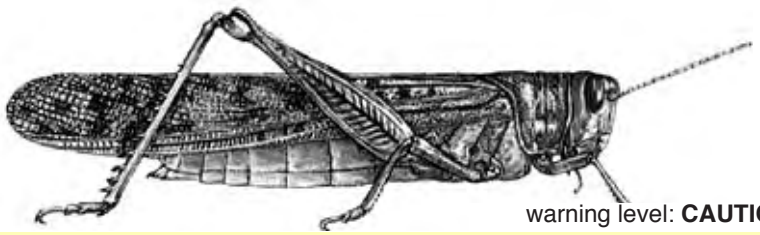

warning level: **CAUTION (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 340**

(2 February 2007)

General Situation during January 2007 Forecast until mid-March 2007

Important Desert Locust infestations were present along the Red Sea coastal plains and in northwest Somalia during January while other regions remained calm. Control operations against hopper and adult groups continued in outbreak areas on the Eritrean coast. Additional infestations were found in adjacent coastal areas in Sudan and small-scale breeding occurred in Saudi Arabia. A second generation of breeding is underway in Eritrea and Sudan that could give rise to small hopper bands and swarms in March. More rains could cause the situation to deteriorate further in April and threaten the Central Region by May. All efforts should be made to monitor the developing and potentially dangerous situation carefully.

Western Region. Desert Locust infestations continued to decline in previously infested areas in northwest **Mauritania**, **Western Sahara** and **Niger** where only small residual populations remained during January. Although low numbers of adults could move north towards the Draa Valley in **Morocco**, to northern Mauritania and to southern **Algeria** during periods of warm southerly winds, the situation is expected to remain calm during the forecast period.

Central Region. Ground teams treated 4,000 ha of solitarious and *transiens* hoppers and adults that were forming small groups on the northern Red Sea coast of **Eritrea** during January. Some infestations extended across the border onto the coastal plains of **Sudan** where additional survey and control teams were being mobilized. A second generation of breeding started at mid-month that will cause locust numbers to increase further in both countries. As vegetation dries out, locusts will concentrate, gregarize and form small groups, hopper bands and perhaps a few small swarms that could easily move across the Red Sea to **Yemen** and **Saudi Arabia**. So far, small-scale breeding has occurred on the Saudi Arabian coast while only a few adults were present on the Yemeni coast. If more rain falls during February and March in Eritrea, conditions could remain favourable for a third generation in April and May during which locust numbers would rapidly increase and hopper bands and swarms would form and threaten the Region. Neighbouring countries have been alerted to increase surveys in the winter breeding areas along the Red Sea coast. In northern **Somalia**, scattered adults formed groups at two places on the northwest coast where small-scale breeding is expected to occur in February and March, giving rise to additional groups. All efforts should be made to monitor the situation closely in the Region and undertake necessary control operations.

Eastern Region. The situation remained calm during January. Limited egg laying and hatching are likely in the spring breeding areas in western **Pakistan** and southeast **Iran** by the end of the forecast period. No significant developments are expected.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
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DLIS: www.fao.org/ag/locusts

No. 340

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in January 2007

Good rainfall and ecological conditions prevailed along both sides of the Red Sea during January. No significant rainfall occurred in the Western or Eastern regions where vegetation was mainly dry.

In the **Western Region**, no significant rainfall was reported during January. Consequently, vegetation continued to dry out in the northern Sahel and dry conditions prevailed further north throughout most of the Sahara. In Mauritania, vegetation became increasingly dry in the northwest (Inchiri and Adrar) while light rain fell in the north (Tiris-Zemmour). In northern Mali, vegetation continued to dry out in the Adrar des Iforas. In Niger, vegetation remained green in parts of Tamesna, mainly northwest of In Abangharit. In Algeria, vegetation was dry or drying out in the west near Tindouf, in the central Sahara near Adrar, in the east near Djanet, and along the Malian border but it remained green in some wadis in the south near Tamanrasset. Light rain fell in parts of the central interior of Western Sahara on 11 January, and light to moderate showers fell on the 27-28th along the coast from Laayoune to the southern side of the Atlas Mountains in Morocco near Errachidia. Nevertheless, ecological conditions remained dry except for one area in the southern part of Western Sahara near Ma'Tallah where vegetation was drying out.

In the **Central Region**, breeding conditions remained unusually favourable during January along both sides of the Red Sea, between Suakin, Sudan and Obock, Djibouti and from Yenbo, Saudi Arabia to Al Mukha, Yemen. Light rain fell in most of these coastal areas while heavier showers were reported along the Tihama coast in Yemen. Light rain also fell along the coastal plains east of Aden in southern Yemen. In northwest Somalia, green vegetation was present along the coast between Bulhar and the Djibouti border, and breeding conditions were favourable due to rainfall in December and again in late January. Dry conditions prevailed on the southeastern coast in Egypt while green vegetation persisted along the Lake Nasser shore and in the Western Desert in agricultural areas at Sh. Oweinat. Light to moderate rain fell at times in the coastal and interior areas of northern Oman where vegetation was mostly dry.

In the **Eastern Region**, no significant rainfall was reported during January. Nevertheless, vegetation remained green in parts of Rajasthan, India. Ecological conditions are likely to be improving in parts of the spring breeding areas in Baluchistan of Iran and Pakistan where good rains fell in December.

Area Treated

Eritrea 4,000 ha (28 December – 18 January)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **Situation**

During January, low numbers of scattered solitarious immature and mature adults were present in the northwest region of Inchiri between Akjoujt (1945N/1421W) and the Western Sahara border, and in southwest Adrar between Tidjikja (1833N/1126W) and Atar (2032N/1308W). Scattered immature adults were seen near Zouerate (2244N/1221W) and at one place south of Akjoujt. Isolated breeding continued east of Akjoujt and north of Atar where late instar hoppers and fledglings were present at two places.

• **Forecast**

Unless rainfall occurs, breeding should end in the northwest and only scattered adults are likely to persist during the forecast period. During periods of warm southerly winds, some adults could move further north to Tiris-Zemmour and eventually breed if rainfall occurs.

Mali

• **Situation**

On 3 January, mature gregarious-coloured locust adults were reported between Tombouctou and Araouane at N'Karba (1805N/0316W). Subsequent ground surveys did not find any locusts in the area.

• **Forecast**

Low numbers of locusts are likely to be present in parts of Timetrine, Tilemsi Valley, Adrar des Iforas and Tamesna and could persist during the forecast period in any areas that remain green.

Niger

• **Situation**

During January, isolated late instar solitarious hoppers, fledglings and immature adults were present near Arlit (1843N/0721E) while only solitarious immature adults were seen at a few places in Tamesna northwest of In Abangharit (1754N/0559E). These locusts are residual populations from earlier infestations that were treated in December.

• **Forecast**

Low numbers of solitarious locusts are likely to persist in those parts of Tamesna that remain green. There is a low risk that some adults could move east to the Air Mountains or north towards central Algeria during periods of warm southerly and southwesterly winds.

Chad

• **Situation**

No reports were received during January.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No reports were received during January.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During December and January, no locusts were seen during surveys carried out in the west near Tindouf (2741N/0811W), in the central Sahara near Adrar (2753N/0017W), in the east near Djanet (2434N/0930E) or in the south between Tamanrasset (2250N/0528E) and the Malian border at Bir Bou Mokhtar (2120N/0056E).

• **Forecast**

Low numbers of adults could appear in the west and in the south during periods of warm southerly winds.

Morocco

• **Situation**

During January, isolated immature *transiens* adults were seen at two locations during surveys carried out in Western Sahara: near the coast south of Dakhla (2342N/1555W) on 18 January and in the interior southwest of Aousserd near Ma'Tallah (2223N/1502W) on the 20th. These locusts are left-over from breeding that occurred last November.

• **Forecast**

Isolated adults are likely to persist in the southern part of Western Sahara. No significant developments are likely.

Libyan Arab Jamahiriya

• **Situation**

No surveys were carried out and no locusts were reported during January.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during January.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During January, locust numbers increased on the Red Sea coastal plains south of Tokar Delta near Karora (1745N/3820E) and the Eritrean border. By the end of the month, solitarious, *transiens* and gregarious hoppers of all instars, fledglings and immature and mature adults were gregarizing and forming small groups at one location. Adults were also seen laying eggs on 29 January, indicating that a second generation of breeding has commenced. No locusts were seen in Tokar Delta.

• **Forecast**

Locust numbers will increase on the Red Sea coastal plains between Tokar Delta and the Eritrean border as second generation eggs hatch. As vegetation dries out, locusts will concentrate, gregarize and form small groups, bands and perhaps a few swarmlets. Adults could move north or south along the coast. If more rain falls during February and March, conditions could remain favourable for a third generation in April and May during which locust numbers would rapidly increase and hopper bands and swarms would form and threaten the Region. All efforts should be made to monitor the situation closely and undertake the necessary control operations.

Eritrea

• **Situation**

During January, a small outbreak continued on the Red Sea coastal plains north of Massawa (1537N/3928E) within an area of about 200 km by 30 km. Solitarious and *transiens* hoppers and adults were present between Shelshela (1553N/3906E) and Meleet (1730N/3845E), near the Sudanese border. Small groups of hoppers and adults formed in a few places but there were no reports of hopper bands or swarms. By mid-month, a second generation of breeding had started as adults were laying eggs near Wekiro (1548N/3918E), Mersa Cuba (1616N/3911E) and Meleet. Most of the control operations were carried out against infestations in millet crops near Shelshela (1553N/3906E) and, to a lesser extent, in other areas north of Massawa. Ground teams treated 4,000 ha from 28 December to 18 January.

Although no locusts were seen on the southern coast between Massawa and Assab (1301N/4247E), there is a strong possibility that eggs were laid in some areas but have not yet hatched.

• **Forecast**

Locust numbers will increase on the Red Sea coastal plains between Massawa and the Sudanese border as second generation eggs hatch. As vegetation dries out, locusts will concentrate, gregarize and form small groups, bands and perhaps a few swarmlets. Adults could move north or south along the coast. Locust numbers will also increase on the southern coast as hatching is expected early in the forecast period. If more rain falls during February and March, conditions could remain favourable for a third generation in April and May during which locust numbers would rapidly increase and hopper bands and swarms would form and threaten the Region. All efforts should be made to monitor the situation closely and undertake the necessary control operations.

Ethiopia

• **Situation**

No surveys were carried out and no locusts were reported during December.

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

No locusts were reported during January.

• **Forecast**

There is a slight risk of low numbers of adults appearing on the northern coastal plains between Obock and the Eritrean border.

Somalia

• **Situation**

During January, scattered solitarious immature and mature adults were present at densities less than 500 adults/ha within a 200 km stretch of the northwest coastal plains between Bulhar (1023N/4425E) and the Djibouti border. Groups of solitarious and gregarious adults were reportedly seen at two places near Abdigeedi (1031N/4402E) on about 100 ha. Some of the adults were copulating.

• **Forecast**

Small-scale breeding will occur on the northwest coast, causing locust numbers to increase and perhaps a few small groups or bands will form between Berbera and the Djibouti border.

Egypt

• **Situation**

No locusts were seen during surveys carried out in January on the Red Sea coast between Shalatyn (2308N/3535E) and Halaib (2212N/3635E), in the Red Sea Hills between the coast and Lake Nasser, along the shore of Lake Nasser, in the Western Desert at Sh. Oweinat (2219N/2845E) and Siwa (2912N/2531E) and on the Mediterranean coast east of Salum (3131N/2509E).

• **Forecast**

If rains fall, small-scale breeding is likely to occur on the Red Sea coastal plains between Shalatyn and the Sudanese border. There is a low risk of adults arriving in this area from further south.

Saudi Arabia

• **Situation**

During January, small-scale breeding continued along the Red Sea coastal plains north of Jeddah near Masturah (2309N/3851E) where isolated late instar solitarious hoppers were present. Small-scale breeding was also in progress further south along the coast near Qunfidah (1909N/4107E) and Jizan (1656N/4233E). Low numbers of solitarious and *transiens* third to sixth instar hoppers and immature and mature solitarious adults were present in several places in both areas. Some adults were laying eggs near Qunfidah.

• **Forecast**

Locust numbers will increase as small-scale breeding continues during the forecast period along

the Red Sea coast. There is a low risk that a few adult groups and perhaps swarmlets could appear in coastal areas from the western side of the Red Sea. All efforts should be made to monitor the situation closely.

Yemen

• **Situation**

No surveys were carried out on the Red Sea coastal plains until 28 January when isolated immature and mature solitarious adults were seen between Bayt Al Faqih (1430N/4317E) and Midi (1619N/4248E).

In the south of the country, there was an unconfirmed report in mid-January of solitarious fledglings and adults in the Abyan province.

• **Forecast**

Locust numbers will increase as small-scale breeding occurs along the Red Sea coast during the forecast period. There is a low risk that a few adult groups and perhaps swarmlets could appear in coastal areas from the western side of the Red Sea. All efforts should be made to monitor the situation closely.

Oman

• **Situation**

No locusts were seen during surveys carried out on the Musandam Peninsula, the Batinah coast and in the Dhahera interior of the north during January.

• **Forecast**

No significant developments are likely.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No reports were received during January.

• **Forecast**

Low numbers of adults could appear and small-scale breeding may occur in areas of earlier rainfall along the southeastern coast between Bandar Abbas and Gwatar.

Pakistan

• **Situation**

No locusts were reported in January.

• **Forecast**

Low numbers of adults could appear and breed on a small-scale in areas of earlier rainfall along the coast and perhaps in the interior of Baluchistan.

India

• **Situation**

During January, an isolated adult was seen copulating north of Bhuj (2312N/6954E) in the Rann of Kutch region in Gujarat. No locusts were seen during surveys carried out in Rajasthan.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week and affected countries are encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

No. 340

DESERT LOCUST BULLETIN

Desert Locust warning levels. A colour-coded scheme has been established to indicate the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level. Your feedback on the usefulness of this scheme and any suggested improvements is welcome.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html.

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **EMPRES/WR.** Final report of the 5th Liaison Officers meeting held in Nouakchott, Mauritania (December 2006)

Links to the above information can be found in the new *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **Biopesticides**. Workshop on the future of biopesticides for Desert Locust management, Saly (Senegal), 12-15 February
- **CLCPRO**. 4th sessions of the Executive Committee and CLCPRO, Bamako (Mali), 18-22 June
- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

David Greathead. It is with deep regret that we announce the death of David Greathead in October 2006. He was an influential figure in biological control, beginning his career in the Anti-Locust Research Service in 1953 under Dr. Boris Uvarov and joining CABI in 1963. We would like to express our sincere condolences to his family and government.

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)
- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)
- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP
- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL
- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL
- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM
- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE
- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE
- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT
- 1 - 20 mm of rainfall.

MODERATE
- 21 - 50 mm of rainfall.

HEAVY
- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

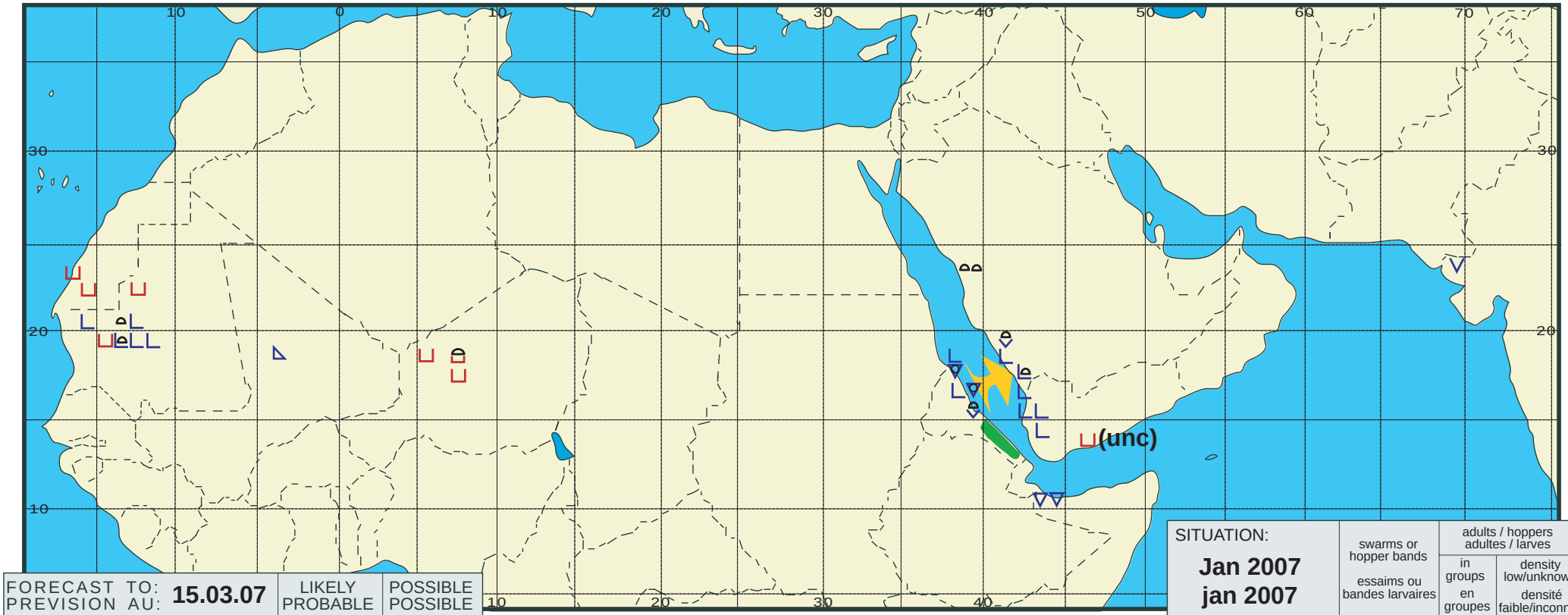
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

340



FORECAST TO: PREVISION AU: **15.03.07**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Jan 2007** **jan 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊍

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Desert locust outbreak in Eritrea

Alert level increased to "caution" in the Red Sea area

23 February 2007, Rome – In Desert Locust early warning, vigilance is critical, particularly on the Red Sea coastal plains where a Desert Locust outbreak developed in Eritrea in December 2006, FAO says. Locust numbers continued to increase along the coast between Massawa and the Sudanese border during January. Recently infestations have also been reported in adjacent coastal areas in Sudan.

Other countries along the Red Sea and Gulf of Aden could face important locust infestations this winter because of unusually good rains and favourable ecological conditions.

Small-scale breeding is in progress in coastal areas of Saudi Arabia and Yemen, and reports of locust concentrations on the northwest coast of Somalia have been received by FAO.

In Eritrea and Sudan a second generation of breeding is underway that could cause locusts to rapidly increase in number.

"When vegetation begins to dry out, these locusts may form hopper bands and swarms that could move to neighbouring countries," said FAO expert Keith Cressman.

FAO is closely monitoring the situation as continuing rains could lead to further deterioration and greater threat to the countries around the Red Sea in April/May.

Control operations

Control operations against locusts are continuing in outbreak areas on the Eritrean coast.

Eritrean ground teams have treated more than 15,000 hectares of hoppers and adults that were forming small groups on the northern Red Sea coast since last December. Most of the control has been carried out in millet crops on the coast near Shelshela and Sheib.

The governments of Sudan and Yemen have mobilized additional locust teams to monitor the coastal plains in their countries and control any infestations that may endanger crops. A spray aircraft has been deployed on standby on the Sudanese coast.

Workshop on biopesticides

Biopesticides are derived from natural materials such as animals, plants, bacteria, and certain minerals. They help to fight pests while minimizing risks to human health and the environment.

The potential of the biopesticide Green Muscle® as a method to combat Desert Locust has been demonstrated in several field trials in Africa.

These results have just been announced in an international forum on the future of biopesticides for Desert Locust management that FAO and IFAD organized in Senegal from 12 to 15 February 2007.

The workshop signalled the growing acceptance of bio-pesticides in Desert Locust and grasshopper control. The first practical outcome of the workshop is that FAO will conduct field trials on the Red Sea coastal plains in Sudan in collaboration with the national Locust Control Centre and the international research institution, ICIPE, in the next month.

Contact:
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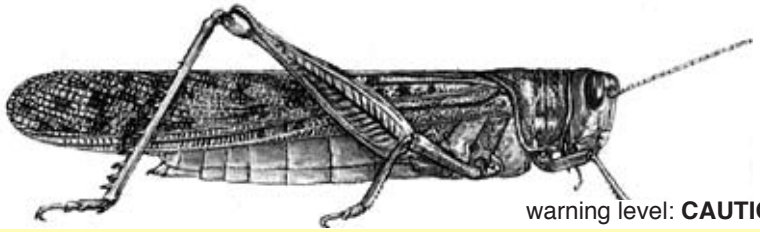
Related links
Locust Watch
EMPRES



warning level: **CAUTION (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 341**

(2 March 2007)

General Situation during February 2007 Forecast until mid-April 2007

The Desert Locust situation remained very serious during February along the Red Sea coastal plains near the Sudan/Eritrea border and on the northwest coast of Somalia. In both areas, there were reports of hopper bands and swarms forming. More rains in March could cause the situation to deteriorate further and threaten the Central Region. Control operations are in progress in Sudan and Eritrea. All efforts should be made to monitor the developing and potentially dangerous situation carefully.

Western Region. The situation remained calm in the region during February. Limited breeding occurred in northwest **Mauritania** and in central **Algeria** where low numbers of solitarious locusts were present. Isolated adults were also present in parts of the spring breeding areas along the southern side of the Atlas Mountains in **Morocco** and western Algeria. During the forecast period, small-scale breeding is likely to take place in both countries causing locust numbers to increase slightly. Elsewhere, isolated adults may be present in parts of northern **Mali** and **Niger**. No significant developments are expected.

Central Region. Although no reports were received from **Eritrea** during February, survey and control operations were probably in progress against small groups, bands and swarms forming on the northern Red Sea coast. Several swarms were reported in adjacent coastal areas in **Sudan** where they laid eggs that started hatching by the end of the month and the resulting hoppers were forming small bands. Aerial and ground control operations treated 2,700 ha in Sudan. Local breeding occurred on the coast in **Saudi Arabia** and **Yemen**, and barrier treatments were undertaken on nearly 2,000 ha in one area in Saudi Arabia. The situation in Sudan and Eritrea is worrisome because breeding conditions continued to remain favourable during February. More rain in March would allow further breeding in which case locusts would rapidly increase and hopper bands and swarms would form and threaten the Region. Elsewhere, unconfirmed reports indicated that locusts increased on the northwest coast in **Somalia** where small hopper bands and swarms may be present. FAO missions will visit Eritrea and Somalia in the coming weeks to clarify the situation. A Green Muscle® biopesticide trial will be carried out in Sudan in March.

Eastern Region. The situation remained calm during February. Limited egg laying and hatching are likely in the spring breeding areas in western **Pakistan** where isolated adults were present in February and in southeast **Iran**. No significant developments are expected.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
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No. 341

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in February 2007

Good ecological conditions prevailed on the Red Sea coast near the Eritrea/Sudan border and in Saudi Arabia and Yemen as well as in northwest Somalia. Ecological conditions were improving in parts of Northwest Africa where light rain fell at times.

In the **Western Region**, light rain fell at times in parts of Northwest Africa during February. During the first week, heavy rain occurred in Laayoune, Western Sahara while lighter showers were reported in other parts of the territory. Nevertheless, vegetation remained dry except in one area in the extreme south near Ma'Tallah. Light showers also occurred at times along the southern side of the Atlas Mountains in Morocco between Sidi Ifni and Erfoud, and ecological conditions were improving in some of the nearby spring breeding areas, mainly in the Draa, Ziz and Ghris valleys. In Algeria, rains may have fallen in the first week in the west between Adrar and Tindouf. Ecological conditions remained favourable for breeding in the west near Beni Abbes, in the centre near Adrar and in the south near Tamanrasset. In Libya, green vegetation was limited to a few wadis in the Al Hamada Al Hamra region in the northwest. In West Africa, very little if any rain fell in the Sahel. In Mauritania, ecological conditions were unfavourable for locust survival and breeding except for a few limited areas in the northwest between Akjoujt and Chinguetti. Green vegetation persisted in northern Mali in some of the larger wadis in the Adrar des Iforas and Tamesna, and in Niger mainly along the western side of the Air Mountains.

In the **Central Region**, light rain fell at times during February in the winter breeding areas along both sides of the Red Sea. On the western side of the Red Sea, rain occasionally fell on the coastal plains between Tokar, Sudan and Mehimet, Eritrea causing vegetation to become greener and ecological conditions to remain favourable for breeding. Vegetation started to dry out slightly south of Mehimet to Massawa but remained green further south near Tio. Although light showers were reported near the Sudanese-Egyptian border, unusually dry conditions prevailed between Suakin, Sudan and Shalatyn, Egypt except in parts of Wadi Diib and on the coast near Halaib. On the eastern side of the Red Sea, light rains fell at times mainly along the central and southern coast in Saudi Arabia. Ecological conditions remained favourable for breeding along the coast from Jeddah to the northern coast in Yemen as well as along parts of the Gulf of Aden coast. Conditions were less favourable along the Yemeni central coast where vegetation was starting to dry out. In northwest Somalia, green vegetation persisted along the coast between Berbera and the Djibouti border. In Oman, scattered showers fell in parts of the northern interior and on the coast.

In the **Eastern Region**, light rain fell in parts of the spring breeding areas in Baluchistan in western Pakistan and southeast Iran, causing breeding conditions to improve during February. During the first decade of the month, light to moderate rain fell in the summer breeding areas along both sides of the Indo-Pakistan border and conditions were favourable for breeding. However, locusts are normally not present in this area during the winter.

Area Treated

Eritrea	no details available
Saudi Arabia	1,900 ha (20-28 February)
Sudan	2,710 ha (15-26 February)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **Situation**

During February, isolated immature and mature adults were present between Akjoujt (1945N/1421W) and Chinguetti (2027N/1221W). Small-scale breeding occurred east of Akjoujt near Grara de Tenemrourt (1945N/1325W) where isolated late instar hoppers and fledglings were seen at four places and adults were copulating on the 21st. In Tiris-Zemmour, isolated immature adults were reported from two places between Zouerate (2244N/1221W) and Bir Moghrein (2510N/1135W).

• **Forecast**

Low numbers of adults will persist in those areas that remain green in southwest Adrar and in parts of Tiris-Zemmour. Limited hatching will occur east of

Akjoujt by mid-March and the resulting hoppers are expected to fledge from mid-April onwards. During periods of warm southerly winds, some adults could move further north to Tiris-Zemmour and breed if rainfall occurs.

Mali

• **Situation**

No locusts were reported in February.

• **Forecast**

Isolated adults may be present and could persist in any areas that remain green in Timetrine, Tilemsi Valley, Adrar des Iforas and Tamesna.

Niger

• **Situation**

No reports were received in February.

• **Forecast**

Isolated adults may be present and could persist in the few places in the Air Mountains that remain green. There is a low risk that some adults could move north towards central Algeria during periods of warm southerly and southwesterly winds.

Chad

• **Situation**

No reports were received in February.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No locusts were reported during February.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During February, isolated mature solitarious adults were present and some were copulating west of Beni Abbes (3011N/0214W). Small-scale breeding occurred south of Adrar (2753N/0017W) where isolated hoppers were reported. No locusts were seen in the south near Tamanrasset (2250N/0528E) and Djanet (2434N/0930E).

• **Forecast**

Scattered adults will persist near Adrar and Beni Abbes where limited hatching could occur by the end of March with the resulting hoppers fledging in about May. Low numbers of adults could appear in the west and in the south during periods of warm southerly winds.

Morocco

• **Situation**

In mid-February, a few isolated mature solitarious adults were seen near Merzouga in W. Talghoumt (3059N/0358W) and at Khamlia (3102N/0359W).

• **Forecast**

Small-scale breeding is likely to occur near Merzouga and perhaps in a few areas of recent rainfall in the Draa, Ziz and Ghris valleys.

Libyan Arab Jamahiriya

• **Situation**

No surveys were carried out and no locusts were reported during February.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during February.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During the first week of February, scattered immature and mature adults were present at densities of 50-300 adults/ha at three places on the Red Sea coast between Suakin (1906N/3719E) and Tokar (1827N/3741E) and at another three places in the Tokar Delta. On the 5th, five swarms were reported on the coast near the Eritrean border. During the remainder of the month, there were 11 reports of immature and mature adult groups and swarms at densities of 4-12 adults/m^2 and varying in size from 1 to 6 km^2. The infestations were concentrated within a small area of about 7 x 15 km near Aiterba (1753N/3819E) between Khor Balatat and the Eritrean border. Egg laying was first reported on the 10th and, by the last decade of the month, hatchlings were forming high-density hopper bands in one place. Aerial and ground control operations treated 2,710 ha on 15-26 February. Nearby, groups of solitary adults were copulating near Adobana (1811N/3816E). The

situation remained calm in the Tokar Delta and no locusts were seen in Khor Baraka.

• **Forecast**

Locust numbers will increase on the Red Sea coastal plains between Tokar Delta and the Eritrean border as second-generation eggs hatch. As vegetation dries out, locusts will concentrate, gregarize and form small groups, bands and swarms. Adults could move north or south along the coast. If more rain falls during March, conditions could remain favourable for a third generation in April and May during which locust numbers would rapidly increase and hopper bands and swarms would form and threaten the Region. All efforts should be made to monitor the situation closely and undertake the necessary control operations.

Eritrea

• **Situation**

Although no reports were received during February, survey and control operations are thought to be in progress against small groups, bands and swarms on the Red Sea coast between Massawa (1537N/3928E) and the Sudanese border where an outbreak has been underway for the past three months.

• **Forecast**

Locust numbers will increase on the Red Sea coastal plains between Massawa and the Sudanese border as second-generation eggs hatch. As vegetation dries out, locusts will concentrate, gregarize and form small groups, bands and swarms. Adults could move north or south along the coast. Locust numbers will also increase on the southern coast as hatching is expected early in the forecast period. If more rain falls during March, conditions could remain favourable for a third generation in April and May during which locust numbers would rapidly increase and hopper bands and swarms would form and threaten the Region. All efforts should be made to monitor the situation closely and undertake the necessary control operations.

Ethiopia

• **Situation**

No surveys were carried out and no locusts were reported in January and February.

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

No reports were received during February.

• **Forecast**

Gregarizing locust infestations may be present on the coast between Djibouti town and the Somali border. There is also a risk of low numbers of adults appearing on the northern coastal plains between Obock and the Eritrean border. All efforts should be made to monitor the situation closely.

Somalia

• **Situation**

Although surveys were not carried out during February, there were several unconfirmed reports suggesting that locust numbers increased on the northwest coast near Bulhar (1023N/4425E) and between Lughaye (1041N/4356E) and the Djibouti border where locals reported small hopper bands, adult groups and swarms.

• **Forecast**

Small-scale breeding is likely to continue on the northwest coast, causing locust numbers to increase further and perhaps a few small groups, bands or swarms will form between Berbera and the Djibouti border. All efforts should be made to monitor the situation closely.

Egypt

• **Situation**

No locusts were seen during surveys carried out in February on the Red Sea coast between Berenice (2359N/3524E) and Abu Ramad (2224N/3624E), in the Red Sea Hills between the coast and Lake Nasser, near Abu Simbel (2219N/3138E) and Tushka (2247N/3126E), and on the Mediterranean coast east of Salum (3131N/2509E).

• **Forecast**

If rains fall, small-scale breeding is likely to occur on the Red Sea coastal plains between Shalatyn and the Sudanese border. There is a low risk of adults arriving in this area from further south.

Saudi Arabia

• **Situation**

During February, small-scale breeding continued along the Red Sea coastal plains at a few places southeast of Qunfidah (1909N/4107E) where scattered solitarious immature and mature adults were present at densities of 50-80 adults/ha mixed with second to fifth instar *transiens* hoppers at densities of 1-3 hoppers/m^2. Ground control teams treated 1,900 ha using barrier treatments. Small-scale breeding was also in progress on the coast near Lith (2008N/4016E) where isolated first to fourth instar hoppers and adults were present, and near Jizan (1656N/4233E) where

scattered fledglings and adults were seen. No locusts were reported elsewhere along the coast or in the spring breeding areas in the interior.

• **Forecast**

Small-scale breeding is likely to continue along parts of the Red Sea coastal plains, causing locust numbers to increase slightly. There is a low risk that a few adult groups and small swarms could appear in coastal areas from the western side of the Red Sea. All efforts should be made to monitor the situation closely.

Yemen

• **Situation**

During February, isolated hoppers and adults were present in a few places on the central Red Sea coast between Zabid (1410N/4318E) and Hodeidah (1450N/4258E). Isolated immature and mature solitarious adults were present further north between Al Zuhrah (1541N/4300E) and Midi (1619N/4248E). On the southern coast, small-scale breeding occurred east of Aden near Zinjibar (1306N/4523E) where low numbers of third to fifth instar solitarious and *transiens* hoppers were mixed with scattered immature and mature solitarious adults. Some of the adults were copulating.

• **Forecast**

Small-scale breeding will cause locust numbers to continue to increase slightly along the Red Sea coast. Hatching will occur near Zinjibar at the beginning of the forecast period and the resulting hoppers are likely to fledge in early April. There is a low risk that a few adult groups and small swarms could appear in coastal areas from the western side of the Red Sea. All efforts should be made to monitor the situation closely.

