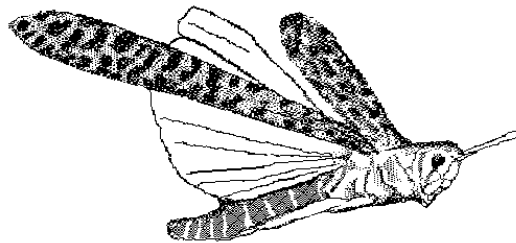


**The Second Joint Survey  
of the Desert Locust Winter Breeding Areas  
on the Egyptian-Sudanese Border**

**26 January – 2 February 2003**



**FAO EMPRES/CR  
Commission for Controlling the Desert Locust in the Central Region**



**April 2003**

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# **The Second Joint Survey of the Desert Locust Winter Breeding Areas on the Egyptian-Sudanese Border<sup>1</sup>**

**26 January – 2 February 2003**

Locust Control Units in Egypt and Sudan, supported by the FAO EMPRES/CR Programme and the FAO Central Region Commission (CRC), organized the Second Joint Survey of the Desert Locust Winter Breeding Areas on the Egyptian-Sudanese Border. Two Locust Officers from each country led by one FAO expert (EMPRES/CR NPO Survey) surveyed an estimated 6,700 ha and drove 2,047 kilometers in seven days.

In general, most areas were dry on the Egyptian side of the border, while green or greening areas were present in some places in Sudan. No locusts were seen during the survey. Ecological conditions were not favourable for Desert Locust breeding in Egypt, but they were favourable in some locations in Wadi Diib, Sudan. The survey provided a good opportunity for participants to practice survey organization and to exchange technical knowledge.

## **Introduction**

Important habitats for Desert Locust breeding often are present near border areas of two countries. These areas can be sensitive and may not be included in the regular surveys conducted by national locust teams. It has been demonstrated in the past that joint surveys at or near border areas between locust-affected countries are a useful means to fill this gap by checking habitat conditions and the Desert Locust situation. The first joint survey along the Egyptian/Sudanese border was conducted in February-March 2000. One of the suggestions resulting from that survey was to carry out regular joint surveys in the winter breeding areas in both countries every year. Unfortunately, subsequent joint surveys did not materialize until this year when the locust control units in the two countries organized a second joint survey in collaboration with EMPRES/CR and CRC from 27 January to 2 February 2003 using a small team consisting of two Locust Officers from each country. Both countries conducted an initial survey in their own territory two weeks before the joint border survey.

The survey organization and methodology are discussed below. The survey participants are presented in Appendix I, the itinerary in Appendix II and the results of the survey are in Appendix III using the *FAO Locust Survey and Control Form*. Recommendations are included as a separate section in this report.

## **Organization**

As a part of preparation for organizing the joint survey, the locust control units in Egypt and Sudan undertook the necessary arrangements for issuing security clearances and visas for the participants from both countries. They also provide transportation, field equipment and camping facilities in the areas that were surveyed. It was agreed that survey vehicles would not cross the border. Each country agreed to provide the necessary transport for the team during that portion of the survey carried out in their own territory. A new locust

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<sup>1</sup> This report was prepared by F. Bahakim in collaboration with the participants of the Second Joint Survey. Editorial assistance and final production for printing was provided by K. Cressman.

base was built after the last joint survey at Abu Ramad, Egypt. The EMPRES/CR NPO Survey participated with two locust officers from each country during the survey.

All survey equipment was provided to the locust officers (GPS, compass, maps and *FAO Locust Survey & Control Forms*) in addition to one radio mounted on each survey vehicle for communication and safety. In Sudan, a Codan HF radio modem was brought from the Locust Unit Headquarters in Khartoum to test the wireless transmission of data from the field to Khartoum using eLocust.

The participants planned the survey route based on the results of earlier national surveys, their knowledge of traditional Desert Locust breeding areas and the itinerary of the first joint survey. The route was modified every day based on the previous day's results.

## **Methodology**

During the joint survey, the methodology used for surveying Desert Locust and its habitat was according to the *FAO Desert Locust Guidelines*. The precise method varied, depending on the topography and the situation of the vegetation at each survey stop. The following methods were used to evaluate the habitat and Desert Locust numbers.

