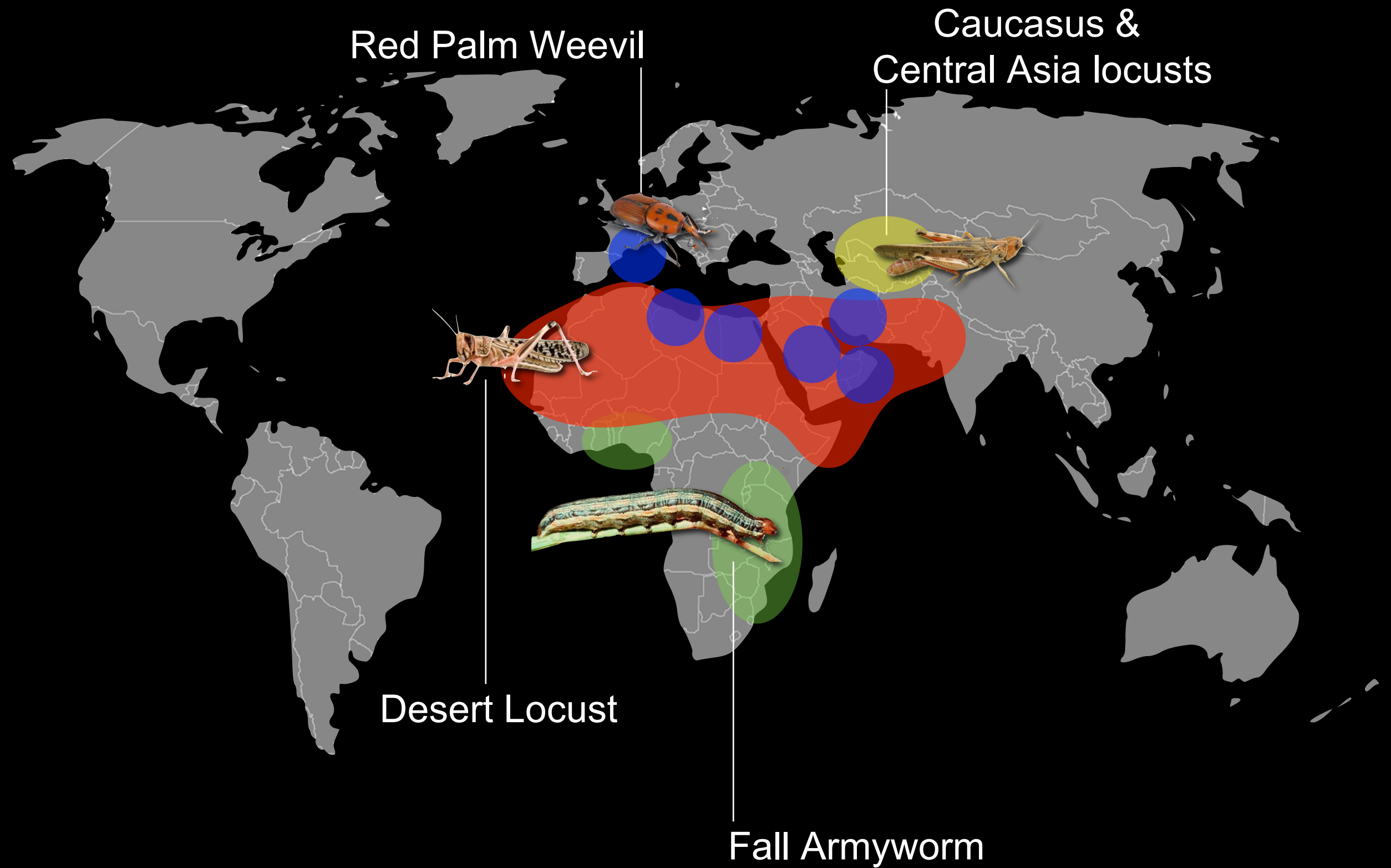


A close-up photograph of a desert locust, showing its head, antennae, and legs. The locust is holding a black smartphone in its mouth. The phone's screen is on, displaying a home screen with various app icons like Messages, Calendar, Photos, Camera, Weather, Clock, Maps, News, Videos, Notes, Reminders, Stocks, App Store, and Settings. The background is blurred, showing more locusts and green foliage.

Technical innovations in Global Desert Locust Early Warning



Keith Cressman



major transboundary pests

Early warning systems

75 years

in progress

emerging

Desert Locust (since 1943)

Caucasus & Central Asia (since 2010)

Red Palm Weevil (2017)

Fall Armyworm (2017)



a swarm of **Desert Locust**



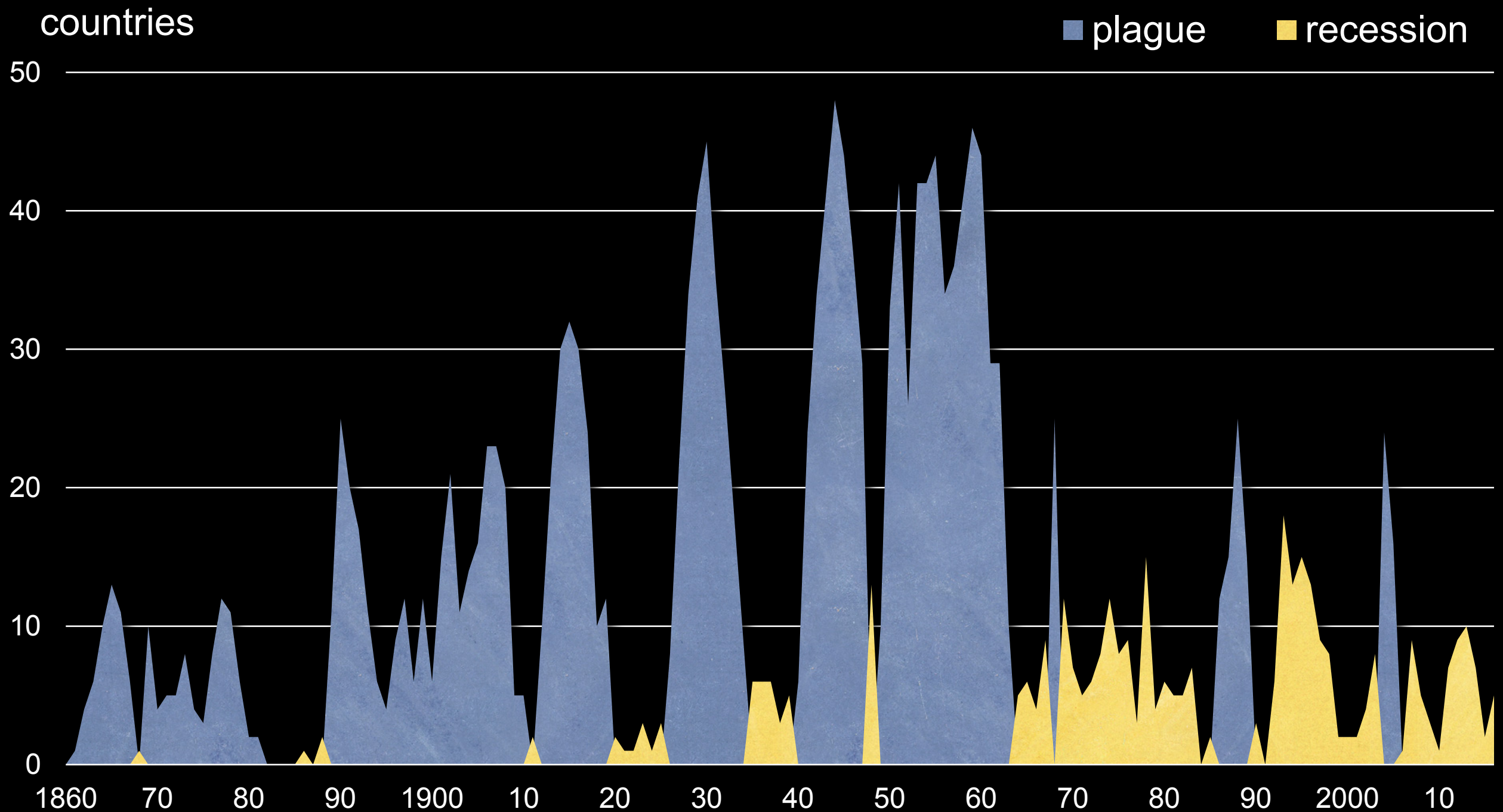
a swarm the size of **Vienna**
eats the same amount of food in **1 day**
as everyone in **Austria + Switzerland**

Desert Locust

Schistocerca gregaria



20% of the Earth's land surface



irregular recessions & plagues
(1860–2017)

\$ 570 MILLION

CONTROL OPERATIONS
(2003–2005)

\$ 3.3 MILLION

ANNUAL COST
PREVENTIVE CONTROL
(10 COUNTRIES W+NW AFRICA)

3 = 170

YEARS

CURATIVE

YEARS

PREVENTIVE

climate change impacts



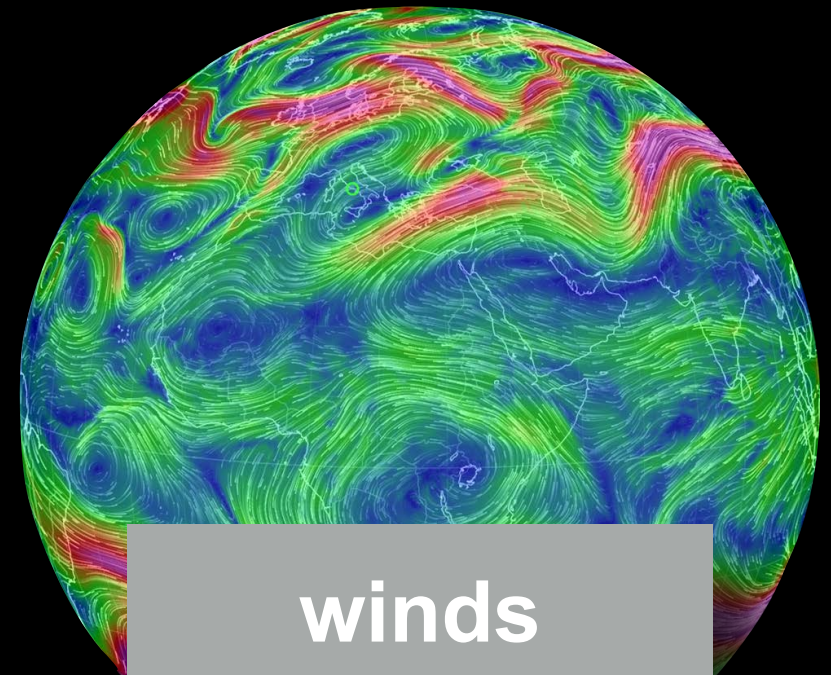
temperature
increase

★ more rapid
maturation



rainfall
unusual events

★ more frequent
outbreaks



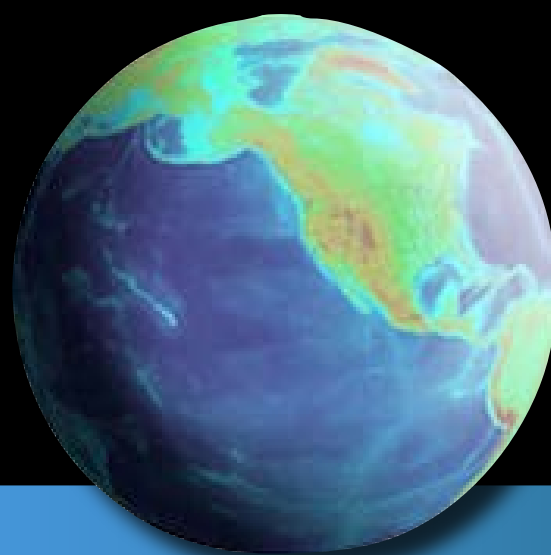
winds
shifting

★ new invasion
areas

more Desert Locusts !



1. collect



2. analyse

Food and Agriculture Organization of the United Nations *Helping to build a world without hunger*

Locust watch

Desert Locust

Google Custom Search Search

français

Information Mapper Activities Publications Archives

Desert Locust situation update 3 May 2017

Desert Locust situation remains calm but limited spring breeding may still occur

The Desert Locust situation is currently calm. Low numbers of solitary adults are present in **Mauritania, Morocco, Algeria, Egypt and Iran**. The situation continues to remain unclear in **Yemen** where surveys cannot be conducted.

During the forecast period, small-scale breeding could occur in parts of the interior in **Saudi Arabia** and **Yemen**, and in a few places in northeast **Morocco**, central **Algeria** and southeast **Iran**. Although this may cause locust numbers to increase slightly, they will remain below threatening levels and no significant developments are likely.

Regular surveys should be conducted throughout the spring to monitor the situation and prepare for the summer breeding period.