Oman

• **Situation**

No locusts were seen during surveys carried out on the Batinah coast and in the northern interior regions of Dakhalia and Sharqiya during February.

• **Forecast**

No significant developments are likely.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No locusts were seen during surveys carried out along the southwestern coastal plains in Khuzestan Province on 18-20 February.

• **Forecast**

Low numbers of adults may be present and small-scale breeding may occur in areas of earlier rainfall along the southeastern coast between Bandar Abbas and Gwatar.

Pakistan

• **Situation**

During February, isolated mature adults were present in the spring breeding areas in Baluchistan at a few places along the coast near Pasni (2513N/6330E).

• **Forecast**

Small-scale breeding is expected to occur in areas of earlier rainfall along the coast and perhaps in the interior of Baluchistan, causing locust numbers to increase slightly.

India

• **Situation**

No locusts were seen during surveys carried out in Rajasthan and the Rann of Kutch during February.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week and affected countries are encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the

following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme has been established to indicate the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level. Your feedback on the usefulness of this scheme and any suggested improvements is welcome.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **Press Release.** Desert Locust outbreak in Eritrea (23 February)

Links to the above information can be found in the new *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **CRC**. 26th session, Kuwait (or Sana'a, Yemen), 13-17 May
- **CLCPRO**. 4th sessions of the Executive Committee and CLCPRO, Bamako (Mali), 18-22 June
- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

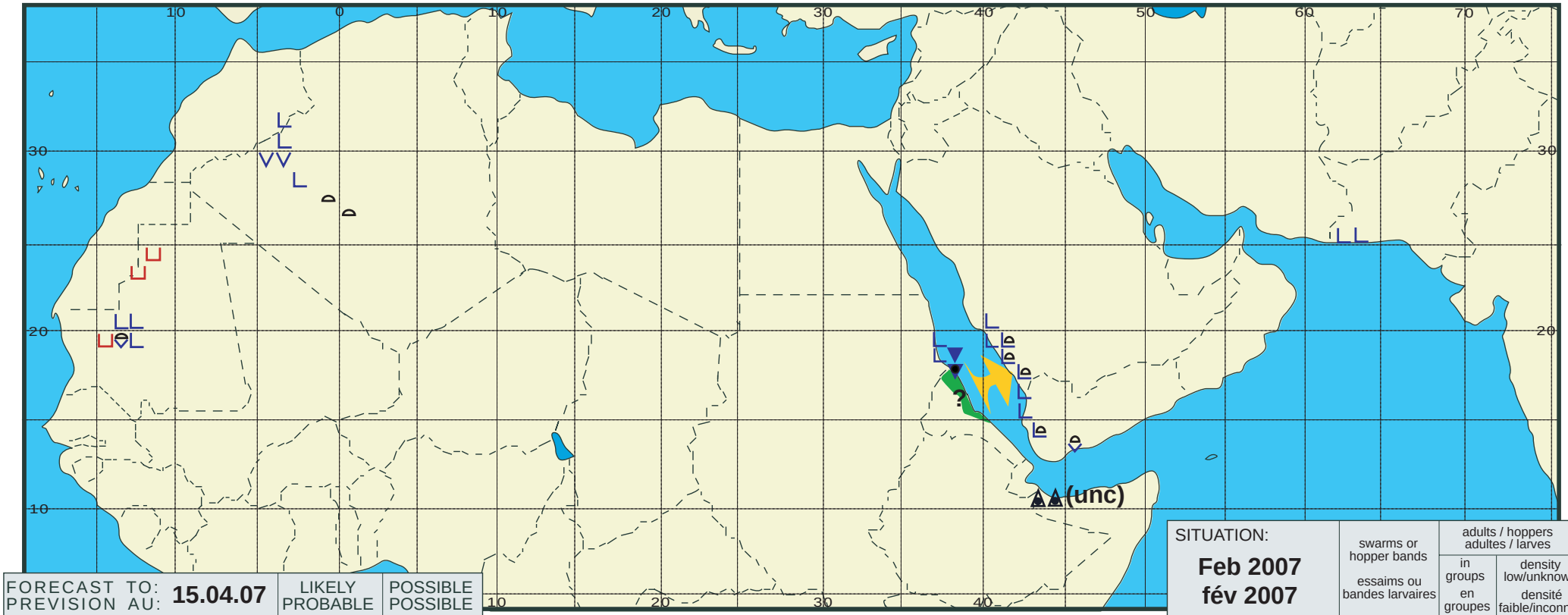
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

341



FORECAST TO: PREVISION AU: **15.04.07**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Feb 2007 fév 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	⋀
egg laying or eggs pontes ou œufs	▼	▽	⋁
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊍

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New offensive against Desert locust

Aerial control operations on the Red Sea coast and in the Horn of Africa

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Related links
Locust Watch

28 March 2007, Rome – In a new offensive against the desert locust, the UN Food and Agriculture Organization (FAO) today called on countries in northeast Africa to intensify survey and control operations, particularly on the Red Sea coast of Eritrea and Sudan and in northwest Somalia.

FAO and the Desert Locust Control Organization for Eastern Africa (DLCO-EA) have launched aerial control operations on the Red Sea coast near the Sudanese and Eritrean border to eliminate small swarms that are forming from a local outbreak that has been underway since the end of last year. Ground control operations against hopper and adult infestations have been in progress in both countries for several months.

DLCO-EA aerial operations will also start this week on the coast of northwest Somalia near Djibouti. This new offensive against an old enemy is conducted in close cooperation with local anti-locust teams.

If the swarms are not controlled on the Red Sea coast, they are likely to migrate to cropping areas in the Tokar Delta on the coast of Sudan and to the Eritrean Highlands, where it will be difficult to stop them from attacking pastures and crops.

Swarms could migrate westwards

"Once the locusts invade the Highlands, there is a slight risk that some swarms could migrate towards the summer breeding areas in the interior of Sudan before the rainy season starts. In this case, they could continue westwards in search of favourable green vegetation in Chad, Niger and Mali," FAO Desert Locust expert Keith Cressman said.

"Swarms could even reach Mauritania next June, in time for the beginning of the summer rains," according to Cressman, who recalled that a similar movement towards West Africa from the Red Sea last occurred in 1993.

Careful monitoring

In the meantime, FAO urges all concerned countries to keep monitoring the situation carefully, especially in the coastal plains in northwest Somalia as well in neighbouring areas in Djibouti, Ethiopia and Yemen.

According to FAO, any small immature swarms that escape control operations in northwest Somalia could move towards the Eritrean Highlands, across the Gulf of Aden to southern Yemen, inland towards the Ethiopian

border, or simply stay on the coast and eventually breed once the long rains commence. So far, a few swarms have crossed the Ethiopian border and were seen near Jigjiga.

Saudi Arabia

FAO is also following the situation carefully in two other important areas – the Red Sea coastal plains of Saudi Arabia and in the spring breeding areas of Southwest Asia.

Local breeding occurred on the Saudi coast south of Jeddah and, earlier this week, reports were received of small swarms. National teams have been deployed to the infested areas to conduct the necessary control operations.

Unusually good rains fell earlier this month over a large area of northern Oman, southeast Iran and western Pakistan. Ecological conditions will improve in the areas where it rained and locusts are expected to increase due to breeding during the spring.

There is a slight risk that if more swarms form in northwest Somalia, some of them could reach these spring breeding areas. Iran and Pakistan are conducting a joint ground survey on both sides of their common border in Baluchistan during April to clarify the situation.

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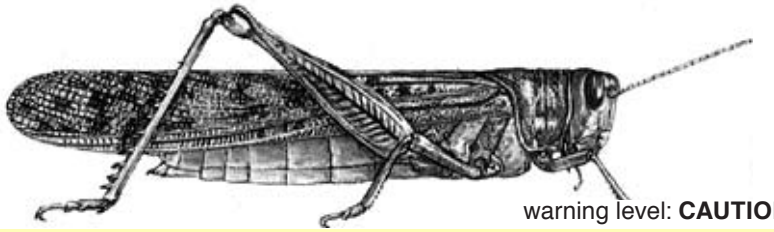

warning level: **CAUTION (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 342**

(3 April 2007)

General Situation during March 2007
Forecast until mid-May 2007

The Desert Locust situation continued to remain very serious during March in the Central Region. Hopper bands and swarms formed along the Red Sea coastal plains near the Sudan/Eritrea border and to a lesser extent on the northwest coast of Somalia. Some swarms also formed from local breeding on the Red Sea coast in Saudi Arabia. Control operations are underway in Eritrea, Sudan and Saudi Arabia. As currently infested areas are drying out, any swarms that are not controlled are expected to move into the Eritrean Highlands and the interior of Sudan, and to the interior of Saudi Arabia and Yemen where good rains fell in March. A few swarms could continue to Baluchistan in Iran and western Pakistan where widespread rains fell recently. All efforts should be made to monitor the developing and potentially dangerous situation carefully.

Western Region. The situation remained calm in the region during March. Limited breeding continued in one area of northwest **Mauritania**. Scattered adults were present in parts of western **Algeria** and western **Libya**. If swarms originating from current infestations on the Red Sea coast move towards the interior of Sudan, then there is a slight risk that they may continue towards the Western Region in May. FAO will keep countries well informed in advance.

Central Region. Hopper bands continued to form on the Red Sea coast between Massawa, **Eritrea** and Tokar, **Sudan** during March. By the end of the month, most of the hoppers had fledged and new swarms were forming along the border within an area of about 3,000 km^2. Local breeding continued on the central Red Sea coast in **Saudi Arabia**. At the end of the month, a few small swarms formed and some of the adults started to move towards the spring breeding areas in the interior. Ground control in the three countries was supplemented by aerial operations at the end of the month. As vegetation is drying out on the coast, most of the swarms along the Sudan/Eritrea border are likely to move into the Eritrean Highlands and perhaps continue west into Sudan. A few small swarms could also move further north along the coast or cross the Red Sea and reach the central interior of Saudi Arabia where they would eventually lay eggs in areas of recent rainfall. In northern **Somalia**, a few small swarms formed on the northwest coast and moved into adjacent areas of eastern **Ethiopia**. A few more swarms could form in northwest Somalia and move east along the northern coast, north to areas of recent rainfall in the interior of **Yemen**, or into adjacent areas of Ethiopia and eventually to the Highlands.

Eastern Region. Unusually heavy rains fell in the spring breeding areas in southeast **Iran** and western **Pakistan** during March. Small-scale breeding was in progress on the coast in western Pakistan and limited control operations were carried out. Nevertheless, more breeding is likely to occur during the forecast period, causing locust numbers to increase slightly. There is also a low risk that a few swarms could reach these areas from current infestations along the Red Sea coast and in northern Somalia.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
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No. 342

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in March 2007

Vegetation started to dry out in winter breeding areas along both sides of the Red Sea during March. Breeding conditions will improve due to good rains that fell in the interior of the Arabian Peninsula and in southwest Asia. Dry conditions prevailed in the Western Region.

In the **Western Region**, no significant rain fell during March in West Africa and dry conditions prevailed in most countries. Consequently, ecological conditions were only sufficient to allow the survival of low numbers of solitarious locusts in parts of northwest Mauritania, the Adrar des Iforas in northern Mali and along the western side of the Air Mountains in Niger. In Northwest Africa, green vegetation persisted along parts of the Draa, Ziz and Ghris Valleys south of the Atlas Mountains in Morocco. In Western Sahara, light rain may have fallen at the end of the month near the southern border with Mauritania. Vegetation remained green along the Sakia Alhamra in the north and in the Ma'Tallah area in the south. In northwest Libya, good rain fell in parts of the Al Hamada Al Hamra and nearby Ghadames during the last week of March and vegetation was becoming green.

In the **Central Region**, no significant rain fell in winter breeding areas along both sides of the Red Sea during March. Vegetation continued to dry out on the Eritrean coastal plains south of Mehimet to Massawa. Vegetation started to dry out in the area between Mehimet and the Tokar Delta, Sudan, and remained green only in a few wadis. Unusually heavy and widespread rains fell in northern Oman on 17-19 March. Most of the rain was concentrated along the Batinah coast between Muscat (55 mm) and Sohar (107 mm), near Sur (40 mm) and in the northern interior near Buraimi (45 mm). Consequently, breeding conditions will improve and should remain favourable during April and May. Good rains fell over most of the spring breeding areas in the central interior of Saudi Arabia on 26-27 March where vegetation is already green. Good rains also fell in mid-March and again at the end of the month in the summer breeding areas in the interior of Yemen, mainly in Shabwah and Marib, where ecological conditions are expected to improve in the coming weeks.

In the **Eastern Region**, unusually heavy and widespread rain fell throughout the spring breeding areas extending from Bushehr to Hormozgan and Sistan-Baluchistan provinces in Iran and to Baluchistan, Pakistan on 17-20 March. Rainfall was heaviest along the coast of both countries (Chabahar 98 mm, Pasni 53 mm). Some showers reached the summer breeding areas along both sides of the Indo-Pakistan border. Consequently, ecological conditions will improve and should allow breeding to occur during April and May in coastal and interior areas of southeastern Iran and western Pakistan.

Area Treated

Eritrea	16,456 ha (January-February)
	1,740 ha (27-31 March by air; no ground details)
Pakistan	50 ha (end of March)
Saudi Arabia	7,740 ha (1-31 March)
Sudan	11,174 ha (1-31 March)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During March, isolated solitarious hoppers and few maturing adults were seen in one area east of Akjoujt where breeding occurred in February near Grara de Tenemrourt (1945N/1325W). In the north, isolated immature solitarious adults were seen near Zouerate (2244N/1221W).

• **FORECAST**

Isolated adults will persist in those areas that remain green in southwest Adrar and in parts of Tiris-Zemmour. No significant developments are likely.

Mali

• **SITUATION**

No locusts were reported in March.

• **FORECAST**

Isolated adults may be present and could persist in the few wadis in the Adrar des Iforas that may remain green.

Niger

• **Situation**

No reports were received in March.

• **Forecast**

Isolated adults may be present and could persist in the few places on the western side of the Air Mountains and near Iferouane that remain green.

Chad

• **Situation**

No reports were received in March.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No locusts were reported during March.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During March, isolated mature solitarious adults persisted in the west between Beni Abbes (3011N/0214W) and the Moroccan border. No locusts were seen in the central Sahara near Adrar, in the south near Tamanrasset or in the east near Djanet.

• **Forecast**

Scattered adults will persist near Beni Abbes and may be present at low number in other parts of the central Sahara. Small-scale breeding could occur in these areas with hatching in April and fledging in May.

Morocco

• **Situation**

No locusts were reported during March.

• **Forecast**

No significant developments are likely.

Libyan Arab Jamahiriya

• **Situation**

During March, isolated mature solitarious adults were present at Qarat Ghadames (2956N/0940E) and at one place in the Al Hamada Al Hamra near Al Nahya (2841N/1122E).

• **Forecast**

Scattered adults are expected to persist in those areas that remain green in the northwest and perhaps breed on a small scale.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during March.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During March, locust infestations persisted on the Red Sea coastal plains between the Tokar Delta and the Eritrean border. Groups of immature and mature solitarious and gregarious adults mixed with numerous small early instar hopper bands at densities of up to 2,000 hoppers/m^2 were initially concentrated in a relatively small area of about 7 x 15 km between Agetai (1802N/3823E) and the border. Hoppers continued to form bands and, by mid-month, fledging had commenced. Thereafter, several small immature and mature swarms formed in the same area, some of which laid eggs. During the last week of March, there were nine reports of small immature swarms arriving from adjacent coastal areas in Eritrea and most of the hopper bands had fledged except near Agetai where many large fifth instar bands were reported. Ground and aerial control operations treated 11,174 ha during March.

In the Tokar Delta, only scattered solitarious immature and mature adults were present during the month. Although there was no indication that swarms had reached the delta, one mature swarm was reported to be laying eggs on the 25th about 10 km from its southern edge.

• **Forecast**

Hopper bands and swarms will continue to form on the Red Sea coastal plains between Agetai and the Eritrean border. Small-scale hatching will occur by mid-April and the resulting hoppers are likely to form a few small bands and fledge by mid-May. More swarms are expected to arrive from adjacent coastal areas in Eritrea in April. As vegetation continues to dry out, the swarms are likely to move north along the coast towards the Tokar Delta and Port Sudan as well as inland towards the Red Sea Hills and the Nile Valley. Some swarms could cross the Red Sea to the Saudi Arabian coast. All efforts should be made to monitor the situation closely and maintain the necessary control operations.

Eritrea

• **Situation**

A late report indicated that ground control operations were carried out against hopper bands and groups of adults on the Red Sea coastal plains between Massawa (1537N/3928E) and the Sudanese border, treating 8,700 ha in January and 7,756 ha in February. Additional hatching was also reported during January and February.

During March, ground control operations continued along the Red Sea coastal plains between Sheib (1551N/3903E) and Mehimet (1723N/3833E) primarily against fourth and fifth instar hopper bands. Many of the infestations started to fledge and become immature adults by mid-month. By the third week, the situation improved in these areas but remained serious further north where late instar hopper bands, at densities of several hundred hoppers/m^2, were present in millet along a 50 km stretch (5,000 ha) of Wadi Falkat between Mehimet and the coast. Groups of recently fledged adults were forming small immature swarms on the plains between W. Falkat and the Sudanese border within an area of about 160,000 ha. During the remainder of the month, ground control operations focused on these infestations. Further details are awaited as no reports have been received after 19 March. Aerial operations commenced on the 27th and treated 1,740 ha until the end of the month.

• **Forecast**

Small immature swarms will form early in the forecast period and are expected to emigrate as vegetation continues to dry out. Some of the swarms are likely to move further north along the coast to Sudan while others could move west into the highlands. Once in the highlands, the swarms may stay there for several weeks or they could move irrigated agriculture in the western lowlands (Gash Barka). There is a risk that a few small swarms could also appear in these areas from current infestations in northwest Somalia.

Ethiopia

• **Situation**

On 19 March, a small immature swarm of about one hectare in size was seen near Aysha (1045N/4234E) moving towards the interior. The swarm probably came from the northwest coast of Somalia. On the 23rd, an immature swarm of about 50 ha was reported near the Somali border at Degego (1029N/4233E), and there was an unconfirmed report of a much larger swarm between Jijiga (0922N/4250E) and the Somali border.

• **Forecast**

A few more small swarms are likely to appear between Jijiga and Dire Dawa from neighbouring areas in northern Somalia. If so, these swarms could continue north into the highlands of Amhara and Tigray.

Djibouti

• **Situation**

No reports were received during March.

• **Forecast**

There is a slight risk of a few small swarms arriving early in the forecast period from adjacent areas of northwest Somalia. All efforts should be made to monitor the situation closely.

Somalia

• **Situation**

During March, small third to fifth instar hopper bands, and immature and mature swarms were reported on the northwest coast near Djibouti in a relatively small and concentrated area near Silil (1058N/4326E). At the end of the month, scattered immature adults were seen further east along the coast near Lughaye (1041N/4356E) and about 50 km east of Berbera (1028N/4502E). There was also an unconfirmed report of a swarm near Boroma (0956N/4313E).

• **Forecast**

A few more small swarms could form on the northwest coast and move east along the coast or towards the plateau and the Ethiopian border, or remain on the northwest coast, mature and lay eggs in areas of recent rainfall. If laying occurs, hatching is expected by the end of April and fledging by the end of May. All efforts should be made to monitor the situation closely.

Egypt

• **Situation**

At the end of March, isolated hoppers of all instars and maturing solitarious adults were seen at a few places on the Red Sea coast between Abu Ramad (2224N/3624E) and the Sudanese border. No locusts were seen during surveys in Wadi Diib, along Lake Nasser or in the Western Desert at Sh. Oweinat (2219N/2845E).

• **Forecast**

Small-scale breeding is expected to end on the Red Sea coastal plains between Shalatyn and the Sudanese border. There is a low risk of adults and

perhaps a few small swarms arriving in Upper Egypt from the Red Sea coast near the Sudanese/Eritrean border or from the eastern side of the Red Sea.

Saudi Arabia

• **Situation**

During March, small-scale breeding continued along the central coast of the Red Sea between Lith (2008N/4016E) and Qunfidah (1909N/4107E) for the third consecutive month. Scattered solitarious and *transiens* hoppers of all instars and maturing adults were present. Although densities were relatively low, some of the adults were forming small groups. During the last week of the month, there were six reports of swarms: Rabigh (2247N/3901E) on the 23rd, Lith on the 24th and again on from 26th to the 28th, and near Jeddah on the 25th. The swarms varied in size from 1,000 to 2,000 ha at densities of up to 10 adults/m^2. All of the swarms were laying eggs. These swarms were probably from local infestations that had moved along the coast. Scattered adults were also seen in the Asir Mountains suggesting that some locusts were starting to move towards the spring breeding areas in the central interior. Both movements probably occurred on winds associated with a storm over the central interior on the 26th. No locusts were reported elsewhere on the Red Sea coastal plains or in the interior. Control teams treated 7,740 ha during March, mainly between Lith and Qunfidah, including barrier treatments by ground and aerial operations near Lith from 27 March onwards.

• **Forecast**

Hatching is likely to occur during the second week of April in those places on the coast where swarms were seen laying eggs in March. If so, hoppers could form small bands, fledge by mid-May and form small swarms. Adults and perhaps a few small swarms could appear in the spring breeding areas in the central and lay eggs in areas of recent rainfall that should hatch by the end of April. The resulting hoppers could form small groups or bands, and fledge in late May. There is a low risk that a few adult groups and small swarms could appear in coastal or interior areas from the western side of the Red Sea in April. All efforts should be made to monitor the situation closely.

Yemen

• **Situation**

During March, scattered immature and mature solitarious adults were present on the Red Sea coastal plains near Hodeidah (1450N/4258E), Al Zuhrah (1541N/4300E) and Midi (1619N/4248E). On the southern coast, small-scale breeding occurred for the second consecutive month east of Aden near Zinjibar (1306N/4523E) where low numbers of second to fifth instar solitarious and *transiens* hoppers, at densities of 5-10 hoppers/m^2, were mixed with scattered maturing solitarious adults.

• **Forecast**

Locusts may appear in the summer breeding areas in the interior where they could mature and lay eggs in areas of recent rainfall. There is a low to moderate risk of a few small swarms arriving in these areas from northern Somalia. Unless further rainfall occurs, locust numbers are expected to decline on the Red Sea coastal plains. All efforts should be made to monitor the situation closely, especially in the interior desert areas.

Oman

• **Situation**

No locusts were seen during surveys carried out on the Batinah coast, on the Musandam Peninsula and in the northern interior regions of Dakhalia, Dahera and Sharqiya during March.

• **Forecast**

No significant developments are likely.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No locusts were seen during surveys carried out in Sistan-Baluchistan province on the coast near Chabahar (2517N/6036E) and in the interior west of Iranshahr (2715N/6141E) on 25 March.

• **Forecast**

Scattered adults are likely to be present and breeding on a small-scale in areas of recent rainfall along the southeastern coast between Jask and Gwatar as well as in the interior of Jaz Murian and Iranshahr. There is a low risk of adults and perhaps a few small swarms arriving from the west.

Pakistan

• **Situation**

During March, isolated mature solitarious adults were present at two places in the spring breeding areas near Turbat (2600N/6303E) in Baluchistan. Small-scale breeding occurred on the coast between

Gwadar (2508N/6219E) and Ormara (2512N/6438E) and control teams treated 50 ha of first to third instar hopper groups at the end of the month.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in coastal and interior areas of Baluchistan. There is a slight risk of adults and perhaps a few swarms arriving from the west or southwest and laying eggs during the forecast period.

India

• **Situation**

No locusts were seen during surveys carried out in Rajasthan and the Rann of Kutch during March.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week and affected countries are encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme has been established to indicate the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level. Your feedback on the usefulness of this scheme and any suggested improvements is welcome.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html. For further information, contact Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **Press Release.** Desert Locust situation (28 March)
- **Eritrea outbreak.** Photos (23 March)

Links to the above information can be found in the new *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **CRC**. 29th meeting of the Executive Committee, Sana'a (Yemen), 20-24 May
- **CLCPRO**. 4th sessions of the Executive Committee and session, Bamako (Mali), 18-22 June
- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

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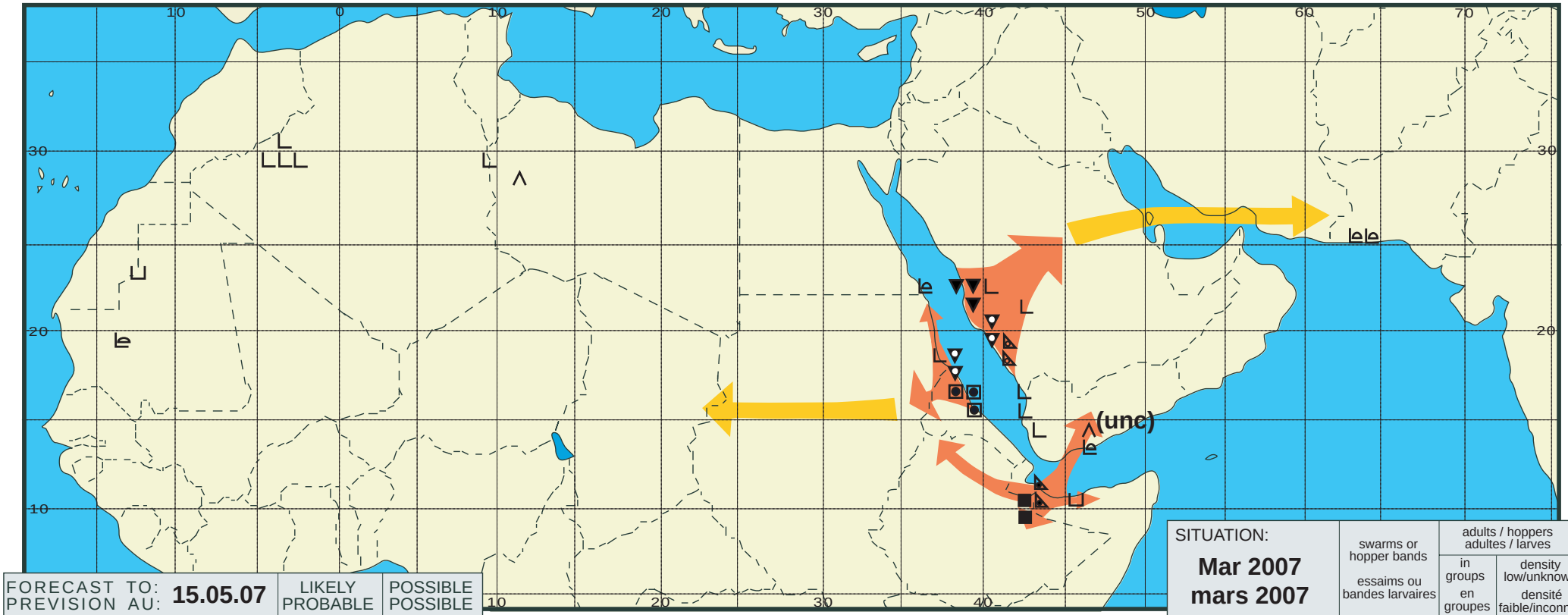
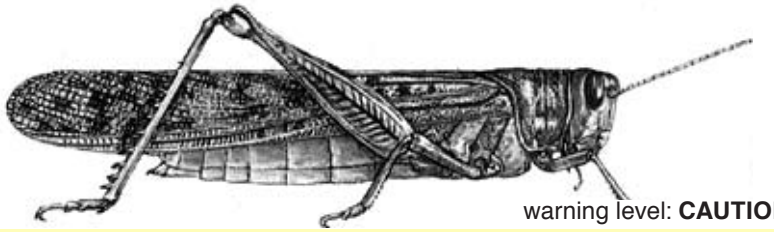


FORECAST TO: PREVISION AU: **15.05.07**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Mar 2007 mars 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures			
mature or partly mature adults adultes matures ou partiellement matures			
adults, maturity unknown adultes, maturité inconnue			
egg laying or eggs pontes ou œufs			
hoppers larves			
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)			



warning level: **CAUTION (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 343**

(3 May 2007)

General Situation during April 2007 Forecast until mid-June 2007

The Desert Locust situation remains serious in the Central Region even though aerial and ground control operations treated some 46,000 ha during April. As vegetation dried out, swarms moved from the coastal plains of the Red Sea and Gulf of Aden into spring breeding areas in the interior of Saudi Arabia, Yemen, northern Somalia and eastern Ethiopia and laid eggs. If the subsequent hopper bands are not controlled, new swarms could form in mid-June. In this case, swarms in Saudi Arabia are likely to move west to Sudan and perhaps south to Yemen while those in the Horn of Africa could remain and breed or perhaps migrate to the Indo-Pakistan border. All efforts should be made to monitor the developing and potentially dangerous situation closely and carefully.

Western Region. The situation remained calm in the region during April. Limited breeding continued in one area of northwest **Mauritania** and in southwest **Algeria**. Scattered adults were present in parts of central Algeria and western **Libya**. There is a slight risk that a few small swarms could move from the Central Region across the Sahel towards **Niger**, **Mali** and Mauritania. Consequently, Sahelian countries should be on alert.

Central Region. Aerial and ground control operations continued against hopper bands and swarms on the Red Sea coast in **Eritrea**, **Saudi Arabia** and **Sudan** where infestations declined in mid-April. In Sudan, a third generation of hatching and band formation occurred on the coast in Tokar Delta, and adults and a few groups moved west to cropping areas along the Nile. Most of the remaining swarms on the Saudi Arabian coast migrated east to the spring breeding areas in the interior where they laid eggs that should hatch in early May. If the resulting hopper bands are not controlled, swarms could form and move across the Red Sea to the interior of Sudan in about mid-June and breed with the onset of the summer rains. Some swarms could also move south into Yemen. Several swarms moved up the escarpment in northwest **Somalia** and crossed into **Djibouti** and eastern **Ethiopia** in April, and a few adults were seen in the northern highlands. At least one swarm reached the interior of **Yemen**. As a result of good rains in April, most of the swarms laid eggs that will hatch in early May, and new swarms could form by mid-June along the northern Somalia / Ethiopian border and, to a lesser extent, in the Yemeni interior. If conditions remain favourable in these places, the swarms will remain and eventually lay eggs. Elsewhere, small-scale breeding continued on the Red Sea coast in southeast **Egypt**, and was reported on the southern coast in Yemen.

Eastern Region. Small-scale breeding occurred in the spring breeding areas in western **Pakistan** and southeastern **Iran** in April, and a swarm was treated on the coast of Pakistan. Control operations were also undertaken near the Pakistani border in Rajasthan, **India** where local breeding was in progress because of pre-monsoon rainfall. Breeding will decline in the spring areas but will continue along the Indo-Pakistan border where higher than normal populations are expected to be present at the beginning of the summer.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
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E-mail: eclo@fao.org
Internet: www.fao.org
DLIS: www.fao.org/ag/locusts

Weather & Ecological Conditions in April 2007

Good rains fell in the spring breeding areas in the interior of Yemen and Saudi Arabia as well as in eastern Ethiopia and northwest Somalia. Rains also fell along the Indo-Pakistan border. Consequently, ecological conditions were favourable for breeding in all of these areas.

In the **Western Region**, mainly dry conditions prevailed during April. Light to moderate rain fell at times in a few places along the southern side of the Atlas Mountains in Morocco. Consequently, vegetation remained green in the Draa, Ziz and Ghris Valleys. No significant rain was reported in Western Sahara where vegetation was dry. During the third decade of April, good rains may have fallen along both sides of the Algerian/Libyan border as well as parts of central Libya.

In the **Central Region**, good rains fell during April on the coast in northwest Somalia as well as on the escarpment and plateau from Boroma to Erigavo, extending to Djibouti, eastern Ethiopia and the northern Ogaden. Good rains also fell in the Ethiopian Highlands, in the interior of Yemen and in the central and northern interior of Saudi Arabia. As most of these areas received rainfall in late March, ecological conditions were already becoming favourable for breeding. Showers may have also fallen in parts of eastern Sudan during the last decade of April. A deep low-pressure system persisted over northern Saudi Arabia during the second week of April, causing strong southwesterly and southerly winds over the Arabian Peninsula and the Horn of Africa, which probably allowed swarms to move into the interior of Saudi Arabia and Yemen. In the winter breeding areas along both sides of the Red Sea, very little rain fell except on the northern Red Sea coast in Yemen at mid-month. Consequently, vegetation was drying out and breeding conditions were becoming unfavourable. Vegetation was green in some of the wadis in the Red Sea Hills in southeastern Egypt and northeastern Sudan. In southern Oman, breeding conditions may be favourable in coastal and interior areas of Dhofar where good rains fell in late March.

In the **Eastern Region**, light to moderate rain fell during April in the Indus Valley in Pakistan. Some of these showers reached the summer breeding areas along both sides of the border, mainly in Cholistan Desert, Pakistan and Rajasthan, India. As heavier rain had fallen in these areas during March, ecological conditions became favourable for breeding in parts of Rajasthan in April. Showers also fell in the eastern portion of the spring breeding area in Pakistan between Lasbela and Quetta, and in the western portion between Jask and Kahnuj, Iran.

Area Treated

During April, more than 46,000 ha were treated, including aerial control operations in Eritrea, Ethiopia, Saudi Arabia and Sudan.