*Foot transects.* Each survey officer walked about 250 – 400 meters at the survey site with the wind to his face. Locust adults were counted in a one-meter or wider strip in front of the officer. The precise width depended on the time of day and the specific habitat at the site, and was noted by the officer. The total number of locusts counted and the length and width of the foot transect were recorded on the *FAO Locust Survey & Control Form*. For hoppers, at least ten samples were inspected and the number of hoppers seen recorded. A sample could either be a one square meter of ground or a bush. The officer was instructed to record the minimum and maximum number of hoppers seen in a single sample on the survey form; in other words, the range. Furthermore, the officer noted the presence or absence of locusts and their appearance, behavior, and maturity as well as the ecology at the survey site. If several officers conducted transects at the same location, the total number of locusts seen in the total length of transect were recorded on the survey form (including those officers who did not see any locusts in their transect), assuming that the transect width was the same for each officer.

*Vehicle transects.* A vehicle transect consisted of driving slowly in low gear with the wind from behind for at least one kilometer. The officer counted the number of adults that flew up across the front of the vehicle.

*Estimation of breeding areas.* The survey team decided to estimate the size of the areas that could be suitable for Desert Locust breeding if sufficient rains were to fall. This was estimated by driving the vehicle along the length and width of a potential area. This method was used on plains. In wadis, each person recorded the different widths of the wadi while driving and at the end the team came up with an estimation of the wadi's width at different locations and the length of the areas that are suitable for Desert Locust breeding. By multiplying these results, the size of the breeding area was estimated. Although it is a rough estimation, it may help in planning future survey or control operations.

Information were collected and recorded on the *FAO Locust Survey & Control Form* in the field at each survey stop. In the evenings, participants discussed the results and findings of that day and noted any recommendations. Participants tried to send data through the Codan HF radio modem from Sufaya in Sudan to the Locust Unit Headquarters in

Khartoum, but this test failed. This will be examined further with the expert who installed the system. The completed *FAO Locust Survey & Control Form* from Sudan and Egypt were transmitted to each country's Locust Unit Headquarters and to FAO DLIS once participants returned to their country, about two or three days after finishing the survey.

## Results

The survey results for each country are presented below. Completed survey forms are presented in Appendix II.

### A. EGYPT

- Date:** 27 January 2003
- Itinerary:** Abu Ramad – W. Serimtai – W. Todhei – J. Elba – W. Yahmieb – Abu Ramad. 120 km
- Weather:** Sunny, with low to moderate NE winds. There was no recent rain received; showers reported by locals on 29 October 2002.
- Habitat:** The dominant vegetation was low density *Acacia* trees with some Usher. No other vegetation like shrubs and grasses observed.
- Vegetation:** Dry in surveyed area.
- Soil moisture:** Dry
- Locust:** No locusts were seen or reported.

The survey team decided to try to estimate the size of the areas that could be suitable for Desert Locust breeding if enough rainfall is received (see the section above). The size of these areas visited was not estimated because the idea came at the end of the day. Anyhow, locust officers in the two countries agreed to continue to carry out the estimation during the regular national surveys.

- Date:** 28 January 2003
- Itinerary:** Abu Ramad – Eikwan – Sulhamid – W. Harbob – W. Harettra – W. Diib. 186 km
- Weather:** Sunny, no clouds with calm wind in the morning; northeasterly winds after mid day. No recent rains; light rains last reported in late October 2002.
- Habitat:** Wadis and plains dominated by *Suada monoica*, *Calatropis persica* and *Acacia* and, to a lesser extent, other species such as the green *Cassia cenna*.
- Vegetation:** Dry in most locations except for a few patches along Wadi Diib that were drying out.
- Soil moisture:** Dry

**Locust:** No locust were seen during the survey or reported by locals.

The size of the areas visited during this day were estimated to be about 144 sq. km in Wadi Diib and nearby areas plus another 63.8 sq. km covering W. Eikwan, W. Harbob, Sulhamid and Harettra plains.

**Date:** 29 January 2003

**Itinerary:** Abu Ramad – W. Eikwan – W. Furkait – W. Shallal – W. Marikwan Plain between W. Karamandib and W. Aidaib – Aburamad. 139 km

**Weather:** Sunny, no clouds observed with light wind in the morning and moderate temperature. Northwesterly wind observed after midday. Light rains last reported on 29 October 2002.

