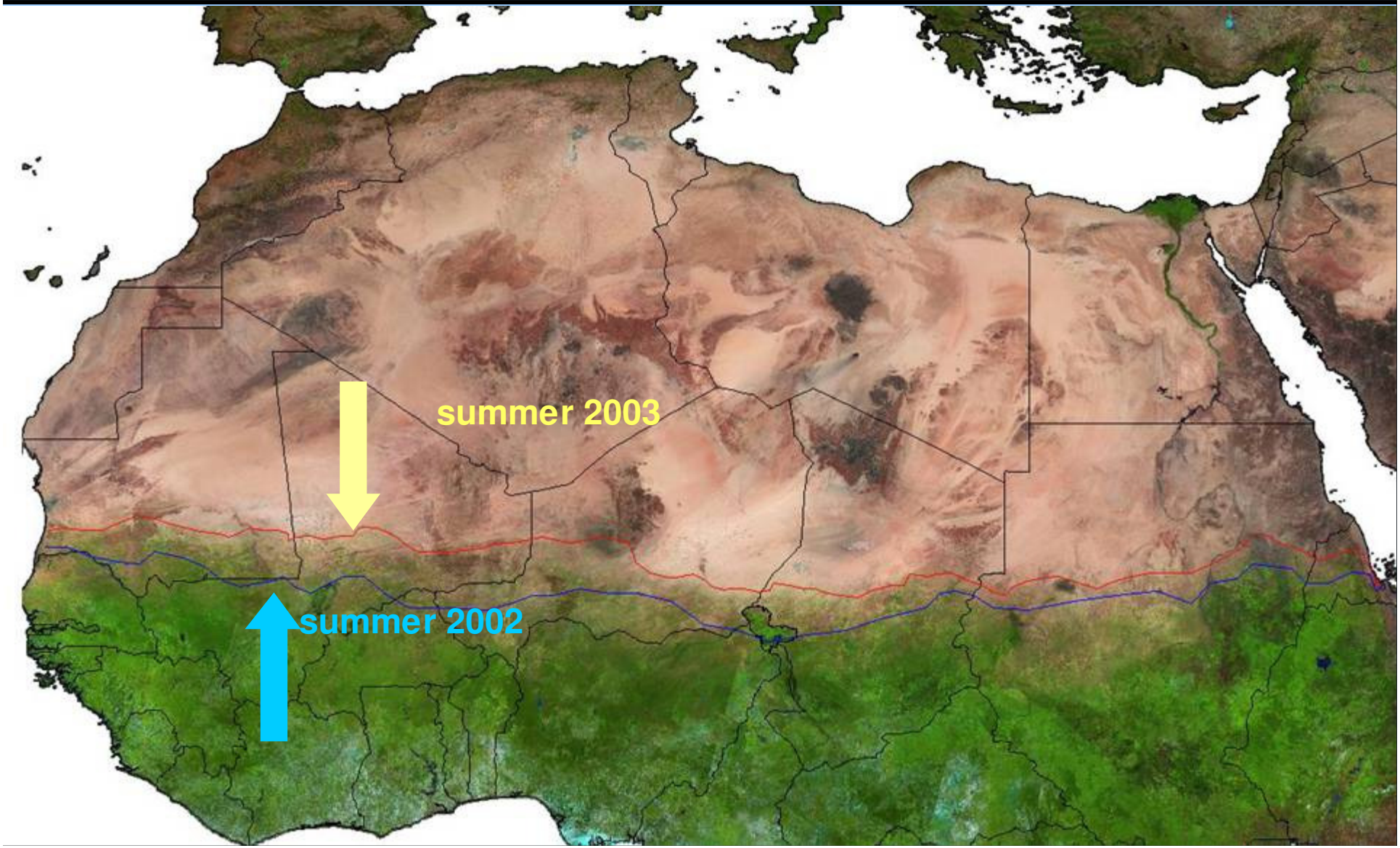
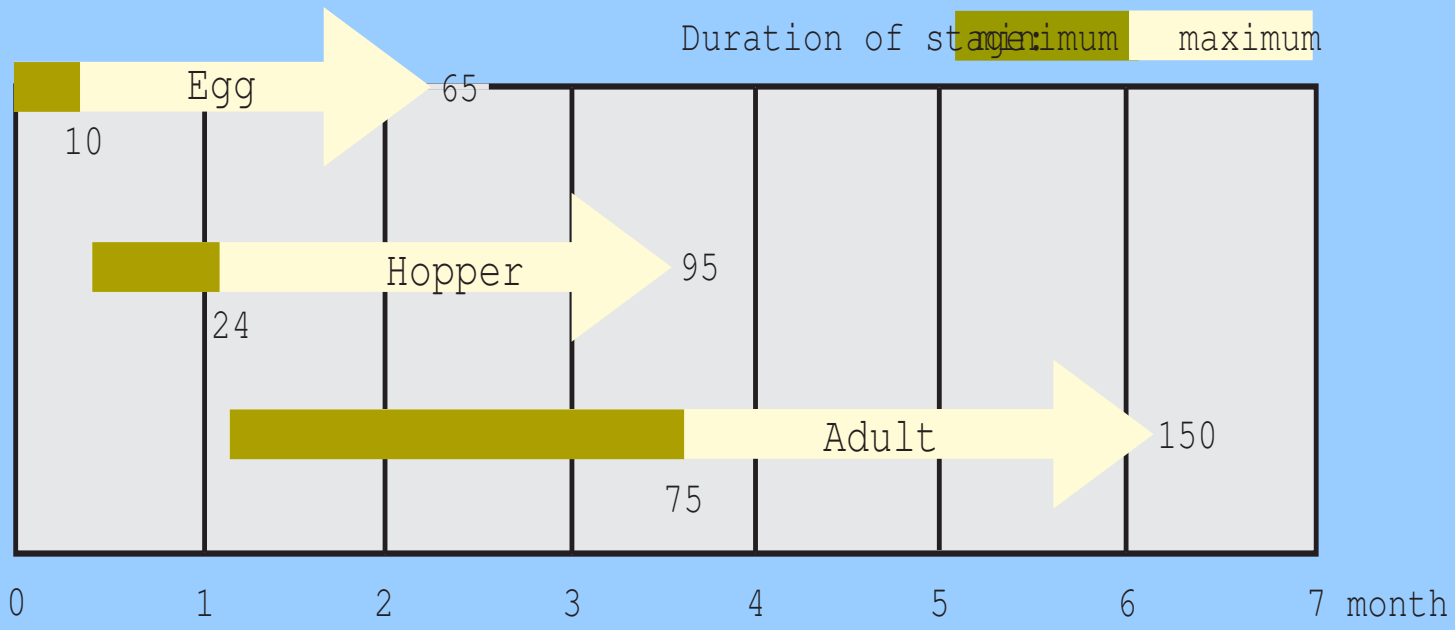
Locust plagues, climate change and control strategies

Rain and so vegetation vary between seasons changing locust habitats and their numbers

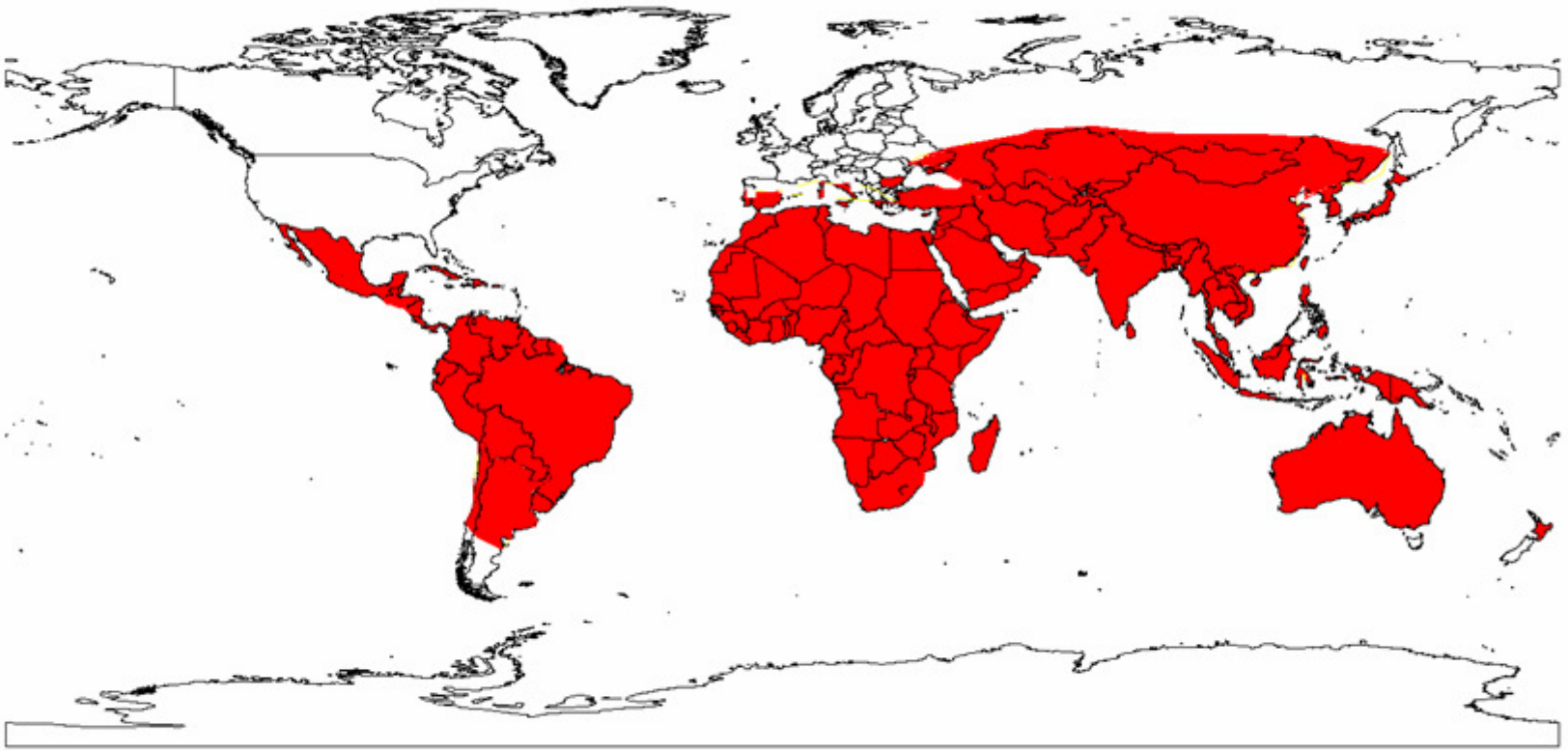


Temperature determines life-cycle periods



Note: adult maturation may extend up to 270 days in low temperatures o

Locust affected regions



Locust studies had multi-disciplinary teams in field and laboratories from 1920s

Where and why intermittent plagues start?