Eritrea	36,420 ha (March)
	3,300 ha (1-20 April)
Ethiopia	296 ha (April)
India	no details (April)
Pakistan	50 ha (April)
Saudi Arabia	34,980 ha (1-30 April)
Sudan	7,996 ha (1-30 April)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During April, isolated solitarious adults were maturing in a few places between Akjoujt (1945N/1421W) and Atar (2032N/1308W). Isolated third instar hoppers were seen at one place north of Atar at mid-month. No surveys were conducted during the third decade of the month.

• **FORECAST**

Isolated adults will persist in those areas that remain green in southwest Adrar and in parts of Tiris-Zemmour. No significant developments are likely.

Mali

• **SITUATION**

No locusts were reported in April.

• **FORECAST**

Isolated adults may be present and could persist in the few wadis in the Adrar des Iforas that may remain green.

Niger

• **Situation**

No reports were received in April.

• **Forecast**

Isolated adults may be present and could persist in the few places on the western side of the Air Mountains and near Iferouane that remain green.

Chad

• **Situation**

No reports were received in April.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No locusts were reported in April.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During April, small-scale breeding occurred at one place between Beni Abbes (3011N/0214W) and the Moroccan border. Low numbers of solitarious mature adults were present between Beni Abbes and Tindouf (2741N/0811W), and near Adrar (2753N/0017W) and Djanet (2434N/0930E). No locusts were seen in the south near Tamanrasset.

• **Forecast**

Scattered adults will persist in parts of the central and eastern Sahara where they could breed on a small scale in areas of recent rainfall.

Morocco

• **Situation**

During April, two immature solitarious adults were seen in the northeast near Bouarfa (3232N/0159W).

• **Forecast**

No significant developments are likely.

Libyan Arab Jamahiriya

• **Situation**

During April, isolated solitarious were present near Ghat (2459N/1011E) and at one place in the Al Hamada Al Hamra. No locusts were seen in the southeast near Kufra.

• **Forecast**

Scattered adults are likely to persist between Ghat and Ghadames where they could breed on a small scale in areas of recent rainfall.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during April.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

In early April, a third generation of breeding commenced on the Red Sea coast where a swarm was seen laying eggs in the Tokar Delta on the 4th. Hatching started on the 11th and ground control operations treated small bands at densities of up to 200 hoppers/m^2. Further south, aerial and ground control operations continued against a few remaining hopper bands and small maturing swarms on the plains between Agetai (1802N/3823E) and the Eritrean border. During the second week, immature and mature adults and a few swarms moved north along the plains to Tokar.

During the second half of April, control operations declined near the Eritrean border but continued in the Tokar Delta against first instar hopper bands. A few solitarious mature adults moved along the coast north of Port Sudan and reached the Arbaat (1958N/3710E) area by the 23rd. Similar populations were also seen near the Egyptian border west of Wadi Diib on the 27th, probably from local breeding near Halaib. In the Nile Valley, solitarious and transiens immature and mature adults, including an immature group, were seen in crops between Berber (1801N/3400E) and Dongola (1910N/3027E) from the 21st onwards. Most of these locusts probably originated from infestations on the coast near the Eritrean border. Aerial and ground control operations treated 7,996 ha on the Red Sea coast in April.

• **Forecast**

Locusts will decline on the Red Sea coast although small hopper bands will continue to form in the Tokar Delta. Fledging is expected to occur during the second half of May and a few small swarms could form and move to the summer breeding areas between Kassala and Darfur. Adults and small swarms may also arrive in the interior during June from breeding areas in

southeast Egypt and in Saudi Arabia, and egg laying will commence with the onset of the summer rains. In the Nile Valley, small-scale breeding is likely to occur in crops north of Khartoum in May that could give rise to small hopper groups and bands.

Eritrea

• **Situation**

During the first half of April, ground and aerial control operations continued against fledglings and immature swarms on the northern Red Sea coast between Mehimet (1723N/3833E) and the Sudanese border. Further south, scattered gregarious immature adults were present in previously infested areas between Sheib (1551N/3903E) and Geleb Sagla (1707N/3853E). During the second half of April, locust infestations declined on the coast. A few small groups and swarmlets persisted close to the Sudanese border near Karora (1745N/3820E) and Mehimet. Scattered solitarious and gregarious adults were seen elsewhere on the coastal plains north of Sheib. Control teams treated 3,300 ha, 1,250 ha by air, on 1-20 April.

• **Forecast**

Locust infestations will continue to decline on the Red Sea coast as vegetation dries out and the remaining adult groups and swarms move north into adjacent coastal areas in Sudan or west into the Highlands towards the western lowlands. Consequently, a few small groups and swarms are likely to appear in the highlands where they could stay for several weeks or continue to the western lowlands, mainly to irrigated agriculture in the Gash Barka. These locusts may be supplemented by similar populations arriving from northern Ethiopia. All efforts should be made to monitor the situation carefully in the above-mentioned areas.

Ethiopia

• **Situation**

In early April, ground control operations treated a 10 ha immature swarm near the Somali border northeast of Dire Dawa at Biye Gurgur (1022N/4239E). This swarm had arrived in late March from adjacent areas in northwest Somalia. In the highlands of Tigray, there were unconfirmed reports of scattered locusts in Mekele (1330N/3929E) and Zalanbessa (1431N/3923E) areas at mid-month. During the last decade of April, several small mature swarms, of up to 3 km^2 in size with densities of 5-6 adults/m^2, dispersed and laid eggs in the Dire Dawa (0935N/4150E) area. Ground and aerial control operations treated 296 ha during the month.

• **Forecast**

A few more small swarms could appear early in the forecast period from neighbouring areas in northern Somalia and lay eggs between Jijiga and Dire Dawa. Hatching and band formation will start in early May and continue throughout the month in the Dire Dawa area. If the bands are not controlled, new swarms could form by mid-June. These swarms may persist and eventually lay eggs if breeding conditions remain favourable.

Djibouti

• **Situation**

A late report indicated that a swarm from northwest Somalia appeared in the southeast interior near Ali Adde (1108N/4253E) on 22 March and was moving towards the southwest. On the 25th, a swarm was reported further west on the Gobaad Plains near Kouta Bouyya (1101N/4157E) and the Ethiopian border. Locust infestations were also seen near the Somali border between Ali Olou (1121N/4307E) and Holhol (1118N/4255E).

During the first decade of April, a few mature swarms crossed the border from northwest Somalia and moved rapidly into the southern interior near the Henle Plains between Yoboki (1130N/4206E) and the Ethiopian border. No locusts were reported during the remainder of the month.

• **Forecast**

There is a slight risk that some of the swarms may have laid eggs on the Henle and Gobaad plains. If so, hatching and band formation will take place during May and, if uncontrolled, a few small swarms could form in June. All efforts should be made to monitor the situation closely.

Somalia

• **Situation**

During the first week of April, a low-density 2 km^2 mature swarm was reported on the coast east of Berbera (1028N/4502E), and scattered immature adults and groups of mature adults were seen nearby. During the second half of the month, there were increased reports of small mature swarms on the escarpment and plateau from Boroma (0956N/4313E) to east of Hargeisa (0931N/4402E). Some of these swarms were copulating, and crop damage was reported in a few areas.

• **Forecast**

Hatching and band formation will start in early May and continue throughout the month on the plateau between Boroma and Burao. Breeding could also

occur in areas of recent rainfall on the coast, further east to Erigavo and south of Burao. If the resulting bands are not controlled, new swarms could form in mid-June and remain to breed or move towards the east.

Egypt

• **Situation**

During April, small-scale breeding continued on the Red Sea coast between Halaib (2213N/3638E) and the Sudanese border where scattered third and fourth instar solitarious hoppers and mature adults were present. At mid-month, immature solitarious adults were seen in the Red Sea Hills between the coast and Aswan. Solitarious hoppers were also reported at one location. Elsewhere, no locusts were seen along the shore of Lake Nasser and on the northwest coast.

• **Forecast**

Locust numbers will decline on the Red Sea coast as vegetation dries out and breeding ends. Adults and perhaps a few small swarms, from infestations in Sudan and Saudi Arabia, could appear in the Red Sea Hills east of Aswan, near Lake Nasser and in the southern part of the Western Desert. Surveys should be maintained in these areas to monitor the situation carefully.

Saudi Arabia

• **Situation**

During April, aerial and ground control operations continued on the Red Sea coast between Lith (2008N/4016E) and Qunfidah (1909N/4107E) against hopper bands of all instars, at densities up to 30 hoppers/m^2, and immature and mature swarms up to 10 km^2 in size. Some of the mature swarms laid eggs during the first week and by the end of the month, hatching and band formation had occurred. Immature swarms were also reported further north along the coast to Yenbo (2405N/3802E) up to mid-month. Small-scale breeding occurred on the southern coast near Jizan (1656N/4233E) where solitarious hoppers and mature adults were present. During the second half of April, mature adults, groups and swarms moved into the spring breeding areas in the interior and laid eggs near Khaybar (2542N/3917E), Buraydah (2621N/4358E) and Wadi Dawasir (2028N/4447E) from 19 April onwards. No locusts were seen in the interior north of Hail. Aerial and ground control operations treated 34,980 ha on the coast and in the interior during April.

• **Forecast**

A few more swarms could form in May from hatching that occurred during April between Lith and Qunfidah. Unless further rainfall occurs, breeding will end on the coast and the adults and small swarms will primarily move into the interior although some could migrate west across the Red Sea. In the spring breeding areas in the interior, hatching will occur in early May and hoppers are expected to form small bands. Fledging should take place in early June and small swarms could form and move towards the west or further south in about mid-June.

Yemen

• **Situation**

In the spring breeding areas of the interior, a few solitarious mature adults were copulating close to farms near Shabwah (1522N/4700E) in early April. On the 13th, locals reported a mature swarm northwest of Thamud (1717N/4955E) on the southern edge of the Empty Quarter. On the 16th, one swarm at a density of 30 adults/m^2 laid eggs within an area of 30 km^2 in Wadi Hazar (1744N/4901E). Mature adults at densities up to 5 adults/m^2 were seen nearby in Wadi Khoudra (1746N/4904E). Scattered solitarious mature adults were present and laying eggs within a large area south of Al Aber (1551N/4829E) between Marib (1525N/4521E), Ataq (1435N/4649E) and Shabwah. These adults and swarms are likely to have originated from both sides of the Gulf of Aden where breeding occurred on the coast in February and March. On the southern coast, third to fifth instar *transiens* and gregarious hoppers at densities of 5-20 hoppers/m^2 mixed with scattered maturing adults were reported at the end of the month near Sayhut (1512N/5115E).

On the Red Sea coast, only isolated solitarious immature adults were present at a few places on the central and northern Tihama at mid-month. On the coastal plains west of Aden, a few solitarious immature adults were present near Am Rija (1302N/4434E).

• **Forecast**

Locust numbers will increase in the interior as hatching occurs early in the forecast period between Marib, Ataq and Shabwah. Hatching will also occur at about the same time near Thamud where small hopper bands could form. In both areas, fledging is expected to occur in early June. There is a risk that immature swarms could appear from the interior of Saudi Arabia after mid-June. Locust breeding is likely to end on the southern coast and adults will probably move into the summer breeding areas in the interior.

Oman

• **Situation**

No locusts were seen during surveys carried out in coastal and interior areas of the north during April.

• **Forecast**

Scattered adults might be present and breeding on a small scale in a few coastal and interior areas in the southern province of Dhofar where good rains fell in March.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During April, isolated immature adults were present along the southeastern coast between Chabahar (2517N/6036E) and the Pakistani border. Nearby, local breeding was in progress on the Vashnam Plains as well as west of Chabahar where solitarious hoppers of all instars were seen. In the interior, small-scale breeding occurred near Iranshahr (2715N/6141E) where solitarious third instar hoppers mixed with mature adults were present. Isolated mature adults were seen near Bampur (2711N/6028E) and west of Saravan (2721N/6220E).

• **Forecast**

Locust numbers are expected to decline in Sistan-Baluchistan as vegetation dries out and breeding ends. Low numbers of adults will move east towards the summer breeding area along the Indo-Pakistan border.

Pakistan

• **Situation**

During the first half of April, scattered mature solitarious adults were present at several places along the coast and, to a lesser extent, in the interior of Baluchistan. Small-scale breeding occurred in the Shooli area (2535N/6207E) and on the coast east of Pasni (2515N/6328E) where isolated solitarious hoppers of all instars were present. Control teams treated a 50 ha swarm on the coast between Pasni and Ormara (2512N/6438E) on the 14th.

• **Forecast**

Locust numbers are expected to decline in Baluchistan as vegetation starts to dry out and breeding ends. Low numbers of adults will move from Baluchistan to the summer breeding areas of Cholistan and Tharparkar where scattered adults may already be present and breeding in areas of recent rainfall. There is a slight risk that a few swarms from the Horn of Africa could also arrive in Tharparkar in late June. Summer surveys should commence earlier than normal this year (in May) as higher than normal populations are expected to be present.

India

• **Situation**

During April, local breeding occurred near the Pakistani border west of Sam (2649N/7030E) in Rajasthan. Ground control teams treated scattered solitarious third to fifth instar hoppers and mature adults at three places. No locusts were seen elsewhere during surveys in Rajasthan.

• **Forecast**

Small-scale breeding could occur in a few places of Rajasthan where good rains fell in April. Higher than normal populations are expected to be present at the beginning of summer. These populations will breed once the monsoon rains arrive. There is a slight risk that a few swarms from the Horn of Africa could arrive in Rajasthan in late June.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week and affected countries are encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **DLCC session reports.** Archived reports of the 10-30th sessions: 1966-1989
- **Locust situation.** Several updates during April
- **CLCPRO.** Report of the 3rd Executive Committee meeting (French)
- **EMPRES/WR.** Report of the 2nd Session of the Steering Committee (French)

Links to the above information can be found in the new *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **CRC**. 29th meeting of the Executive Committee, Sana'a (Yemen), 20-24 May
- **CLCPRO**. 4th sessions of the Executive Committee and CLCPRO, Bamako (Mali), 18-22 June
- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

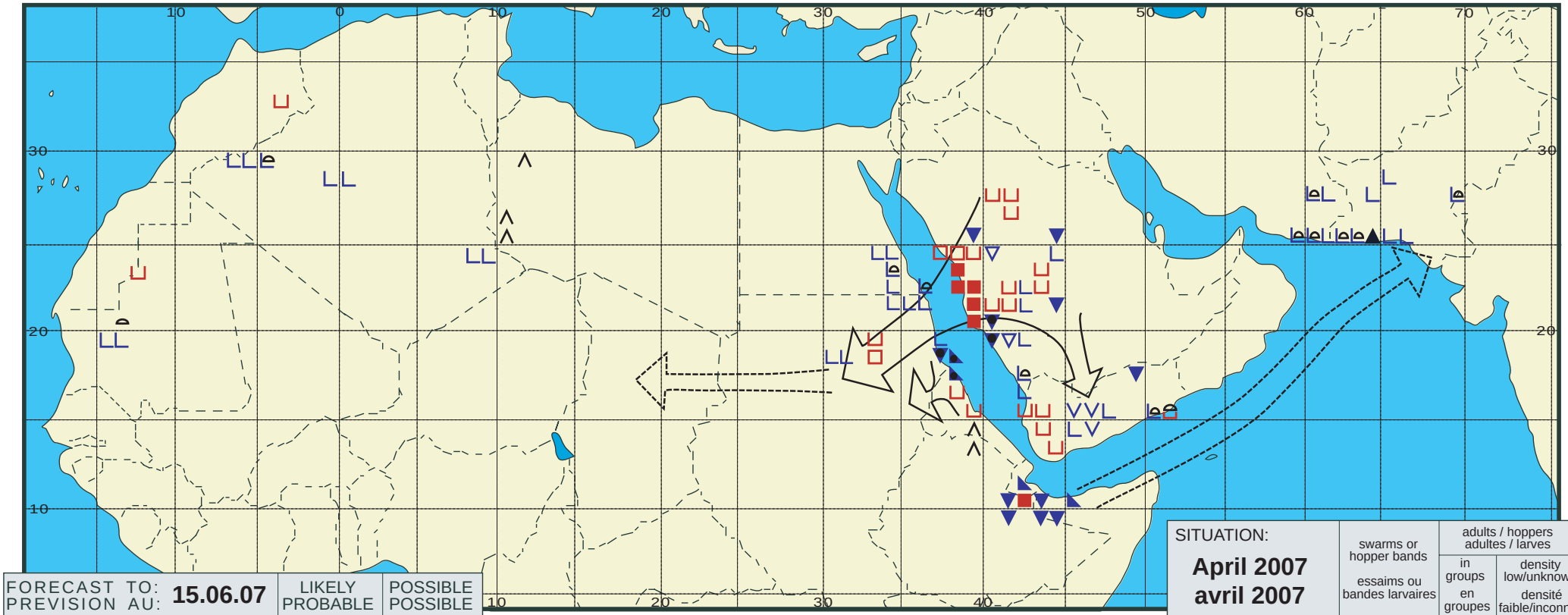
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

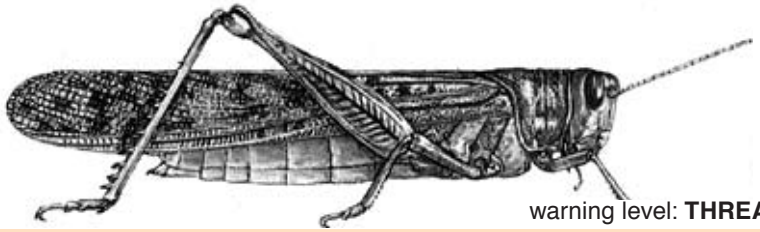
Desert Locust Summary
Criquet pèlerin - Situation résumée

343



FORECAST TO: PREVISION AU: **15.06.07**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **April 2007** **avril 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves in groups en groupes	 density low/unknown densité faible/inconnue
immature adults adultes immatures			
mature or partly mature adults adultes matures ou partiellement matures			
adults, maturity unknown adultes, maturité inconnue			
egg laying or eggs pontes ou œufs			
hoppers larves			
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)			



warning level: **THREAT (C. & E. Regions)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 344

(6 June 2007)

General Situation during May 2007
Forecast until mid-July 2007

The Desert Locust situation has become extremely serious in the interior of Yemen where unusually heavy rains fell and breeding occurred over a large area during May. Consequently, aerial operations requiring external assistance will need to be mounted in July to avoid the formation of swarms and to minimize the threat to agriculture. Control operations continued in the interior of Saudi Arabia against hopper bands but declined along both sides of the Red Sea. Operations were also mounted against hopper bands on the coast of Iran and Pakistan, along the Ethiopian and northern Somalia border, and in central Algeria. A tropical cyclone is likely to affect current infestations in the Arabian Peninsula and southwest Asia. All efforts should be made to monitor the developing and potentially dangerous situation closely and carefully.

Western Region. The situation remained calm in the region during May. Limited breeding continued in central **Algeria** where ground control operations were carried out against small hopper bands in irrigated cropping areas. Isolated solitarious adults were reported in northern **Mali** and southeast **Niger**. Small-scale breeding will commence with the onset of the seasonal rains in southern **Mauritania**, northern Mali and Niger, and in eastern **Chad** in July, causing locust numbers to increase slightly.

Central Region. Aerial and ground control operations continued against hopper bands on the Red Sea coast in **Saudi Arabia** where infestations had declined by mid-May. Hatching and band formation occurred in the interior of Saudi Arabia and control operations were in progress throughout the month. Any infestations that are not controlled are likely to form small swarms in June that could move to Sudan and Yemen. Widespread breeding occurred in the interior of **Yemen** causing numerous hopper bands to form within a large remote area. New swarms will form and another generation of breeding will occur in July that will threaten crops and pastures. Small swarms are likely to form along the border of **Ethiopia** and northern **Somalia** and probably remain there to mature and lay eggs in July. Locusts declined on the Red Sea coast in **Sudan** as groups of adults moved to the Nile Valley where small-scale breeding is likely to occur there and elsewhere in the interior during July. Scattered adults were present in southern **Egypt** and in northern **Oman**.

Eastern Region. Small hopper bands formed on the coast of southeast **Iran** and western **Pakistan** during May from breeding that occurred in the spring. Local breeding continued in Rajasthan, **India** near the border with Pakistan. Ground control operations were carried out in all three countries. Higher than normal populations are expected to be present at the beginning of the summer along both sides of the Indo-Pakistan border where breeding will start with the onset of the monsoon rains.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
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Internet: www.fao.org
DLIS: www.fao.org/ag/locusts

Weather & Ecological Conditions in May 2007

Unusually heavy rains and flooding occurred in the interior of Yemen where ecological conditions were already favourable for breeding. Favourable breeding conditions persisted along the border of Ethiopia and northern Somalia.

In the **Western Region**, mainly dry conditions persisted during May. The Inter-Tropical Convergence Zone (ITCZ) remained south of the summer breeding area in the Sahel. Consequently, ecological conditions remained unfavourable for breeding. Nevertheless, there may have been limited green vegetation in parts of the Adrar des Iforas in northern Mali and in the Air Mountains of Niger to allow low numbers of locusts to survive. In Northwest Africa, vegetation was starting to dry out in the Draa, Ziz and Ghris Valleys along the southern side of the Atlas Mountains in Morocco.

In the **Central Region**, light rain fell in the spring breeding areas in central Saudi Arabia during the first decade of May. Heavier showers fell along both sides of the border between Ethiopia and northern Somalia, extending from Dire Dawa to Erigavo. Showers also occurred in the Red Sea Hills in northeast Sudan near the Egyptian and Eritrean borders, and in the highlands in Eritrea. Nevertheless, ecological conditions were favourable for breeding on the escarpment and plateau in northern Somalia as well as in the railway area and the northern Ogaden in eastern Ethiopia. Conditions were also favourable for breeding within a large portion of the interior of Yemen from Marib to the northeast, extending to the Dhofar region in southern Oman. In the summer breeding areas, unusually heavy rains fell in the interior of Yemen on 25-30 May. Good rains also fell in adjacent areas of southern Oman on 24-25 May. In Sudan, the ITCZ reached Geneina, Nyala, El Obeid and Gedaref by the end of the month but dry conditions prevailed except in cropping areas along the Nile. Good rains fell on the southern part of the western lowlands in Eritrea near Teseney at the end of May.

In the **Eastern Region**, light to moderate rain fell in early May in the spring breeding area in western Pakistan between Pasni and Lasbela. Consequently, breeding conditions remained favourable in the interior and along the coast in western Pakistan and parts of southeast Iran during the first half of May. Ecological conditions were mainly dry in Rajasthan, India except along the border west of Sam and near the Rajasthan Canal.

Area Treated

During May, more than 46,000 ha were treated, mainly in Saudi Arabia.

Algeria	100 ha (May)
Ethiopia	1,461 ha (May)
India	110 ha (16-30 April)
	180 ha (1-6 May)
Iran	4,705 ha (May)
Pakistan	1,806 ha (May)
Saudi Arabia	34,815 ha (May)
Somalia	176 ha (May)
Sudan	8,011 ha (1-30 April)
	70 ha (May)
Yemen	3,265 ha (1-17 May)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

No reports were received in May.

• **FORECAST**

Scattered adults are expected to appear in the summer breeding areas in the south and small-scale breeding should commence with the onset of the seasonal rains.

Mali

• **SITUATION**

Nomads reported that a few isolated adults were present in the extreme north of the Adrar des Iforas near the Algerian border in W. Inabsar (2013N/0014E) and W. Takorkat (2030N/0036E) in early May.

• **FORECAST**

Scattered adults are expected to appear in the summer breeding areas in the northeast and small-scale breeding should commence with the onset of the seasonal rains.

Niger

• **Situation**

Isolated immature adults were seen at two places in the southeast between Zinder (1346N/0858E) and Diffa (1318N/1236E) at the end of May.

• **Forecast**

Scattered adults are expected to appear in the summer breeding areas in Tamesna and small-scale breeding should commence with the onset of the seasonal rains.

Chad

• **Situation**

No locusts were reported during the first half of May.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No reports were received in May.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During May, local breeding about 100 km north and south of Adrar (2753N/0017W) caused locust numbers to increase in irrigated crops where scattered mature *transiens* adults were present and first to fourth instar gregarious hoppers formed a few groups and bands at densities up to 200 hoppers/m^2. Similar infestations were seen to the northwest in W. Saoura at densities of 1-5 hoppers/m^2 and 100 adults/tree. Isolated late instar solitarious hoppers were present at one place between Beni Abbes (3011N/0214W) and the Moroccan border. In the south, scattered immature solitarious locusts were seen at one place west of Tamanrasset (2250N/0528E) and isolated mature solitarious adults were present in one area west of Djanet (2434N/0930E). Control teams treated 1,500 ha during May in W. Saoura and near Adrar and Tamanrasset.

• **Forecast**

Small-scale breeding may continue between Beni Abbes and Adrar where hoppers and adults could form a few small groups. Low numbers of solitarious adults are likely to persist in the south and southeast.

Morocco

• **Situation**

No locusts were reported during May.

• **Forecast**

No significant developments are likely.

Libyan Arab Jamahiriya

• **Situation**

No locusts were seen during surveys carried out in the south in early May, and no locusts were reported during the remainder of the month.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during May.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

In early May, scattered immature and mature solitarious and gregarious adults, at densities up to 900 adults/ha, and a few groups persisted on the Red Sea coast in the Tokar Delta and on the plains near the Eritrean border. By mid-month, most of these adults had moved to crops along the Nile Valley between Ed Damer (1734N/3358E) and Dongola (1910N/3027E) where mainly scattered solitarious and gregarious populations and a few groups at densities up to 15,000 adults/ha were present. Some adults were copulating. Adults were also present in the Baiyuda Desert west of Ed Damer to Merowe (1830N/3149E). Ground control teams treated 70 ha during the first half of May.

• **Forecast**

Small-scale breeding is likely to occur in crops in the Nile Valley between Khartoum and Dongola that could give rise to small hopper groups and bands. From mid-June onwards, immature adults and small swarms may arrive in Kassala, Nile, Northern, Khartoum, White Nile, North Kordofan and North Darfur states from breeding areas in Saudi Arabia, mature and lay eggs with the onset of the summer rains.

Eritrea

• **Situation**

No surveys were carried out during May.

• **Forecast**

Scattered adults and perhaps a few small groups may be present in the highlands. These populations are expected to move to the western lowlands and breed on small scale once the seasonal rains commence.

Ethiopia

• **Situation**

During May, hatching and band formation occurred in the Harawa (0953N/3836E) area near Dire Dawa. Ground and aerial control operations treated 1,461 ha of second to fourth instar bands, at densities of up to 2,000 hoppers/m^2, mixed with low numbers of gregarious mature adults. By the end of the month, some of the hoppers had reached fifth instar.

• **Forecast**

The remaining hopper bands will fledge early in the forecast period and there is a possibility that a few small groups and swarms of immature adults could form. The adults are likely to remain in the area between Dire Dawa and Jijiga where they will mature and lay eggs if rainfall occurs. If so, hatching and band formation are likely to occur in about mid-July.

Djibouti

• **Situation**

The situation was reported to be calm during May.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

During May, control operations were carried out against numerous small hopper bands on the plateau between Boroma (0956N/4313E) and Hargeisa (0931N/4402E). At the end of the month, hatching was still in progress and hoppers had reached the fifth instar. Ground control operations treated 176 ha in May.

• **Forecast**

The remaining hopper bands will fledge early in the forecast period and there is a possibility that a few small groups and swarms of immature adults could form. The adults are likely to remain in the area between Boroma and Burao where they will mature and lay eggs if rainfall occurs. If so, hatching and band formation are likely to occur in about mid-July.

Egypt

• **Situation**

During May, scattered solitarious and *transiens* immature adults were present at a few places along the Red Sea coast between Halaib (2213N/3638E) and the Sudanese border. Scattered solitarious and *transiens* mature adults were seen in the Red Sea Hills near Wadi Allaqi (ca. 23N/31E). Adults were copulating at one place on the 7th. A few solitarious adults were maturing near Abu Simbel (2219N/3138E). No locusts were seen in the Western Desert near Sh. Oweinat.

• **Forecast**

Low numbers of scattered locusts are likely to persist along the Lake Nasser shoreline and local breeding could occur in a few places.

Saudi Arabia

• **Situation**

During May, aerial and ground control operations continued on the Red Sea coast between Lith (2008N/4016E) and Qunfidah (1909N/4107E), treating 13,905 ha of numerous second to fifth instar hopper bands at densities up to 70 hoppers/m^2. Groups of adults were also present, some of which were copulating during the first week. By the end of the month, operations had finished.

In the spring breeding areas in the interior, groups of gregarious adults, at densities up to 40 adults/m^2, laid eggs during the last decade of April and the first week of May near Khaybar (2542N/3917E), Buraydah (2621N/4358E) and Wadi Dawasir (2028N/4447E). Hatching started in early May and continued to about mid-month, leading to the formation of numerous small hopper bands at densities up to 300 hoppers/m^2. By the last week of May, some of the hoppers had reached fifth instar. Aerial and ground control operations treated 20,910 ha in the interior.

• **Forecast**

Any hopper band infestations that are not controlled in the interior will form small swarms in June. Most of these swarms are likely to move west across the Red Sea towards the summer breeding areas in Sudan although there is a risk that some swarms could also move south into the interior of Yemen.

Yemen

• **Situation**

During May, the locust situation deteriorated as heavy rains fell and more infestations were found in the interior. Substantial breeding occurred over a large area along the southern edge of the Empty

Quarter between Al Abr (1608N/4714E) and Thamud (1717N/4955E) where late instar *transiens* and gregarious hoppers formed groups and bands at densities up to 200 hoppers/m^2 in many wadis of the plateau. By the end of the month, most of the hoppers had fledged and adults were forming groups. Small-scale breeding occurred on the plateau east of Thamud to Remah (1727N/5034E) and near the Oman border between Shehan (1746N/5229E) and Hat (1719N/5205E) where scattered solitarious hoppers and maturing adults were present. Control operations treated 2,965 ha on 12-16 May in Wadi Hazar (1744N/4901E).

Smaller infestations were present further south in the interior between Bayhan (1452N/4545E) and Shabwah (1522N/4700E). Ground control operations treated 300 ha of third to fifth instar solitarious and gregarious hoppers at densities up to 8 hoppers/m^2, fledglings and solitarious immature adults at densities of about 150 adults/ha. Adults were reported to be copulating in some places.

On the southern coast, small infestations of third to fifth instar hopper bands, at densities up to 30 hoppers/m^2, and fledglings persisted on the southern coast near Seyhut (1512N/5115E). Control operations could not be carried out due to the presence of beehives and, by the end of the month, small immature swarms were forming and moving into the interior. Scattered late instar solitarious hoppers, immature and mature adults were present on the coast near Al Ghaydah (1612N/5210E) where a few adults were seen copulating.

• **Forecast**

Locust numbers are likely to increase dramatically as a second generation of breeding occurs in the interior. At the same time, a few swarms could appear from the interior of Saudi Arabia. Hatching is expected in mid-July and new swarms could form by the end of August. Breeding will be concentrated mainly between Al Abr and Thamud but will also occur further south in areas of recent rainfall in Ramlat Sabatyn and between Shabwah and Bayhan. Locusts may also appear and breed in the Marib and Al Jawf areas, and perhaps on the Tihama and in the interior of Al Mahra in areas of recent rainfall. Locusts will decline on the southern coast.

Oman

• **Situation**

No locusts were seen during a survey carried out in the central interior near the Saudi Arabian border and in the southern province of Dhofar near Yemen on 6-9 May. Isolated mature solitarious adults were present on the Batinah coast northwest of Muscat (2337N/5833E) and near Sohar (2421N/5644E).

• **Forecast**

Scattered adults might be present and could breed in the interior of Dhofar along the Yemen border where good rains fell in March. Small-scale breeding is likely to occur along the Batinah coast and adjacent interior areas that are affected by cyclone Gonu. There is a slight risk of swarms arriving from the interior of the Arabian Peninsula in June and July.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During May, small-scale breeding continued on the southeast coast near Chabahar (2517N/6036E) on the Vashnam Plains and near Zaribad (2536N/5921E). In both areas, solitarious and *transiens* hoppers of all instars were present in numerous places at densities of 5-60 hoppers/m^2 as well as groups of fledglings and *transiens* immature and mature adults at densities of 300-2,000 adults/ha. Ground teams treated 4,705 ha during May.

• **Forecast**

A few small adult groups and swarms could form on the southeast coast. If cyclone Gonu affects coastal areas, these adults may remain, mature and lay eggs, or they could move east towards the Indo-Pakistan border. There is a slight risk of swarms arriving from the interior of the Arabian Peninsula in June and July.

Pakistan

• **Situation**

During the first half of May, there was an increase in locust populations as small-scale breeding continued in the spring breeding area in Baluchistan. Second to fourth instar hoppers were present along the coast between Pasni (2515N/6328E) and Uthal (2548N/6637E), and scattered immature and mature solitarious adults at densities up to 3,500 adults/ha were seen at 50 places along the coast and further inland near Panjgur (2658N/6406E). Infestations were also reported in northern Baluchistan near Kharan (2832N/6526E) and in the summer breeding areas east of Sukkur (2742N/6854E).

