

warning level: **CAUTION (Mauritania)**

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 364

(2 February 2009)



## General Situation during January 2009 Forecast until mid-March 2009

The Desert Locust situation remained calm during January. Limited ground control operations continued in northwest Mauritania against hoppers and a few small groups of adults. Only low numbers of locusts were present in the winter breeding areas along both sides of the Red Sea. Small-scale breeding occurred in Eritrea and, to a lesser extent, on the coast in Sudan, Saudi Arabia and Yemen. Scattered adults were present on the coast in northwest Somalia and a few adults were seen in southern Egypt. No locusts were reported elsewhere in the recession area. During the forecast period, locusts will persist in the above-mentioned areas and continue to breed on a small scale as long as ecological conditions remain favourable.

**Western Region.** Ground control operations continued in Mauritania against residual populations of solitary hoppers and adults east of Nouakchott, treating more than 600 ha during January. Although adult densities increased slightly and a few groups of *transiens* adults formed, the situation remained under control. Limited breeding occurred in adjacent areas and only isolated adults were seen in the north. No locusts were seen during surveys carried out in Morocco, Algeria and Libya or were reported in other countries in the region. Residual populations will persist during the forecast period in northwest Mauritania and small-scale breeding could occur in parts of northern Mauritania, Western Sahara and central Algeria as temperatures warm up.

**Central Region.** Small-scale breeding occurred during January along both sides of the Red Sea in Sudan, Eritrea, Yemen and Saudi Arabia but solitary hopper and adult numbers remained low. The potential for breeding was greatest in Eritrea where large areas of green vegetation were present on the northern coastal plains. Limited breeding may also be in progress on the Gulf of Aden coast in northwest Somalia where locust numbers increased slightly in January. During the forecast period, limited hatching will occur in the winter breeding areas in February with fledging by the end of March. Elsewhere, isolated adults were seen on a farm in southern Egypt.

**Eastern Region.** The locust situation remained calm during January as generally dry conditions prevailed and no locusts were reported. Small-scale breeding is expected to occur during the forecast period in the spring breeding areas along the coast in southeast Iran and 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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### Weather & Ecological Conditions in January 2009

**Very little rain fell in the recession area during January for the third consecutive month. Nevertheless, ecological conditions remained favourable for breeding on the Red Sea coast in Eritrea and to a lesser extent in Sudan, Saudi Arabia and Yemen as well as in northwest Somalia.**

In the **Western Region**, very little rain fell during January except for light showers in parts of central Mauritania and in the Algerian Sahara near Tindouf, Adrar and Tamanrasset, and near Bir Bou Mokhtar on the Malian border. In Mauritania, strong winds reduced visibility in the north and temperatures were slightly higher than normal. Ecological conditions remained favourable for locust survival and small-scale breeding in the wadis in Tiris Zemmour but vegetation was starting to dry out in Inchiri and Adrar. Vegetation was drying out in southern Algeria. In northwest Libya, vegetation was green or becoming green in parts of the Al Hamada Al Hamra plateau. South of the Atlas Mountains in Morocco, annual vegetation became green in the northeast near Bouarfa and remained green along the Draa Valley. In Western Sahara, light rains fell at times in the north and vegetation remained green east of Smara while small patches of green vegetation persisted further south between Bir Anzarane and Tichla. Limited amounts of green vegetation persisted in parts of the Adrar des Iforas in northern Mali and in the Air Mountains in Niger. Light rains fell in late January in the western Tenere Desert and southeast of Bilma in eastern Niger.

In the **Central Region**, very little rain fell for the second consecutive month in winter breeding areas along both sides of the Red Sea coast where only some light showers fell in Saudi Arabia between Jizan and Lith. Nevertheless, vegetation was green and ecological conditions to be favourable on the Red Sea coast from Massawa, Eritrea to Port Sudan, on the central Tihama in Yemen and on the southern coast in Saudi Arabia. Conditions were also favourable for breeding in northwest Somalia between Lughaye and Djibouti. In Oman, light rains may have fallen on the central coast between Duqm and Marmul while slightly

heavier showers occurred on the northern Batinah coast where green vegetation was present.

In the **Eastern Region**, low to moderate rains fell in mid-January on the southeast coast of Iran between Jask and the Pakistani border. Some showers extended along the coast of Baluchistan to Pasni, Pakistan. Vegetation was green near Jask, Iran. Dry conditions prevailed in Rajasthan, India.



### Area Treated

Mauritania 13,427 ha (December, corrected)  
621 ha (January)



### Desert Locust Situation and Forecast

( see also the summary on page 1 )

#### WESTERN REGION

##### **Mauritania**

###### • SITUATION

During January, locust numbers continued to decline in the Zgueimir area east of Nouakchott between Aguilal Faye (1827N/1444W) and Akjoujt (1945N/1421W) where scattered solitarious hoppers and adults and a few small groups of *transiens* immature and mature adults were present. Adult densities increased slightly, reaching 4,500 adults/ha by the end of the month. Ground teams treated 621 ha in January.

Elsewhere, low numbers of second to fifth instar hoppers and maturing adults were present between Tidjikja (1833N/1126W) and Oujeft (2003N/1301W), between Chinguetti (2027N/1221W) and Ouadane (2056N/1137W) and near Zouerate (2244N/1221W). Isolated solitarious immature and mature adults were seen in a few places in Dakhlet Nouadhibou, Inchiri and near Bir Moghreïn (2510N/1135W) in Tiris Zemmour.

###### • FORECAST

*Some of the residual populations in the Zgueimir area are likely to persist while others could still move north to Inchiri and Tiris Zemmour. Small-scale breeding could occur in the north if ecological conditions remain favourable. Surveys should be maintained in all areas to monitor the situation on a regular basis.*

##### **Mali**

###### • SITUATION

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

- **FORECAST**

*Scattered locusts are likely to be present and are expected to persist in the main wadis of the Adrar des Iforas. Breeding is unlikely to occur unless there is rainfall during the forecast period.*

### **Niger**

- **SITUATION**

A late report indicated that no locusts were reported in December. No surveys were carried out and no locusts were reported during January.

- **FORECAST**

*Scattered locusts are likely to be present and are expected to persist in parts of the Air Mountains and breed on a small-scale if rains fall during the forecast period.*

### **Chad**

- **SITUATION**

No reports were received in January.

- **FORECAST**

*Low numbers of adults are likely to concentrate and persist in areas that remain green.*

### **Senegal**

- **SITUATION**

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

- **FORECAST**

*No significant developments are likely.*

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

- **FORECAST**

*No significant developments are likely.*

### **Algeria**

- **SITUATION**

A late report indicated that scattered mature solitary adults were present along the Malian border near Tin Zaouatene (1958N/0258E) in December. No locusts were seen elsewhere during surveys carried out in the south or in the west near Tindouf (2741N/0811W) and Beni Abbes (3011N/0214W).

During January, no locusts were seen during surveys in the west near Tindouf and Beni Abbes, in the central Sahara near Adrar (2753N/0017W) and in the south near Tamanrasset (2250N/0528E), In Guezzam (1937N/0552E) and Tin Zaouatene.

- **FORECAST**

*Low numbers of solitary adults may be present in the south where they are likely to persist during the forecast period. Similar numbers may also be present in the central Sahara where they could breed on a*

*small scale on the edge of irrigated areas near Adrar and west of Bechar.*

### **Morocco**

- **SITUATION**

No locusts were seen during surveys carried out in January in the northeast near the Algerian border between Bouanane (3202N/0303W) and Figuig (3207N/0113W), and in the Western Sahara east of Smara (2644N/1140W) as well as further south between Bir Anzarane (2353N/1431W), Bir Gandouz (2136N/1628W) and Tichla (2137N/1453W).

- **FORECAST**

*Scattered adults may be present in the northeastern and southern parts of the Western Sahara. As temperatures warm up, small-scale breeding could occur in areas where conditions remain favourable.*

### **Libyan Arab Jamahiriya**

- **SITUATION**

No locusts were seen during a survey carried out on 1-8 January in the Al Hamada Al Hamra plateau (3000N/1200E) in the northwest.

- **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, scattered immature and mature solitary adults were present on the Red Sea coastal plains at densities up to 250 locusts/ha near Suakin (1906N/3719E) and between Aqiq (1813N/3811E) and the Eritrean border. Small-scale breeding occurred on the southern plains near Aiterba (1753N/3819E) where second to fifth instar hoppers were seen at mid-month and adults were copulating the following week. No locusts were seen on the coast between Port Sudan (1938N/3713E) and the Egyptian border, or in the Tokar Delta.



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### • Forecast

*Limited hatching will occur on the coast near Aiterba by mid-February and hoppers will fledge by the end of March. Small-scale breeding may occur elsewhere on the Red Sea coastal plains between Aqiq and Suakin, and perhaps in Wadi Oko/Diib near Tomala and Sufiya. Consequently, locust numbers will increase slightly during the forecast period.*

### Eritrea

#### • SITUATION

During the first week of January, locust numbers increased slightly on the western side of the Akbanazouf Plains northeast of Shelshela (1553N/3906E) where small-scale breeding continued and third and fourth instar hoppers and solitary adults were present. Scattered mature solitary adults were copulating on the coast between Mersa Gulbub (1633N/3908E) and Mersa Teklay (1734N/3851E). Reports of hopper bands in the same area were not confirmed.

#### • FORECAST

*Local breeding will continue on the Red Sea coast near Shelshela where fledging will occur in February. Small-scale breeding is likely to be in progress in other areas between Sheib and Karora and will continue during the forecast period, causing locust numbers to increase slightly.*

### Ethiopia

#### • SITUATION

No locusts were seen during a survey carried out in the Afar region between Dire Dawa (0935N/4150E) and the Danakil Desert from 25 December to 3 January and in the Somali Region on 19-31 January.

#### • FORECAST

*No significant developments are likely.*

### Djibouti

#### • SITUATION

A late report indicated that no surveys were carried out and no locusts were reported in December. No surveys were carried out and no locusts were reported in January.

#### • FORECAST

*No significant developments are likely.*

### Somalia

#### • SITUATION

During January, scattered immature and mature solitary adults at densities up to 400 locusts/ha were seen at a few places on the northwest coast near Sillil (1058N/4326E). No locusts were seen during surveys on the plateau near Boroma (0956N/4313E) and the Ethiopian border.

#### • FORECAST

*Small-scale breeding will occur the northwest coast between Lughaye and the Djibouti border, causing locust numbers to increase slightly. No significant developments are likely.*

### Egypt

#### • SITUATION

During January, isolated solitary adults were seen on a farm near Abu Simbel (2219N/3138E) on the 8<sup>th</sup>. Elsewhere, no locusts were seen during surveys carried out on the Red Sea coastal plains and in Wadi Diib between the Sudanese border and Abu Ramad (2224N/3624E), in the Allaqi area east of Lake Nasser, along Lake Nasser and in the Western Desert near Sh. Oweinat (2219N/2845E).

#### • FORECAST

*Isolated adults are likely to persist near Lake Nasser.*

### Saudi Arabia

#### • SITUATION

In early January, scattered adults and hoppers were seen near Jizan (1656N/4233E) during a joint Yemen/Saudi Arabia survey along the southern coastal plains of the Red Sea. Small-scale breeding also occurred on the coast between Jizan and Lith (2008N/4016E) where solitary third and fourth instar hoppers and scattered immature and mature adults were present. A few adults were laying eggs near Qunfidah (1909N/4107E).

#### • FORECAST

*Low numbers of locusts will persist along the Red Sea coastal plains and breed on a small scale between Lith and Jizan. Limited hatching is expected near Qunfidah in mid-February and hoppers will fledge by the end of March.*

### Yemen

#### • SITUATION

A late report indicated that no surveys were carried out and no locusts were reported in December.

During the first half of January, scattered immature and mature solitary adults were seen on the central Red Sea coastal plains near Hodeidah (1450N/4258E) during a joint Yemen/Saudi Arabia survey. A few adults were laying eggs and scattered third to fifth instar hoppers were seen. No locusts were seen during



the joint survey on the northern plains near Midi (1619N/4248E) and the Saudi Arabian border. On the Gulf of Aden coast, scattered mature adults were present near Lahij (1303N/4453E).

• **FORECAST**

*Small-scale breeding will continue on the central coastal plains of the Red Sea and is expected to occur on the Gulf of Aden coast near Lahij, causing locust numbers to increase slightly.*

**Oman**

• **SITUATION**

No locusts were seen during surveys carried out on the Batinah coast and Musandam Peninsula on 20-25 January.

• **FORECAST**

*Scattered adults may appear on the northern Batinah coast and breed on a small-scale in areas of recent rainfall.*

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

• **FORECAST**

*No significant developments are likely.*

**EASTERN REGION**

**Iran**

• **SITUATION**

No locusts were seen during surveys carried out on the southeast coast near Jask (2540N/5746E) and Chabahar (2517N/6036E) from 15 December to 11 January, and again near Jask on 14-26 January.

• **FORECAST**

*Low numbers of adults may be present on the southeast coast between Jask and the Pakistani border. As temperatures warm up, small-scale breeding is expected to occur in areas of recent rainfall.*

**Pakistan**

• **SITUATION**

No reports were received during January.

• **FORECAST**

*Low numbers of adults may be present on the Baluchistan coast between Pasni and the Iranian border. As temperatures warm up, small-scale breeding is expected to occur in areas of recent rainfall.*

**India**

• **SITUATION**

No locusts were seen during surveys in Rajasthan and Gujarat up to 22 January.

• **FORECAST**

*No significant developments are likely.*

**Afghanistan**

• **SITUATION**

No reports received.

• **FORECAST**

*No significant developments are likely.*



**Announcements**

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLD Desert Locust Information Service (eclod@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.

**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 (eclod@fao.org) for details.

**MODIS imagery.** Columbia University's International Research Institute for Climate and Society (IRI) provides 16-day 250-metre resolution



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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](http://iridl.ldeo.columbia.edu/maproom/.Food_Security/Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato ([pceccato@iri.columbia.edu](mailto:pceccato@iri.columbia.edu)).

**New information on Locust Watch.** Recent additions to the web site are:

- **DLCC working papers.** Working papers for the 39<sup>th</sup> session in English, French and Arabic are uploaded as they become available, so please check the *Latest Additions* section on Locust Watch regularly.

**2009 events.** The following activities are scheduled:

- **Biopesticides.** Workshop on the Future of Biopesticides for Locust Control, Rome (10-12 February)
- **DLCC.** 39<sup>th</sup> Session, Rome (10-13 March)
- **CLCPRO.** 5<sup>th</sup> Executive Committee (22-23 June) and 5<sup>th</sup> CLCPRO Session (24-27 June), 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<sup>2</sup>    • band: 1 - 25 m<sup>2</sup>

##### **SMALL**

- swarm: 1 - 10 km<sup>2</sup>    • band: 25 - 2,500 m<sup>2</sup>

##### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup>    • band: 2,500 m<sup>2</sup> - 10 ha

##### **LARGE**

- swarm: 100 - 500 km<sup>2</sup>    • band: 10 - 50 ha

##### **VERY LARGE**

- swarm: 500+ km<sup>2</sup>    • 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.



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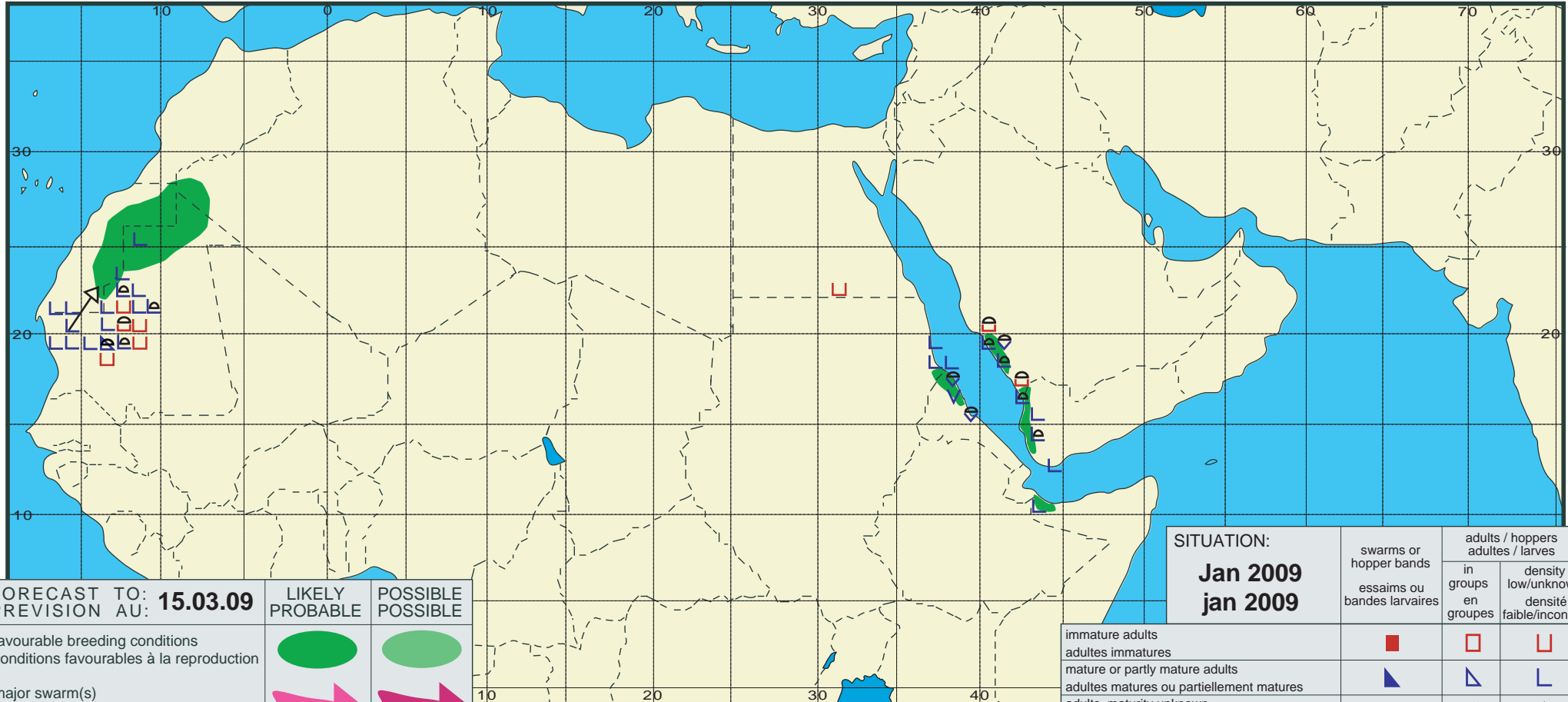
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# Desert Locust Summary

## Criquet pèlerin - Situation résumée

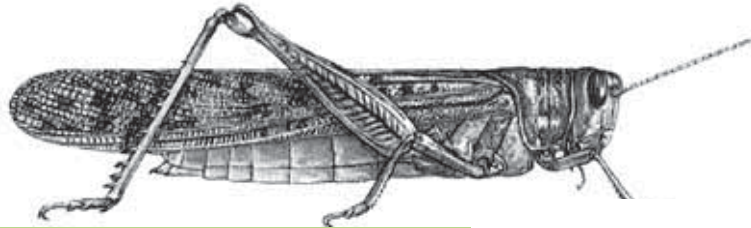
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FORECAST TO: PREVISION AU: <b>15.03.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>Jan 2009</b> jan 2009	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: **CALM**

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 365

(2 March 2009)



## General Situation during February 2009 Forecast until mid-April 2009

The Desert Locust situation remained calm during February. Low numbers of solitarious locusts were present in parts of northern Mauritania, central Algeria, in some of the winter breeding areas along both sides of the Red Sea and on the Gulf of Aden coast in southern Yemen. Limited breeding occurred in Mauritania and Yemen where hoppers were present, and egg-laying was reported in Eritrea, Saudi Arabia and Sudan. Very little rain fell in the recession area during February for the fourth consecutive month. Unless further rains fall, locust numbers will continue to decline, only low numbers of locusts are expected to persist in the above areas during the forecast period and further breeding is unlikely.

**Western Region.** Isolated solitarious adults were present in northwest and northern Mauritania during February. Small-scale breeding occurred near Zouerate but locust numbers remained low. A few adults were seen near irrigated areas in central Algeria. Low numbers of adults may also be present in parts of northern Mali and Niger but surveys could not confirm this because of continued insecurity. No locusts were reported elsewhere in the Region. Further breeding is unlikely to occur unless more rains fall. In any case, locust numbers will remain low and no significant developments are expected during the forecast period.

**Central Region.** Small populations of solitarious adults persisted on the Red Sea coast in Yemen, Saudi Arabia and near the border of Sudan and Eritrea during February. Some adults were seen laying eggs at the end of the month in Sudan and Eritrea. Small-scale breeding also occurred on the southern coast in Yemen where groups of adults laid eggs in early February in areas that were flooded four months ago. No locusts were reported elsewhere in the Region. Unless further rains fall, locust numbers will remain low in the winter breeding areas on both sides of the Red Sea but may increase slightly on the coast in southern Yemen once hatching commences in March. Regular surveys should monitor the situation carefully.

**Eastern Region.** The locust situation remained calm during February as generally dry conditions prevailed and no locusts were reported. During the forecast period, small-scale breeding is expected to occur in the spring breeding areas along the coast in southeast Iran where ecological conditions are already favourable and in western Pakistan if rains fall.

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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### Weather & Ecological Conditions in February 2009

**Very little rain fell in the recession area during February for the fourth consecutive month. Consequently, vegetation began drying out in the winter breeding areas along both sides of the Red Sea but remained green in parts of northwest Africa. Ecological conditions were favourable for small-scale breeding on southern coast of Iran.**

In the **Western Region**, no significant rain fell during February. Temperatures gradually increased in the central and southern Algeria Sahara. Ecological conditions were favourable for breeding near Adrar, Bechar and Tindouf but were drier and less favourable south of In Salah. Green vegetation persisted in parts of the Draa Valley south of the Atlas Mountains in Morocco as well as in some places in Western Sahara south of Aousserd and on the Adrar Settouf plateau. In Mauritania, vegetation was green in the northwest and north where ecological conditions were favourable to allow limited breeding in a few places. Small areas of green vegetation persisted in a few wadis in the Adrar des Iforas in northern Mali and in the Air Mountains in Niger. Light showers may have fallen in northeast Chad between Faya and Kalait and in the Mourdi Depression but vegetation remained dry.

In the **Central Region** winter breeding areas, very little rain fell for the third consecutive month during February. Nevertheless, green vegetation increased along the southern coastal plains of the Red Sea in Sudan between Aqiq and Aiterba. Vegetation remained green in other parts of the coast between Port Sudan and the Karora Plains on both sides of the Sudanese/Eritrean border. Even though light rains fell in some areas on the 6<sup>th</sup>, vegetation started to dry out at the end of the month. Vegetation was also drying out on the Eritrean coast south of Karora to Massawa even though light rains fell near Karora on the 24<sup>th</sup>. In Ethiopia, vegetation was drying out in the Somali region between Jijiga and northern Somalia but was greener near Dire Dawa from recent rains. In Saudi Arabia, green vegetation persisted in a few places on the Red Sea coast between Lith and Jizan. In Yemen, vegetation was green on the central Red Sea coast but was drying out further north. Vegetation

was also green on the Gulf of Aden coastal plains between Ahwar and Mukalla as well as in the interior between Shabwah and Al Hazm. Although light rains fell in a few places on the Batinah coast in northern Oman in early February and heavier rains fell in the nearby mountains, vegetation remained dry along the coast and ecological conditions were not favourable for breeding. Elsewhere, light rains may have fallen in northwest Sudan, north of Wadi Hawar, and in southwest Egypt near Jebel Uweinat.

In the **Eastern Region**, ecological conditions were favourable for breeding on the southeast coast in Iran where light rains fell in early February. Dry conditions prevailed elsewhere in the Region.



### Area Treated

No control operations were reported during February.



### Desert Locust Situation and Forecast

*( see also the summary on page 1 )*

#### WESTERN REGION

##### **Mauritania**

###### • SITUATION

During February, isolated solitary immature and mature adults persisted in the northwest between Akjoujt (1945N/1421W) and Atar (2032N/1308W), and in the north near Zouerate (2244N/1221W) and Bir Moghreïn (2510N/1135W). Only a few adults were seen at each location except for one place near Zouerate where densities reached 300 adults/ha. Small-scale breeding occurred at a few sites to the south and east of Akjoujt and west of Zouerate where solitary hoppers of all instars were present.

###### • FORECAST

*Low numbers of locusts are likely to persist in the northwest and north and breed on a small-scale in any areas that receive rainfall during the forecast period.*

##### **Mali**

###### • SITUATION

No reports were received in February.

###### • FORECAST

*Isolated adults may be present in parts of the Adrar des Iforas where they could breed on a small-scale if rains fall during the forecast period.*

## Niger

### • SITUATION

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

### • FORECAST

*Isolated adults may be present in parts of the Air Mountains where they could breed on a small-scale if rains fall during the forecast period.*

## Chad

### • SITUATION

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

### • FORECAST

*No significant developments are likely.*

## Senegal

### • SITUATION

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

### • FORECAST

*No significant developments are likely.*

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

### • FORECAST

*No significant developments are likely.*

## Algeria

### • SITUATION

During February, surveys were carried out in the west near Tindouf (2741N/0811W) and Beni Abbes (3011N/0214W), in the central Sahara near Adrar (2753N/0017W) and in the south near Tamanrasset (2250N/0528E). No locusts were seen except for a few individual mature solitary adults on the edge of irrigated crops near between Adrar and In Salah (2712N/0229E).

### • FORECAST

*Low numbers of solitary adults are likely to persist in parts of the central Sahara. Small-scale breeding could occur in favourable areas between Tindouf and Beni Abbes as well as near irrigated areas in parts of the central Sahara.*

## Morocco

### • SITUATION

During February, isolated mature solitary adults were seen at a few places south of the Souss Valley near Tiznit (2941N/0943W). Elsewhere, no locusts were seen during surveys in the northeast near Bouarfa (3232N/0159W) and in Western Sahara near Guelta Zemmur (2508N/1222W) and between Ma'Tallah (2223N/1502W), Bir Gandouz (2136N/1628W) and Tichla (2137N/1453W).

### • FORECAST

*Small-scale breeding could occur in parts of the Western Sahara in those areas where ecological conditions remain favourable and if more rains fall.*

## 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 February, scattered solitary adults at densities up to 350 locusts/ha persisted on the Red Sea coastal plains between Aqiq (1813N/3811E) and the Eritrean border where they matured. On the 21<sup>st</sup>, some adults were seen copulating. A few immature and mature adults were reported between Tokar (1827N/3741E) and Suakin (1906N/3719E) but no locusts were seen in the Tokar Valley or along the coast between Suakin and Eit (2009N/3706E). At the end of the month, no locusts were seen on the northern coast or in adjacent interior areas during a joint survey with Egypt.

### • FORECAST

*Limited hatching will occur on the coast near Aiterba in early March and hoppers will fledge by mid-April. Unless further rains fall, breeding will end and locust numbers are expected to decline along the coast.*

## Eritrea

### • SITUATION

During February, isolated solitary adults persisted at a few places on the Red Sea coastal plains near Karora (1745N/3820E) and Embere (1628N/3856E). On the 24<sup>th</sup>, adults were seen laying eggs in crops near Embere.



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### • FORECAST

*Limited hatching will occur by mid-March near Embere but, unless further rains fall, locust numbers will decline along the Red Sea coast during the forecast period.*

### Ethiopia

#### • SITUATION

No locusts were seen during surveys carried out in February near Dire Dawa (0935N/4150E), Jijiga (0922N/4250E) and along the railway towards Djibouti.

#### • FORECAST

*No significant developments are likely.*

### Djibouti

#### • SITUATION

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

#### • FORECAST

*No significant developments are likely.*

### Somalia

#### • SITUATION

No reports were received in February.

#### • FORECAST

*Low numbers of adults may be present on the northwest coastal plains between Berbera and the Djibouti. Unless further rains fall, breeding is unlikely to occur and locust numbers will decline during the forecast period.*

### Egypt

#### • SITUATION

No locusts were seen during surveys carried out in the second week of February on the Red Sea coast near Halaib (2213N/3638E).

#### • FORECAST

*No significant developments are likely.*

### Saudi Arabia

#### • SITUATION

During February, local breeding occurred on the Red Sea coastal plains near Qunfidah (1909N/4107E) and Jizan (1656N/4233E) where solitary mature adults were seen in a few places. No locusts were seen during surveys carried out in the winter breeding areas on the coast near Jeddah (2130N/3910E) and

Lith (2008N/4016E) and in the spring breeding areas in the interior.

#### • FORECAST

*Low numbers of locusts will persist along the Red Sea coastal plains and breed on a small scale between Lith and Jizan. Unless further rains fall, breeding is not likely to continue and locust numbers will decline.*

### Yemen

#### • SITUATION

During the first week of February, small groups of mature solitary and *transiens* adults at densities of up to 12 adults/m<sup>2</sup> laid eggs in one area on the southern coast near Erqa (1347N/4729E). Scattered maturing and mature solitary adults mixed with a few late instar hoppers were seen at other places along the coast between Ahwar (1333N/4644E) and Sayhut (1512N/5115E). At mid-month, isolated immature and mature solitary adults were seen west of Aden near Am Rija (1302N/4434E). On the Red Sea coast, small-scale breeding occurred in few places between Zabid (1410N/4318E) and Bajil (1458N/4314E) where isolated solitary and *transiens* hoppers were present in addition to scattered adults. A few adults were also reported further north between Al Zuhrah (1541N/4300E) and Midi (1619N/4248E). In the summer breeding areas in the interior, isolated immature and mature adults were seen at one place southeast of Al Abr (1608N/4714E).