**Habitat:** Wadis and plain

**Vegetation:** Dry in most of the surveyed areas with the exception of *Acacia* trees and Usher.

**Soil moisture:** Dry

**Locust:** No locust were seen during the survey or reported by locals.

The estimated size of the potential breeding areas that were surveyed during this day was 19.7 sq. km in W. Eikwan, W. Frukkit, W. Shallal and on the coastal plains at the end of Wadis Karamandib and Aidieb.

## **B. SUDAN**

**Date:** 30 January 2003

**Itinerary:** Abu Ramad – Halaib – Gabatit – Marob – Fodokwan – W. Hebikwan – Khor Adashia – W. Hipkok – W. Karbanit – Sufaya. 154 km

**Weather:** Sunny, no clouds with light wind in the morning (NE, 7 kph). Light to moderate rains were reported during the first week of December 2002.

**Habitat:** Wadis and plain

**Vegetation:** The vegetation at six locations was dry; greening and drying were observed in the other two locations. The density of vegetation was low to medium. The dominant species were *Panicum*, *Acacia* and *Heliotropium* sp.

**Soil moisture:** Dry

**Locust:** No locust were seen or reported by locals.

In Wadi Hipkok, 16.5 sq. km are suitable for Desert Locust breeding if enough rains are received. The other locations (Gabatit, Marob and Khor Adashia) areas were estimated to be 9.3 sq. km.

- Date:** 31 January 2003
- Itinerary:** Sufaya – W. Diib (Mafdaib, Nurayet, Sawaret, Adarim and Shendeib) – Sufaya. 143 km
- Weather:** Sunny, no clouds with NE wind at 5 kph. Light rain was last reported on 7 December 2002.
- Habitat:** Wadis and plain with the dominant species being *Adleeb*, Usher, *Heliotropium*, *Camplus* and *Sorghum* crops cultivated in some of these areas.
- Vegetation:** In general, most of the areas surveyed were either green or greening, only one location was dry.
- Soil moisture:** Dry
- Locust:** No locust were seen or reported by locals.

The size of potential suitable areas for Desert Locust breeding was estimated in Wadi Diib to be 52.9 sq. km if enough rains are received.

- Date:** 1 February 2003
- Itinerary:** Sufaya – Oseif (8 hrs) 67 km

In this day, breaking camp in Sufaya took more than four hours and traveling time from Sufaya to Oseif was four and half hours, passing by the same road taken from Oseif to Sufaya. No stops were undertaken on this day. The night was spent in Oseif.

- Date:** 2 February 2003
- Itinerary:** Oseif – Aburamad – Hurgadah (684 km) in 12 hrs. Stop at Aburamad for breakfast.

The team departed Oseif at 0630 h and moved to the checkpoint on the Egypt/Sudan border where the Egyptian participants crossed into Egypt. The formalities took one hour. The team and the EMPRES/CR NPO Survey then continued to Abu Ramad. At 1100 h, everyone continued to Hurgadah (9.5 hours) where they spent the night.

- Date:** 3 February 2003
- Itinerary:** Hurgadah – Cairo 554 km

## Recommendations

1. One extra day should be added for crossing the border to allow sufficient time for immigration formalities.
2. Participants recommended to start the joint survey from the Sudan side, due to lack of accommodation in the survey area and because of the harsh conditions. In other words, the Sudan side should be surveyed first, followed by Egypt.
3. The Heads of the Suakin and Aswan locust bases should be involved in the preparation of and provide support for the joint survey.
4. Participants recommended that the most suitable time for conducting the joint survey is between December and February. The precise timing may vary from year to year because it depends on irregular rainfall and runoff from showers in the nearby hills.
5. Although prevailing conditions, based on the results of national surveys undertaken before the joint survey, should be considered when determining the duration of the joint border survey, it is desirable to fix the number of days in advance for planning purposes.
6. Participants suggested the desirability of having a permanent base particularly at Sufaya and Oseif to reduce the difficulties of transporting camping equipment, to save time and to have more comfortable accommodation.
7. In case there is no possibility or sufficient justification of building a permanent base at Sufaya or Oseif, an alternative solution would be to send a support team in advance to make the necessary arrangements for the joint survey team.
8. Due to a shortage of time, the Nubian Desert was not included in this year's joint survey itinerary. This area has not been surveyed since the first joint survey in 2000 despite good rainfall in adjacent areas in November 2002.
9. Transmitting data through the Codan HF radio modem using eLocust was tested from Sufaya to Khartoum, but the system did not working due to unknown reasons. Consequently, this test should be repeated again from Suakin and feedback should be provided to Bob Aston to insure that the system works.
10. The Locust Information Officers in Sudan and Yemen should prepare a short guide on operating the Codan HF radio modem and exchange their knowledge to improve the wireless transmission of field data. Bob Aston should be consulted regarding any difficulties or problems in using the modem with eLocust.