During the second half of May, medium density third to firth hopper bands formed near Ormara (2512N/6438E). Solitarious hoppers and maturing adults persisted near Gwadar (2508N/6219E) and Uthal. Most of the maturing adults near Uthal were forming groups at densities of up to 1 adult/m^2. Scattered adults were also present near Panjgur (2658N/6406E). Ground control teams treated 1,806 ha during May.

• **Forecast**

Small groups of adults and perhaps a few small swarms are likely to form in Baluchistan and move to the summer breeding areas of Cholistan and Tharparkar and lay eggs with the onset of the monsoon rains. Breeding this summer is expected to be on a larger scale than in previous years. There is a slight risk of a few swarms arriving in Tharparkar from the Arabian Peninsula or Horn of Africa after mid-June.

India

• **Situation**

During the first week of May, ground control teams treated 180 ha of high numbers of third to fifth instar hoppers, fledglings and immature and mature adults that were present at 14 places northwest of Sam (2649N/7030E) near the Pakistani border. By mid-month, only scattered solitarious mature adults were reported at three places. No locusts were seen elsewhere in Rajasthan.

• **Forecast**

Locust numbers will increase in Rajasthan as low to moderate numbers of adults arrive from the west and lay eggs with the onset of the monsoon rains. Consequently, summer breeding is likely to be on a larger scale than in previous years. There is a slight risk of a few swarms arriving in Rajasthan from the Arabian Peninsula or Horn of Africa after mid-June.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week and affected countries are encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution*, orange for *threat* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.

Locusts/index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **Yemen outbreak.** Recent photos of rain and locust infestations in the interior of Yemen.
- **DLCC session reports.** Archived reports of all the sessions from 1955 to the present.
- **Locust situation.** Several updates during May
- **CLCPRO.** Report of the 3rd Executive Committee meeting (French)
- **EMPRES/WR.** Report of the 2nd Session of the Steering Committee (French)
- **Iran/Pakistan Joint Border survey.** Report of survey carried out in April 2007 (English)

Links to the above information can be found in the new *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **CLCPRO**. 4th sessions of the Executive Committee and CLCPRO, Bamako (Mali), postponed
- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

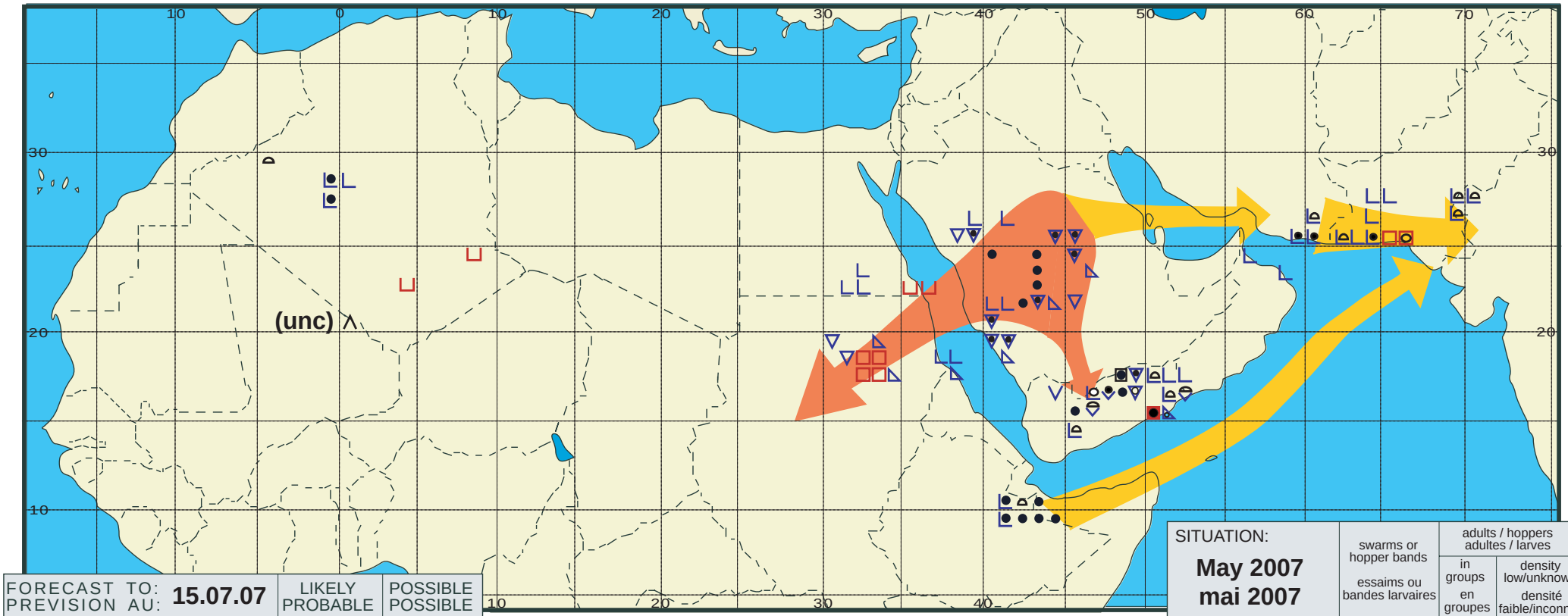
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

344



FORECAST TO: PREVISION AU: **15.07.07**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **May 2007 mai 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	Λ
egg laying or eggs pontes ou œufs	▼	▽	V
hoppers larves	●	○	◞
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	◓

FAO Newsroom Food and Agriculture Organization of the United Nations
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Yemen is facing worst locust outbreak in nearly 15 years

Widespread breeding ongoing – aerial control campaign required

6 June 2007, Rome – Yemen is facing its worst Desert Locust outbreak since 1993, FAO warned today. An intensive survey and aerial control campaign using helicopters needs to be mounted to avoid massive locust infestations and serious damage to food crops.

"Widespread breeding is in progress within a large and remote area of an estimated 31 000 square kilometres in the interior of Yemen, where locust swarms are likely to form," said FAO locust expert Keith Cressman, who has just returned from a week-long assessment mission to the country.

"Smaller-scale breeding has occurred also in other areas. Overall, an estimated 50 000 to 75 000 hectares may have to be treated this summer," he added.

If locust infestations are not controlled in time, agricultural crops in Wadi Hadhramaut and other areas including the Sana'a highlands will be at risk.

Heavy rains

Unprecedented heavy rains in March and again last week have favoured locust breeding and fledging in the most affected areas, and one or two more Desert Locust generations can be expected.

The situation could be exacerbated in the coming days by heavy rains and high winds associated with a very strong tropical cyclone over Oman.

The current generation of new locust adults will mature during June and should lay eggs by the end of the month. At that time, there is also a risk of swarms forming in the interior of Saudi Arabia which, if not controlled, could move to currently infested areas in Yemen.

As the locust infestations are spread over a large and remote area of rough terrain, it is not possible to conduct sufficient surveys or control the infestations on the ground only.

The National Locust Control Center is not sufficiently equipped to deal with the problem, facing a shortage of vehicles, pesticides, sprayers, communication equipment, and trained field teams.

Helicopter control

FAO recommends that a control campaign using two helicopters

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Locust swarms are likely to form in Yemen.

Related links

Locust watch

The Desert Locust consumes its own weight in vegetation every day.

should start by mid-July in order to minimize the locust threat to the region.

The Government of Yemen is mobilizing national funds and is activating the National Locust Steering Committee. Nevertheless, international assistance will be necessary to support national control efforts for a first control phase until September.

Locusts are migratory grasshoppers that often travel in vast swarms. A Desert Locust lives about three to five months. The life cycle comprises three stages: egg, hopper and adult.

Eggs hatch in about two weeks, hoppers develop in five to six stages over a period of about 30-40 days, and adults can mature within three weeks. Swarms can travel from 5 to 130 kilometres or more in a day with the wind.

A Desert Locust adult can consume roughly its own weight in fresh food per day -- about two grams. A very small part of an average swarm eats the same amount of food in one day as about 2 500 people.

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Locusts could reach India and Pakistan

Swarms expected to cross Indian Ocean – Situation in Yemen remains serious

4 July 2007, Rome – Desert Locust swarms from Ethiopia and northern Somalia are expected to cross the Indian Ocean and could reach India and Pakistan in the next days, FAO said today. This potentially dangerous situation should be closely monitored in both countries.

Two recent tropical cyclones have caused heavy rainfall in Pakistan and western India that will create unusually favourable breeding conditions for locusts until October along both sides of the Indo-Pakistan border and, for the first time in many years, in coastal areas of western Pakistan.

The governments in India and Pakistan have been warned and they are mobilizing field teams, equipment and resources in Rajasthan and Gujarat, India as well as in adjacent areas of Cholistan and Tharparkar deserts in Pakistan, FAO said.

“Desert Locusts usually fly with the wind and can travel up to about 100-150 km in a day,” said FAO locust expert Keith Cressman. “Locusts can stay in the air for long periods of time. For example, locusts regularly cross the Red Sea, a distance of around 300 km.”

Crossing the Indian Ocean on monsoon winds is part of the natural migration cycle of Desert Locusts and has already occurred in the past.

Emergency operations in Yemen

Meanwhile Yemen is facing the worst locust outbreak in nearly 15 years.

Desert Locusts have infested large areas in the remote interior along the southern edge of the Empty Quarter, stretching from Marib to the Oman border. Locust numbers are likely to increase dramatically as a second generation of breeding continues in these areas. Agricultural crops in Wadi Hadhramaut and other areas including the Sanaa highlands could be at risk.

FAO is organizing an emergency aerial control campaign in the interior of Yemen that will start later this month.

The $5 million campaign will be financed by the United Nations Central Emergency Response Fund ($2.4 million), the government of Japan ($2 million) and the government of Yemen. The funds will support two helicopters, pesticide, equipment, vehicles, and locust control and

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Related links
Locust watch

logistics experts.

The campaign is initially expected to last 30 days but could be longer depending on the weather and locust developments.

If the campaign is not successful, there is a risk of numerous swarms forming and invading countries along both sides of the Red Sea during the autumn.

Desert Locusts are migratory grasshoppers that often travel in vast swarms. A Desert Locust lives about three to five months. The life cycle comprises three stages: egg, hopper and adult.

A Desert Locust adult consumes roughly its own weight in fresh food per day -- about two grams. However, a very small part of an average swarm eats as much food in one day as about 2 500 people.

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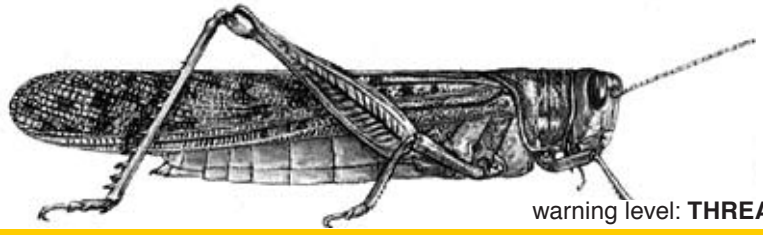

warning level: **THREAT (C. & E. Regions)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 345**

(3 July 2007)

General Situation during June 2007
Forecast until mid-August 2007

The Desert Locust situation continues to be extremely serious in the interior of Yemen where good rains fell again during June in areas where locusts were breeding, increasing in number and forming hopper bands. FAO is organizing aerial control operations that will commence in July. Several swarms moved from eastern Ethiopia and northwest Somalia to northeast Somalia at the end of June. These swarms are expected to cross the Indian Ocean and reach Pakistan and India in early July. Two tropical cyclones in the Indian Ocean caused heavy rains extending from Oman and Iran to Pakistan and western India, which will give rise to unusually favourable breeding conditions during the summer. All efforts should be made to monitor the developing and potentially dangerous situation closely and carefully, and to undertake control as necessary. Elsewhere, control operations ended in the interior of Saudi Arabia. The situation remained calm in the Sahel of West Africa and Sudan where the seasonal rains have yet to commence.

Western Region. The situation remained calm in the region during June. Low numbers of solitarious adults were present in a few places in **Morocco** and southern **Algeria**. Limited breeding occurred in northwest Algeria where ground control operations were carried out against groups of hoppers and adults. Small-scale breeding will commence with the onset of the seasonal rains in southern **Mauritania**, northern **Mali** and **Niger**, and in eastern **Chad**, causing locust numbers to increase slightly during July and August.

Central Region. Aerial and ground control operations ended in mid-June against hopper bands in the spring breeding areas in the interior of **Saudi Arabia**. Substantial breeding occurred within a large portion of the interior of **Yemen** where egg-laying, hatching and band formation was reported throughout the month. More hatching and band formation are expected during July and August, and new swarms are likely to start forming by the end of July. Immature swarms formed in eastern **Ethiopia** and northwest **Somalia** in early June and, by the end of the month, most of them had moved further east, damaging orchards in the Bosaso area. Although some adults are likely to remain in northern Somalia, mature and eventually lay eggs, most of the populations are expected to migrate to southwest Asia. Ground control operations treated a few hopper bands in northern **Sudan** and southern **Egypt** where small-scale breeding occurred. Breeding may occur in areas of recent rainfall in **Oman**.

Eastern Region. Control operations against groups of adults ended on the southeast coast of **Iran** in early June. Locust numbers declined in western **Pakistan** due to control operations and adult movement to the summer breeding areas along the Indo-Pakistan border. Locust numbers increased on both sides of the border and laying occurred in parts of Rajasthan, **India**. There is a strong possibility of several swarms arriving on the coast of Pakistan and in Gujarat and Rajasthan from northeastern Somalia during the first week of July. If so, the adults are likely to mature quickly and lay eggs. Consequently, locust numbers will increase and small hopper bands could form during the forecast period. Breeding could also occur in areas of recent rainfall on the coast in western Pakistan.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
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No. 345

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in June 2007

Two tropical cyclones caused unusually heavy rains and flooding in parts of Oman, southern Iran and Pakistan and in western India. Ecological conditions remained favourable for breeding in the interior of Yemen and along the border of Ethiopia and northern Somalia, and improved along the Indo-Pakistan border.

In the **Western Region**, mainly dry conditions persisted during June. The Inter-Tropical Convergence Zone (ITCZ) remained south of the summer breeding area in the Sahel, oscillating between 12N and 15N, with occasional northward surges to 20N over Mali and Niger. Consequently, light rains may have fallen in southern Mauritania between Kiffa and Tamchaket, in the Adrar des Iforas in northern Mali and in Niger near Tanout and on the southeastern side of the Air Mountains. Light rains may also have occurred at mid-month in south-central Libya and in the Tibesti region in northern Chad. Ecological conditions remained dry in most places except perhaps in parts of the Adrar des Iforas in northern Mali and in the Air Mountains of Niger where limited amounts of green vegetation may have been present to allow low numbers of locusts to survive. In Northwest Africa, dry conditions prevailed in the Western Sahara, in central and southern Algeria, and along the southern side of the Atlas Mountains in Morocco except for a few small areas of green vegetation in parts of the Draa, Ziz and Ghris valleys.

In the **Central Region**, tropical cyclone Gonu brought heavy rains (up to 300 mm in a single day) and floods to northern Oman and the Musandam Peninsula on 4-9 June. A second cyclone, Yemyin, caused further heavy rains to fall on 22-25 June in the interior of Yemen from Al Abr to Hayma in central Oman. Rainfall was heaviest in southern Oman. Consequently, breeding conditions remained favourable over a large portion of the interior of Yemen between Al Abr and Shehan as well as in the interior of Dhofar region in Oman and further north along the coast and interior between Sur and Musandam. Breeding conditions were improving in Shabwah and Marib regions in the interior of Yemen. Light to moderate rains fell on the Red Sea coast from Qunfidah, Saudi Arabia to Bab El Mandeb in Yemen. Ecological conditions remained favourable on the plateau in northern Somalia between Boroma and Burao as well as in adjacent areas of eastern Ethiopia where light showers fell at times during the month. In Sudan, the ITCZ reached the southern part of the summer breeding areas in Darfur and Kordofan but dry conditions prevailed except in cropping areas along the Nile. Light rains fell on the southern portion of the western lowlands in Eritrea near Teseney.

In the **Eastern Region**, two tropical cyclones, Gonu and Yemyin, occurred at the beginning and end of June, respectively. Gonu caused heavy rains and flooding on the southern coast of Iran between Bandar Abbas and Chabahar on 6-9 June, extending to adjacent areas in Pakistan (Turbat 45 mm, Jiwani 42 mm, Panjgur 23 mm, Pasni 16 mm). Yemyin with winds up to 130 km/h brought heavy rains and floods to southern Sindh province in Pakistan and adjacent areas of Rajasthan, India on 23 June as well as to coastal areas in western Pakistan between Karachi and Gwadar on the 26th. Although ecological conditions had started to dry out in the spring breeding areas of Baluchistan in Pakistan and Iran, these storms are likely to cause breeding conditions to remain favourable for another month or two. Ecological conditions were mainly dry in the summer breeding areas along the Indo-Pakistan border but after the cyclones will now improve and become favourable for breeding, especially in Tharparkar and southern Rajasthan.

Area Treated

Algeria	360 ha (June)
Egypt	45 ha (June)
Ethiopia	116 ha (June)
Iran	60 ha (2 June)
Pakistan	94 ha (1-15 June)
Saudi Arabia	3,709 ha (1-15 June)
Sudan	157 ha (June)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

No surveys were carried out and no locusts were reported during June.

• **Forecast**

Small-scale breeding will occur in the south, probably initially in the two Hodhs, with the onset of the seasonal rains, causing locust numbers to increase slightly.

Mali

• **Situation**

No surveys were carried out and no locusts were reported during June.

• **Forecast**

Small-scale breeding will occur in the northeast (Tilemsi Valley, Adrar des Iforas and Tamesna) with the onset of the seasonal rains, causing locust numbers to increase slightly.

Niger

• **Situation**

No reports were received in June.

• **Forecast**

Small-scale breeding will occur in Tamesna and perhaps in southeastern Air with the onset of the seasonal rains, causing locust numbers to increase slightly.

Chad

• **Situation**

No locusts were reported during the second half of May.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No locusts were reported during June.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During the first week of June, *transiens* fourth and fifth instar hoppers and immature and mature adults, at densities of up to 150 adults/bush, were present in one part of W. Saoura between Beni Abbes (3011N/0214W) and Adrar (2753N/0017W). Ground control operations treated 360 ha. *Transiens* mature adults were also seen in irrigated crops near Adrar. Local breeding occurred in both areas during May. During the last week of June, scattered mature solitarious adults were seen at one place southwest of Tamanrasset (2250N/0528E). No locusts were seen during surveys in June north of Beni Abbes, west of Djanet (2434N/0930E) and along the Malian border near Bir Bou Mokhtar (2120N/0056E).

• **Forecast**

Locusts should decline in W. Saoura but scattered adults and perhaps small groups may persist near Adrar. Low numbers of solitarious adults are likely to persist in the south and eventually breed on a small scale if rainfall occurs.

Morocco

• **Situation**

During June, isolated immature solitarious adults were seen south of the Atlas Mountains near Merzouga (3105N/0400W) and in the Draa Valley at Ksar Chair (2908N/0759W) on the 19-25th. No locusts were seen near Guelmim (2859N/1003W).

• **Forecast**

No significant developments are likely.

Libyan Arab Jamahiriya

• **Situation**

No surveys were carried out and no locusts were reported during June.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during June.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During the second decade of June, hopper bands of all instars, at densities of up to 13 hoppers/m^2, were present in the Northern State in a few cropping areas south of the Nile Rive and Merowe (1830N/3149E). Ground control operations treated 157 ha. No surveys were carried out and no locusts were reported elsewhere in the summer breeding areas.

• Forecast

Small residual populations may persist in cropping areas near the Nile River in Northern State. Small-scale breeding will occur in parts of Kassala, Nile,

Northern, Khartoum, White Nile, North Kordofan and North Darfur with the onset of the summer rains and cause locust numbers to increase slightly.

Eritrea

• **Situation**

A late report stated that a few individual locusts were seen in Asmara and perhaps in other towns in May. No locusts were seen during surveys carried out in the western lowlands on 26-30 June.

• **Forecast**

Scattered adults and perhaps a few small groups may be present in the highlands. These populations are expected to move to the western lowlands and breed on small scale once the seasonal rains commence.

Ethiopia

• **Situation**

During the first week of June, a few late instar hopper bands, at densities up to 110 hoppers/m^2 and 2.5 ha in size, were still present in the Harawa (0953N/3836E) area near Dire Dawa from breeding that occurred during May. Fledging continued until about mid-month, and adults formed a few very small immature groups and swarms, up to 27 ha in size, that were seen to the east of Dire Dawa (0935N/4150E) and Harar (0919N/4206E). Ground control operations treated 116 ha. No locusts were seen after the 16th between Dire Dawa and the border of northern Somalia.

• **Forecast**

Small residual adult populations may be present between Dire Dawa and northern Somalia. If conditions remain favourable, these adults are likely to mature and lay eggs that could hatch by the end of the forecast period.

Djibouti

• **Situation**

No locusts were reported during June.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

During the first week of June, small but dense late instar hopper bands persisted on the plateau between Boroma (0956N/4313E) and Hargeisa (0931N/4402E) and Shiikh Abdaal (0957N/4441E) where breeding had occurred during May. Fledging and swarm formation were in progress. Crop damage was reported in some areas. Groups of mature adults were present on the coast near Berbera (1028N/4502E). At mid-month, there were several reports of immature swarms over Hargeisa (0931N/4402E), followed by reports of swarms passing east of Erigavo (1040N/4720E) through the Gebi Valley and Golis Mountains in eastern Sanaag region, and reaching the Bari region near Bosaso (1118N/4910E) on the 23rd. Damage occurred to fruit trees in the Bosaso area. By the end of the month, only scattered immature adults were present on the coast and escarpment near Berbera (1028N/4502E).

• **Forecast**

Although there is a good possibility that many of the adults moved east along the plateau to the Bari region and beyond, small adult infestations are likely to remain between Boroma and Erigavo, mature and lay eggs that could hatch by the end of the forecast period. All efforts should be made to monitor the situation carefully.

Egypt

• **Situation**

During the second decade of June, hatchlings and medium density first to fourth instar hopper bands were present near Lake Nasser between Abu Simbel (2219N/3138E) and Tushka (2247N/3126E) as well as in the Wadi Allaqi area (ca. 23N/31E) where local breeding occurred in May. Low to medium densities of solitarious and *transiens* immature and mature adults were present. Some of the adults were copulating and laying eggs near Tushka. Ground control operations treated 45 ha. No locusts were seen in the Western Desert near Sh. Oweinat or in the Red Sea coast.

• **Forecast**

In early July, hatching will occur near Tushka and fledging will take place near Allaqi and Abu Simbel. Consequently, small groups of adults could form during July. Some of the adults are likely to stay in areas where green vegetation is present near Lake Nasser while others could move south towards the summer breeding areas in Sudan.

Saudi Arabia

• **Situation**

During the first half of June, numerous hopper bands of all instars, at densities up to 150 hoppers/m^2, persisted in areas of previous breeding in the interior near Khaybar (2542N/3917E), south of Buraydah (2621N/4358E) and north of Wadi Dawasir (2028N/4447E). Ground and aerial operations treated 3,709 ha. No locusts were reported east of Buraydah

and Riyadh (2439N/4646E) during the second half of the month.

• **Forecast**

Locust numbers will continue to decline in the spring breeding areas in the interior. Any hopper band infestations that are not detected or controlled could form a few small swarms in early July and, by mid-month, these swarms may move south into the interior of Yemen or west across the Red Sea towards the summer breeding areas in Sudan. Thereafter, the situation should remain calm.

Yemen

• **Situation**

During June, significant breeding occurred within most of the summer breeding areas in the interior between Marib (1527N/4519E) and Thamud (1717N/4955E). On the 6th, two immature swarms were seen northeast of Bayhan (1452N/4545E) that may have arrived from previous breeding on the coast near Seyhut (1512N/5115E). Solitarious and *transiens* adults were laying eggs in parts of Al-Jawf, Marib and Shabwah (1522N/4700E) regions. However, most of the egg laying occurred between Al Abr (1608N/4714E) and Thamud, mainly near Zamakh (ca. 1631N/4738E), Minwakh (1647N/4807E), W. Hazar (1744N/4901E) and W. Qirad (ca. 1650N/4919E). During the second half of the month, there was an increasing number of reports of hatching and hoppers forming bands at densities up to 250 hoppers/m^2. By the end of the month, egg laying and hatching were still in progress, and some hoppers had reached the fourth instar. Lower numbers of transiens hoppers and mature adults were present east of Thamud to Remah (1727N/5034E), and scattered solitarious adults were seen on the coast near Al Ghaydah (1612N/5210E).

• **Forecast**

Locust numbers are likely to increase dramatically as a second generation of breeding continues in the interior between Marib and Thamud. Hatching and hopper band formation will continue during July. Fledging is expected to commence about mid-July and new swarms will form by the end of the month and continue during August. Although the swarms may move within the larger summer breeding area, they are expected to remain between Marib and Thamud where they will mature. Another generation of egg laying could start by the end of August with hatching and band formation in September.

Oman

• **Situation**

During June, isolated hoppers were present on the 11th in the interior of Dhofar region near Maziuna (1750N/5239E) and the Yemen border.

• **Forecast**

Low to moderate numbers of locusts may be present in the interior of Dhofar near the Yemen border as well as on the Batinah coast. As both areas received heavy rains in June, small-scale breeding could occur during the forecast period. There is a high probability of a few swarms landing on the coast during the first week of July as they migrate from northern Somalia to Pakistan and India.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

On 2 June, ground control operations treated 60 ha of groups of immature and mature *transiens* adults, at densities of 1 adult/2m^2, at three places on the southeast coast near Chabahar (2517N/6036E).

• **Forecast**

Adults may remain on the southeastern coast between Jask and Chabahar, mature and lay eggs in areas affected by cyclones Gonu and Yemyin. If so, locust numbers will increase during the forecast period. There is a slight risk of similar infestations in the interior between Kahnuj and Saravan. Regular surveys should be maintained to monitor the situation.

Pakistan

• **Situation**

During the first half of June, locust numbers declined in the spring breeding areas in Baluchistan. Scattered groups of immature and mature adults, at densities up to 900 adults/ha, were reported from several places on the coast between Ormara (2512N/6438E) and Uthal (2548N/6637E). Scattered mature adults were also present at one place in the interior northeast of Panjgur (2658N/6406E). During the first week, some adults moved into the Indus Valley northwest of Mirpurkhas (2533N/6905E) and by the second week, scattered mature adults were seen in Cholistan between Rahimyar Khan (2822N/7020E) and the India border. Control operations treated 94 ha near Uthal.

• **Forecast**

Low to moderate numbers of locusts may remain on the coast between Gwadar and Uthal, mature and lay eggs in areas affected by cyclones Gonu and Yemyin. If so, locust numbers will increase during the forecast period. Regular surveys should be maintained to monitor the situation. In the summer breeding areas, locust numbers will increase as breeding occurs in Tharparkar and Cholistan. There is high probability that several swarms could arrive on the coast of Sindh and perhaps Baluchistan by early July from the Horn of Africa and lay eggs shortly thereafter which could give rise to hopper bands.

India

• **Situation**

During June, scattered immature and mature adults appeared in several districts (Jaisalmer, Barmer and Jodhpur) of Rajasthan. Egg laying occurred between Jodhpur (2618N/7308E) and Phalodi (2706N/7222E) on the 6th and north of Jaisalmer (2652N/7055E) on the 17th.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Rajasthan and hatching will occur during the forecast period. There is high probability that several swarms could arrive by early July from the Horn of Africa and lay eggs shortly thereafter which could give rise to hopper bands.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week and affected countries are encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution*, orange for *threat* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **Yemen outbreak.** Recent photos of rains and locust infestations in the interior of Yemen.
- **DLCC session reports.** Archived reports of all the sessions from 1955 to the present.
- **Locust situation.** Several updates during June
- **Iran/Pakistan Joint Border survey.** Report of survey carried out in April 2007 (English)

Links to the above information can be found in the new *Latest Additions* section on Locust Watch.

Desert Locust diploma course. The Graduate College of the University of Khartoum (Sudan) is offering a one-year post-graduate diploma course in Desert Locust management, starting 1 August 2007. The application deadline is 15 July. Please contact Munir.Butrous@fao.org for more information.

2007 events. The following meetings are scheduled:

- **CLCPRO**. 4th sessions of the Executive Committee and CLCPRO, Bamako (Mali), postponed
- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

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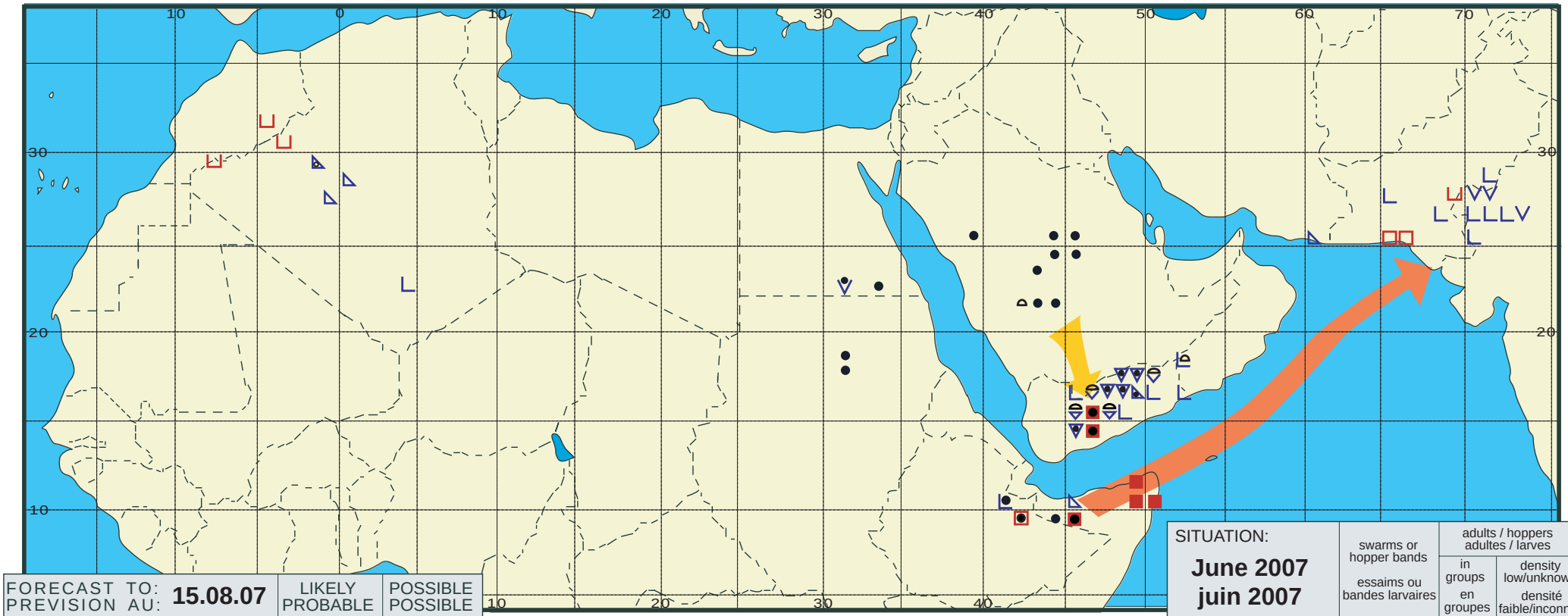

FORECAST TO: PREVISION AU: **15.08.07**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **June 2007 juin 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves: in groups en groupes	adults / hoppers adultes / larves: density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	Λ
egg laying or eggs pontes ou œufs	▼	▽	V
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊕

FAONewsroom Food and Agriculture Organization of the United Nations
helping to build a world without hunger

Yemen receives pesticides from Mauritania to battle locust outbreaks

Joint FAO/WFP effort to battle locust outbreaks in Yemen

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Related links
Locust
Watch

21 July 2007, Sana'a – Yemen has received a pesticide donation from Mauritania to combat the worst locust outbreak in nearly 15 years.

The donated chemicals were transported by air to Yemen in a joint operation between FAO and the World Food Programme (WFP). They will be used in an intensive campaign to prevent massive locust infestations and serious damage to food crops in Yemen and neighbouring countries.

An aircraft leased by WFP on behalf of FAO arrived in Sana'a 21 July 2007 carrying 35 000 litres of pesticides donated by the government of Mauritania. In addition, an agricultural spray plane chartered by FAO will be arriving in Sana'a within the next days for locust control in the interior of Yemen. A helicopter from the government of Yemen will also participate in the emergency operations.

Overall, an estimated 50 000 to 75 000 hectares infested by locusts may have to be treated through air and ground control for which FAO has leased vehicles from WFP's logistics centre in Dubai.

Desert Locusts have infested large areas in the remote interior of Yemen along the southern edge of the Empty Quarter, stretching from Marib to the Oman border. Locust numbers are likely to increase dramatically as a second generation of breeding continues in these areas over the next months. Agricultural crops in Wadi Hadhramaut and other areas including the Sanaa highlands can only be protected by successful locust survey and control operations.

Massive control campaign to be launched

"The pesticide donation made by Mauritania shows the country's commitment in the global control of Desert Locust. With the arrival of aircraft and pesticides, a massive control campaign can be launched over a large and remote area of rough terrain," said FAO locust expert Christian Pantenius. "This should help to minimize the locust threat to local crops in most affected areas and to neighbouring countries."