#### • FORECAST

*Small-scale breeding will continue on the central coastal plains of the Red Sea and along the Gulf of Aden coast between Ahwar and Sayhut as long as ecological conditions remain favourable. Breeding could extend into adjacent areas or continue longer if more rains fall during the forecast period. Consequently, locust numbers may increase slightly but probably not enough to form an outbreak.*

### Oman

#### • SITUATION

No locusts were seen during surveys carried out in the extreme south of the Dhofar region near the border with Yemen in February.

#### • FORECAST

*Small-scale breeding could occur on the northern Batinah coast if rains fall during the forecast period.*

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

#### • FORECAST

*No significant developments are likely.*



## **EASTERN REGION**

### **Iran**

#### **• SITUATION**

No locusts were seen during surveys carried out on the southeast coast near Jask (2540N/5746E) and Chabahar (2517N/6036E) and in the interior near Kahnuj (2757N/5742E) and Bampur (2711N/6028E) from 27 January to 25 February.

#### **• FORECAST**

*If rainfall occurs in coastal areas between Jask and the Pakistani border, small-scale breeding is expected to take place but locust numbers should remain low.*

### **Pakistan**

#### **• SITUATION**

Late reports indicated that there were no locusts present during January. No reports were received during February.

#### **• FORECAST**

*Low numbers of adults may be present on the Baluchistan coast between Pasni and the Iranian border. Small-scale breeding is expected to occur in areas that receive rainfall but locust numbers should remain low.*

### **India**

#### **• SITUATION**

No locusts were seen during surveys in Rajasthan and Gujarat during February.

#### **• FORECAST**

*No significant developments are likely.*

### **Afghanistan**

#### **• SITUATION**

No reports received.

#### **• FORECAST**

*No significant developments are likely.*

periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLD Desert Locust Information Service (eclod@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.

**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 (eclod@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](http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato (pceccato@iri.columbia.edu).

**New information on Locust Watch.** Recent additions to the web site are:

- **DLCC working papers.** Working papers for the 39<sup>th</sup> session in English, French and Arabic are uploaded as they become available, so please check the *Latest Additions* section on Locust Watch regularly.

**2009 events.** The following activities are scheduled or planned:

- **DLCC.** 39<sup>th</sup> Session, Rome (10-13 March)
- **EMPRES/WR survey training.** 2<sup>nd</sup> regional workshop for master survey officers, Agadir, Morocco (30 March – 10 April)



## **Announcements**

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red)



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- **CRC Equipment evaluation.** Sprayers and protective clothing testing workshop, Ismailia, Egypt (9-19 May)
- **CRC/SWAC Locust Information.** Inter-regional workshop for Desert Locust Information Officers in the CRC and SWAC, Cairo (27-28 May)
- **CRC Aerial training.** 2<sup>nd</sup> regional aerial training course, Lake Zeway, Ethiopia (7-12 June)
- **CLCPRO.** 5<sup>th</sup> Executive Committee (22-23 June) and 5<sup>th</sup> CLCPRO Session (24-27 June), Agadir (Morocco)
- **CRC Training.** 5<sup>th</sup> Desert Locust sub-regional training course, Damascus, Syria (3-17 July)
- **EMPRES/WR Locust Information.** Regional workshop for Desert Locust Information Officers, Algiers (mid-July, tentative)
- **CRC Planning.** Contingency planning workshop, Cairo (26-31 July)
- **EMPRES/WR Research.** Regional workshop on Desert Locust research, Dakar (early October, tentative)
- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting (mid-December, tentative)
- **EMPRES/WR Steering Committee.** 4<sup>th</sup> EMPRES Steering Committee meeting (mid-December, tentative)



### 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<sup>2</sup> • band: 1 - 25 m<sup>2</sup>

##### **SMALL**

- swarm: 1 - 10 km<sup>2</sup> • band: 25 - 2,500 m<sup>2</sup>

##### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup> • band: 2,500 m<sup>2</sup> - 10 ha

##### **LARGE**

- swarm: 100 - 500 km<sup>2</sup> • band: 10 - 50 ha

##### **VERY LARGE**

- swarm: 500+ km<sup>2</sup> • 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.



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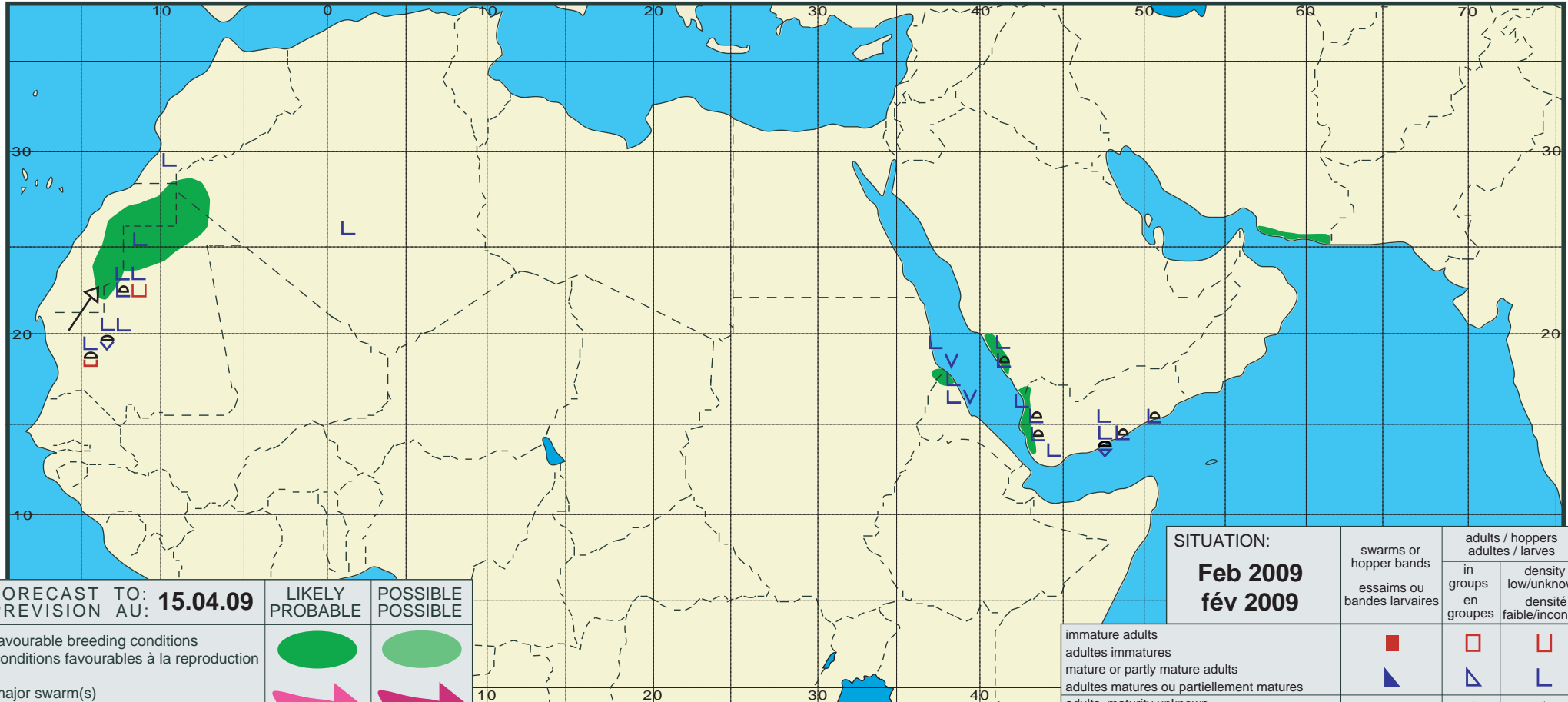
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# Desert Locust Summary

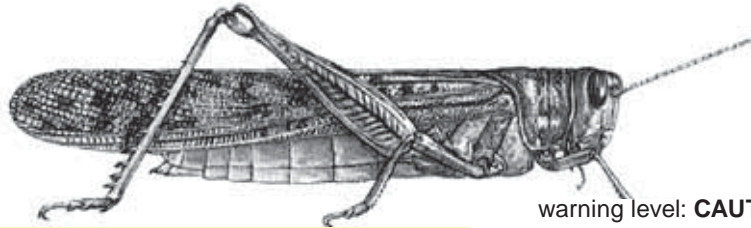
## Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: <b>15.04.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>Feb 2009</b> <b>fév 2009</b>	swarms or hopper bands	adults / hoppers	
	essaims ou bandes larvaires	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. 366

(2 April 2009)



## General Situation during March 2009 Forecast until mid-May 2009

Small outbreaks of Desert Locust developed on the southern coast of Yemen and in northwest Somalia during March. Ground control operations were undertaken in Yemen and are expected to start shortly in Somalia. By the end of the month, small swarms were forming in Yemen. If control operations are less than successful and good rains fall, locusts could increase further and spread to adjacent countries in the region. Elsewhere, scattered solitary adults were present in parts of northwest Mauritania, Morocco and Algeria, locusts declined in the winter breeding areas along both sides of the Red Sea, and so far only scattered adults have been seen in the spring breeding areas in western Pakistan.

**Western Region.** Locust numbers remained low during March in northwest and northern Mauritania except for one place where hopper and adult densities increased but did not require control. Solitary adults were present in Morocco on the southern side of the Atlas Mountains along the Algerian border where 1 ha was treated. Isolated adults were seen in parts of the Western Sahara and near irrigated areas in central Algeria. Similar populations may also be present in parts of northern Mali and Niger but surveys could not confirm this because of continued insecurity. Small-scale breeding could occur in spring breeding areas of northwest Africa but locust numbers are expected to remain low and no significant developments are likely during the forecast period.

**Central Region.** An outbreak developed in March on the southern coast of Yemen where more than 200 small hopper bands formed within a limited area of about 1,000 km<sup>2</sup>. Ground teams treated nearly 5,000 ha and two small swarms were seen flying on the coast at the end of the month. Any hopper bands and adults that are not controlled will form small adult groups and a few small swarms that will probably move towards the summer breeding areas in the interior of southern Yemen where good rains began to fall in late March. A small outbreak also developed on the northwest coast of Somalia within an area of about 2,000 km<sup>2</sup> where nearly two-dozen small hopper bands and two small swarms were reported. Although the infestations are expected to remain in situ during most of the forecast period because of unusually favourable conditions, there is a moderate risk that a few adult groups or small swarms could move up the escarpment to the Ethiopian plateau or east along northern Somalia. Control operations should commence in early April. Locusts declined in winter breeding areas along both sides of the Red Sea as vegetation dried out in March. Consequently, only small-scale breeding occurred in a few places on the coast in Saudi Arabia, scattered adults remained on the coast in Sudan and a few adults were copulating on the northern coast in Eritrea.

**Eastern Region.** Scattered adults appeared along the coast in the spring breeding areas of western Pakistan during the second half of February and in the interior during the first half of March. Small-scale breeding is expected to occur during the forecast period in coastal and interior areas of southeast Iran and, if more rains fall, in Baluchistan, 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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### Weather & Ecological Conditions in March 2009

**Mainly dry conditions prevailed in the recession area during March. Breeding conditions were favourable in northwest Somalia and are expected to improve in the interior of Yemen and in southeast Iran where good rains fell at the end of March.**

In the **Western Region**, light showers fell at times during March but ecological conditions remained generally dry. In Mauritania, light rains fell during the first week between Nouakchott and Zouerate and in adjacent areas of Western Sahara. Annual vegetation was drying out east of Nouakchott but remained green further north in Tiris Zemmour. Light rains may have fallen at mid-month in parts of northern Mali west of Timetrine and in the Tamesna in Niger; however, vegetation was dry in most places except for some wadis in the Adrar des Iforas, Mali and in the Air Mountains, Niger. In northwest Africa, good rains fell at times along the southern side of the Atlas Mountains in Morocco. Annual vegetation remained green in the Draa Valley and in central and northern areas of Western Sahara but was dry further south. In Algeria, vegetation was green near Tindouf and in irrigated agricultural schemes in the central Sahara near Beni Abbes and Adrar, but was drying out in the south and east near Tamanrasset and Djanet.

In the **Central Region**, vegetation remained unusually green on the northwest coast of Somalia near Siliil during March. On the other hand, conditions were dry in adjacent coastal areas of Djibouti. Light rains occasionally fell during the second half of March on the nearby plateau between Dire Dawa and Jijiga, Ethiopia and Hargeisa, Somalia. In southern Yemen, vegetation dried out along the coast but good rains and flooding occurred at the end of the month in the summer breeding areas in the interior of Shabwah near Bayhan. In Oman, moderate to heavy showers fell along the northern coast on 25-29 March. In the winter breeding areas along both sides of the Red Sea, ecological conditions were dry because of a lack of rainfall in March. Consequently, breeding was limited to just a few coastal areas in Saudi Arabia between Lith and Jizan and the central Tihama coast

in Yemen where light rains fell at times. In Eritrea, annual vegetation dried out on the coast north of Massawa but remained green and dense on the Karora plains near the Sudanese border.

In the **Eastern Region**, a mild warm winter prevailed in western Pakistan and southeast Iran. During the third decade of March, light rain fell in the interior of the spring breeding areas in Baluchistan, Pakistan as well as along both sides of the Indo-Pakistan border in the summer breeding areas of Cholistan, Pakistan and Rajasthan, India. During the last week of March, light to heavy rains fell in coastal and interior areas of southeast Iran.



### Area Treated

Morocco	1 ha (24 March)
Yemen	4,670 ha (18-31 March)



### Desert Locust Situation and Forecast

( see also the summary on page 1 )

#### WESTERN REGION

##### **Mauritania**

###### • SITUATION

During March, scattered immature and mature solitary adults were present at densities of 100-300 adults/ha mixed with solitary hoppers of all instars (up to 265 hoppers/site) in several places to the south and southwest of Oujef (2003N/1301W). Higher numbers of locusts were seen at one location (1933N/1320W) on 10 ha where densities reached 3,200 adults/ha and 1,224 hoppers/ha at mid-month. Further north, isolated immature and mature solitary adults were seen near Zouerate (2244N/1221W) and limited hatching occurred at mid-month.

###### • FORECAST

*Low numbers of locusts are likely to persist in currently infested areas in the northwest and north. Limited breeding may occur on a small-scale giving rise to low numbers of hoppers that should fledge at the end of April.*

##### **Mali**

###### • SITUATION

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



- **FORECAST**

*Isolated adults may be present in parts of the Adrar des Iforas where they could breed on a small-scale if rains fall during the forecast period.*

### **Niger**

- **SITUATION**

On 25 March, there was an unconfirmed report of scattered adults on about 10 ha in the southern Tamesna near In Gall (1651N/0701E).

- **FORECAST**

*Isolated adults may be present in parts of the Tamesna and Air Mountains where they could breed on a small-scale if rains fall during the forecast period.*

### **Chad**

- **SITUATION**

No reports were received during March.

- **FORECAST**

*No significant developments are likely.*

### **Senegal**

- **SITUATION**

No locusts were seen during surveys carried out in the north near Richard Toll (1626N/1541W) and Keur Momar Sarr (1555N/1558W) in March.

- **FORECAST**

*No significant developments are likely.*

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

- **FORECAST**

*No significant developments are likely.*

### **Algeria**

- **SITUATION**

During March, isolated immature and mature solitary adults were present near several irrigated cropping areas in the Adrar (2753N/0017W) region and to a lesser extent southeast of Beni Abbes (3011N/0214W) and west of Djanet (2434N/0930E). No locusts were seen during surveys near Tindouf (2741N/0811W) and Tamanrasset (2250N/0528E).

- **FORECAST**

*Low numbers of solitary adults are likely to persist in parts of the central Sahara. Small-scale breeding could occur in favourable areas between Tindouf and Beni Abbes as well as near irrigated areas in parts of the central Sahara.*

### **Morocco**

- **SITUATION**

During March, isolated mature solitary adults were seen in the northeast near Bouarfa (3232N/0159W). Two groups of solitary adults at

densities of 50-200 adults/ha were present along the Algerian border in the Draa Valley southeast of Fom El Hassan (2901N/0853W) and 1 ha was treated on the 24<sup>th</sup>. In the Western Sahara, isolated mature solitary adults were reported near Bir Lahlou (2619N/0933W), Laayoune (2709N/1311W) and southwest of Guelta Zemmur (2508N/1222W).

- **FORECAST**

*Small-scale breeding could occur in parts of the Draa Valley and in the northeast near Bouarfa causing locust numbers to increase slightly. Low numbers of locusts are likely to persist in parts of central and northeast Western Sahara and breed on a small scale if rainfall occurs.*

### **Libyan Arab Jamahiriya**

- **SITUATION**

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

- **FORECAST**

*No significant developments are likely.*

### **Tunisia**

- **SITUATION**

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

- **FORECAST**

*No significant developments are likely.*

## **CENTRAL REGION**

### **Sudan**

- **SITUATION**

No locusts were seen on the northern coast or in adjacent interior areas during a joint survey with Egypt on 1-2 March. During the remainder of the month, locust numbers declined on the southern coast between Aqiq (1813N3811E) and the Eritrean border and only scattered mature solitary adults at densities of 50-200 adults/ha were seen at only two places.

- **FORECAST**

*Locust numbers will continue to decline along the southern coast of the Red Sea coast and no significant developments are likely.*

### **Eritrea**

- **SITUATION**

During March, isolated solitary adults including a few copulating adults were seen at two places on



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the northern Red Sea coast between Mersa Gulbub (1633N/3908E) and Mehimet (1723N/3833E) during surveys carried out on 23-26 March. No locusts were seen elsewhere on the plains.

- **FORECAST**

*Locust numbers will decline along the central and northern coast of the Red Sea and no significant developments are likely.*

### **Ethiopia**

- **SITUATION**

No locusts were seen during surveys carried out in March in the southern parts of Oromiya and Somali regions in the extreme southeast.

- **FORECAST**

*There is a moderate risk that groups of adults and perhaps a few small swarms could appear from northwest Somalia on the escarpment near Dire Dawa, the railway, and Jijiga. Regular surveys should be carried out to monitor the situation closely.*

### **Djibouti**

- **SITUATION**

No locusts were seen during surveys carried out on the coast between Djibouti and Somalia on 23-25 March.

- **FORECAST**

*No significant developments are likely.*

### **Somalia**

- **SITUATION**

A small outbreak developed in late February and early March within an area of unusually green vegetation on the northwest coast near Silil (1058N/4326E), about 65 km by 20 km in size. During the first week of March, small groups of mature gregarious adults, a small copulating swarm, and a few first to third instar hopper bands and solitary hoppers were present. Intensive surveys subsequently found nearly two dozen very small to medium sized hopper bands of all instars and two small mature swarms, each about 2.5 km<sup>2</sup> in size, as well as solitary and gregarious hoppers and adults. At the end of the month, ground control operations were being organized.

- **FORECAST**

*Locust populations are expected to remain on the northwest coast as long as vegetation stays green.*

*Limited hatching may occur during April from March egg laying, more hopper bands could form and fledging is likely to commence by the end of April. Once vegetation dries out, adult groups and a few small swarms could move up the escarpment towards Ethiopia or east along the escarpment towards Erigavo. There is a lower risk of adults crossing the Gulf of Aden to southern Yemen.*

### **Egypt**

- **SITUATION**

No locusts were seen during surveys carried out in March in the Western Desert near Sh. Oweinat (2219N/2845E), along Lake Nasser near Tushka (2247N/3126E) and Abu Simbel (2219N/3138E), and on the Red Sea coast between Halaib (2213N/3638E) and Shalatyn (2308N/3535E).

- **FORECAST**

*No significant developments are likely.*

### **Saudi Arabia**

- **SITUATION**

During March, isolated late instar solitary hoppers and immature adults were present in a few places on the Red Sea coastal plains between Lith (2008N/4016E) and Qunfidah (1909N/4107E), and near Jizan (1656N/4233E). No locusts were seen elsewhere on the coast or in the spring breeding areas in the interior.

- **FORECAST**

*Unless further rains fall, locust numbers will decline along the Red Sea coastal plains and no significant developments are likely.*

### **Yemen**

- **SITUATION**

In early March, a small outbreak developed along a 90 km stretch of coast on the Gulf of Aden between Ahwar and Mukalla coast near Erqa (1347N/4729E) after flooding in October and egg laying in January and February. Hatching continued until mid March and numerous medium-sized hopper groups and bands formed during the second half of the month, mixed with solitary, *transiens* and gregarious hoppers and immature adults. By the end of March, at least 200 late instar hopper bands at densities up to 100 hoppers/m<sup>2</sup> and fledglings were reported from 20 locations. On the 30<sup>th</sup>, two immature swarms of 2 km<sup>2</sup> were seen flying in the area. Ground teams treated 4,670 ha of hopper bands, fledglings, adult groups and swarms on 18-31 March.

- **FORECAST**

*The remaining hopper bands on the southern coast near Erqa that are not controlled will fledge in early April. The new adults are likely to form small groups and a few small swarms that, if not treated,*

will move to areas of recent rainfall in the summer breeding areas in the Shabwah interior near Bayhan. By the end of the forecast period, egg laying could commence near Bayhan and in other areas that receive rains. On the Red Sea coast, low numbers of locusts are likely to be present and could breed on a small-scale in those areas that remain favourable.

#### Oman

- SITUATION

No locusts were seen during surveys carried out in Musandam, Batinah and Muscat regions in March except for an individual immature solitarious adult near Mawaleh (2332N/5812E).

- FORECAST

*Small-scale breeding could occur in areas of recent rainfall on the northern coast.*

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

- FORECAST

*No significant developments are likely.*

#### EASTERN REGION

##### Iran

- SITUATION

No locusts were seen during surveys carried out in March on the southeast coast near Jask (2540N/5746E) and Chabahar (2517N/6036E) and in the interior near Bampur (2711N/6028E).

- FORECAST

*If rainfall occurs in coastal areas between Jask and the Pakistani border, small-scale breeding is expected to take place but locust numbers should remain low.*

##### Pakistan

- SITUATION

Late reports indicated that there were no locusts present during the first half of February while isolated immature and mature solitarious adults were seen in the spring breeding areas near Uthal (2548N/6637E) and in the Shooli Valley near Turbat (2600N/6303E) in the second half of the month.

During the first half of March, isolated mature solitarious adults persisted in the above areas and appeared in the interior near Panjgur (2658N/6406E) and in the Kharan Valley (2832N/6526E).

- Forecast

*If more rains fall, small-scale breeding will occur in coastal and interior areas of Baluchistan but locust numbers are likely to remain low.*

##### India

- SITUATION

No locusts were seen during surveys in Rajasthan

and Gujarat during March.

- FORECAST

*No significant developments are likely.*

#### Afghanistan

- SITUATION

No reports received.

- FORECAST

*No significant developments are likely.*



## Announcements

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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 (ecl@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.

**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 (ecl@fao.org) for details.



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## Glossary of terms

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

**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](http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato ([pceccato@iri.columbia.edu](mailto:pceccato@iri.columbia.edu)).

**2009 events.** The following activities are scheduled or planned:

- **EMPRES/WR survey training.** 2<sup>nd</sup> regional workshop for master survey officers, Agadir, Morocco (30 March – 10 April)
- **CRC Equipment evaluation.** Sprayers and protective clothing testing workshop, Ismailia, Egypt (9-19 May)
- **CRC/SWAC Locust Information.** Inter-regional workshop for Desert Locust Information Officers in the CRC and SWAC, Cairo (27-28 May)
- **CRC Aerial training.** 2<sup>nd</sup> regional aerial training course, Lake Zeway, Ethiopia (7-12 June)
- **CLCPRO.** 5<sup>th</sup> Executive Committee (22-23 June) and 5<sup>th</sup> CLCPRO Session (24-27 June), Agadir (Morocco)
- **CRC Training.** 5<sup>th</sup> Desert Locust sub-regional training course, Damascus, Syria (3-17 July)
- **EMPRES/WR Locust Information.** Regional workshop for Desert Locust Information Officers, Algiers (mid-July, tentative)
- **CRC Planning.** Contingency planning workshop, Cairo (26-31 July)
- **EMPRES/WR Research.** Regional workshop on Desert Locust research, Dakar (early October, tentative)
- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting (mid-December, tentative)
- **EMPRES/WR Steering Committee.** 4<sup>th</sup> EMPRES Steering Committee meeting (mid-December, tentative)

### **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<sup>2</sup>      • band: 1 - 25 m<sup>2</sup>

#### **SMALL**

- swarm: 1 - 10 km<sup>2</sup>      • band: 25 - 2,500 m<sup>2</sup>

#### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup>      • band: 2,500 m<sup>2</sup> - 10 ha

#### **LARGE**

- swarm: 100 - 500 km<sup>2</sup>      • band: 10 - 50 ha

#### **VERY LARGE**

- swarm: 500+ km<sup>2</sup>      • 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.



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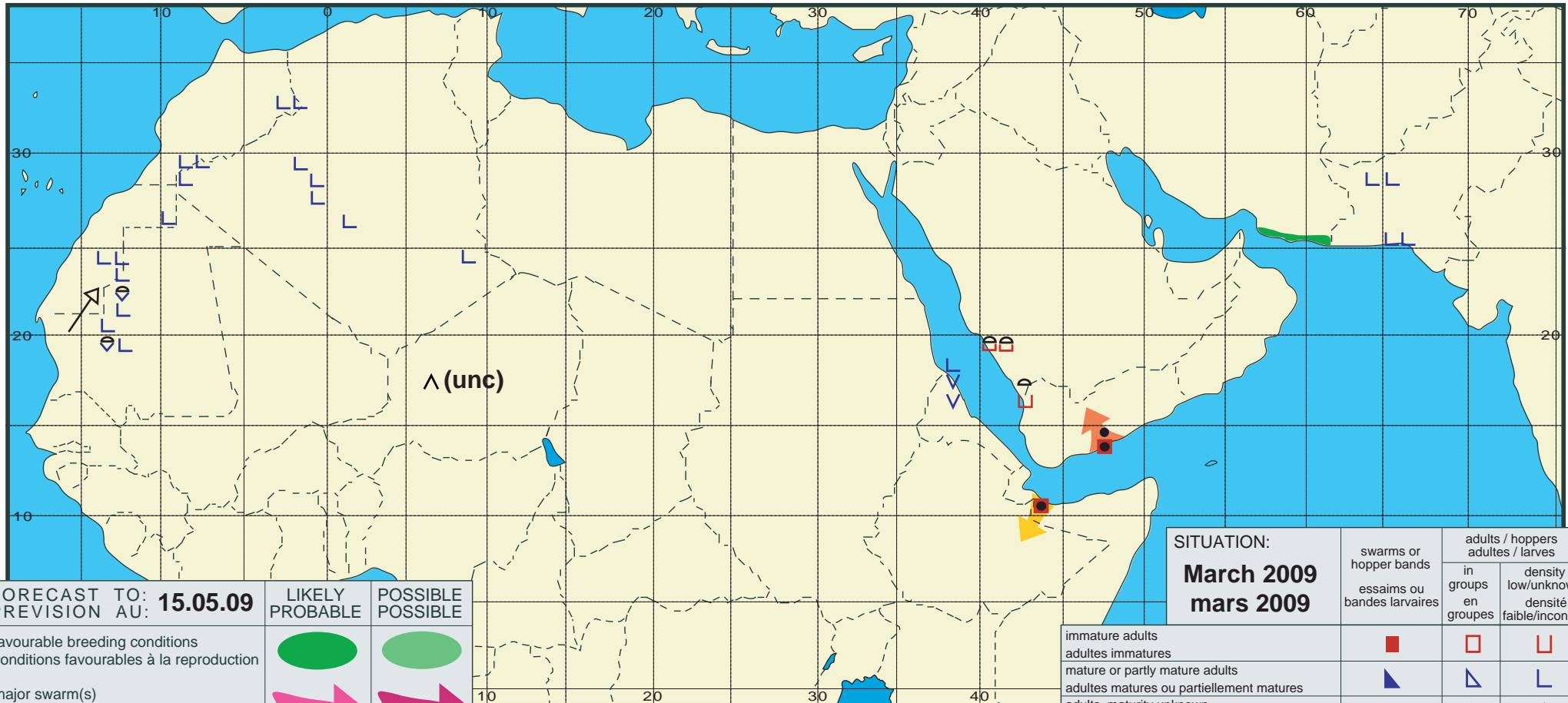




# Desert Locust Summary

## Criquet pèlerin - Situation résumée

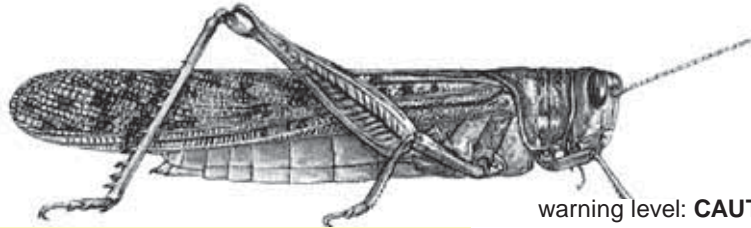
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FORECAST TO: PREVISION AU: <b>15.05.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

<b>SITUATION:</b> <b>March 2009</b> <b>mars 2009</b>	swarms or hopper bands	adults / hoppers	
	essaims ou bandes larvaires	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. 367

(5 May 2009)



## General Situation during April 2009 Forecast until mid-June 2009

The locust situation remained a cause for concern in Yemen and northern Somalia where swarms formed during April and moved to the interior of both countries as well as into northeast Ethiopia. Ground and aerial control operations were undertaken in northern Somalia that included the use of bio-pesticides. Breeding will occur in the three countries with hatching and formation of hopper groups and bands in May. The situation requires intensive monitoring and control in order to reduce the possibility of new swarms forming by mid June that could threaten other countries in the Central Region and perhaps Southwest Asia. Elsewhere, control operations were carried out against hopper infestations on the Red Sea coast of Saudi Arabia. Scattered adults were present in the spring breeding areas in Northwest Africa and Southwest Asia where small-scale breeding may occur during May.

