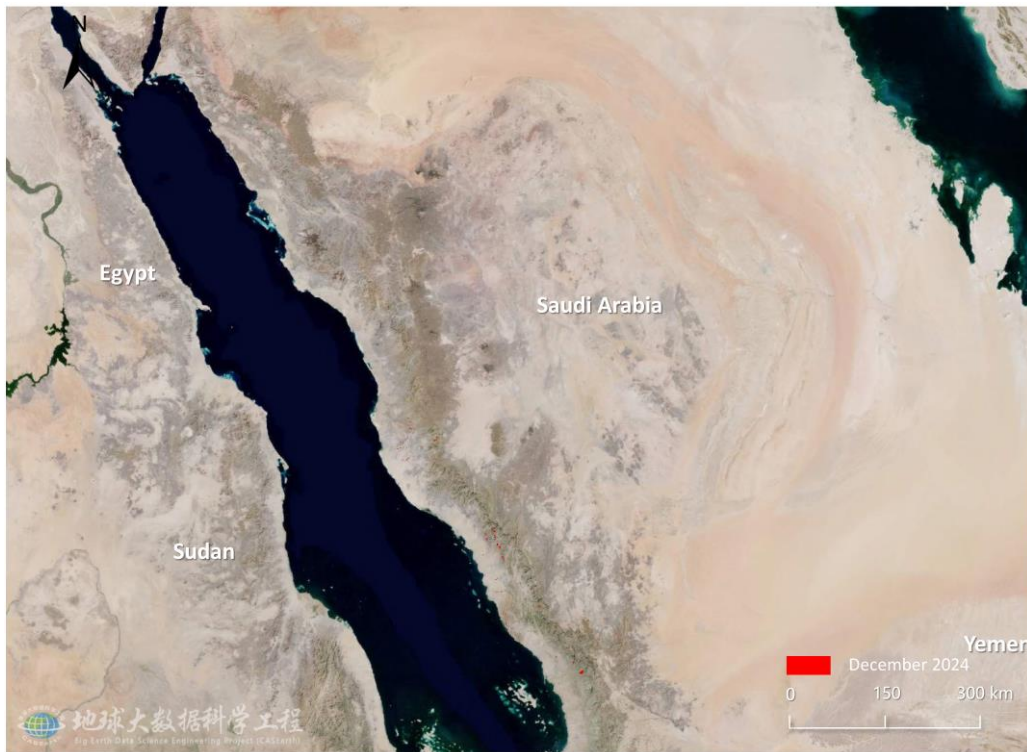


Fig.2 Monitoring of Desert Locust damage in Saudi Arabia (December 2024)

■ 3. Desert Locust Monitoring and Loss Assessment in Yemen

In December 2024, desert locusts in Yemen were primarily distributed along the Red Sea, Gulf of Aden coastal areas, and the western inland regions. These areas experienced abundant rainfall and robust vegetation growth, providing favorable conditions for locust egg-laying and reproduction. Monitoring results showed that desert locusts affected 31.0 thousand hectares of vegetation in December, including 6.2 thousand hectares of farmland, 9.2 thousand hectares of grassland, and 15.6 thousand hectares of shrubland (Figure 3), accounting for 1.26%, 0.24%, and 0.29% of the total areas of farmland, grassland, and shrubland, respectively. The Al Hudaydah governorate experienced the most extensive damage, with 8.1 thousand hectares affected, followed by the Abyan governorate, with 5.9 thousand hectares. The Ibb, Sana'a, Dhamar, and Taiz governorates were also affected, with 5.6 thousand hectares, 5.0 thousand hectares, 4.3 thousand hectares, and 2.1 thousand hectares of vegetation impacted, respectively.



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

The comprehensive analysis suggests that, in the next two months, locust numbers in the central Red Sea coastal areas of Eritrea will continue to increase due to the migration of locusts from Sudan and abundant rainfall in the region. Additionally, increased rainfall in the Gulf of Aden and Red Sea coastal areas will promote robust vegetation growth, creating favorable conditions for desert locust survival and reproduction. Locusts in Saudi Arabia and Yemen are expected to migrate toward the coastal areas and carry out small-scale winter breeding, leading to further increases in locust numbers. Continuous monitoring of desert locust dynamics in Eritrea, Saudi Arabia and Yemen is essential to prevent repeated losses in crop growth and agricultural production.

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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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