"With WFP's logistical strengths combined with FAO's technical expertise and operational assistance we are in a strong position to provide valuable support to the Government of Yemen at this critical time," said Mohamed El-Kouhene, WFP Representative in Yemen. "It is vital to work fast to minimise the crop damage that these locusts cause

and its impact on already vulnerable communities."

WFP has also included in the mission an expert to assess the impact of the insects on peoples' livelihoods and access to food.

The United Nations Central Emergency Response Fund (CERF) has provided US$2.4 million to FAO to support the government of Yemen's control of the Desert Locust over the next three months. The funds will support aircraft, pesticide, equipment, vehicles, and locust control and logistics experts.

Although Yemen imports around 75 percent of its food needs, anything that might impact the country's limited agricultural areas – estimated at between just one and two percent of the country's land mass – could lead to a sharp price increase of domestically grown food. The rural people will be most affected and they are already the most vulnerable being on average much poorer than the urban population.

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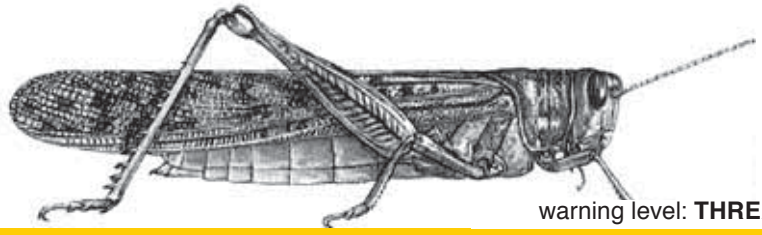

warning level: **THREAT (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 346

(2 August 2007)

General Situation during July 2007
Forecast until mid-September 2007

The Desert Locust situation during July remained extremely serious in Yemen for a third consecutive month. Egg laying, hatching and hopper band formation occurred within a large portion of the interior. By the end of the month, immature swarms started to form and were moving into crops. At the same time, breeding continued and new infestations were being found in areas that had not been surveyed previously. Ground control operations commenced in early July and treated nearly 19,000 ha. More swarms will form during August but most of these swarms are likely to remain in the interior. There is a slight risk that some swarms could move to the Red Sea coastal plains of Yemen and Saudi Arabia or to the Indo-Pakistan border via Oman. If more rainfall occurs in the interior of Yemen, another generation of egg laying could start by the end of August with hatching and band formation in September.

Western Region. The situation remained calm during July. Seasonal rains commenced in the summer breeding areas in the Sahel between Mauritania and Chad, and breeding conditions were improving because of the good rainfall. Isolated mature adults were reported in southern **Mauritania** and were probably present in **Mali**, **Niger** or **Chad** but surveys were not undertaken in these countries. Small-scale breeding will occur in the northern Sahel during the forecast period, causing locust numbers to increase slightly. No locusts were reported in Northwest Africa except for an isolated adult in northwest **Libya**.

Central Region. Apart from Yemen, the situation remained calm in the Region during July. Control teams treated 1,500 ha of hopper and adult groups in southern **Oman** that represented the eastward extent of the infestations in Yemen. Seasonal rains started in the interior of **Sudan** where good rainfall occurred throughout the summer breeding area from Darfur to western Eritrea. Scattered solitarious adults were present in the Baiyuda Desert north of Khartoum. So far, only limited surveys could be carried out in Sudan. During the next few months, small-scale breeding will cause locust numbers to increase slightly and it will be important to conduct surveys and monitor the situation closely. Good rains that fell along both sides of the Red Sea in July, unusual for this time of year, will cause breeding conditions to improve, especially on the Tihama coast in **Yemen**. In northeast **Eritrea**, solitarious adults laid eggs on the coast near the Sudanese border. Consequently, locust numbers could increase on both sides of the Red Sea. No locusts were reported elsewhere in the Region.

Eastern Region. Some locusts appeared on the Gujarat coast in **India** in early July that may have come from infestations in western Pakistan or perhaps northern Somalia. Small-scale breeding commenced with the onset of the monsoon rains in Rajasthan, India and probably in adjacent areas of **Pakistan**. Consequently, locust numbers will gradually increase in both countries. There is a very low possibility that a few swarms from Yemen could reach the Indo-Pakistan border in August.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
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E-mail: eclo@fao.org
Internet: www.fao.org
DLIS: www.fao.org/ag/locusts

No. 346

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in July 2007

Ecological conditions improved in the summer breeding areas in the Sahel of West Africa and Sudan where seasonal rains commenced during July. Good rains fell for a second month along parts of the Red Sea coast. Breeding conditions remained unusually favourable in the interior of Yemen. Monsoon rains started along both sides of the Indo-Pakistan border and ecological conditions were improving.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) oscillated between 15N and 20N over the Sahel with occasional northward surges to 23N near the Algerian/Malian border. Consequently, seasonal rains began to fall in early July in parts of the summer breeding areas. In Mauritania, light rains fell near Aleg, Kiffa and in the southeast between Aioun, Nema and Oualata. Rains reach as far north as 18N near N'Beika during the second decade, and heavy showers fell at the end of the month in Hodh El Gharbi. Light to moderate showers fell at times over most of northern Mali (north of Tombouctou, Timetrine, Tilemsi Valley, Adrar des Iforas and Tamesna). Above-average rainfall occurred in northern Niger (Tamesna, Air Mountains) and between Tanout and Bilma. In Chad, light rains fell as far north as 18N near Faya and Fada as well as in the Tibesti Mountains. As a result, ecological conditions were becoming favourable for breeding in the above areas. Mainly dry conditions prevailed in northwest Africa, except for light rains in western Algeria between Adrar and the Moroccan border as well as further south in the Hoggar Mountains and along the Malian border near Bir Bou Mokhtar where vegetation was becoming green.

In the **Central Region**, seasonal rains commenced in early July in the summer breeding areas in Sudan. Light to moderate rains fell over a widespread area extending from West Darfur to the Red Sea Hills, including parts of northern Sudan (Wadi Milk, Baiyuda Desert and Dongola). The heaviest rains fell north of El Obeid and east of El Fasher during the first decade. Less rain fell during the last week of July. As a result, ecological conditions were becoming favourable for breeding within a large portion of the interior of Sudan. In Eritrea, good rains fell in the highlands and, more importantly, in the western lowlands where breeding conditions were improving. Along the Red Sea, good rains fell in coastal and subcoastal areas between Abu Ramad, Egypt and Massawa, Eritrea and for the second consecutive month from Qunfidah, Saudi Arabia to Bab El Mandeb in Yemen. Rainfall was heaviest on the Yemeni Tihama coast. Very little rain fell in the Yemen interior between Marib and the Oman border except for light showers on a few days during the second and third weeks of July. Consequently, soil conditions had become dry by the end of the month, except near Minwakh and Thamud, but vegetation remained green except near Zamakh. In the Horn of Africa, light rains fell on the plateau between Dire Dawa, Ethiopia and Hargeisa in northwestern Somalia, and breeding conditions remained favourable in many areas. Light rains also fell in parts of the interior in northern Oman and vegetation was drying out in the south.

In the **Eastern Region**, moderate to heavy rains associated with the monsoon fell in the summer breeding areas along both sides of the Indo-Pakistan border during the first decade of July. In Pakistan, most of the rainfall was concentrated in Tharparkar and Khairpur deserts (south of Rohri) and between Bahawalpur and the Indian border. In India, rains fell throughout Rajasthan and Gujarat. Less rain fell along the Rajasthan Canal northeast of Jaisalmer. During the second half of July, very little rain fell in either country. Nevertheless, ecological conditions were becoming favourable for breeding along both sides of the border. Elsewhere, light rains fell in the mountains in southeast Iran between Chabahar and Bampur that may runoff onto the coastal plains. Similar rains fell in coastal and interior areas in western Pakistan between Pasni and Khuzdar. These rains may have allowed ecological conditions to be suitable for small scale breeding in both countries.

Area Treated

Oman	1,500 ha (July)
Yemen	18,591 ha (4-31 July)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During July, isolated mature solitarious adults were present at a few places in the south – east of Kaedi (1612N/1332W) in Gorgol and south of Kiffa (1638N/1124W) in Assaba – and in the southeast between Timbedra (1614N/0809W), Nema (1636N/0715W) and Oualata (1717N/0701W) in Hodh Ech Chargui.

• **FORECAST**

Small-scale breeding will occur in the south and southeast, causing locust numbers to increase slightly.

Mali

• **SITUATION**

No surveys were carried out, but an isolated solitarious adult was reported on 14 June along the Niger River southeast of Gao (1616N/0003W).

• **FORECAST**

Scattered adults are likely to be present north of Tombouctou and in parts of the northeast (Timetrine, Tilemsi Valley, Adrar des Iforas and Tamesna). Small-scale breeding will occur in areas of recent rainfall, causing locust numbers to increase slightly.

Niger

• **SITUATION**

No reports were received in July.

• **FORECAST**

Scattered adults are likely to be present in parts of Tamesna and perhaps in southeastern Air. Small-scale breeding will occur in areas of recent rainfall, causing locust numbers to increase slightly.

Chad

• **SITUATION**

No surveys were carried out and no locusts were reported during June. No reports were received in July.

• **FORECAST**

Scattered adults are likely to be present in parts of the centre and northeast where small-scale breeding is expcted to occur in areas of recent rainfall, causing locust numbers to increase slightly.

Senegal

• **SITUATION**

No surveys were carried out and no locusts were reported during July.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **FORECAST**

No significant developments are likely.

Algeria

• **SITUATION**

During July, no locusts were seen during surveys carried out in the central and southern Sahara near Adrar (2753N/0017W), Tamanrasset (2250N/0528E), Djanet (2434N/0930E) and along the Malian border near Bir Bou Mokhtar (2120N/0056E).

• **FORECAST**

Isolated adults could appear in the south near Tamanrasset and Bir Bou Mokhtar and breed on a small scale if rainfall occurs.

Morocco

• **SITUATION**

No locusts were reported during July.

• **FORECAST**

No significant developments are likely.

Libyan Arab Jamahiriya

• **SITUATION**

During July, an isolated solitarious mature adult was seen near Ghadames (3010N/0930E).

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No surveys were carried out and no locusts were reported during July.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

On 19-25 July, limited surveys were carried out in the River Nile State where scattered mature solitarious adults were seen in the Baiyuda Desert between Atbara (1742N/3400E) and Merowe (1830N/3149E), in the Nile Valley south of Abu Hamed (1932N/3320E) and at one place east of Atbara. No surveys were carried out in the summer breeding areas in Darfur, Kordofan, White Nile or Kassala.

• Forecast

Small populations will persist in the River Nile State where laying and hatching will occur in August. Low numbers of adults are almost certainly present in the summer breeding areas in West and North Darfur, North Kordofan, White Nile and Kassala States where small-scale breeding is likely to be in progress. Breeding will continue during the forecast period, causing locust numbers to increase slightly. Surveys should be conducted in these areas on a regular basis.

Eritrea

• **Situation**

During July, no locusts were seen during surveys in the summer breeding areas in the western lowlands. On the Red Sea coast, mature adults were present and laying eggs during the first and third weeks of July at several places in the north between Mehimet (1723N/3833E) and the Sudanese border. Mature adults were also seen on the coast near Mersa Gulbub (1633N/3908E) and in the foothills near Afabet (1612N/3841E). No locusts were seen further south along the coast to Tio (1441N/4057E).

• **Forecast**

Small-scale breeding is likely to occur in the western lowlands and on the northern Red Sea coast between Mehimet and Karora, causing locust numbers to increase slightly.

Ethiopia

• **Situation**

No locusts were seen during surveys carried out near Dire Dawa during the first half of July.

• **Forecast**

Small residual adult populations may be present between Dire Dawa and northern Somalia. If conditions remain favourable, small-scale breeding could occur in areas of recent rainfall.

Djibouti

• **Situation**

No locusts were reported during July.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

No surveys were carried out and no locusts were reported after 1 July.

• **Forecast**

Small residual adult populations may be present on the plateau between Boroma and Burao and perhaps on the coast near Berbera. If conditions remain favourable, small-scale breeding could occur in areas of recent rainfall.

Egypt

• **Situation**

No locusts were seen during surveys carried out in July near Lake Nasser between Abu Simbel (2219N/3138E) and Tushka (2247N/3126E).

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

During the second week of July, no locusts were seen on the Red Sea coast near Qunfidah (1909N/4107E) or in previously infested areas in the interior near Buraydah (2621N/4358E) and Riyadh.

• **Forecast**

Scattered adults may appear on the southern coast of the Red Sea between Qunfidah and Jizan and breed on a small scale in areas of recent rainfall. There is a very low possibility that a few swarms could arrive in these areas from Yemen.

Yemen

• **Situation**

During July, egg laying and hatching continued within a large portion of the interior. The most significant infestations were in remote wadis in the plateau north of W. Hadhramaut between Al Abr (1608N/4714E) and Thamud (1717N/4955E) where hoppers formed groups and bands at densities up to 400 hoppers/m^2. Smaller infestations continued east to the Oman border at Shehan (1746N/5229E) and south to Hat (1719N/5205E). Hatching and band formation also occurred in wadis in the plateau south of W. Hadhramaut, in crops of W. Hadhramaut itself, and in the traditional breeding areas in Shabwah near Ataq (1435N/4649E) and Bayhan (1452N/4545E). Groups of solitarious and *transiens* immature and mature adults were scattered throughout most of these areas. Although hopper development was not well synchronized, most hoppers had reached fourth or fifth instar by the end of the month and were fledging and forming groups of immature adults. From the 26th onwards, a few small immature swarms of up to 3 km^2 in size were reported near W. Hadhramaut.

Ground control operations commenced on 4 July and 18,591 ha were treated during July.

Solitarious and *transiens* hoppers and adults were present on the desert plains about 100 km west of Al Abr, and mature solitarious adults were seen at a few places in the Al-Jawf region near Al Hazm (1609N/4447E).

On the southern coast, late instar hoppers and a few groups and bands, mixed with solitarious and *transiens* mature adults, were present during the first decade of July near Seyhut (1512N/5115E) and in the interior near Al Ghaydah (1612N/5210E). Some mature adults were also seen on the coast near Mukalla (1431N/4908E).

• **Forecast**

Moderate numbers of small swarms will form during August as the remaining hoppers fledge in currently infested areas. As vegetation dries out, swarms are likely to move between Marib and the Oman border where they will mature in areas that remain green. If more rainfall occurs, egg laying could start by the end of August with hatching and band formation in September. Most of the swarms are expected to stay in the interior but there is a slight risk that some swarms could move to the Sana'a highlands and to the Red Sea coastal plains or to southern Oman.

Oman

• **Situation**

During July, groups of solitarious and *transiens* hoppers of all instars mixed with solitarious, *transiens* and gregarious immature and mature adults were present along the Yemeni border near Maziuna (1750N/5239E). Some adults were copulating. Ground control teams treated 1,500 ha. No locusts were seen during surveys in the northern regions of Sharqiya and Batinah.

• **Forecast**

Unless further rainfall occurs, breeding will end and locust numbers will decline in the south along the Yemeni border. Nevertheless, there is a slight risk that some swarms could appear in this region from adjacent areas in Yemen.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No reports were received during July.

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

During the second half of June, scattered maturing adults were west of Karachi near Uthal and in the summer breeding areas in the Khairpur Desert south of Rohri and in Cholistan Desert between Rahimyar Khan (2822N/7020E) and the Indian border.

During the first half of July, scattered mature adults persisted in the above areas. No surveys were conducted in the Tharparkar Desert.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Tharparkar, Khairpur and Cholistan during the forecast period. There is a very low possibility that a few swarms could appear from Yemen via Oman in August.

India

• **Situation**

On 3 July, low numbers of immature and mature adults were seen on the coast of Gujarat in the Rann of Kutch near the Pakistani border. During the remainder of the month, scattered solitarious adults were present in several districts (Jaisalmer, Bikaner, Barmer and Jodhpur) of Rajasthan where they matured and laid eggs.

• **Forecast**

Small-scale hatching will occur during August and cause locust numbers to increase slightly in Rajasthan. There is a very low possibility that a few swarms could appear from Yemen via Oman in August.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week and affected

countries are encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution*, orange for *threat* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **Locust situation.** Several updates during July (home page and in Archives section)
- **Press.** Two press releases on the Yemen situation, 4 and 26 July (home page)
- **Pesticide Referee Group.** 1st to 9th session reports, 1989-2004 (Publications section)
- **SW Asia Commission.** 1st to 25th session reports, 1964-2006 (Publications section)
- **Outbreaks and upsurges.** New format (Archives section)

Links to the above information can be found in the *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

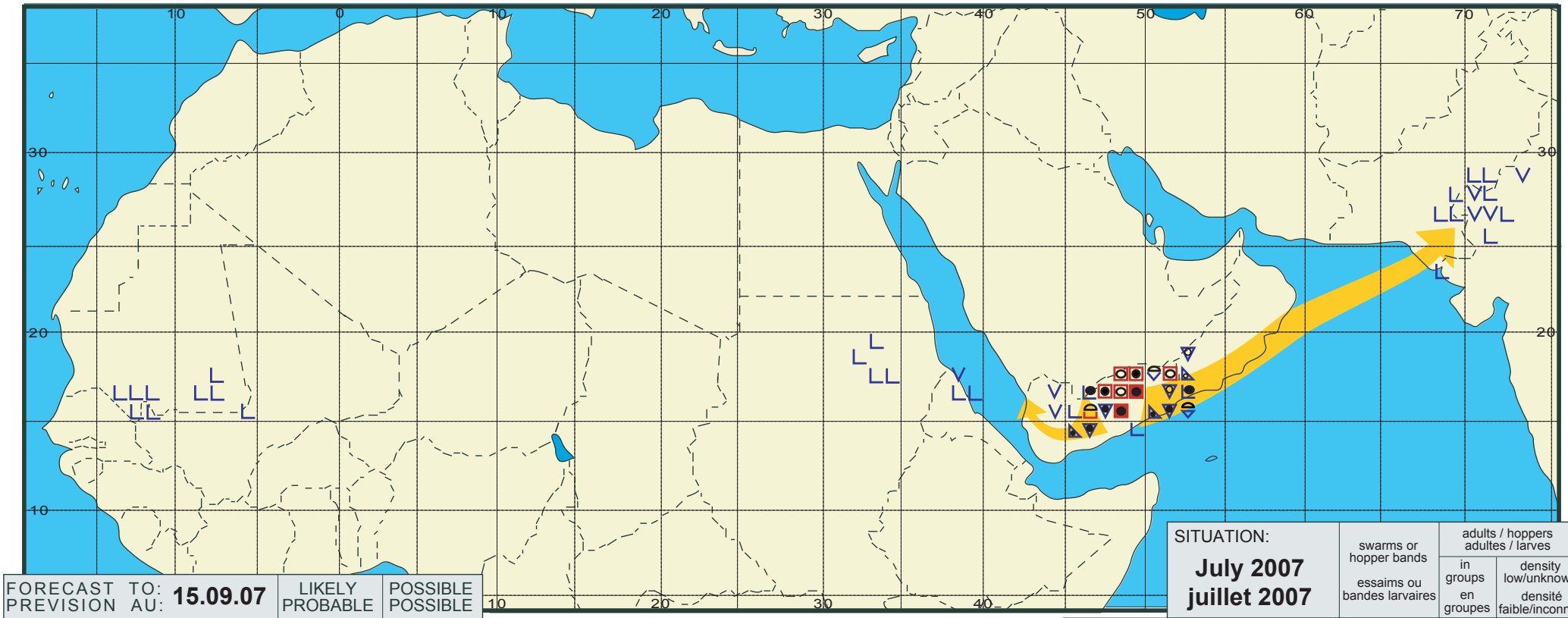
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

346

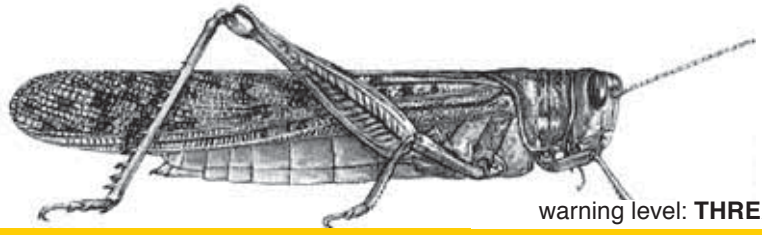


FORECAST TO: / PREVISION AU: **15.09.07**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION:

July 2007
juillet 2007

	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves: in groups en groupes	adults / hoppers adultes / larves: density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	⋀
egg laying or eggs pontes ou œufs	▼	▽	V
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	◒



warning level: **THREAT (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 347**

(3 September 2007)

General Situation during August 2007
Forecast until mid-October 2007

The Desert Locust situation worsened during August in Yemen as immature swarms formed in the interior and moved into the central highlands. Some swarms remained in the interior where another generation of breeding is likely to occur while a few others moved to southern Oman. The swarms in the highlands are expected to reach the Red Sea and Gulf of Aden coast where they will mature and lay eggs. A few swarms could also reach coastal areas in Saudi Arabia, Eritrea, Sudan and northern Somalia where good rains fell during August. There is also a slight risk that a few swarms could reach the Indo-Pakistan border during the first half of September. Elsewhere, heavy rains and flooding occurred in the interior of Sudan and Eritrea where locust numbers are expected to increase.

Western Region. The situation continued to remain calm during August. Small-scale breeding has probably started in parts of the northern Sahel in **Mauritania**, **Mali**, **Niger** and **Chad** where good rains fell and ecological conditions were favourable during the month. Surveys were halted in northeast Mali due to insecurity. Locust numbers will gradually increase during the forecast period as breeding continues in these countries. Local breeding may also take place in southern **Algeria**. No locusts were reported and no significant developments are expected elsewhere in Northwest Africa.

Central Region. Breeding occurred in the interior of **Sudan** and in the western lowlands in **Eritrea** during August. Locust numbers increased on the Red Sea coastal plains in Sudan, Eritrea and **Yemen** where breeding is likely to start earlier than usual. At the end of the month, there were unconfirmed reports of locusts on the Red Sea coast near Jizan, **Saudi Arabia**. These events, combined with the deteriorating situation in the interior of Yemen, could lead to a significant increase in locusts in the Region during the coming months, first in the summer breeding areas, then in the winter breeding areas on the Red Sea coast. Countries should take immediate steps to monitor these areas and carry out control operations as required. Some of these activities may need additional assistance from the international community. Elsewhere, a few swarms from eastern Yemen invaded southern **Oman** and adults moved to northeast Oman where local breeding was in progress.

Eastern Region. Locust numbers increased slightly along both sides of the Indo-Pakistan border because of small-scale breeding that occurred during August. Breeding is expected to continue during the forecast period between Tharparkar and Cholistan in **Pakistan** and in Rajasthan, **India**. There is a very low possibility that a few small swarms could arrive in either country from Yemen via Oman during the first half of September. Thereafter, this threat should pass. Limited control was carried out against adults that persisted and were breeding on the southeastern coast of **Iran**.

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No. 347

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in August 2007

Good rains fell and ecological conditions were favourable for breeding in the northern Sahel of West Africa. Floods occurred in Sudan and Eritrea, and breeding conditions improved on the Red Sea coast. Vegetation was drying in the interior of Yemen. Breeding conditions were favourable along the Indo-Pakistan border.

In the **Western Region**, the position of the Inter-Tropical Convergence Zone (ITCZ) was normal during August compared to the long-term average, oscillating around 20N over the Sahel with occasional northward surges to 26N over the Algerian Sahara. Consequently, good rains fell in most of the summer breeding areas throughout the month, although they were generally heaviest in the first and last decades of the month. In Mauritania, showers fell south of 19N, mainly in the two Hodhs and to a lesser extent in other areas. In the northwest, light rainfall occurred in parts of Inchiri and southwest Adrar during the second week. Vegetation was green south of the Tagant Plateau but was dry in the Aftout Fai. In Mali, good rains fell in the west along the Mauritania border and in the Tamesna east of Gao. Lighter rains fell and ecological conditions were improving in the north between Araouane and Ti-n-kar and from Kidal to the Niger border. In Niger, good rains fell in the Air Mountains, in Tamesna and along the Chad border. Vegetation was green in southern Tamesna and it was becoming green further north as well as in western Air. In Chad, rainfall reached 18N but was heaviest in Kanem, Batha, Ouaddai and Biltine provinces. In Northwest Africa, light to moderate showers fell along the southern side of the Atlas Mountains from Guelmim, Morocco to El Oued, Algeria. Rains were heaviest in Morocco between Tata and Zag, and extended to areas east of Smara. Light rains fell at times in the Algerian Sahara near Adrar, Tamanrasset and along the Malian border.

In the **Central Region**, heavy rains fell throughout the summer breeding areas in the interior of Sudan and in western Eritrea. In Sudan, some of the showers reached as far north as 18N in North Darfur and 19N in Nile State. Rains also fell in the Red Sea Hills between Haiya and Gebeit. Good rains since mid-June have caused flash floods with the worst affected areas being Kassala State where the River Gash flooded and washed away crops, Khartoum and North Kordofan. In Eritrea, heavy rains delayed crop planting and washed away bridges in the western lowlands. Ecological conditions were favourable in non-flooded areas and will become favourable in other areas once the waters recede. On the Red Sea coast, vegetation was green along many wadis between Massawa, Eritrea and Port Sudan because of previous rainfall and runoff. Breeding conditions continued to be favourable along the coast in Saudi Arabia from Qunfidah to Bab El Mandeb in Yemen where rains fell for the third consecutive month. Rainfall declined in the summer breeding areas in the interior of Yemen. Vegetation was drying out quickly on the plateau from Minwakh to the Oman border but remained green in the Shabwah and Marib Governorates where light rains fell at times. Mainly dry conditions prevailed in Oman. Elsewhere, light to moderate rains fell at times between Dire Dawa, Ethiopia and Berbera, northern Somalia.

In the **Eastern Region**, good rains associated with the monsoon fell in early August along both sides of the Indo-Pakistan border. Heavy rains generated by a low-pressure system over Rajasthan occurred during the second week in Rajasthan and Gujarat in India, and in Sindh and coastal areas of Baluchistan in Pakistan. Thereafter, little rain fell except for a few days during the last decade of the month. Nevertheless, ecological conditions were favourable for breeding in Tharparkar, Khairpur and Cholistan deserts in Pakistan and in Rajasthan.

Area Treated

Iran	50 ha (10-12 August)
Oman	947 ha (August)
Yemen	12,664 ha (August)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During August, isolated mature solitarious adults persisted in a few places in the southeast, mainly in Hodh Ech Chargui between Nema (1636N/0715W) and Oualata (1717N/0701W) and, to a lesser

extent, in Hodh El Gharbi near Aioun El Atrous (1639N/0936W). No locusts were seen elsewhere in the summer breeding areas.

• **Forecast**

Small-scale breeding is likely to be in progress and will continue in the south and cause locust numbers to increase slightly. Scattered locusts are likely to appear in the northwest and breed on a small-scale if rainfall occurs.

Mali

• **Situation**

No locusts were seen during surveys that commenced on 13 August northeast of Tombouctou (1649N/0259W), in the Timetrine near Ti-n-kar (1926N/0022W), and in the Adrar des Iforas near Tessalit (2011N/0102E), Aguelhoc (1927N/0052E) and between Kidal (1827N/0125E) and Tin Essako (1826N/0229E). All surveys were halted on the 26th after one team was attacked north of Gao.

• **Forecast**

Scattered adults are likely to be present and breeding north of Tombouctou and in parts of the northeast (Timetrine, Tilemsi Valley, Adrar des Iforas and Tamesna). Small-scale breed will continue in these areas and cause locust numbers to increase slightly.

Niger

• **Situation**

During August, isolated solitarious fourth instar hoppers and immature adults were seen in the southeast at two places about 200 km northeast of Zinder (1346N/0858E). No surveys were carried out and no locusts were reported in Tamesna or Air.

• **Forecast**

Scattered adults are likely to be present and breeding in parts of Tamesna and the Air Mountains. Small-scale breeding will continue in these areas and cause locust numbers to increase slightly.

Chad

• **Situation**

A late report indicated that no surveys were carried out and no locusts were reported during July.

During August, no locusts were seen during surveys carried out in Kanem west of Salal (1448N/1712E) and in Biltine south of Arada (1501N/2040E) on the 5-8th. There was an unconfirmed report of a few locusts in Ouaddai near Goz Beida (1242N/2125E) on the 26th.

• **Forecast**

Scattered adults are likely to be present and breeding in parts of the centre and northeast. Small-scale breeding will continue in these areas and cause locust numbers to increase slightly.

Senegal

• **Situation**

A late report indicated that no locusts were seen during surveys carried out on 17-26 July. In August, no locusts were seen during surveys carried out during the last week of the month.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

No surveys were carried out and no locusts were reported during August.

• **Forecast**

Isolated adults could appear in the south near Tamanrasset and Bir Bou Mokhtar and breed on a small scale in areas of recent rainfall.

Morocco

• **Situation**

No surveys were carried out and no locusts were reported during August.

• **Forecast**

No significant developments are likely.

Libyan Arab Jamahiriya

• **Situation**

No surveys were carried out and no locusts were reported during August.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No reports were received during August.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

Surveys carried out during the last week of August indicated that breeding was in progress in River Nile

and Khartoum States. First to fourth instar hopper bands were seen in the Baiyuda Desert west of Atbara (1742N/3400E) as well as mature gregarious adults, some of which were laying eggs. Further south, isolated hoppers and groups of maturing adults were present west of Shendi (1641N/3322E). Groups of immature and mature gregarious adults were seen in the Red Sea Hills near Khor Baraka and the Eritrean border at 1726N/3742E and on the Red Sea coast in the Tokar Delta.

• Forecast

Scattered hoppers and adults are almost certainly present in West and North Darfur, North Kordofan, White Nile and Kassala States. Small to moderate scale breeding will continue during the forecast period, causing locust numbers to increase further and perhaps gregarize. Locusts are also likely to be present on the Red Sea coastal plains south of Port Sudan where there is a risk that a few swarms may arrive from Yemen. Locust numbers will increase on the coast as breeding occurs in areas of recent rainfall and runoff. Efforts should be made to monitor the situation carefully in all areas.

Eritrea

• **Situation**

During August, small scale breeding occurred in the western lowlands where solitarious hoppers of all instars, at densities of up to 5 hoppers/m^2, mixed with scattered immature and mature adults were seen at few places along W. Barka near Kerkebet (1618N/3724E). On the northern Red Sea coast, there was an increase in the number of scattered solitarious immature and mature adults at several places between Mehimet (1723N/3833E) and the Sudanese border as well as at few places further south near Gheleb Sagla (1707N/3853E) Mersa Gulbub (1633N/3908E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in the western lowlands and on the northern Red Sea coast between Massawa and Karora. There is a risk that a few swarms may arrive from Yemen.

Ethiopia

• **Situation**

No locusts were seen during surveys carried out between Jijiga (0922N/4250E) and the northern Somalia border on 12 August.

• **Forecast**

Scattered adults may be present between Dire Dawa and northern Somalia and breed on a small scale in areas of recent rainfall.

Djibouti

• **Situation**

No surveys were carried out and no locusts were reported during August.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

No surveys were carried out during August but there were unconfirmed reports of isolated mature adults present on the plateau between Boroma (0956N/4313E) and Burao (0931N/4533E).

• **Forecast**

Scattered adults may be present and breeding on the plateau between Boroma and Burao in areas of recent rainfall. There is a risk that a few swarms could arrive on the coast or the escarpment from Yemen during periods of strong northerly winds. If so, the adults are likely to mature and lay eggs in favourable areas.

Egypt

• **Situation**

No locusts were seen during surveys carried out in mid-August on the Red Sea coast between Abu Ramad (2224N/3624E) and the Sudanese border, and in nearby W. Diib.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

During August, no locusts were seen during surveys in the interior and on the Red Sea coast near Rabigh (2247N/3901E) and Qunfidah (1909N/4107E). On the 30th, there were unconfirmed reports of locusts in many places on the Red Sea coast south of Jizan (1656N/4233E).

• **Forecast**

Scattered adults are likely to appear on the southern coast of the Red Sea between Qunfidah and Jizan, and breed on a small scale in areas of recent rainfall. There is a risk that a few swarms could arrive in these areas from Yemen.

Yemen

• **Situation**

During August, hatching and band formation continued in the summer breeding areas of the

interior, mainly reported in the Hadhramaut region and, to a lesser extent, in Al-Mahara, Shabwah and Marib regions. Light to moderate crop damage was reported in some areas. By mid-month, most of the hatching had ended, the majority of hoppers had fledged and an increasing number of gregarious immature adults were forming groups and small swarms up to 5 km^2 in size. As vegetation dried out on the Hadhramaut plateau between Al Abr (1608N/4714E) and Shehan (1746N/5229E), swarms moved during the second half of the month west towards Shabwah, Abyan, Marib and Al-Jawf regions and reached the central highlands near Sana'a, Dhamar (1433N/4424E), Ibb (1358N/4411E), Ad Dali (1341N/4443E) and Al Baydha (1405N/4542E), and the Aden coast near Lahij (1303N/4453E). One swarm reportedly reached Al-Mahwait (1529N/4334E) in the mountains west of Sana'a. A few swarms also moved east into southern Oman.