Latest Desert Locust Bulletin (No. 463, April 2017)
Arabic English Français

Previous Desert Locust Bulletin (No. 462, March 2017)
Arabic English Français

situation CALM

Current situation (click for larger view)

Current Desert Locust threat (click for larger view)

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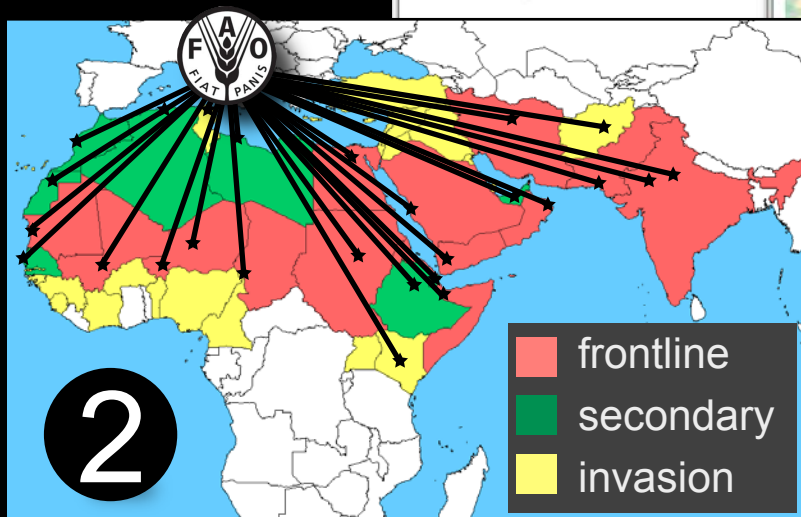
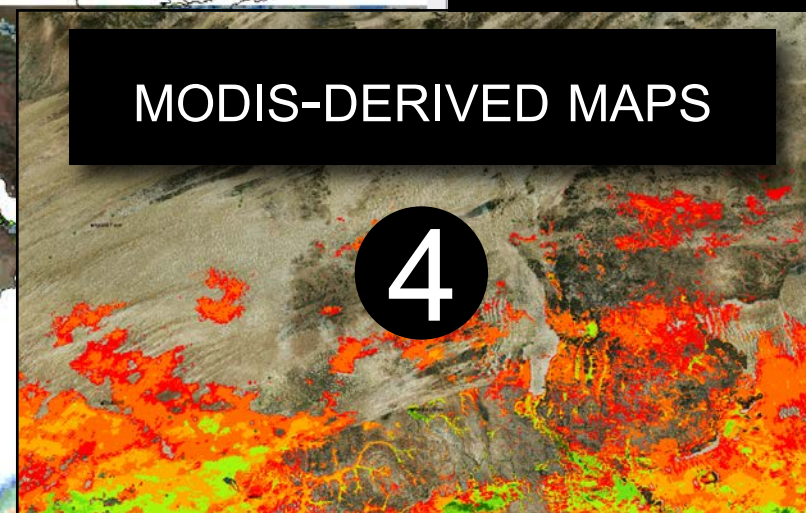
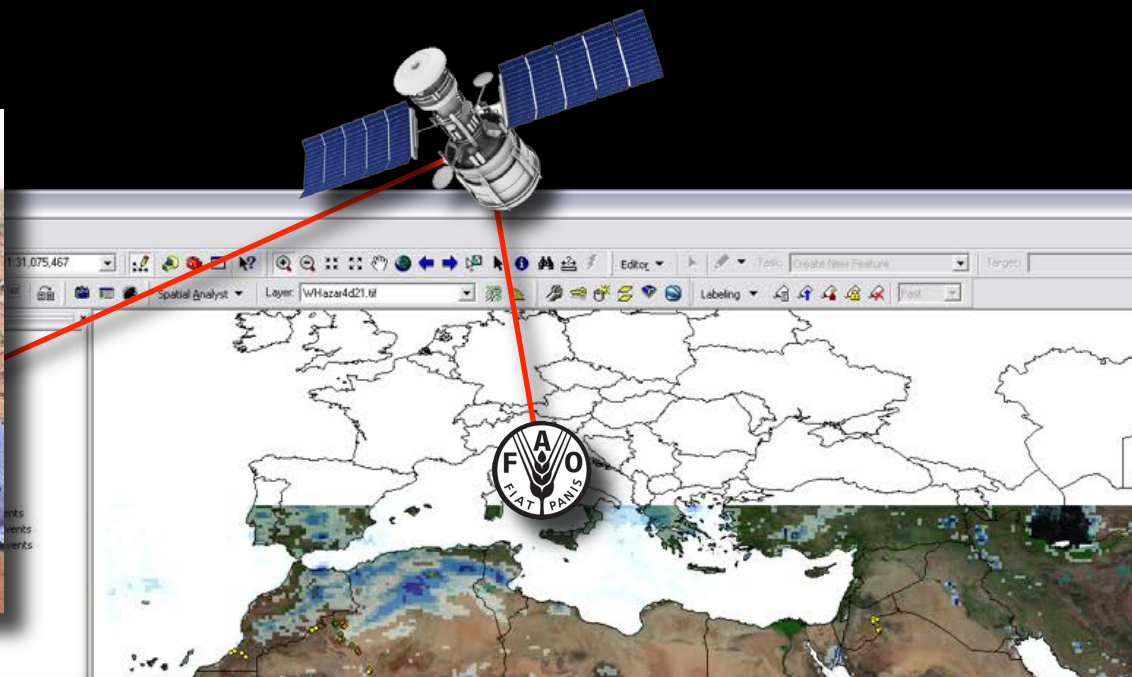
3. advise

information flow

FOR AREA-WIDE PEST MANAGEMENT

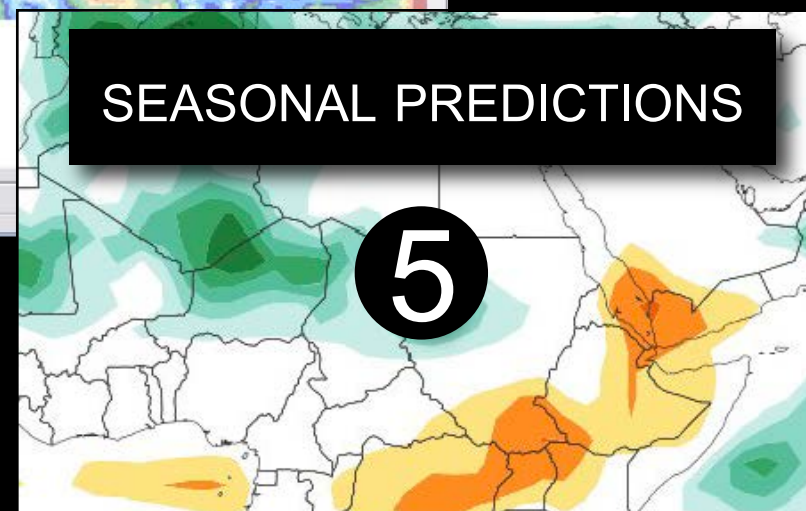
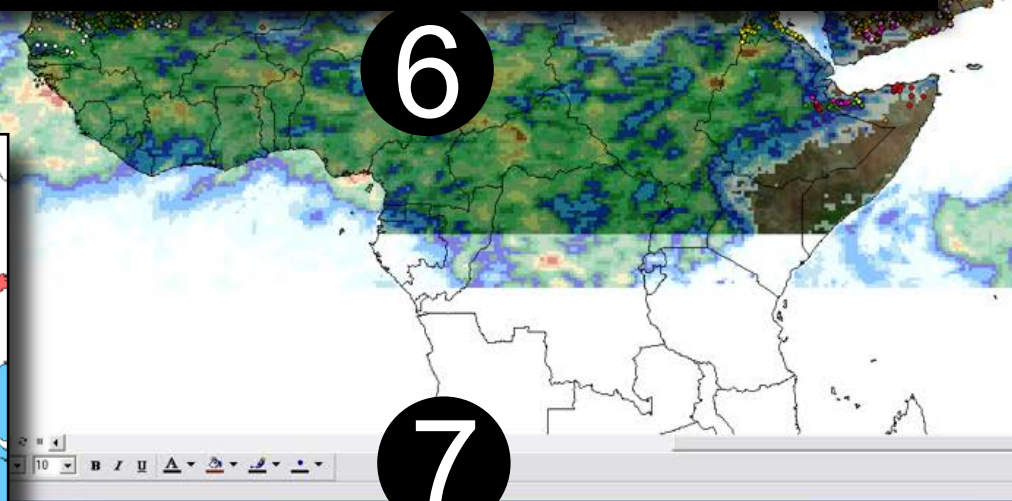


Desert Locust early warning system



data collection

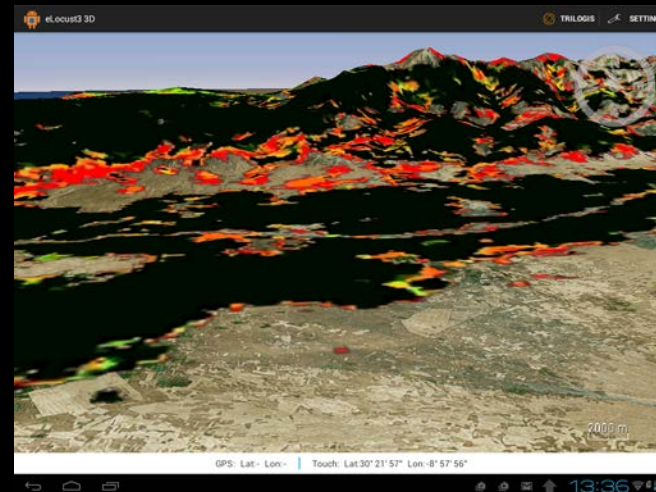
SWARMS geographic information system



advice (outputs)

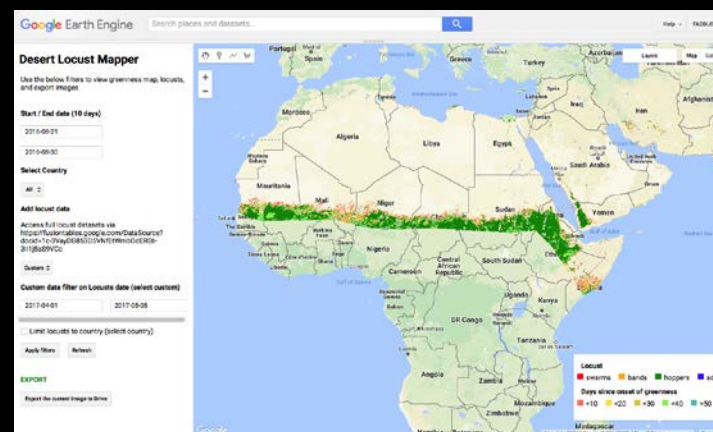
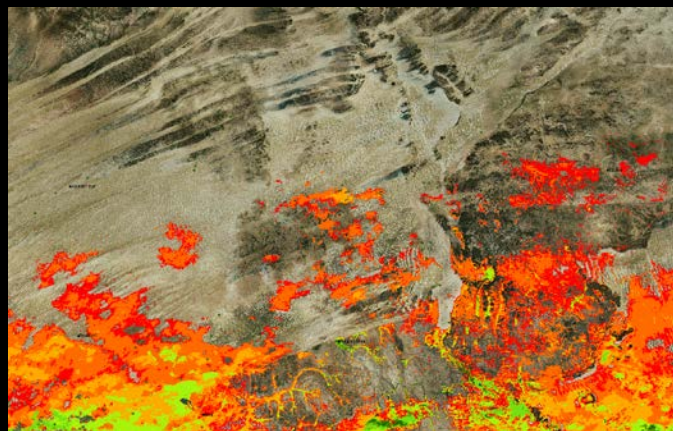
analysis

Innovations



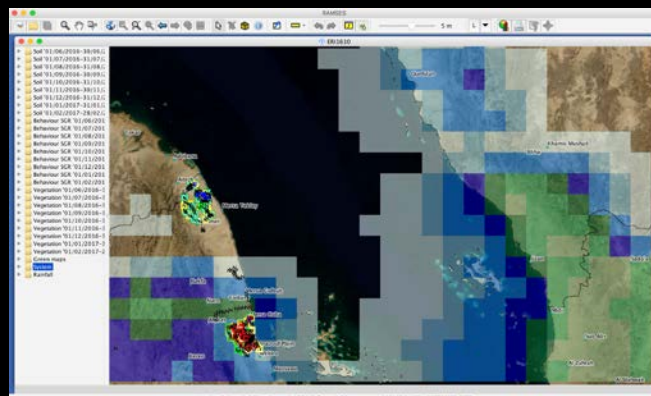
eLocust3

- handheld data logger
- data transmission by satellite
- navigate to vegetation without Internet



Dynamic greenness

- MODIS-derived
- on-demand delivery by GEE
- new: dryness & soil moisture



GIS analysis

- open-source
- use team communications to provide training & support

SUCCESSFUL

area-wide pest management

- ✓ meet & adapt to users' needs
- ✓ keep it simple but powerful
- ✓ issue clear & well-targeted outputs
- ✓ provide sufficient training & support
- ✓ give feedback & motivation
- ✓ develop partnerships & networks
- ✓ always innovate sensibly

always innovate . . .

transport



computing



telecommunications



remote sensing



data management





1

ID by
satellite

2

100km
survey

3

site
inspection

4

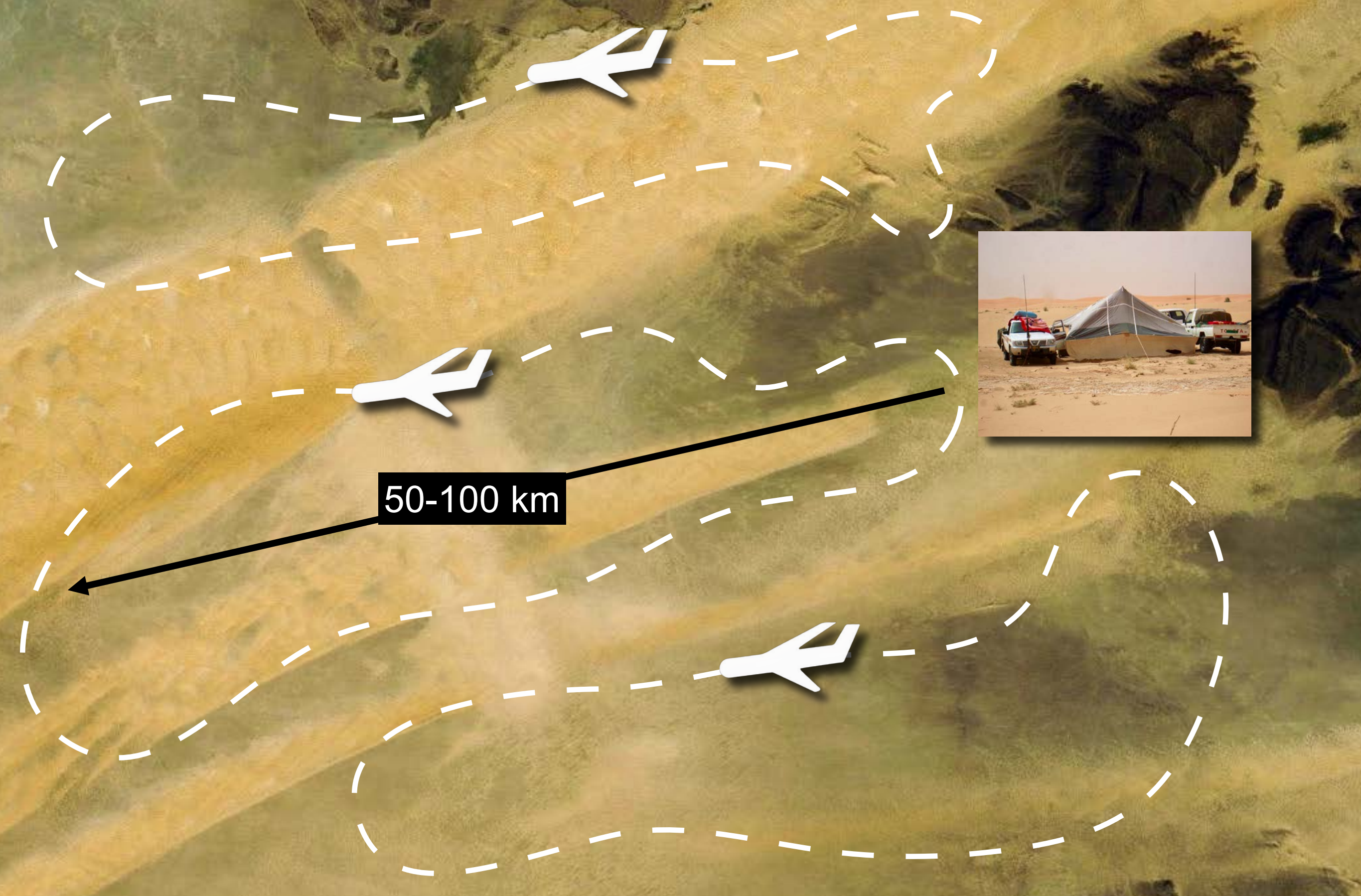
safe
control

D R O N E S

extensive survey



LONG-DISTANCE DRONE to find green areas within vast desert



ADDITIONAL EXTENSIVE SURVEYS from field base camp

intensive site inspection

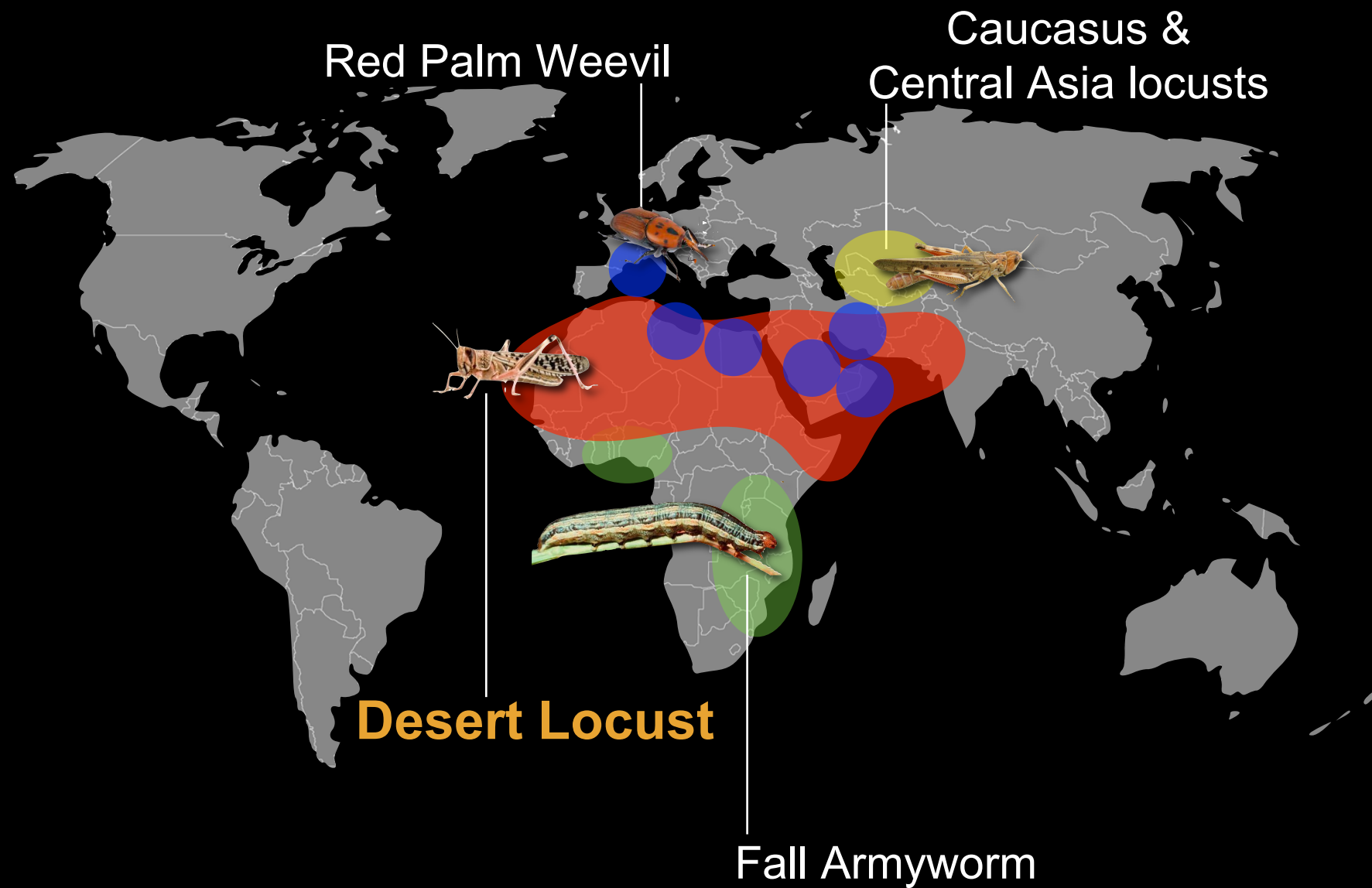


ROTARY DRONE surveys site for locust infestations

control



CONTROL DRONE sprays locust infestations



- **Learn from world's oldest** migratory pest early warning system
- **Appropriate innovation** can lead to success
- **Adapt & apply** to other area-wide pest management

A large, colorful locust, possibly a desert locust, is shown from a front-facing perspective. It has long, thin antennae and a segmented body with various colors including brown, orange, and white. A smartphone is placed on its back, held in place by its legs. The phone's screen is on, displaying a home screen with various app icons like Messages, Calendar, Photos, Camera, Weather, Clock, Maps, News, Videos, Notes, Reminders, Stocks, App Store, and Settings. The background is a blurred natural setting.

Technical innovations in Global Desert Locust Early Warning



Keith Cressman