Dry habitats = low locust numbers

Desert habitats can change rapidly


14 16:52


12/26/03

The few locusts begin to breed

Good food and shelter = high survival


18 9:08


12/29/03

Concentrated laying in bare soil

Plagues in Africa & Western Asia prompt collaboration 1930-1940

International conferences

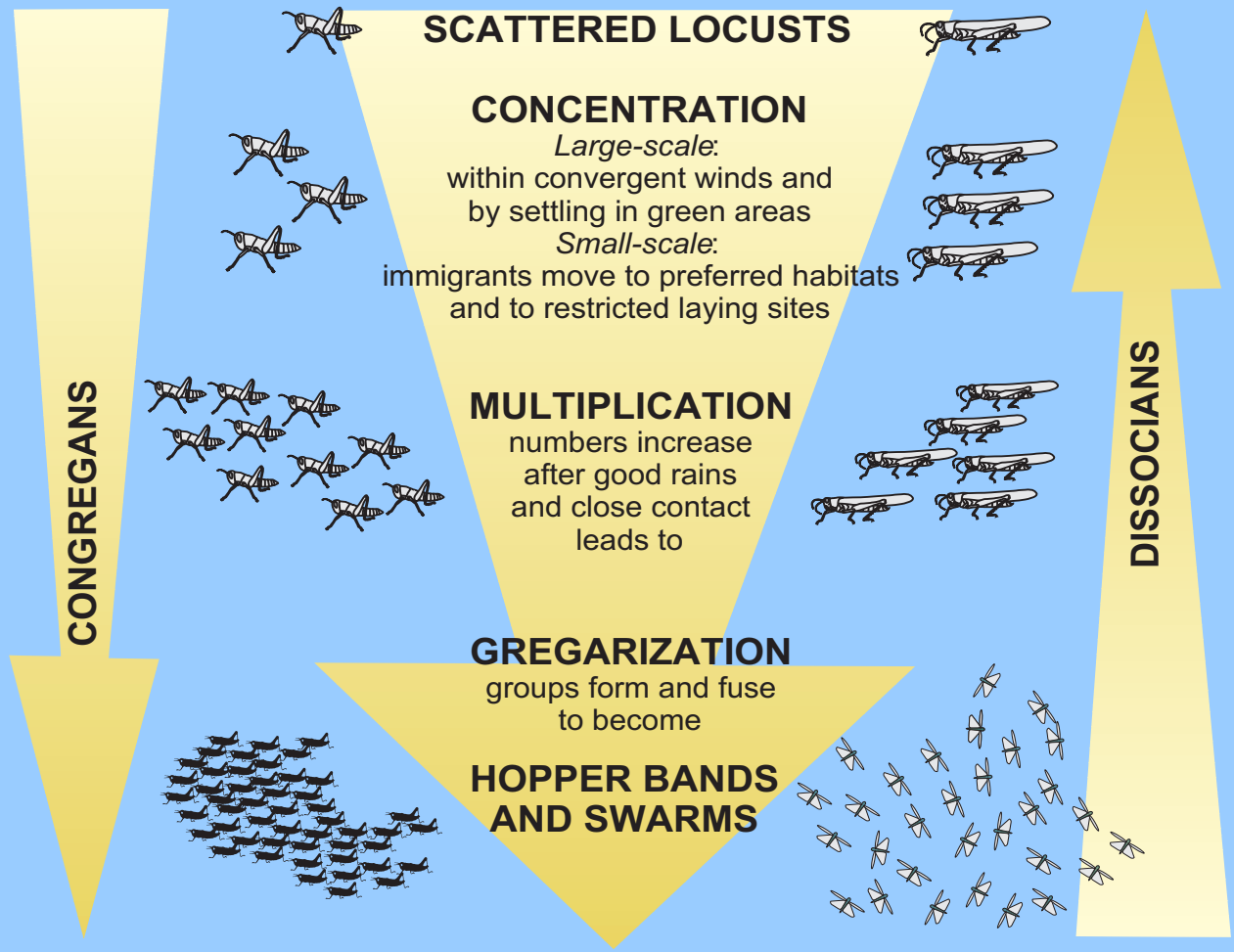
- agreed institutional, research and field priorities
- centralized international information service

Results

- field teams located and studied Outbreak Areas
- information service mapped and described the three plagues and the seasonal breeding areas
- control methods improved
- international plague prevention services proposed
- control strategy applied from the 1940s

1912-20: Plague origins lead to control strategy

Plagues start in small permanently infested areas where:



Swarms emigrate, breed and begin a plague

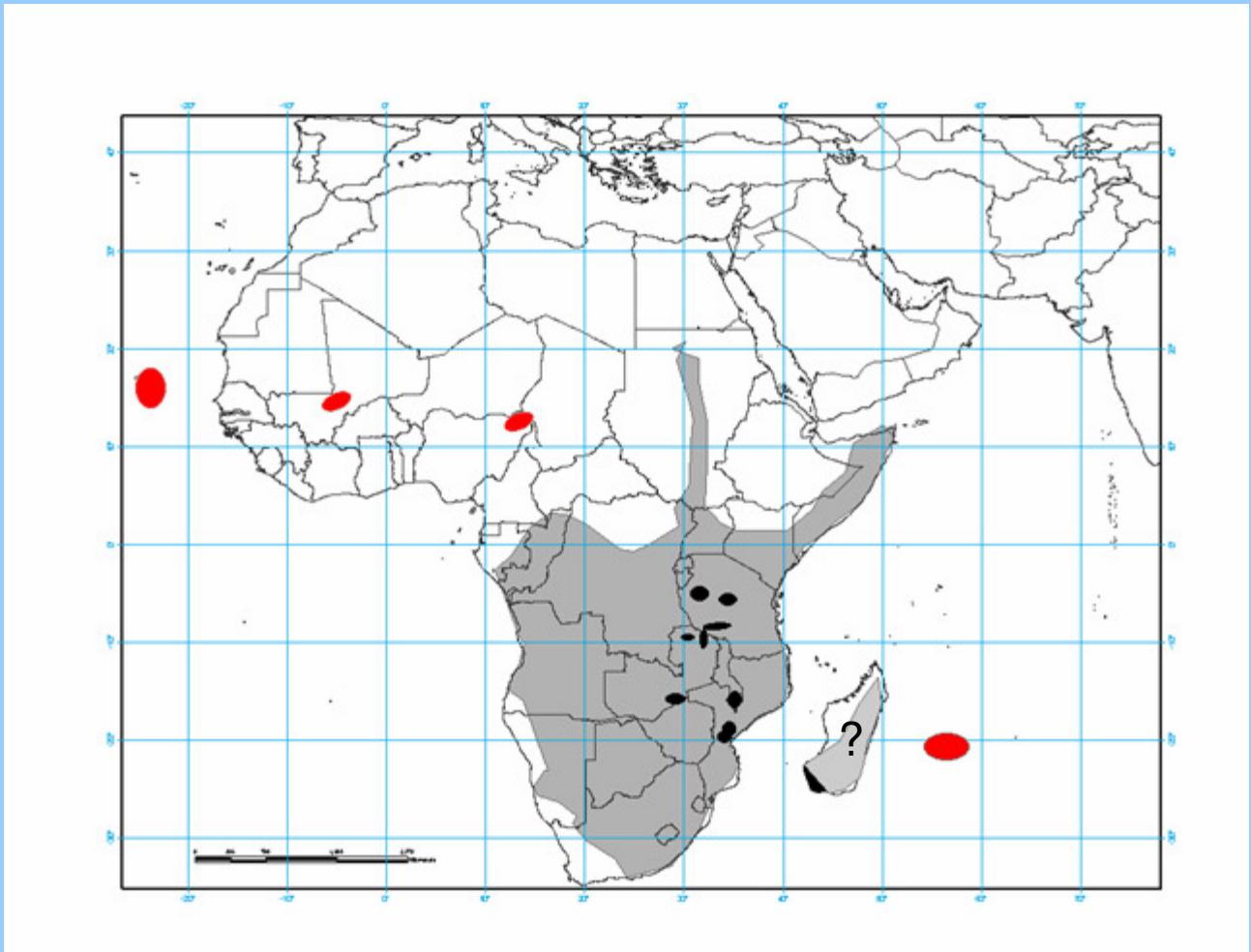
A. Locusts matching model

Plague prevention achieved

- As plagues ended in 1940s naturally or through effective control in 1950s providing preventive control continued
- Habitats of these pre-plague populations were small (upper limit around 100 000 km^2)
- Treat in >100 000 km^2 to protect ≅ 8 million km^2

Species involved:

The Red Locust

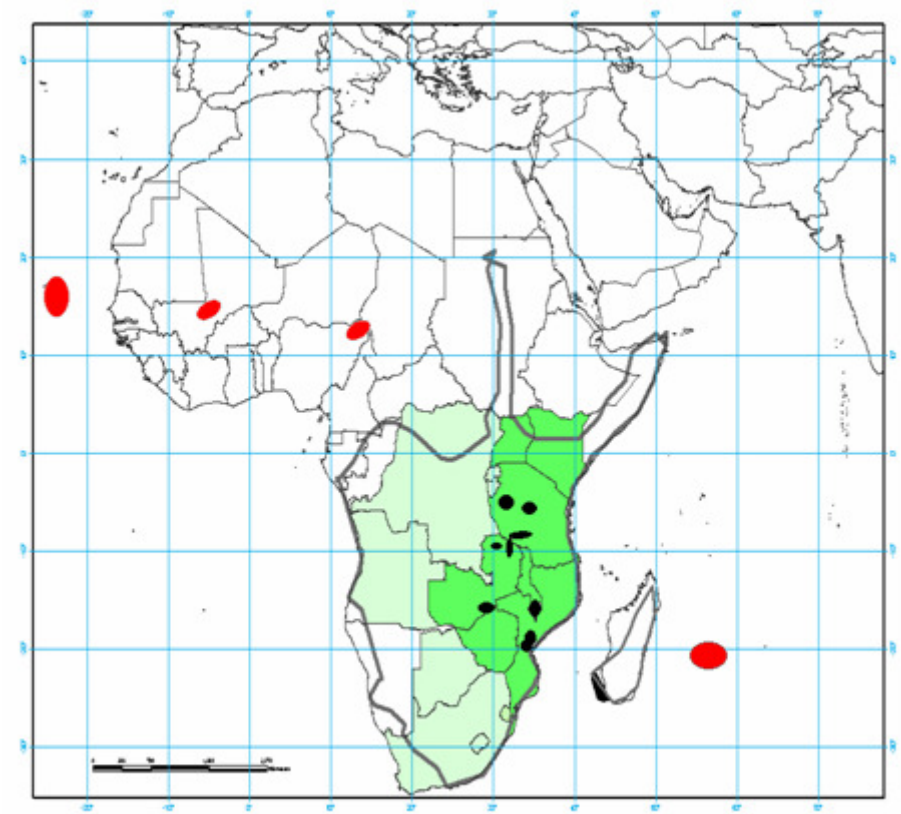


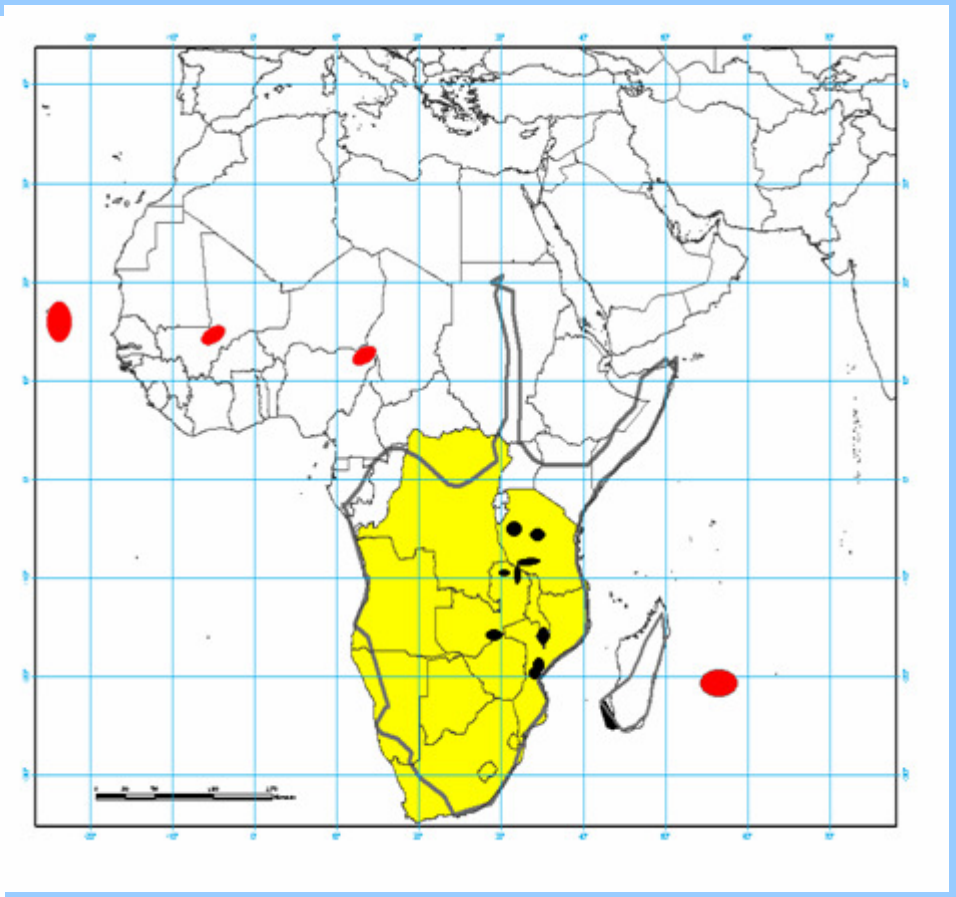
Grey zone: reported swarms in the 1930-1944 and final plague.
Black areas: monitored & treated to prevent plagues from 1941 (Africa).
Red areas: produce swarms, could they initiate plagues in a changed climate?

Red Locust Institutions

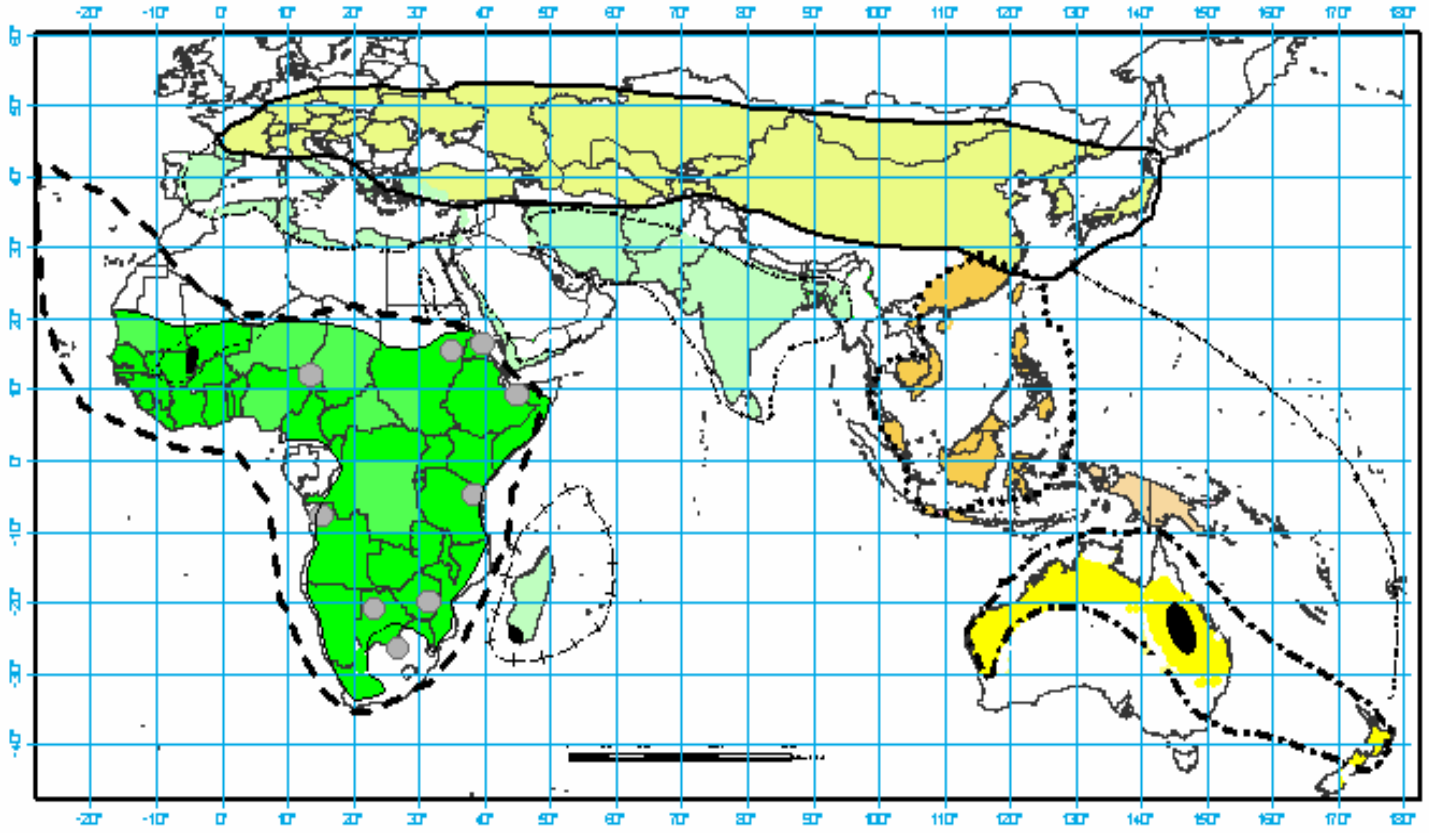
Left: Cost sharing original & current Members States

Right: web based information system ICOSAMP



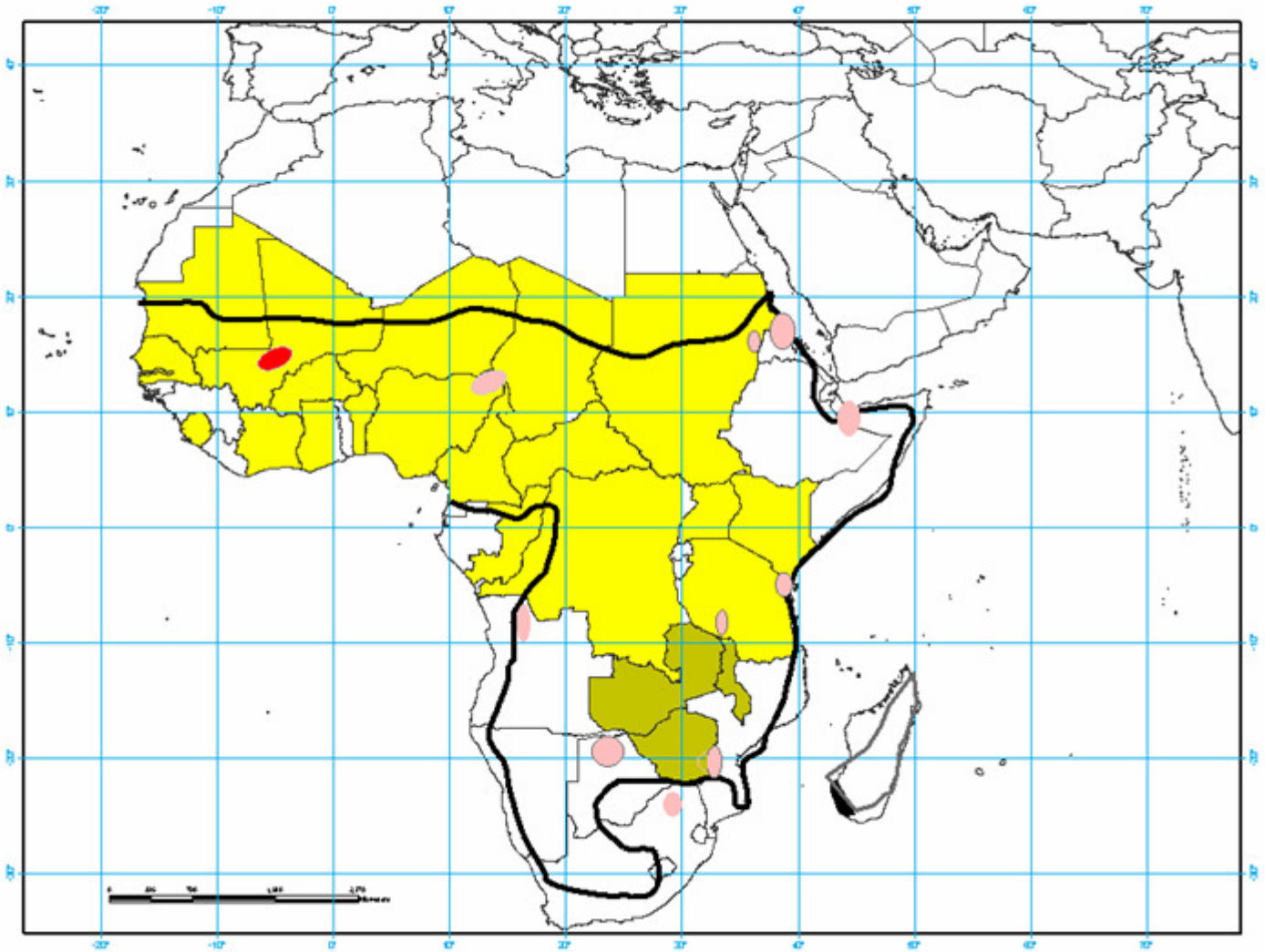


Migratory Locusts

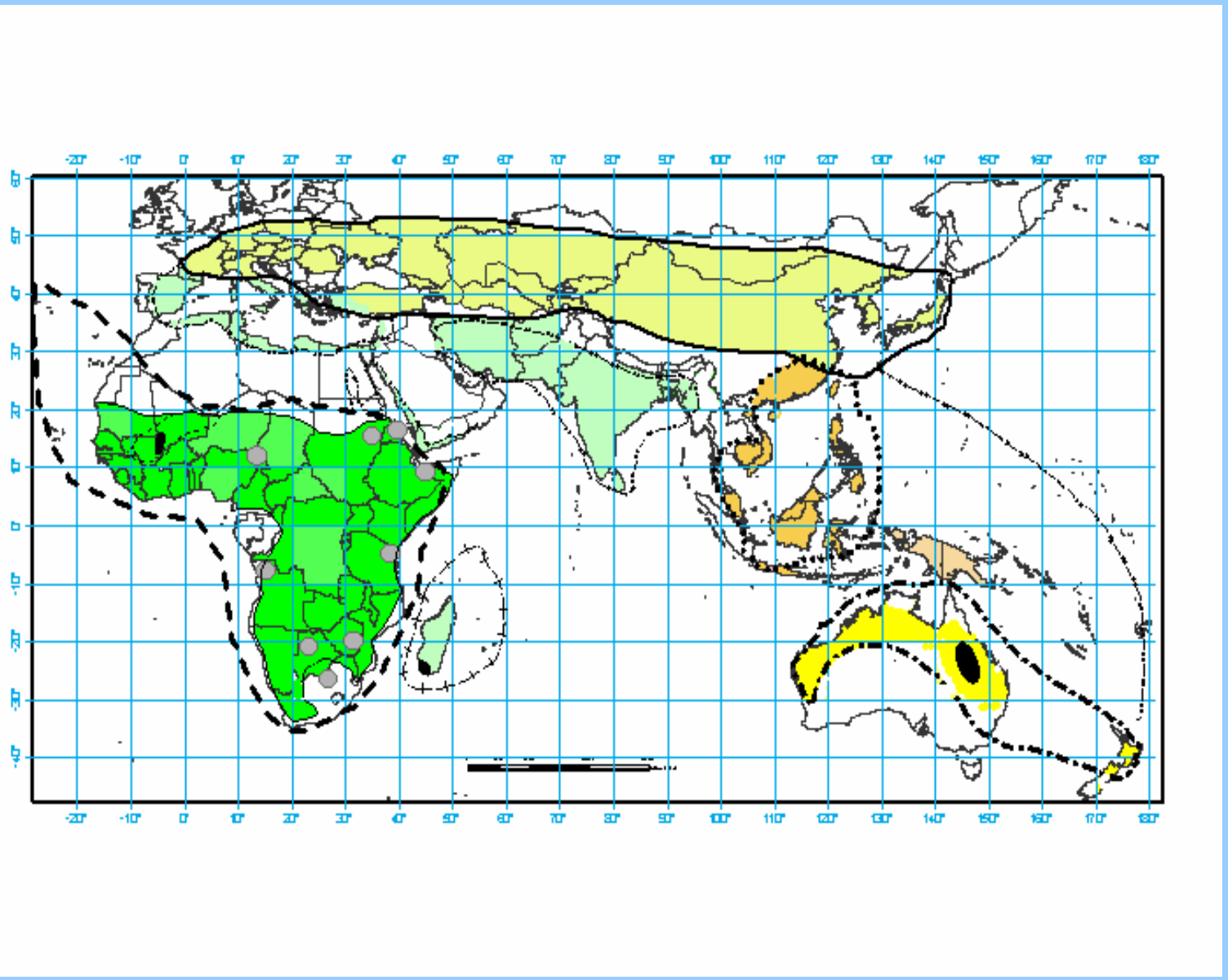


Most widespread species, long histories of plagues,
feeds on grasses and sedges

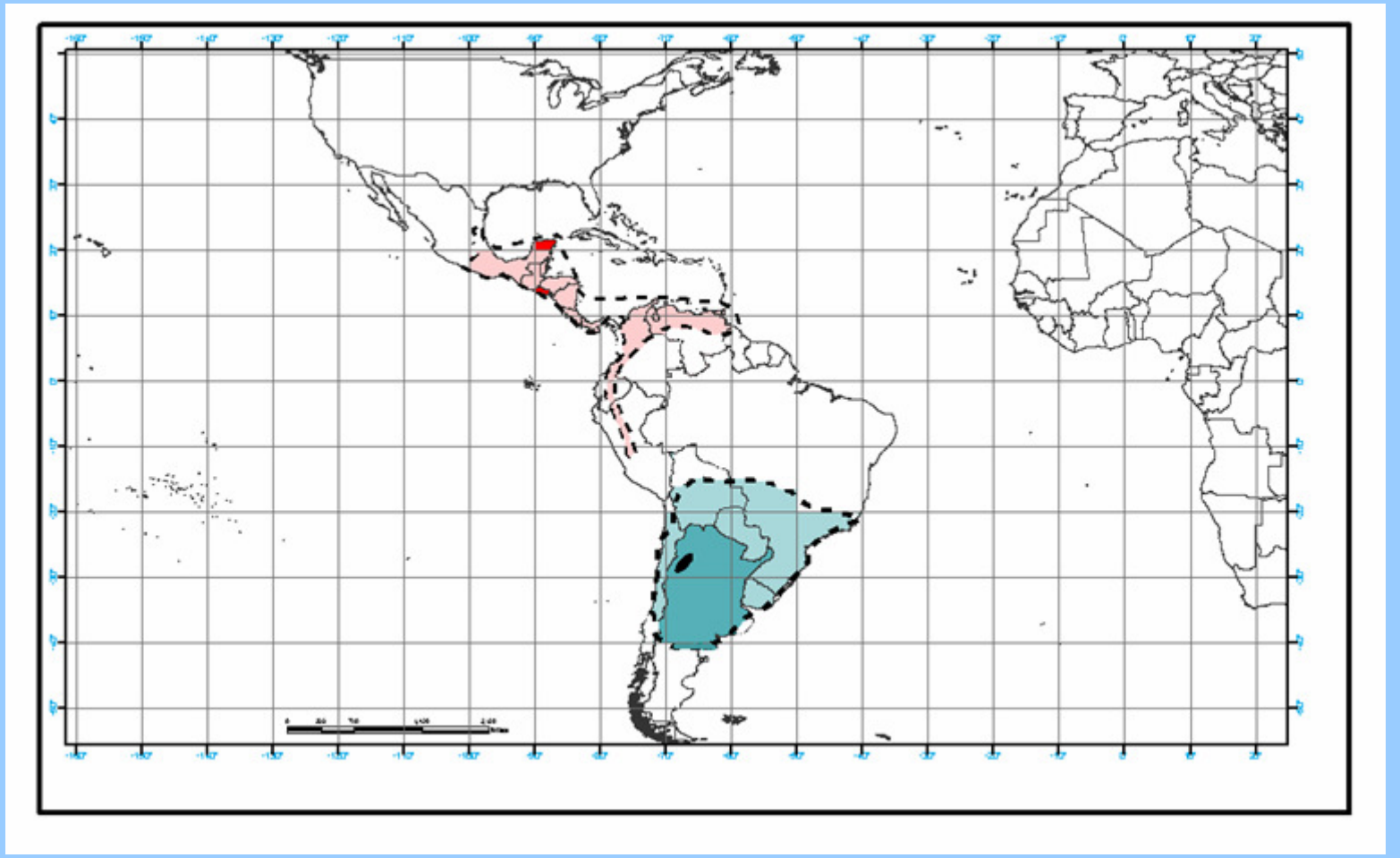
OICMA Member States 1950 -1985



Migratory Locust plagues and agricultural development



New World locusts a problem until control able to destroy plague populations in 1950s



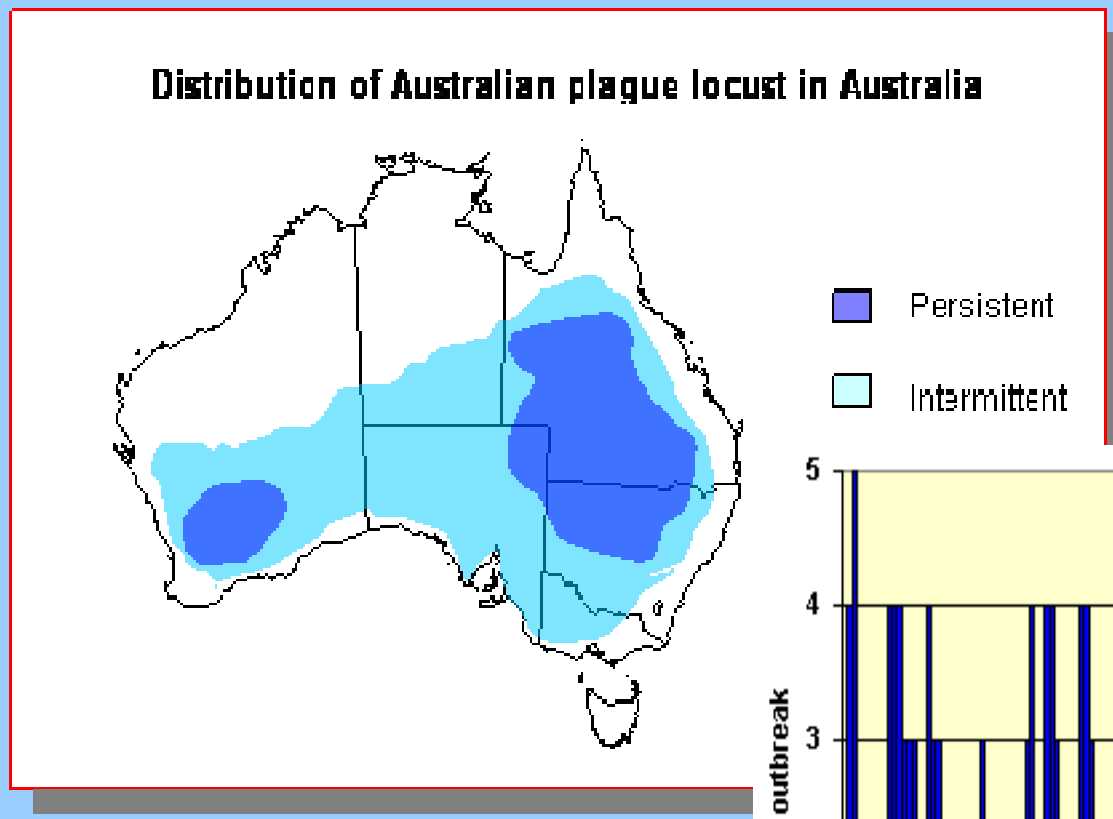
Extreme ENSO, El Ni™o event in 1997 produced swarms for the first time in a species in Peru in 1998 as had deforestation in Brazil in 1980s

B. Locusts requiring an amended model

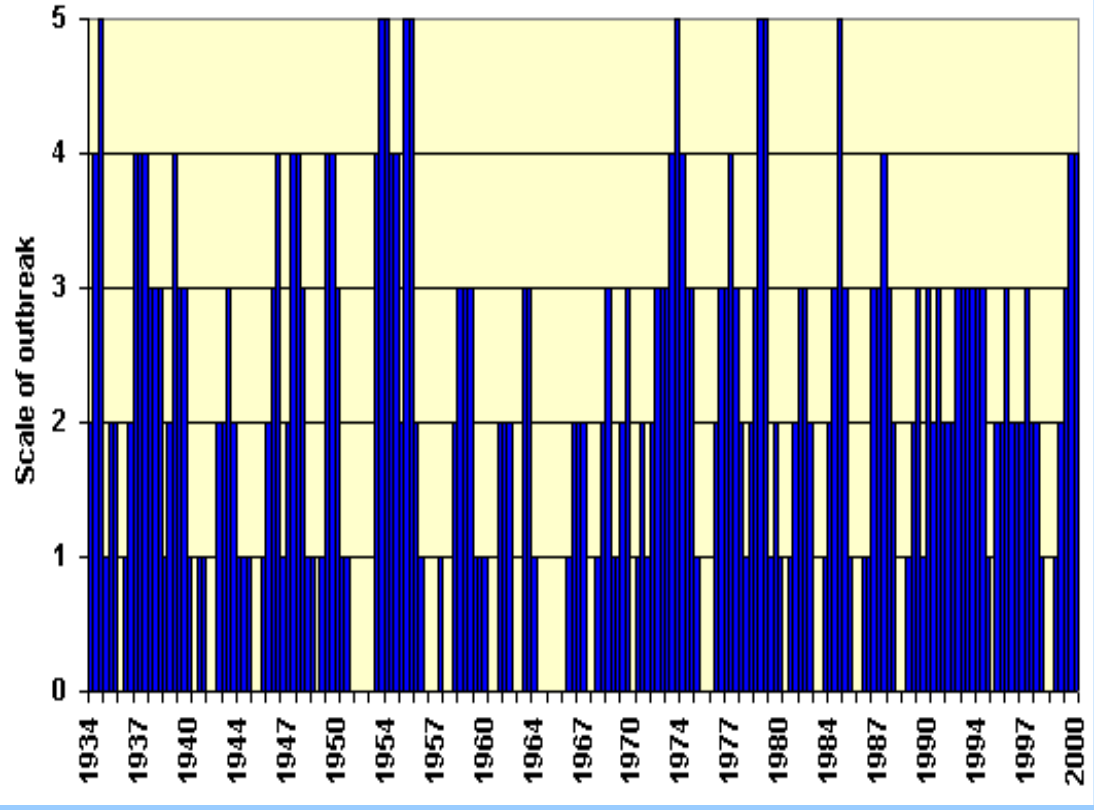
Plagues reduction achieved

- plague producing areas (250 000 to 16 million km^2)
- gregarization areas ephemeral according to rains
- migration between generations frequent

Species involved



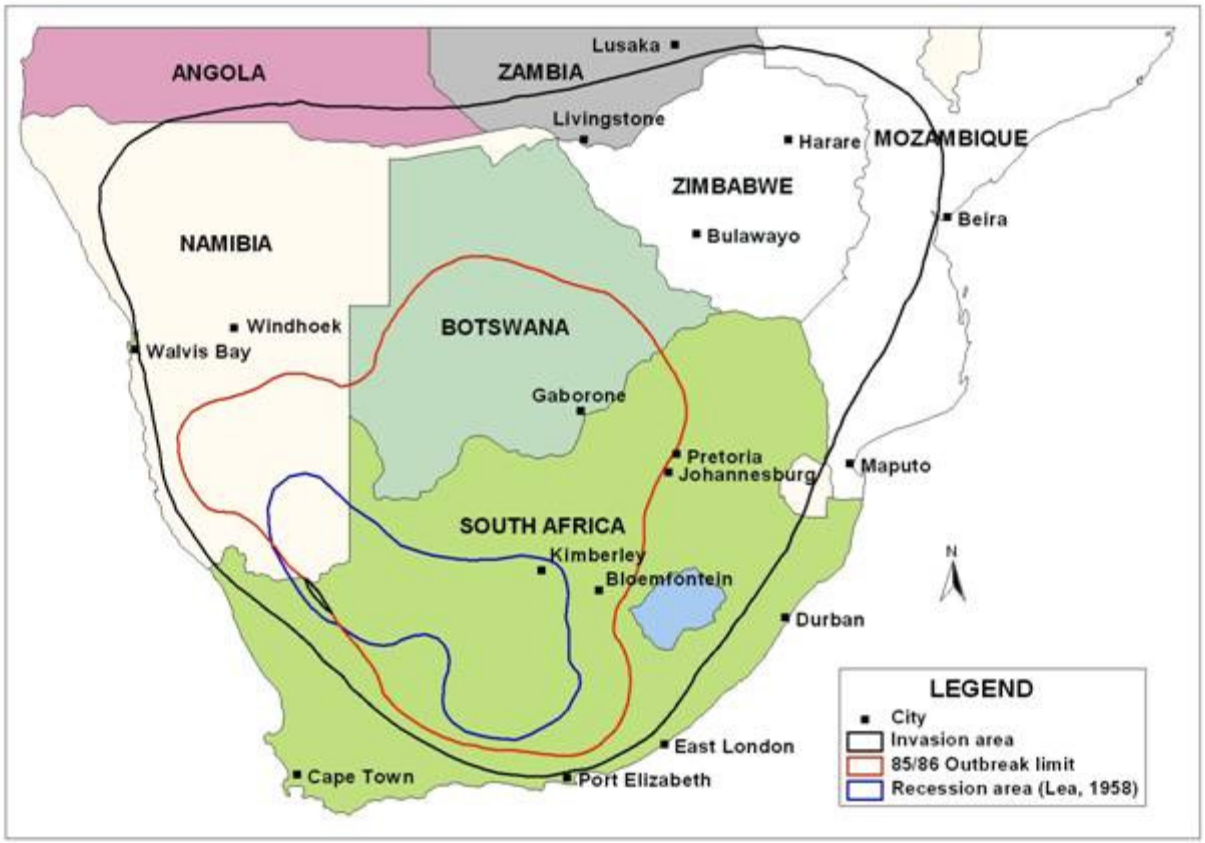
→ Eastern area 2 million km^2



Figures courtesy APLC

0-3 pre-plague; 4 = plague; 5 = major plague

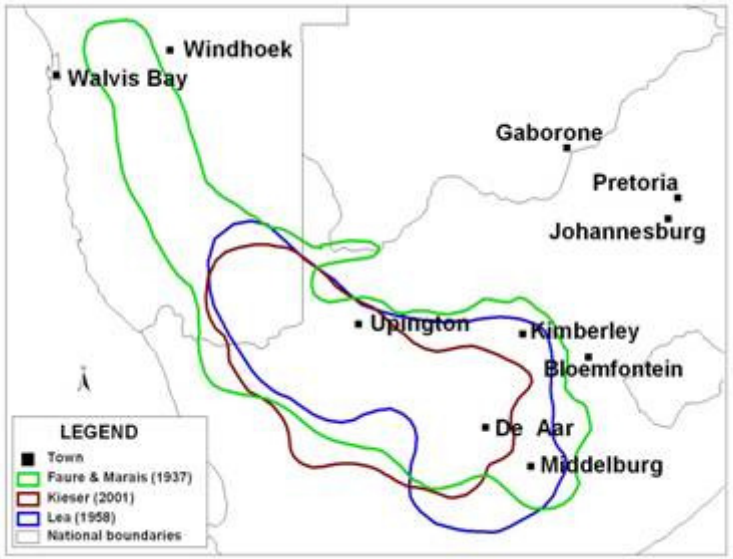
Brown Locust plague extent reduced



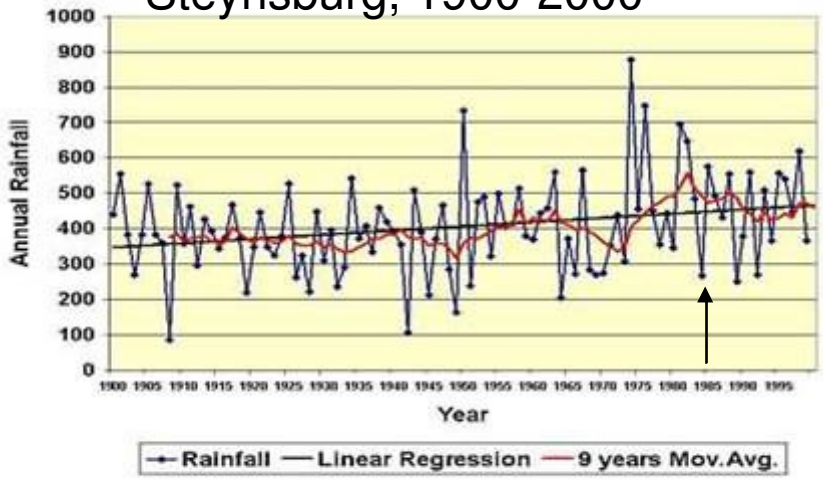
Source area 240 000 km^2 1930-50 Invasion area 1985-86 Invasion

Brown locust figures © ARC S Africa

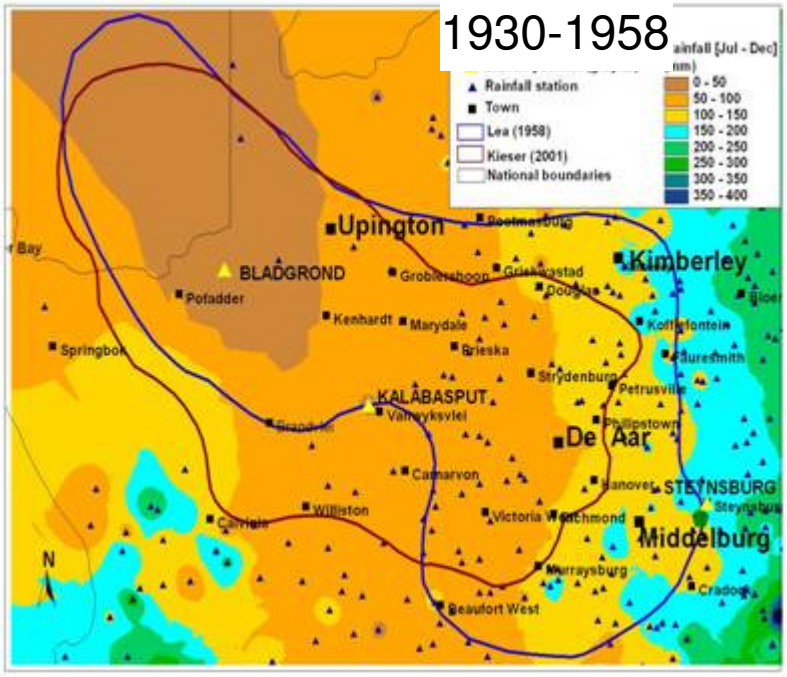
Brown Locust effects of climate change?



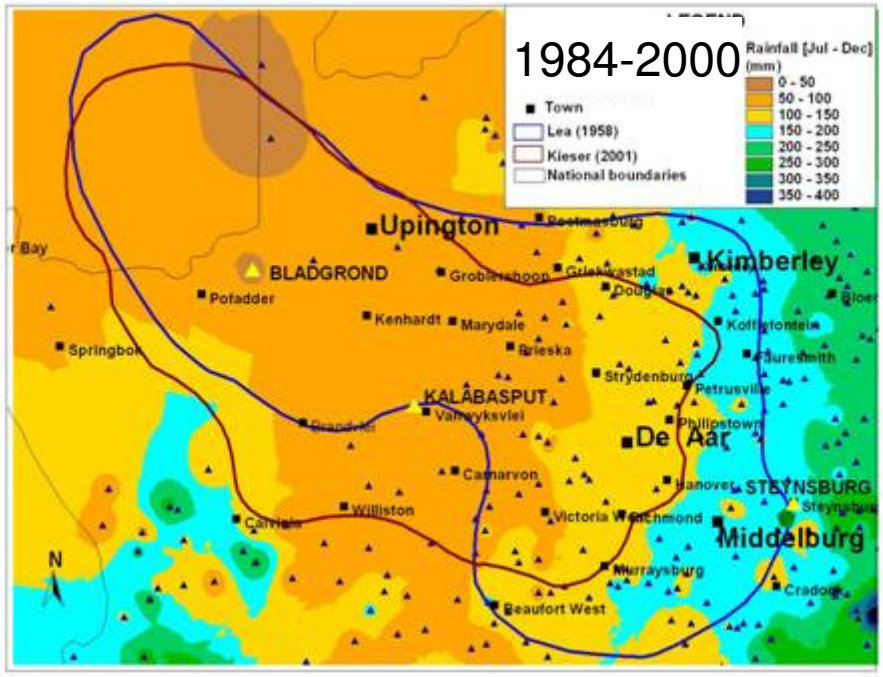
Steynsburg, 1900-2000



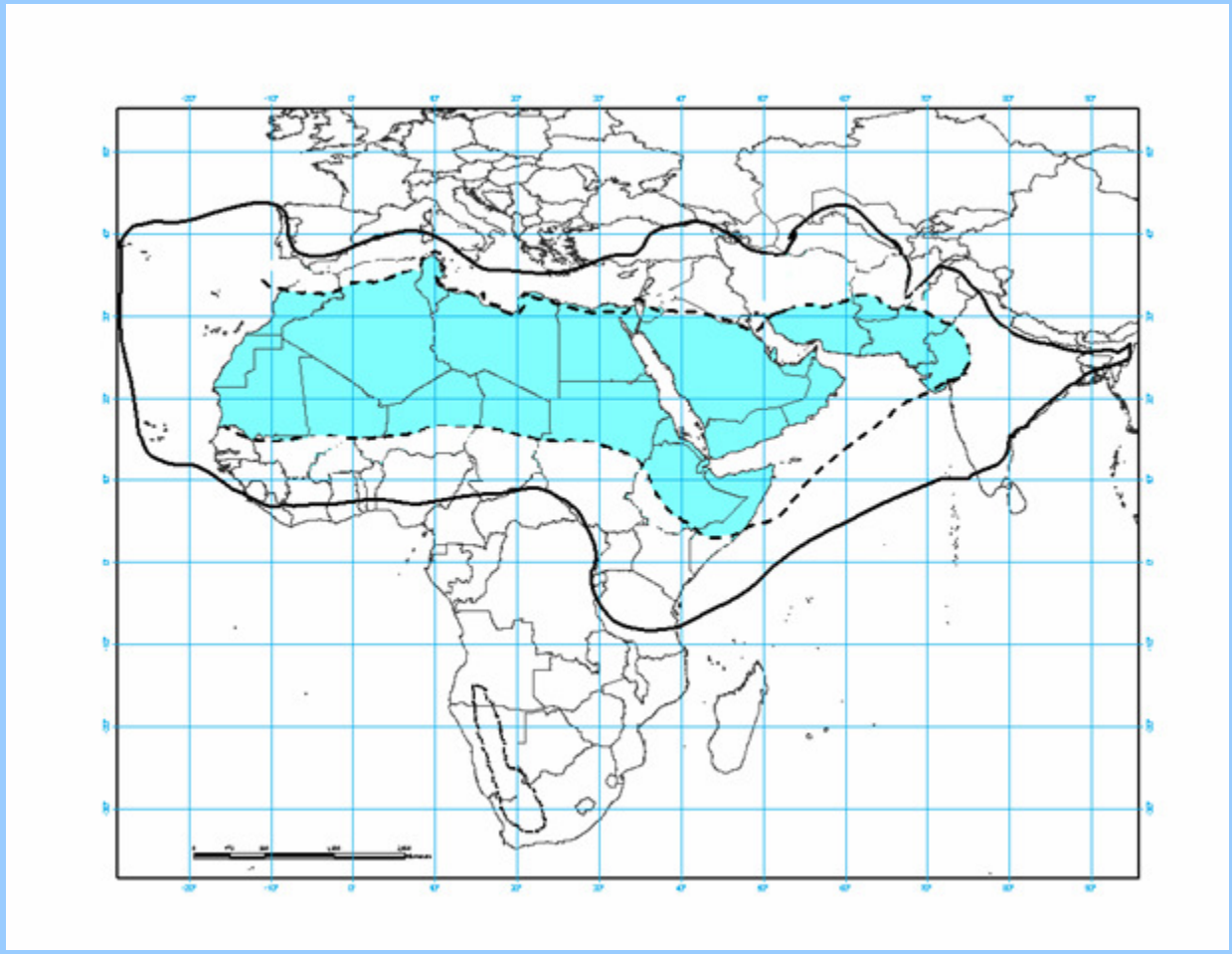
1930-1958



1984-2000



Desert Locust Invasion and Recession Areas

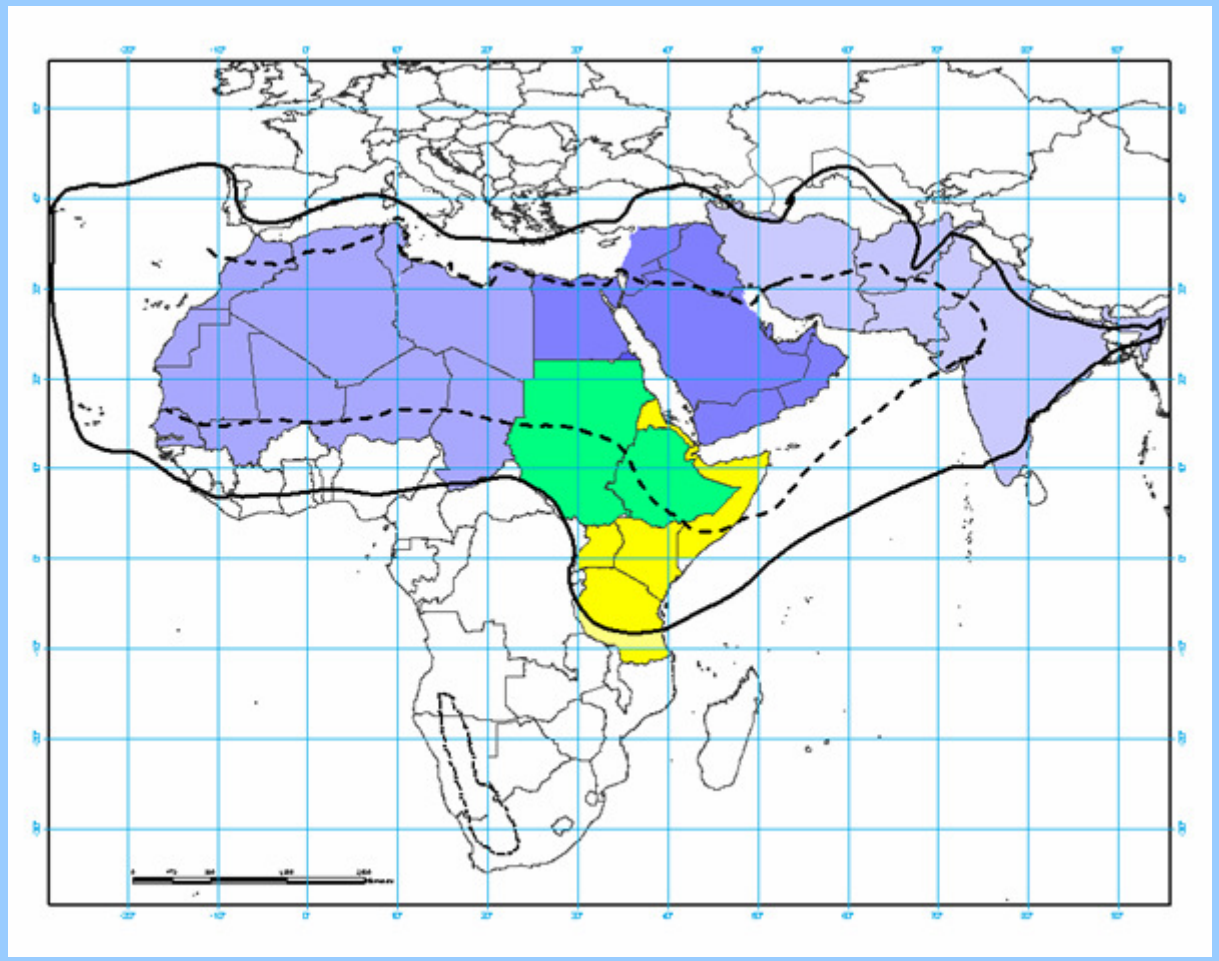


Invasion area
28 million km^2

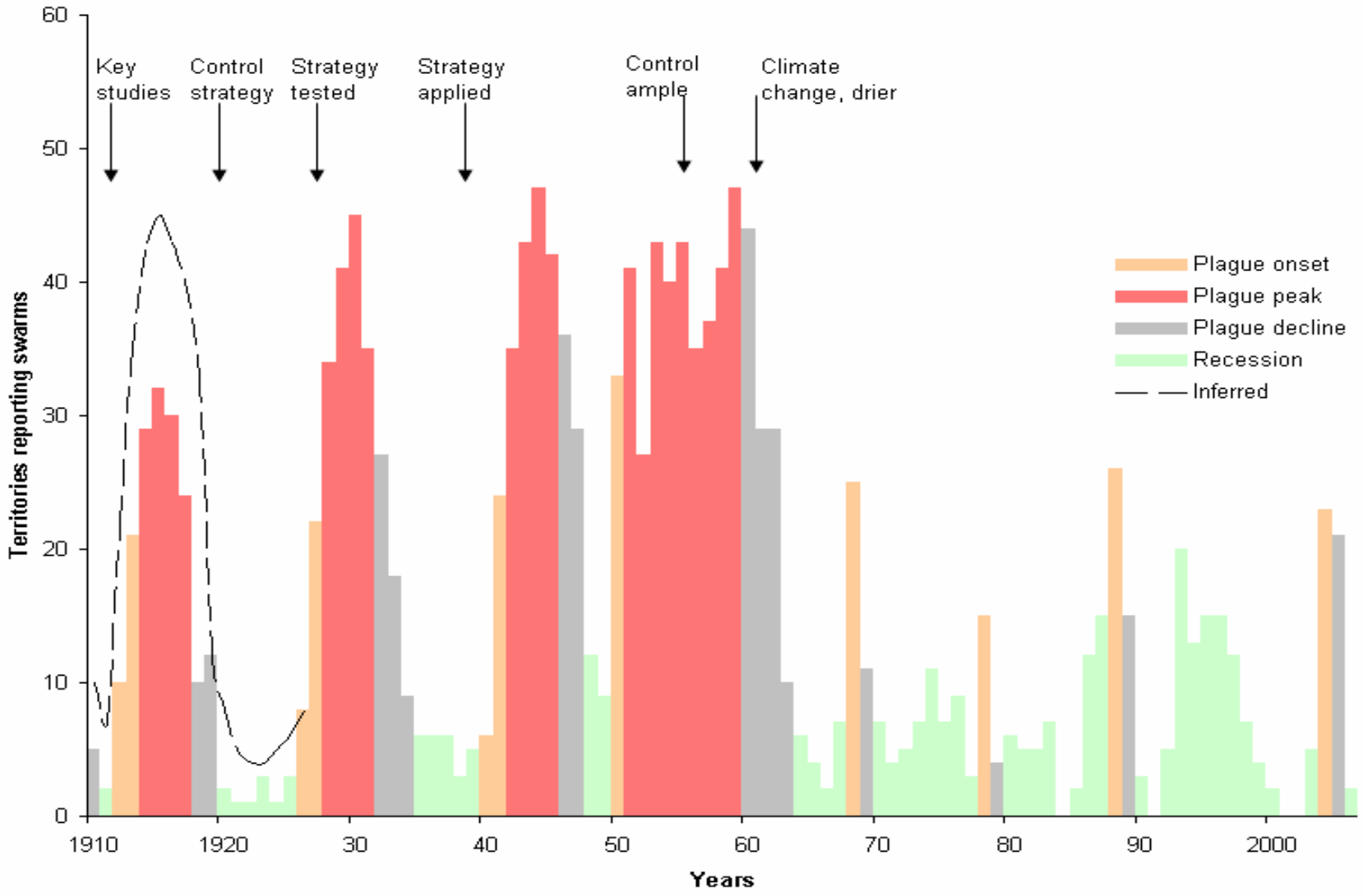
Recession area
16 million km^2

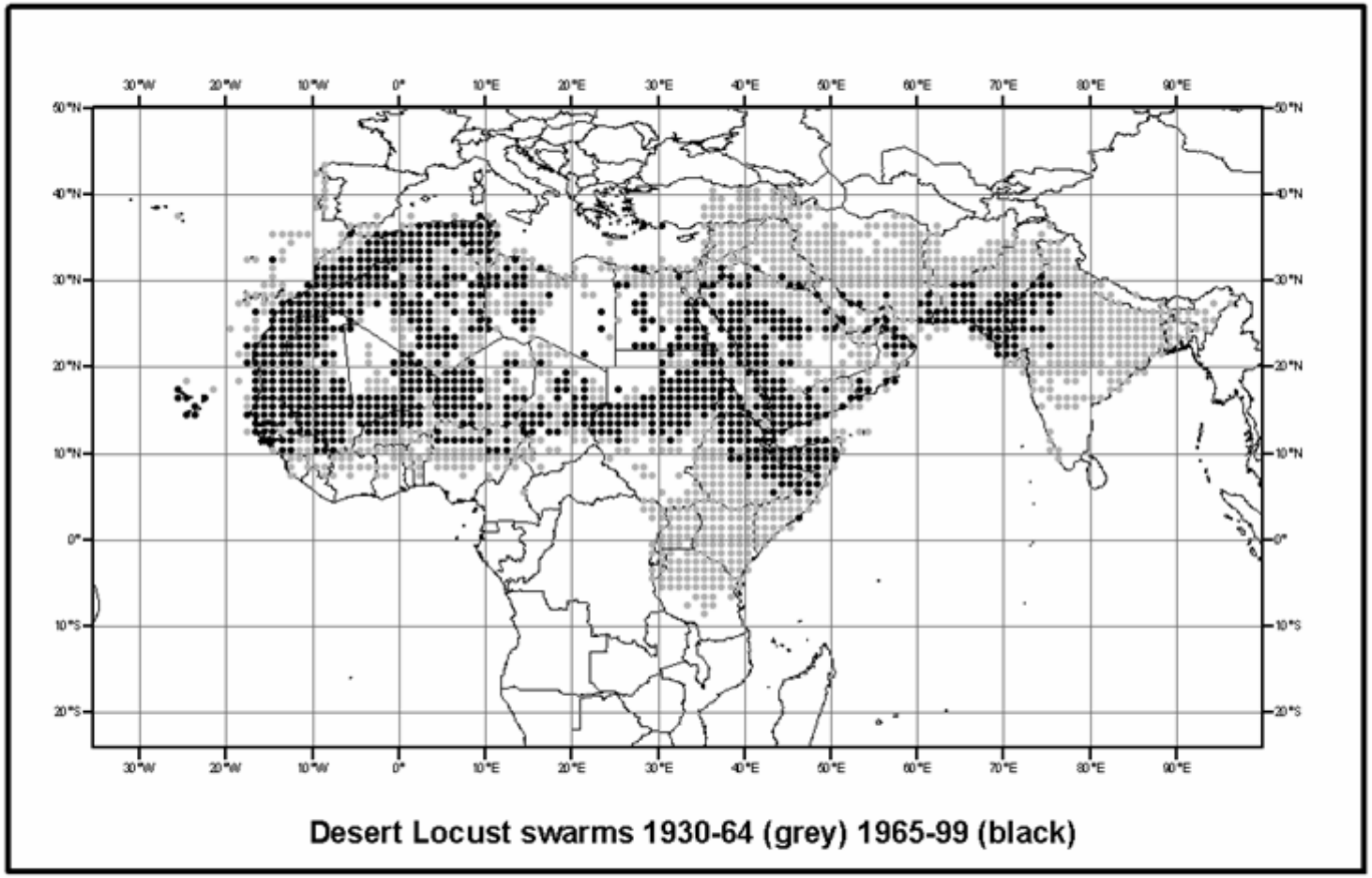
25 countries
in each zone

International Desert Locust Organizations



Change due to control, to weather or both?

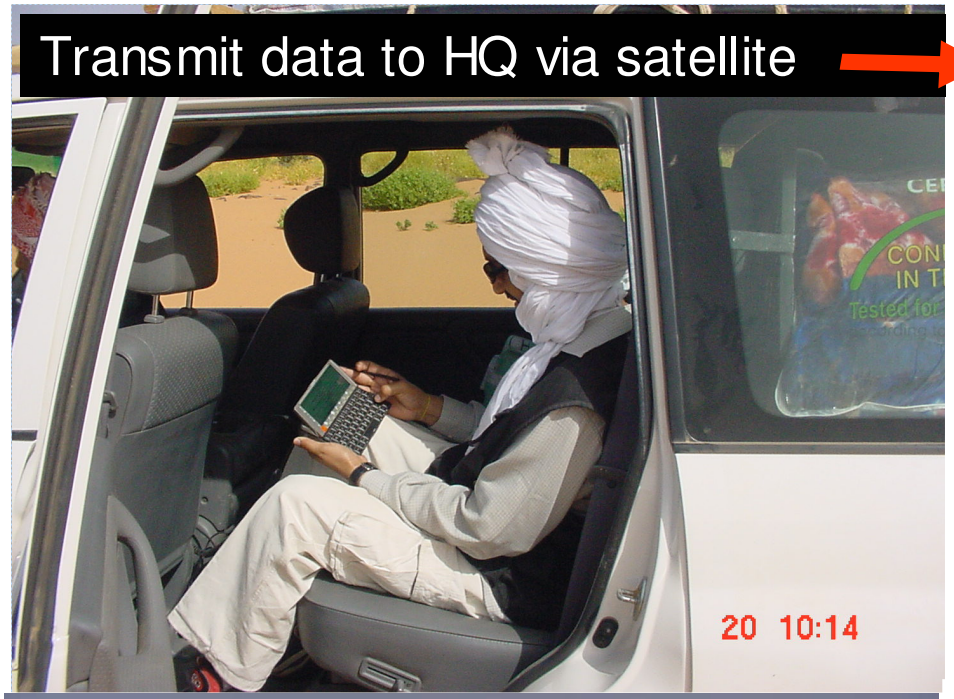


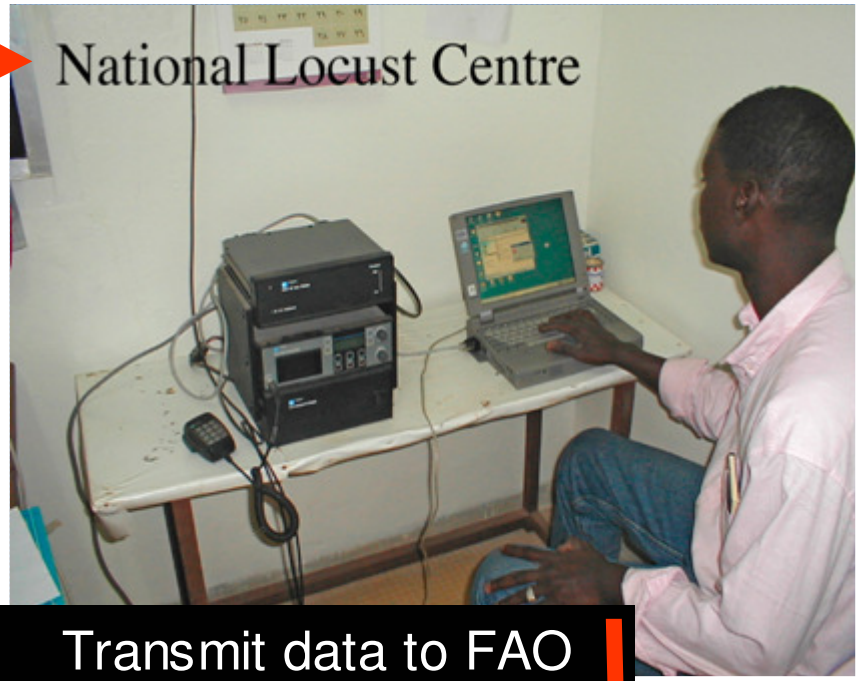


Desert Locust swarms 1930-64 (grey) 1965-99 (black)

Information, communications and control

Operational from 1930 responds to changes in technology





Transmit data to FAO


2003 12 16

GAFAÑOTU

Faze ida ne'e gafañotu moris mesak, maibe espesies hanesan deit. Gafañotu tau tolun iha rai kuak, depois nakfera sa'e ba oan hamutuk iha grupu ki'ik ida. Espesies ida ne'e iha potensial atu halo estraga maka'as ba ai-horis. Grupu ki'ik fasil atu kontrola. Ita bele oho gafañotu sira ne'e ho ita nian liman.

Iha tinan ida nian laran, faze ida ne'e (moris iha grupu ki'ik) bele repete dala rua (2) mais ou menus.

Faze ida ne'e gafañotu moris hamutuk iha grupu bo'ot, maibe espesies hanesan deit. Gafañotu tau tolun iha rai kuak, depois nakfera sa'e ba oan hamutuk iha grupu bo'ot ida. Espesies ida ne'e bele halo estraga maka'as ba ai-horis barak. Grupu bo'ot susar atu kontrola ka halo mate.

Iha tinan ida nian laran, faze ida ne'e (moris iha grupu bo'ot) bele repete dala haat (4) mais ou menus.

PREVENSAUN

Ita la iha dalan ka metodu ida atu prevene gafañotu sira.

Diak liu ita sei hato'o informasaun lalais ba MAFP ka Agente Produsaun Alimentar se ita haré gafañotu espesies sira hotu ne'ebe moris iha grupu bo'ot. MAFP ka FAO, atu hola asaun lalais molok gafañotu sira ne'e estraga ita nian ai-horis.

Ita bele hetan gafañotu sira la'os iha to'os, natar laran deit, maibe iha ai laran, mota, bee-lihun no fatin ne'ebe deit.

Kontaktu ba MAFP nian telefone: 3339033 ka haruka sms ba FAO nian: 7270077. Ka hato'o ba Agente Produsaun Alimentar, MAFP nian.

MAFP no FAO sira hotu sei prontu atu responde kedas.

REGA

Bainhira MAFP sira rega pestisida kimiku atu oho gafañotu iha to'os ka natar laran, ida ne'e perigu tebes ba ita nian saúde. Maibe, Ekipa Tekniku sira fó garante bainhira atu halo asaun ba aktividade ne'e. Se gafañotu mai atu han ai-horis iha to'os ka natar laran, MAFP sira sei rega ho pestisida venenu hodi oho.

Tenki bolu lalais ba MAFP ka FAO se ita haré gafañotu espesies sira hotu ne'ebe moris iha grupu bo'ot.

ATENSAUN!

MAFP sei rega pestisida kimiku ho biológiku hodi kontrola gafañotu sira iha ita bo'ot sira nian let.

Progama ida ne'e importante tebes atu prevene gafañotu sira ha'an ai-horis, iha to'os ka natar.

Hare didiak informasaun kona ba gafañotu iha brosur ida ne'e nian laran.

Ita la iha metodu ida atu prevene gafañotu sira. Diak liu ita fó informasaun lalais ba MAFP ka Agente Produsaun Alimentar se ita haré gafañotu espesies sira hotu ne'ebe moris iha grupu bo'ot. Telefone ba MAFP iha: 3339033 ka haruka sms ba FAO: 7270077

ATENSAUN!

MAFP no UN sira sei rega pestisida kimíku biológiku hodi kontrola gafañotu. Helikopteru UN nian ida ne'e, atu rega pestisda biológiku. Pestisida biológiku tipu ida ne'e la halo susar no la halo ema no mos animal sira moras.

Ita bo'ot sira hotu tenki ses do'ok husi fatin ne'ebe ema rega ho pestisida biológiku!!!