At the end of August, hopper groups and bands as well as small immature swarms continued to be reported in the Hadhramaut region, groups of late instar hoppers and scattered adults were present in Al-Mahara, immature and mature swarms were seen in Shabwah, and adults were present in Al-Jawf region. Some adults were reported to be copulating near Wadi Hadhramaut. Control teams treated 12,664 ha in August of which 3,080 ha were by air. Control operations were halted for a week due to insecurity and tensions with beekeepers in Hadhramaut.

On the Red Sea coast, scattered immature and mature solitarious adults were present in the north near Midi (1619N/4248E) and on the central coast near Bajil (1458N/4314E). Adults were reported to be copulating near Bajil.

• **Forecast**

More swarms will form in Hadhramaut and Al-Mahara in September and move towards Shabwah, Marib and Al-Jawf where they will mature and lay eggs. Hatching is expected to occur by the end of September and hoppers will form bands in October. Some swarms may continue to the central highlands and eventually reach the Red Sea coastal plains and the coast near Aden. If so, they will mature and lay eggs that should hatch and cause hoppers to form bands from October onwards. Consequently, locust numbers will increase on the Red Sea coast because of local breeding by current populations, supplemented by locusts that arrive from the interior and breed.

Oman

• **Situation**

In early August, small-scale breeding occurred in the south along the Yemeni border near Maziuna (1750N/5239E) where solitarious and *transiens* hoppers and adults were present in several places. On the 15th, a small immature swarm with about 10 locusts/m^2 arrived near Maziuna from adjacent areas in Yemen. During the next few days, the same swarm was seen further north near Qabat Al Nasr (1810N/5311E) and there were other reports of small swarms flying from the southwest to the northeast in the same area. During the last week of August, groups of low to medium densities of immature gregarious adults mixed with a few mature gregarious adults were present in the south. Ground control teams treated 947 ha during August.

In the northeast, immature solitarious adults were seen in the Sharqiya region on the 22nd in the Wahiba Sands (ca. 2144N/5852E) and near the coast southwest of Ras Al Hadd (2232N/5947E) on the 27th. Local breeding occurred in a few places affected by Cyclone Gonu in June where solitarious and *transiens* hoppers were present.

• **Forecast**

There remains a slight risk that a few more swarms could appear in the south from adjacent areas in eastern Yemen during September and move north towards Sharqiya. A few small groups of hoppers and adults may form from local breeding in Sharqiya.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During August, medium to high densities of solitarious and *transiens* immature and mature adults were seen at 8 places on the southeastern coast near Chabahar (2517N/6036E) on the 10-12th. Some of the adults were copulating. Ground control operations treated 50 ha.

• **Forecast**

Low numbers of locusts could persist in a few places near Chabahar and breed on a small-scale in those areas that remain favourable.

Pakistan

• **Situation**

During the second half of July, scattered mature adults persisted in the Khairpur and Cholistan desert between the Indus River Valley and the Indian border as well as in the Lasbela (2614N/6619E) area west of Karachi.

During the first half of August, limited hatching occurred at two places near the Indian border southeast of Rahimyar Khan (2822N/7020E). Scattered mature adults persisted in Khairpur and Cholistan.

• **Forecast**

Small-scale breeding will continue in Cholistan and Khairpur with further hatching, causing locust numbers to increase slightly. Fledglings and immature adults will appear from early September onwards. Similar breeding is probably underway and will continue in Tharparkar. There is a very low possibility that a few small swarms could arrive from Yemen via Oman during the first half of September. Thereafter, this threat should pass.

India

• **Situation**

During August, small-scale breeding occurred in Bikaner district where scattered solitarious second to fourth instar hoppers were seen north of Phalodi (2706N/7222E). Isolated and scattered immature and mature solitarious adults persisted in Bikaner, Jaisalmer and Jodhpur districts of Rajasthan, and in Bhuj district of Gujarat. Some adults were laying eggs near Jaisalmer (2652N/7055E).

• **Forecast**

Small-scale breeding will continue in Rajasthan with further hatching, causing locust numbers to increase slightly. Fledglings and immature adults will appear from early September onwards. There is a very low possibility that a few small swarms could arrive from Yemen via Oman during the first half of September. Thereafter, this threat should pass.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week and affected countries are encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution*, orange for *threat* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/

index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **Locust situation.** Several updates during August (home page and in Archives section)
- **Pesticide Referee Group.** 1st to 9th session reports, 1989-2004 (Publications section)
- **SW Asia Commission.** 1st to 25th session reports, 1964-2006 (Publications section)
- **Outbreaks and upsurges.** New format (Archives section)

Links to the above information can be found in the *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **EMPRES/CR**. 4th Desert Locust Emergency Prevention meeting (9-11 September), Cairo (Egypt)
- **CLCPRO**. 4th Executive Committee (18-19 October) and 4th Session (22-26 October), Bamako (Mali)
- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as

bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

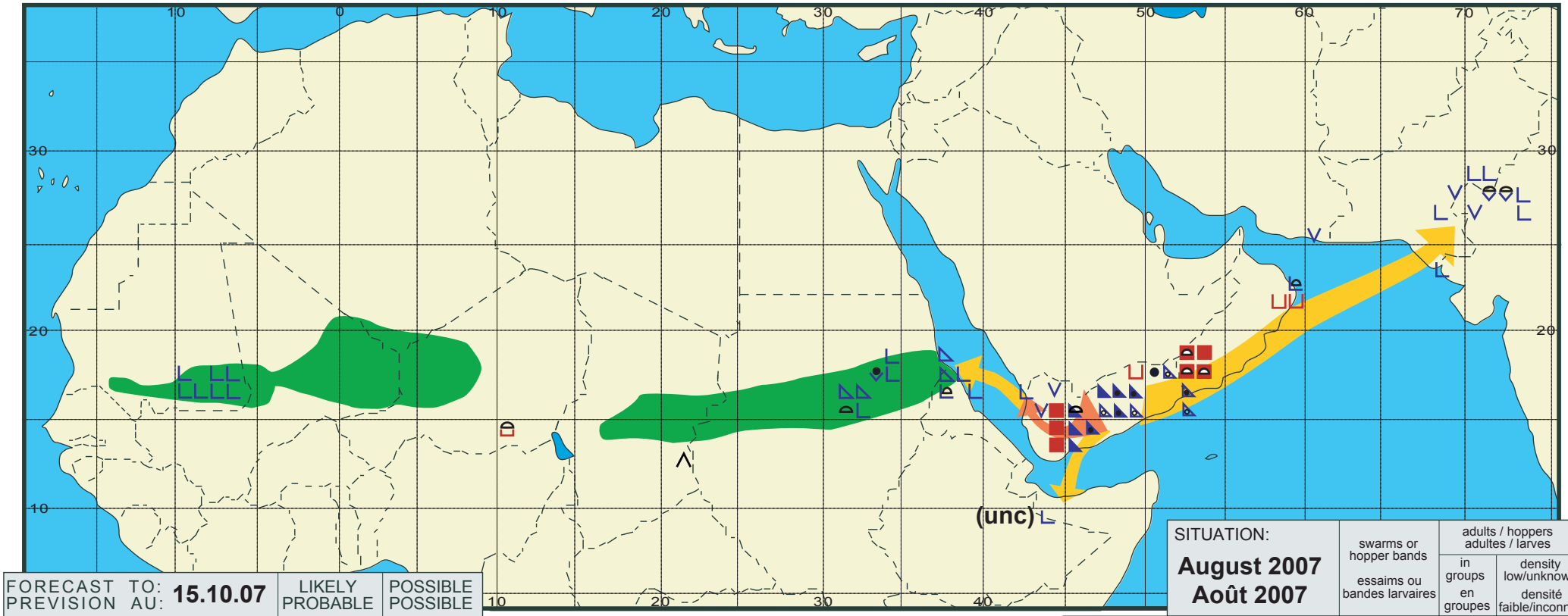
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

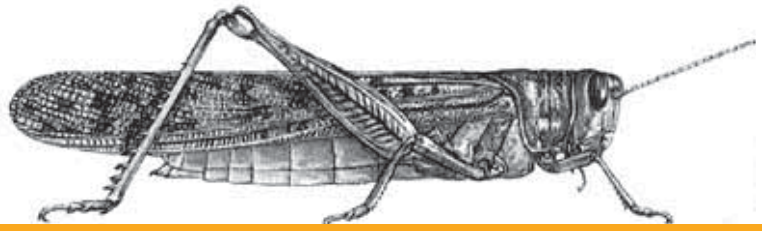
Desert Locust Summary
Criquet pèlerin - Situation résumée

347



FORECAST TO: / PREVISION AU: **15.10.07**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **August 2007 / Août 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves in groups / en groupes	density low/unknown / densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	Λ
egg laying or eggs pontes ou œufs	▼	▽	V
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊟



DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 348**

(2 October 2007)

General Situation during September 2007
Forecast until mid-November 2007

The Desert Locust outbreak continued in Yemen during September as more swarms formed in the interior and moved into the highlands and to the southern coast. Some swarms crossed the Gulf of Aden to Djibouti, eastern Ethiopia and northern Somalia while others perished at sea. So far, no swarms have reached the Red Sea coastal plains where small-scale local breeding was underway in Yemen, Eritrea and Sudan. Nevertheless, breeding is expected to cause locust numbers to increase dramatically in the coming months on the Red Sea coast in Yemen and, to a lesser extent, in Eritrea, Sudan and Saudi Arabia. Small-scale breeding occurred in the Sahel in West Africa and along the Indo-Pakistan border, causing locust numbers to increase slightly. As seasonal rains have nearly stopped in the western and eastern regions and, as breeding ends, no significant developments are expected.

Western Region. The situation continued to remain calm during September. Small-scale breeding occurred in parts of southern and central **Mauritania**, in central **Niger** and in eastern **Chad**. Breeding is likely to have occurred in northern **Mali** and adjacent areas of Niger but surveys could not be carried out due to insecurity. As seasonal rains appear to have ended in the northern Sahel, further breeding is unlikely except in northeast Chad where ecological conditions remain unusually favourable and locusts could form a few small groups. No locusts were reported in northwest Africa.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00100 Rome, Italy. It is also available on the Internet.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
Facsimile: +39 06 570 55271
E-mail: eclo@fao.org
Internet: www.fao.org
DLIS: www.fao.org/ag/locusts

Central Region. Locust infestations declined in the interior of **Yemen** as vegetation dried out and adult groups and swarms formed and moved into the highlands and southern coastal areas. Limited ground control operations were carried out and only small residual populations remained by the end of the month. Local breeding started on the Red Sea coast in Yemen where hatching occurred and a few hopper bands formed. Breeding will commence shortly in adjacent areas of **Saudi Arabia** where mature adults appeared in September. Groups of solitarious adults were laying eggs on the coast in **Eritrea** and **Sudan** that will hatch in October. Consequently, breeding has started along both sides of the Red Sea about a month or two earlier than in most years which should allow sufficient time for locust numbers to increase significantly if rains continue. Several very mobile immature and maturing swarms crossed the Gulf of Aden from southern Yemen and rapidly moved through **Djibouti** to eastern **Ethiopia** and east across northern **Somalia**. These locusts may persist in northern Somalia and slowly mature or perhaps move south into the Ogaden in November. Local breeding continued in northeast **Oman** where ground control operations were carried out against hopper groups.

Eastern Region. Small-scale breeding occurred in Rajasthan, **India** and along the border in the Cholistan Desert in **Pakistan**. Limited control operations were carried out in India. Rainfall declined in the summer breeding areas along both sides of the Indo-Pakistan border. As vegetation dries out and breeding ends, locust numbers will decline and scattered adults could move west towards Baluchistan, Pakistan.

Weather & Ecological Conditions in September 2007

Rains declined after the first decade in the summer breeding areas of the Sahel in West Africa and Sudan and along the Indo-Pakistan border. Although vegetation remained green in most areas, it was starting to dry out at the end of the month. Ecological conditions were favourable in the winter breeding areas along both sides of the Red Sea, especially in Yemen.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) oscillated between 15N and 18N over West Africa during September. During the first decade, good rains fell in the summer breeding areas in southern and central Mauritania, northern Mali, Niger and Chad but less rain fell in parts of Tamesna in Mali and Niger. Rains also fell in northwest Mauritania (Inchiri and southwest Adrar) and the southern portion of Western Sahara as far north as Bir Anzarane where breeding conditions remained unfavourable, and in southern Algeria along the Malian border and west of Tamanrasset and Illizi. Very little rainfall occurred after mid-month in the Region. Vegetation was green in southern Mauritania as well as west of Tidjikja, in parts of Aftout Fai, and 100 km north of Aioun El Atrous and Oualata, but it was starting to dry out by the end of the month in the southeast. Vegetation was also green in the wadis of the Adrar des Iforas in northern Mali, in parts of the central Tamesna in Mali and Niger, in the western Air Mountains in Niger, in central Chad to 16N, and in southern Sahara of Algeria near Tamanrasset and along the Malian border near Bir Bou Mokhtar. Vegetation was unusually green in eastern Chad as far north as Fada and the Mourdi Depression. In northwest Africa, light rains may have fallen at times in northwest Libya but vegetation was dry.

In the **Central Region**, good rains fell during the first decade of September in the summer breeding areas of the interior of Sudan between Darfur and the Red Sea Hills and in the western lowlands in Eritrea. Thereafter, rainfall declined in these areas except for some showers near Khartoum and in western Eritrea. Breeding conditions remained extremely favourable in both countries except in the Baiyuda Desert in northern Sudan and in the northern portion of the western lowlands in Eritrea where vegetation was starting to dry out. Vegetation was also drying out in the summer breeding areas in the interior of Yemen except for Wadi Hadhramaut. In the winter breeding areas, very little rain fell on the Red Sea coastal plains in Sudan and Eritrea but green vegetation persisted between Massawa, Eritrea and Port Sudan. Good rains fell on the coast between Jizan, Saudi Arabia and Bab El Mandeb, Yemen where ecological conditions continued to be extremely favourable for breeding. Dry conditions prevailed along the coastal plains on both sides of the Gulf of Yemen except in the larger wadis and at the base of the foothills. Green vegetation was present on the plateau of eastern Ethiopia and northern Somalia, and in few places on the eastern side of the Wahiba Sands in northeast Oman.

In the **Eastern Region**, rainfall associated with the monsoon continued during the first decade of September along both sides of the Indo-Pakistan border. Thereafter, very little rain fell except in a limited area between Bikaner, India and Bahawalpur, Pakistan as the monsoon retreated south. Nevertheless, vegetation remained green in most areas in both countries.

Area Treated

Eritrea	1,100 ha (25-31 August)
India	225 ha (1-15 September)
Oman	260 ha (September)
Pakistan	880 ha (August)
Yemen	13,317 ha (August, revised)
	230 ha (1-24 September)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During September, small-scale hatching occurred in parts of the summer breeding areas from eggs laid in August. Isolated solitarious hoppers of all instars and adults were present in Brakna and Tagant between Magta Lahjar (1730N/1305W) and N'Beika (1758N/1215W), in Hodh El Gharbi northeast of Aioun El Atrous (1639N/0936W), and in Hodh Ech Chargui near Timbedra (1614N/0809W). Isolated mature adults were also seen north of Oualata

(1717N/0701W) and appeared in Trarza near Rkiz (1658N/1514W), Boutilimit (1732N/1441W) and Aguilal Faye (1827N/1444W).

• **Forecast**

Locust numbers will increase slightly from current breeding in the south. Unless further rains occur, breeding will end and locusts are likely to concentrate in vegetation that remains green. Scattered locusts are expected to move to the northwest (Inchiri and southwest Adrar) and breed on a small-scale if more rainfall occurs.

Mali

• **Situation**

During September, surveys could not be carried out in the north due to insecurity and no locusts were reported.

• **Forecast**

Scattered adults are likely to be present and breeding north of Tombouctou and in parts of the northeast (Timetrine, Tilemsi Valley, Adrar des Iforas and Tamesna). Locust numbers will increase slightly from current breeding. Unless further rains occur, breeding will end and locusts are likely to concentrate in vegetation that remains green, mainly in the wadis in the Adrar des Iforas.

Niger

• **Situation**

Although no surveys could be carried out because of insecurity, there were reports of isolated immature and mature solitarious adults in Tamesna between Agadez (1700N/0756E) and In Gall (1651N/0701E), and near Arlit (1843N/0721E). Further south, small-scale breeding occurred southeast of Tanout (1505N/0850E) where isolated third and fourth instar solitarious hoppers and adults were present.

• **Forecast**

Scattered adults are likely to be present and breeding in parts of southern and central Tamesna and in the western Air Mountains. Locust numbers will increase slightly from current breeding there and near Tanout. Unless further rains occur, breeding will end and locusts are likely to concentrate in vegetation that remains green, mainly in the Air Mountains.

Chad

• **Situation**

During September, isolated solitarious mature adults were present in Kanem near Salal (1448N/1712E), in Biltine north of Iriba (1507N/2215E) and in Ennedi between Kalait (1550N/2054E) and Fada (1714N/2132E). Small-scale breeding occurred near Kalait where low numbers of solitarious hoppers of all instars were present. Egg laying was reported near Kalait and Fada after mid-month.

• **Forecast**

Locust numbers will increase as small-scale breeding continues in the northeast (Ennedi and Biltine) and to a limited extent in Kanem. As conditions start to dry out, locusts are likely to concentrate in the remaining green vegetation and could form a few small groups.

Senegal

• **Situation**

No surveys were carried out and no locusts were reported during September.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During September, no locusts were seen during surveys carried out in the southern Sahara west of Djanet (2434N/0930E), near Tamanrasset (2250N/0528E) and along the Malian border near Bir Bou Mokhtar (2120N/0056E).

• **Forecast**

Isolated adults may be present in the south near Tamanrasset and Bir Bou Mokhtar and breed on a small scale in areas of previous rainfall.

Morocco

• **Situation**

No locusts were reported during September.

• **Forecast**

Isolated adults may appear in the extreme south of Western Sahara in areas of recent rainfall near Ma'Tallah.

Libyan Arab Jamahiriya

• **Situation**

No surveys were carried out and no locusts were reported during September.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during August and September.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During September, small-scale breeding occurred in Northern Kordofan between Sodiri (1423N/2906E) and Umm Saiyala (1426N/3112E) where scattered solitarious hoppers and immature and mature adults were present at densities up to 300 adults/ha. Isolated hoppers were seen in the Baiyuda Desert northwest of Khartoum, and scattered mature adults were present near Atbara (1742N/3400E) and Kassala (1527N/3623E). Groups of mature solitarious, *transiens* and gregarious adults were present at densities up to 1,350 adults/ha along the western side of the Red Sea Hills from Derudeb (1731N/3607E) to Tomala (2002N/3551E) in Wadi Oko and on the Red Sea coast in the Tokar Delta and near Port Sudan. Some of these adults were laying eggs.

• Forecast

Locust numbers will increase slightly from current breeding in North Kordofan, Northern and Kassala States and most likely in West and North Darfur. Unless further rains occur, breeding will end but there is a moderate risk that groups could form along the Atbara River and on the western side of the Red Sea Hills and breed again. Locust numbers will increase in the winter breeding areas along the Red Sea coast and in Wadi Oko/Diib as adults arrive from the interior, mature and lay eggs. Hatching will occur on the coast from October onwards.

Eritrea

• **Situation**

In the summer breeding areas of the western lowlands, ground control teams treated 1,100 ha of scattered second to fifth instar solitarious hoppers, fledglings and *transiens* adults in the western lowlands near Kerkebet (1618N/3724E) during the last week of August. Only a few solitarious mature adults remained a month later.

In the winter breeding areas along the Red Sea coast, locust numbers continued to increase during September between Sheib (1551N/3903E) and Karora (1745N/3820E). From the first week onwards, scattered solitarious and gregarious adults, at densities up to 15,000 adults/ha, laid eggs throughout this area, including a few wadis at the foot of the escarpment near Naro (1626N/3840) where laying had occurred earlier and first to third instar solitarious hoppers were already present near crops.

• **Forecast**

Locust infestations will decline further in the western lowlands but increase on the Red Sea coastal plains. Small-scale breeding is expected to extend to most coastal areas between Massawa and Karora with hatching occurring throughout the forecast period. There is a slight risk that hoppers could form a few small groups in places where concentrated laying occurred. A few small swarms could appear from Yemen early in the forecast period.

Ethiopia

• **Situation**

From 21-25 September, at least one immature swarm appeared near the Djibouti border and Aysha (1045N/4237E) and along the border of northern Somalia near Teferi Ber (0947N/4313E).

• **Forecast**

A few small swarms could appear from Yemen early in the forecast period near the borders of Djibouti and northern Somalia. Some of these could remain between Dire Dawa and Jijiga and slowly mature. There is a slight risk that a few groups or swarms could move from northern Somalia to the Ogaden towards the end of the forecast period.

Djibouti

• **Situation**

On 16 September, a medium-density maturing swarm arrived on the coast near Tadjourah (1147N/4253E) but then departed shortly thereafter.

• **Forecast**

A few small swarms could appear from Yemen early in the forecast period.

Somalia

• **Situation**

During September, there were several unconfirmed reports of swarms on the plateau north of Gebiley (0941N/4337E) and Hargeisa (0931N/4402E) at the end of the second week. An immature swarm of about 80-100 locusts/tree was reported about 500 km to the east near Iskushuban (1017N/5014E) on the 16th. During the following week, immature and mature solitarious and gregarious adults were scattered throughout the plateau between Boroma

(0956N/4313E) and Erigavo (1040N/4720E), and hoppers were seen in one area. Some of these adults may have been leftover from the earlier swarms. On the 23rd, an immature swarm was seen flying from the north at high altitude in the afternoon at Hargeisa where it settled nearby and covered about 4 km^2 with a density of 45 adults/m^2. On the 24th, a swarm was seen in the northeast near Gardo (0930N/4905E).

• **Forecast**

Scattered adults are likely to persist and breed on a small scale on the plateau between Boroma and Erigavo in areas of recent rainfall. Hatching could occur from October onwards. There is a moderate risk that a few swarms could arrive on the plateau from Yemen early in the forecast period and move east towards Erigavo and Gardo where they could mature and lay eggs that would hatch during the forecast period.

Egypt

• **Situation**

No locusts were seen during surveys carried out in mid-September along both sides of Lake Nasser near Abu Simbel (2219N/3138E), Tushka (2247N/3126E) and W. Allaqi.

• **Forecast**

Scattered adults could appear in the southeast on the Red Sea coastal plains between Shalatyn and Halaib and, if rainfall occurs, lay eggs that could hatch by the end of the forecast period.

Saudi Arabia

• **Situation**

During September, scattered mature solitarious and *transiens* adults appeared in several places on the southern Red Sea coast near Jizan (1656N/4233E). In the Asir Mountains, isolated mature solitarious adults were seen in crops near Khamis Mushait (1819N/4245E). No locusts were seen on the coast near Qunfidah (1909N/4107E) and between Jeddah and Rabigh (2247N/3901E), or in the interior.

• **Forecast**

Locust numbers will increase as hatching occurs on the Red Sea coast near Jizan and perhaps near Qunfidah. There is a slight risk that a few swarms could arrive in these areas from Yemen in October.

Yemen

• **Situation**

During September, more laying occurred in the interior in Wadi Hadhramaut at the beginning of the month and near Bayhan (1452N/4545E) towards the end. Solitarious, *transiens* and gregarious hopper infestations and mature adult groups were present near Ataq (1435N/4649E) and Shabwah (1522N/4700E). Groups of mature adults were also present between Al Abr (1608N/4714E) and Minwakh (1650N/4812E), and in W. Hadhramaut, and solitarious mature adults were reported in Al Jawf near Al Hazm (1609N/4447E). As vegetation dried out in the interior, several immature swarms formed during the first week and moved west towards the highlands where they were seen between Al Baydha (1405N/4542E) and Ad Dali (1341N/4443E). Although one swarm was seen west of Sana'a, adult groups and swarms did not reach the Red Sea coast but probably dispersed within the central and southern highlands. Immature swarms also moved south from Hadhramaut towards the Gulf of Aden coast where they were seen near Mukalla (1431N/4908E), Ahwar (1333N/4644E), Aden (1250N/4503E) and Bab El Mandab during the second and third weeks. During the second week, fishermen near Aden saw large numbers of dead immature gregarious adults off the coast and washed up on shore, indicating that some swarms were crossing the sea. Egg laying was reported on the plains west of Aden on the 20th. By the end of the month, infestations had declined in the interior. Control operations treated 230 ha from 1-26 September.

On the Red Sea coastal plains, hatching commenced in several places between Bayt Al Faqih (1430N/4317E) and the Saudi Arabian border near Midi (1619N/4248E) and scattered solitarious hoppers and adults were present. By the end of the month, hoppers had formed very small low-density bands near Suq Abs (1600N/4312E) and groups at densities of 4-25 hoppers/m^2 south of Hodeidah. Adult groups laid eggs throughout the month.

• **Forecast**

Hatching is expected to occur in the interior near Bayhan early in the forecast period and hoppers could form small groups and bands. A few more adult groups and swarms could form from the remaining infestations in the interior and move towards the southern coast or into the central highlands. On the southern coast, residual populations could breed near Aden with hatching and limited band formation from October onwards. On the Red Sea coast, locust numbers will increase as breeding continues and extends to other areas between Bab El Mandeb and Midi. Small hopper groups, bands and adult groups are likely to form in places. There is a moderate risk that a few adult groups or swarms could arrive on the Tihama in October.

Oman

• **Situation**

In early September, local breeding continued in the Sharqiya region of the northeast where late instar solitarious and *transiens* hoppers mixed with a few immature solitarious adults were present on the edge of the Wahiba Sands mainly between Ibra (2243N/5831E) and the coast. By the second week, locust numbers had increased slightly and some immature adults were forming small groups. At the end of the month, control teams treated 260 ha of solitarious and *transiens* hopper groups of all instars mixed with solitarious adults in Wadi Al Ameiri (2141N/5613E) in Dhahira region. No locusts were reported in the south near Yemen or elsewhere in the country.

• **Forecast**

Low numbers of locusts may persist in Sharqiya in any areas that remain green.

Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No reports were received during September.

• **Forecast**

Small-scale breeding may have occurred in September on the southeast coast near Chabahar. If so, locusts may persist in those areas that remain green, especially on the Vashnum Plains.

Pakistan

• **Situation**

A late report indicated that control teams treated 880 ha of solitarious first to fourth instar hoppers west of Karachi near Uthal (2548N/6637E) in August. During the second half of the month, scattered immature and mature adults at densities up to 300 adults/ha persisted at 39 places near the Indian border in Khairpur and Cholistan.

During September, the number of places with locusts declined and only scattered solitarious adults and a few hoppers persisted near the Indian border southeast of Rahimyar Khan (2822N/7020E). In the Uthal area, solitarious adult densities increased to 1,000 adults/ha.

• **Forecast**

Breeding will end along the border with India and locust numbers will decline in Cholistan and Khairpur as adults leave the area and move west towards Baluchistan. Low numbers of locusts may persist in the Uthal area.

India

• **Situation**

During September, low numbers of solitarious mature adults were present in a few places of Rajasthan between Phalodi (2706N/7222E) and Bikaner (2801N/7322E) where local breeding had occurred in August. Isolated mature adults were also seen at one place in northwest Gujarat. Control operations were undertaken during the second week at 13 places near Phalodi against solitarious and *transiens* mature adults, treating 225 ha.

• **Forecast**

Breeding will end in Rajasthan and locust numbers are expected to decline as most of the adults move towards the west. Some adults could persist and concentrate in those areas that remain green and perhaps form a few small groups.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week within 48 hours of the last survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution*, orange for *threat* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) provides 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. New information has been added to the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts):

- **Locust situation.** Several updates during September (home page and in Archives section)
- **EMPRES/CR.** Report of 4th ad-hoc Emergency prevention consultation (Publications section)
- **FAO Technical Series.** No. 34 – Review of the efficacy of *Metarhizium anisopliae* var. *acridum* (Publications section)
- **Guidelines.** *Metarhizium* field trials (Publications section)

Links to the above information can be found in the *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **CLCPRO**. 4th Executive Committee (18-19 October) and 4th Session (22-26 October), Bamako (Mali)
- **EMPRES/WR**. RAMSES and eLocust2 evaluation workshop (10-12 November), Algiers (Algeria)
- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

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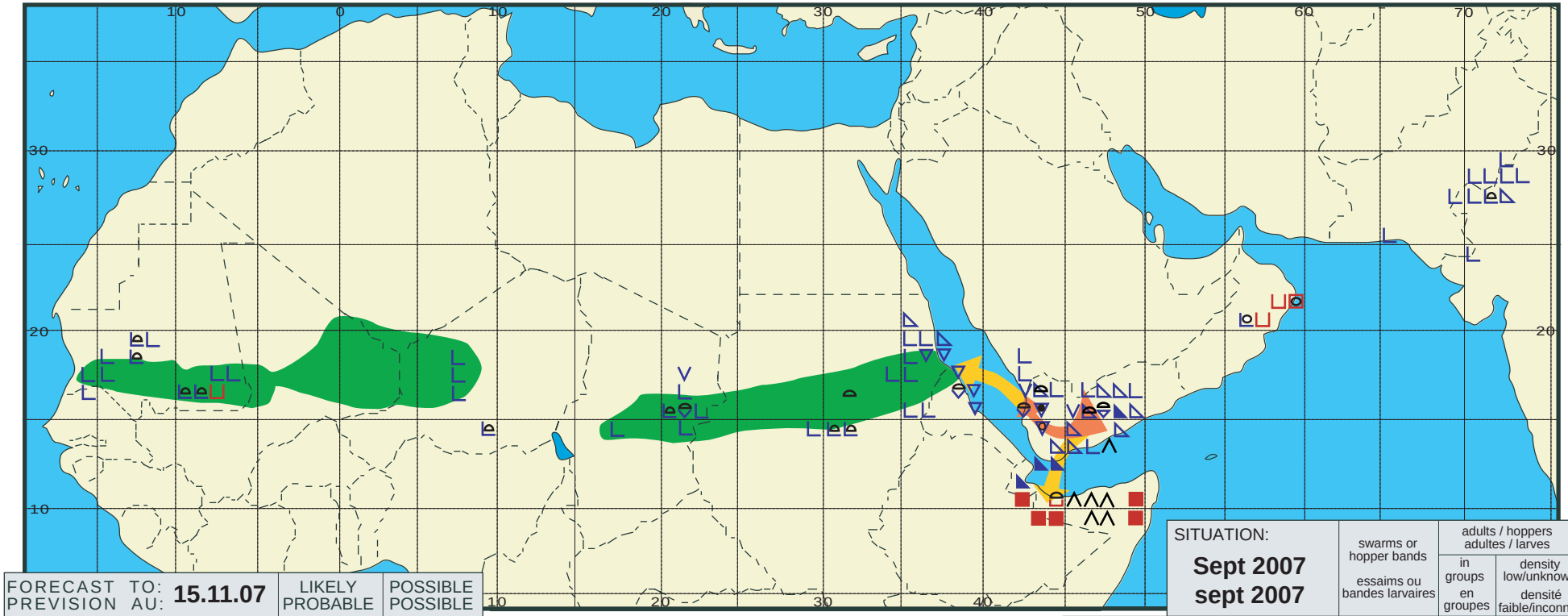
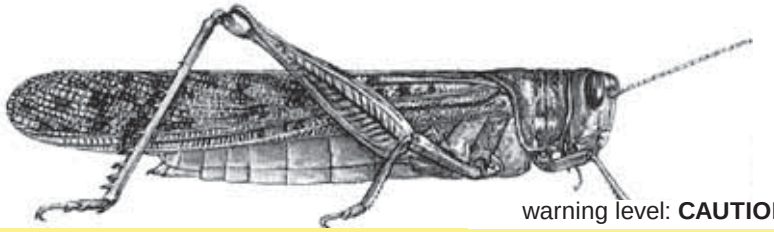


FORECAST TO: PREVISION AU: **15.11.07**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Sept 2007 sept 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves in groups en groupes	 density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	V
hoppers larves	●	○	⌓
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊎



warning level: **CAUTION (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 349

(5 November 2007)

General Situation during October 2007
Forecast until mid-December 2007

A Desert Locust outbreak developed during October in northern Sudan where hopper bands and small swarms formed. A few hoppers bands also formed on the Red Sea coast in Sudan and Yemen. This winter will be very important as there is a strong possibility that locust numbers will increase significantly on the Red Sea coast in Sudan and, to a lesser extent, in Yemen during November and December. All efforts should be made to monitor this developing and potentially dangerous situation closely and carefully, and to undertake control as necessary. In the Horn of Africa, a few swarms moved from northern Somalia to eastern Ethiopia where they will probably lay eggs in November. There is a very low risk that some locusts could reach northeastern Kenya.

Western Region. The situation continued to remain calm during October. Small-scale breeding occurred in parts of western and central **Mauritania**, northern **Niger** and northeast **Chad** where locust numbers increased slightly. A similar situation is expected in northern **Mali** but surveys could not be carried out due to insecurity. During the forecast period, locusts could concentrate, increase in number and form a few small groups as vegetation dries out in western Mauritania, on the Tamesna Plains in Niger and in northeast Chad. No locusts were reported in northwest Africa and no significant developments are expected.