## **Appendix I. Survey participants**

### **EGYPT**

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**Appendix II. Daily programme of the Second Joint Survey, 26 Jan – 2 Feb 2003**

<b>Date &amp; Time</b>	<b>Activity</b>	<b>Overnight</b>	<b>Remarks</b>
<b>26/01/03</b>	Egyptian participants at Abu Ramad and Sudanese participants at Oseif	Abu Ramad	
<b>27/01/03</b> 0730-1030 1030-1100 1100-1630 1900-2100	Participants from Sudan crossed border and met the Egyptians; moved to Abu Ramad Discussed and agreed on the main programme of the joint survey Surveyed coastal areas from Abu Ramad to Halaib (W. Serimtai, W. Todhei, J. Elba and W. Yahmeib) Discussed survey results and started to draft final report	Abu Ramad	Delay at border of participants from Sudan made survey time in this day shorter.
<b>28/01/03</b> 0600-1600 1800-2000	Surveyed W. Diib including (Eikwan, Sulhamed Plains, W. Harbub, W Hertra) Discussed survey findings and recorded these in the final report	Abu Ramad	
<b>29/01/03</b> 0600-1400 1800-2000	Surveyed sub-coastal areas of main wadis between Abu Ramad – Halaib (W. Eikwan, W. Furkit, Bir Furkit, W. Shallal, W. Marikwan) Discussed survey findings and recommendations	Abu Ramad	Supporting team undertook arrangements for crossing the border on the next day
<b>30/01/03</b> 0700-0900 0900-1800 1800-2000	Team crossed border to Sudan Surveyed areas between border to Sufaya via Oseif passing by W. Gabatit, Khor Marob, W. Fodokwan, W. Hebikwan, W. Adashia, W. Hipkok and W. Karbanit Prepared the camp at Sufaya	Sufaya	
<b>31/01/03</b> 0630-1600 1800-1930	Surveyed W. Diib and its branches (W. Mafdeib, Nurayeit, Sawaret, Adarim and Shendeib) Discussed survey results and suggestions to improve future joint surveys	Sufaya	
<b>01/02/03</b> 0630-1630	Break camp and travel from Sufaya to Oseif	Oseif	
<b>02/02/03</b> 0630-0930 1100-2230	Oseif – crossed border, moved to Abu Ramad Abu Ramad – Hargadah	Hargadah	

### Appendix III. Survey results

1	SURVEY STOP	1	2	3	4	5	6
1-1	Date	27/01/03	27/01/03	27/01/03	27/01/03	27/01/03	28/01/03
1-2	Name	Serimtai	Serimtai	Todhei	J. Elba	Yahmeib	Eikwan
1-3	Latitude (N)	22 12 63	22 09 09	22 13 37	22 15 00	22 14 53	22 21 03
1-4	Longitude (E or W)	36 29 31	36 25 45	36 27 13	36 23 28	36 20 48	36 12 56
<b>2</b>	<b>ECOLOGY</b>						
2-1	Area (ha) of survey	25	50	100	80	40	200
2-2	Habitat (wadi, plains, dunes, crops)	Wadi	Wadi	Wadi	Wadi	Wadi	Wadi
2-3	Date of last rain	29/10/02	29/10/02	29/10/02	29/10/02	29/10/02	29/10/02
2-4	Rain amount (mm, low moderate high?)	L	L	L	L	L	L
2-5	Vegetation (dry, greening, green, drying)	Dry	Dry	Dry	Dry	Dry	Dry
2-6	Vegetation density (low medium dense)	L	L	L	L	L	L
2-7	Soil moisture (wet/dry)	D	D	D	D	D	D
<b>3</b>	<b>LOCUSTS</b>						
3-1	Present or absent	A	A	A	A	A	A
3-2	Area infested (ha)						
<b>4</b>	<b>HOPPERS</b>						
4-1	Hopper stages (H123456F)						
4-2	Appearance (Solitary, transience, gregarious)						
4-3	Behavior (isolated, scattered, groups)						
4-4	Hopper density (/site, /m2, low med high)						
<b>5</b>	<b>BANDS</b>						
5-1	Band state (H12345F)						
5-2	Band density (/m2 or low medium high)						
5-3	Band sizes (/m2 or ha)						
5-4	Numbers of bands						
<b>6</b>	<b>ADULTS</b>						
6-1	Maturity (immature, mature)						
6-2	Appearance (solitary, transience, gregarious)						
6-3	Behavior (isolated, scattered, groups)						
6-4	Adult density (/transect, /ha, L M H)						
6-5	Breeding (copulating, laying)						
<b>7</b>	<b>SWARMS</b>						
7-1	Maturity (immature, mature)						
7-2	Swarm density (/m2 or low medium high)						
7-3	Swarm size (km2 or ha)						
7-4	Number of swarms						
7-5	Breeding (copulating, laying)						
7-6	Flying (direction, time passing)						
7-7	Flying height (low medium high)						
<b>8</b>	<b>CONTROL</b>						
8-1	Pesticide name and formulation						
8-2	Application rate (l/ha or g/ha)						
8-3	Quantity (l)						
8-4	Area treated (ha)						
8-5	Ground or air						
8-6	Estimated % kill						
<b>9</b>	<b>COMMENTS</b>						

Was a GPS used to determine locations? Yes

No

Country: EGYPT

05/01/03

Is a brief interpretation or analysis of the results included?

Locust Officer: Joint Team

Date:

1	SURVEY STOP	7	8	9	10	11	12
1-1	Date	28/01/03	28/01/03	28/01/03	28/01/03	28/01/03	28/01/03
1-2	Name	Sulhamed	W.Harbub	W. Heratra	W. Diib	W. Diib	W. Diib
1-3	Latitude (N)	22 15 01	22 11 10	22 05 19	22 00 19	22 02 36	22 04 00
1-4	Longitude (E or W)	36 10 10	36 08 44	36 05 53	35 59 57	35 57 30	35 56 34
<b>2</b>	<b>ECOLOGY</b>						
2-1	Area (ha) of survey	100	90	2000	25	70	150
2-2	Habitat (wadi, plains, dunes, crops)	Wadi	Wadi	Wadi	Wadi	Wadi	Wadi
2-3	Date of last rain	29/10/02	29/10/02	29/10/02	29/10/02	29/10/02	29/10/02
2-4	Rain amount (mm, low moderate high?)	L	L	L	L	L	L
2-5	Vegetation (dry, greening, green, drying)	Dry	Dry	Dry	Dry	Drying	Drying
2-6	Vegetation density (low medium dense)	L	L	L	L	L	L
2-7	Soil moisture (wet/dry)	D	D	D	D	D	D
<b>3</b>	<b>LOCUSTS</b>						
3-1	Present or absent	A	A	A	A	A	A
3-2	Area infested (ha)						
<b>4</b>	<b>HOPPERS</b>						
4-1	Hopper stages (H123456F)						
4-2	Appearance (Solitary, transience, gregarious)						
4-3	Behavior (isolated, scattered, groups)						
4-4	Hopper density (/site, /m2, low med high)						
<b>5</b>	<b>BANDS</b>						
5-1	Band state (H12345F)						
5-2	Band density (/m2 or low medium high)						
5-3	Band sizes (/m2 or ha)						
5-4	Numbers of bands						
<b>6</b>	<b>ADULTS</b>						
6-1	Maturity (immature, mature)						
6-2	Appearance (solitary, transience, gregarious)						
6-3	Behavior (isolated, scattered, groups)						
6-4	Adult density (/transect, /ha, L M H)						
6-5	Breeding (copulating, laying)						
<b>7</b>	<b>SWARMS</b>						
7-1	Maturity (immature, mature)						
7-2	Swarm density (/m2 or low medium high)						
7-3	Swarm size (km2 or ha)						
7-4	Number of swarms						
8-5	Breeding (copulating, laying)						
7-6	Flying (direction, time passing)						
7-7	Flying height (low medium high)						
<b>8</b>	<b>CONTROL</b>						
8-1	Pesticide name and formulation						
8-2	Application rate (l/ha or g/ha)						
8-3	Quantity (l)						
8-4	Area treated (ha)						
8-5	Ground or air						
8-6	Estimated % kill						
<b>9</b>	<b>COMMENTS</b>						

Was a GPS used to determine locations? Yes

No

Country: EGYPT  
05/01/03

Is a brief interpretation or analysis of the results included?

Locust Officer: Joint Team

Date:

1	SURVEY STOP	13	14	15	16	17	18
1-1	Date	28/01/03	28/01/03	29/01/03	29/01/03	29/01/03	29/01/03
1-2	Name	W. Diib	W. Diib	Eikwan	Bir Furkeit	W. Furkeit	W. Furkeit
1-3	Latitude (N)	22 08 49	22 18 21	22 01 33	22 00 05	21 59 28	22 01 43
1-4	Longitude (E or W)	35 56 13	35 56 26	36 39 51	36 36 13	36 38 00	36 36 43
2	ECOLOGY						
2-1	Area (ha) of survey	80	100	60	200	80	45
2-2	Habitat (wadi, plains, dunes, crops)	Wadi	Wadi	Wadi	Wadi	Wadi	Wadi
2-3	Date of last rain	29/10/02	29/10/02	29/10/02	29/10/02	29/10/02	29/10/02
2-4	Rain amount (mm, low moderate high?)	L	L	L	L	L	L
2-5	Vegetation (dry, greening, green, drying)	Dry	Dry	Dry	Dry	Dry	Dry
2-6	Vegetation density (low medium dense)	L	L	L	L	L	L
2-7	Soil moisture (wet/dry)	D	D	D	D	D	D
3	LOCUSTS						
3-1	Present or absent	A	A	A	A	A	A
3-2	Area infested (ha)						
4	HOPPERS						
4-1	Hopper stages (H123456F)						
4-2	Appearance (Solitary, transience, gregarious)						
4-3	Behavior (isolated, scattered, groups)						
4-4	Hopper density (/site, /m2, low med high)						
5	BANDS						
5-1	Band state (H12345F)						
5-2	Band density (/m2 or low medium high)						
5-3	Band sizes (/m2 or ha)						
5-4	Numbers of bands						
6	ADULTS						
6-1	Maturity (immature, mature)						
6-2	Appearance (solitary, transience, gregarious)						
6-3	Behavior (isolated, scattered, groups)						
6-4	Adult density (/transect, /ha, L M H)						
6-5	Breeding (copulating, laying)						
7	SWARMS						
7-1	Maturity (immature, mature)						
7-2	Swarm density (/m2 or low medium high)						
7-3	Swarm size (km2 or ha)						
7-4	Number of swarms						
8-5	Breeding (copulating, laying)						
7-6	Flying (direction, time passing)						
7-7	Flying height (low medium high)						
8	CONTROL						
8-1	Pesticide name and formulation						
8-2	Application rate (l/ha or g/ha)						
8-3	Quantity (l)						
8-4	Area treated (ha)						
8-5	Ground or air						
8-6	Estimated % kill						
9	COMMENTS						

Was a GPS used to determine locations? Yes  
Country: EGYPT  
05/01/03

Is a brief interpretation or analysis of the results included? No  
Locust Officer: Joint Team  
Date:

1	SURVEY STOP	19	20	21	22	23	24
1-1	Date	29/01/03	29/01/03	30/01/03	30/01/03	30/01/03	30/01/03
1-2	Name	W. Shallal	W. Marikwn	W. Gabatit	W. Marob	W. Fodokwan	W. Hebikwan
1-3	Latitude (N)	22 05 12	22 11 52	21 56 02	21 50 10	21 44 56	21 32 42
1-4	Longitude (E or W)	36 34 58	36 34 36	36 46 39	36 50 58	36 44 28	36 32 04
<b>2</b>	<b>ECOLOGY</b>						
2-1	Area (ha) of survey	100	2000	20	30	30	30
2-2	Habitat (wadi, plains, dunes, crops)	Wadi	Wadi	Wadi	Wadi	Wadi	Wadi
2-3	Date of last rain	29/10/02	29/10/02	29/10/02	29/10/02	07/12/02	07/12/02
2-4	Rain amount (mm, low moderate high?)	L	L	L	L	M	M
2-5	Vegetation (dry, greening, green, drying)	Dry	Dry	Dry	Drying	Dry	Dry
2-6	Vegetation density (low medium dense)	L	L	L	L	L	L
2-7	Soil moisture (wet/dry)	D	D	D	D	D	D
<b>3</b>	<b>LOCUSTS</b>						
3-1	Present or absent	A	A	A	A	A	A
3-2	Area infested (ha)						
<b>4</b>	<b>HOPPERS</b>						
4-1	Hopper stages (H123456F)						
4-2	Appearance (Solitary, transience, gregarious)						
4-3	Behavior (isolated, scattered, groups)						
4-4	Hopper density (/site, /m2, low med high)						
<b>5</b>	<b>BANDS</b>						
5-1	Band state (H12345F)						
5-2	Band density (/m2 or low medium high)						
5-3	Band sizes (/m2 or ha)						
5-4	Numbers of bands						
<b>6</b>	<b>ADULTS</b>						
6-1	Maturity (immature, mature)						
6-2	Appearance (solitary, transience, gregarious)						
6-3	Behavior (isolated, scattered, groups)						
6-4	Adult density (/transect, /ha, L M H)						
6-5	Breeding (copulating, laying)						
<b>7</b>	<b>SWARMS</b>						
7-1	Maturity (immature, mature)						
7-2	Swarm density (/m2 or low medium high)						
7-3	Swarm size (km2 or ha)						
7-4	Number of swarms						
8-5	Breeding (copulating, laying)						
7-6	Flying (direction, time passing)						
7-7	Flying height (low medium high)						
<b>8</b>	<b>CONTROL</b>						
8-1	Pesticide name and formulation						
8-2	Application rate (l/ha or g/ha)						
8-3	Quantity (l)						
8-4	Area treated (ha)						
8-5	Ground or air						
8-6	Estimated % kill						
<b>9</b>	<b>COMMENTS</b>						

Was a GPS used to determine locations? Yes  
Country: EGYPT & SUDAN

Is a brief interpretation or analysis of the results included? No  
Locust Officer: Joint Team  
Date: 05/02/03

<b>1</b>	<b>SURVEY STOP</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
1-1	Date	30/01/03	30/01/03	30/01/03	30/01/03	31/01/03	31/01/03
1-2	Name	K. Adashia	W. Hipkok	W. Hipkok	W. Karbanit	Mafdaib	Mafdaib
1-3	Latitude (N)	21 33 35	21 30 54	21 29 44	21 28 31	21 22 21	21 24 55
1-4	Longitude (E or W)	36 27 23	36 20 10	36 18 16	36 14 32	36 02 18	36 04 40
<b>2</b>	<b>ECOLOGY</b>						
2-1	Area (ha) of survey	100	20	600	20	100	4
2-2	Habitat (wadi, plains, dunes, crops)	Wadi	Wadi	Wadi	Wadi	Wadi	Wadi
2-3	Date of last rain	07/12/02	07/12/02	07/12/02	07/12/02	07/12/02	07/12/02
2-4	Rain amount (mm, low moderate high?)	M	M	M	M	L	L
2-5	Vegetation (dry, greening, green, drying)	Dry	Dry	Dry	Greening	Green	Greening
2-6	Vegetation density (low medium dense)	L	L	L	L	L	L
2-7	Soil moisture (wet/dry)	D	D	D	D	D	D
<b>3</b>	<b>LOCUSTS</b>						
3-1	Present or absent	A	A	A	A	A	A
3-2	Area infested (ha)						
<b>4</b>	<b>HOPPERS</b>						
4-1	Hopper stages (H123456F)						
4-2	Appearance (Solitary, transience, gregarious)						
4-3	Behavior (isolated, scattered, groups)						
4-4	Hopper density (/site, /m2, low med high)						
<b>5</b>	<b>BANDS</b>						
5-1	Band state (H12345F)						
5-2	Band density (/m2 or low medium high)						
5-3	Band sizes (/m2 or ha)						
5-4	Numbers of bands						
<b>6</b>	<b>ADULTS</b>						
6-1	Maturity (immature, mature)						
6-2	Appearance (solitary, transience, gregarious)						
6-3	Behavior (isolated, scattered, groups)						
6-4	Adult density (/transect, /ha, L M H)						
6-5	Breeding (copulating, laying)						
<b>7</b>	<b>SWARMS</b>						
7-1	Maturity (immature, mature)						
7-2	Swarm density (/m2 or low medium high)						
7-3	Swarm size (km2 or ha)						
7-4	Number of swarms						
8-5	Breeding (copulating, laying)						
7-6	Flying (direction, time passing)						
7-7	Flying height (low medium high)						
<b>8</b>	<b>CONTROL</b>						
8-1	Pesticide name and formulation						
8-2	Application rate (l/ha or g/ha)						
8-3	Quantity (l)						
8-4	Area treated (ha)						
8-5	Ground or air						
8-6	Estimated % kill						
<b>9</b>	<b>COMMENTS</b>						

Was a GPS used to determine locations? Yes  
Country: SUDAN

Is a brief interpretation or analysis of the results included? No  
Locust Officer: Joint Team  
Date: 05/01/03

1	SURVEY STOP	31	32	33	34	35	
1-1	Date	31/01/03	31/01/03	31/01/03	31/01/03	31/01/03	
1-2	Name	Nurayet	Sawaret	Adarim	Adarim	Shendeib	
1-3	Latitude (N)	21 30 55	21 33 14	21 38 10	21 39 12	21 46 49	
1-4	Longitude (E or W)	36 06 04	36 06 36	36 07 18	36 08 19	36 08 16	
2	<b>ECOLOGY</b>						
2-1	Area (ha) of survey	15	20	15	75	40	
2-2	Habitat (wadi, plains, dunes, crops)	Wadi	Wadi	Wadi	Wadi	Wadi	
2-3	Date of last rain	07/12/02	07/12/02	07/12/02	07/12/02	29/10/02	
2-4	Rain amount (mm, low moderate high?)	L	L	L	L	L	
2-5	Vegetation (dry, greening, green, drying)	Green	Drying	Greening	Green	Dry	
2-6	Vegetation density (low medium dense)	M	L	L	D	L	
2-7	Soil moisture (wet/dry)	D	D	D	D	D	
3	<b>LOCUSTS</b>						
3-1	Present or absent	A	A	A	A	A	
3-2	Area infested (ha)						
4	<b>HOPPERS</b>						
4-1	Hopper stages (H123456F)						
4-2	Appearance (Solitary, transience, gregarious)						
4-3	Behavior (isolated, scattered, groups)						
4-4	Hopper density (/site, /m2, low med high)						
5	<b>BANDS</b>						
5-1	Band state (H12345F)						
5-2	Band density (/m2 or low medium high)						
5-3	Band sizes (/m2 or ha)						
5-4	Numbers of bands						
6	<b>ADULTS</b>						
6-1	Maturity (immature, mature)						
6-2	Appearance (solitary, transience, gregarious)						
6-3	Behavior (isolated, scattered, groups)						
6-4	Adult density (/transect, /ha, L M H)						
6-5	Breeding (copulating, laying)						
7	<b>SWARMS</b>						
7-1	Maturity (immature, mature)						
7-2	Swarm density (/m2 or low medium high)						
7-3	Swarm size (km2 or ha)						
7-4	Number of swarms						
8-5	Breeding (copulating, laying)						
7-6	Flying (direction, time passing)						
7-7	Flying height (low medium high)						
8	<b>CONTROL</b>						
8-1	Pesticide name and formulation						
8-2	Application rate (l/ha or g/ha)						
8-3	Quantity (l)						
8-4	Area treated (ha)						
8-5	Ground or air						
8-6	Estimated % kill						
9	<b>COMMENTS</b>						

Was a GPS used to determine locations? Yes  
Country: SUDAN

Is a brief interpretation or analysis of the results included? No  
Locust Officer: Joint Team  
Date: 05/02/03