**Western Region.** Scattered solitary adults were present south of the Atlas Mountains in Morocco and Algeria during April. Small-scale breeding is expected to occur in some areas but locust numbers will remain low. No surveys were undertaken in the Sahel in West Africa where vegetation remained dry and temperatures were high. Nevertheless, low numbers of locusts probably persisted in parts of northwest Mauritania and in northern Mali and Niger. A few locusts may start to appear in the summer breeding areas of southern Mauritania in mid-June.

**Central Region.** The situation remained serious in Yemen and Somalia during April as a result of an outbreak that developed in each country in March. Several swarms formed on the coast in northwest Somalia and moved up the escarpment to the plateau. Although nearly 800 ha were treated in northern Somalia, a few swarms escaped and reached northeast Ethiopia. In Yemen, swarms formed on the coast and moved to the interior desert where good rains fell and egg laying was seen. At least one swarm reached the central highlands. Hatching and hopper band formation will occur during May in the three countries that, if not controlled, could lead to the formation of small swarms by mid-June, some of which could eventually move northwest towards Eritrea and Sudan (as the ITCZ move north) or northeast towards the Indo-Pakistan border. In Saudi Arabia, locusts increased in one area on the Red Sea coast from breeding that occurred in December and January. Ground teams treated more than 200 ha of hopper groups and bands. The situation remained calm elsewhere in the region.

**Eastern Region.** Scattered adults were present during April in the spring breeding areas of southeast Iran and western Pakistan. Limited control was undertaken against hoppers in the interior of Pakistan. Small-scale breeding may take place in May in both countries but locust numbers will remain low. There is a low risk that a few small swarms from the Arabian Peninsula and Horn of Africa could reach the Indo-Pakistan border at the end of 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](http://www.fao.org/ag/locusts)



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## DESERT LOCUST BULLETIN



### Weather & Ecological Conditions in April 2009

**Widespread rains fell in early April over the Arabian Peninsula and Horn of Africa, and to a lesser extent in the spring breeding areas in Northwest Africa and Southwest Asia. Ecological conditions improved and were favourable for breeding in all of these areas.**

In the **Western Region**, very little rain fell during April except for light rains at times in the spring breeding areas on the southern side of the Atlas Mountains in Morocco and Algeria. Consequently, ecological conditions were favourable for breeding in western Algeria northwest of Tindouf and in the Saoura Valley near Bechar. Conditions were also favourable in the central Sahara near irrigated farms in the Adrar area. Vegetation was green near In Salah but continued to dry out in the southern Sahara west of Tamanrasset and Djanet. In Morocco, vegetation was green and breeding conditions were favourable in the Draa Valley and Ziz-Ghris Valley along the Algerian border. Further south, annual vegetation was drying out but remained sufficiently green in a few wadis in Western Sahara and in adjacent areas of northern Mauritania for locust survival. No significant rain fell in the Sahel in West Africa where temperatures remained high and vegetation was dry.

In the **Central Region**, good rains fell over the Arabian Peninsula and the Horn of Africa during the first decade of April. In Yemen, light to moderate rains fell in most parts of the highlands and interior (Shabwah, Hadhramaut and Al Mahra), extending to southern Oman. Similar rains fell throughout the spring breeding areas in the interior of Saudi Arabia. In northern Somalia, rains fell on the coast, escarpment and plateau from the Djibouti border to Erigavo. In Ethiopia, good rains fell in the Harar Highlands, reaching the western Ogaden. Consequently, ecological conditions improved and became favourable for breeding in all of these areas. Rains declined during the remainder of the month and only light rains fell on the escarpment in northern Somalia and in the Harar highlands and Ogaden in Ethiopia. Ecological conditions remained dry along both sides of the Red Sea except for the coast between Qunfidah

and Lith, Saudi Arabia where small areas of green vegetation were present.

In the **Eastern Region**, ecological conditions improved during April in the spring breeding areas in western Pakistan and southeast Iran from rains that fell in late March and the first half of April. Consequently, conditions were favourable for small-scale breeding along parts of the coast between Uthal, Pakistan and Jask, Iran as well as in adjacent areas of the interior.



### Area Treated

Ethiopia	60 ha (April)
Pakistan	10 ha (12 April)
Saudi Arabia	239 ha (April)
Somalia	774 ha (April)
Yemen	4,740 ha (March, updated)



### 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 April.

###### • FORECAST

*Isolated adults that may be present in parts of the northwest will gradually move towards the south during the forecast period.*

##### **Mali**

###### • SITUATION

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

###### • FORECAST

*Isolated adults may be present in parts of the Adrar des Iforas where they are expected to persist during the forecast period.*

##### **Niger**

###### • SITUATION

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

###### • Forecast

*Isolated adults may be present in parts of the Tamesna and Air Mountains where they are expected to persist during the forecast period.*

## Chad

### • SITUATION

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

### • FORECAST

*No significant developments are likely.*

## Senegal

### • SITUATION

No locusts were seen during surveys carried out in the north near the Senegal River between Dagana (1631N/1530W) and Matam (1540N/1318W) in April.

### • FORECAST

*No significant developments are likely.*

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

### • FORECAST

*No significant developments are likely.*

## Algeria

### • SITUATION

During April, scattered mature solitarious adults persisted in the central Sahara near irrigated cropping areas in the Adrar (2753N/0017W) region. A few solitarious adults were also present west of Beni Abbes (3011N/0214W), In Salah (2712N/0229E) and Djanet (2434N/0930E). No locusts were seen near Tindouf (2741N/0811W) and Tamanrasset (2250N/0528E).

### • FORECAST

*Low numbers of solitarious adults are likely to persist in parts of the central and western Sahara. Small-scale breeding could occur in favourable areas between Tindouf and Beni Abbes as well as near irrigated areas near Adrar.*

## Morocco

### • SITUATION

There was an increase of reports of scattered mature solitarious adults during April along the Algerian border from northeast of Zag (2800N/0920W) to Bouarfa (3232N/0159W). Some adults were seen copulating in the Draa Valley southwest of Tata (2944N/0758W) and Erfoud (3128N/0410W). Low numbers of mature solitarious adults were also seen between Guelmim (2859N/1003W) and Tan-tan (2827N/1109W). Scattered immature adults persisted in the northeastern part of Western Sahara near Bir Lahlou (2619N/0933W).

### • FORECAST

*Limited hatching is likely to occur along the Algerian border in the Draa and Ziz-Ghris valleys but locust numbers will remain low.*

## Libyan Arab Jamahiriya

### • SITUATION

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

### • FORECAST

*No significant developments are likely.*

## Tunisia

### • SITUATION

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

### • FORECAST

*No significant developments are likely.*

## CENTRAL REGION

### Sudan

#### • SITUATION

Scattered immature solitarious adults at densities of 200 adults/ha were seen at one location on the Red Sea coast near Aqiq (1813N/3811E) on 20-22 April. No locusts were seen elsewhere on the coast between Suakin (1906N/3719E) and the Eritrean border.

#### • Forecast

*There may be a low risk of a few swarms appearing in summer breeding areas at the end of the forecast period from the Horn of Africa, or adults from the winter breeding areas along the Red Sea coast.*

### Eritrea

#### • SITUATION

No locusts were seen during surveys carried out on the Red Sea coastal plains on 22-23 April.

#### • FORECAST

*There may be a low risk of a few swarms appearing in summer breeding areas at the end of the forecast period from the Horn of Africa.*

### Ethiopia

#### • SITUATION

During April, locusts moved from northern Somalia towards Dire Dawa (0935N/4150E). On the 6<sup>th</sup>, an immature swarm crossed the border at Abdirkadi (1036N/4240E). Isolated immature and mature solitarious adults were seen on the 9-11<sup>th</sup> along the railway near Aysha (1045N/4234E) and the Djibouti and Somalia borders. On the 25-26<sup>th</sup>, at least one swarm moved to within about 50 km of Dire Dawa and a 26 km<sup>2</sup> swarm was partially sprayed (60 ha) the next day. Locals reported groups of adults in nearby areas.



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### • FORECAST

*There is a moderate risk that a few more groups of adults and small swarms could appear in the Harar Highlands, on the escarpment near Dire Dawa and Jijiga, and in the Ogaden in early May. The adults will probably disperse in these areas and breed on a small to moderate scale with hatching and possible hopper band formation during May.*

### Djibouti

#### • SITUATION

Scattered mature gregarious adults and a few groups were seen along the Somalia border between the coast and Holhol (1118N/4255E) on 14-19 April.

#### • FORECAST

*No significant developments are likely.*

### Somalia

#### • SITUATION

Nearly two dozen medium density late instar hopper groups and bands, mixed with fledglings and mature solitary adults and groups, were present on the northwest coast near Silil (1058N/4326E) during the first decade of April. A few hopper bands and groups of mature adults were also reported on the escarpment north of Boroma (0956N/4313E), indicating that previous breeding was more widespread than expected. A large immature swarm moved up the escarpment towards Ethiopia on the 6<sup>th</sup>, and a few other immature and mature swarms moved east along the escarpment towards Burao (0931N/4533E) in the following days. Some egg laying was reported on the coast and escarpment near Lughaye (1041N/4356E) and on the plateau east of Hargeisa (0931N/4402E). On 20-23 April, several mature swarms moved from the coast up the escarpment towards Boroma while other mature swarms moved east of Berbera (1028N/4502E) and up the escarpment to lay eggs. Aircraft sprayed 550 ha (with Green Muscle) and ground teams treated 224 ha in April.

#### • FORECAST

*Hatching is expected to occur in early May on the escarpment and plateau between Boroma and Erigavo, and to a lesser extent on the northwest coast near Lughaye. Hoppers may form small groups and bands, and fledge from early June onwards, causing*

*small groups and perhaps a few small swarms to form by mid-month.*

### Egypt

#### • SITUATION

No locusts were seen during surveys carried out in April in the Western Desert near Sh. Oweinat (2219N/2845E), along Lake Nasser near Tushka (2247N/3126E) and Abu Simbel (2219N/3138E), and on the Red Sea coast between Berenice (2359N/3524E) and the Sudanese border.

#### • FORECAST

*No significant developments are likely.*

### Saudi Arabia

#### • SITUATION

During April, groups of third to fifth instar hoppers and nearly two dozen very small hopper bands, mixed with solitary fledglings and immature adults at densities up to 400 adults/ha were present along a 40 km stretch of the Red Sea coast between Lith (2008N/4016E) and Qunfidah (1909N/4107E). Ground teams treated 239 ha. No locusts were seen elsewhere on the coast or in the interior.

#### • FORECAST

*Any hoppers that remain between Lith and Qunfidah will fledge by early June and, thereafter, locust numbers are expected to decline as vegetation dries out.*

### Yemen

#### • SITUATION

During the first half of April, small immature swarms progressively moved northwest from the southern coast towards the interior, reaching Mayfa'ah (1417N/4734E) on the 4<sup>th</sup>, Ataq (1435N/4649E) on the 5<sup>th</sup>, Bayhan (1452N/4545E) on the 8<sup>th</sup>, Marib (1527N/4519E) on the 12<sup>th</sup>, then moving east towards Wadi Hadhramaut, reaching Shebam (1555N/4837E) on the 14<sup>th</sup>. There were several more reports of mature swarms between Al Abr (1608N/4714E) and Sayun (1559N/4844E) in the following days. Some of the swarms may have veered further north towards Minwakh (1650N/4812E) and Hazar (1744N/4901E) as groups of gregarious adults at densities up to 50 adults/m<sup>2</sup> were laying eggs on 19-22 April. Adult groups at densities up to 15 adults/m<sup>2</sup> also laid eggs between Ataq and Bayhan. On the 27<sup>th</sup>, an immature swarm was seen in the central highlands near Dhamar (1433N/4424E) that split into two and dispersed towards the southwest and northwest.

#### • FORECAST

*Moderate scale hatching is expected to start in early May in the interior of Shabwah and Hadhramaut and, perhaps to a lesser extent in Al Mahra. In some areas, hoppers are likely to form small groups and*



bands. Fledging should start in early June, causing small swarms to form by mid-month. Locusts in the highlands may persist, mature and breed, or migrate either to the Red Sea coast or to the interior.

#### Oman

##### • SITUATION

No locusts were seen during surveys carried out in Dakhiliya, Musandam, Batinah and Muscat regions in April.

##### • FORECAST

*There is a moderate risk that adults and perhaps a few small groups arrived from eastern Yemen in the extreme south of Dhofar where small-scale breeding could occur in areas of recent rains. At the end of the forecast period, there is a low risk that a few swarms may appear in the south and move northwards along the central coast.*

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

##### • FORECAST

*No significant developments are likely.*

#### **EASTERN REGION**

#### Iran

##### • SITUATION

During April, isolated mature adults were seen in the last week at one place on the southeast coast near Chabahar (2517N/6036E) and at two places in the interior west of Bampur (2711N/6028E). No locusts were seen elsewhere on the coast or interior during a joint survey with Pakistan.

##### • FORECAST

*Small-scale breeding may take place in early May in areas that remain favourable along the coast and interior of the southeast. Thereafter, conditions will start to dry out and locust numbers are likely to decline.*

#### Pakistan

##### • SITUATION

During the second half of March, isolated immature and mature solitary adults persisted in the spring breeding areas in Baluchistan near Panjgur (2658N/6406E) and Uthal (2548N/6637E).

During April, isolated immature adults were seen at two places near Kharan (2832N/6526E) and at one location southwest of Panjgur. Ground teams treated 10 ha of second and third instar hoppers in the northern interior of Baluchistan southwest of Nushki near Mull (2920N/6545E) on 12 April.

##### • Forecast

*Small-scale breeding may take place in early May in areas that remain favourable along the coast and*

*interior of Baluchistan. Thereafter, conditions will start to dry out and locust numbers are likely to decline. There is a low risk that a few small swarms from the Arabian Peninsula and the Horn of Africa could reach the Indo-Pakistan border at the end of the forecast period.*

#### India

##### • SITUATION

No locusts were seen during surveys in Rajasthan and Gujarat during April.

##### • FORECAST

*There is a low risk that a few small swarms from the Arabian Peninsula and Horn of Africa could reach the Indo-Pakistan border at the end of the forecast period.*

#### Afghanistan

##### • SITUATION

No reports received.

##### • FORECAST

*No significant developments are likely.*



## Announcements

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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



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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.

**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 (eclco@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](http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato (pceccato@iri.columbia.edu).

**2009 events.** The following activities are scheduled or planned:

- **CRC Equipment evaluation.** Sprayers and protective clothing testing workshop, Ismailia, Egypt (9-19 May)
- **CRC/SWAC Locust Information.** Inter-regional workshop for Desert Locust Information Officers in the CRC and SWAC, Cairo (27-28 May)
- **CRC Aerial training.** 2<sup>nd</sup> regional aerial training course, Lake Zeway, Ethiopia (7-12 June)
- **CLCPRO.** 5<sup>th</sup> Executive Committee (22-23 June) and 5<sup>th</sup> CLCPRO Session (24-27 June), Agadir (Morocco)
- **CRC Training.** 5<sup>th</sup> Desert Locust sub-regional training course, Damascus, Syria (3-17 July)
- **EMPRES/WR Locust Information.** Regional workshop for Desert Locust Information Officers, Algiers (13-15 July)
- **CRC Planning.** Contingency planning workshop, Cairo (26-31 July)
- **EMPRES/WR Research.** Regional workshop on Desert Locust research, Dakar (early October, tentative)

- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting (mid-December, tentative)
- **EMPRES/WR Steering Committee.** 4<sup>th</sup> EMPRES Steering Committee meeting (mid-December, tentative)



## 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<sup>2</sup>      • band: 1 - 25 m<sup>2</sup>

#### **SMALL**

- swarm: 1 - 10 km<sup>2</sup>      • band: 25 - 2,500 m<sup>2</sup>

#### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup>      • band: 2,500 m<sup>2</sup> - 10 ha

#### **LARGE**

- swarm: 100 - 500 km<sup>2</sup>      • band: 10 - 50 ha

#### **VERY LARGE**

- swarm: 500+ km<sup>2</sup>      • 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.



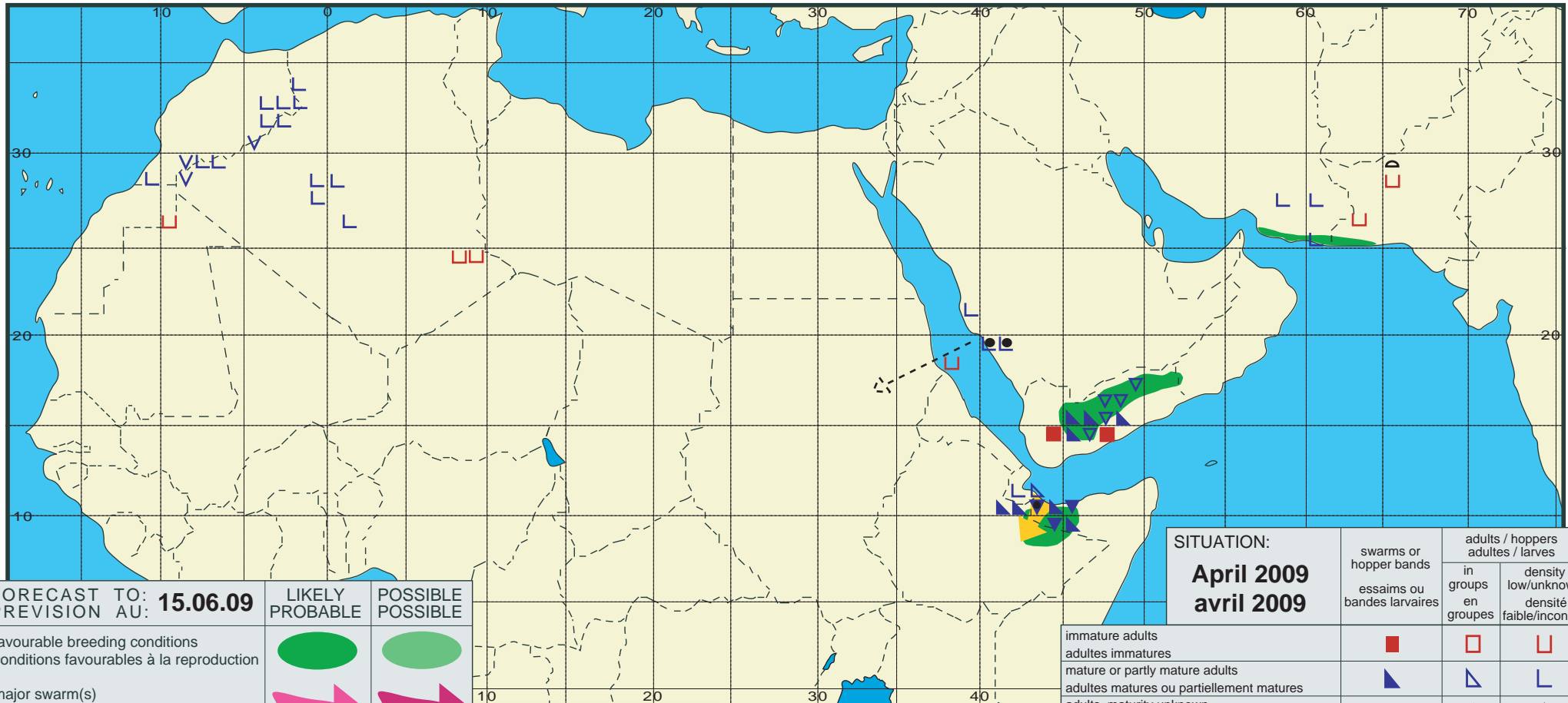
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# Desert Locust Summary

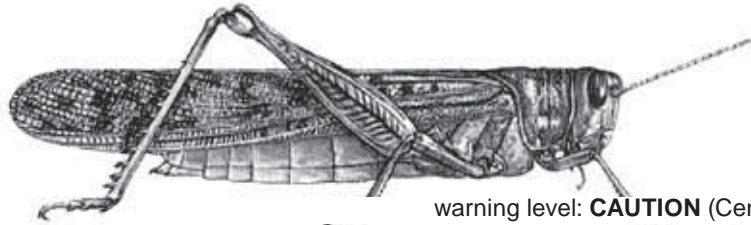
## Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: <b>15.06.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>April 2009</b> <b>avril 2009</b>	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 & Eastern Region)

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 368

(2 June 2009)



## General Situation during May 2009 Forecast until mid-July 2009

The locust situation deteriorated in Yemen and northern Somalia where hopper bands and swarms formed by the end of May. Although control operations have been mounted in both countries as well as in adjacent areas of Ethiopia, there is a high risk that more small swarms will form by mid June in northern Somalia and Yemen. While most of the swarms in northern Somalia should remain on the plateau where good rains have fallen, there is a chance that some swarms could move northeast towards southern Arabia and perhaps reach the summer breeding areas along the Indo-Pakistan border. Other swarms could move into Ethiopia and continue to the summer breeding areas in Sudan and western Eritrea. These migration routes will vary, depending on the position of the ITCZ when the emigration occurs. In Yemen, new swarms will form in early June. Unless more rains fall, most of these swarms are likely to move into cropping areas and to the central highlands, while some swarms could move towards Oman and cross the Arabian Sea to Pakistan and India. All countries need to be alert and take the necessary precautions.

**Western Region.** The locust situation remained calm during May. Small-scale breeding occurred in Morocco and in the central Sahara in Algeria. Ground control was undertaken in Algeria. No surveys were carried out in the Sahel in West Africa. Low numbers of locusts are expected to appear in the

summer breeding areas in the Sahel and breed with the onset of the seasonal rains. The situation in the Central Region is not expected to affect the Western Region.

**Central Region.** Breeding occurred in northern Somalia and the interior of Yemen that caused numerous hopper bands to form during May. By the end of the month, new swarms formed in northern Somalia along the escarpment and plateau. A few swarms moved into adjacent areas of Ethiopia. In Yemen, ground control started in late May against hopper bands present in some of the same interior areas as during the 2007 locust upsurge. However, ecological conditions are less favourable this year, so new swarms that start forming in early June are unlikely to remain in the interior desert. Instead, most of them are expected to move into cropping areas in Wadi Hadhramaut and the central highlands. There is a moderate risk of swarms from Yemen and northern Somalia moving northeast along the eastern coast of Oman. Elsewhere, ground teams in Saudi Arabia treated very small hopper bands in one area along the Red Sea coast and scattered adults were present along the Nile River in northern Sudan, in southern Egypt and in northern Oman.

**Eastern Region.** Locust populations remained low in the spring breeding areas during May. Ground teams treated hopper groups in southeast Iran and scattered adults were present in western Pakistan. There is a low risk that a few small swarms from the Arabian Peninsula and the Horn of Africa could reach the Indo-Pakistan border from about mid June onwards.

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](http://www.fao.org/ag/locusts)





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## DESERT LOCUST BULLETIN



### Weather & Ecological Conditions in May 2009

**Good rains fell in mid May over the Horn of Africa causing breeding conditions to improve. Elsewhere in the recession area, no significant rain fell and ecological conditions were not favourable for breeding.**

In the **Western Region**, very little rain fell during May and ecological conditions were predominantly dry and unfavourable for Desert Locust. Conditions were hot and dusty in the Sahel prior to the arrival of the seasonal rains, which is not expected for another month. The Inter-Tropical Convergence Zone (ITCZ) was located further south than usual in May. North of the ITCZ, strong northeasterly winds prevailed at times and maximum temperatures ranged from 35C to 46C. In Mauritania, traces of rain fell at Nouakchott and Bir Moghrein on the 21<sup>st</sup>. Ecological conditions were not favourable for locust survival or breeding except for a few spots in the north but even these were nearly dry. In Niger, light to moderate local showers fell on the 7<sup>th</sup> in the In Gall area of southern Tamesna between Agadez and Tassara, which may be sufficient for local breeding. Light rains may have fallen in the northeast in parts of the Tenere Desert and Djado Plateau. In Algeria, green vegetation persisted in the central Sahara. Light rains fell in the extreme south but vegetation remained dry there as well as in the southeast near Illizi.

In the **Central Region**, good rains fell over most of northern Somalia and eastern Ethiopia during the second decade of May. In northern Somalia, vegetation was drying out on the northwest coast but was becoming green on the escarpment and plateau. In adjacent areas of northeast Ethiopia, vegetation was green or becoming green north of Jijiga. By mid-month, the southwest monsoon winds had become established over the Horn of Africa. In the interior of Yemen, ecological conditions were favourable for breeding at the mouth of Wadi Hadhramaut, in the numerous wadis to the north between Minwakh and Thamud, and at the base of the foothills along the edge of Ramlat Sabatayn. Vegetation was drier on the Ramlat Sabatayn plains in the absence of any rain. In Saudi Arabia, good rains fell in the central and

northern interior during the first half of May. Vegetation was green but starting to dry out in some areas. In Oman, light rains fell early in the month along parts of the central and northern coast where annual vegetation was green in places. In southern Egypt, heavy rains fell on 7-9 May in the Western Desert and light to moderate rains were reported near Lake Nasser and on the Red Sea coast near Marsa Alam.

In the **Eastern Region**, light rains ahead of the seasonal monsoon may have fallen in northern parts of the summer breeding areas between Bikaner, India and Bahawalpur, Pakistan during the first decade of May. Nevertheless, vegetation remained dry on both sides of the border. In the spring breeding areas, vegetation continued to dry out in western Pakistan and southeast Iran.



### Area Treated

More than 7,500 ha were treated during May as follows:

Algeria	870 ha (27-30 April)
	1,770 ha (May)
Ethiopia	452 ha (May)
Iran	3,000 ha (May)
Saudi Arabia	30 ha (May)
Somalia	1,100 ha (May)
Yemen	1,275 ha (24-29 May)



### 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 May.

###### • FORECAST

*Isolated adults may appear in a few places in the southeast and start to breed on a small scale once the seasonal rains commence.*

##### **Mali**

###### • SITUATION

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

###### • FORECAST

*Isolated adults may be present in parts of the Adradas lforas where they are expected to persist. Small-scale breeding will start once the seasonal rains commence.*

## Niger

### • SITUATION

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

### • FORECAST

*Isolated adults may be present in southern Tamesna where small-scale breeding may occur in areas of recent rains near In Gall and eventually expand to other areas once the seasonal rains commence.*

## Chad

### • SITUATION

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

### • FORECAST

*Scattered adults may appear by the end of the forecast period in the northeast and start to breed on a small scale once seasonal rains commence.*

## Senegal

### • SITUATION

No reports were received during May.

### • FORECAST

*No significant developments are likely.*

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

### • FORECAST

*No significant developments are likely.*

## Algeria

### • SITUATION

From 27 April to the end of May, numerous small infestations of solitary hoppers of all instars and a few *transiens* hoppers were present and forming small groups, at densities up to 100 hoppers/m<sup>2</sup>, east of Adrar near Matriouene (2749N/0116E) in the central Sahara. Ground teams treated 2,640 ha. Scattered solitary hoppers of all instars mixed with immature solitary adults were present southeast of In Salah in W. El Botha (2628N/0330E). Scattered immature solitary adults were also present west of Beni Abbes (3011N/0214W) and mature adults were seen west of Djanet (2434N/0930E).

### • FORECAST

*Locust numbers are expected to decrease in the central Sahara but small infestations could persist near irrigated areas in Adrar. Scattered adults may appear further south in areas of recent rainfall to the west and southeast of Tamanrasset where small-scale breeding could eventually occur in places that receive more rain.*

## Morocco

### • SITUATION

During May, isolated mature solitary adults persisted along the Algerian border south of Tata (2944N/0758W), and between Erfoud (3128N/0410W) and Bouarfa (3232N/0159W). A few adults laid eggs in the Ziz-Ghris valley south of Erfoud. Small-scale breeding occurred in the Draa Valley southwest of Tata where third to fifth instar solitary hoppers were concentrated in two places. Scattered hoppers of all instars were seen nearby.

### • FORECAST

*Limited hatching is likely to occur along the Algerian border in the Draa and Ziz-Ghris valleys early in the forecast period but locust numbers will remain low and gradually decline as vegetation dries out.*

## Libyan Arab Jamahiriya

### • SITUATION

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

### • 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

During May, scattered mature solitary adults were present in irrigated fields along the Nile River near Atbara (1742N/3400E) and Dongola (1910N/3027E). A few small groups with densities up to 1,500 adults/ha were seen at one place near Atbara.

### • FORECAST

*Scattered adults are expected to persist near Atbara and Dongola. Low numbers of adults are likely to appear in the summer breeding areas in the interior (Khartoum, Northern, River Nile, Kassala, Red Sea, White Nile and Northern Kordofan States) and lay eggs once seasonal rains commence. There is a low risk of a few swarms appearing in the summer breeding areas from the Horn of Africa.*



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### Eritrea

#### • SITUATION

During May, scattered solitary hoppers and adults were seen during surveys on the Red Sea coast near Sheib (1551N/3903E).

#### • FORECAST

*Locust numbers will decline on the Red Sea coast as vegetation dries out. There is a low risk of a few swarms appearing in the western lowlands from the Horn of Africa.*

### Ethiopia

#### • SITUATION

During the first week of May, two immature swarms were treated by air (220 ha) near Dire Dawa (0935N/4150E) on the 1<sup>st</sup> and 7<sup>th</sup>. At mid-month, there were unconfirmed reports of mature gregarious adults between Dire Dawa and Jijiga (0922N/4250E). On the 31<sup>st</sup>, ground and aerial operations treated 232 ha of immature swarms east of Dire Dawa.

#### • FORECAST

*There is a high risk that small groups of adults and immature swarms could appear in early June in the Harar Highlands between Dire Dawa and Jijiga, and eventually breed in areas of recent rainfall. However, some of the swarms may continue moving northwest towards Amhara and Tigray or northeast to Somalia.*

### Djibouti

#### • SITUATION

No reports were received during May.

#### • FORECAST

*There is a low risk to moderate risk that a few swarms may arrive from adjacent areas of northern Somalia and Ethiopia; however, they are not likely to remain in the country.*

### Somalia

#### • SITUATION

During the last week of April and first half of May, hatching and band formation occurred in a few places on the northwest coast. By mid-May, medium to high density second to fifth instar hopper groups, bands and fledglings were reported south of Lughaye (1041N/4356E) at the foot of the escarpment as well as in wadis on the escarpment near Waraqadhigta (1010N/4337E). Scattered solitary hoppers were seen nearby on the coast, at the base of the

escarpment south of Berbera (1028N/4502E) and on the plateau near Burao (0931N/4533E). During the last week of May, aerial operations treated 1,100 ha of late instar hopper bands in the above areas, including 600 ha using Green Muscle™. Several immature swarms were reported on the plateau and escarpment east of Hargeisa on the 28-31<sup>st</sup>.

#### • FORECAST

*Small immature swarms are expected to continue to form during the first half of June. Although the swarms should remain on the plateau in areas of recent rain, there is a moderate risk that some swarms could move east along the escarpment and plateau towards the northeast and the Gulf of Aden. Any swarms that move up the plateau near Boroma are likely to continue into Ethiopia.*

### Egypt

#### • SITUATION

During May, isolated immature solitary adults were present near Lake Nasser at Tushka (2247N/3126E). No locusts were seen during surveys carried out in the Western Desert near Sh. Oweinat (2219N/2845E) and Abu Simbel (2219N/3138E).

#### • FORECAST

*No significant developments are likely.*

### Saudi Arabia

#### • SITUATION

During the first week of May, ground teams treated 30 ha of very small third to fifth instar hopper bands varying from 4 to 30 m<sup>2</sup> in size, fledglings and immature solitary adults on the Red Sea coast between Qunfidah (1909N/4107E) and Lith (2008N/4016E). Isolated mature solitary adults were seen in the interior on the eastern side of the Al Hijaz Mountains south of Zalim (2248N/4210E). No locusts were reported elsewhere in the spring breeding areas of the interior.

#### • FORECAST

*Any hoppers that remain between Lith and Qunfidah will fledge by early June and, thereafter, locust numbers are expected to decline as vegetation dries out.*

### Yemen

#### • SITUATION

In early May, hatching occurred in the interior along the edge of Ramlat Sabatayn between Al Hazm (1609N/4447E), Ataq (1435N/4649E), Al Abr (1608N/4714E) and Wadi Hadhramaut, and north of W. Hadhramaut between Minwakh (1650N/4812E) and Thamud (1717N/4955E). Hoppers formed small groups and numerous small bands with densities up to 200 hoppers/m<sup>2</sup> in all of these areas except between Al Hazm and Bayhan (1452N/4545E) where only

solitarious hoppers were present. By the last week of the month, hoppers started fledging and immature gregarious adults were seen in at least one place. Scattered mature solitarious adults were also present including some gregarious adults near Thamud. Some adults were copulating on the 17<sup>th</sup> near Nuqub (1458N/4557E). Ground control operations commenced during the last week and treated 1,275 ha of hopper bands in Shabwah, Minwakh and southwest of Thamud.

- **FORECAST**

*Fledging will continue in early June and small swarms are expected to form. Some hatching is likely to occur in early June but further breeding will be limited unless more rains fall in the interior. If rains do not fall, the swarms are likely to move into crops in W. Hadhramaut and the central highlands, and perhaps to the southern coast then northeast towards Oman. There is a moderate risk of a few small swarms from northern Somalia reaching the southern coast between Aden and Sayhut in early June and continuing to the northeast.*

#### **Oman**

- **SITUATION**

During May, isolated immature and mature solitarious adults were present on the Batinah coast near Jamma (2333N/5733E).

- **FORECAST**

*Locust numbers will decline on the northern coast as vegetation dries out. There is a moderate risk that a few swarms may appear in the south from Yemen or northern Somalia and move northwards along the central coast during June.*

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

- **FORECAST**

*No significant developments are likely.*

#### **EASTERN REGION**

##### **Iran**

- **SITUATION**

During the first half of May, scattered immature solitarious adults were present in the Jaz Murian Basin southeast of Kahnuj (2757N/5742E). Ground teams treated 3,000 ha containing small groups of second instar gregarious hoppers in Jaz Murian east of Kahnuj.

- **FORECAST**

*Locust numbers will decline in the spring breeding areas in the southeast as vegetation dries out.*

#### **Pakistan**

- **SITUATION**

During the first half of May, isolated immature and mature solitarious adults were present in the interior of Baluchistan near Panjgur (2658N/6406E) and Kharan (2832N/6526E).

- **FORECAST**

*Locust numbers will decline in the spring breeding areas as vegetation dries out. There is a low risk that a few small swarms from the Arabian Peninsula and the Horn of Africa could reach Tharparkar and Cholistan from mid June onwards.*

#### **India**

- **SITUATION**

No locusts were seen during surveys in Rajasthan and Gujarat during May.

- **FORECAST**

*There is a low risk that a few small swarms from the Arabian Peninsula and Horn of Africa could reach Gujarat and Rajasthan from mid June onwards.*

#### **Afghanistan**

- **SITUATION**

No reports received.

- **FORECAST**

*No significant developments are likely.*



## **Announcements**

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## DESERT LOCUST BULLETIN

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**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 (eclod@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](http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato (pceccato@iri.columbia.edu).

**2009 events.** The following activities are scheduled or planned:

- **CRC Aerial training.** 2<sup>nd</sup> regional aerial training course, Lake Zeway, Ethiopia (7-12 June)
- **CLCPRO.** 5<sup>th</sup> Executive Committee (22-23 June) and 5<sup>th</sup> CLCPRO Session (24-27 June), Agadir (Morocco)
- **CRC Training.** 5<sup>th</sup> Desert Locust sub-regional training course, Damascus, Syria (3-17 July)
- **EMPRES/WR Locust Information.** Regional workshop for Desert Locust Information Officers, Algiers (13-15 July)
- **CRC Planning.** Contingency planning workshop, Cairo (26-31 July)
- **EMPRES/WR Research.** Regional workshop on Desert Locust research, Dakar (5-9 October)

- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting (mid-December, tentative)
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## 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<sup>2</sup>      • band: 1 - 25 m<sup>2</sup>

#### **SMALL**

- swarm: 1 - 10 km<sup>2</sup>      • band: 25 - 2,500 m<sup>2</sup>

#### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup>      • band: 2,500 m<sup>2</sup> - 10 ha

#### **LARGE**

- swarm: 100 - 500 km<sup>2</sup>      • band: 10 - 50 ha

#### **VERY LARGE**

- swarm: 500+ km<sup>2</sup>      • 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.



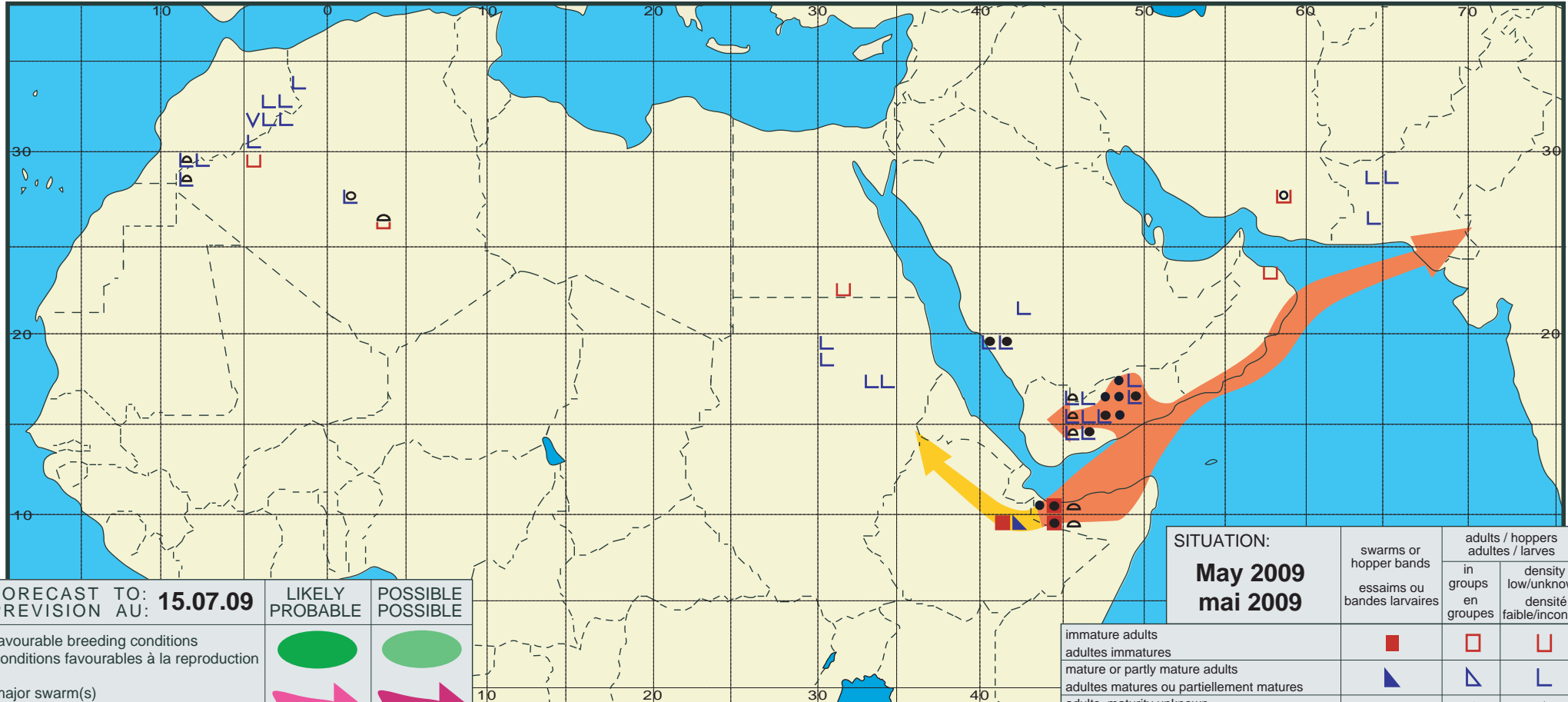
No. 368



# Desert Locust Summary

## Criquet pèlerin - Situation résumée

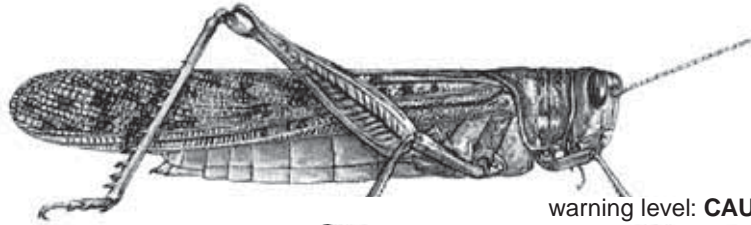
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FORECAST TO: PREVISION AU: <b>15.07.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>May 2009</b> <b>mai 2009</b>	swarms or hopper bands	adults / hoppers	
	essaims ou bandes larvaires	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. 369

(2 July 2009)



## General Situation during June 2009 Forecast until mid-August 2009

The locust situation remained serious in the Horn of Africa in early June as small swarms formed in northern Somalia and moved to eastern Ethiopia. Although there had been a high risk of small swarms moving from Yemen and northern Somalia towards the Indo-Pakistan border, this did not occur. By the end of June, a few small swarms dispersed in the highlands of northern Ethiopia, and only scattered adults were reported in northern Somalia and Yemen. Consequently, the situation has improved in all three countries. During the forecast period, there is a moderate risk that scattered adults and perhaps a few small groups of adults from northern Ethiopia may appear in the summer breeding areas in Sudan and Eritrea and breed with the onset of the rains. Elsewhere, small-scale breeding is expected to occur in the summer breeding areas in the Sahel of West Africa and along both sides of the Indo-Pakistan border once seasonal rains commence. Locust numbers are likely to remain low and below threatening levels this summer.

**Western Region.** The locust situation remained calm during June. Small-scale breeding continued in Morocco near the Algerian border and ground control operations were undertaken. Isolated adults were present near irrigated areas in parts of the central Sahara in Algeria. No locusts were reported in West Africa but unusually heavy rain fell in northern Mauritania and parts of Western Sahara where small-scale breeding could occur. Light rain in parts

of southern Mauritania, northern Mali and Niger will allow ecological conditions to improve and small-scale breeding is likely to commence during the forecast period.

**Central Region.** Several small immature swarms formed in northwest Somalia in early June. Some of the swarms moved into eastern Ethiopia while others moved east across northern Somalia. It was not clear if any swarms reached the Gulf of Aden and crossed to Yemen. A few of the swarms in Ethiopia continued into the northern highlands where they dispersed and were difficult to treat. Conditions dried out in the interior of Yemen and only scattered adults remained. Local breeding occurred in a few places along the Nile River in northern Sudan, and a few solitary adults appeared in the summer breeding areas in Northern Kordofan. No locusts were reported elsewhere in the region. During the forecast period, small-scale breeding is likely in the summer breeding areas in Sudan and western Eritrea, and perhaps in northern Ethiopia. Small-scale breeding may occur in areas of recent rains on the Red Sea coast in Yemen.

**Eastern Region.** Local breeding continued during June in the interior of southeast Iran and ground teams treated more than 5,000 ha of hoppers. No locusts were reported in Pakistan or India. During the forecast period, small-scale breeding is likely to occur along both sides of the Indo-Pakistan border in areas that receive 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.

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Facsimile: +39 06 570 55271

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Internet: [www.fao.org](http://www.fao.org)

DLIS: [www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)



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## DESERT LOCUST BULLETIN



### Weather & Ecological Conditions in June 2009

**Heavy rains in northern Mauritania and Western Sahara and local showers in parts of the northern Sahel in West Africa during June should allow ecological conditions to improve for summer breeding. At the end of June, monsoon rains had commenced in the summer breeding areas in India. Ecological conditions dried out in the interior of Yemen and in northern Somalia.**

In the **Western Region**, good rains fell in parts of the summer breeding areas in the northern Sahel in mid-June. Unusually heavy rains fell on 14-19 June in northern Mauritania between Zouerate and Bir Moghreïn and in adjacent areas of Western Sahara. The heaviest showers were reported near Zouerate where 110 mm fell in two days. Light rain fell near Atar and moderate showers were reported in the central and southeastern parts of the summer breeding areas in Mauritania. Light rains fell from the Adrar des Iforas in northern Mali to the Air Mountains and the Termit area in Niger. As a result of these rains, ecological conditions began to improve slightly in parts of the summer breeding areas in the northern Sahel of Mauritania, Mali and Niger. In Northwest Africa, annual vegetation was drying out south of the Atlas Mountains in Morocco near the border of Algeria, in the Ziz-Ghris and Draa valleys and near Bouarfa. In Algeria, dry conditions prevailed in the central and southern Sahara except near irrigated areas in the Adrar region where vegetation was green.

In the **Central Region**, light rains fell during the first week of June in the summer breeding areas of Sudan between El Fasher and Geneina, from Ed Dueim to Kassala and in the Red Sea Hills. Thereafter, rainfall remained south of 13N. Vegetation was becoming green in parts of eastern Sudan between Gedaref and Kassala, but remained dry in Northern Kordofan and in the Northern State except for cropping areas along the Nile River. In the Horn of Africa, light rains fell at times over the Harar Highlands in eastern Ethiopia and extended to the Somali plateau near Hargeisa. Vegetation remained green in these areas but was dry or drying out elsewhere in northern Somalia. Good rains fell in the highlands of Amhara and Tigray in

northern Ethiopia where vegetation was green. Light to moderate rains fell at times on the Red Sea coast and in the nearby mountains between Qunfidah, Saudi Arabia and the southern Tihama plains in Yemen, which should be sufficient to allow ecological conditions to improve for breeding. Vegetation was dry or drying out in the interior of Yemen because of a lack of rainfall since May.

In the **Eastern Region**, light to moderate pre-monsoon rains fell in parts of northeast Rajasthan during the first half of June. By the end of the month, monsoon showers had covered most of Gujarat and reached southern Rajasthan. Light rains fell in parts of the spring breeding areas of western Pakistan and southeast Iran but vegetation continued to dry out except for western portions of the Jaz Murian Basin near Kahnuj, Iran.



### Area Treated

More than 9,000 ha were treated during June as follows:

Ethiopia	552 ha (May, updated)
	2,207 ha (June)
Iran	0 ha (May, corrected)
	5,500 ha (June)
Morocco	1,557 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

*Isolated adults may appear in areas of recent rain near Zouerate and in the south and southeast, and breed on a small scale. Breeding is likely to extend to central and western parts of the south if these areas receive rain during the forecast period.*

##### **Mali**

###### • SITUATION

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

###### • FORECAST

*Isolated adults may be present in parts of the Adrar des Iforas and breed on a small scale if more rains fall.*

## Niger

### • SITUATION

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

### • FORECAST

*Isolated adults are likely to be present in southern Tamesna and breed on a small scale if more rains fall.*

## Chad

### • SITUATION

No reports were received during June.

### • FORECAST

*Scattered adults may appear in the northeast and start to breed on a small scale if rains fall.*

## 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, Guinea Bissau, Liberia, Nigeria, Sierra Leone and Togo**

### • FORECAST

*No significant developments are likely.*

## Algeria

### • SITUATION

During June, isolated mature solitary adults were present in a few irrigated perimeters in the central Sahara between Adrar (2753N/0017W) and In Salah (2712N/0229E), and in a wadi to the west of Tamanrasset (2250N/0528E) in the south.

### • FORECAST

*Small infestations could persist near irrigated areas in Adrar. Scattered adults may appear further south and breed on a small scale if rains fall.*

## Morocco

### • SITUATION

During the first half of June, solitary and *transiens* fifth instar hoppers and fledglings, at densities of up to 5 locusts/m<sup>2</sup>, were present in the Draa Valley and along the Algerian border from south of Tata (2944N/0758W) to Erfoud (3128N/0410W). By mid-month, most of the hoppers had fledged and immature solitary and *transiens* adults were seen at densities of about 250 adults/ha except near Ksar Chair (2907N/0759W) where up to 2,000 adults/ha were present. On the 17<sup>th</sup>, solitary adults were seen laying eggs south of Guelmim (2859N/1003W). In the northeast, locust densities increased near Figuig (3207N/0113W) where immature and mature solitary adults were present. By the end of the

month, a few small adult groups had formed. Ground teams treated 1,557 ha during June.

In Western Sahara, scattered solitary adults were seen in the northeast near Mehaires (2613N/1109W) on 19 June.

### • FORECAST

*Locust numbers will decline along the Algerian border as vegetation dries out. Limited hatching may occur by early July south of Guelmim with fledging by early August. Scattered adults may appear in areas of recent rainfall in the Western Sahara and breed on a small scale.*

## 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 first week of June, scattered mature adults were seen in Northern Kordofan between El Obeid (1311N/3010E) and En Nahud (1246N/2828E). Scattered immature and mature solitary adults persisted along the Nile River in the Northern State southwest of Merowe (1830N/3149E) and in the River Nile State between Abu Hamed (1932N/3320E) and Ed Damer (1734N/3358E). Locust numbers were slightly higher in River Nile where second to fourth instar solitary hoppers were present at densities of 2-3 hoppers/m<sup>2</sup> near Berber (1801N/3400E) and some adults were forming small groups.

### • FORECAST

*There is a moderate risk of scattered adults and perhaps a few small groups of adults appearing in the summer breeding areas from northern Ethiopia during the first half of July. Small-scale breeding will commence in the summer breeding areas once rains fall, causing locust numbers to increase in parts of*



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*Khartoum, Northern, River Nile, Kassala, Red Sea, White Nile and Northern Kordofan States. Scattered adults are likely to persist and breed along the Nile River between Ed Damer and Dongola.*

### Eritrea

#### • SITUATION

No reports were received during June.

#### • FORECAST

*There is a moderate risk of scattered adults and perhaps a few small groups of adults appearing in the western lowlands from adjacent areas of northern Ethiopia during the first half of July. If rains fall, small-scale breeding will occur.*

### Ethiopia

#### • SITUATION

During the first week of June, at least five small immature swarms ranging in size from 2.5 ha to 4 km<sup>2</sup> crossed from northern Somalia to the Dire Dawa (0935N/4150E) area. The swarms reportedly moved back and forth over the border until 10 June and then remained in this area during the following week when aerial control operations were carried out. A few immature swarms were reported in the central Rift Valley from 4 to 17 June. Several of these swarms continued northwest into the southern highlands of Amhara where they split up into smaller swarmlets and dispersed throughout the highlands, reaching southern Tigray on the 12<sup>th</sup> and coming to within about 50 km of Lake Tana by the last week of the month. During June, 1,797 ha were treated by air and 410 ha by ground.

#### • FORECAST

*A few small swarms may appear in the northern highlands from the central Rift Valley in early July. If so, they are likely to disperse, and scattered adults and perhaps a few small groups may move to the summer breeding areas in central Sudan and western Eritrea. Similar populations are likely to persist in the Harar highlands and on the plains near Jijiga.*

### Djibouti

#### • SITUATION

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

#### • FORECAST

*No significant developments are likely.*

### Somalia

#### • SITUATION

During the first decade of June, several immature swarms were seen on the northwest coast near Bulhar (1023N/4425E), on the escarpment from south of Silil (1058N/4326E) to Erigavo (1040N/4720E) and on the plateau between Boroma (0956N/4313E) and Hargeisa (0931N/4402E). The swarms were highly mobile. The swarms west of Hargeisa moved southwest into Ethiopia while those to the east moved northeast towards Erigavo and the Gulf of Aden. One swarm was seen on the plateau near Burao (0931N/4533E) on the 12<sup>th</sup> but thereafter, no locusts were reported except for a swarm on the 22<sup>nd</sup> along the escarpment north of Burao, another swarm near Erigavo, and some scattered immature solitarious adults on the coast near Berbera and Bulhar. No locusts were seen on the plateau during surveys carried out on 20-24 June.

#### • FORECAST

*Unless further rain falls, current infestations will continue to decline and no significant developments are likely.*

### Egypt

#### • SITUATION

During June, no locusts were seen during surveys carried out in the Western Desert between Farafra (2710N/2818E) and Dakhla (2530N/2900E), and near Sh. Oweinat (2219N/2845E) and Abu Simbel (2219N/3138E).

#### • FORECAST

*No significant developments are likely.*

### Saudi Arabia

#### • SITUATION

During June, no locusts were seen during surveys carried out on the Red Sea coast between Umm Lajj (2501N/3716E) and Lith (2008N/4016E), in the Asir Mountains near Khamis Mushait (1819N/4245E) and in the spring breeding areas of the interior near Wadi Dawasir (2027N/4534E), Buraydah (2621N/4358E), Riyadh (2439N/4646E) and in the Nafud.

#### • FORECAST

*Low numbers of adults could appear on the Red Sea coast in areas of recent rainfall near Qunfidah.*

### Yemen

#### • SITUATION

During the last week of June, scattered immature solitarious adults at densities up to 875 adults/ha were seen in the interior northeast of Al Abr (1608N/4714E) in the Zamakh area (ca. 1631N/4738E) and in Minwakh (1650N/4812E) as well as in a few places in Wadi Hadhramaut near Sayun (1559N/4844E). No

locusts were seen along the southern coast between Zinjibar (1306N/4523E) and Mukalla (1431N/4908E).

• **FORECAST**

*Unless rainfall occurs, locust numbers will continue to decline in the interior. There is a moderate risk that low numbers of adults could appear in areas of recent rainfall on the Tihama coast of the Red Sea and eventually lay eggs. Regular surveys are recommended in all areas.*

**Oman**

• **SITUATION**

During June, no locusts were seen during surveys carried out in the southern interior along the Yemeni border near Maziuna (1750N/5239E) and in the northern interior between Buraimi (2415N/5547E) and Sur (2234N/5930E).

• **FORECAST**

*No significant developments are likely.*

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

• **FORECAST**

*No significant developments are likely.*

**EASTERN REGION**

**Iran**

• **SITUATION**

During the first week of June, groups of second to fourth instar solitary hoppers at densities of 15 hoppers/m<sup>2</sup> were present in the Jaz Murian Basin southeast of Kahnuj (2757N/5742E). Second to fifth instar hoppers persisted in the area during the remainder of the month but densities declined. Ground teams treated 5,500 ha. No locusts were seen during surveys carried out on the coast near Jask (2540N/5746E) and Bander-e Lengheh (2634N/5452E).

• **FORECAST**

*No significant developments are likely.*

**Pakistan**

• **SITUATION**

During the second half of May, isolated mature solitary adults were present on the coast of Baluchistan near Pasni (2515N/6328E).

During the first half of June, no locusts were seen during surveys carried out in the spring breeding areas of the interior of Baluchistan or in the summer breeding areas in the Cholistan Desert.

• **Forecast**

*Low numbers of adults are likely to be present in the summer breeding areas between Tharparkar and Cholistan and will breed on a small scale once the monsoon rains commence.*

**India**

• **SITUATION**

No locusts were seen during surveys in Rajasthan and Gujarat during June.

• **FORECAST**

*Low numbers of adults are likely to be present in parts of Gujarat and Rajasthan. Small-scale breeding is expected to occur with hatching commencing by the end of July.*

**Afghanistan**

• **SITUATION**

No reports received.

• **FORECAST**

*No significant developments are likely.*



**Announcements**

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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 (ecl@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.



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**New information on Locust Watch.** Recent additions to the web site ([www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)) are:

- **39<sup>th</sup> session DLCC final report.** Publications section – Reports
- **2009 Iran/Pakistan Joint survey results.** Publications section – Reports
- **Desert Locust Survey & Control Form updated.** Publications section – Forms
- **Internet catalogue of the Pesticide Referee Group database.** Activities section – Environment and health
- **Desert Locust situation updates (10, 12, 19 June).** Archives Section – Briefs

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#### **GROUP**

- forming ground or basking groups;
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### **ADULT SWARM AND HOPPER BAND SIZES**

#### **VERY SMALL**

- swarm: less than 1 km<sup>2</sup> • band: 1 - 25 m<sup>2</sup>

#### **SMALL**

- swarm: 1 - 10 km<sup>2</sup> • band: 25 - 2,500 m<sup>2</sup>

#### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup> • band: 2,500 m<sup>2</sup> - 10 ha

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- swarm: 100 - 500 km<sup>2</sup> • band: 10 - 50 ha

#### **VERY LARGE**

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### **RAINFALL**

#### **LIGHT**

- 1 - 20 mm of rainfall.

#### **MODERATE**

- 21 - 50 mm of rainfall.

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- 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.



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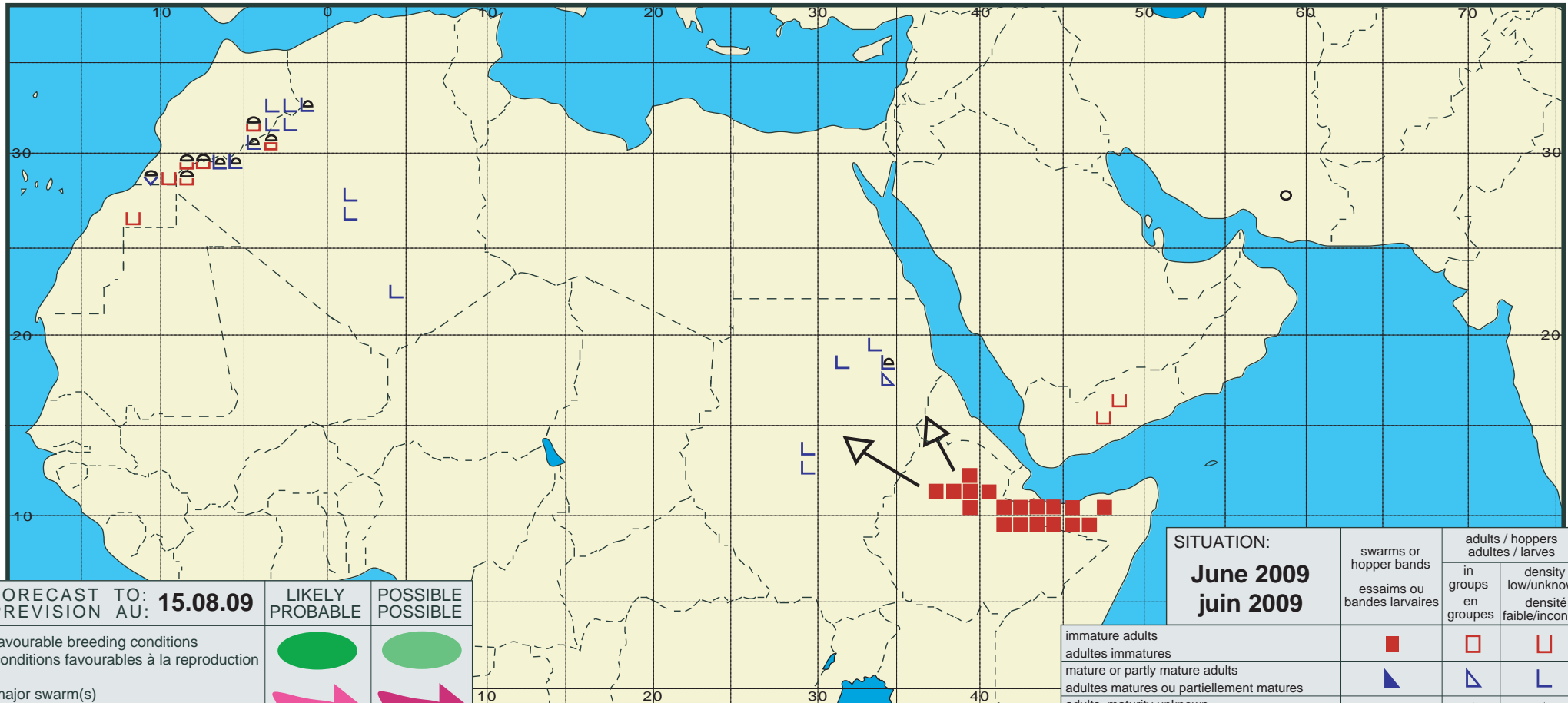
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# Desert Locust Summary

## Criquet pèlerin - Situation résumée

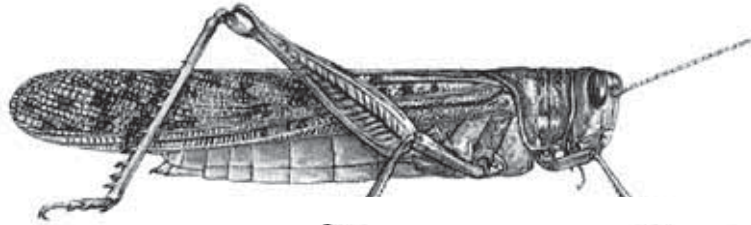
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FORECAST TO: PREVISION AU: <b>15.08.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

<b>SITUATION:</b> <b>June 2009</b> <b>juin 2009</b>	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: **CALM**

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 370

(3 August 2009)



## General Situation during July 2009 Forecast until mid-September 2009

The locust situation became calm in all areas during July. Scattered adults were present in northwest Mauritania, Algeria and Sudan. National ground teams treated small infestations along the Algerian border in Morocco and in the highlands of Ethiopia. Low numbers of adults appeared in Pakistan near the Indian border. Seasonal rains fell in the summer breeding areas in the Sahel of West Africa, Sudan and Eritrea, and along both sides of the Indo-Pakistan border. During the forecast period, small-scale breeding in these areas will cause locust numbers to increase slightly but they should remain below threatening levels. Regular surveys should be carried out in all affected countries to monitor the situation carefully throughout the summer.

**Western Region.** The locust situation remained calm during July. Ground teams treated 250 ha of fledglings and immature solitary adults in Morocco near the Algerian border. Isolated mature solitary adults were present in northwest and southern Algeria. Local breeding occurred at one place in northwest Mauritania where scattered solitary adults were present in areas of previous rainfall. Surveys could not be carried out in Mali and Niger due to continuing insecurity. Good rains fell in the summer breeding areas of the northern Sahel between Mauritania and Chad, causing ecological conditions to become favourable in most areas. During the forecast period, small-scale breeding will cause locust numbers to increase slightly but remain below

threatening levels in the northern Sahel of Mauritania, Mali, Niger and Chad.

**Central Region.** Seasonal rains commenced during July in the summer breeding areas in the interior of Sudan and western Eritrea. Scattered solitary adults were present in some of these areas in Sudan. By the end of the end of the month, ecological conditions had become favourable for breeding. Consequently, small-scale breeding will cause locust numbers to increase slightly but remain below threatening levels in both countries during the forecast period. Small locust infestations persisted and matured in northern Ethiopia where two small swarms were reported north of Addis Ababa and scattered solitary adults were seen about 100 km south of the Eritrean border. Ground teams were able to treat some of the infestations. No locusts were seen during surveys carried out in Saudi Arabia and Oman. No surveys were carried out elsewhere in the Region. Scattered solitary adults may be present on the Red Sea coast in Yemen where they could breed on a small scale during the forecast period in areas of recent rainfall.

**Eastern Region.** Scattered solitary adults appeared in the summer breeding areas in Pakistan near the Indian border in July. Monsoon rains arrived along both sides of the border, which caused ecological conditions to become favourable. Consequently, small-scale breeding will cause locust numbers to increase slightly but remain below threatening levels in Pakistan and India 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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## DESERT LOCUST BULLETIN



### Weather & Ecological Conditions in July 2009

**Good rains fell in the summer breeding areas of the northern Sahel between Mauritania and Sudan that will allow small-scale breeding to occur. In Southwest Asia, monsoon rains reached the summer breeding areas along both sides of the Indo-Pakistan border, causing ecological conditions to become favourable for breeding.**

In the **Western Region**, good rains fell in the summer breeding areas of the northern Sahel between Mauritania and Chad, causing ecological conditions to become favourable in most areas. In Mauritania, summer rains commenced in the southeast (Hodh Ech Chargui and Hodh El Gharbi) in early July and progressively moved north and west towards Assaba, Rkiz (Trarza), Magta Lahjar (Brakna) and Tidjikja (Tagant). Vegetation also became green and ecological conditions were favourable for breeding in the north near Zouerate where unusually good rains fell in mid June and, to a lesser extent, near Bir Moghrein and between Akjoujt and Atar in the northwest. In Mali, good rains fell in southern Tamesna near Menaka in early July, followed by light to moderate rains northwest of Tombouctou, in the central Adrar des Iforas (Kidal to Aguelhoc) and in the Timetrine near Tadhak. In Niger, good rains fell in parts of the Tamesna (Tassara, In Abangharit and Tazerzait Plateau), the central and western Air Mountains, and in the northern Sahel north of Tahoua, Tanout and Diffa. In Chad, light to moderate rains fell in Biltine and southern Batha early in the month, and progressively moved further north in central and western areas, reaching northern Kanem and Batha by mid-month and Fada by the end of July. Good rains fell in southern Algeria between Tamanrasset and Bir Bou Mokhtar during the first decade of July. Ecological conditions improved along the borders of Mali and Niger between Tin Zaouatene and In Guezzam.

In the **Central Region**, good rains fell in the summer breeding areas in the interior of Sudan and western Eritrea as well as along the Red Sea coast in Yemen. During July, the rains moved progressively northwards in Sudan and by the end of the month they had reached north of Melit (Darfur), Hamrat Esh

Sheikh and Abu Uruq (North Kordofan) and Atbara (Nile State). Good rains fell along the Gash Barka and throughout the western lowlands in Eritrea. Consequently, ecological conditions improved in both countries and were favourable for breeding by the end of July. Good rains also fell in the highlands in northern Ethiopia. Vegetation continued to dry out on the plateau between Dire Dawa and Hargeisa but was green in northern Somalia near Hargeisa and Boroma from light showers that fell at times. In Yemen, light to moderate showers fell along the Red Sea coast and, to a lesser extent, in some places on the southern coast west of Aden.

In the **Eastern Region**, monsoon rains reached the summer breeding areas along the Indo-Pakistan border on about 3 July which is almost two weeks earlier than normal. Heavy showers fell in Tharparkar and Khipro deserts in Pakistan while good rains fell further north in Cholistan and throughout Rajasthan, India. Torrential rains (230 mm) fell in Karachi on 24-26 July, causing floods. In Iran, vegetation dried out along the southeast coast between Jask and the Pakistan border.



### Area Treated

Ethiopia	64 ha (July)
Morocco	1,807 ha (June, updated) 50 ha (July)



### Desert Locust Situation and Forecast

( see also the summary on page 1 )

#### WESTERN REGION

##### **Mauritania**

##### • SITUATION

In the north and northwest, isolated mature solitarious adults were present in between Akjoujt (1945N/1421W) and Zouerate (2244N/1221W) in late June and throughout July. Most of the adults were concentrated near Zouerate where it rained in mid-June while only isolated adults were seen further north near Bir Moghrein (2510N/1135W). Small-scale breeding was detected in one area between Akjoujt and Atar (2032N/1308W) where isolated solitarious first to third instar hoppers were seen on the 24<sup>th</sup>. In the summer breeding areas further south, a few individual mature adults were seen in Brakna in mid-July.

- **FORECAST**

*Small-scale breeding will cause locust numbers to increase slightly in the two Hodhs, Tagant, northern Assaba and Brakna, and Trarza. Nevertheless, locust numbers will remain below threatening levels.*

### **Mali**

- **SITUATION**

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

- **FORECAST**

*Small-scale breeding will cause locust numbers to increase slightly in parts of the Adrar des Iforas and Tamesna, and to a lesser extent in the Tilemsi Valley and Timetrine. Nevertheless, locust numbers will remain below threatening levels.*

### **Niger**

- **SITUATION**

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

- **Forecast**

*Small-scale breeding will cause locust numbers to increase slightly in the northern Sahel, Tamesna, and in the southern Air Mountains. Nevertheless, locust numbers will remain below threatening levels.*

### **Chad**

- **SITUATION**

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

- **FORECAST**

*Small-scale breeding will cause locust numbers to increase slightly in Biltine, Ennedi and in northern Ouaddai, Batha and Kanem. Nevertheless, locust numbers will remain below threatening levels.*

### **Senegal**

- **SITUATION**

No reports were received during July.

- **FORECAST**

*No significant developments are likely.*

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

- **FORECAST**

*No significant developments are likely.*

### **Algeria**

- **SITUATION**

During July, isolated mature solitary adults were present in the west near Tindouf, Bechar (3135N/0217W) and Beni Abbes (3011N/0214W), and in the south between Tamanrasset (2250N/0528E) and the borders of Mali, between Bir Bou Mokhtar

(2120N/0056E) and Tin Zaouatene (1958N/0258E), and Niger near In Guezzam (1937N/0552E).

- **FORECAST**

*Small-scale breeding could occur in areas of recent rainfall in the south between Tamanrasset, Tin Zaouatene and In Guezzam, causing locust numbers to increase slightly but remain below threatening levels.*

### **Morocco**

- **SITUATION**

Ground teams treated 250 ha of fledglings and immature adults on 26-30 June south of the Atlas Mountains near the border of Algeria.

During the first decade of July, immature solitary adults persisted in a few places in the northeast near Figuig (3207N/0113W) at densities up to 3,000 adults/ha. Ground teams treated 50 ha. In the Draa Valley, immature solitary adults were seen at densities of 1-2 adults/m<sup>2</sup> southeast of Tata (2944N/0758W) near the Algerian border.

In Western Sahara, scattered solitary hoppers and adults were seen in the northeast near Bir Lahlou (2619N/0933W) during the last decade of July.

- **FORECAST**

*Locust numbers will continue to decline along the Algerian border as vegetation dries out. Scattered adults may appear in the southern parts of Western Sahara at the end of the forecast period.*

### **Libyan Arab Jamahiriya**

- **SITUATION**

No reports were received during July.

- **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**

During July, scattered immature and mature solitary adults were present in parts of the summer breeding areas in North Kordofan between En Nahud



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## DESERT LOCUST BULLETIN

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(1246N/2828E), Sodiri (1423N/2906E) and Umm Saiyala (1426N/3112E) as well along the Nile River in the Northern and River Nile states near Dongola (1910N/3027E), Merowe (1830N/3149E), Abu Hamed (1932N/3320E), Berber (1801N/3400E) and Ed Damer (1734N/3358E). No locusts were seen on the western side of the Red Sea Hills between Kassala (1527N/3623E) and Haiya (1820N/3621E).

• **FORECAST**

*Small-scale breeding will cause locust numbers to increase slightly in North Darfur, North Kordofan, Khartoum, Kassala, along the Nile River in Northern and River Nile states, and in the northern parts of West Darfur, West Kordofan and White Nile states. Nevertheless, locust numbers will remain below threatening levels.*

### **Eritrea**

• **SITUATION**

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

No locusts were seen during surveys carried out in the western lowlands from the Ethiopian border to about 1545N in the second week of July.

• **FORECAST**

*Small-scale breeding will occur in the western lowlands and along the Gash Barka, causing locust numbers to increase slightly but remain below threatening levels.*

### **Ethiopia**

• **SITUATION**

During July, scattered immature and mature solitary adults were seen at two places in central Tigray on the 9<sup>th</sup>. Two low-density mature swarms of 2.5 km<sup>2</sup> and 5.4 km<sup>2</sup> were seen about 300 km north of Addis Ababa (0858N/3847E) in the northeast highlands in South Wello on the 21<sup>st</sup>. These infestations are likely to have originated from immature swarms that moved into the highlands during June. Ground teams treated 64 ha in South Wello.

• **FORECAST**

*Scattered adults that originated from swarms in July may persist in the northern highlands and perhaps breed on a small scale.*

### **Djibouti**

• **SITUATION**

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

• **FORECAST**

*No significant developments are likely.*

### **Somalia**

• **SITUATION**

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

• **FORECAST**

*Scattered adults may be present and could persist in areas of recent rainfall on the plateau between Hargeisa and Boroma.*

### **Egypt**

• **SITUATION**

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

• **FORECAST**

*No significant developments are likely.*

### **Saudi Arabia**

• **SITUATION**

During July, no locusts were seen during surveys carried out on the Red Sea coast near Rabigh (2247N/3901E), in the Asir Mountains near Khamis Mushait (1819N/4245E) and in the spring breeding areas of the interior in the extreme north near the border of Jordan and between Buraydah (2621N/4358E) and the Persian Gulf.

• **FORECAST**

*No significant developments are likely.*

### **Yemen**

• **SITUATION**

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

• **FORECAST**

*Scattered adults may be present and will persist in areas of recent rainfall on the Tihama coast. Regular surveys are recommended in all areas.*

### **Oman**

• **SITUATION**

During July, no locusts were seen during surveys carried out on the northern coast near Jamma (2333N/5733E) and on the coast northwest of Sur (2234N/5930E).

• **FORECAST**

*No significant developments are likely.*



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

• FORECAST

*No significant developments are likely.*

**EASTERN REGION**

**Iran**

• SITUATION

During July, no locusts were seen during surveys on the southeast coast near Jask (2540N/5746E) and Chabahar (2517N/6036E), and in the interior near Bampur (2711N/6028E).

• FORECAST

*No significant developments are likely.*

**Pakistan**

• SITUATION

During the second half of June, isolated immature and mature solitarious adults were seen in the spring breeding areas of Baluchistan near Panjgur (2658N/6406E) and Pasni (2515N/6328E), and in the summer breeding areas south of Bahawalpur (2924N/7147E). No locusts were seen during surveys carried out on the coast of Baluchistan on 18 to 26 June.

During the first half of July, isolated mature solitarious adults were present at a few places near the border of India in Cholistan south of Bahawalpur and Rahimyar Khan (2822N/7020E), and in the Khipro Desert northeast of Mirpurkhas (2533N/6905E).

• Forecast

*Small-scale breeding in parts of Tharparkar, Khipro and Cholistan will cause locust numbers to increase slightly but remain below threatening levels.*

**India**

• SITUATION

No locusts were seen during surveys in Rajasthan and Gujarat during July.

• FORECAST

*Low numbers of adults are likely to be present in parts of Gujarat and Rajasthan. Small-scale breeding is expected to occur, causing locust numbers to increase slightly but remain below threatening levels.*

**Afghanistan**

• SITUATION

No reports received.

• FORECAST

*No significant developments are likely.*

 **Announcements**

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLD Desert Locust Information Service (eclod@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.

**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 (eclod@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](http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato (pceccato@iri.columbia.edu).



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**New information on Locust Watch.** Recent additions to the web site ([www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)) are:

- **EMPRES/WR evaluation report (2006-08).** Publications section – Reports
- **39<sup>th</sup> session DLCC final report.** Publications section – Reports
- **2009 Iran/Pakistan Joint survey results.** Publications section – Reports
- **Desert Locust Survey & Control Form updated.** Publications section – Forms
- **Internet catalogue of the Pesticide Referee Group database.** Activities section – Environment and health
- **Desert Locust situation updates.** Archives Section – Briefs

**2009 events.** The following activities are scheduled or planned:

- **EMPRES/WR Research.** Regional workshop on Desert Locust research, Dakar (5-9 October)
- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting (mid-December, tentative)
- **EMPRES/WR Steering Committee.** 4<sup>th</sup> EMPRES Steering Committee meeting (mid-December, tentative)



### 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<sup>2</sup> • band: 1 - 25 m<sup>2</sup>

##### **SMALL**

- swarm: 1 - 10 km<sup>2</sup> • band: 25 - 2,500 m<sup>2</sup>

##### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup> • band: 2,500 m<sup>2</sup> - 10 ha

##### **LARGE**

- swarm: 100 - 500 km<sup>2</sup> • band: 10 - 50 ha

##### **VERY LARGE**

- swarm: 500+ km<sup>2</sup> • 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.



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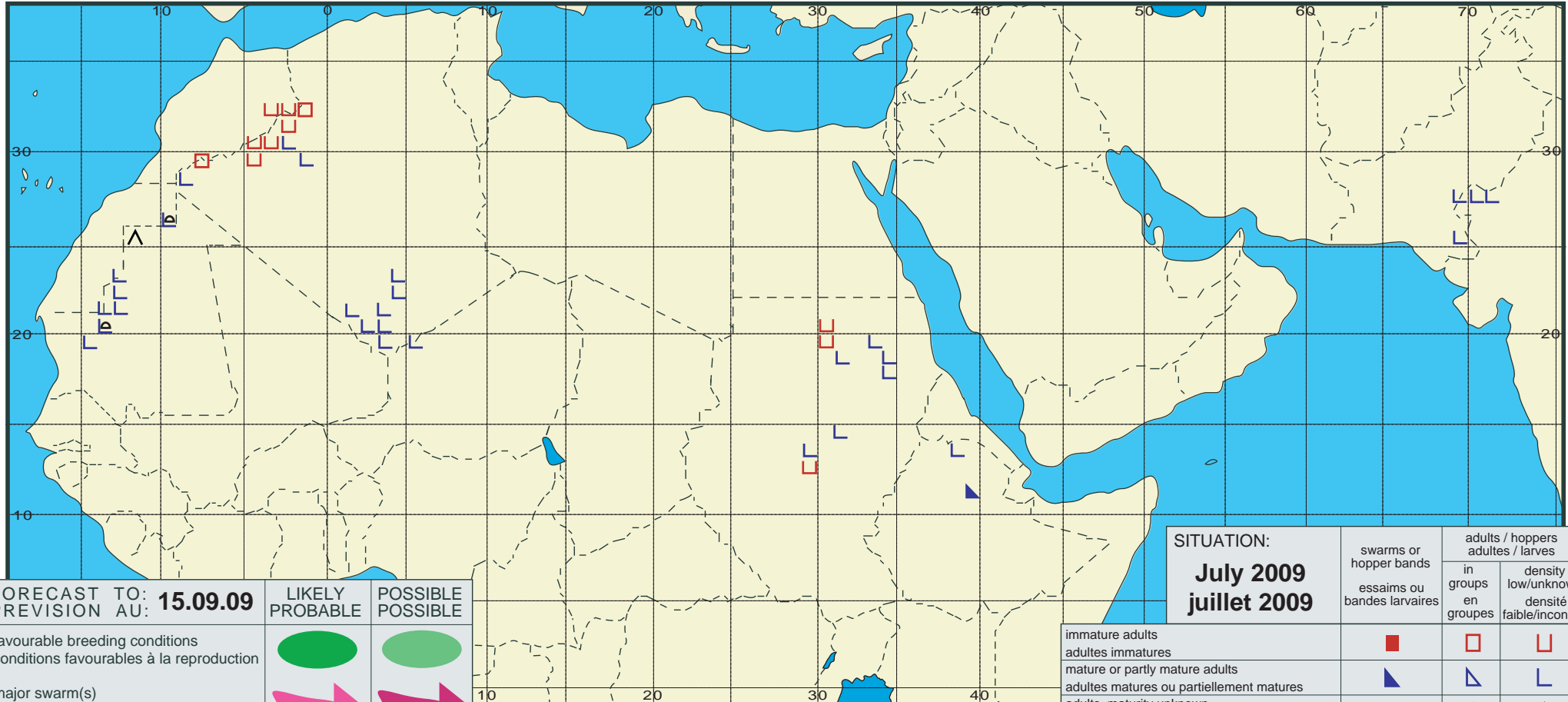
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# Desert Locust Summary

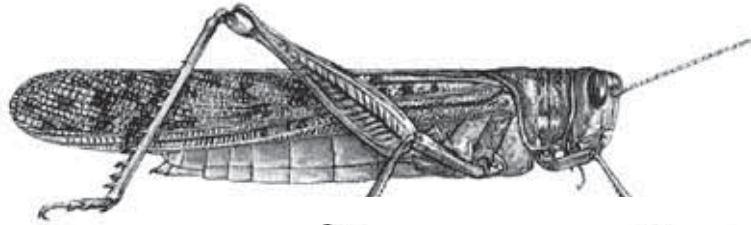
## Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: <b>15.09.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>July 2009</b> <b>juillet 2009</b>	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: **CALM**

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 371

(1 Sept 2009)



## General Situation during August 2009 Forecast until mid-October 2009

The Desert Locust situation remained calm during August. Although good rains fell in most of the summer breeding area in the northern Sahel between Mauritania and western Eritrea, only scattered hoppers were reported in Mauritania. Nevertheless, breeding is likely to be in progress in parts of northern Mali, Niger, Chad, Sudan and Eritrea. Breeding will continue during the forecast period, causing locusts to increase substantially in Mauritania and to a lesser extent in other countries where they should remain below threatening levels. Unusually heavy rains fell on the Red Sea coast in Eritrea, Djibouti and Yemen that could eventually lead to small-scale breeding. Only isolated adults were present along both sides of the Indo-Pakistan border because of poor monsoon rains. Unless further rains fall, no significant developments are expected in southwest Asia.

**Western Region.** The locust situation remained calm during August. Small-scale egg laying commenced in the summer breeding areas of central and southern Mauritania in about mid-July that gave rise to low numbers of hoppers during August. As good rains fell and solitary adults were scattered over much of the area, small-scale breeding will continue and cause locust numbers to increase significantly during September and October. By the end of the forecast period, locusts are likely to become concentrated in west and northwest Mauritania, increase in density and perhaps form a

few small groups that could lead to the development of a local outbreak. Small-scale breeding is probably underway and will continue in northern Mali and Niger but surveys could not be carried out to confirm this due to continued insecurity. In Northwest Africa, locust infestations declined and only isolated adults were reported in southern Algeria along the Malian border. No locusts were reported elsewhere in the Region.

**Central Region.** Despite good rains and favourable ecological conditions, only low numbers of solitary adults were present in the summer breeding areas in the interior of Sudan during August. Good rains also fell in adjacent areas of western Eritrea. Although breeding has yet to be detected, it is almost certainly in progress on a small-scale in both countries and will continue during the forecast period, causing locusts to increase slightly but remain below threatening levels. Unusually heavy rains fell in late August along the entire Red Sea coast in Eritrea and Yemen. Isolated adults were already present on the coast in Yemen and could appear in Eritrea, and small-scale breeding could occur in both countries. The situation remained unclear in northern Ethiopia where there were unconfirmed reports of a few swarms and some control was undertaken. No locusts were reported elsewhere in the Region.

**Eastern Region.** Poor monsoon rains during August have caused ecological conditions to be less favourable than normal in the summer breeding areas along both sides of the Indo-Pakistan border. Only isolated solitary adults were seen in the Cholistan Desert in Pakistan and in a few places in Rajasthan, India. Unless further rains fall, no significant developments are likely. No locusts were seen during surveys along the coast in southeast Iran.

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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## DESERT LOCUST BULLETIN



### Weather & Ecological Conditions in August 2009

**Good rains fell in the northern Sahel between Mauritania and Eritrea that will allow breeding to continue during the forecast period. Unusually heavy rains fell in coastal areas on both sides of the southern Red Sea that could cause breeding conditions to improve. Very little rain fell along the Indo-Pakistan border.**

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) fluctuated between 16N and 20N over West Africa during August. At times, the ITCZ surged north to 21N and reached southern Algeria. Although good rains fell mainly in Mauritania and to a lesser extent in other countries, ecological conditions were favourable in most of the summer breeding areas in the Sahel. In Mauritania, good rains fell throughout the south as far north as Tidjikja. In Mali, rains were sporadic and fell in parts of the western Adrar des Iforas, Tilemsi Valley, and southern Tamesna as well as between Tombouctou and Araouane and near the Algerian border between Tadhak and Taoudenni. In Niger, ecological conditions were favourable for breeding in parts of the north, mainly in the Tamesna near In Abangharit, but were dry in northern and eastern areas of the Air Mountains because of patchy rainfall during August. In Chad, good rains fell in the northeast between Abeche and Fada, in the centre (Batha) and in the west (Kanem). In northwest Africa, a few isolated showers fell in southern Algeria near Tamanrasset. Ecological conditions were favourable for breeding in the extreme south of Algeria near the borders of Mali and Niger between Tin Zaouatene and In Guezzam.

In the **Central Region**, good rains fell during August in the summer breeding areas in the interior of Sudan and western Eritrea. In Sudan, the rains reached as far north as about 15N in North Darfur and about 17N in North Kordofan. During the last decade of the month, good rains fell in northeast Sudan between the Nile Valley and the Red Sea Hills. In Eritrea, good rains fell throughout the western lowlands and along the Gash Barka, reaching as far north as the Sudanese border. Consequently, ecological conditions were favourable in most of the summer breeding

areas of both countries. Vegetation was dry in most areas of Saudi Arabia and Yemen except in a few places on the Tihama in Yemen where vegetation was becoming green. On 25 August, unusually heavy showers fell along the entire length of the Red Sea coast in Eritrea, Djibouti and Yemen from Aqiq, Sudan to Obock, Djibouti and from Jizan, Saudi Arabia to Aden, Yemen. This is expected to give rise to favourable ecological conditions for breeding. Light showers may have fallen at times on the plateau in northwest Somalia between Boroma, Somalia and Dire-Dawa, Ethiopia. Light to heavy showers fell locally at times during the second half of August in parts of the northern interior in Oman.

In the **Eastern Region**, very little rain fell in the summer breeding areas along both sides of the Indo-Pakistan border during August. The poor performance of this year's monsoon is attributed to El Nino and has resulted in less favourable ecological conditions than normal in Rajasthan and adjacent areas of Cholistan, Khipro and Tharparkar deserts in Pakistan.



### Area Treated

Ethiopia 154 ha (August)



### Desert Locust Situation and Forecast

*( see also the summary on page 1 )*

#### WESTERN REGION

##### **Mauritania**

##### • SITUATION

During August, small-scale breeding occurred in the central portion of the summer breeding area between Aguilal Faye (1827N/1444W) and Moudjeria (1752N/1219W) where adults laid eggs from mid-July onwards after good rains that fell in late June and again in late July. Hatching commenced by the end of July and continued during August, giving rise to low numbers of solitary hoppers at densities of up to about 300 hoppers per site. A few hoppers began fledging in the last week of August. Immature adults were also present in the same area, probably having arrived from earlier breeding in the north. Isolated breeding was reported at a few places in the southeast (the two Hodhs) north of Timbedra (1614N/0809W) and Aioun El Atrous (1639N/0936W), and in southwest Adrar between Akjoujt (1945N/1421W) and Atar (2032N/1308W). Scattered



mature solitary adults, at densities up to 200 adults/ha, were dispersed throughout the area from Aguilal Faye to east of Nema (1636N/0715W). Some of the adults were seen laying eggs.

• **FORECAST**

*Small-scale breeding will continue and extend to western and eastern parts of the summer breeding areas, causing locust numbers to increase substantially in Trarza, southwest Adrar, northern Brakna and Assaba, Tagant and the two Hodhs. Once vegetation begins to dry out towards the end of the forecast period, adults will concentrate in western and northwestern areas, locust densities are likely to increase and small groups could form.*

**Mali**

• **SITUATION**

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

• **FORECAST**

*Scattered adults are likely to be present and will persist in parts of the Adrar des Iforas, Tamesna, and the Tilemsi Valley, and to a lesser extent in Timetrine and south of Araouane. Small-scale breeding will cause locust numbers to increase slightly in these areas but remain below threatening levels.*

**Niger**

• **SITUATION**

Although no surveys were carried out during August, isolated immature and mature solitary adults mixed with a few second and third instar hoppers were reported at one place in the northern Sahel between Tanout (1505N/0850E) and Zinder (1346N/0858E).

• **Forecast**

*Small-scale breeding will cause locust numbers to increase slightly in the northern Sahel, Tamesna, and in the southern Air Mountains. Nevertheless, locust numbers will remain below threatening levels.*

**Chad**

• **SITUATION**

During August, no locusts were seen during surveys carried out in the west (Kanem) and in the east (Biltine) as far north as Kalait (1550N/2054E).

• **FORECAST**

*Small-scale breeding will cause locust numbers to increase slightly in Biltine, Ennedi and in northern Ouaddai, Batha and Kanem. Nevertheless, locust numbers will remain below threatening levels.*

**Senegal**

• **SITUATION**

No reports were received during August.

• **FORECAST**

*No significant developments are likely.*

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

• **FORECAST**

*No significant developments are likely.*

**Algeria**

• **SITUATION**

During August, isolated mature solitary adults were present along the Malian border near Tin Zaouatene (1957N/0258E). No locusts were seen during surveys carried out in the central Sahara near Adrar and in the south near Tamanrasset (2250N/0528E), Bir Bou Mokhtar (2120N/0056E) and In Guezzam (1937N/0552E).

• **FORECAST**

*Small-scale breeding is likely to occur along the Malian border near Tin Zaouatene, causing locust numbers to increase slightly but remain below threatening levels.*

**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 reports were received during August.

• **FORECAST**

*No significant developments are likely.*

**Tunisia**

• **SITUATION**

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

• **FORECAST**

*No significant developments are likely.*

**CENTRAL REGION**

**Sudan**

• **SITUATION**

During August, scattered immature and mature solitary adults were present at densities of up to



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400 adults/ha in North Kordofan west of Khartoum (1533N/3235E) and Umm Saiyala (1426N/3112E), and in the north along the Nile River near Berber (1801N/3400E), Merowe (1830N/3149E) and Dongola (1910N/3027E). No locusts were seen during surveys carried out elsewhere in North Kordofan, Northern and River Nile states or in White Nile, Khartoum and Kassala states.

### • FORECAST

*Small-scale breeding will continue to cause locust numbers to increase in North Darfur, North Kordofan, Khartoum, Kassala, along the Nile River in Northern and River Nile states, and in the northern parts of West Darfur, West Kordofan and White Nile states. Nevertheless, locust numbers will remain below threatening levels.*

### Eritrea

#### • SITUATION

In late July, no locusts were seen during surveys carried out on the Red Sea coast between Sheib (1551N/3903E) and the Sudanese border from the 28<sup>th</sup> to the 31<sup>st</sup>.

During August, no locusts were seen during surveys carried out in the southern part of the western lowlands between Teseney (1506N/3639E) and the Ethiopian border from the 20<sup>th</sup> to the 23<sup>rd</sup>.

#### • FORECAST

*Scattered adults are almost certainly present and breeding on a small scale along the Gash Barka in the northern part of the western lowlands between Teseney and the Sudanese border (1705N). Consequently, locust numbers will increase during the forecast period but should remain below threatening levels. Scattered adults could appear in areas of recent rain on the Red Sea coast and eventually breed on a small scale. Regular surveys are recommended in these areas to monitor and clarify the situation.*

### Ethiopia

#### • SITUATION

During August, surveys were conducted in the northeast where swarms had previously been reported. Ground teams treated 154 ha. There were still unconfirmed reports of some swarms that disappeared in remote and inaccessible areas of northwest Afar region. Further details are awaited.

### • FORECAST

*Scattered adults may persist and breed in the northern highlands.*

### Djibouti

#### • SITUATION

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

#### • FORECAST

*Low numbers of adults could appear by late September in areas of recent rainfall on the northern coast between Obock and the Eritrean border. Surveys should be undertaken to clarify the situation.*

### Somalia

#### • SITUATION

No reports were received during August.

#### • FORECAST

*No significant developments are likely.*

### Egypt

#### • SITUATION

During August, no locusts were seen during surveys carried out in the Western Desert near Sh. Oweinat (2219N/2845E), Baris (2448N/3035E), along Lake Nasser near Tushka (2247N/3126E), Abu Simbel (2219N/3138E), and Garf Husein (2317N/3252E), and on the Red Sea coast between Berenice (2359N/3524E) and the Sudanese border.

#### • FORECAST

*No significant developments are likely.*

### Saudi Arabia

#### • SITUATION

During August, no locusts were seen during surveys carried out on the central Red Sea coast between Jeddah (2130N/3910E) and Rabigh (2247N/3901E), in the Asir Mountains near Khamis Mushait (1819N/4245E), and in the interior near Buraydah (2621N/4358E).

#### • FORECAST

*No significant developments are likely.*

### Yemen

#### • SITUATION

During the first week of August, isolated immature and mature solitary adults were seen on the northern Tihama of the Red Sea coast near Midi (1619N/4248E) and on the central Tihama near Bajil (1458N/4314E) and south of Hodeidah (1450N/4258E). No locusts were seen during surveys carried out near Aden (1250N/4503E).

#### • FORECAST

*Small-scale breeding will cause locust numbers to increase slightly but remain below threatening levels*

*in areas of recent rainfall on the Red Sea coast.  
Regular surveys are recommended.*

#### **Oman**

- **SITUATION**

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

- **FORECAST**

*No significant developments are likely.*

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

- **FORECAST**

*No significant developments are likely.*

#### **EASTERN REGION**

##### **Iran**

- **SITUATION**

During August, no locusts were seen on the southeast coast near Jask (2540N/5746E) and Chabahar (2517N/6036E).

- **FORECAST**

*No significant developments are likely.*

##### **Pakistan**

- **SITUATION**

During the second half of July, scattered immature and mature solitary adults at densities of up to 100 adults/ha were present at 25 places in Cholistan and to a lesser degree in Khipro and Tharparkar.

During the first half of August, locust densities declined to 50 adults/ha and only seven locations in Cholistan reported locusts, mainly along the Indian border south of Bahawalpur (2924N/7147E) and Rahimyar Khan (2822N/7020E).

- **Forecast**

*Unless further rains fall, breeding will decline in Tharparkar, Khipro and Cholistan, and no significant developments are likely.*

##### **India**

- **SITUATION**

During August, a single solitary adult was seen near Jodhpur (2618N/7308E) and isolated mature adults were seen at two places near the Pakistani border northwest of Barmer (2543N/7125E).

- **FORECAST**

*Unless further rains fall, breeding will decline in Rajasthan and Gujarat, and no significant developments are likely.*

#### **Afghanistan**

- **SITUATION**

No reports received.

- **FORECAST**

*No significant developments are likely.*

## **Announcements**



## **Announcements**

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLD Desert Locust Information Service (eclod@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.

**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 (eclod@fao.org) for details.

**MODIS imagery.** Columbia University's International Research Institute for Climate and



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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](http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato ([pceccato@iri.columbia.edu](mailto:pceccato@iri.columbia.edu)).

**New information on Locust Watch.** Recent additions to the web site ([www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)) are:

- **Desert Locust Survey & Control Form updated.** Publications section – Forms
- **Internet catalogue of the Pesticide Referee Group database.** Activities section – Environment and health
- **Desert Locust situation updates.** Archives Section – Briefs
- **Locust Information officer training at FAO.** Activities Section – DLIS

**2009 events.** The following activities are scheduled or planned:

- **EMPRES/WR Research.** Regional workshop on Desert Locust research, Dakar (5-9 October)
- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting (mid-December, tentative)
- **EMPRES/WR Steering Committee.** 4<sup>th</sup> EMPRES Steering Committee meeting (mid-December, tentative)



### 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<sup>2</sup>      • band: 1 - 25 m<sup>2</sup>

##### **SMALL**

- swarm: 1 - 10 km<sup>2</sup>      • band: 25 - 2,500 m<sup>2</sup>

##### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup>      • band: 2,500 m<sup>2</sup> - 10 ha

##### **LARGE**

- swarm: 100 - 500 km<sup>2</sup>      • band: 10 - 50 ha

##### **VERY LARGE**

- swarm: 500+ km<sup>2</sup>      • 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.



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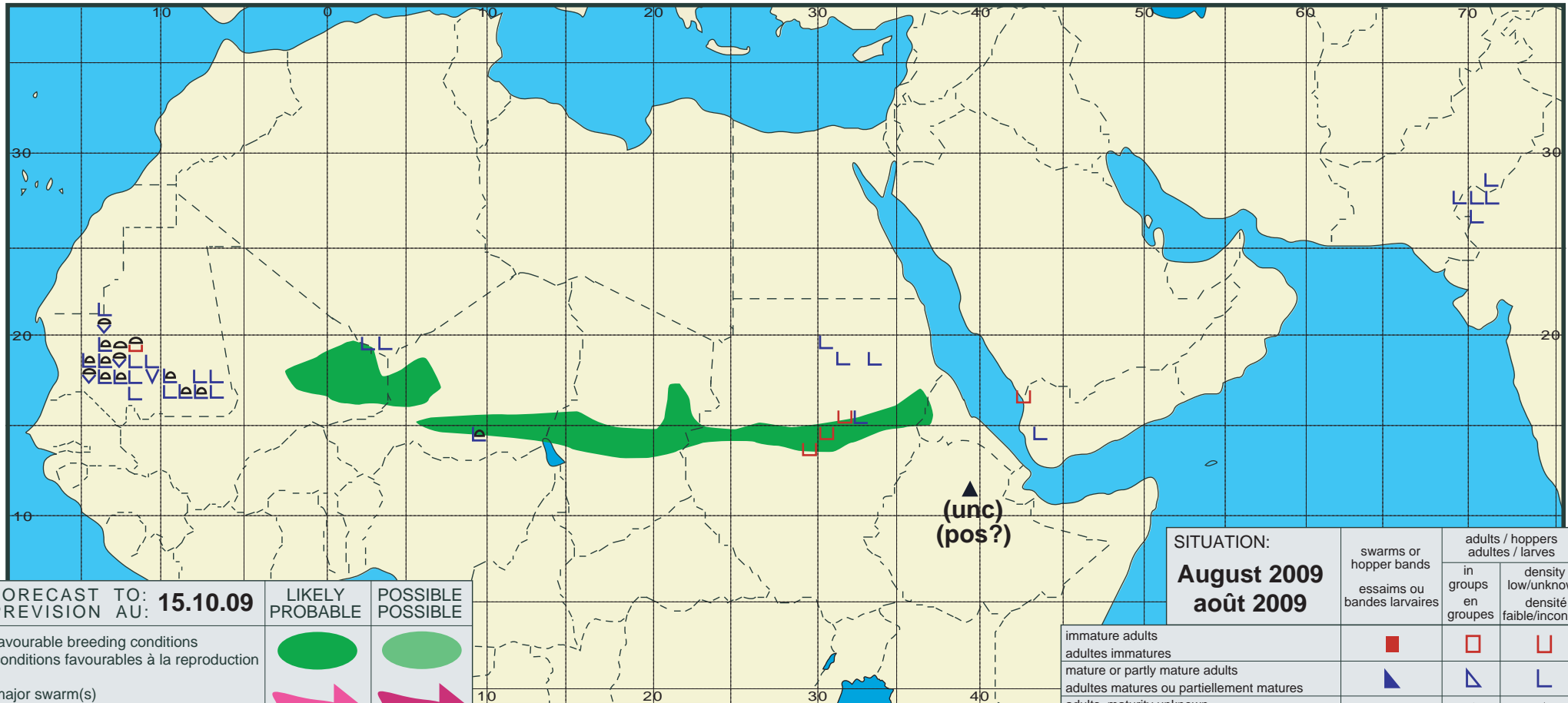




# Desert Locust Summary

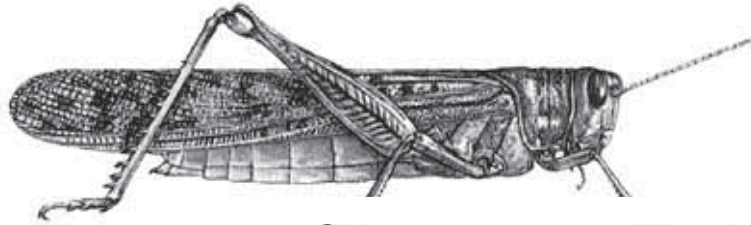
## Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: <b>15.10.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>August 2009</b> <b>août 2009</b>	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: **CALM**

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



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(1 Oct 2009)



## General Situation during September 2009 Forecast until mid-November 2009

The Desert Locust situation remained calm during September. Good rains fell in most of the summer breeding area in the northern Sahel between Mauritania and western Eritrea in early September but decreased thereafter. Small-scale breeding caused locust numbers to increase in Mauritania and limited control operations were carried out. Breeding probably occurred in parts of the northern Sahel from Mali to western Eritrea but surveys were only carried out in Chad where low numbers of adults were seen. The forecast period is one in which summer generation adults move to the autumn breeding areas in northwest Mauritania and winter breeding areas along both sides of the Red Sea. This year, small-scale movement and breeding is expected to occur in both areas. In Southwest Asia, the seasonal monsoon was unusually poor in the summer breeding areas along both sides of the Indo-Pakistan border and, as a result, there was no significant locust activity this year.

**Western Region.** Small-scale breeding continued during September in the summer breeding areas of central and southern Mauritania, causing locust numbers to increase east of Nouakchott and limited control operations were undertaken. As vegetation dries out in October, adults are expected to move from the south and southeast and appear in areas of recent rainfall in the northwest. Breeding is likely to commence in the northwest and continue east of Nouakchott, giving rise to more locusts that could

concentrate and form small groups. Isolated adults were present in Chad and low numbers of adults were probably present in northern Mali and Niger but surveys could not be carried out due to continued insecurity. During the forecast period, breeding will end in the northern Sahel and only low numbers of adults are likely to persist in parts of northern Mali, northern Niger and eastern Chad. Although locusts were not reported in Northwest Africa, scattered adults could appear in central and southern Algeria where good rains fell in September.

**Central Region.** Although good rains fell in early September in the summer breeding areas in Sudan and western Eritrea where low numbers of solitary adults were probably present and breeding on a small-scale, surveys were not carried out. No locusts were seen during surveys carried out in Egypt, Saudi Arabia, Oman and on the northern Red Sea coast in Eritrea. During the forecast period, low numbers of adults will move from the summer breeding areas in Sudan and western Eritrea to the Red Sea coast where breeding usually occurs during the winter. Small-scale breeding could commence earlier than usual on the coast of Eritrea, Djibouti, Yemen and Saudi Arabia where unusually heavy rains fell in late August. Regular surveys should be undertaken in all countries to monitor the situation.

**Eastern Region.** Very little rain fell during September in the summer breeding areas along both sides of the Indo-Pakistan border for the second consecutive month. Consequently, ecological conditions were unusually dry and not favourable for breeding, and only isolated solitary adults were seen in the Cholistan Desert in Pakistan. No locusts were seen during surveys along the coast in southern Iran. No significant developments are likely in the Region during the forecast period.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and made available on the Internet.

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## DESERT LOCUST BULLETIN



### Weather & Ecological Conditions in September 2009

**Ecological conditions were favourable for breeding in the northern Sahel in West Africa and Sudan where good rains fell until about mid-September. Ecological conditions are expected to be improving along both sides of southern Red Sea coast from earlier rains. The monsoon has come to an early end this year along the Indo-Pakistan border and conditions were drying out.**

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) oscillated around 20N over West Africa during the first half of September. At times, the ITCZ surged north to 25N and reached southern Algeria. Consequently, good rains fell during the first decade in the summer breeding areas of Mauritania, the Air Mountains in Niger, and in Chad. These rains extended further north than usual and reached northern Mauritania, northwest Mali, and parts of the Sahara in central Algeria. During the second half of the month, the ITCZ moved gradually southwards to 15N and there was a noticeable decline in rainfall in the northern Sahel, except for Mauritania where good rains continued to fall mainly in the west and to a lesser extent in parts of the south and southeast. Despite the decline in rainfall after the first decade, vegetation stayed green and ecological conditions remained favorable for breeding in most of the summer breeding areas in the northern Sahel from Mauritania to eastern Chad.

In the **Central Region**, good rains fell in the summer breeding areas in the interior of Sudan during the first half of September but declined thereafter, especially in the last decade of the month. Rainfall was heaviest in North Kordofan while much less rain fell in Darfur and in the eastern part of the country. In Eritrea, good rains fell in the western lowlands during the first decade of September. Despite the declining rainfall, ecological conditions remained favourable for breeding in most areas of both countries. Light rains fell at times on the plateau in northern Somalia between Erigavo and Hargeisa, extending to the Harar Highlands in eastern Ethiopia. In Yemen, good rains fell along the Red Sea coast where ecological conditions are expected to be improving from heavy

rains that occurred in late August. Similarly, ecological conditions are also expected to be improving on the coast of Eritrea and northern Djibouti from the August rains.

In the **Eastern Region**, no significant rain fell during September in the summer breeding areas along both sides of the Indo-Pakistan border for the second consecutive month. It appears that the poor performance and early end of this year's monsoon is attributed to El Nino and has resulted in much less favourable ecological conditions than normal in Rajasthan and adjacent areas of Cholistan and Tharparkar deserts in Pakistan. Consequently, vegetation continued to dry out during the month in both countries.



### Area Treated

Mauritania 37 ha (11-15 September)



### Desert Locust Situation and Forecast

( see also the summary on page 1 )

#### WESTERN REGION

##### **Mauritania**

##### • SITUATION

During September, small-scale breeding continued in the central portion of the summer breeding areas between Aguilal Faye (1827N/1444W) and Moudjeria (1752N/1219W) where copulating adults and solitary hatchlings and hoppers of all instars were present. Solitary hoppers were starting to concentrate in a few places at densities up to 1-2 hoppers/m<sup>2</sup>. Lower numbers of solitary hoppers and adults were present in the two Hodhs. During the second decade, more hoppers and adults were seen west and northwest of Moudjeria. Hopper densities increased to about 200 hoppers/site and adult densities reached as high as 1,500 adults/ha. Ground control was undertaken at six places against solitary immature adults at densities of 100-400 adults/ha and hopper concentrations, covering 37 ha. During the third decade, locust densities continued to increase slightly, reaching 1,900 adults/ha at one location, as vegetation started to dry out in some places.

##### • FORECAST

*As vegetation dries out in the south and southeast, low numbers of adults will move towards areas of recent rainfall in the northwest. Locust numbers are expected to increase further between Aguilal Faye and*

*Moudjeria as the adults arrive and breeding continues on a small scale. This could lead to formation of small groups once vegetation dries out, forcing the hoppers and adults to concentrate in the remaining green vegetation and increase in density. The situation should be monitored very carefully.*

#### **Mali**

- **SITUATION**

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

- **FORECAST**

*Scattered adults are likely to be present and breeding in parts of the Adrar des Iforas, Tamesna, and the Tilemsi Valley, and to a lesser extent in Timetrine and south of Araouane. Unless further rains fall, small-scale breeding will come to an end and only low numbers of adults are likely to persist in some areas.*

#### **Niger**

- **SITUATION**

Although surveys could not be carried out during September, a few isolated immature solitary adults were seen in Agadez (1700N/0756E) on the 24<sup>th</sup>.

- **Forecast**

*Scattered adults are likely to be present and breeding in parts of the northern Sahel, Tamesna, and in the southern Air Mountains. Unless further rains fall, small-scale breeding will come to an end and only low numbers of adults are likely to persist in some areas.*

#### **Chad**

- **SITUATION**

During September, isolated mature solitary adults were seen at a few places in the east near Arada (1501N/2040E), Kalait (1550N/2054E) and Fada (1714N/2132E). No locusts were seen during surveys carried out in the west (Kanem) and in the centre (Batha).

- **FORECAST**

*Small-scale breeding may be in progress in parts of Biltine and Ennedi. Unless further rains fall, breeding will come to an end and only low numbers of adults are likely to persist in some areas.*

#### **Senegal**

- **SITUATION**

No reports were received during September.

- **FORECAST**

*No significant developments are likely.*

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

- **FORECAST**

*No significant developments are likely.*

#### **Algeria**

- **SITUATION**

During September, no locusts were seen during surveys in the extreme south close to the Malian border near Bir Bou Mokhtar (2120N/0056E) and Tin Zaouatene (1957N/0258E), and near In Guezzam (1937N/0552E) and the Niger border.

- **FORECAST**

*Low numbers of adults may appear in areas of recent rainfall in parts of the central and southern Sahara.*

#### **Morocco**

- **SITUATION**

No surveys were carried out and no locusts were reported during September. However, isolated solitary hoppers and adults were seen in northeast Western Sahara near Bir Lahlou (2619N/0933W) and a few solitary adults were seen in the southeast near Agwanit (2212N/1309W).

- **FORECAST**

*No significant developments are likely.*

#### **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 reports were received during September.

- **FORECAST**

*No significant developments are likely.*

#### **CENTRAL REGION**

##### **Sudan**

- **SITUATION**

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



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## DESERT LOCUST BULLETIN

### • FORECAST

*Scattered adults are likely to be present and breeding on a small scale in North Kordofan and parts of Darfur, Khartoum, Kassala, and along the Nile River in Northern and River Nile states. Unless further rains fall, breeding will end and low numbers of adults are expected to move gradually towards the winter breeding areas on the Red Sea coast.*

### Eritrea

#### • SITUATION

No locusts were seen during surveys on the Red Sea coast in the first week of September between Sheib (1551N/3903E) and the Sudanese border.

#### • FORECAST

*Scattered adults are likely to be present and breeding on a small scale along the Gash Barka in the northern part of the western lowlands between Teseney and the Sudanese border (1705N). Unless further rains fall, breeding will end and low numbers of adults are expected to move gradually towards the winter breeding areas on the Red Sea coast where they could appear in areas of recent rain and breed on a small scale.*

### Ethiopia

#### • SITUATION

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

#### • FORECAST

*No significant developments are likely.*

### Djibouti

#### • SITUATION

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

#### • FORECAST

*Low numbers of adults could appear in areas of recent rainfall on the northern coast between Obock and the Eritrean border. Surveys should be undertaken to monitor the situation.*

### Somalia

#### • SITUATION

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

#### • FORECAST

*Low numbers of adults could appear in areas of*

*recent rainfall on the plateau between Hargeisa and Erigavo.*

### Egypt

#### • SITUATION

During September, scattered immature solitary adults were seen at one place between Abu Simbel (2219N/3138E) and Tushka (2247N/3126E). Elsewhere, no locusts were seen during surveys carried out in the Western Desert near Sh. Oweinat (2219N/2845E), along Lake Nasser to Garf Husein (2317N/3252E), and on the Red Sea coast between Shalatyn (2308N/3535E) and the Sudanese border.

#### • FORECAST

*No significant developments are likely.*

### Saudi Arabia

#### • SITUATION

During September, no locusts were seen during surveys on the Red Sea coast north of Jeddah (2130N/3910E) and near Jizan (1656N/4233E), in the interior south of Buraydah (2621N/4358E), and near the borders of Jordan and Kuwait.

#### • FORECAST

*Low numbers of adults could appear and breed on a small scale in areas of recent rainfall on the southern coast of the Red Sea near Jizan.*

### Yemen

#### • SITUATION

No reports were received during September.

#### • FORECAST

*Scattered adults are likely to be present and breeding on a small scale on the Red Sea coast. Small-scale breeding is expected to continue during the forecast period, causing locust numbers to increase slightly but remain below threatening levels. Regular surveys should be undertaken to monitor the situation.*

### Oman

#### • SITUATION

During September, no locusts were seen during surveys carried out in the northern interior of Dhahera between Ibri (2314N/5630E) and Buraimi (2415N/5547E).

#### • FORECAST

*No significant developments are likely.*

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

#### • FORECAST

*No significant developments are likely.*



## **EASTERN REGION**

### **Iran**

#### **• SITUATION**

No locusts were seen during surveys carried out on the southeast coast near Bander-e Lengheh (2634N/5452E), Jask (2540N/5746E), and Chabahar (2517N/6036E) in September.

#### **• FORECAST**

*No significant developments are likely.*

### **Pakistan**

#### **• SITUATION**

During the second half of August, isolated mature solitary adults were seen at 13 places in Khairpur and southern Cholistan south of Rohri (2739N/6857E) and Rahimyar Khan (2822N/7020E).

During the first half of September, low numbers of mature solitary adults persisted in the above areas.

#### **• Forecast**

*No significant developments are likely.*

### **India**

#### **• SITUATION**

During September, an isolated mature solitary adult was seen near Barmer (2543N/7125E) on the 11<sup>th</sup>. No locusts were seen elsewhere during intensive surveys carried out in the summer breeding areas in Rajasthan and Gujarat.

#### **• FORECAST**

*No significant developments are likely.*

### **Afghanistan**

#### **• SITUATION**

No reports received.

#### **• FORECAST**

*No significant developments are likely.*



## **Announcements**

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a

brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

**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](http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato (pceccato@iri.columbia.edu).

**New information on Locust Watch.** Recent additions to the web site ([www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)) are:

#### **• Desert Locust Survey & Control Form updated.**

Publications section – Forms

#### **• Internet catalogue of the Pesticide Referee**

Group database. Activities section – Environment and health

#### **• Desert Locust situation updates.** Archives Section – Briefs

#### **• Locust Information officer training at FAO.**

Activities Section – DLIS

**2009 events.** The following activities are scheduled or planned:

#### **• EMPRES/WR Research.** Regional workshop on Desert Locust research, Dakar (5-9 October)



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- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting (mid-December, tentative)
- **EMPRES/WR Steering Committee.** 4<sup>th</sup> EMPRES Steering Committee meeting (mid-December, tentative)



### 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<sup>2</sup>      • band: 1 - 25 m<sup>2</sup>

##### **SMALL**

- swarm: 1 - 10 km<sup>2</sup>      • band: 25 - 2,500 m<sup>2</sup>

##### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup>      • band: 2,500 m<sup>2</sup> - 10 ha

##### **LARGE**

- swarm: 100 - 500 km<sup>2</sup>      • band: 10 - 50 ha

##### **VERY LARGE**

- swarm: 500+ km<sup>2</sup>      • 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.



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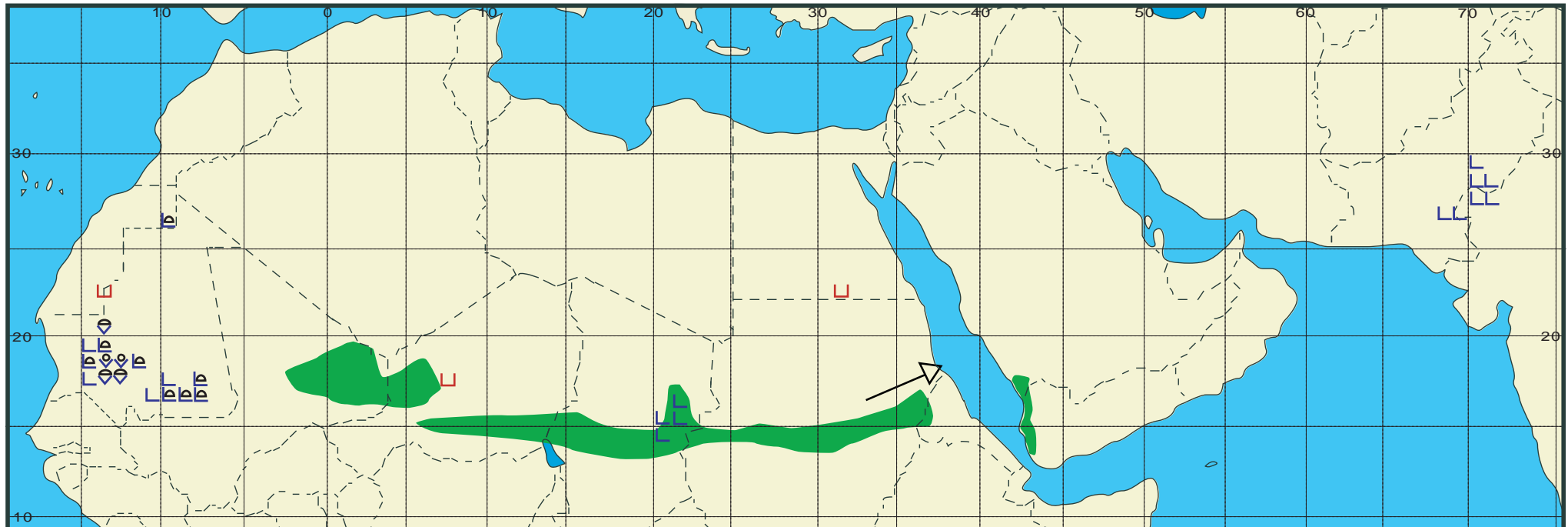
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# Desert Locust Summary

## Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: <b>15.11.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>Sept 2009</b> <b>sept 2009</b>	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)			

## Locust infestation in Mauritania

### Country teams and FAO bring situation under control



FAO offers hand to curtail locusts before they threaten crops and livelihoods

**26 October 2009, Rome -**

Ground control operations are in progress against an infestation of desert locusts in Mauritania. As long as there are no heavy rains the infestations should be eliminated by early December, FAO said today.

Seventeen teams from the National Locust Centre in Mauritania are currently undertaking survey and control

operations against breeding locusts in the west of the country where a serious infestation developed earlier this month.

The new hatchlings are gathering together to form small but dense hopper groups that are good targets for the control teams. More than 2,100 ha have been treated since the control operations started on 11 September.

“The current situation appears to be under control,” said Keith Cressman. “FAO is monitoring the situation extremely closely and will continue to keep countries, the donor community and other stakeholders informed of any significant developments as they arise.”

#### 2004 outbreak worse

The infestation is smaller than the outbreak in 2003 that led to a regional plague in 2004-05. No significant rain has fallen this month and vegetation is starting to dry out.

All countries within the region are much better prepared than in 2003 and have sufficient resources in place to bring the current situation under control.

Although there is no immediate threat, other countries in the region are on standby and ready to help Mauritania if needed. Morocco has mobilized survey teams and two aircraft in the extreme south just in case locust adults arrive from Mauritania. So far, ecological conditions remain dry in southern Morocco and no significant locust infestations have been detected.

#### Rains only risk

If unusually heavy and widespread rains occur in the next six weeks, there is a risk that small swarms will form in early December in the infested area.

They could then move north into northern Mauritania and southern Morocco and breed during the winter. This could eventually lead to further migration and breeding during the spring as far north as the Atlas

#### Related links

[Locust Watch](#)

[Frequently Asked Questions](#)

[2004 Locust Outbreak](#)

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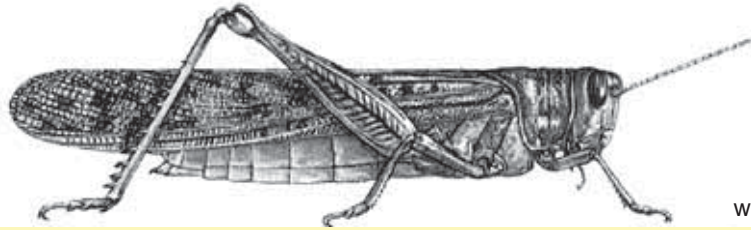
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Mountains in Morocco and Algeria.

However, the probability of this to occur is slim and FAO and its partners will keep a close watch on the developments. FAO has taken several precautionary steps in case the locust situation deteriorates.

FAO is organising an experts meeting in Mauritania next week to assess the situation on the ground and to develop short and mid-term action plans. FAO is in regular contact with the donor community if additional funds are required for control operations.



warning level: **CAUTION**

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 373

(1 Nov 2009)



## General Situation during October 2009 Forecast until mid-December 2009

An outbreak of Desert Locust developed in early October in western Mauritania. Control operations were in progress against a second generation of hatchlings and hoppers that were forming small concentrated groups and a few bands. The outbreak should be contained by early December unless unusually heavy and widespread rains fall in November. In that case, small swarms could form in early December and move north into southern Morocco, Western Sahara and northern Mauritania and breed, causing a significant increase in locust numbers that could lead to a regional upsurge. Elsewhere, the situation remained calm and vegetation was drying out in most areas. Only isolated adults were seen in parts of the northern Sahel in West Africa and on the Red Sea coast in Yemen. During the forecast period, low numbers of locusts may persist in a few parts of the northern Mali and Niger, and in northeast Chad. Small-scale breeding is likely to occur along both sides of the Red Sea.

**Western Region.** A potentially dangerous outbreak developed in western Mauritania in late September and early October. Additional national teams were deployed to conduct survey and control operations, treated nearly 4,000 ha. The outbreak is smaller than in 2003 and Mauritania is better prepared with sufficient resources to combat new hopper groups as they form during November. Very little rain fell in the Region during October, which means that breeding is likely to end shortly unless more rains fall. This,

combined with effective control operations against primarily hopper infestations, should reduce locust numbers and bring the situation under control and stop the migration of adults towards the north. So far, only isolated solitary immature adults have arrived in adjacent areas of southern Morocco and Western Sahara. Elsewhere, low numbers of adults were present in central Mali, southern Algeria, northern Niger and Chad. Small-scale breeding may have occurred in some of these places during October.

**Central Region.** Very little rain fell during October in the Region except for light showers on the Red Sea coast of Yemen where low numbers of locusts were present. Consequently, small-scale breeding is likely to occur during the forecast period, causing locust numbers to increase slightly. Elsewhere, a ground team treated solitary hoppers and adults at one place in the northern highlands of Ethiopia, and isolated adults were seen on the northern Red Sea coastal plains in Eritrea. During the forecast period, low numbers of adults are likely to appear on the Red Sea coast of Sudan, Eritrea and Saudi Arabia, and breed on a small scale in any areas that receive rainfall. No significant developments are likely.

**Eastern Region.** No significant rain fell during October and no locusts were reported in the Region. The situation will remain calm during the forecast period.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and made available on the Internet.

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DLIS: [www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)



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## DESERT LOCUST BULLETIN



### Weather & Ecological Conditions in October 2009

**No significant rain fell in the Desert Locust recession area during October. Consequently, vegetation was drying out or already dry in most places except for along the Red Sea coast of Yemen where conditions were favourable for breeding.**

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) moved south and consequently very little, if any, rain fell in the summer breeding areas of the northern Sahel during October. In Mauritania, vegetation first began drying out in the south and southeast and by the end of the month it had started to dry out in the west and centre of the country. In Mali, vegetation was green in the north but started to dry out by the end of the month. In Algeria, dry conditions persisted except in the extreme south along the borders of Mali and Niger between Bir Bou Mokhtar and In Guezzam where breeding conditions remained favourable. In Niger, light rains fell at the end of the month in parts of the Tamesna and Air Mountains. In Chad, vegetation started drying out by the end of October in the northeast. Elsewhere, dry conditions prevailed in the region.

In the **Central Region**, no significant rain fell during October. Consequently, vegetation continued to dry out in the summer breeding areas in the interior of Sudan and in western Eritrea. In the winter breeding areas, light to moderate rains fell on the northern Red Sea coast in Sudan and in adjacent areas of Wadi Diib on 25 October. In Eritrea, light rain fell on the central coast of the Red Sea and in the adjacent highlands between Erafile and Afabet at mid-month. More rain is probably required in both countries before ecological conditions become favourable for breeding. In Yemen, breeding conditions were favourable in most coastal areas along the Red Sea and Gulf of Aden as a result of light rains during October and good rains during August and September.

In the **Eastern Region**, no significant rain fell during October in the summer breeding areas along both sides of the Indo-Pakistan border for the third consecutive month. Consequently, vegetation

continued to dry out during the month in both countries.



### Area Treated

Ethiopia	37 ha (15 October)
Mauritania	64 ha (11-30 September; updated)
	3,865 ha (1-31 October, estimated)



### Desert Locust Situation and Forecast

*( see also the summary on page 1 )*

#### WESTERN REGION

##### **Mauritania**

##### • SITUATION

In late September and early October, a potentially serious outbreak developed between Nouakchott and Moudjeria (1752N/1219W), Boutilimit (1732N/1441W) and Akjoujt (1945N/1421W) in an area of about 400 km by 250 km. One generation of breeding had already occurred and solitarious adults were arriving from breeding areas that were drying out in the south and southeast. Hopper and adult densities increased, and solitarious and *transiens* hoppers formed small groups. During the second half of October, second-generation hatching occurred and the hatchlings and early instar hoppers formed small but dense groups. Immature solitarious and *transiens* adults formed groups near Moudjeria while mature adults formed groups in the Agual Faye area. Copulating and egg laying continued, extending towards Oujeft (2003N/1301W). Further north, mature solitarious adults and some solitarious hoppers were present near Zouerate (2244N/1221W). Ground control teams treated more than 3,800 ha during the month.

##### • FORECAST

*Hatching will continue during November and hoppers are expected to form small dense groups in currently infested areas. By the end of the month, hoppers that hatched in October will fledge and could form small groups of immature adults and perhaps a few small immature swarms. Hatching may also occur near Zouerate and Oujeft. Unless further rains fall, teams should be able to bring the situation under control and only low numbers of adults are likely to persist through December with a possibility of moving north to Inchiri and Tiris Zemmour. But if unusually good rains fall and temperatures remain warm, then another generation of breeding could occur, giving rise to hopper bands and adults swarms.*

## Mali

### • SITUATION

During October, isolated immature and mature solitary adults were seen at three places west of Hombori (1516N/0140W) at mid month. No locusts were seen during surveys between Nara (1510N/0717W) and Tombouctou (1649N/0259W).

### • FORECAST

*Low numbers of adults are likely to persist in parts of the Adrar des Iforas.*

## Niger

### • SITUATION

During October, scattered immature and mature solitary adults were present at densities up to 400 adults/ha in the Tamesna west of Agadez (1700N/0756E) between Tassara (1650N/0550E) and Arlit (1843N/0721E). Some of the adults were seen copulating and laying eggs during the first decade at four places west of Arlit.

### • Forecast

*Low numbers of hoppers and adults will persist in parts of the Tamesna where they could concentrate in a few places as vegetation dries out.*

## Chad

### • SITUATION

During October, isolated mature solitary adults were seen at a few places in the east (Biltine and BET) between Kalait (1550N/2054E) and Fada (1714N/2132E), and near Arada (1501N/2040E), in the centre (Batha and eastern Kanem) between Salal (1448N/1712E) and Haraz-Djombo (1357N/1926E), and in the west (Lac Tchad) southwest of Mao (1406N/1511E). A few adults were seen copulating near Fada in early October.

### • FORECAST

*Locust numbers will continue to decline and no significant developments are likely.*

## Senegal

### • SITUATION

No reports were received during October.

### • FORECAST

*No significant developments are likely.*

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

### • FORECAST

*No significant developments are likely.*

## Algeria

### • SITUATION

During October, isolated immature and mature solitary adults were seen in the extreme south

close to the Malian border near Bir Bou Mokhtar (2120N/0056E). No locusts were seen elsewhere along the borders of Mali and Niger.

### • FORECAST

*Low numbers of adults may persist near the borders of Mali and Niger. Low to moderate numbers of adults and perhaps a few small groups coming from Mauritania may appear near Tindouf.*

## Morocco

### • SITUATION

During the second half of October, isolated immature solitary adults were seen in the extreme south of the Western Sahara between Bir Gandouz (2136N/1628W) and Tichla (2137N/1453W), and in the centre near Oum Dreyga (2416N/1325W) as well as in northeastern Morocco near the Algerian border southeast of Bouarfa (3232N/0159W).

### • FORECAST

*Low to moderate numbers of adults and perhaps a few small groups may appear from Mauritania in the extreme south between Tichla and Laayoune, and breed if rainfall occurs.*

## Libyan Arab Jamahiriya

### • SITUATION

No reports were received 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

No locusts were seen during surveys carried out in North Kordofan between El Obeid (1311N/3010E) and Ed Dueim (1400N/3220E) in mid-October.

### • FORECAST

*Locust numbers will decline in the summer breeding areas as adults move to the winter breeding areas along the Red Sea coast. Low numbers of adults may first appear in Wadi Diib where it may have rained*



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*recently. Adults will also appear on the coastal plains and breed in those places that receive rainfall.*

### Eritrea

#### • SITUATION

No locusts were seen during surveys on the Red Sea coast in the third week of October between Tio (1441N/4057E) and Afabet (1612N/3841E) except for isolated solitarious adults north of Massawa at Sherbeck (1605N/3901E).

#### • FORECAST

*Low numbers of locust adults are expected to appear on the Red Sea coastal plains between Massawa and the Sudanese border, and breed on a small scale in areas that receive rainfall or runoff.*

### Ethiopia

#### • SITUATION

During October, no locusts were seen in the northern highlands except at one place (1135N/3844E) northwest of Addis Ababa where ground teams treated fifth instar solitarious hoppers and adults on 35 ha on the 15<sup>th</sup>.

#### • FORECAST

*No significant developments are likely.*

### Djibouti

#### • SITUATION

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

#### • FORECAST

*Low numbers of adults may be present in areas of earlier rainfall on the northern coast between Obock and the Eritrean border. Surveys should be undertaken to check the situation.*

### Somalia

#### • SITUATION

No reports were received during October.

#### • FORECAST

*No significant developments are likely.*

### Egypt

#### • SITUATION

During October, no locusts were seen during surveys carried out in the Western Desert near Sh. Oweinat (2219N/2845E), along Lake Nasser between Abu Simbel (2219N/3138E) and Garf Husein

(2317N/3252E), and on the Red Sea coast between Shalatyn (2308N/3535E) and the Sudanese border.

#### • FORECAST

*No significant developments are likely.*

### Saudi Arabia

#### • SITUATION

No locusts were seen during surveys carried out in October on the central and southern coast of the Red Sea and in the northern interior.

#### • FORECAST

*Low numbers of adults are likely to appear on the southern and central Red Sea coast and breed on a small scale if rainfall occurs.*

### Yemen

#### • SITUATION

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

During October, isolated immature and mature solitarious adults were scattered along the Red Sea coastal plains in the north between Suq Abs (1600N/4312E) and Midi (1619N/4248E) and in the centre between Hodeidah (1450N/4258E) and Zabid (1410N/4318E). An individual immature adult was seen on the southern coast northwest of Aden near Am Rijja (1302N/4434E).

#### • FORECAST

*Isolated adults will persist on the Red Sea coastal plains and breed on a small scale in areas of recent rainfall, causing locust numbers to increase slightly but remain below threatening levels. Regular surveys should be undertaken to monitor the situation.*

### Oman

#### • SITUATION

During October, no locusts were seen during surveys carried out in the northern interior of Dhahera between Ibri (2314N/5630E) and Buraimi (2415N/5547E).

#### • FORECAST

*No significant developments are likely.*

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

#### • FORECAST

*No significant developments are likely.*

### EASTERN REGION

#### Iran

#### • SITUATION

No locusts were seen during surveys carried out on the southeast coast near Bander-e Lengheh (2634N/5452E), Jask (2540N/5746E) and Chabahar (2517N/6036E) in October.



- **FORECAST**

*No significant developments are likely.*

### **Pakistan**

- **SITUATION**

During the second half of September, low numbers of mature solitary adults persisted in the summer breeding areas near Rahimyar Khan (2822N/7020E), Sukkur (2742N/6854E) and Mirpurkhas (2533N/6905E).

No locusts were seen in the summer breeding areas during the first fortnight of October.

- **Forecast**

*No significant developments are likely.*

### **India**

- **SITUATION**

No locusts were seen during intensive surveys carried out in October in the summer breeding areas in Rajasthan and Gujarat.

- **FORECAST**

*No significant developments are likely.*

### **Afghanistan**

- **SITUATION**

No reports received.

- **FORECAST**

*No significant developments are likely.*



## **Announcements**

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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 (ecl@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.

**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 (ecl@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](http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato (pceccato@iri.columbia.edu).

**New information on Locust Watch.** Recent additions to the web site ([www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)) are:

- **Desert Locust Survey & Control Form updated.** Publications section – Forms
- **Internet catalogue of the Pesticide Referee Group database.** Activities section – Environment and health
- **Desert Locust situation updates.** Archives Section – Briefs
- **Locust Information officer training at FAO.** Activities Section – DLIS

**2009 events.** The following activities are scheduled or planned:

- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting (mid-December, tentative)
- **EMPRES/WR Steering Committee.** 4<sup>th</sup> EMPRES Steering Committee meeting (mid-December, tentative)



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### 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<sup>2</sup>      • band: 1 - 25 m<sup>2</sup>

##### **SMALL**

- swarm: 1 - 10 km<sup>2</sup>      • band: 25 - 2,500 m<sup>2</sup>

##### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup>      • band: 2,500 m<sup>2</sup> - 10 ha

##### **LARGE**

- swarm: 100 - 500 km<sup>2</sup>      • band: 10 - 50 ha

##### **VERY LARGE**

- swarm: 500+ km<sup>2</sup>      • 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.



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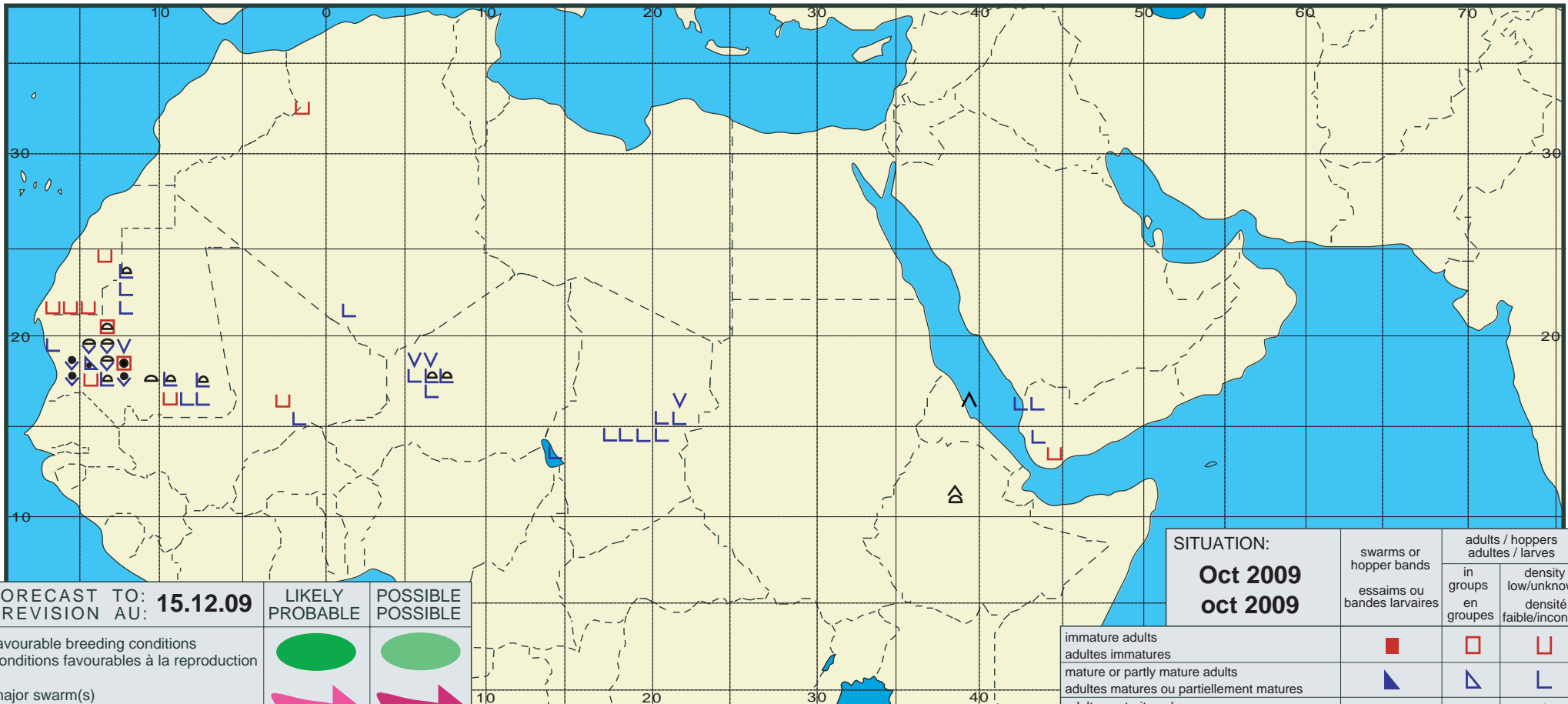
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# Desert Locust Summary

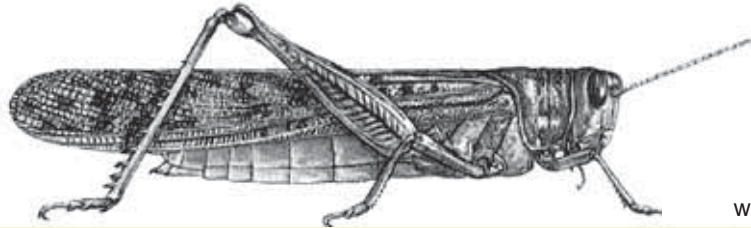
## Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: <b>15.12.09</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>Oct 2009</b> oct 2009	swarms or hopper bands	adults / hoppers adultes / larves	
	essaims ou bandes larvaires	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**

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



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(2 Dec 2009)



## General Situation during November 2009 Forecast until mid-January 2010

The Desert Locust outbreak in western Mauritania continued during November. However, by the end of the month, the situation had improved as a result of intensive ground control operations undertaken by national teams, a lack of significant rainfall and a northerly movement of scattered adults to the Western Sahara and Morocco. The situation is expected to improve further unless unusually heavy and widespread rains fall but this is unlikely. Limited control operations were undertaken in southern Morocco and central Algeria where local breeding occurred. In the winter breeding areas along both sides of the Red Sea, conditions remained generally dry and unfavourable except for northeast Sudan where egg laying took place. Small-scale breeding during the forecast period will cause locust numbers to increase slightly but remain below threatening levels in those places along both sides of the Red Sea that receive rainfall. No significant developments are likely.

**Western Region.** A potentially dangerous outbreak developed in western Mauritania in late September has been nearly controlled. Since mid-September, national ground teams have treated nearly 14,000 ha, of which more than 9,500 ha were in November. During November, egg laying continued in some areas, and hoppers and adults formed small groups. At mid-month, scattered adults moved northwards on warm winds to the Western Sahara and Morocco. Limited control was undertaken in southern Morocco

against small groups of hoppers. By the last week of the month, locust densities began to decline in Mauritania, there were fewer groups and infestations were smaller. In central Algeria, ground teams treated 225 ha of locally bred hoppers and adults. Low numbers of locusts were reported in other parts of the Sahara in Algeria and southwest Libya. During the forecast period, low numbers of locusts are expected to persist in all of the above-mentioned areas. Small-scale breeding could occur if rains fall and temperatures remain warm. There is a moderate risk that scattered adults will move further north towards the Atlas Mountains during periods of warm winds.

**Central Region.** Although some rain fell along the Red Sea coast in November, ecological conditions remained generally dry and unfavourable in the winter breeding areas except in northeast Sudan near the Egyptian border. Low numbers of adults were present in a few areas along the coast in Sudan. Breeding was in progress in the northeast and is expected to occur in the Tokar Delta once rains fall. During the forecast period, small-scale breeding is also likely to take place along the Red Sea coast in Eritrea, Saudi Arabia and Yemen in areas that receive rainfall or runoff. This will cause locust numbers to increase slightly but remain below threatening levels. Regular surveys are recommended throughout the period. No locusts were reported elsewhere in the region.

**Eastern Region.** Dry conditions prevailed throughout the region during November and no locusts were reported. During the forecast period, isolated adults may start to appear in the spring breeding areas along the coast of western Pakistan and southeastern Iran.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and made available on the Internet.

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DLIS: [www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)





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### Weather & Ecological Conditions in November 2009

**Very little rain fell in the Desert Locust recession area during November except for parts of western Mauritania and the Red Sea coast. Consequently, vegetation was green or becoming green in these places but remained mainly dry elsewhere.**

In the **Western Region**, light rain fell on 2 November in the Western Sahara between Aousserd and Agwanit, extending into adjacent parts of northwest and northern Mauritania from Akjoujt and Zouerate to the Ouarane sand sea. Light rain also fell on the 18<sup>th</sup> in a few places of central Mauritania. Ecological conditions remained favourable in western and central Mauritania for locust survival and limited breeding. Conditions are likely to improve in the southern part of the Western Sahara where a few patches of green vegetation were present near Aousserd and Tichla. The rains in November should allow limited breeding during the forecast period in both countries. In Morocco, vegetation was becoming green south of the Atlas Mountains in the Ziz-Ghris Valley and near Bouarfa. Warm (Chergui) winds during the second decade of the month favoured a northerly movement of locusts over the Western Sahara and southern Morocco. In Algeria, green vegetation was present in the extreme south near Bir Bou Mokhtar and the Malian border, in the east between Illizi and Djanet and in parts of the central Sahara west and northwest of Tamanrasset. Vegetation was drying out near In Guezzam and the Niger border. Elsewhere in the northern Sahel, vegetation continued to dry out in the absence of any significant rainfall.

In the **Central Region**, very little rain fell during November in the winter breeding areas along both sides of the Red Sea except for northeast Sudan and the central Red Sea coast in Saudi Arabia. In Sudan, moderate showers fell on 10 November in Wadi Diib near the Egyptian border where it had rained two weeks earlier. Consequently, ecological conditions remained favourable for breeding. In Saudi Arabia, unusually heavy rains fell on the 25<sup>th</sup> near Jeddah where 70 mm was reported, more than the amount of rain that normally falls in an entire year. Ecological conditions are likely to improve but within a limited

area near Jeddah. In Yemen, ecological conditions were favourable for breeding along parts of the Red Sea coastal plains. Elsewhere in the winter breeding area and throughout the region, conditions remained generally dry and unfavourable for breeding.

In the **Eastern Region**, no significant rain fell in the summer and spring breeding areas during November. Consequently, vegetation continued to dry out during the month and ecological conditions were not favourable for breeding.



### Area Treated

Algeria	225 ha (November)
Mauritania	4,214 ha (October, updated) 9,554 ha (November)
Morocco	0.04 ha (November)



### Desert Locust Situation and Forecast

*( see also the summary on page 1 )*

#### WESTERN REGION

##### **Mauritania**

##### • SITUATION

During the first half of November, ground control operations increased as second generation mid to late instar hoppers continued to form small groups within a remote area between Nouakchott, Moudjeria (1752N/1219W), and Oujeft (2003N/1301W). Hopper densities reached 80 hoppers/m<sup>2</sup> near Nouakchott. Some of the immature and mature adults also formed groups, mainly near Moudjeria and Nouakchott while egg-laying continued in a few areas between Aguilal Faye (1827N/1444W) and Akjoujt (1945N/1421W). Further north, scattered mature solitary adults were present near Zouerate (2244N/1221W).

During the second half of the month, the situation improved as a result of the control operations, a lack of significant rainfall and as scattered immature adults moved north to Zouerate. By the last week, locust densities began to decline, there were fewer groups and infestations were smaller. Although most of the hoppers had fledged, hatching occurred near Nouakchott and a few adults were copulating near Atar (2032N/1308W). In the north, isolated mature solitary adults were seen near Bir Moghreïn (2510N/1135W). In the southeast, scattered immature solitary adults were present west of Nema (1636N/0715W). Ground control teams treated some 9,554 ha during November.

• **FORECAST**

*Locust numbers are expected to decline east of Nouakchott and only low numbers of scattered hoppers and adults are likely to persist. If temperatures remain warm, the adults will mature and could breed on a limited scale in areas where conditions stay favourable. During periods of warm southerly winds, scattered adults may move north to Inchiri and Tiris Zemmour. Unless unusually widespread and heavy rains fall which is unlikely, the situation is expected to remain under control.*

**Mali**

• **SITUATION**

During November, isolated mature solitary adults were seen near the Niger River southeast of Gao near the Niger border. No locusts were seen in the west between Kayes (1426N/1128W) and Nara (1510N/0717W) or in the centre between Hombori (1516N/0140W), Gourma (1653N/0155W) and west of Tombouctou (1649N/0259W).

• **FORECAST**

*Low numbers of adults are likely to persist in parts of the Adrar des Iforas.*

**Niger**

• **SITUATION**

Although no surveys were undertaken in November, there were unconfirmed reports from travelers of hopper bands in the Tamesna near In Abangharit (1754N/0559E). A survey will be organized to verify the situation.

• **Forecast**

*Low numbers of hoppers and adults are likely to present in parts of the Tamesna where they could concentrate in those areas that remain green. A few adults may appear in parts of the Air Mountains where they are expected to persist during the forecast period.*

**Chad**

• **SITUATION**

During November, no locusts were seen in Biltine near Arada (1501N/2040E).

• **FORECAST**

*No significant developments are likely.*

**Senegal**

• **SITUATION**

A late report indicated that no locusts were reported from July to October.

During November, no locusts were seen during surveys carried out in the north.

• **FORECAST**

*No significant developments are likely.*

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

• **FORECAST**

*No significant developments are likely.*

**Algeria**

• **SITUATION**

During November, ground teams treated 225 ha of first to third instar *transiens* hoppers and isolated immature solitary adults at five places (ca. 2453N/0342E) in the central Sahara between Tamanrasset (2250N/0528E) and In Salah (2712N/0229E). Isolated mature solitary adults were seen between Djanet (2434N/0930E) and Illizi (2630N/0825E), and isolated immature and mature adults were present near In Guezzam (1937N/0552E) and the Niger border. No locusts were seen near Bir Bou Mokhtar (2120N/0056E) and the Mali border.

• **FORECAST**

*Low numbers of locusts are likely to persist in parts of the central, southern and eastern Sahara. Small-scale breeding may occur in central and eastern areas that received rainfall during the autumn.*

**Morocco**

• **SITUATION**

During November, immature and mature solitary adults increased slightly in the extreme south of the Western Sahara between Tichla (2137N/1453W) and Bir Anzarane (2353N/1431W). Near Tichla, second instar hoppers were concentrating and forming small groups at densities up to 60 hoppers/m<sup>2</sup> while a few adults were seen copulating. During the second week, low numbers of maturing solitary adults moved progressively north through the Western Sahara and reached the Souss Valley on the 16<sup>th</sup>. Ground teams treated 400 m<sup>2</sup> near Tichla.

In the northeast, scattered solitary adults were maturing near the Algerian border between Erfoud (3128N/0410W) and Figuig (3207N/0113W).

• **FORECAST**

*Low numbers of hoppers and adults are expected to persist in parts of the Western Sahara, primarily between Tichla and Aousserd. Scattered adults could appear in southern Morocco and the Western Sahara from the south and move further north towards the Atlas Mountains during periods of warm southerly*



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winds. If further rains fall and temperatures remain warm, small-scale breeding could occur in some places of the extreme south as well as southwest and southeast of the Atlas Mountains.

### Libyan Arab Jamahiriya

- SITUATION

During November, scattered solitary adults were seen at two places in the southwest near Ghat (2459N/1011E) and the Algerian border.

- FORECAST

Low numbers of locusts will persist in the southwest near Ghat and could breed on a small scale if rains fall and temperatures remain warm.

### 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 mid-November, isolated mature solitary adults were seen in the interior of the northern Red Sea coast on 5 ha northwest of Sufiya (2119N/3613E) in Wadi Diib and on the coast near the Egyptian border. Some adults were laying eggs in W. Diib. On the southern coast, scattered mature solitary adults at densities up to 200 adults/ha were present at three places in the Tokar Delta. No locusts were seen elsewhere along the coast or in Wadi Diib/Oko.

- FORECAST

Limited hatching will occur during December in Wadi Diib. Small-scale breeding will take place in the Tokar Delta and nearby coastal plains if more rains fall. Consequently, locust numbers will increase gradually but remain below threatening levels on the coast and in subcoastal areas.

#### Eritrea

- SITUATION

No reports were received during November.

- FORECAST

Low numbers of locust adults are expected to appear on the Red Sea coastal plains between

Massawa and the Sudanese border, and breed on a small scale in areas that receive rainfall or runoff.

### Ethiopia

- SITUATION

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

- FORECAST

No significant developments are likely.

### Djibouti

- SITUATION

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

- FORECAST

No significant developments are likely.

### Somalia

- SITUATION

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

- FORECAST

No significant developments are likely.

### Egypt

- SITUATION

During November, no locusts were seen during surveys carried out in the Western Desert near Sh. Oweinat (2219N/2845E), Dakhla (2530N/2900E), along Lake Nasser between Abu Simbel (2219N/3138E) and Garf Husein (2317N/3252E), and on the Red Sea coast from south of Marsa Alam (2504N/3454E) to the Sudanese border.

- FORECAST

Isolated adults may appear on the southern coastal plains of the Red Sea between Shalatyn and the Sudanese border as well as in adjacent subcoastal areas. Small-scale breeding will occur in areas that receive rainfall.

### Saudi Arabia

- SITUATION

No locusts were seen during surveys carried out in November on the central and southern coast of the Red Sea from Masturah (2309N/3851E) to the Yemeni border and in the interior near Buraydah (2621N/4358E).

- FORECAST

Low numbers of adults are likely to appear on the southern and central Red Sea coast and breed on a small scale in areas of recent rainfall near Jeddah as well as in other places that receive rains during the forecast period.

## Yemen

### • SITUATION

Although surveys could not be carried out during November, the locust situation was reported to be calm on the Red Sea coastal plains.

### • FORECAST

*Scattered adults are likely to be present and will persist on the Red Sea coastal plains. Small-scale breeding will cause locust numbers to increase slightly but remain below threatening levels in areas that receive rainfall. A few adults may also be present on the southern coastal plains near Aden. Regular surveys should be undertaken to monitor the situation.*

## Oman

### • SITUATION

During November, no locusts were seen during surveys carried out in the southern region of Dhofar near Shehan (1746N/5229E) and the Yemeni border.

### • FORECAST

*No significant developments are likely.*

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

### • FORECAST

*No significant developments are likely.*

## EASTERN REGION

### Iran

### • SITUATION

During November, no locusts were seen during surveys carried out on the southeast coast near Bander-e Lengheh (2634N/5452E) and Jask (2540N/5746E).

### • FORECAST

*Isolated adults may start to appear in the spring breeding areas along the southeast coast at the end of the forecast period.*

### Pakistan

### • SITUATION

No locusts were reported during the second fortnight of October and first fortnight of November.

### • Forecast

*Isolated adults may start to appear in the spring breeding areas along the coast of Baluchistan at the end of the forecast period.*

### India

### • SITUATION

No locusts were seen during intensive surveys carried out in November in the summer breeding areas in Rajasthan and Gujarat.

### • FORECAST

*No significant developments are likely.*

## Afghanistan

### • SITUATION

No reports received.

### • FORECAST

*No significant developments are likely.*



## Announcements

**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.

**Locust reporting.** During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLD Desert Locust Information Service (eclod@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.

**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, eLocust2Mapper and satellite imagery. Interested information officers should contact DLIS (eclod@fao.org) for details.

**MODIS imagery.** Columbia University's International Research Institute for Climate and Society (IRI) provides 16-day 250-metre resolution



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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](http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato ([pceccato@iri.columbia.edu](mailto:pceccato@iri.columbia.edu)).

**New information on Locust Watch.** Recent additions to the web site ([www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)) are:

- **Desert Locust situation updates.** Archives Section – Briefs
- **Mauritania outbreak overview.** Information Section – home page
- **Experts meeting on Mauritania outbreak report.** Publications Section – Miscellaneous reports

**2009-10 events.** The following activities are scheduled or planned:

- **EMPRES/WR Liaison Officers.** 8<sup>th</sup> EMPRES Liaison Officers meeting, Bamako (14-18 December)
- **EMPRES/WR Steering Committee.** 5<sup>th</sup> EMPRES Steering Committee meeting, Bamako (21-22 December)
- **EMPRES/WR Phase 2.** Planning meeting, Dakar (8-12 March)
- **SWAC/CRC Locust Information Officers.** 3<sup>rd</sup> Inter-regional workshop on the use and improvement of RAMSES and eLocust2, Cairo (18-19 April)
- **SWAC/CRC Master Trainers.** 2<sup>nd</sup> Master Trainers training course, Iran (8-13 May)



### 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<sup>2</sup>      • band: 1 - 25 m<sup>2</sup>

##### **SMALL**

- swarm: 1 - 10 km<sup>2</sup>      • band: 25 - 2,500 m<sup>2</sup>

##### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup>      • band: 2,500 m<sup>2</sup> - 10 ha

##### **LARGE**

- swarm: 100 - 500 km<sup>2</sup>      • band: 10 - 50 ha

##### **VERY LARGE**

- swarm: 500+ km<sup>2</sup>      • 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.



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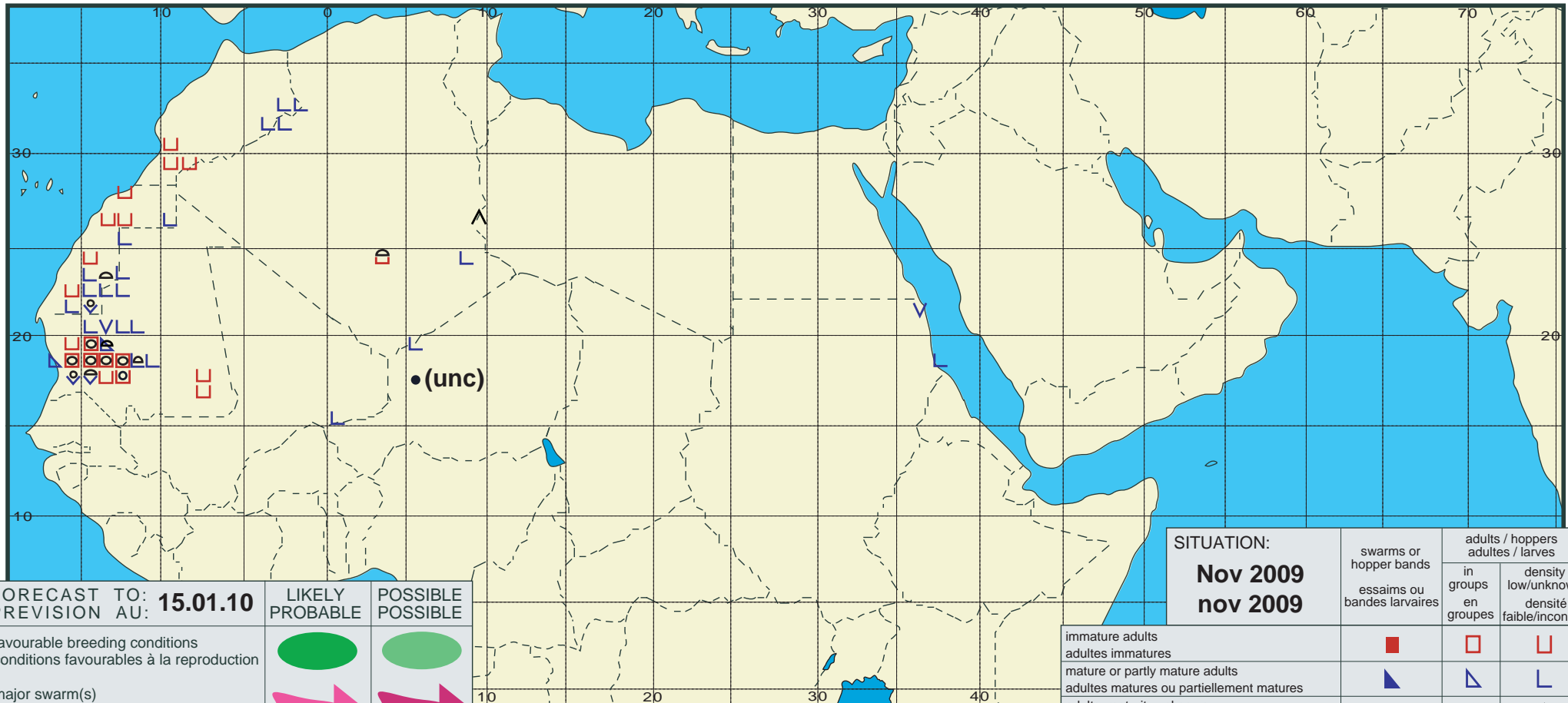
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# Desert Locust Summary

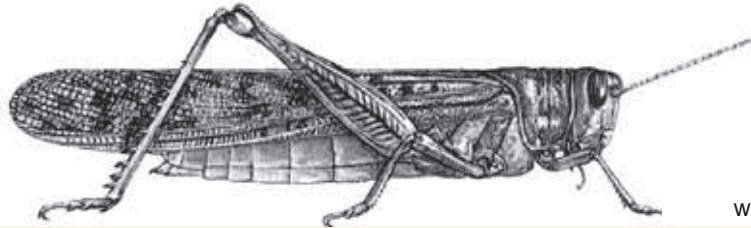
## Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: <b>15.01.10</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>Nov 2009</b> <b>nov 2009</b>	swarms or hopper bands	adults / hoppers adultes / larves	
	essaims ou bandes larvaires	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**

# DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 375

(4 Jan 2010)



## General Situation during December 2009 Forecast until mid-February 2010

The Desert Locust outbreak in western Mauritania came to an end in December and only small residual populations remain. Locusts concentrated in vegetation that remained green in northern Niger and formed small groups that were controlled by national ground teams. Local breeding occurred in one area of the central Sahara in Algeria and control was undertaken. In the winter breeding areas along both sides of the Red Sea, limited breeding was reported in Egypt and Eritrea while low numbers of adults were present in coastal areas of Sudan, Saudi Arabia, Yemen and northwest Somalia. During the forecast period, small-scale breeding will occur on both sides of the Red Sea, especially if more rains fall, while low numbers of adults are expected to persist in parts of Mauritania, Western Sahara, Mali, Niger, Algeria and Morocco. No significant developments are likely.

**Western Region.** Locust infestations continued to decline during December in Mauritania due to control operations and little rainfall. By mid-month, no further control operations were required and the outbreak that developed in late September had ended. Nevertheless, a few adults moved north into southern parts of Morocco, Western Sahara and western Algeria. Ground teams treated 15 ha in the central Sahara of Algeria where local breeding occurred. In Niger, ground teams treated 1,600 ha of late instar hoppers and immature adults that were forming small groups in vegetation that was drying out in Tamesna.

Similar infestations may be present in adjacent areas of Tamesna in eastern Mali but surveys are difficult due to insecurity. Some of the adults probably moved north into southern Algeria where they were seen during surveys. During the forecast period, low numbers of solitary adults are likely to persist in the above countries. If temperatures remain warm, small-scale breeding could occur on a limited scale in areas where conditions stay favourable. During periods of warm southerly winds, scattered adults may move further north towards the central Sahara and the Atlas Mountains.

**Central Region.** Local breeding commenced during December in the winter breeding areas along the western side of the Red Sea on the coast of Egypt and Eritrea. Low numbers of mature adults were reported on the coastal plains in Sudan, Saudi Arabia and Yemen. Isolated adults were also present on the coast in northwest Somalia. During the forecast period, small-scale breeding will occur on both sides of the Red Sea and in northwestern Somalia if more rains fall but locust numbers are expected to remain below threatening levels in all countries. In Oman, good rains fell in the north that could lead to local breeding in some areas.

**Eastern Region.** No locusts were reported in the region during December. Light rains fell in the spring breeding areas of western Pakistan that may allow conditions to become favourable for small-scale breeding to commence by the end of the forecast period. Breeding could also commence in adjacent coastal areas of southeast Iran.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and made available on the Internet.

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DLIS: [www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)



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### Weather & Ecological Conditions in December 2009

**Very little rain fell in the Desert Locust recession area during December except for parts of the winter breeding areas along the western side of the Red Sea. Consequently, breeding conditions were improving in these areas but remained generally unfavourable elsewhere.**

In the **Western Region**, very little rain fell during December. In Mauritania, ecological conditions were favourable for locust survival and breeding in parts of Inchiri, Adrar and Tiris-Zemmour but were becoming unfavourable in the western and central areas as vegetation was drying out. In northern Mali, small areas of green vegetation were present in the Kidal region. In Niger, ecological conditions were favourable in the Tamesna south of the Azaouak Valley, especially in the In Afer, Iguidi and Tamaya areas, where green vegetation was present in between the dunes. Conditions were dry and not favourable further north to the Algerian border. In Morocco, light rain fell near the western end of the Draa Valley while heavier showers fell further north, reaching the Souss Valley. Vegetation continued to become green south of the Atlas Mountains in the Ziz-Ghris Valley. Green vegetation persisted in a few southern areas of the Western Sahara near Tichla. In Algeria, vegetation was green in parts of the central and southern Sahara but remained dry in western areas near Tindouf.

In the **Central Region**, light showers fell at times in a few places in the winter breeding areas along the western side of the Red Sea, causing ecological conditions to improve slightly for breeding. In Sudan, light showers fell along parts of the southern coastal plains of the Red Sea between Port Sudan and the Eritrean border. Moderate to heavy rains fell during the second half of the month further north in coastal and subcoastal areas near the Egyptian border. In Eritrea, light showers fell at times along parts of the central and northern coast of the Red Sea. In both countries, breeding conditions were improving. In Saudi Arabia, vegetation was becoming green on the Red Sea coast between Jeddah and Masturah from good rains in November. Vegetation was also green near Qunfidah and Jizan but remained generally dry elsewhere

along the coast. No significant rainfall occurred along the Red Sea coast in Yemen and, consequently, ecological conditions were not very favourable for breeding. In northern Somalia, vegetation remained mainly dry along the northwest coast except for a few places near Silil and Lughaye. In northern Oman, good rains fell in the interior regions of Buraimi, Dakhliya, and Sharqiya on 11-13 December. Some places received between 40 mm and 70 mm in three days.

In the **Eastern Region**, light rains fell in the spring breeding areas of the interior of Baluchistan, Pakistan between Turbat and Dalbandin during the first half of December. Nevertheless, ecological conditions remained dry and unfavourable for breeding. In Iran, vegetation was green in a few places on the southeastern coast near Jask but dry elsewhere along the coast to the west.



### Area Treated

Algeria	15 ha (December)
Mauritania	75 ha (December)
Niger	1,605 ha (December)



### Desert Locust Situation and Forecast

*( see also the summary on page 1 )*

#### WESTERN REGION

##### **Mauritania**

##### • SITUATION

During December, locust numbers continued to decline in the west and centre of the country. A few small groups of hoppers were present at densities up to 4 hoppers/m<sup>2</sup> near Nouakchott and between Akjoujt (1945N/1421W) and Oujeft (2003N/1301W). A few small groups of mature adults were also seen near Nouakchott. Egg laying was reported at one place south of Akjoujt. Residual populations of isolated and scattered solitarious hoppers and immature and mature adults persisted in the outbreak area west of Moudjeria (1752N/1219W). Elsewhere, scattered immature and mature solitarious adults were present in the northwest north of Tijirat (1929N/1557W), in the north near Zouerate (2244N/1221W) and Bir Moghreïn (2510N/1135W), in Adrar near Tidjikja (1833N/1126W), and in Hodh El Gharbi north of Aioun El Atrous (1639N/0936W) and Tamchekket (1714N/1040W). Ground control teams treated 75 ha during the first

decade of December; thereafter, no further control was undertaken.

- **FORECAST**

*Locust infestations will decline further and only low numbers of solitary adults are expected to persist in parts of the north and west of the country. If temperatures remain warm, small-scale breeding could occur on a limited scale in areas where conditions stay favourable. During periods of warm southerly winds, scattered adults may move towards the north.*

### **Mali**

- **SITUATION**

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

- **FORECAST**

*Low numbers of adults are likely to be present in Tamesna and parts of the Adrar des Iforas. As vegetation dries out in the Tamesna, adults are likely to concentrate and move into the Adrar des Iforas where they will persist during the forecast period.*

### **Niger**

- **SITUATION**

During the first three weeks of December, numerous small groups of late instar *transiens* hoppers, fledglings and immature adults were present in the Tamesna between In Abangharit (1754N/0559E) and the Malian border. Densities in some areas reached more than 3,000 adults/ha. The heaviest concentrations were near In Afer (1748N/0541E). Ground control teams treated 1,605 ha on 10-21 December.

- **Forecast**

*Any adults that escaped control operations are likely to concentrate in the remaining green vegetation in the Tamesna, form small groups and move north towards southern and central Algeria during periods of warm southerly winds, and east towards the Air Mountains.*

### **Chad**

- **SITUATION**

No surveys were carried out and no locusts were reported 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, Guinea Bissau, Liberia, Nigeria, Sierra Leone and Togo**

- **FORECAST**

*No significant developments are likely.*

### **Algeria**

- **SITUATION**

During December, ground teams treated 15 ha of hoppers that were present at densities of 20-30 hoppers/bush at one place (2513N/0230E) in the central Sahara between Tamanrasset (2250N/0528E) and In Salah (2712N/0229E). Isolated mature adults were seen in the south between Tamanrasset and the Niger border, and immature adults were present west near the Mauritanian border southeast of Tindouf (2741N/0811W). No locusts were seen in the east near Djanet (2434N/0930E) or in the northwest between Beni Abbes (3011N/0214W) and the Moroccan border.

- **FORECAST**

*Low numbers of locusts are likely to persist and could increase slightly near Tindouf, In Salah, Adrar, and between Tamanrasset and the Niger border, especially during periods of warm southerly winds that could carry adults from the northern Sahel.*

### **Morocco**

- **SITUATION**

During December, isolated immature and mature solitary adults were present in the extreme south of the Western Sahara near Tichla (2137N/1453W). No locusts were seen elsewhere in the Western Sahara near Bir Anzarane (2353N/1431W) and Laayoune (2709N/1311W), or in the northeast near Bouarfa (3232N/0159W).

- **FORECAST**

*Low numbers of adults are likely to persist in parts of the Western Sahara, mainly near Tichla. Scattered adults could appear in southern Morocco and the Western Sahara from the south and move further north towards the Atlas Mountains during periods of warm southerly winds. If rains fall and temperatures remain warm, small-scale breeding could commence by the end of the forecast period along the southern side of the Atlas Mountains in the Draa and Ziz-Ghris valleys.*



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### Libyan Arab Jamahiriya

- SITUATION

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

- FORECAST

*Low numbers of locusts are likely to be present and will persist in the southwest near Ghat. Small-scale breeding could occur if rains fall and temperatures remain warm.*

### 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 December, isolated mature solitary adults were present at a few places in the Tokar Delta (1827N/3741E) and in one place in the northern subcoastal areas in Wadi Oko/Diib north of Tomala (2002N/3551E). No locusts were seen elsewhere during surveys carried out along the coast between Port Sudan and the Eritrean border or in Wadi Oko/Diib.

- FORECAST

*Small-scale breeding will take place in the Tokar Delta, nearby coastal plains and perhaps in Wadi Oko/Diib. Consequently, locust numbers will increase gradually but remain below threatening levels on the coast and in subcoastal areas.*

#### Eritrea

- SITUATION

During December, isolated third instar hoppers and mature solitary adults were seen at mid-month on the central Red Sea coast near Shelshela (1553N/3906E). Some of the adults were copulating. No locusts were seen elsewhere along the coast from south of Massawa (1537N/3928E) to Embere (1628N/3856E).

- FORECAST

*Low numbers of locust numbers will increase slightly as hatching occurs during January on the Red*

*Sea coastal plains near Shelshela and perhaps in other nearby areas that receive rainfall or runoff.*

### Ethiopia

- SITUATION

No reports were received during December.

- FORECAST

*No significant developments are likely.*

### Djibouti

- SITUATION

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

- FORECAST

*No significant developments are likely.*

### Somalia

- SITUATION

During the first week of December, isolated mature solitary adults were present on the northwest coast near Silil (1058N/4326E) and the Djibouti border. No locusts were seen elsewhere on the coast or the escarpment between Silil and Berbera (1028N/4502E).

- FORECAST

*Small-scale breeding could occur on the northwest coast if rainfall occurs.*

### Egypt

- SITUATION

During December, isolated immature and mature solitary adults were present at one location on the southern coast of the Red Sea in Wadi Diib. Isolated third instar solitary hoppers were seen on the coast between Halaib and the Sudanese border during the last week of the month. No locusts were seen during surveys carried out in the northwest near Salum (3131N/2509E) and the Mediterranean coast, in the Western Desert near Sh. Oweinat (2219N/2845E), and along Lake Nasser.

- FORECAST

*Small-scale breeding is likely to continue in areas that receive rainfall on the Red Sea coastal plains between Shalatyn and the Sudanese border. No significant developments are likely.*

### Saudi Arabia

- SITUATION

During December, isolated mature solitary adults were seen on the Red Sea coast north of Jeddah near Thuwal (2215N/3906E) and Rabigh (2247N/3901E). No locusts were reported elsewhere along the coast or in the interior.

- FORECAST

*Small-scale breeding is expected to occur on the Red Sea coast between Jeddah and Rabigh as well*

as near Qunfidah and Jizan. Local breeding could extend to other coastal areas if rainfall occurs during the forecast period.

#### Yemen

##### • SITUATION

During December, scattered immature and mature solitary adults were present in a few places along the Red Sea coast between Zabid (1410N/4318E) and Midi (1619N/4248E).

##### • FORECAST

*Small-scale breeding will occur on the Red Sea coast if more rains fall during the forecast period; otherwise, only low numbers of solitary adults are likely to persist in a few areas. Low numbers of adults may appear on the Gulf of Aden coastal plains near Aden and Zinjibar if rainfall occurs.*

#### Oman

##### • SITUATION

No locusts were seen during surveys carried out in December in Batinah, Musandam, Dhahera and Dakhliya regions.

##### • FORECAST

*By the end of the forecast period, low numbers of adults may appear in areas of recent rainfall in Buraimi, Dakhliya and Sharqiya.*

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

##### • FORECAST

*No significant developments are likely.*

### **EASTERN REGION**

#### Iran

##### • SITUATION

During the first half of December, no locusts were seen during surveys carried out on the southeast coast near Bander-e Lengheh (2634N/5452E) and Jask (2540N/5746E).

##### • FORECAST

*Isolated adults may appear in the spring breeding areas along the southeast coast and start to breed by the end of the forecast period.*

#### Pakistan

##### • SITUATION

No locusts were reported during the second fortnight of November and first fortnight of December.

##### • Forecast

*Isolated adults may appear in the spring breeding areas along the coast of Baluchistan and start to breed by end of the forecast period in areas of recent rainfall.*

#### India

##### • SITUATION

No locusts were seen during intensive surveys carried out in December in the summer breeding areas in Rajasthan and Gujarat.

##### • FORECAST

*No significant developments are likely.*

#### Afghanistan

##### • SITUATION

No reports received.

##### • FORECAST

*No significant developments are likely.*



## Announcements

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**Google group.** FAO DLIS has established a Google group for national locust information officers to exchange opinions and share experiences regarding



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data management and analysis, GIS, eLocust2, eLocust2Mapper and satellite imagery. Interested information officers should contact DLIS (ecl@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](http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/index.html). The site is available in English and French. Address comments and questions to Pietro Ceccato (pceccato@iri.columbia.edu).

**New information on Locust Watch.** Recent additions to the web site ([www.fao.org/ag/locusts](http://www.fao.org/ag/locusts)) are:

- **Desert Locust situation updates.** Archives Section – Briefs
- **Desert Locust risk map update.** Archives Section – Risk maps
- **Mauritania outbreak overview.** Information Section – home page
- **CLCPANO session reports.** Publications Section – Regional commission reports

**2010 events.** The following activities are scheduled or planned:

- **EMPRES/WR Phase 2.** Planning meeting, Dakar (8-12 March)
- **SWAC/CRC Locust Information Officers.** 3<sup>rd</sup> Inter-regional workshop on the use and improvement of RAMSES and eLocust2, Cairo (18-19 April)
- **SWAC/CRC Master Trainers.** 2<sup>nd</sup> Master Trainers training course, Iran (8-13 May)



## 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<sup>2</sup> • band: 1 - 25 m<sup>2</sup>

#### **SMALL**

- swarm: 1 - 10 km<sup>2</sup> • band: 25 - 2,500 m<sup>2</sup>

#### **MEDIUM**

- swarm: 10 - 100 km<sup>2</sup> • band: 2,500 m<sup>2</sup> - 10 ha

#### **LARGE**

- swarm: 100 - 500 km<sup>2</sup> • band: 10 - 50 ha

#### **VERY LARGE**

- swarm: 500+ km<sup>2</sup> • 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.



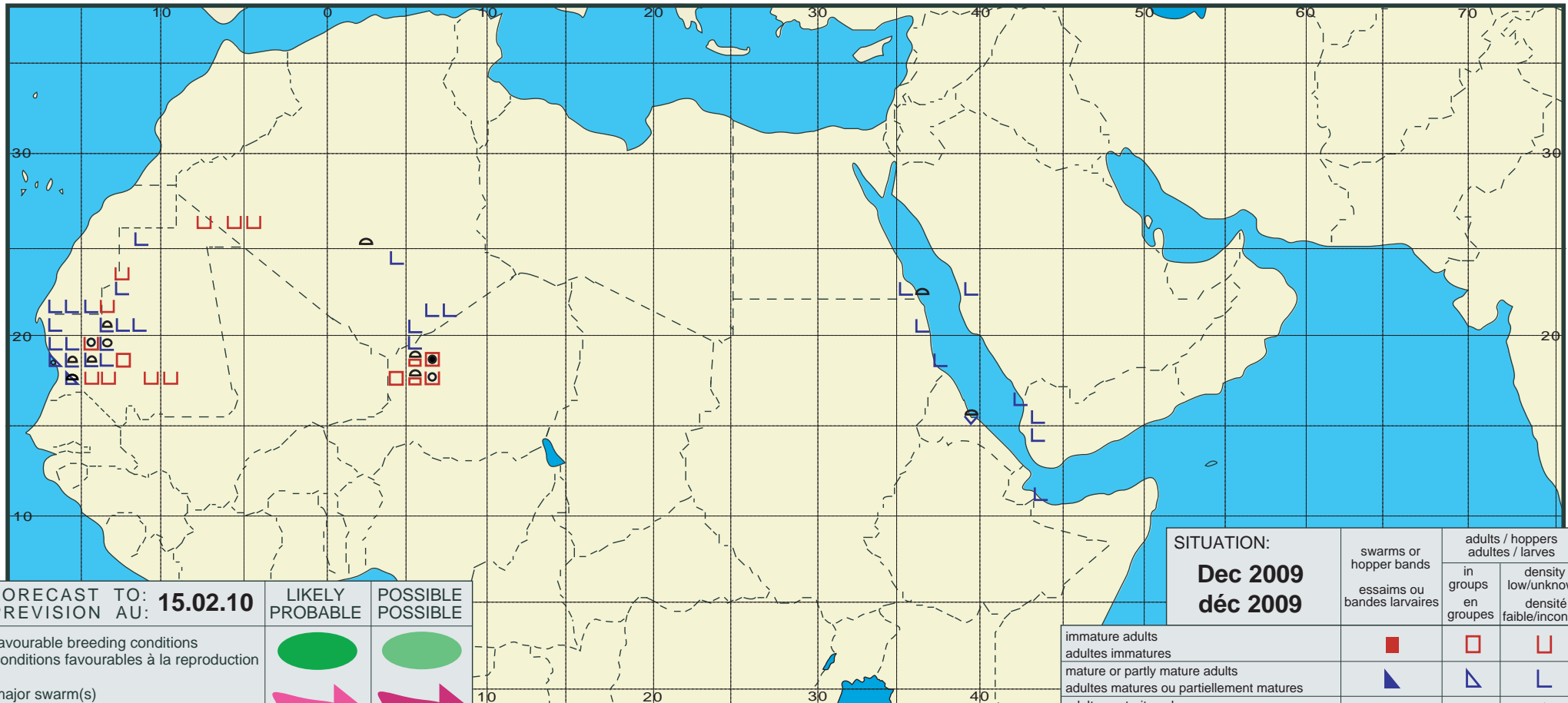
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# Desert Locust Summary

## Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: <b>15.02.10</b>	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: <b>Dec 2009</b> <b>déc 2009</b>	swarms or hopper bands	adults / hoppers adultes / larves	
	essaims ou bandes larvaires	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)			