Central Region. Locust numbers increased in the summer breeding areas in **Sudan** where small hopper bands and a few swarms formed in the north during October. Although aerial and ground control operations were undertaken, small adult groups and swarms are likely to form in the interior during November and move to the Red Sea coastal plains where they will rapidly mature and lay eggs. Hatching and band formation will occur by mid-December. Although the outbreak ended in the interior of **Yemen**, breeding on the Red Sea coast gave rise to a few hopper bands, and more breeding is expected during the forecast period. Limited breeding will take place along the coast in southeast **Egypt**, northern **Eritrea** and on the coast of **Saudi Arabia** where a few locusts were present in October. Small to moderate scale breeding is likely to occur in the Ogaden in eastern **Ethiopia** where several swarms arrived from northern **Somalia**. Limited ground control operations were carried out in Ethiopia, Saudi Arabia and Yemen in October.

Eastern Region. Locust numbers declined in the summer breeding areas along both sides of the Indo-Pakistan border during October, and a few adults persisted on the coast in southeastern Iran. No significant developments are expected in the Region during the forecast period.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
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DLIS: www.fao.org/ag/locusts

Weather & Ecological Conditions in October 2007

Vegetation dried out during October in the summer breeding areas of the Sahel in West Africa and Sudan. Light rains along the Red Sea coast in Sudan, Saudi Arabia and Yemen maintained favourable ecological conditions in the winter breeding areas. Dry weather prevailed in the Eastern Region.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) began its southward retreat where it remained below 15N over West Africa during October. Consequently, only light rains fell at times, mainly in southern Mauritania in early October. In Mauritania, annual vegetation dried out in the south but remained green in the southwest and west where conditions were favourable for breeding. Similarly, annual vegetation was drying out in northern Mali, Niger and Chad. Ecological conditions remained favourable for breeding in southern Algeria near the Hoggar Mountains and along the Malian border. In Northwest Africa, light rains associated with eastward-moving Mediterranean depressions fell along the southern side of the Atlas Mountains in Morocco and, to a lesser extent, in Algeria.

In the **Central Region**, very little rain fell during October in the summer breeding areas while showers occurred in some areas along the Red Sea coastal plains. In the winter breeding areas, light to moderate rains fell in the Red Sea Hills from southeastern Egypt to the Sudanese/Eritrean border, including parts of the coast near the Egyptian border and in the Tokar Delta in Sudan. Consequently, vegetation was becoming green or already green, and breeding conditions were favourable in the Tokar Delta and improving in the other areas. In Eritrea, ecological conditions were not favourable on the coast as no rain fell except for some showers in the north on the 29th between Mehimet and the Sudanese border. Light to moderate rains fell along the Red Sea coast between Jizan, Saudi Arabia and Mocha, Yemen where ecological conditions continued to be favourable for breeding. In the Horn of Africa, light rains fell on the plateau in northwest Somalia in early October but vegetation remained dry. Light rain may have also fallen in parts of the Ogaden in eastern Ethiopia where breeding conditions could improve if more rains occur.

In the **Eastern Region**, dry conditions prevailed throughout October in the summer breeding areas along both sides of the Indo-Pakistan border. No rains fell and vegetation was drying out.

Area Treated

Egypt	8 ha (October)
Ethiopia	35 ha (1-8 October)
India	21 ha (16-30 September)
Saudi Arabia	15 ha (October)
Sudan	11,212 ha (1-29 October)
Yemen	10 ha (25-30 September)
	384 ha (1-10 October)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

Small-scale breeding occurred during October in parts of Tagant, northern Brakna, Trarza and southwest Adrar. In these areas, isolated and scattered solitarious hoppers and immature and mature solitarious adults were present. Egg laying and hatching were reported up until the end of the month in southwest Adrar, Tagant and northern Brakna, causing locust numbers to increase slightly, up to 400 hoppers/site.

• **FORECAST**

If rains fall in the northwest (Inchiri and southwest Adrar) and the north (southern Tiris-Zemmour), small-scale breeding could cause locust numbers to increase slightly.

Mali

• **SITUATION**

No surveys were carried out and no locusts were reported during October.

• **FORECAST**

Low numbers of locusts may be present and could persist in those areas that remain green in the Adrar des Iforas.

Niger

• **SITUATION**

Although surveys could not be carried out during October, scattered third to fifth instar solitarious

hoppers and immature adults were reported from one place northwest of Agadez (1700N/0756E) on the 26th and groups of immature solitarious adults were seen 15 km east of Arlit (1843N/0721E) on the 30th.

• **Forecast**

Scattered adults are likely to be present and breeding in parts of Tamesna, in the western Air Mountains and near Tanout. Consequently, locusts could increase, concentrate and form small groups.

Chad

• **Situation**

During September, isolated solitarious mature adults were present in Kanem near Salal (1448N/1712E), in Biltine north of Iriba (1507N/2215E) and in Ennedi between Kalait (1550N/2054E) and Fada (1714N/2132E). Small-scale breeding occurred near Kalait where low numbers of solitarious hoppers of all instars were present. Egg laying was reported near Kalait and Fada after mid-month.

During the first half of October, scattered immature and mature solitarious adults, at densities up to 3,700 adults/ha, persisted in Kanem near Salal (1448N/1712E) and in Ennedi near Kalait (1550N/2054E) and Fada (1714N/2132E). Some adults were seen copulating near Fada early in the month.

• **Forecast**

Locust numbers are expected to increase in the Fada area as hatching occurs early in the forecast period. Elsewhere, locusts are likely to concentrate and could form small groups as vegetation continues to dry out.

Senegal

• **Situation**

No surveys were carried out and no locusts were reported during October.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During October, isolated solitarious adults were present in the extreme south along the Malian border near Bir Bou Mokhtar (2120N/0056E).

• **Forecast**

Low numbers of locusts may persist in the south near Tamanrasset and Bir Bou Mokhtar but breeding is unlikely unless additional rainfall occurs.

Morocco

• **Situation**

No locusts were reported during September.

• **Forecast**

Isolated adults may appear in the extreme south of Western Sahara, especially if rainfall occurs.

Libyan Arab Jamahiriya

• **Situation**

No surveys were carried out and no locusts were reported during October.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during October.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During the first week of October, a few small swarms laid eggs and hatching occurred in the northern Baiyuda Desert near Merowe (1830N/3149E). Throughout the month, hopper bands formed and groups of immature and mature adults were present in the Baiyuda between Merowe and Shendi (1641N/3322E), along the Atbara River, northwest of Kassala (1527N/3623E), and on the western side of the Red Sea Hills near Haiya (1820N/3621E) and in Wadi Oko near Tomala (2002N/3551E). The bands were mainly small and consisted of all instars at densities up to 50 hoppers/m^2. By the end of the month, most of the bands were fledging. From the 18th onwards, small immature and mature swarms were seen in the Baiyuda and near Kassala and Haiya. Some of these swarms near Kassala laid eggs.

In the winter breeding areas, groups of immature and mature solitarious and gregarious adults were present on the Red Sea coast in the Tokar Delta at densities up to 2,000 adults/ha, and in the northern subcoastal areas along Wadi Diib at densities up to 650 adults/ha. In the Tokar Delta, egg laying occurred throughout the month. Solitarious, *transiens* and gregarious hoppers formed small groups at densities

up to 12 hoppers/m^2 and, by the last week of the month, a few small late instar hopper bands had formed.

Ground control teams treated 11,212 ha during October of which 418 ha were in the Tokar Delta and 112 ha were with *Metarhizium*. Some aerial control was carried out near Kassala.

• Forecast

Small adult groups and swarms are likely to form in the Baiyuda Desert, along the Atbara River and west of the Red Sea Hills. These locusts are expected to move to the Red Sea coastal plains where they will rapidly mature and lay eggs, primarily in the Tokar Delta and surrounding coastal plains but some could also reach Wadi Diib in the north. Hatching and the formation of groups and perhaps small bands are expected to take place in Tokar and could occur near Kassala where swarms were seen laying eggs in October.

Eritrea

• **Situation**

During October, locust numbers declined on the Red Sea coastal plains because of unfavourable breeding conditions. Only low numbers of solitarious mature adults persisted in a few places near Shelshela (1553N/3906E), Naro (1626N/3840) and Karora (1745N/3820E). Small-scale breeding occurred in crops near Naro where scattered second and third instar solitarious hoppers were seen at mid-month, and adults were copulating in the north near Mehimet (1723N/3833E) during the last week. No locusts were seen between Massawa (1537N/3928E) and Tio (1441N/4057E) during surveys on 9-13 October.

• **Forecast**

Small-scale hatching will take place and locust numbers will increase slightly on the Red Sea coast between Massawa and Karora if rainfall occurs during the forecast period. There is a slight risk of adult groups arriving in the north from adjacent coastal areas in Sudan.

Ethiopia

• **Situation**

During the first decade of October, isolated immature solitarious adults persisted between Dire Dawa (0935N/4150E) and the borders of Djibouti and northern Somalia where about three swarms were seen in late September. In the Ogaden, egg laying occurred north of Warder (0658N/4520E) and small medium-density second instar hopper bands were reported on the 27th at two places. From about the 23rd onwards, there were several reports of mature swarms arriving in the eastern Ogaden from adjacent areas of northern Somalia. These swarms moved west and south and, by the end of the month, a few swarms had reached the Fik area (0808N/4218E) in the west and south of Kebri Dehar (0644N/4416E) near Kelafo (0524N/4410E) and the Shabele River. Survey efforts were hampered by insecurity in the region.

In the Afar region, ground control teams treated 35 ha of hoppers that gregarized at Buldugum (1155N/4129E) in early October.

• **Forecast**

Small to moderate scale breeding is expected to occur in areas of recent rainfall in the Ogaden, giving rise to hopper groups and bands that may form small adult groups and swarms by the end of the forecast period.

Djibouti

• **Situation**

No reports were received during October.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

During the last week of September, a swarm near Hargeisa was seen moving southeast towards adjacent areas in eastern Ethiopia. Immature and mature solitarious adults were present at a few places on the coastal plains west of Berbera (1028N/4502E).

In early October, groups of mature adults were seen in the northeast near Gardo (0930N/4905E). During the second week, there were several reports of locusts further south between Garowe (0824N/4828E) and Galkayo (0642N/4725E). Some of these were seen crossing into eastern Ethiopia. Shortly after mid-month, there were reports of several swarms southeast of Burao (0931N/4533E) along the border with Ethiopia. The situation was reported to be calm at the end of the month.

• **Forecast**

Unless further rainfall occurs, only scattered adults are likely to remain in some areas on the plateau between Boroma and Gardo, and the northwest coastal plains

Kenya

• **Forecast**

There is a very low risk that a few small adult groups or swarms could reach the northern part of the North Eastern Province from adjacent areas of

southeastern Ethiopia and eventually lay eggs in areas of recent rainfall.

Egypt

• **Situation**

During October, scattered solitarious mature adults were present on the Red Sea coastal plains near Abu Ramad (2224N/3624E) and Wadi Diib. At the end of the month, some adults were copulating. Isolated immature solitarious adults were present along the western side of Lake Nasser near Tushka (2247N/3126E), and ground teams treated 8 ha of solitarious and *transiens* mature adult groups.

• **Forecast**

Small-scale breeding is likely to occur in the southeast on the coastal plains between Abu Ramad and Halaib and in Wadi Diib. Isolated adults may persist near Lake Nasser.

Saudi Arabia

• **Situation**

During October, isolated immature and mature solitarious adults were present on the Red Sea coast near Jizan (1656N/4233E), Qunfidah (1909N/4107E), Rabigh (2247N/3901E) and Yenbo (2405N/3802E). Ground teams treated 15 ha near Yenbo and an infestation of adults at densities of 200-500 adults/ha near Medina. No locusts were reported in the interior.

• **Forecast**

Small-scale breeding is likely to occur along parts of the Red Sea coast, especially in areas of recent rainfall or where rains fall during the forecast period, causing locust numbers to increase slightly.

Yemen

• **Situation**

During October, small locust infestations were present along the coastal plains of the Red Sea and Gulf of Aden. Small-scale breeding continued in the north near Suq Abs (1600N/4312E) and on the central plains between Hodeidah and Bayt Al Faqih (1430N/4317E). Hoppers of all instars formed a few small bands in the north and small groups at densities up to 20 hoppers/m^2 on the central coast. Ground control treated 384 ha on 1-10 October. Solitarious fledglings, immature and mature adults at densities less than 1,000 adults/ha were also present in both areas. Some of the adults were copulating early in the month.

Immature and mature solitarious adults, at densities less than 500 adults/ha, were scattered along the Aden coast from west of Aden to east of Zinjibar (1306N/4523E). Most of the locusts were concentrated in the Am Rija (1302N/4434E) area, and some were *transiens* in appearance. A few adults were seen copulating early in the month, hatching occurred during the second half of the month and scattered first and second instar solitarious hoppers were present at densities of 2 hopper/m^2 during the last week.

In the summer breeding areas of the interior, *transiens* and gregarious mature adults were present near Minwakh (1650N/4812E) during the first week of October. Thereafter, no further surveys were conducted.

• **Forecast**

Small groups, hopper bands and perhaps a few very small swarms could form in some areas along the Red Sea coastal plains. If more rains fall, another generation of breeding will occur that would cause locust numbers to increase further. On the Gulf of Aden coast, breeding could continue if more rains fall; otherwise, only low numbers of locusts are likely to persist.

Oman

• **Situation**

No locusts were seen during surveys carried out on the northern Batinah coast and on the Musandam Peninsula during October.

• **Forecast**

No significant developments are likely.

Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

A late report indicated that scattered mature solitarious adults, at densities up to 500 adults/ha, were present during the last week of September along the southeastern coast between Chabahar (2517N/6036E) and the Pakistani border. No locusts were seen in the interior between Kahnuj (2757N/5742E) and Bampur (2711N/6028E).

During October, isolated mature solitarious adults persisted at a few places near Chabahar. No locusts were seen on the Persian Gulf coast west of Bander-e Lengheh (2634N/5452E).

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

During October, scattered immature and mature adults at densities up to 350 adults/ha persisted near the Indian border southeast of Rahimyar Khan (2822N/7020E). By the end of the month, locust numbers were declining.

• **Forecast**

No significant developments are likely.

India

• **Situation**

During the last half of September, ground teams treated 21 ha of first to third instar hoppers west of Jodhpur near Phalodi (2706N/7222E).

No locusts were seen during surveys carried out in Gujarat during the first half of October.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week within 48 hours of the last survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution*, orange for *threat* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES/CRC website. Detailed information on EMPRES/CR and the FAO Central Region Commission as well as member country profiles can be found on the new EMPRES/CRC website at: www.crc-empres.org.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. DLIS launched a new initiative in October called *Desert Locust e-info news* as a means of keeping everyone informed on a weekly basis of new information on the Locust Group's web page, Locust Watch (www.fao.org/ag/locusts). The latest additions are:

- **Locust situation.** Several updates during October (home page and in Archives section)
- **FAO Technical Series.** No. 34 – Review of the efficacy of *Metarhizium anisopliae* var. *acridum* (Publications section)
- **Guidelines.** *Metarhizium* field trials (Publications section)

Links to the above information can be found in the *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **EMPRES/WR**. 6th Liaison Officers Meeting (26-30 November) and 3rd Steering Committee (3-4 December), Agadir (Morocco)
- **EMPRES/WR**. RAMSES and eLocust2 evaluation workshop (6-8 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

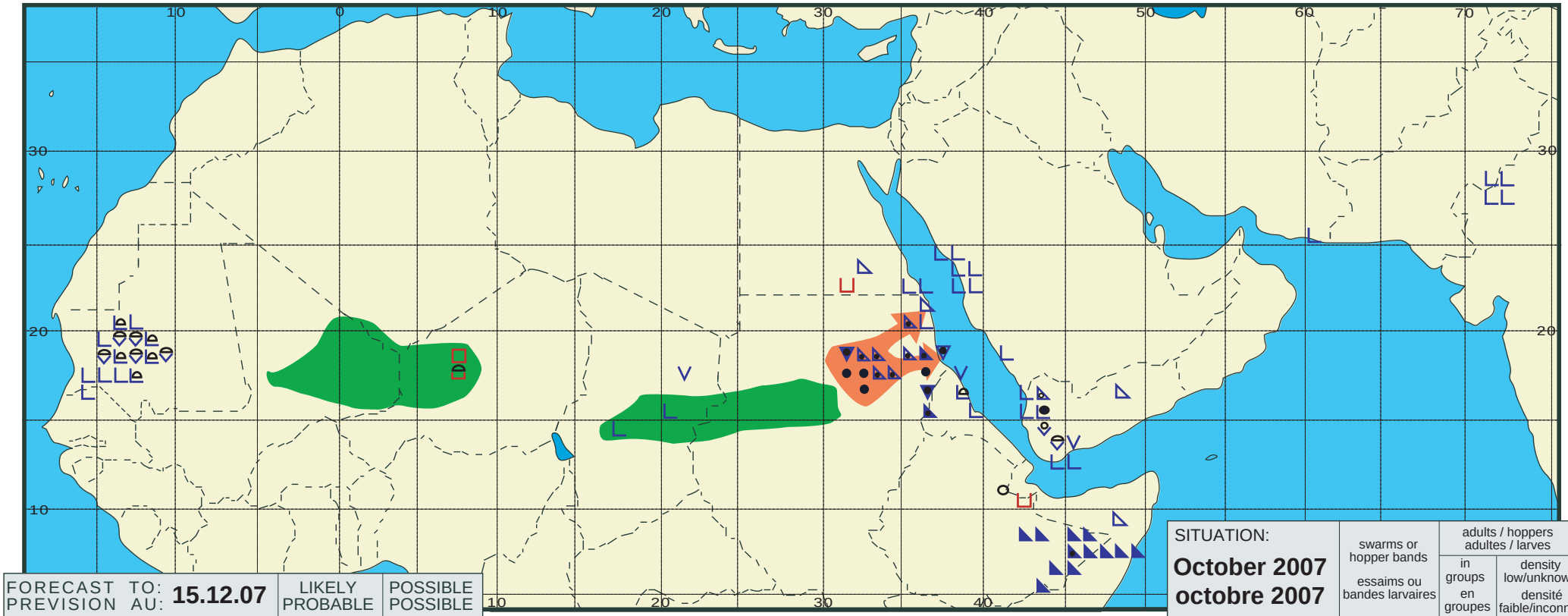
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

349



FORECAST TO: / PREVISION AU: **15.12.07**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **October 2007 octobre 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	⋀
egg laying or eggs pontes ou œufs	▼	▽	V
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊎

FAONewsroom Food and Agriculture Organization of the United Nations
helping to build a world without hunger

FAO warns: dangerous desert locust situation forecast along the red sea this winter

The situation should be monitored closely and carefully

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Related links
Locust Watch

12 November 2007, Rome- A Desert Locust outbreak has developed during October in northern Sudan, which could give rise to a potentially dangerous situation in the region. According to the latest bulletin issued this month by the Food and Agriculture Organization of the United Nations, Desert Locust infestations will intensify along both sides of the Red Sea this winter. FAO warned that all efforts are required to monitor the situation closely and carefully, and to undertake control as necessary in the coming months.

Recent field reports indicate that locust numbers have increased in the summer breeding areas in Sudan, primarily north and east of Khartoum where ground surveys could be conducted. Unusually favourable breeding conditions have caused wingless hoppers to concentrate and form small bands while adults have formed several small swarms. The Government immediately mobilized aerial and ground control teams that have treated more than 11,000 ha so far. Nevertheless, it is difficult to find and treat all of the locust infestations in the remote desert areas. Consequently, more swarms could form in the interior and move to the Red Sea coastal plains in Sudan during November.

Locusts are already present and breeding on the Red Sea coast in Sudan, mainly in the Tokar Delta where small groups and bands of hoppers formed last week. The delta is the most important agricultural area on the Sudanese coast. As adults arrive from the interior, they will rapidly mature and lay eggs in the delta. Hatching and band formation are likely to occur from about mid-December onwards.

Although the risk of infestations spreading from Sudan to adjacent countries is very low at the moment, small locust populations are already present and breeding along the Red Sea coastal plains in Yemen and northern Eritrea. Local breeding is expected to commence shortly on the Red Sea coast in southeast Egypt and in Saudi Arabia.

If good rains fall along the coast this winter, locust numbers are likely to increase dramatically and significant infestations could develop by February that would require substantial control operations. Once conditions dry out along the coast, locust swarms could form and move towards the east to the Arabian Peninsula and towards the west to Darfur by early summer.

Early warning and rapid response are crucial in protecting agriculture and minimizing the risk of a new locust plague developing. The

Japanese Government continues to support these efforts and has contributed $2 million for improving surveys, information and collaboration within the region.

Desert Locusts are migratory grasshoppers that often travel in vast swarms. A Desert Locust lives about three to five months. The life cycle comprises three stages: egg, hopper and adult. A Desert Locust adult consumes roughly its own weight in fresh food per day – about two grams. A very small part of an average swarm eats as much as food in one day as about 2,500 people.

The FAO Desert Locust Bulletin is issued monthly by the FAO Locust and Other Migratory Pests Group. It is usually supplemented by Updates during periods of increased Desert Locust activity. The bulletin is available in English, French and Arabic on FAO's Locust Watch website (www.fao.org/ag/locusts).

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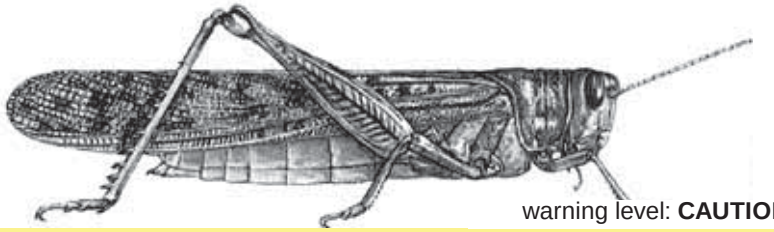


warning level: **CAUTION (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 350

(3 December 2007)

General Situation during November 2007 Forecast until mid-January 2008

The Desert Locust situation worsened in eastern Africa during November. Hatching and band formation occurred in eastern Ethiopia, swarms were seen in Somalia and a few swarms invaded northeastern Kenya for the first time since 1961 and laid eggs. Hatching and band formation will occur during December in the three countries. Therefore, it is critical that intensive survey and control operations are undertaken; otherwise, new swarms could start to form at the end of the year and move further south in Kenya. Small swarms also formed in Sudan and moved towards Egypt and to the Red Sea coast where breeding was underway and will continue during the forecast period, causing locust numbers to increase further. All efforts should be made to monitor this developing and potentially dangerous situation closely and carefully, and to undertake control as necessary. The locust situation remained calm in the Western and Eastern regions.

Western Region. The situation continued to remain calm during November. Locust numbers increased slightly from small-scale breeding that took place in central **Mauritania**, in northern **Niger** and probably in northeastern **Chad**. During the forecast period, small-scale breeding is expected to occur in northwest Mauritania and locusts will increase further. Low numbers of adults will persist in parts of northern **Mali** and Niger, and in northeastern Chad. No locusts were reported in northwest Africa and no significant developments are expected.

Central Region. Breeding occurred during November in eastern **Ethiopia** where hatching and numerous bands formed in the Ogaden. Several swarms continued to lay eggs there while a few others moved south to southern **Somalia** and northeastern **Kenya**. Ground and aerial control operations were carried out in Ethiopia and teams in Kenya are preparing for hopper band control in December. Numerous adult groups and several swarms formed in the summer breeding area in the interior of **Sudan** and moved north and eastwards as vegetation dried out. Consequently, an increasing number of adults were seen in the Western Desert in **Egypt** and some adults reached Cairo. In the winter breeding areas along the Red Sea coast, hopper bands and a swarm formed in northeastern Sudan and bands were present in the Tokar Delta. Smaller scale breeding was in progress on the coast in southeastern Egypt, northern **Eritrea**, in **Yemen** including the Gulf of Aden coast, and probably in **Saudi Arabia**. Control operations were carried out in Sudan and Egypt. A few swarms are expected to arrive on the Red Sea coast from the interior in December and lay eggs. If more rains fall along the Red Sea coast, breeding will continue during the forecast period and cause locust numbers to increase further.

Eastern Region. Locust numbers continued to decline in the summer breeding areas along both sides of the Indo-Pakistan border during November. Two small swarms unexpectedly formed from local breeding in northern Baluchistan, **Pakistan** and were controlled in early November.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
Facsimile: +39 06 570 55271
E-mail: eclo@fao.org
Internet: www.fao.org
DLIS: www.fao.org/ag/locusts

No. 350

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in November 2007

Very little rain fell during November in all regions. Yet, ecological conditions remained favourable for locust survival in parts of the northern Sahel in West Africa, and for breeding along parts of the Red Sea coast and in eastern Africa.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its steady southward retreat over West Africa, reaching 5N by the end of the month. Although, no significant rains fell in the region, enough green vegetation persisted in a few areas of the northern Sahel to allow low numbers of locusts to survive. In central Mauritania, vegetation remained green and ecological conditions were favourable for breeding in Tagant and southwestern Adrar. Green vegetation persisted in the main wadis in the Adrar des Iforas in northern Mali and in the Air Mountains in Niger. In northwest Africa, light showers fell in Morocco in a few places along the southern side of the Atlas Mountains and on the coast near Tan-tan during the last week of November.

In the **Central Region**, very little rain fell during November. Nevertheless, ecological conditions remained favourable in the summer breeding areas in the interior of Sudan in North Kordofan along Wadi Milk and near Abu Uruq, in the Baiyuda Desert, along the Nile and Atbara rivers and on the western side of the Red Sea Hills. On the coast, ecological conditions were not favourable for breeding except for a few places where light showers fell between Tokar Delta, Sudan and Mehimet, Eritrea and near Abu Ramad in southeastern Egypt. In Yemen, vegetation was drying out along parts of the Red Sea and Gulf of Aden coasts where only a few light showers fell at times during the month. In northwest Somalia, light to moderate rains fell on the coast, escarpment and plateau, and ecological conditions were improving. Light to moderate rain associated with a tropical disturbance fell in coastal and interior areas of southern and central Oman on 1-3 November, and some showers fell in coastal areas of eastern Yemen and northeast Somalia. During the first decade of the month, widespread light to moderate showers fell in eastern Ethiopia, central and southern Somalia, and in northeastern Kenya. Thereafter, only light showers fell in parts of southern Somalia and northeastern Kenya. Nevertheless, breeding conditions were favourable in all three countries.

In the **Eastern Region**, dry weather prevailed throughout November in the region and ecological conditions were not favourable for breeding. Vegetation was drying out in the Cholistan Desert in Pakistan near the border with India, and in most places of Rajasthan, India except for Barmer district.

Area Treated

Egypt	168 ha (1-26 November)
Ethiopia	40 ha (31 October)
	1,707 ha (9-23 November)
Pakistan	700 ha (26-31 October)
	250 ha (2-6 November)
Sudan	28,446 ha (1-23 November)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During November, locust numbers increased steadily because of small-scale breeding and hatching in northern Brakna, northeastern Trarza, Tagant and southwestern Adrar where scattered solitarious hoppers and adults were present. By the 20th, densities had reached up to 3,000 hoppers/ha and 3,500 adults/ha and, in a few places, up to four late instar hoppers/bush and one first instar hopper/m^2 were seen. Laying was also in progress in southwestern Adrar. No locusts were seen in Hodh Ech Chargui except for scattered mature adults at one place east of Nema (1636N/0715W).

• **FORECAST**

Small-scale breeding will continue in the centre and northwest, causing locust numbers to increase further with a possibility that a few small groups could form.

Mali

• **SITUATION**

During November, isolated solitarious locusts were reported on the 16th in the central part of the Adrar des Iforas near Etambar (1827N/0124E).

• **Forecast**

Isolated locusts are expected to persist in those areas that remain green in the Adrar des Iforas.

Niger

• **Situation**

During November, isolated immature solitarious adults were seen near Tahoua (1457N/0519E) and Arlit (1843N/0721E). Isolated solitarious late instar hoppers and immature and mature adults were present in the southeastern Air Mountains, and a group of immature adults was seen in the same area at Azangara (1705N/0854E) on the 13th.

• **Forecast**

Low numbers of locusts are likely to persist in parts of the Air Mountains and perhaps breed if conditions become favourable.

Chad

• **Situation**

No reports were received during November.

• **Forecast**

Small-scale breeding is expected to have occurred in the Fada area during November. During the forecast period, scattered adults may concentrate and could form small groups as vegetation continues to dry out in the northeast.

Senegal

• **Situation**

No surveys were carried out and no locusts were reported during November.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

No reports were received during November.

• **Forecast**

Low numbers of locusts may be present in the south near Tamanrasset and Bir Bou Mokhtar but breeding is unlikely unless additional rainfall occurs.

Morocco

• **Situation**

No locusts were reported during October and November.

• **Forecast**

Scattered adults are likely to appear in the extreme south of Western Sahara and breed on a small-scale if rainfall occurs.

Libyan Arab Jamahiriya

• **Situation**

No locusts were seen during surveys carried out at the end of November in the southwest near Ghat (2459N/1011E) and in the southeast near Kufra (2411N/2315E).

• **Forecast**

There is a low risk that scattered adults and perhaps a few small groups could appear in the southeast near Jebel Uweinat from northern Sudan.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during November.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

In the summer breeding areas, groups of immature and mature solitarious, *transiens* and gregarious adults formed at densities up to 30,000 adults/ha in North Kordofan State between Sodiri (1423N/2906E), Wadi Milk and the Baiyuda Desert. Similar groups and a few dozen low-density swarms up to 5 km^2 in size formed on the western side of the Red Sea Hills near Haiya (1820N/3621E) and to a lesser extent along the Atbara and Nile rivers. Groups and bands of late instar hoppers and fledglings were present in a few places in the Baiyuda Desert south of Merowe (1830N/3149E), and mature adults were seen laying further north along the Nile near Dongola (1910N/3027E). During the third week, some of these swarms moved east to the Tokar Delta on the Red Sea coast where they were copulating, while other swarms moved northwest to the Egyptian border at Wadi Halfa (2147N/3122E) and northeast to Wadi Oko near Tomala (2002N/3551E).

In the winter breeding areas, numerous very small late instar hopper bands were present and fledging near the Egyptian border in Wadi Diib, giving rise to a few a small swarms by the third week. Groups of mature adults were also present nearby, and adults were seen on the coast north of Port Sudan. Breeding continued in the Tokar Delta where groups of mature

adults were present and hoppers formed small groups and bands. A low-density swarm was seen laying on the 19th.

Ground control teams treated 28,446 ha up to 23 November. Although it was indicated in Bulletin 349 that *Metarhizium* was used in October, this was incorrect.

• Forecast

Locust numbers will decline in the summer breeding areas of the interior as vegetation dries out and the remaining populations form small groups and swarms that will move in December towards the Red Sea coast. Consequently, locust numbers will increase on the coast, mainly in Tokar Delta, and in subcoastal areas in the north (W. Oko/Diib). Breeding will continue in these areas where hoppers and adults will form small groups, bands and perhaps a few swarms.

Eritrea

• **Situation**

During November, isolated adults were laying eggs on the northern Red Sea coast between Mehimet (1723N/3833E) and Karora (1745N/3820E) during the first and last weeks of the month.

No locusts were seen during surveys carried out in the western lowlands.

• **Forecast**

Small-scale hatching will take place and locust numbers will increase slightly on the Red Sea coast between Mehimet and Karora. Breeding could also extend to other areas along the coast towards Massawa if rainfall occurs.

Ethiopia

• **Situation**

On 31 October, second and third instar hopper bands were present at 7 places in the eastern Ogaden, east of Warder (0658N/4520E). Ground control operations were undertaken at four of these places, treating 40 ha.

During November, several mature swarms continued to move south in the Ogaden and laid eggs, reaching the Shebele River at Gode (0557N/4333E) on the 9th, Dolo (0410N/4203E) on the 16th and crossing the Dawa River into northeast Kenya on the 18th. There were also reports of a few swarms further west along the eastern side of the Harar Highlands. Eggs that were laid in October mainly hatched during the second week of November and numerous dense, small early instar hopper bands formed north of the Shebele River in Korahe and Warder zones. A few late instar bands were seen in third week from earlier hatching. Many of the infestations were concentrated between Warder (0658N/4520E) and the Somali border.

Control operations treated 1,707 ha from 9-23 November of which 1,400 ha were treated by air.

• **Forecast**

By early December, hatching is expected to commence south of the Shebele River where hopper bands will form, giving rise to small swarms in early January. From mid-December onwards, small swarms are expected to form in the Ogaden north of the Shebele and gradually move south towards Kenya.

Djibouti

• **Situation**

No reports were received during November.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

In the northwest, mature adults were present at a few places along the northwest coast near Bulhar (1023N/4425E) and Berbera (1028N/4502E). A 6 km^2 medium density mature swarm was reported just east of Berbera on the 24th. No locusts were seen on the plateau between Hargeisa (0931N/4402E) and Burao (0931N/4533E).

In the centre and south, medium and high density groups of solitarious and *transiens* late instar hoppers were seen during the second week east of Garowe (0824N/4828E) and near Galkayo (0646N/4725E). A small low-density mature swarm was seen further south near the Ethiopian border at Belet Weyne (0444N/4512E). In the following week, there was an unconfirmed report of locusts in the southern regions of Bay and Bakool, and a swarm was seen on the 20th moving from Qansahdere (0252N/4300E) west towards the Gedo region and the Kenyan border.

• **Forecast**

Egg laying may occur on the northwest coast near Berbera that could give rise to a few small hopper groups and bands by the end of the forecast period. Some swarms may have laid eggs in parts of the centre and south that could result in hatching and band formation during December.

Kenya

• **Situation**

On 18 November, a dense mature swarm flew over Mandera (0356N/4151E) in the North Eastern Province near the borders of Ethiopia and Somalia.

There were several reports during the next few days of at least one swarm of about 8 km^2 in size that dispersed in the Mandera area and was laying eggs. There were also reports of egg laying further south near Elwak (0249N/4056E) and an unconfirmed report near Wajir (0144N/4003E). Some crop damage occurred along the Dawa River.

• **Forecast**

Hatching will occur in the northeast during the second week of December and small bands will form, giving rise to small swarms by mid January. New swarms could appear from the north after mid-December.

Egypt

• **Situation**

During the last week of October, moderate densities of solitarious adults were present in the southwest near Jebel Uweinat (2154N/2458E).

During the first half of November, small-scale breeding occurred in Wadi Diib near the Red Sea coast and the Sudanese border where solitarious first to fourth instar hoppers were seen early in the month. Scattered immature and mature adults were present on the Red Sea coastal plains near Abu Ramad (2224N/3624E), in the Red Sea Hills near W. Allaqi and along the Lake Nasser shoreline between Abu Simbel (2219N/3138E) and Aswan (2405N/3256E). Some of the adults were *transiens* and forming small groups.

During the second half of the month, solitarious and *transiens* adults appeared further north on the Red Sea coast near Berenice (2359N/3524E), in the Red Sea Hills west of Marsa Alam (2504N/3454E) and there was a report of immature *transiens* adults in Cairo. Adults were also seen in the Western Desert north of Tushka (2247N/3126E), and mature groups were present at Farafra oasis (2710N/2818E). Control operations were carried out in most of these areas, treating 168 ha up to the 26th. At the end of the month, there was an unconfirmed report of gregarious immature adults in the southwest near Jebel Uweinat.

• **Forecast**

Small-scale breeding is likely to continue in the southeast on the coastal plains near Abu Ramad and extend along the coast towards Marsa Alam and inland towards Lake Nasser if rains fall in these areas.

Saudi Arabia

• **Situation**

No reports were received during November.

• **Forecast**

Small-scale breeding is likely to be in progress along parts of the Red Sea coast, especially in areas of recent rainfall, and will extend to those areas where rains fall during the forecast period, causing locust numbers to increase slightly.

Yemen

• **Situation**

During November, low numbers of scattered solitarious and *transiens* immature and mature adults persisted along the Red Sea coastal plains between Zabid (1410N/4318E) and Midi (1619N/4248E) and on the coastal plains west of Aden (1250N/4503E). Small-scale breeding occurred in both areas where isolated solitarious and *transiens* hoppers were present. Hopper densities were slightly higher, up to 4 hoppers/m^2, on the Gulf of Aden coast near Lahij (1303N/4453E).

• **Forecast**

Small-scale breeding is expected to continue along the Red Sea and Gulf of Aden coastal plains, causing locust numbers to increase slightly.

Oman

• **Situation**

No locusts were seen during surveys carried out on the Musandam Peninsula during November.

• **Forecast**

No significant developments are likely.

Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During November, low numbers of solitarious immature and mature adults were present on the southeastern coast near Chabahar (2517N/6036E), and isolated hoppers of all instars were seen at a few places nearby. No locusts were seen elsewhere along the coast near Jask (2540N/5746E) and Bander-e Lengheh (2634N/5452E).

• **Forecast**

Low numbers of locusts are likely to persist on the southeastern coast.

Pakistan

• **Situation**

A late report indicated that ground control operations were carried out in the spring breeding areas in Baluchistan against 700 ha of fifth instar hoppers, fledglings and immature adults near Kharan (2832N/6526E) on 26-31 October. Two small immature swarms were treated on 2 and 6 November, covering 250 ha.

In the summer breeding areas, locust numbers continued to decline during the first half of November in the Cholistan Desert, and only isolated mature adults remained near the Indian border southeast of Rahimyar Khan (2822N/7020E) and Bahawalpur (2924N/7147E).

No locusts were reported during the second half of November.

• **Forecast**

Locusts will continue to decline in Cholistan but small residual populations may be present in the Kharan area in Baluchistan.

India

• **Situation**

No locusts were seen during surveys carried out in Rajasthan and Gujarat during the second half of October and in November.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week within 48 hours of the last survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution*, orange for *threat* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES websites. Detailed information on the EMPRES programme and the FAO regional locust commission is available on the Internet for the Central Region (www.crc-empres.org) and the Western Region (www.clcpro-empres.org).

Google group. FAO DLIS has established a Google group for national locust information officers to exchange opinions and share experiences regarding data management and analysis, GIS, eLocust2 and satellite imagery. Interested information officers should contact DLIS (eclo@fao.org) for details.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/

index.html. Comments and questions can be sent to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. The latest additions to the web site are:

- **Locust situation.** Several updates during November (home page and in Archives section)
- **CLCPRO.** Report of the 4th Executive Committee meeting and the 4th Session (Publications section – Reports)
- **Early warning.** Basic components for effective early warning (Activities section – DLIS)
- **Press release.** 11 November locust update in Sudan for the media (Archives section – Bulletins)

Links to the above information can be found in the *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **EMPRES/WR**. 3rd Steering Committee (3-4 December), Agadir (Morocco)
- **EMPRES/WR**. RAMSES and eLocust2 evaluation workshop (6-8 December), Agadir (Morocco)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)

- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP

- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM

- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE

- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK

- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE

- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE

- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN

- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW

- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

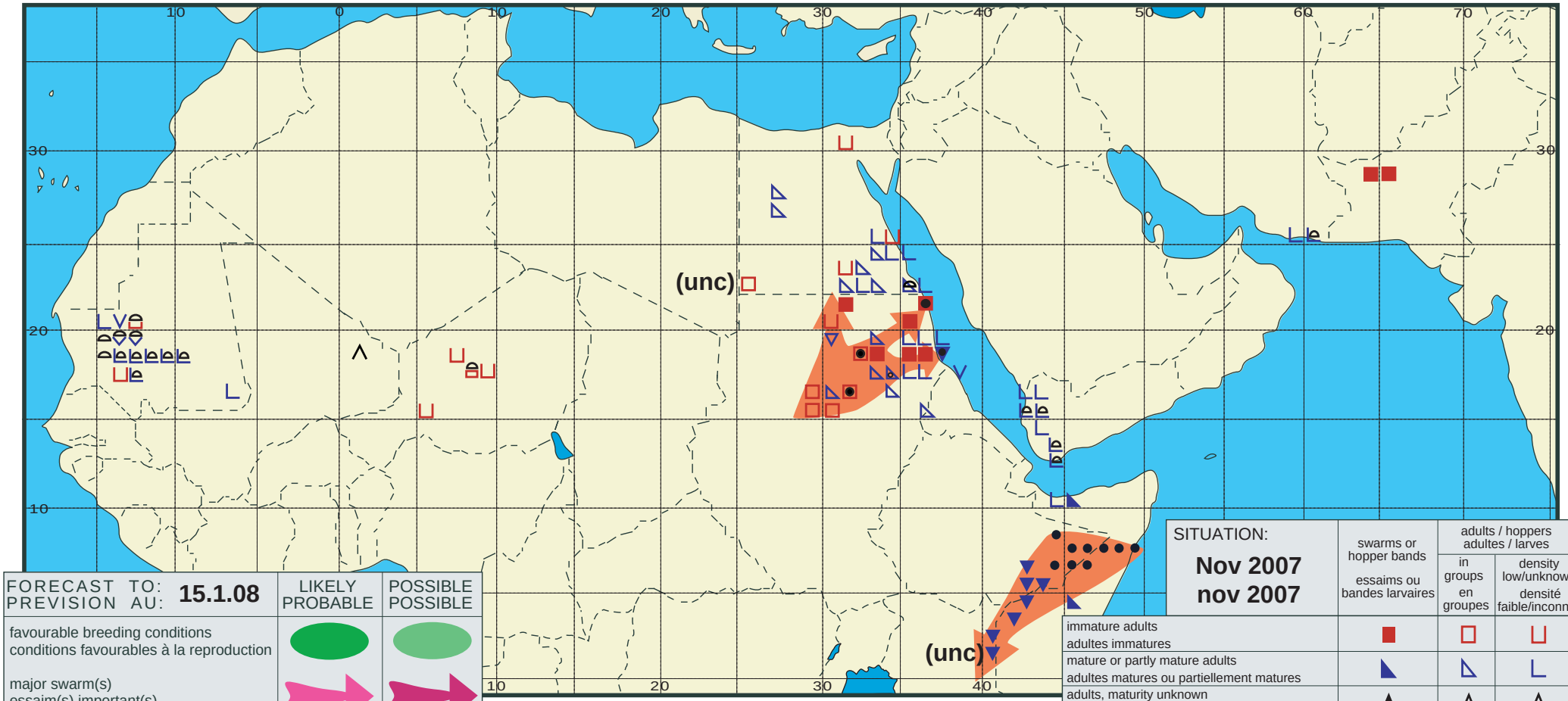
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

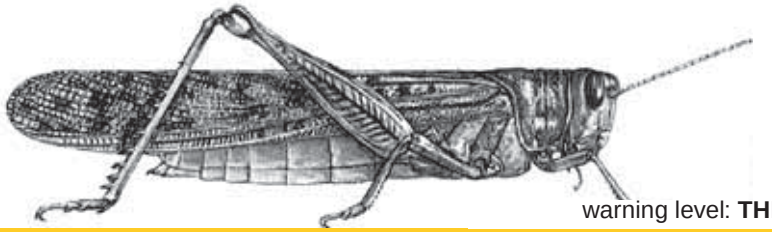
Desert Locust Summary
Criquet pèlerin - Situation résumée

350



FORECAST TO: / PREVISION AU: **15.1.08**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Nov 2007** **nov 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves: in groups en groupes	adults / hoppers adultes / larves: density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊕



warning level: **THREAT (East Africa)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 351

(3 January 2008)

General Situation during December 2007 Forecast until mid-February 2008

The Desert Locust situation remained serious in eastern Africa during December. Hatching and hopper band formation occurred in northeast Kenya from previous swarm laying. Although aerial and ground control operations were conducted in Kenya, operations could not be carried out on a similar scale in adjacent areas of eastern Ethiopia where large infestations of hopper bands were present. New swarms started to form shortly after mid-month in the Ogaden and moved to southern Ethiopia and northeastern Kenya. More swarms are likely to form in the coming weeks that could potentially threaten central and northwest Kenya, western Ethiopia and Uganda. Elsewhere, several swarms moved from the interior of Sudan to the Red Sea coast and a few groups probably crossed the sea to the coast of Saudi Arabia. Control operations were carried out against hopper bands on the coast of Sudan where breeding will continue during the forecast period and a few small swarms could form. All efforts should be made to monitor this developing and potentially dangerous situation closely and carefully, and to undertake control as necessary. The situation remained calm in the Western and Eastern regions.

Western Region. The situation continued to remain calm during December. Ground control operations were carried out against scattered adults in central and southern **Algeria** and, to a lesser extent in central **Mauritania**. Limited breeding occurred in Mauritania and along the Malian border in southern Algeria. During the forecast period, small-scale breeding could occur in areas of recent rainfall in southern Algeria and **Western Sahara**.

Central Region. In early December, remaining mature swarms in eastern **Ethiopia** moved south the Oromiya region and to northeast **Kenya**. Hopper bands continued to develop in the Ogaden and several new swarms started forming shortly after mid-month and moved south to Kenya. As the swarms were very mobile, it was difficult to treat them. Locusts continued to increase in the winter breeding areas along the Red Sea coast in **Sudan** but were limited to the Tokar Delta where hatching occurred and control operations were carried out by air against numerous small hopper bands that formed. Breeding will continue during the forecast period and is likely to extend south along the coast to northern **Eritrea**. In **Egypt**, locust numbers declined on the Red Sea coast and in the interior where limited control was undertaken. Even though small adult groups were present on the coast of **Saudi Arabia** and scattered adults may be present on the coast in **Yemen**, breeding is unlikely unless additional rains fall. In **Oman**, ground teams treated groups of gregarious adults that were laying eggs on the central coast. In northwest **Somalia**, isolated adults were reported on the coast.

Eastern Region. Small-scale breeding occurred on the southeast coast of **Iran** during December and scattered hoppers and adults were present. No locusts were reported along both sides of the Indo-Pakistan border. Low numbers of locusts are likely to appear in the spring breeding areas of Baluchistan in western **Pakistan** during the forecast period.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
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DLIS: www.fao.org/ag/locusts

No. 351

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in December 2007

Very little rain fell during December in all regions for the second consecutive month. Consequently, vegetation was drying out in all areas and breeding conditions were favourable only in limited areas, mainly along the western side of the Red Sea.

In the **Western Region**, mainly dry conditions prevailed during December in the Sahel and in northwest Africa. During the second week, light to moderate rains fell along the coast of Western Sahara, extending inland to Bir Moghrein in northern Mauritania and perhaps to western Mauritania. This could cause ecological conditions to improve in these areas. Vegetation continued to dry out in the northern Sahel where ecological conditions were not favourable for breeding except in a few parts of Trarza and Adrar in central Mauritania, and along the border of Mali and Algeria near Bir Bou Mokhtar. Nevertheless, there may be sufficient vegetation to allow the survival of low numbers of locusts in central Mauritania, northern Mali and Niger, and central and southern Algeria.

In the **Central Region**, ecological conditions remained favourable during December in the winter breeding areas along the western side of the Red Sea. Light to moderate rains fell on the Red Sea coast in Sudan near Tokar Delta. Vegetation was green and conditions were favourable for breeding along the coast from Tokar to Mehimet on the northern coast in Eritrea. Ecological conditions were also favourable further north near Abu Ramad in southeastern Egypt where light to heavy rains fell. However, conditions were dry along the coastal plains and in adjacent interior areas between Tokar and Abu Ramad. On the eastern side of the Red Sea, ecological conditions were generally dry along the coastal plains of Saudi Arabia and Yemen. In northern Somalia, light rains fell on the coast at the end of the month, and vegetation was becoming green west of Berbera but was dry further east. In eastern Ethiopia and northeastern Kenya, vegetation was drying out because of a lack of rain but remained green mainly in irrigated areas. In central Oman, moderate rains fell on 4 December along the coastal plains where vegetation was green and conditions were favourable for breeding.

In the **Eastern Region**, dry weather prevailed throughout December in the region and ecological conditions were not favourable for breeding. Nevertheless, vegetation remained green in parts of the spring breeding areas, mainly near the coast in southeastern Iran from rains that fell in late November. Green vegetation was also present in the Kharan, Shooli, and Kulanch valleys in Baluchistan, Pakistan.

Area Treated

Algeria	766 ha (December)
Egypt	10 ha (1-5 December)
Ethiopia	339 ha (December, incomplete)
Kenya	1,254 ha (December)
Mauritania	103 ha (December)
Oman	350 ha (December)
Saudi Arabia	27 ha (December)
Sudan	17,235 ha (1-30 November, corrected)
	9,833 ha (1-31 December)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During December, scattered solitarious hoppers of all instars and immature and mature adults persisted in northeast Trarza, southwest Adrar, western Tagant and northeast Brakna. Most of the hopper infestations were present near Moudjeria (1752N/1219W), west of Chinguetti (2027N/1221W) and south of Oujeft (2003N/1301W). Ground teams treated 103 ha in Adrar and Trarza during the month.

• **FORECAST**

Scattered hoppers and adults will persist in parts of the centre and northwest. Small-scale breeding could occur if additional rains fall. Adults may move further north to Tiris-Zemmour during periods of warm southerly winds and could breed on a small-scale in areas of recent rainfall near Bir Moghrein.

Mali

• **SITUATION**

No locusts were reported during December.

• **FORECAST**

Isolated locusts are likely to be present and will persist in parts of the Adrar des Iforas. Limited

breeding may be in progress or could occur near the Algerian border.

Niger

• **Situation**

No reports were received during December.

• **Forecast**

Low numbers of locusts are likely to be present and will persist in parts of the Air Mountains. Limited breeding could take place if conditions become favourable.

Chad

• **Situation**

No reports were received during December.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No reports were received during December.

• **Forecast**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During December, numerous infestations of solitarious and *transiens* immature and mature adults at densities up to 1,500 adults/ha were present in the south near Tamanrasset (2250N/0528E), along the Malian border near Bir Bou Mokhtar (2120N/0056E), in the southeast near Illizi (2630N/0825E) and Djanet (2434N/0930E), and in the central Sahara near Adrar (2753N/0017W). Some hoppers were present near Bir Bou Mokhtar. Ground teams treated 766 ha in these areas during the month.

• **Forecast**

Small infestations will persist in parts of the southern and central Sahara. Small-scale breeding could occur in areas of recent rainfall between In Salah, Djanet and Bir Bou Mokhtar causing locusts to increase slightly and perhaps form a few small groups.

Morocco

• **Situation**

No locusts were reported during December.

• **Forecast**

Scattered adults are likely to appear in Western Sahara and breed on a small-scale in areas of recent rainfall.

Libyan Arab Jamahiriya

• **Situation**

A late report indicated that scattered solitarious adults were seen at two places northwest of Kufra (2411N/2315E) on 27 November. No surveys were carried out and no locusts were reported during December.

• **Forecast**

Scattered adults may appear in the southwest near Ghat and breed on a limited scale if rains fall.

Tunisia

• **Situation**

No surveys were carried out and no locusts were reported during December.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During the first week of December, scattered solitarious and gregarious mature adults and a few groups persisted in the summer breeding areas along the Atbara and Nile rivers between Atbara (1742N/3400E) and Abu Hamed (1932N/3320E) and west of the Red Sea Hills near Haiya (1820N/3621E). A one hectare low-density immature swarm was seen flying towards the northeast on the 1st at Dongola (1910N/3027E) and another immature swarm of 1 km^2 was seen on the 4th east of Haiya.

In the winter breeding areas along the Red Sea coast, small low-density immature and mature groups and swarms appeared in the Tokar Delta during the last week of November. Egg-laying took place during the first three weeks in December mainly in the Tokar Delta and to a lesser extent at two places on the coastal plains between Tokar (1827N/3741E) and Aiterba (1753N/3819E). Hatching started on about the 23rd and first instar hoppers formed numerous very small bands at densities up to 300 hoppers/m^2.

No locusts were seen during surveys along the coast between Port Sudan and the Egyptian border. Control teams treated 9,833 ha during December of which 9,200 were sprayed by air in the Tokar Delta.

• Forecast

Small hopper bands will continue to form in the Tokar Delta that, if uncontrolled, could lead to the formation of small immature groups and swarms

starting in early February. Hatching and band formation is likely to occur during January on the coastal plains south of Tokar Delta.

Eritrea

• **Situation**

Isolated mature solitarious adults were seen copulating on the northern plains of the Red Sea between Mehimet (1723N/3833E) and Karora (1745N/3820E) on 1-3 December.

• **Forecast**

Small-scale breeding is almost certainly in progress along the Red Sea coastal plains between Mehimet and Karora and to a lesser extent further south towards Massawa. Breeding will continue and cause locust numbers to increase during the forecast period.

Ethiopia

• **Situation**

During December, numerous swarms moved from the Somali Region and spread southwest into the Oromiya region. On the 1st-2nd, small mature swarms appeared into Borena Zone between Negele (0520N/3935E), Arero (0445N/3849E) and Teltele (0504N/3723E), reaching as far south as the Kenyan border. On the 11-12th, a second wave of swarms was reported in Borena. Most of the swarms dispersed and were looking for suitable places to lay eggs in the gorges. Hatching and band formation occurred in Borena and nearby Liben Zone (Somali Region) from the first week of December onwards. By the last week, third and fourth instar hopper bands were present near the Kenyan border and along the Dawa River.

In the Somali region, numerous dense hopper bands were present throughout the month in the Ogaden near Kebri Dehar (0644N/4416E), Gode (0557N/4333E) and K'efalo (0537N/4408E). Damage was reported on crops and pastures. By the last week of December, most of the infestations were fifth instar bands and fledglings. On the 24th, a 3 km^2 immature swarm was seen south of Gode, indicating that new swarms were forming north and south of the Shebele River.

Control operations were undertaken mainly near Gode as many areas were inaccessible because of insecurity. Although details are lacking, at least 339 ha were treated during December, of which 160 ha were by air.

• **Forecast**

Swarms are expected to form in the Ogaden during the first half of January and, thereafter, additional swarms are likely to form further south in Oromiya and along the Kenyan border. Most of the swarms are likely to move towards the south and southwest while some swarms could move west towards the Rift Valley and SNNPR Region.

Djibouti

• **Situation**

No reports were received during December.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

In the northwest, isolated mature solitarious adults persisted along the coastal plains near Bulhar (1023N/4425E) and Berbera (1028N/4502E) during the last week of December. A few mature adults were also seen on the nearby escarpment. No information was available about locusts in central or southern parts of the country.

• **Forecast**

Small-scale breeding is likely to occur on the northwest coast in areas of recent rains near Berbera. Consequently, hatching is expected and low numbers of hoppers will be present during the forecast period. In the south, small swarms could form from previously undetected breeding and move towards Kenya in January.

Kenya

• **Situation**

On 1 December, a mature low-density swarm was reported in the northeast along the Ethiopian border near Moyale (0331N/3903E). First and second instar hopper bands at densities of more than 400 hoppers/m^2 were first reported further east near Mandera (0356N/4151E) on the 4th from hatching that started in late November and continued until mid December. Control operations commenced on the 6th against numerous small but very dense hopper bands that continued to form up to 25 km west of Mandera. By the 21st, some hoppers had reached the fourth instar and, thereafter, no further hopper infestations were found.

On 19 December, a 15 km^2 medium-density immature swarm crossed the Dawa River from southeastern Ethiopia and settled southwest of Mandera near Karow (0353N/4141E). Several other immature swarms of generally less than 10 km^2 in size crossed the river into Mandera District until the 27th.

Control teams treated 1,254 ha until the end of the month, of which 1,200 ha were by air.

• **Forecast**

There is a slight risk that some hopper infestations may not have been detected in the north. If so, these hoppers could form immature swarms in early January. These swarms will be supplemented by immature swarms that form in southeastern Ethiopia and cross the border. The new swarms are likely to be highly mobile and are expected to move towards the south and west where the could mature and lay eggs.

Uganda

• **Situation**

No reports were received during December.

• **Forecast**

There is a moderate risk that a few immature swarms may appear in the east from Kenya and Ethiopia.

Tanzania

• **Situation**

No reports were received during December.

• **Forecast**

There is a slight risk that a few immature swarms may appear in the north from Kenya, mature and lay eggs.

Egypt

• **Situation**

During December, locusts declined along the Red Sea coast and in the interior. Low numbers of solitarious and few *transiens* immature adults were present along the Red Sea coast and in adjacent subcoastal areas between Abu Ramad (2224N/3624E) and Marsa Alam (2504N/3454E). Immature and mature adult groups were reported during the first week in the Western Desert near Sh. Oweinat (2219N/2845E) and close to Lake Nasser in Wadi Allaqi. Ground teams treated 10 ha at Allaqi. Solitarious and *transiens* immature and mature adults were seen in the New Valley oases at Bahariya (2821N/2851E), Farafra (2710N/2818E), Abu Mingar (2630N2740E) and Dakhla (2530N/2900E).

• **Forecast**

Scattered adults will persist in parts of the Western Desert, along the Lake Nasser shoreline and on the Red Sea coastal plains south of Marsa Alam. Small-scale breeding is likely to occur on the coast if more rains fall.

Saudi Arabia

• **Situation**

On 4 December, small groups of gregarious immature adults that may have crossed the Red Sea from Sudan appeared on the coast near Jeddah (2130N/3910E), Rabigh (2247N/3901E), Yenbo (2405N/3802E), Badr (2347N/3847E), Medinah (2430N/3935E) and Umm Lajj (2501N/3716E) at densities up to 500 adults/ha. During the remainder of the month, isolated immature and mature adults persisted in the above places. No locusts were seen on the coast near Lith (2008N/4016E), Qunfidah (1909N/4107E) and Jizan (1656N/4233E) or in the spring breeding areas in the interior between Hail (2731N/4141E) and Buraydah (2621N/4358E). Ground teams treated 27 ha near Medinah.

• **Forecast**

Scattered adults will persist along parts of the Red Sea coastal plains and breed on a small scale if more rains fall during the forecast period.

Yemen

• **Situation**

No reports were received during December.

• **Forecast**

Scattered adults are likely to be present and breeding on a small-scale along parts of the Red Sea and Gulf of Aden coastal plains. If so, this situation will continue if more rains fall during the forecast period and locust numbers will increase slightly.

Oman

• **Situation**

During the first week of December, very small patches and groups of gregarious mature adults were present at a few locations along the central eastern coastal plains near Al Jazer (1835N/5635E). Adults at densities up to 5 adults/m^2 were laying eggs. Ground control teams treated 350 ha.

Further north, immature solitarious adults were seen near Adam on the 3rd and small groups of gregarious second and third instar hoppers were seen on the 24th northwest of Hayma. There was also an unconfirmed report of locusts south of Marmul (1808N/5516E). No locusts were seen during surveys in the northern Batinah coast or on the Musandam Peninsula.

• **Forecast**

No significant developments are likely.

Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, Syria, Turkey and UAE

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During December, low numbers of solitarious mature adults persisted on the southeastern coast between Chabahar (2517N/6036E) and the Pakistani border in areas that received good rains in late November. Isolated third to fifth instar hoppers were present at two places on the nearby Vashnum Plains.

• **FORECAST**

Low numbers of locusts are likely to persist on the southeastern coast and could start to breed by the end of the forecast period if conditions remain favourable.

Pakistan

• **SITUATION**

No locusts were reported during the first half of December.

• **FORECAST**

Low numbers of locusts may be present in the Kharan area in Baluchistan. Scattered adults are expected to appear in spring breeding areas in coastal and interior areas of Baluchistan where they could start to breed by the end of the forecast period.

India

• **SITUATION**

No locusts were seen during surveys carried out in Rajasthan in December.

• **FORECAST**

No significant developments are likely.

Afghanistan

• **SITUATION**

No reports received.

• **FORECAST**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) and threat (orange) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the last survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust warning levels. A colour-coded scheme indicates the seriousness of the current Desert Locust situation: green for *calm*, yellow for *caution*, orange for *threat* and red for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES websites. Detailed information on the EMPRES programme and the FAO regional locust commissions is available on the Internet for the Central Region (www.crc-empres.org) and the Western Region (www.clcpro-empres.org).

Google group. FAO DLIS has established a Google group for national locust information officers to exchange opinions and share experiences regarding data management and analysis, GIS, eLocust2 and satellite imagery. Interested information officers should contact DLIS (eclo@fao.org) for details.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) provides 16-day 250-metre resolution MODIS imagery as well as daily and decadal rainfall imagery for monitoring breeding conditions in the Desert Locust recession area. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html. Comments and questions can be addressed to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. The latest additions to the web site are:

- **Locust situation.** Several updates during December (home page and in Archives section)
- **FAO Technical Series No. 35.** Preparedness to prevent Desert Locust plagues in the Central Region: an historical overview by J. Magor et al (Publications section – Documents)

- **CLCPRO.** Report of the 4th Executive Committee meeting and the 4th Session (Publications section – Reports)
- **Early warning.** Basic components for effective early warning (Activities section – DLIS)
- **Press release.** 11 November locust update in Sudan for the media (Archives section – Bulletins)

Links to the above information can be found in the *Latest Additions* section on Locust Watch.

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)
- very few present and no mutual reaction occurring;
- 0 - 1 adult/400 m foot transect (or less than 25/ha).

SCATTERED (SOME, LOW NUMBERS)
- enough present for mutual reaction to be possible but no ground or basking groups seen;
- 1 - 20 adults/400 m foot transect (or 25 - 500/ha).

GROUP
- forming ground or basking groups;
- 20+ adults/400 m foot transect (or 500+/ha).

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL
- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL
- swarm: 1 - 10 km^2 • band: 25 - 2,500 m^2

MEDIUM
- swarm: 10 - 100 km^2 • band: 2,500 m^2 - 10 ha

LARGE
- swarm: 100 - 500 km^2 • band: 10 - 50 ha

VERY LARGE
- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT
- 1 - 20 mm of rainfall.

MODERATE
- 21 - 50 mm of rainfall.

HEAVY
- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING
- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING
- July - September/October

WINTER RAINS AND BREEDING
- October - January/February

SPRING RAINS AND BREEDING
- February - June/July

DECLINE
- a period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major.

OUTBREAK
- a marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms.

UPSURGE
- a period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions.

PLAGUE
- a period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously.

RECESSION
- period without widespread and heavy infestations by swarms.

REMISSION
- period of deep recession marked by the complete absence of gregarious populations.

WARNING LEVELS

GREEN
- Calm. No threat to crops. Maintain regular surveys and monitoring.

YELLOW
- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

ORANGE
- Threat. Threat to crops. Survey and control operations must be undertaken.

RED
- Danger. Significant threat to crops. Intensive survey and control operations must be undertaken.

REGIONS

WESTERN

- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Desert Locust Summary
Criquet pèlerin - Situation résumée

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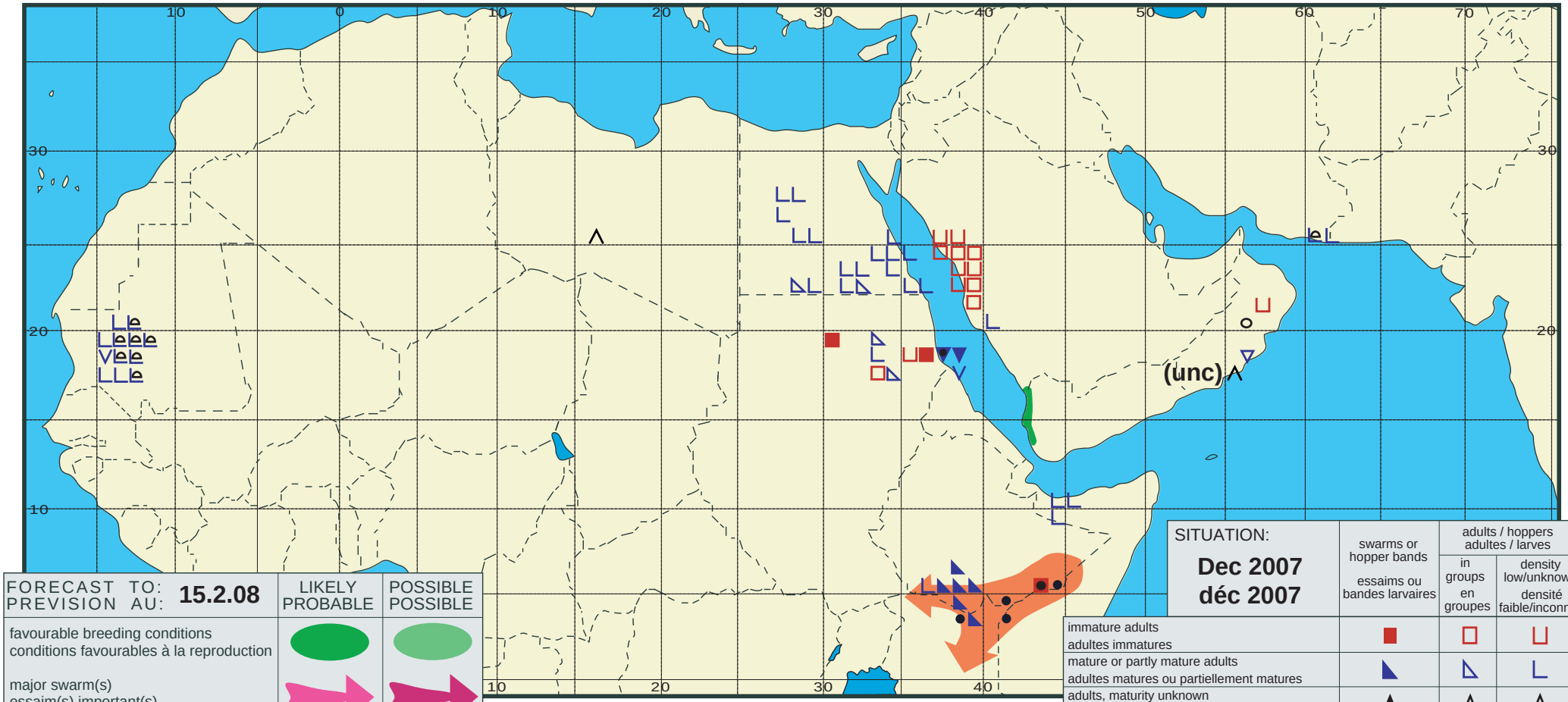

FORECAST TO: / PREVISION AU: **15.2.08**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Dec 2007 déc 2007**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	Λ
egg laying or eggs pontes ou œufs	▼	▽	V
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊕