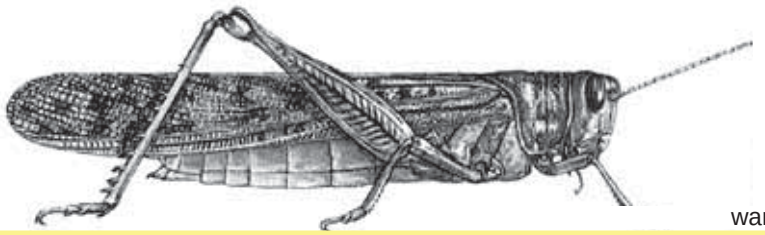

warning level: **CAUTION**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 448**

(3.02.2016)

General Situation during January 2016 Forecast until mid-March 2016

Desert Locust breeding continued during January in north and northwest Mauritania and in adjacent areas of Western Sahara where locusts formed small groups. Limited ground control operations were carried out in these areas. Breeding is likely to continue during the forecast period, which may cause a further increase in locust numbers and the formation of hopper and adult groups. As temperatures increase, some adults may move to spring breeding areas south of the Atlas Mountains in Morocco and Algeria. Only low numbers of locusts persisted in parts of the winter breeding areas along both sides of the Red Sea and Gulf of Aden in Sudan, Eritrea Saudi Arabia, Yemen and northern Somalia. Unless further rains fall, breeding should decline in these areas. The situation remained calm in southwest Asia.

Western Region. Locust activity during January remained confined to **Mauritania** and **Western Sahara** in southern **Morocco**. Breeding increased in northern Mauritania and egg-laying commenced in adjacent areas of Western Sahara. A few small groups of adults formed and limited ground control operations were carried out in both areas. A second generation of breeding is expected to cause locust numbers to increase during the forecast period in Mauritania while hatching will commence in Western Sahara. Solitarious adults were seen along the Mauritanian border in western **Algeria**. As temperatures increase, some adults may appear south of the Atlas Mountains in Algeria and Morocco, and eventually breed. Elsewhere, the situation remained calm.

Central Region. The situation remained calm during January. Low numbers of adults persisted in a few places of the winter breeding areas along both sides of the Red Sea coast in **Sudan**, **Eritrea**, **Saudi Arabia** and **Yemen** where small-scale breeding was underway but limited due to poor rainfall. Isolated adults were present on the northwest coast in northern **Somalia**. Unless further rains fall, small-scale breeding is expected to decline by the end of the forecast period in the winter breeding areas. The situation is less clear in the interior of southern Yemen where ecological conditions are expected to be favourable as a result of two cyclones in November. Even if breeding is in progress, most of the locust populations are expected to remain in these areas as long as vegetation remains green.

Eastern Region. The situation remained calm during January. No locusts were reported in the region. Low numbers of adults are likely to appear in southeast **Iran** and southwest **Pakistan**. Small-scale breeding may occur in the Jaz Murian Basin of Iran in areas of recent rainfall. If swarms form in southern Yemen, there is a low threat that some of these could move to 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 are available on the Internet.
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No. 448

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in January 2016

Very little rain fell during January in the winter breeding areas along both sides of the Red Sea and Gulf of Aden where conditions were favourable on a limited scale. Ecological conditions remained favourable for breeding in northern Mauritania and Western Sahara from previous rainfall.

In the **Western Region**, very little rain fell during January. Nevertheless, ecological conditions remained favourable for breeding in northern and northwest Mauritania (Tiris-Zemmour, Dakhlet Nouadhibou, Inchiri and Adrar) and in adjacent areas of Western Sahara where unusually heavy rains fell in September and October. Rain fell in southeast Mauritania but this is not likely to affect Desert Locust at this time of year.

In the **Central Region**, very little rain fell during January in winter breeding areas along both sides of the Red Sea and Gulf of Aden. Consequently, ecological conditions were favourable for breeding in only a few localized and small areas along the coast in Sudan, Eritrea, Saudi Arabia, Yemen and northwest Somalia. At the end of the month, good rains fell in coastal and subcoastal areas of northwest Somalia. Vegetation remained green in interior and coastal areas of Hadhramaut of southern Yemen from heavy rains associated with two cyclones in November

In the **Eastern Region**, goods rains of up to 50 mm or more fell in the western portion of the Jaz Murian Basin in southeast Iran in early January, causing flooding in some places. As a result, annual vegetation will continue to become green and breeding conditions will improve. While green vegetation persisted in the Shooli Valley south of Turbat in southwest Pakistan, spring breeding areas remained mostly dry and unfavourable.

Area Treated

Mauritania	130 ha (Jan)
Morocco	301 ha (Jan)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During January, breeding increased in the north between Zouerate (2244N/1221W), Bir Moghrein (2510N/1135W) and Ghallaman (2410N/0952W), and declined in the northwest between Akjoujt (1945N/1421W), Atar (2032N/1308W) and Tmeimichat (2119N/1420W). Small patches of solitarious and *transiens* hoppers of all instars were present at densities up to 30 hoppers/m^2, and scattered solitarious and *transiens* adults were maturing with densities up to 6,800 adults/ha. A few small groups of hoppers and immature adults formed northwest of Atar and near Zouerate while only scattered adults were present in Dakhlet Nouadhibou. Adults were copulating and laying eggs during the first week near Atar and at mid-month near Zouerate. Ground teams treated 130 ha in January.

• **FORECAST**

A second generation of breeding is expected to cause locust numbers to increase further in Tiris Zemmour and Dakhlet Nouadhibou where small groups and perhaps a few hopper bands may form in some areas.

Mali

• **SITUATION**

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

• **FORECAST**

Low numbers of locusts are likely to be present and may persist in parts of Timetrine, Tilemsi Valley and the Adrar des Iforas.

Niger

• **SITUATION**

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

• **FORECAST**

Low numbers of adults may persist in parts of the Air Mountains.

Chad

• **SITUATION**

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

• **FORECAST**

No significant developments are likely.

Senegal

• **Situation**

No reports were received during January.

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During January, a few immature solitarious adults were present south of Tindouf (2741N/0811W) along the Mauritanian border. No locusts were seen during surveys in the central Sahara near Adrar (2753N/0017W) and in the east near Illizi (2630N/0825E).

• **Forecast**

Scattered adults may be present or could appear in the west between Tindouf and Beni Abbes, in the central Sahara near irrigated areas in the Adrar region, in runoff areas to the south and west of the Hoggar Mountains, and in the extreme south near the Mali border. Small-scale breeding may occur in these areas, especially in the west where unusually good rains fell in October.

Morocco

• **Situation**

During January, low numbers of solitarious adults, at densities up to 200 adults/ha, were maturing in the Western Sahara between Aousserd (2233N/1419W), Tichla (2137N/1453W) and Bir Gandouz (2136N/1628W). Small groups of mature adults, at densities up to 2 adults/m^2, formed after mid-month and were copulating in several areas. Ground control teams treated 301 ha during January. No locusts were seen further north between Guelta Zemmur (2508N/1222W) and east of Haouza (2707N/1112W) in W. Sakia El Hamra.

• **Forecast**

Egg-laying and hatching will cause locust numbers to increase in areas of recent rainfall in the Western Sahara and small groups of hoppers and adults are likely to form.

Libya

• **Situation**

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

• **Forecast**

Isolated adults may appear in the southwest near Ghat and breed on a small scale in areas that received rainfall last autumn.

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, isolated mature solitarious adults were present at a few places in the Tokar Delta (1827N/3741E) and Khor Baraka. No locusts were seen elsewhere along the coast or in the northeast along Wadi Oko/Diib between Tomala (2002N/3551E) and the Egyptian border.

• **Forecast**

Low numbers of adults will persist and breed on a small scale in Tokar Delta and perhaps elsewhere along the Red Sea coastal plains and in Wadi Oko/Diib.

Eritrea

• **Situation**

During January, isolated mature solitarious adults were present at a few places on the northern coast of the Red Sea near Mehimet (1723N/3833E) where a few adults were seen copulating. No locusts were seen elsewhere on the coast to Massawa (1537N/3928E).

• **Forecast**

Scattered adults will persist on the Red Sea coastal plains where small-scale breeding is expected to cause locust numbers to increase slightly between Sheib and Karora. Hatching is likely to occur in early February near Mehimet.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

During January, isolated mature solitarious adults were seen at one location on the northwest coast near Lughaye (1041N/4356E).

• **Forecast**

Scattered adults are likely to persist on the northwest coastal plains and breed on a small scale if rainfall occurs.

Egypt

• **Situation**

During January, no locusts were seen near Lake Nasser in the Abu Simbel (2219N/3138E), Tushka (2247N/3126E), Garf Husein (2317N/3252E) and Allaqi (2238N/3315E) areas, on the Red Sea coast between Berenice (2359N/3524E) and the Sudan border, and in subcoastal areas near El Sheikh El Shazly (2412N/3438E) and Abraq (2323N/3451E).

• **Forecast**

Isolated adults may be present on the Red Sea coastal plains and subcoastal areas between Shalatyn and Halaib where small-scale breeding could occur if further rains fall.

Saudi Arabia

• **Situation**

During January, isolated mature solitarious adults were present on the central Red Sea coastal plains near Qunfidah (1909N/4107E) and at one place near Yenbo (2405N/3802E). No locusts were seen elsewhere during surveys along the coast.

• **Forecast**

Small-scale breeding is likely to be in progress near Qunfidah and will continue during the forecast period. Low numbers of adults may be present elsewhere on the Red Sea coastal plains between Jizan and Duba where small-scale breeding could occur in areas that receive rainfall.

Yemen

• **Situation**

During January, low numbers of immature and mature solitarious adults were present on the Red Sea coastal plains between Bayt Al Faqih (1430N/4317E) and Suq Abs (1600N/4312E). Insecurity prevented surveys further north on the coast.

• **Forecast**

Low numbers of locusts will persist on the Red Sea coastal plains and small-scale breeding will occur if additional rains fall. Locusts may be present and breeding in coastal and interior areas of Hadhramaut where heavy rains fell from cyclones Chapala and Megh in November.

Oman

• **Situation**

No locusts were seen during surveys in January on the Batinah coast in the north and near the Yemen border in the south.

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No locusts were seen on the southeast coast near Jask (2540N/5746E) during January.

• **Forecast**

Low numbers of adults are likely to appear in areas of recent rainfall in the Jaz Murian Basin and breed on a small-scale in recently flooded areas. Scattered adults may also appear on the southeast coast. If swarms form in southern Yemen, there is a low threat that some of these could move to southeast Iran.

Pakistan

• **Situation**

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

• **Forecast**

Low numbers of adults may appear in coastal areas of Baluchistan where small-scale breeding could occur in places that receive rainfall.

India

• **Situation**

No locusts were seen during surveys carried out in Rajasthan and Gujarat during 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/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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **eLocust3 training videos.** A set of 15 introductory training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT
- **RAMSESv4 training videos.** A set of basic training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So
- **RAMSESv4 and eLocust3 updates.** Updates can be downloaded from https://sites.google.com/site/rv4elocust3updates/home
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

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

- **Press release.** Cyclones and Desert Locust (11 November) – Archives (Bulletins 2015)
- **Seasonal forecast.** Desert Locust winter/spring forecast (Dec 2015 – May 2016) – Information (Current threats)
- **Pesticide Referee Group follow-up.** Final report of the Recommendations of the Stakeholder Workshop on the Procurement and Supply of Pesticide for Locust Control, Rome (2-3 September) – Publications (Reports by Topic, Miscellaneous)
- **Biopesticide and ULV spraying videos.** New multilingual videos on advocacy and operational use of biopesticides, and ULV spraying in locust control – Activities (Environment and human health)

2016 events. The following activities are scheduled or planned:

- **CLCPRO.** Expert group meeting to calculate the amount of the locust risk regional management fund and the practicalities of its use, Dakar, Senegal (24-26 February)
- **SWAC.** 22nd Desert Locust joint survey in the spring breeding areas of Iran and Pakistan (5-28 April)
- **CLCPRO.** Regional training of trainers on spraying techniques, Agadir, Morocco (11-15 April)
- **CRC/SWAC.** 8th inter-regional workshop for Desert Locust information officers, Cairo, Egypt (22-26 May)
- **CLCPRO.** 8th session, N'Djamena, Chad (18-22 July)
- **SWAC.** Regional contingency planning workshop, Tehran, Iran (November) [to be confirmed]
- **SWAC.** 30th session, Kabul, Afghanistan (12-14 December) [to be confirmed]

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

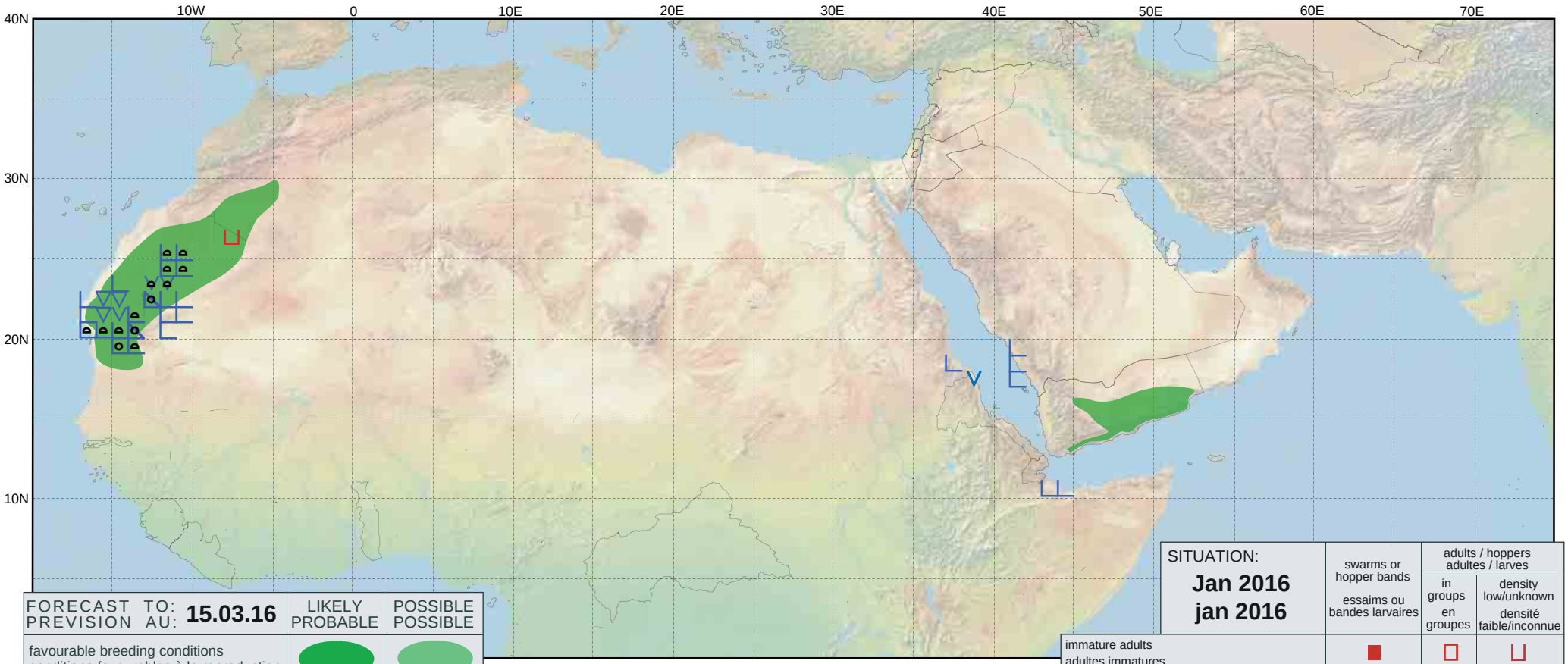
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

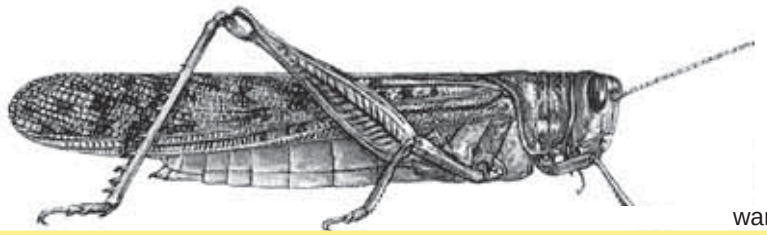
Desert Locust Summary
Criquet pèlerin - Situation résumée

448



FORECAST TO: / PREVISION AU: **15.03.16**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Jan 2016** **jan 2016**	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**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 449

(3.03.2016)

General Situation during February 2016 Forecast until mid-April 2016

Desert Locust breeding continued during February in northern Mauritania and in adjacent areas of Western Sahara where locusts formed small groups. Ground control operations increased in both areas. Although breeding is likely to continue during the forecast period and cause a further increase in locust numbers and the formation of hopper and adult groups, the situation is expected to remain under control. As temperatures increase, low to moderate numbers of adults could move to spring breeding areas south of the Atlas Mountains in Morocco and Algeria and breed if rainfall occurs. Low numbers of locusts continued to persist in parts of the winter breeding areas along both sides of the Red Sea in Sudan, Saudi Arabia and Yemen. Breeding will decline in these areas. The situation remained calm in southwest Asia. Small-scale breeding is likely to occur in parts of southeastern Iran.

Western Region. Breeding continued during February in northern **Mauritania** and in parts of the **Western Sahara** in southern **Morocco**, causing small groups of hoppers and adults to form in some places. Ground control operations increased in Morocco (3,345 ha) and Mauritania (1,295 ha). Despite a lack of rainfall, ecological conditions remain favourable for breeding from good rains last autumn. Consequently, locust numbers are likely to increase further and small groups and perhaps a few hopper bands may form in some areas during the forecast period. As temperatures increase, low to moderate numbers of adults may appear along the southern side of the Atlas Mountains in **Algeria** and Morocco, and breed if rainfall occurs. Elsewhere, the situation remained calm. Low numbers of solitarious hoppers and adults persisted in Tamesna, **Niger** and there were unconfirmed reports of immature solitarious adults in northern **Mali**.

Central Region. The situation remained calm during February due to generally poor rainfall and ecological conditions in the winter breeding areas along both sides of the Red Sea and Gulf of Aden. Consequently, only low numbers of solitarious adults were maturing in a few places on the coast in **Sudan**, **Saudi Arabia** and **Yemen**. Unless further rain falls, breeding will decline and come to an end during the forecast period. The situation remains less clear in the interior of southern Yemen where ecological conditions are expected to be favourable as a result of two cyclones in November. There is a low risk that locusts may be present and breeding. If so, adult groups could form as vegetation dries out and move towards **Oman**.

Eastern Region. The situation remained calm during February. No locusts were reported in the region. Low numbers of adults are likely to appear in southeast **Iran** and perhaps southwest **Pakistan**. Small-scale breeding is likely to occur in the Jaz Murian Basin of Iran in areas of recent rainfall.

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 are available on the Internet.
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Facebook: www.facebook.com/faolocust
Twitter: twitter.com/faolocust

Area Treated

Mauritania	1,259 ha (Feb)
Morocco	3,345 ha (Feb)

Weather & Ecological Conditions in February 2016

Very little rain fell during February, causing vegetation to dry out in most of the winter breeding areas along both sides of the Red Sea and Gulf of Aden. Ecological conditions remained favourable for breeding in northern Mauritania and Western Sahara from previous rainfall.

In the **Western Region**, very little rain fell during February except for moderate showers in northwest Algeria near Bechar. Nevertheless, ecological conditions remained favourable for breeding in northern Mauritania and in adjacent areas of Western Sahara where unusually heavy rains fell in September and October. Elsewhere in the region, dry conditions prevailed except in a few places on the Tamesna Plains of Niger where there were small areas of green vegetation.

In the **Central Region**, very little rain fell in winter breeding areas along both sides of the Red Sea and Gulf of Aden during February except for light showers during the first decade on the southern coast of Sudan and on the Eritrean coast near Sheib and Massawa. Light rain fell in the Tokar Delta during the last decade. Consequently, vegetation was drying out in most areas except in a few places on the northern coast of Eritrea and on the central and southern coast of Saudi Arabia where ecological conditions remained favourable for breeding. Good rains fell during the last decade in parts of the spring breeding areas in the interior of Yemen and in northern Oman. Vegetation remained green in interior and coastal areas of Hadhramaut of southern Yemen from heavy rains associated with two cyclones in November.

In the **Eastern Region**, goods rains fell at times in the western portion of the Jaz Murian Basin in southeast Iran during February. As a result, annual vegetation will continue to become green and breeding conditions will improve. Dry conditions prevailed elsewhere in the region.

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **Situation**

During February, breeding continued in the north between Zouerate (2244N/1221W), Bir Moghrein (2510N/1135W) and Ghallaman (2410N/0952W) where solitarious hoppers of all instars mixed with some *transiens* hoppers were present. There was an increasing number of immature and mature solitarious and *transiens* adults, some of which formed groups near Zouerate. Adult densities reached up to 9,000 adults/ha but declined to 2,500 adults/ha by the end of the month. Groups of adults were also seen laying eggs mainly during the second half of the month. Locust numbers declined in the northwest where only low numbers of immature and mature solitairous adults persisted near Tmeimichat (2119N/1420W). Ground teams treated 1,259 ha during February.

• **Forecast**

Locust numbers are likely to increase further in Tiris Zemmour as a result of continued favourable conditions and breeding. Consequently, small groups of hoppers and adults and perhaps a few hopper bands may form in some areas.

Mali

• **Situation**

On 20 February, there were unconfirmed reports of scattered immature solitarious adults at four places east of Ti-n-kar (1926N/0022W) in the Timetrine region of the north.

• **Forecast**

Low numbers of locusts are likely to be present and may persist in parts of Timetrine, Tilemsi Valley and the Adrar des Iforas.

Niger

• **Situation**

During February, small-scale breeding continued at a few places on the Tamesna Plains near In Abangharit (1754N/0559E) and the Tazerzait Plateau (1832N/0449E) where isolated solitarious third to fifth instar hoppers were present. Low numbers of

immature and mature solitarious adults were also seen in these areas.

• **Forecast**

Low numbers of adults may persist in a few places of Tamesna where vegetation remains green and perhaps in parts of the Air Mountains.

Chad

• **Situation**

No locust activity was reported during February.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No locust activity was 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, isolated immature solitarious adults persisted in the west along the Mauritanian border south of Tindouf (2741N/0811W), and isolated mature solitarious adults were seen west of Tamanrasset (2250N/0528E) in the southern Sahara. No locusts were seen during surveys in the central Sahara near Adrar (2753N/0017W) and In Salah (2712N/0229E), in the east near Illizi (2630N/0825E) and Djanet (2434N/0930E), and in the northwest between Bechar (3135N/0217W) and Beni Abbes (3011N/0214W).

• **Forecast**

Scattered adults may be present or could appear in the west between Tindouf and Beni Abbes, in the central Sahara near irrigated areas in the Adrar region, in runoff areas to the south and west of the Hoggar Mountains. Small-scale breeding may occur in these areas, especially in those places that received previous rainfall.

Morocco

• **Situation**

During February, fifth instar solitarious and *transiens* hoppers formed a few small groups in the southern part of the Western Sahara near Tichla (2137N/1453W) from breeding that occurred in November and December. Some of the hoppers fledged and immature adults formed a few small groups. Very small groups of early instar hoppers from January breeding were also seen nearby at densities up to 5 hoppers/m^2. An increasing number of mature solitarious and *transiens* adults arrived near Tichla and Aousserd (2233N/1419W) throughout the month and laid eggs, primarily near Aousserd. Ground teams treated 3,345 ha in February.

• **Forecast**

Egg-laying and hatching will cause locust numbers to increase in the Western Sahara between Tichla and Aousserd where small groups of hoppers and adults are likely to form. A similar situation may occur near Guelta Zemmur. Low to moderate numbers of locusts may appear south of the Atlas Mountains in the Draa Valley and breed if rainfall occurs.

Libya

• **Situation**

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

• **Forecast**

Isolated adults may appear in the southwest near Ghat and breed on a small scale in areas that received rainfall last autumn.

Tunisia

• **Situation**

No locust activity was reported during February.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During February, low numbers of solitarious adults were maturing at a few places in the Tokar Delta (1827N/3741E), on the southern plains near the Eritrean border, and at one place in the northeast in Wadi Diib northwest of Sufiya (2119N/3613E). A few adults were copulating and laying eggs in Tokar.

• **Forecast**

Low numbers of adults will persist and breed on a small scale in areas that remain green in Tokar Delta and perhaps on the southern coast.

Eritrea

• **Situation**

During February, no locusts were seen during surveys on the Red Sea coastal plains between Massawa (1537N/3928E) and Karora (1745N/3820E).

• **Forecast**

Scattered locusts may be present near Mehimet where copulating adults were seen in January. No significant developments are likely.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

No reports were received during February.

• **Forecast**

Scattered adults are likely to be present on the northwest coastal plains and breed on a small scale if rainfall occurs.

Egypt

• **Situation**

During February, no locusts were seen near Lake Nasser in the Abu Simbel (2219N/3138E), Tushka (2247N/3126E), Garf Husein (2317N/3252E) and Allaqi (2238N/3315E) areas, on the Red Sea coast between Shalatyn (2308N/3535E) and the Sudan border, and in subcoastal areas near El Sheikh El Shazly (2412N/3438E) and Abraq (2323N/3451E).

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

During February, low numbers of immature and mature solitarious adults persisted on the central Red Sea coastal plains near Qunfidah (1909N/4107E) and immature solitarious adults were seen on the southern plains near Jizan (1656N/4233E). No locusts were seen on the coast near Lith (2008N/4016E).

• **Forecast**

Unless further rains fall, the possibility for small-scale breeding along the Red Sea coastal plains will decline during the forecast period.

Yemen

• **Situation**

During February, scattered immature and mature solitarious adults persisted on the northern Red Sea coastal plains between Al Zuhrah (1541N/4300E) and Suq Abs (1600N/4312E), and on the central coast near Hodeidah (1450N/4258E). The situation remained unclear in other areas due to insecurity.

• **Forecast**

Low numbers of locusts will persist on the Red Sea coastal plains and small-scale breeding will occur if additional rains fall. Locusts may be present and breeding in coastal and interior areas of Hadhramaut where heavy rains fell from cyclones Chapala and Megh in November.

Oman

• **Situation**

No locusts were seen during surveys in February in the Musandam Peninsula, and in the northern interior regions of Buraimi and Dakhiliya.

• **Forecast**

If additional rainfall occurs, isolated adults may appear on the Batinah coast and in Sharqiya.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During February, no locusts were seen on the southeast coast near Jask (2540N/5746E) and near Ghale Ganj (2731N/5752E) in the interior of the Jaz Murian Basin.

• **Forecast**

Low numbers of adults are likely to appear in areas of recent rainfall in the Jaz Murian Basin and breed on a small-scale. Scattered adults may also appear on the southeast coast. If swarms form in southern Yemen, there remains a low threat that some of these could move to southeast Iran.

Pakistan

• **Situation**

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

• **Forecast**

Low numbers of adults may appear in coastal areas of Baluchistan where small-scale breeding could occur in places that receive rainfall.

India

• **Situation**

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

• **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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **eLocust3 training videos.** A set of 15 introductory training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT
- **RAMSESv4 training videos.** A set of basic training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So
- **RAMSESv4 and eLocust3 updates.** Updates can be downloaded from https://sites.google.com/site/rv4elocust3updates/home
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

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

- **Iran national training of trainers workshop.** Final report – Publications (Reports by Topic, Commissions – SWAC workshops)

2016 events. The following activities are scheduled or planned:

- **SWAC.** 22nd Desert Locust joint survey in the spring breeding areas of Iran and Pakistan (5-28 April)

- **CLCPRO.** Regional training of trainers on spraying techniques, Agadir, Morocco (11-15 April)
- **CRC/SWAC.** 8th inter-regional workshop for Desert Locust information officers, Cairo, Egypt (22-26 May)
- **CLCPRO.** 8th session, N'Djamena, Chad (18-22 July)
- **SWAC.** Regional contingency planning workshop, Tehran, Iran (20-23 November)
- **SWAC.** 30th session, Kabul, Afghanistan (12-14 December) [to be confirmed]

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2
- band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

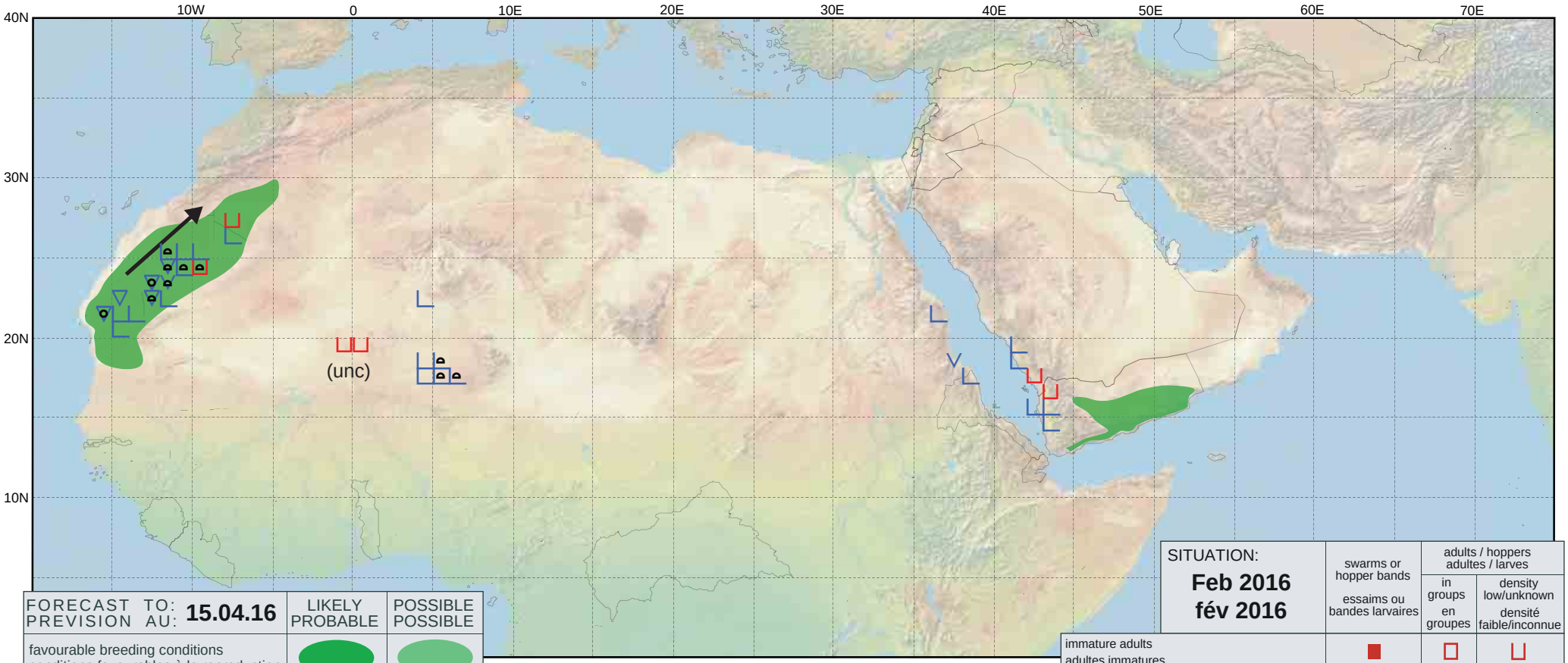
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

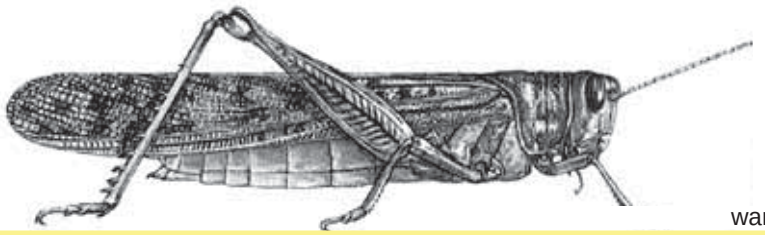
Desert Locust Summary
Criquet pèlerin - Situation résumée

449



FORECAST TO: / PREVISION AU: **15.04.16**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Feb 2016 fév 2016**	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**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 450**

(5.04.2016)

General Situation during March 2016
Forecast until mid-May 2016

A potentially dangerous situation developed during March in Yemen where hopper bands and at least one swarm formed in areas that received heavy rains last November. As survey and control operations are limited by insecurity, locust numbers are expected to increase further, giving rise to more adult groups and swarms that are likely to move along the coast and into the interior, possibly reaching spring breeding areas in central Saudi Arabia, northern Oman and southeast Iran. These countries should take the necessary precautionary measures. In Northwest Africa, hundreds of small hopper bands formed in the southern part of the Western Sahara in southern Morocco and hopper groups formed in adjacent areas of northern Mauritania. Control operations were carried out in both areas. Adult groups and perhaps a few small small swarms could form and move to spring breeding areas south of the Atlas Mountains in Morocco and Algeria. Strict vigilance is required in all areas.

Western Region. Numerous hopper groups and bands formed during March in the southern portion of the **Western Sahara** in **Morocco** and in northern **Mauritania**, respectively. Control operations continued to increase in Morocco (5,095 ha) but declined in Mauritanian (659 ha). As vegetation dries out, more hopper groups and bands are likely to form as well as adult groups and perhaps a few small swarms that could move to spring breeding areas south of the Atlas Mountains in Morocco and Algeria, and breed. Elsewhere, the situation remained calm. Low numbers of solitarious adults were present in central **Algeria**, northern **Mali** and **Niger**, and copulating adults were seen in southwest **Libya**.

Central Region. Groups of hoppers and adults as well as hopper bands and at least one swarm formed on the southern coast of **Yemen** in March where heavy rains associated with two cyclones fell last November. The extent of current breeding is not well known because survey teams cannot access most areas due to prevailing insecurity. As vegetation dries out along the coast, more groups, bands and swarms are likely to form. There is a moderate risk that adult groups and a few small swarms will move along the coast and into the interior of southern Yemen, perhaps reaching spring breeding areas in the interior of central **Saudi Arabia** and northern **Oman**. Elsewhere, the situation remained calm and no locusts were reported except for limited local breeding in northeast Oman.

Eastern Region. The situation remained calm during March and no locusts were reported in the region. However, low numbers of adults are likely to breed on a small scale in areas of recent rains in southeast **Iran** and southwest **Pakistan**. There is a low threat that a few small swarms from southern Yemen could arrive in 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 are available on the Internet.
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No. 450

DESERT LOCUST BULLETIN

Area Treated

Mauritania	659 ha (Mar)
Morocco	5,095 ha (Mar)

Weather & Ecological Conditions in March 2016

Vegetation began drying out in parts of Northwest Africa due to a lack of rainfall in March. Breeding conditions became unfavourable in winter areas along both sides of the Red Sea. Good rains fell in spring breeding areas of Saudi Arabia, Yemen, Oman, Iran and Pakistan.

In the **Western Region**, no significant rain fell during March. Consequently, vegetation began to dry out in northern Mauritania near Bir Moghrein, in parts of the western and southern Sahara in Algeria, and in the Adrar Settouf area of Western Sahara in southern Morocco where only small patches of green vegetation remained by the end of the month. On the other hand, vegetation stayed green near Zouerate, Mauritania, in the central Sahara of Algeria and in some places of southwest Libya north of Ghat. Dry conditions prevailed in the northern Sahel of West Africa.

In the **Central Region**, good rains fell in parts of the spring breeding areas during March. Unusually heavy rains fell in UAE and in the northern interior and coastal areas of Oman on 7-10 March, causing flooding in some places. Light rains fell in eastern Ethiopia during the first two decades. In Yemen, light to moderate showers fell in parts of the interior between Marib and Thamud on 7-9 March. In Saudi Arabia, good rains fell in the southern portion of the spring breeding areas in the interior between Wadi Dawasir and Al Ahsa during the first and third decades. As a result, breeding conditions are expected to improve in all of the above-mentioned areas. Dry conditions prevailed in the winter breeding areas along both sides of the Red Sea.

In the **Eastern Region**, good rains fell in parts of the spring breeding areas in coastal and interior areas of southeast Iran and southwest Pakistan. This should cause ecological conditions to remain favourable for small-scale breeding.

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

Immature and mature solitarious and *transiens* adults were present throughout March in the north between Zouerate (2244N/1221W) and Bir Moghrein (2510N/1135W) at densities up to 3,200 adults/ha. During the first half of the month, adult groups continued to lay eggs near Zouerate while smaller infestations of solitarious and *transiens* adults were breeding south of Bir Moghrein. Hatching occurred by mid-month, causing numerous small hopper groups to form near Zouerate at densities up to 900 hoppers/m^2. At the end of the month, adults were regrouping as vegetation dried out in some areas. Ground teams treated 659 ha in March.

• **FORECAST**

Hatching is likely to continue in Tiris Zemmour early in the forecast period. As vegetation dries out, small groups of hoppers and adults will continue to form mainly near Zouerate.

Mali

• **SITUATION**

During March, immature and mature solitarious adults were seen in the Adrar des Iforas between Aguelhoc (1927N/0052E) and Tessalit (2011N/0102E) at Egharghar (1944N/0037E).

• **FORECAST**

Low numbers of adults are likely to persist in parts of the Adrar des Iforas and perhaps Timetrine and the Tilemsi Valley.

Niger

• **SITUATION**

On 1-2 March, isolated immature solitarious adults were seen at two places on the Tazerzait Plateau (1832N/0449E) where breeding occurred in February.

• **FORECAST**

No significant developments are likely.

Chad

• **SITUATION**

No locust activity was reported during March.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No locust activity was reported during 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, low numbers of mature solitarious adults were seen primarily in the central Sahara between Adrar (2753N/0017W) and In Salah (2712N/0229E), in the southern Sahara near Tamanrasset (2250N/0528E) and, to a lesser extent, southeast of Tindouf (2741N/0811W). Some adults were laying eggs near Adrar. No locusts were seen in the west between Tindouf and Bechar (3135N/0217W).

• **Forecast**

Small groups and perhaps a few small swarms from adjacent areas in Morocco and Mauritania could initially appear near Tindouf, move towards the central Sahara and breed, especially in any areas that receive rainfall.

Morocco

• **Situation**

During March, small groups of solitarious and *transiens* hoppers of all instars and immature and mature adults continued to form at increasing densities in the southern part of the Western Sahara between Tichla (2137N/1453W) and Aousserd (2233N/1419W). From the second decade onwards, hundreds of hopper bands formed between Aousserd (2233N/1419W) and Ma'Tallah (2223N/1502W). The bands were initially small and dense (up to 40 m^2 in size with up to 180 hoppers/m^2) but then became larger and less dense (up to 1,800 m^2 in size with up to 80 hoppers/m^2). Ground teams treated 5,095 ha in March.

• **Forecast**

Small hopper bands may still form in the Western Sahara between Tichla and Aousserd. As fledging occurs and vegetation dries out, the new adults are likely to form small groups and perhaps a few small swarms. Some of these locusts may move northeast to the Draa Valley and breed if rainfall occurs while others may move into adjacent areas of Mauritania and Algeria.

Libya

• **Situation**

During March, low density solitarious adults were seen copulating northwest of Ghat (2459N/1011E) in W. Titaghsin (2531N/1001E) on 2 March. No locusts were seen during a subsequent survey in nearby areas at mid-month.

• **Forecast**

Small-scale breeding is likely to occur in the southwest near Ghat but locust numbers should remain low.

Tunisia

• **Situation**

No locust activity was reported during March.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During March, no locusts were seen during surveys on the Red Sea coastal plains between Suakin (1906N/3719E) and the Eritrean border.

• **Forecast**

Isolated adults may appear and breed on a small scale along the Nile Valley in Northern and River Nile states. No significant developments are likely.

Eritrea

• **Situation**

During March, no locusts were seen during surveys on the Red Sea coastal plains near Massawa (1537N/3928E).

• **Forecast**

No significant developments are likely.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

During March, no locusts were seen during surveys carried out on the escarpment between Boroma (0956N/4313E) and the coast, and on the coastal plains from the Djibouti border to Berbera (1028N/4502E).

• **Forecast**

No significant developments are likely.

Egypt

• **Situation**

During March, isolated immature solitarious adults were seen at one place in the southeast between El Sheikh El Shazly (2412N/3438E) and Abraq (2323N/3451E). No locusts were seen on the Red Sea coast between Berenice and the Sudan border, along both sides of Lake Nasser, near the Nile River south of Qena (2609N/3243E), and near the oases of Baris (2448N/3035E), Abu Mingar (2630N2740E), Farafra (2710N/2818E) and Bahariya (2821N/2851E) in the Western Desert.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

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

• **Forecast**

There is a low to moderate risk of a few small swarms arriving in the Najran area from southern Yemen that could move to areas of recent rainfall between Wadi Dawasir, Riyadh and Al Ahsa.

Yemen

• **Situation**

During March, *transiens* and gregarious hoppers of all instars were forming numerous small groups and bands along a 120 km stretch of the southern coast between Arkha (1340N/4724E) and Bir Ali (1401N/4820E) from undetected breeding in February. A few adults continued to lay eggs during the first half of the month. Fledging was underway and immature *transiens* and gregarious adults formed small groups and at least one immature swarm that was seen flying between Arkha and Morais (1341N/4725E) on the 31st.

• **Forecast**

Breeding will continue along the southern coast and is likely to be in progress in the interior between Marib and Thamud. Hatching and the formation of hopper bands, groups of hoppers and adults, and small swarms are expected to occur on the coast. As vegetation dries out, adult groups and a few small swarms will move along the coast and into the interior, and breed in areas of recent rainfall.

Oman

• **Situation**

During March, isolated mature solitarious adults were laying eggs in the northern Sharqiya region near Bidiya (2222N/5856E). No locusts were seen elsewhere in the northern interior and coastal areas and in the south between Thumrait (1736N/5401E) and Shehan (1746N/5229E).

• **Forecast**

Scattered adults may be present in parts of the northern interior and coast where small scale breeding is likely in areas of recent rainfall. Limited hatching will occur early in the forecast period in northern Sharqiya. There is a low to moderate risk that groups and perhaps a few small swarms could appear in the south from Yemen and move northwards to areas of recent rainfall where breeding could take place.

UAE

• **Forecast**

There is a low risk that a few small swarms from Yemen may appear in areas of recent rainfall. If so, most of them are expected to transit the country and continue towards southeast Iran.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During March, no locusts were seen on the southeast coast between Jask (2540N/5746E) and Chabahar (2517N/6036E), and in the interior near Iranshahr (2712N/6042E).

• **Forecast**

Low numbers of adults are likely to appear and breed on a small scale in areas of recent rainfall in the Jaz Murian Basin and on the southeast coast. There is a low risk that a few small swarms may appear from southern Yemen.

Pakistan

• **Situation**

No reports were received during March.

• **Forecast**

Low numbers of adults may appear and breed on a small scale in coastal and interior areas of Baluchistan that have received recent rainfall.

India

• **Situation**

No locusts were seen during surveys carried out 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 (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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **eLocust3 training videos.** A set of 15 introductory training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT
- **RAMSESv4 training videos.** A set of basic training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So
- **RAMSESv4 and eLocust3 updates.** Updates can be downloaded from https://sites.google.com/site/rv4elocust3updates/home
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

No. 450

DESERT LOCUST BULLETIN

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

- **Desert Locust situation update, 25 March.** Archives – Briefs

2016 events. The following activities are scheduled or planned:

- **SWAC.** 22nd Desert Locust joint survey in the spring breeding areas of Iran and Pakistan (5-28 April)
- **CLCPRO.** Regional training of trainers on spraying techniques, Agadir, Morocco (11-15 April)
- **CRC/SWAC.** 8th inter-regional workshop for Desert Locust information officers, Cairo, Egypt (22-26 May)
- **CLCPRO.** 8th session, Dakar, Senegal (18-22 July)
- **SWAC.** Regional contingency planning workshop, Tehran, Iran (20-23 November)
- **SWAC.** 30th session, Kabul, Afghanistan (12-14 December) [to be confirmed]

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

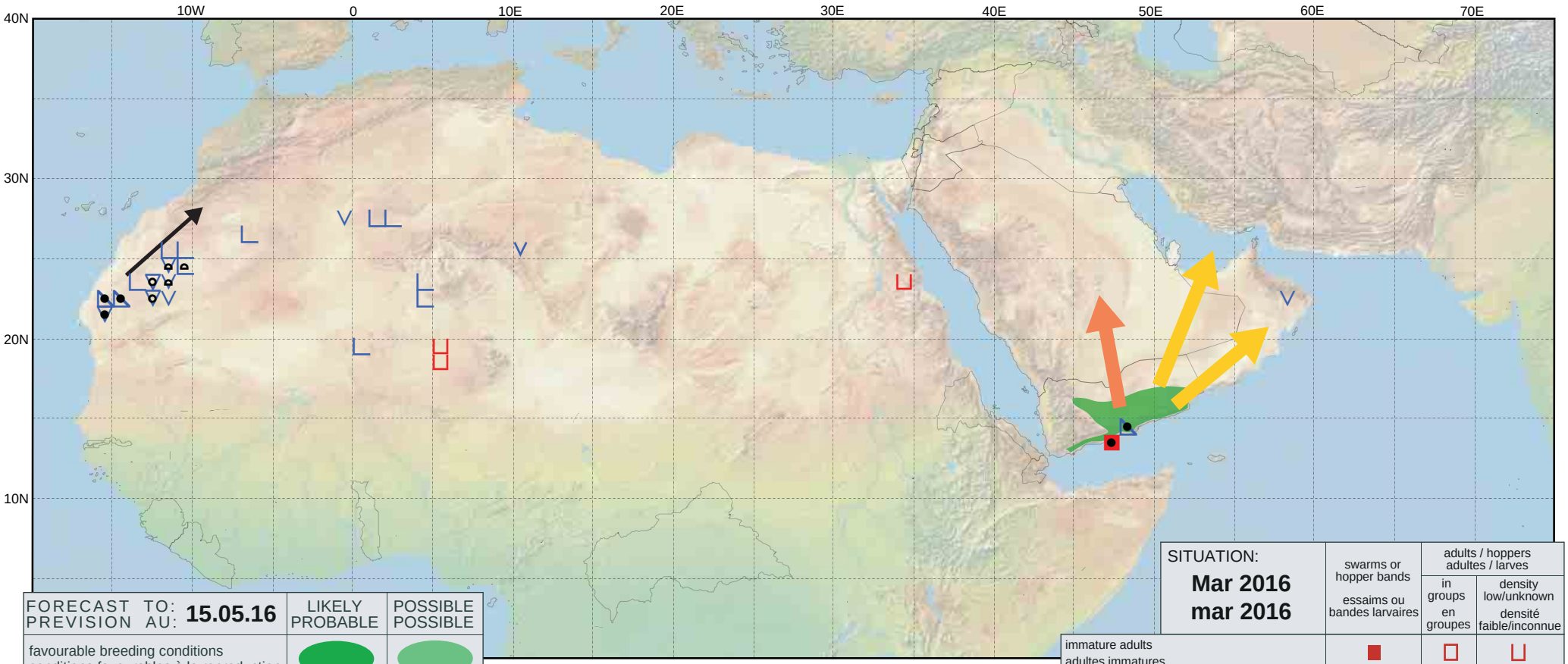
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

Desert Locust Summary
Criquet pèlerin - Situation résumée

450



FORECAST TO: / PREVISION AU: **15.05.16**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Mar 2016 / mar 2016**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves: in groups / en groupes	adults / hoppers adultes / larves: density low/unknown / densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	∟
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)	◘	◙	⊎

Desert Locust outbreak in Yemen leaves surrounding countries potentially at risk

Strict vigilance is also required in northwest Africa

Juvenile desert locust hoppers.

12 April 2016, Rome - The presence of recently discovered Desert Locust infestations in Yemen, where conflict is severely hampering control operations, poses a potential threat to crops in the region, FAO warned today. FAO urged neighbouring countries, Saudi Arabia, Oman and Iran, to mobilize survey and control teams and to take all necessary measures to prevent the destructive insects from reaching breeding areas situated in their respective territories.

Strict vigilance is also required in Morocco and Algeria, especially in areas south of the Atlas Mountains, which could become possible breeding grounds for Desert Locust that have gathered in parts of the Western Sahara, Morocco and Mauritania, FAO added.

Cyclones help trigger locust presence

Groups of juvenile wingless hoppers and adults as well as hopper bands and at least one swarm formed on the southern coast of Yemen in March where heavy rains associated with tropical cyclones Chapala and Megh fell in November 2015.

"The extent of current Desert Locust breeding in Yemen is not well known since survey teams are unable to access most areas. However, as vegetation dries out along the coast more groups, bands and small swarms are likely to form," said Keith Cressman, FAO Senior Locust Forecasting Officer.

He noted that a moderate risk exists that Desert Locusts will move into the interior of southern Yemen, perhaps reaching spring breeding areas in the interior of central Saudi Arabia and northern Oman.

There is a possibility that this movement could continue to the United Arab Emirates where a few small swarms may appear and transit through the country before arriving in areas of recent rainfall in southeast Iran.

FAO is assisting technical teams from Yemen's Ministry of Agriculture and Irrigation in conducting field survey and control operations in infested coastal areas, as part of the agency's continuing support to the country's locust control efforts.

FAO also warned that in northwest Africa, small groups and perhaps a few small swarms could find suitable breeding areas in Morocco (Draa Valley), Mauritania (near Zouerate) and Algeria. In addition, some small-scale Desert Locust breeding is likely to occur in southwestern Libya, but numbers should remain low.

The organization stressed the need for close monitoring in all of these areas over the next few months to prevent the insects from forming large, destructive swarms.

The Desert Locust situation in other countries remained calm in March with no significant developments detected or expected.

A force of nature

Desert Locust hoppers can form vast ground-based bands. These can eventually turn into adult locust swarms, which, numbering in the tens of millions can fly up to 150 km a day with the wind.

Female locusts can lay 300 eggs within their lifetime while an adult insect can consume roughly its own weight in fresh food per day -- about two grams every day. A very small swarm eats the same amount of food in one day as about 35,000 people and the devastating impact locusts can have on crops poses a major threat to food security, especially in already vulnerable areas.

Locust monitoring, early warning and preventive control measures are believed to have played an important role in the decline in the frequency and duration of plagues since the 1960s; however, today climate change is leading to more frequent, unpredictable and extreme weather and poses fresh challenges on how to monitor and respond to locust activity.

Related links

FAO Desert Locust Watch

Climate change and Desert Locust

Desert Locust: Answers to FAQs

Interview with Keith Cressman

Tweets by @FAOlocust

#>Tweets by @faolocust

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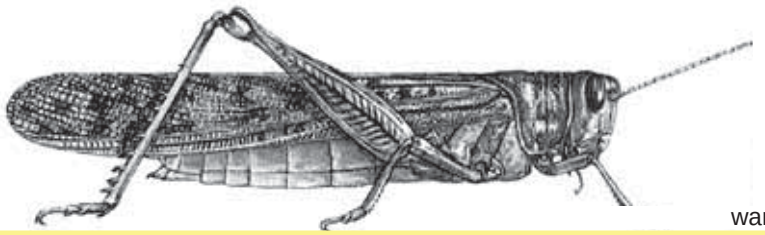
FAO operates a Desert Locust Information Service that receives data from locust-affected countries. This information is regularly analyzed together with weather and habitat data and satellite imagery in order to assess the current locust situation, provide forecasts up to six weeks in advance and if required issue warnings and alerts. FAO also undertakes field assessment missions and coordinates survey and control operations as well as assistance during locust emergencies. Its three regional locust commissions provide regular training and strengthen national capacities in survey, control and planning.



warning level: **CAUTION**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 451**

(2.05.2016)

General Situation during April 2016
Forecast until mid-June 2016

The Desert Locust situation deteriorated further during April in Yemen where adult groups and small swarms formed on the southern coast, moved to the interior and laid eggs. By the end of the month, hatching commenced and further widespread hatching and formation of hopper groups and bands are expected to occur during May within a large area where survey and control operations are difficult due to remoteness and insecurity. This could lead to the formation of new swarms by mid-June. In Northwest Africa, control operations continued against groups of hoppers and adults in the southern part of the Western Sahara in southern Morocco and adjacent areas of northern Mauritania. There is a risk that some groups and perhaps a few small swarms could move towards southern Mauritania and maybe reach Senegal while other groups may move to central Algeria where local breeding was underway. Elsewhere, the situation remained calm.

Western Region. Ground control operations continued during April in the southern portion of the **Western Sahara** in **Morocco** and in northern **Mauritania**, treating 6,502 ha and 1,358 ha respectively of hopper and adult groups as well as a few small hopper bands in Morocco. As vegetation was drying out, adult groups started to move within this area and by the end of the month small groups were seen moving south in western Mauritania. Since vegetation will continue to become dry, adult groups and perhaps a few small swarms are likely to form in the currently infested areas during May and move into oases in western and central Mauritania and perhaps continue towards the summer breeding areas in southern Mauritania and maybe reach northern **Senegal**. There is also a possibility that some of these adults will move northeast to the central Sahara in **Algeria** where scattered adults were already present and breeding on a small scale in April. All efforts are required to monitor the situation carefully and undertake control when necessary in the concerned countries. Elsewhere, low numbers of adults were present in northern **Mali** and **Niger**.

Central Region. The situation worsened in **Yemen** as adult groups and a few small swarms formed on the southern coast in early April and moved into the interior where widespread rains led to rapid maturation and egg-laying. Hatching and band formation commenced by the end of the month. The extent and scale of current breeding are not well known due to the difficulty of undertaking surveys. However, infestations are likely to be scattered throughout a large, remote and insecure area where control operations cannot be carried out easily. Widespread hatching is expected during May that will cause numerous hopper groups and bands to form, followed by a high risk of swarm formation in June. Scattered adults were present on the Red Sea coast in Yemen and southern **Eritrea** where small-scale breeding may occur during the forecast period. Small-scale breeding occurred in northern **Oman** and may take place in the interior of **Saudi Arabia** during May.

Eastern Region. The situation remained calm during April. Small-scale breeding occurred in southeast **Iran** but locust numbers remained low. No significant developments are likely 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 are available on the Internet.
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No. 451

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in April 2016

Widespread good rains fell in the spring breeding areas of the Arabian Peninsula where breeding conditions were favourable. Good rains also fell in the Horn of Africa. Ecological conditions were drying out in Northwest Africa.

In the **Western Region**, very little rain fell during April. In Northwest Africa, vegetation was drying out in northern Mauritania and in the Adrar Settouf area of Western Sahara in southern Morocco. Nevertheless, conditions remained favourable for locust breeding and survival in some areas, mainly between Aousserd and Zouerate, Mauritania and in a few places north of Zouerate. In Algeria, light to moderate rains fell in the northwest near Naama and El Bayadh. Vegetation was starting to dry out in the central Sahara and remained dry in the south. In the northern Sahel of West Africa, dry conditions prevailed but light rains may have fallen in southern Tamesna between Menaka, Mali and Tahoua, Niger during the first decade of the month.

In the **Central Region**, good rains fell in the spring breeding areas of the interior of the Arabian Peninsula during April, causing floods in some places. Widespread moderate to heavy rains fell in the interior of Yemen between Thamud and Marib during the first two decades, in Saudi Arabia east of the Asir Mountains and as far north as Hail throughout the month, and in northern Oman as well as on the central coast and subcoastal areas south of Hayma during the first decade. Consequently, ecological conditions were favourable for breeding in all of these areas. On the Red Sea coast, light to moderate rains fell at mid-month in Yemen and in Saudi Arabia as far north as Thuwal, on the central coast of Sudan between Port Sudan and Mohamed Qol, in Eritrea between Mehimet and Embere as well as on the southern coast from Mersa Fatma to Djibouti. In the Horn of Africa, moderate to heavy rains fell throughout the month in eastern Ethiopia and on the escarpment and plateau in northern Somalia. As a result, ecological conditions are likely to become favourable for breeding in these areas.

In the **Eastern Region**, light rains may have fallen in parts of the interior in southeast Iran and southwest Pakistan during the first decade of April. However, ecological conditions were mostly dry and unfavourable in the spring breeding areas of both countries.

Area Treated

Algeria	26 ha (Apr)
Mauritania	1,358 ha (Apr)
Morocco	6,502 ha (Apr)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During April, solitarious hoppers and groups of transiens hoppers at densities up to 900 hoppers/m^2 mixed with groups of immature and mature adults at densities up to 6,800 adults/ha persisted near Zouerate (2244N/1221W) and south of Bir Moghrein (2510N/1135W). Egg-laying continued in some areas during the first two decades. Some groups of adults may have arrived from adjacent areas to the west. On 26 April, small adult groups were seen moving south of Atar (2032N/1308W). Ground teams treated 1,358 ha during April.

• **FORECAST**

Hatching is likely to continue between Zouerate and Bir Moghrein early in the forecast period. As vegetation dries out, small groups of hoppers and adults, and perhaps a few small swarms, will form mainly near Zouerate. Some of these could move northeast towards central Algeria while others are likely to move south and appear in oases in Adrar, Tagant and Trarza, and perhaps continue to the Senegal River Valley and summer breeding areas.

Mali

• **SITUATION**

During April, immature and mature solitarious adults persisted in the Adrar des Iforas between Aguelhoc (1927N/0052E) and Ti-n-kar (1926N/0022W). A mature adult group was reported on the 11th near Aguelhoc.

• **FORECAST**

Low numbers of adults are likely to persist and form a few small groups in parts of the Adrar des Iforas and perhaps Timetrine and the Tilemsi Valley.

Niger

• **Situation**

During April, isolated mature solitarious adults were reported on the Tamesna Plains at two places in W. Anou-n-Aguerouf between Agadez (1658N/0759E) and Arlit (1843N/0721E).

• **Forecast**

No significant developments are likely.

Chad

• **Situation**

No reports were received.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No locust activity was reported during the first half of April.

• **Forecast**

There is a low risk that a few groups and maybe a small swarm could arrive in the north from Mauritania.

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, an increasing number of scattered mature solitarious adults appeared in the central and southern Sahara near Adrar and between In Salah (2712N/0229E) and Tamanrasset (2250N/0528E). Adults were laying eggs near Adrar and scattered early instar solitarious hoppers were seen at one place. A group of mature adults was reported southeast of In Salah. Ground teams treated 26 ha. No locusts were seen in the west and northwest.

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly in the central Sahara with hatching continuing in May. Fledging of current hoppers will commence from mid-month. Small groups and perhaps a few small swarms from adjacent areas in Morocco and Mauritania could initially appear near Tindouf, move towards the central Sahara and breed, especially in any areas that receive rainfall.

Morocco

• **Situation**

During April, locust infestations persisted in the southern part of the Western Sahara where late instar hoppers, hopper groups and a few hopper bands mixed with groups of immature and mature adults concentrated in small areas that remained green to the west of Aousserd (2233N/1419W) and Tichla (2138N/1453W). Locust densities progressively increased during the month, reaching 7 adults/m^2 and 60 hoppers/m^2. Ground teams treated 6,502 ha during April. In the northeast, isolated immature solitarious adults appeared near Figuig (3207N/0113W).

• **Forecast**

As vegetation dries out, groups of adults and perhaps a few small swarms are likely to form in the Western Sahara between Tichla and Aousserd. Some of these adults may move northeast to the Draa Valley in May if rainfall occurs; otherwise, they are likely to move into adjacent areas of northwest and southwest Mauritania.

Libya

• **Situation**

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

• **Forecast**

Scattered adults may be present in the southwest near Ghat and breeding on a small scale. No significant developments are likely.

Tunisia

• **Situation**

No locust activity was reported during April.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

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

• **Forecast**

Isolated adults may appear and breed on a small scale along the Nile Valley in Northern and River Nile states. No significant developments are likely.

Eritrea

• **Situation**

During April, scattered immature solitarious adults were present on the southern coast of the Red Sea near Tio (1441N/4057E).

• **Forecast**

Low numbers of adults are likely to persist near Tio where small-scale breeding may occur in areas of recent rainfall.

Ethiopia

• **Situation**

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

• **Forecast**

Isolated adults may appear in the eastern region between Ayasha and Jijiga and breed on a small scale in areas of recent rainfall.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

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

• **Forecast**

Scattered adults may appear in recent areas of rainfall on the plateau between Boroma and Burao and breed on a small scale.

Egypt

• **Situation**

During April, no locusts were seen on the Red Sea coast between Shalatyn (2308N/3535E) and the Sudan border, and along both sides of Lake Nasser.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

During April, no locusts were seen during surveys carried out in the spring breeding areas of the interior near Tabuk (2823N/3635E), Hail (2731N/4141E), Gassim (2621N/4358E), Riyadh (2439N/4642E), Wadi Dawasir (2028N/4747E) and near the Yemen border between Najran (1729N/4408E) and Sharawrah (1729N/4706E). No locusts were also seen on the northern Red Sea coast near Yenbo (2405N/3802E).

• **Forecast**

Low numbers of adults may be present in the interior between Wadi Dawasir and Hail where small scale breeding could occur in areas of recent rainfall.

Yemen

• **Situation**

During the first half of April, groups of late instar hoppers and adults continued to form along one section of the southern coast that could be surveyed between Arkha (1340N/4724E) and Bir Ali (1401N/4820E). An increasing number of adults, groups and at least one swarm moved into the interior and dispersed over a wide area between Marib (1527N/4519E), Al Abr (1608N/4714E), W. Hadhramaut and Thamud (1717N/4955E), including the numerous small wadis in the plateau north of W. Hadhramuat. Egg-laying started at mid-month and hatching commenced by the end of the month, causing hopper groups and small bands to form.

On the Red Sea coast, isolated immature and mature solitairous adults were present in few places near Bajil (1458N/4314E) and Al Zuhrah (1541N/4300E).

• **Forecast**

A few more groups and small swarms may form on the southern coast in early May and move into the interior where breeding will continue within a large area between Marib and Thamud. Widespread hatching is expected to give rise to numerous hopper groups and bands during May and adult groups and small swarms in June.

Oman

• **Situation**

During April, isolated immature and mature solitarious adults were seen in the northern Sharqiya region near Bidiya (2222N/5856E) where breeding took place last month. Consequently, low numbers of first to fourth instar solitarious hoppers were present. Isolated immature adults were present near Ibri (2314N/5630E). Elsewhere, no locusts were seen in the northern interior and coastal areas and in the south between Thumrait (1736N/5401E) and Shehan (1746N/5229E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly in the northern interior and, to a lesser extent, on the Batinah coast and in central coastal and subcoastal areas (Hayma – Duqm – Marmul). At the end of the forecast period, there is a low to moderate risk that a few small swarms from Yemen may appear in southern areas.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During April, isolated mature solitarious adults were seen in the western portion of Jaz Murian, on the southeast coast near Chabahar (2517N/6036E) and in the interior near Zaboli (2707N/6140E). Small-scale breeding occurred in western Jaz Murian where isolated early instar solitarious hoppers were present at a few places.

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

No reports were received during April.

• **Forecast**

No significant developments are likely.

India

• **Situation**

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

• **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.

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Glossary of terms

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

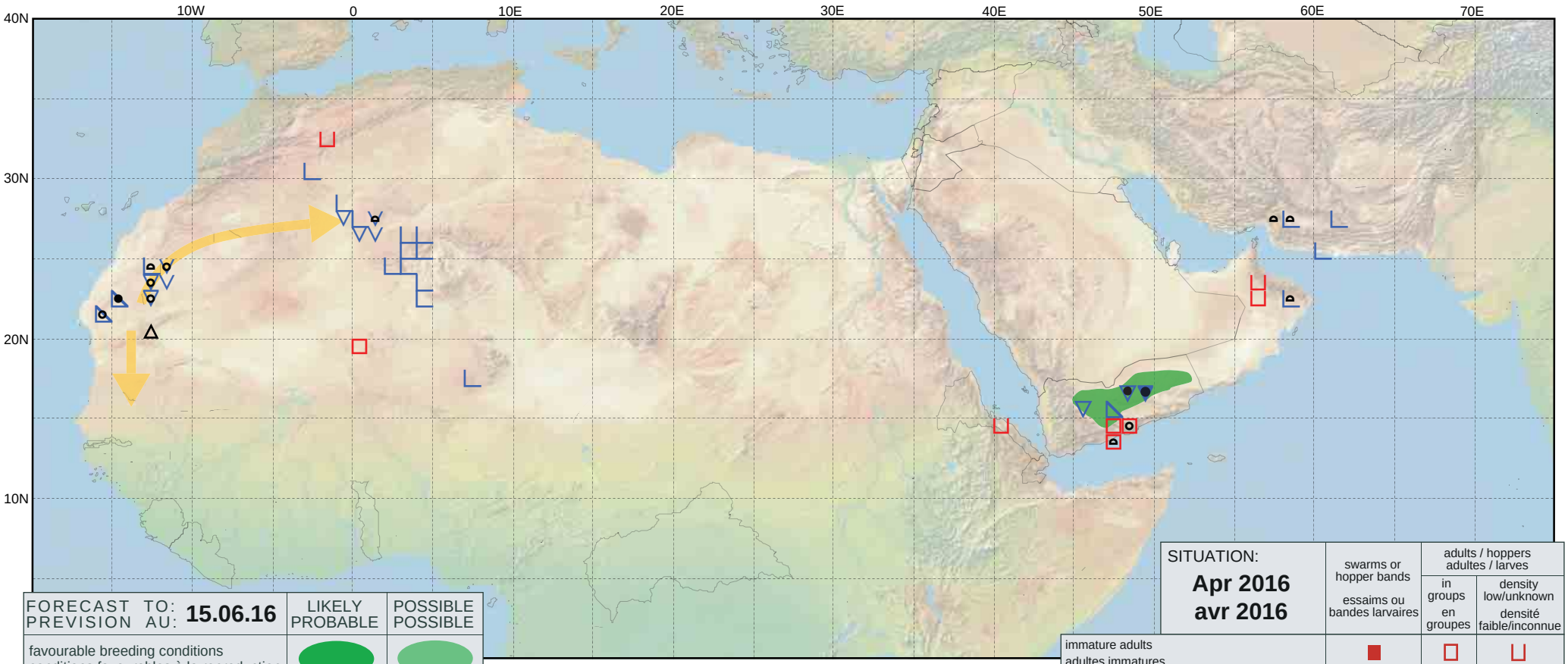
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

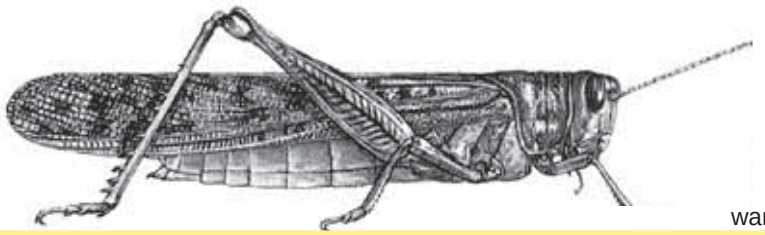
Desert Locust Summary
Criquet pèlerin - Situation résumée

451



FORECAST TO: / PREVISION AU: **15.06.16**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Apr 2016 avr 2016**	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**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 452**

(3.06.2016)

General Situation during May 2016 Forecast until mid-July 2016

The Desert Locust situation in Yemen continued to deteriorate during May as more hopper groups and bands formed in the interior as well as on the Aden coast. Insecurity and remoteness are hampering survey and control efforts. Consequently, swarms will form from early June onwards and are likely to stay in the interior where they could mature and lay eggs if conditions remain favourable until at least mid-July. Otherwise, swarms are likely to move south to the Gulf of Aden where strong monsoon winds could carry them across the Arabian Sea to the Indo-Pakistan summer breeding area. Some of the swarms may transit along the eastern coast of Oman. All efforts are required to increase survey and control operations in Yemen wherever possible and to remain vigilant in other countries. Control operations continued against adult groups in the southern part of the Western Sahara in southern Morocco and adjacent areas of northern Mauritania. A limited number of groups are likely to reach the summer breeding areas in southern Mauritania and lay eggs with the onset of the seasonal rains. Control operations were carried out against locally-bred adult groups in central Algeria.

Western Region. Ground control operations declined during May in the southern portion of the **Western Sahara** in **Morocco** and in northern **Mauritania**, treating 218 ha and 762 ha respectively of adult groups as well as hopper groups in Mauritania. As vegetation dried out further, adults rapidly increased in density and several groups moved south within this area to oases in western Mauritania. This movement is expected to continue during the forecast period when adult groups are likely to reach the summer breeding areas in southern Mauritania and lay eggs with the onset of the rains. Hatching could commence by the end of the forecast period if early rains and egg-laying occur. In the central Sahara of **Algeria**, ground teams treated 651 ha of adult groups that formed from local breeding. Scattered adults were reported in southwest **Libya**, southern Algeria, northern **Mali** and in the Air Mountains of northern **Niger**.

Central Region. The situation deteriorated further in the interior of **Yemen** where more hopper groups and bands formed from local breeding throughout May. Although the full extent of infestations is not well known due to insecurity, it appears that breeding has occurred within a large portion of the interior from Marib to Thamud as well as on the Aden coastal plains. Only limited control operations could be carried out, some by burning hopper bands. Consequently, swarms will almost certainly form from early June onwards. If vegetation remains green, the swarms are expected to remain in the interior and mature with the possibility of another generation of egg-laying by mid-July. On the other hand, if vegetation dries out, then the swarms are likely to move to the southern coast and be carried by strong south-westerly monsoon winds through coastal areas of Oman to the Indo-Pakistan summer breeding area. Elsewhere, the situation remained calm. Small-scale breeding continued in northeast **Oman** and occurred near crops in southern **Egypt**. Good rains fell on the plateau in northern **Somalia** and eastern **Ethiopia**.

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 are available on the Internet.
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Facebook: www.facebook.com/faolocust
Twitter: twitter.com/faolocust

No. 452

DESERT LOCUST BULLETIN

Eastern Region. No locusts were reported and the situation remained calm in the region during May. There is a low to moderate risk that a few small swarms could arrive along the Indo-Pakistan border if vegetation dries out in the interior of Yemen.

Weather & Ecological Conditions in May 2016

Good rains fell in parts of the spring breeding areas in Northwest Africa, the interior of Saudi Arabia and the Horn of Africa. Good rains also fell along the Red Sea and on both sides of the Indo-Pakistan border. Vegetation continued to dry out in southern Morocco and northern Mauritania.

In the **Western Region**, vegetation continued to dry out in northern Mauritania and in the Adrar Settouf area of Western Sahara in southern Morocco during May. In Algeria, breeding conditions remained favourable near cropping areas in the northwest near Beni-Abbes and Bechar, in the central Sahara between Adrar and In Salah and to a lesser extent in the eastern Sahara. Good rains fell primarily in the central and eastern Sahara where Illizi reported 40 while showers fell near Tamanrasset (20 mm) where vegetation was drying out. In Libya, good rains fell at times during May in the west and southwest but vegetation remained dry. In West Africa, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal movement northwards but remained south of the summer breeding area in the northern Sahel. Its position was nearly normal, having reached Nara and Gao (Mali), Abalak (Niger) and Ati (Chad) by the end of the month. In Niger, moderate rains fell near Agadez while light rains were reported in parts of the Air Mountains but vegetation remained mainly dry. Traces of rain were reported in the summer breeding areas of southeastern Mauritania.

In the **Central Region**, good rains fell primarily during the first decade of May along the Red Sea coast of Sudan and northern Eritrea, and in the central interior of Saudi Arabia south of Gassim. The rains extended to the Asir Mountains and the Yemen Highlands where runoff may reach the coastal and interior plains. Good rains also fell on the western side of the Red Sea Hills in eastern Sudan between Derudeb and Sinkat. During the remainder of the month, little rain fell in these areas except for the Yemen Highlands. Although no rain fell in the interior of Yemen, ecological conditions remained favourable for breeding in currently infested areas as a result of rainfall in April. In the Horn of Africa, good rains fell during the first two decades of May on the plateau in northern Somalia and in adjacent areas of eastern Ethiopia where ecological conditions were favourable for breeding.

In the **Eastern Region**, light rains may have fallen during the first decade of May in parts of the interior in southeast Iran and southwest Pakistan between Suran and Panjgur. However, ecological conditions remained mostly dry in both countries. Good rains fell in the Indo-Pakistan summer breeding areas from Lasbela to Rahimyar Khan and Jaisalmer during the first decade of the month.

Area Treated

Algeria	651 ha (May)
Mauritania	762 ha (May)
Morocco	218 ha (May)
Yemen	159 ha (May)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During the first half of May, a few small groups of fifth instar hoppers at densities up to 60 hoppers/m^2 remained near Zouerate (2244N/1221W) mixed with immature and a few mature solitairous and *transiens* adults and a few groups at densities up to 8,500 adults/ha. Scattered immature and mature adults and some groups moved south into southwest Adrar, reaching about 100 km south of Oujeft (2003N/1301W). During the second half of the month, several immature and mature groups at densities up to 30,000 adults/ha were reported to have arrived in the north and northwest and moved south to oases in Adrar. Ground teams treated 762 ha during May.

• **FORECAST**

Adult groups and perhaps a few small swarms may still form early in the forecast period in southern Tiris-Zemmour, supplemented by similar populations

arriving from the west. These will move south to oases in Adrar, Tagant and Trarza, continuing to the summer breeding areas where egg-laying will commence with the onset of the seasonal rains. If early rains fall, hatching could occur by mid-July.

Mali

• **Situation**

During May, isolated immature solitarious adults persisted in the Adrar des Iforas west of Aguelhoc (1927N/0052E).

• **Forecast**

Low numbers of adults are likely to persist in parts of the Adrar des Iforas. Small-scale breeding will commence with the onset of the summer rains.

Niger

• **Situation**

During May, isolated mature solitarious adults were reported in the southeastern Air Mountains east of Timia (1809N/0846E) and one mature adult was seen in Agadez (1658N/0759E).

• **Forecast**

Small-scale breeding is likely to commence on the Tamesna Plains with the onset of the summer rains towards the end of the forecast period. There is a low risk that a few small groups may arrive in this area from the north.

Chad

• **Situation**

No locust activity was reported during May.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No reports received.

• **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 May, locust numbers continued to increase in the central Sahara where a number of small groups of hoppers at densities up to 20 hoppers/m^2 and immature and mature adults at densities up to 4,000 adults/ha formed between Adrar (2753N/0017W) and In Salah (2712N/0229E) as a result of local breeding. Ground teams treated 651 ha during the month.

Scattered immature and mature solitarious adults were present west of Tamanrasset (2250N/0528E) and, to a lesser extent, east of Illizi (2630N/0825E) and near Djanet (2434N/0930E). No locusts were present near Bechar (3135N/0217W) and Tindouf (2741N/0811W).

• **Forecast**

As vegetation dries out, small groups of adults will continue to form in the central Sahara. Some of these adult groups may move south towards the northern Sahel.

Morocco

• **Situation**

During the first two decades of May, small groups of immature and mature *transiens* and gregarious adults, at densities of up to 5 adults/m^2, persisted in the southern part of the Western Sahara west of Aousserd (2233N/1419W). Immature and mature solitarious and *transiens* adults, and a few groups, at densities up to 1,000 adults/ha were present between Bir Gandouz (2136N/1628W) and Tichla (2138N/1453W). During the last decade, very small groups of immature and mature solitarious and *transiens* adults were discovered between Oum Dreyga (2406N/1316W) and Guelta Zemmur (2508N/1222W) at densities up to 14,000 adults/ha. Ground teams treated 218 ha in May.

• **Forecast**

Small but dense groups may still form in the Western Sahara between Tichla and Guelta Zemmur early in the forecast period and move towards the summer breeding areas in southern Mauritania.

Libya

• **Situation**

During May, scattered immature solitarious and *transiens* adults were seen at two places in the southwest near Ghat (2459N/1011E).

• **Forecast**

Small-scale breeding may occur in areas of recent rainfall in the southwest near Ghat during June.

Tunisia

• **Situation**

No locust activity was reported during May.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

No reports received.

• **Forecast**

Isolated adults may be present and could breed on a small scale along the Nile Valley in Northern and River Nile states. Low numbers of adults may start to appear in summer breeding areas of Northern Kordofan and Darfur where small-scale breeding is expected to commence with the onset of the summer rains.

Eritrea

• **Situation**

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

• **Forecast**

Low numbers of adults may appear in the western lowlands and breed on a small scale once summer rains commence.

Ethiopia

• **Situation**

During May, no locusts were seen in the Somali region. Further details are awaited.

• **Forecast**

Isolated adults may appear in areas of recent rainfall in the eastern region between Ayasha and Jijiga, and breed on a small scale.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

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

• **Forecast**

Scattered adults may appear in recent areas of rainfall on the plateau between Boroma and Burao and breed on a small scale in early June.

Egypt

• **Situation**

During May, isolated mature solitarious adults were seen at two places near crops in the Tushka (2247N/3126E) area, one in which isolated fourth instar solitarious hoppers and egg-laying adults were also present. No locusts were seen on the Red Sea coast between Berenice (2359N/3524E) and the Sudan border, and along both sides of Lake Nasser.

• **Forecast**

Small-scale breeding will occur near crops in the Tushka area but locust numbers will remain low.

Saudi Arabia

• **Situation**

During May, no locusts were seen during surveys carried out in the spring breeding areas of the interior between Khaybar (2542N/3917E) and Gassim (2621N/4358E), and west of Riyadh (2439N/4642E). No locusts were seen on the Red Sea coast between Jeddah (2130N/3910E) and Umm Lajj (2501N/3716E).

• **Forecast**

No significant developments are likely.

Yemen

• **Situation**

During May, numerous small, high density hopper bands were present in wadis on the plateau north of W. Hadhramaut between Thamud (1717N/4955E) and Minwakh (1650N/4812E) mixed with scattered immature and mature adults. Adult groups were laying eggs until the 12th. By the end of the month, fledging had commenced. Limited ground control operations were carried out, treating 39 ha at mid-month. Small groups of early instar hoppers bands were reported in the interior between Safer (1534N/4547E) and Al Abr (1608N/4714E) and near Bayhan (1452N/4545E), and on the southern coast near Zinjibar (1306N/4523E) from the second week onwards. Ground teams treated 120 ha in the Bayhan area. Isolated solitarious hoppers and mature adults were present on the coast west of Aden (1250N/4503E).

• **Forecast**

Groups and small swarms will form in the interior between Marib and Thamud and on the southern coast east of Aden from early June onwards. The adults are likely to remain in the interior and mature as long as vegetation stays green. This could allow another generation of breeding to commence by the end of the forecast period. However, if vegetation dries out, swarms are likely to move to the southern coast and then northeast along the Gulf of Aden towards the Indo-Pakistan summer breeding area.

Oman

• **Situation**

During May, isolated second to fifth instar solitarious hoppers and mature solitarious adults were present in the northern Sharqiya region near Bidiya (2222N/5856E). Isolated mature adults were present about 165 km south of Ibri (2314N/5630E). Elsewhere, no locusts were seen in the northern interior, Musandam Peninsula and in the south near Shehan (1746N/5229E) close to the Yemen border.

• **Forecast**

Locust numbers will decline in the north. There is a low to moderate risk that a few small swarms from Yemen may briefly appear in coastal areas between the Yemen border and Sur as they move towards the Indo-Pakistan summer breeding area.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During May, no locusts were seen on the southeast coast near Chabahar (2517N/6036E).

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

During May, no locusts were seen on the coast west of Karachi near Lasbela (2614N/6619E) and Uthal (2548N/6637E).

• **Forecast**

If swarms form and vegetation dries out in the interior of Yemen, a few swarms could migrate across the Arabian Sea and arrive in Tharparkar to coincide with the arrival of the summer monsoon rains.

India

• **Situation**

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

• **Forecast**

If swarms form and vegetation dries out in the interior of Yemen, a few swarms could migrate across the Arabian Sea and arrive in Gujarat and Rajasthan to coincide with the arrival of the summer monsoon rains.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

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ADULT SWARM AND HOPPER BAND SIZES

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

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

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

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

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

RAINFALL

LIGHT
- 1 - 20 mm of rainfall.

MODERATE
- 21 - 50 mm of rainfall.

HEAVY
- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING
- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS
- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS
- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

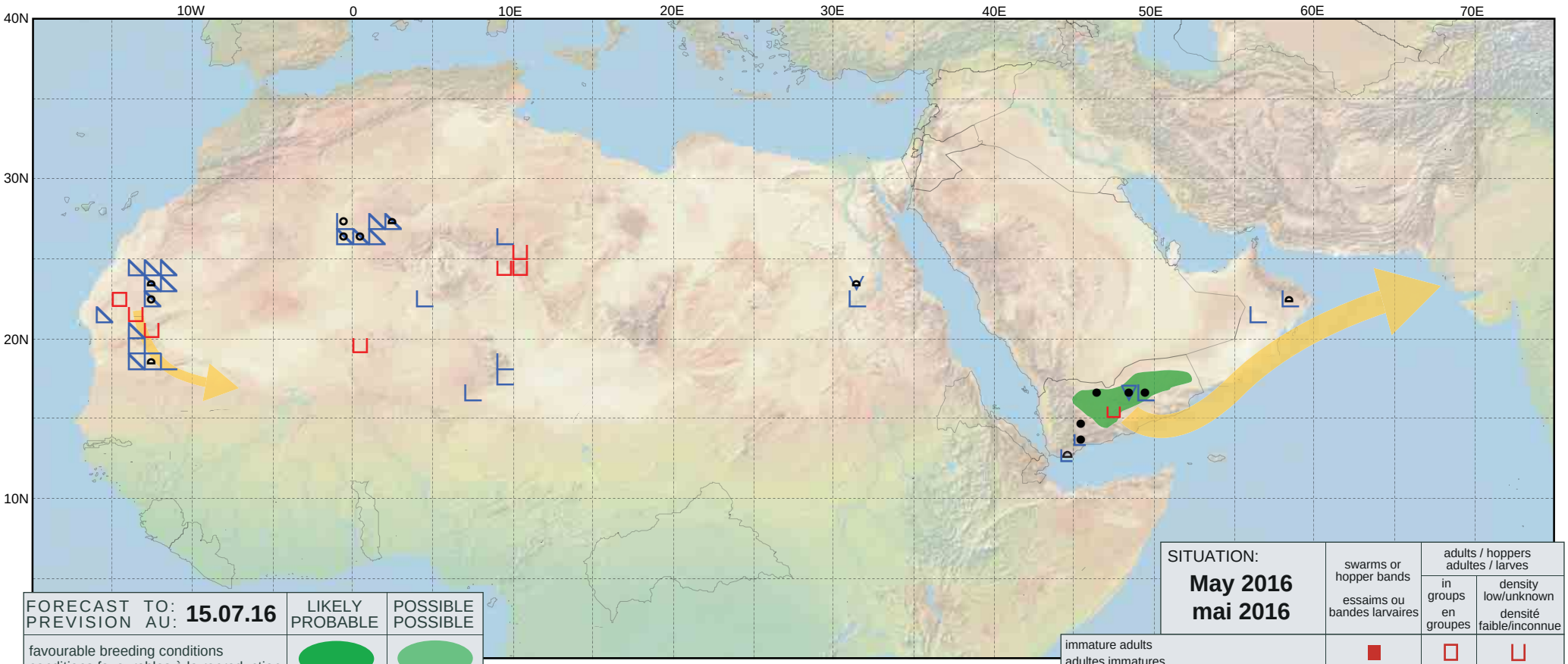
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

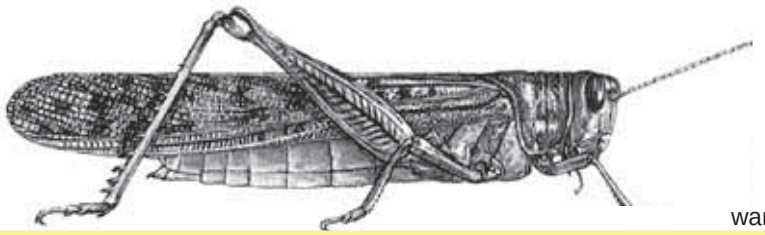
Desert Locust Summary
Criquet pèlerin - Situation résumée

452



FORECAST TO: / PREVISION AU: **15.07.16**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **May 2016 / mai 2016**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves: in groups en groupes	adults / hoppers adultes / larves: density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	∟
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. 453**

(5.07.2016)

General Situation during June 2016 Forecast until mid-August 2016

The Desert Locust situation remained extremely serious in Yemen during June. New swarms formed in the interior, some of which moved into the highlands and may continue to the Red Sea coast while others could still move to the summer breeding areas along the Indo-Pakistan border. Crop damage was reported in Yemen. More swarms are expected to form during July and another generation of breeding could commence in August. Survey and control operations remain limited due to insecurity. Elsewhere, breeding ended in southern Morocco and northern Mauritania, and adults moved towards summer breeding areas in southern Mauritania. Seasonal rains commenced in the northern Sahel between Mauritania and Sudan where small-scale breeding will cause locust numbers to increase slightly during the forecast period.

Western Region. Locust infestations declined in the southern portion of the **Western Sahara** in **Morocco** and in northern **Mauritania** due to drying conditions and control operations (375 ha) in June. Adults and a few small groups that escaped detection or control moved towards the summer breeding areas of southern and southeastern Mauritania. Isolated adults were present in north and west **Niger**. As seasonal rains started in the northern Sahel of West Africa in mid-June, small-scale breeding is expected to occur during the forecast period, causing locust numbers to increase primarily in Mauritania and, to a lesser extent in **Mali**, Niger and **Chad**. In Northwest Africa, ground teams treated a few small hopper groups that formed from local breeding in the Central Sahara of **Algeria**.

Central Region. The locust situation deteriorated further in **Yemen** as hopper bands continued to form in the interior, supplemented by new swarm formation that led to crop damage and an extension of the current threat to the central highlands and perhaps the Red Sea coast. Limited surveys and control operations (365 ha) were undertaken despite prevailing insecurity. If the swarms remain in Yemen, another generation of breeding could occur. However, there remains a risk that some swarms could move to the southern coast and be carried by strong south-westerly monsoon winds through coastal areas of Oman to the Indo-Pakistan summer breeding area. Elsewhere, the situation remained calm. Isolated adults were present in northern **Oman**, on the northwest coast of **Somalia** and on the northern Red Sea coast in **Eritrea**. Seasonal rains started in the interior of **Sudan** and western Eritrea where small-scale breeding will cause locust numbers to increase slightly.

Eastern Region. No locusts were reported and the situation remained calm in the region during June. Small-scale breeding is likely to occur with the arrival of the monsoon in July, causing locust numbers to increase slightly. There is a low to moderate risk that a few small swarms from Yemen could arrive along the **Indo-Pakistan** border.

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 are available on the Internet.
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Facebook: www.facebook.com/faolocust
Twitter: twitter.com/faolocust

Weather & Ecological Conditions in June 2016

Seasonal rains started in the summer breeding areas of the northern Sahel in West Africa and Sudan. Vegetation dried out in Northwest Africa. Mainly warm and dry conditions prevailed in Southwest Asia.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal movement northwards. By the third decade of June, it had reaching further north than usual in Mali (Kidal), Niger (In Abangharit) and Chad (Kalait) but remained further south than usual in southeast Mauritania. Consequently, light rain began to fall in parts of the summer breeding areas in the northern Sahel during the second half of the month. Although ecological conditions were dry in most areas during June, the rains should allow annual vegetation to become green in July. In Mauritania, rains started in the southeast during the second decade. In Mali, good rains fell in the northeast near Tin Essako and to a lesser extent in the Adrar des Iforas, Timetrine, Tilemsi Valley and Tamesna. In Niger, good rains fell in Tamesna, Air Mountains, on the Djado Plateau and in central areas. In Chad, good rains fell in Kanem, Batha, Ouaddai, Bilthine and in the northeast near Fada. In Northwest Africa, light rain fell along both sides of the Algerian-Libyan border while good rains fell in southern Algeria east of Tamanrasset and along the borders of Mali and Niger. Ecological conditions had dried out in the spring breeding areas south of the Atlas Mountains and in northern Mauritania.

In the **Central Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal movement northwards over Sudan, reaching further north than usual in North Kordofan (Sodori). As a result, light rain began to fall in parts of the summer breeding areas in White Nile State, followed by northern Darfur and Kordofan. Light rain fell in parts of the western lowlands in Eritrea. These rains should allow annual vegetation to become green during July. In the Horn of Africa, light rain fell on the northern Somali plateau at mid-month. Vegetation had dried out in most places on the northwest coast but was green on the plateau. In the Arabian Peninsula, good rains fell in the Yemeni Highlands and southern portions of the Asir Mountains in southwest Saudi Arabia. Some of these rains extended onto the Red Sea coastal plains. Although no rain fell in the interior of Yemen, vegetation remained green in many areas.

In the **Eastern Region**, dry conditions prevailed during June. Pre-monsoon rains fell in west Rajasthan, India and adjacent border areas of Pakistan at times during the month. By the end of June, the northern extent of the monsoon had reached southern portions of Gujarat.

Area Treated

Algeria	38 ha (June)
Mauritania	375 ha (June)
Yemen	365 ha (June)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During June, breeding nearly ended in the north where only isolated late instar solitarious hoppers remained at mid-month near Zouerate (2244N/1221W). There was an influx of immature and mature solitarious and transiens adults, including a few groups, from adjacent areas of southern Morocco mixed with local populations that moved south in Inchiri and Adrar through several oases towards the summer breeding areas in the south and southeast. By late June, adults had reached Tidjikja (1833N/1126W) and N'Beika (1758N/1215W) in western Tagant. Locust densities declined during the month from 8,200 adults/ha to 3,000 adults/ha due to control operations and dispersion. Ground teams treated 375 ha during June.

• **FORECAST**

Breeding will commence with the onset of the seasonal rains in the south and southeast, where egg-laying and hatching will cause locust numbers to increase slightly.

Mali

• **SITUATION**

No locust activity was reported during June.

• **FORECAST**

Low numbers of adults are likely to be present in parts of the Adrar des Iforas. Small-scale breeding

will commence in the Adrar des Iforas, Tilemsi Valley, Timetrine and Tamesna, causing locust numbers to increase slightly.

Niger

• **Situation**

During June, isolated immature solitarious adults were seen in the northern Air Mountains south of the Algerian border near Tidounane (2021N/0848E), in the eastern Air near Timia (1809N/0846E), and on the southeastern Tamesna Plains near In Gall (1651N/0701E). Isolated mature solitarious adults were reported in Sahelian pasture areas near Tillaberi (1428N/0127E) in the west.

• **Forecast**

Small-scale breeding will commence on the Tamesna Plains and in central areas, causing locust numbers to increase slightly. There is a low risk that a few small groups may arrive in this area from the north.

Chad

• **Situation**

No locust activity was reported during June.

• **Forecast**

Small-scale breeding will commence in northern portions of Kanem and Batha, in Bilthine and in the northeast, causing locust numbers to increase slightly.

Senegal

• **Situation**

No locust activity was 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, hopper infestations of all instars persisted near irrigated perimeters in the Adrar (2753N/0017W) area in the central Sahara where a few small groups formed at densities of up to 8 hoppers/m^2, mixed with isolated immature and mature solitarious adults. Ground teams treated 38 ha during the month.

• **Forecast**

Low numbers of adults may persist near irrigated areas in the Central Sahara. Small-scale breeding may occur in areas of recent rainfall in the extreme south.

Morocco

• **Situation**

During the first week of June, no locusts were seen in the central part of the Western Sahara near Oum Dreyga (2406N/1316W).

• **Forecast**

No significant developments are likely.

Libya

• **Situation**

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

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No locust activity was reported during June.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

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

• **Forecast**

Small-scale breeding will commence in West and North Darfur, West and North Kordofan and White Nile states as well as near Kassala, causing locust numbers to increase slightly.

Eritrea

• **Situation**

During June, no locusts were seen during surveys on the northern coastal plains of the Red Sea between Afabet (1612N/3841E) and the Sudanese border except for low-density scattered mature solitarious adults at two places between Mehimet (1723N/3833E) and Karora (1745N/3820E).

• **Forecast**

Low numbers of adults are expected to appear in the western lowlands and breed on a small scale in areas that receive summer rains.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

During June, low numbers of immature solitarious adults were seen at three places on the northwest coast near Lughaye (1041N/4356E). Small-scale breeding occurred nearby where scattered mid-instar solitarious hoppers were present.

• **Forecast**

No significant developments are likely.

Egypt

• **Situation**

During June, no locusts were seen by surveys carried out in the Tushka (2247N/3126E) area.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Yemen

• **Situation**

During June, hopper bands were present in the interior and immature swarms started to form in the second week in W. Hadhramaut near Sayun (1559N/4844E), on the plateau to the north, in Shabwah and near Bayhan (1452N/4545E). During the last week, some swarms moved west into the highlands and were seen near Al Hazm (1609N/4447E), west of Al Baydha (1405N/4542E), and south of Sana'a (1521N/4412E). Crop damage was reported in Hadhramaut, Al Jawf and Marib. Ground teams treated 355 ha of hopper bands near Marib, Bayhan and Sana'a. On the southern coast, scattered solitarious hoppers of all instars, fledglings and immature solitarious adults were present near Zinjibar (1306N/4523E), Ahwar (1333N/4644E) and Bir Ali (1401N/4820E) and 10 ha were treated.

• **Forecast**

More groups and small swarms will form in the interior between Marib and Thamud. If additional rainfall occurs, adults will remain in the interior and breed. Otherwise, groups and swarms will move into the highlands and perhaps reach the Red Sea coast. In both areas, egg-laying, hatching and band formation could commence by the end of the forecast period. There remains a moderate risk that swarms could move to the southern coast and then northeast along the Gulf of Aden towards the Indo-Pakistan summer breeding area.

Oman

• **Situation**

During June, locust numbers declined in the northern Sharqiya region near Bidiya (2222N/5856E) where only low-density immature and mature solitarious adults remained in Wadi Batha. Elsewhere, no locusts were seen in the northern interior near Buraimi (2415N/5547E) and on the Musandam Peninsula.

• **Forecast**

Locust numbers will decline in the north. There is a low to moderate risk that a few small swarms from Yemen may briefly appear in coastal areas between the Yemen border and Sur as they move towards the Indo-Pakistan summer breeding area.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During June, no locusts were seen on the southeast coast near Chabahar (2517N/6036E) and Jask (2540N/5746E), and in the Jaz Murian Basin of the interior near Ghale Ganj (2731N/5752E).

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

No locusts were seen during surveys carried out in Sukkur (2742N/6854E) and Mirpurkhas (2533N/6905E) areas in June.

• **Forecast**

Small-scale breeding will commence with the onset of the monsoon rains in Cholistan, Nara and Tharparkar deserts, causing locust numbers to increase slightly. There remains a low risk that a few swarms from Yemen may arrive in Tharparkar to coincide with the arrival of the summer monsoon rains.

India

• **Situation**

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

• **Forecast**

There remains a low to moderate risk that a few small swarms from Yemen may arrive in Gujarat and Rajasthan. Small-scale breeding will occur with the onset of the summer monsoon.

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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **eLocust3 training videos.** A set of 15 introductory training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT
- **RAMSESv4 training videos.** A set of basic training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So
- **RAMSESv4 and eLocust3 updates.** Updates can be downloaded from https://sites.google.com/site/rv4elocust3updates/home
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

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

- **Desert Locust situation updates, 3 and 18 June.** Archives – Briefs
- **Current threats.** Information
- **Yemen outbreak.** Archives – Threats

- **Summer-winter outlook**. Information – Latest additions
- **SWAC Iran/Pakistan Joint Survey 2016 final report**. Publications – Reports
- **CRC/SWAC 8th inter-regional workshop for Desert Locust Information Officers final report**. Publications – Reports
- **Results of Desert Locust Information Officer questionnaire on DLIS**. Activities – DLIS

2016 events. The following activities are scheduled or planned:

- **CLCPRO.** 8th session, Dakar, Senegal (18-22 July)
- **CLCPRO.** Regional training of trainers on health and environment standards, Agadir, Morocco (5-9 September)
- **CLCPRO.** Regional training for new survey officers on survey techniques, Aioun, Mauritania (20 Sep - 5 Nov)
- **CRC.** Regional workshop on health and environment standards, Hurghada, Egypt (25-29 September)
- **SWAC.** Regional contingency planning workshop, Tehran, Iran (20-23 November)
- **SWAC.** 30th session, Islamabad, Pakistan (12-14 December)

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

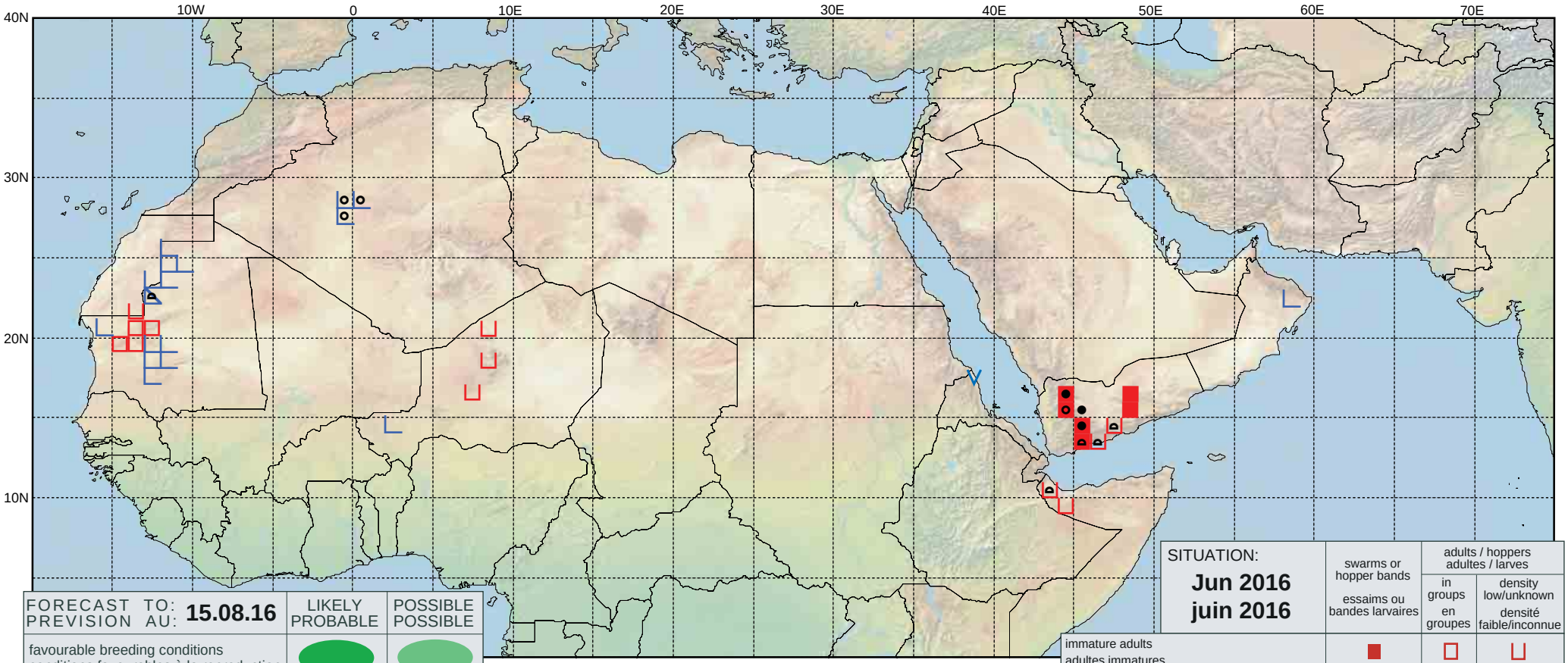
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

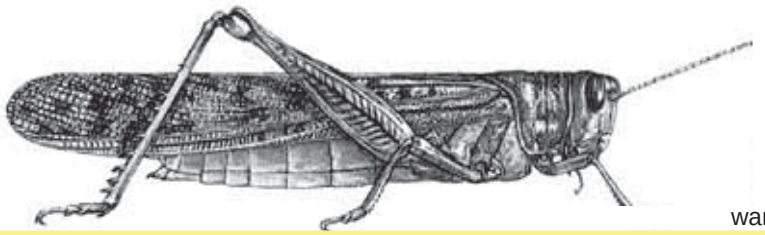
Desert Locust Summary
Criquet pèlerin - Situation résumée

453



FORECAST TO: / PREVISION AU: **15.08.16**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Jun 2016 juin 2016**	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**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 454**

(2.08.2016)

General Situation during July 2016
Forecast until mid-September 2016

The Desert Locust situation continued to be a cause for major concern in Yemen during July. An unknown number of swarms continued to form in the interior. At least one swarm moved into the central highlands while adult groups moved to the southern coast. Heavy rains and flooding in most areas at the end of July will allow breeding to continue and extend to the Red Sea coastal plains. Survey and control operations are severely limited by insecurity. While most of the swarms are expected to remain in Yemen, there is a low risk that a few could appear in Saudi Arabia, Oman and the Horn of Africa. These countries should remain vigilant. Elsewhere, the situation remained calm. Scattered adults appeared in the summer breeding areas of Mauritania, Niger, Sudan, India, Pakistan and perhaps Mali. Small-scale breeding will cause locust numbers to increase slightly in the northern Sahel from Mauritania to Eritrea and along the Indo-Pakistan border but remain below threatening levels.

Western Region. Low numbers of solitarious adults appeared in the summer breeding areas of the northern Sahel in southern **Mauritania**, **Niger** and perhaps **Mali** during July. This coincided with an increase in the seasonal rains. By the end of the month, ecological conditions had become favourable for breeding in many areas. Small-scale breeding commenced in Mauritania in about mid-July and hatching began at the end of the month. During the forecast period, breeding will continue in Mauritania and commence in northern Mali, Niger, **Chad** and perhaps in southern **Algeria**. Hatching will occur during August and locust numbers will increase slightly but should remain below threatening levels.

Central Region. The locust situation was extremely worrying in **Yemen** during July. An unknown amount of breeding continued in the interior where swarms formed. At least one swarm moved to the central highlands while adult groups moved to the southern coast, and scattered adults appeared on the Red Sea coastal plains. Heavy rains and flooding occurred at the end of the month that will allow further breeding. Survey and control operations could not be carried out due to prevailing insecurity and logistical difficulties. During the forecast period, swarms are likely to remain in the country and lay eggs in areas of recent rainfall on the Red Sea coast and in the interior where hatching and band formation are expected. There is a low risk that a few small swarms could appear in adjacent areas of **Saudi Arabia** and **Oman** or move to northern **Somalia**, **Djibouti**, **Ethiopia** and **Eritrea**. The situation in Yemen is potentially very dangerous. Elsewhere, low numbers of solitarious adults were present in the Nile Valley of northern **Sudan** and isolated adults were reported in eastern Ethiopia. During the forecast period, small-scale breeding will occur in the interior of Sudan and western Eritrea where hatching is expected and locust numbers will increase slightly but remain below threatening levels.

Eastern Region. The locust situation remained calm during July. Low numbers of adults began to appear in summer breeding along both sides of the Indo-Pakistan border. The seasonal monsoon rains arrived by mid-month but rainfall so far has been lower than normal. Nevertheless, small-scale breeding is expected to occur in both countries during the forecast period, causing locust numbers to increase slightly.

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 are available on the Internet.
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No. 454

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in July 2016

Seasonal rains continued in the summer breeding areas of the northern Sahel in West Africa and Sudan, and ecological conditions became favourable for breeding in most areas. Below-normal monsoon rains fell in the Indo-Pakistan summer breeding areas. Heavy rains fell at the end of the month in Yemen.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) remained further north than usual over West Africa during July. By the end of the month, it was located over the Adrar region in Mauritania, north of the Mali and Niger border in southern Algeria, and in northern Chad. As a result, light to moderate rains fell in Assaba, Tagant and the two Hodhs in central and southern Mauritania, in the Adrar des Iforas and parts of Tamesna in northeast Mali, in Tamesna and central pasture areas of Niger, and throughout central Chad as far north as 15N. Consequently, breeding conditions had become favourable in most of these areas by the end of the month. Light rain fell in southern Algeria near the Hoggar Mountains, causing runoff in several wadis. Annual vegetation was dry or absent in the south, but vegetation was green near irrigated agricultural schemes in the Adrar area of the central Sahara.

In the **Central Region**, the Inter-Tropical Convergence Zone (ITCZ) was located further north than usual over Sudan during July, reaching Dongola by the end of the month. Consequently, good rains fell in West and North Darfur, North Kordofan, White Nile and Khartoum states and ecological conditions became favourable for breeding in many areas. Light rainfall extended to southern parts of the western lowlands in Eritrea. In Yemen, moderate to heavy rains fell during the last decade of July on the Red Sea coast, in the central highlands and the interior, causing flooding in many areas including Wadi Bayhan and Wadi Hadhramaut. Some of the rains extended to the southern coastal plains in Saudi Arabia near Jizan. As a result, ecological conditions should remain favourable in Shabwah and Hadhramaut and will become favourable for breeding on the Red Sea coast. In Oman, light to moderate showers fell at times during the last two decades of the month in parts of the northern interior between Buraimi and Sharqiya while heavier than normal showers fell in the south along the Salalah coast. Light rains fell in eastern Ethiopia that may be sufficient to allow limited breeding in a few places.

In the **Eastern Region**, the seasonal southwest monsoon reached summer breeding areas along both sides of the Indo-Pakistan border by mid-July. In India, the monsoon arrived in northern Rajasthan on about the 3rd and by the 12th had covered all of Rajasthan. In some places, the monsoon was nearly two weeks late. On the 13th, it reached adjacent areas of Tharparkar, Nara and Cholistan deserts in Pakistan. By the end of the month, near-normal levels of rainfall had been received in eastern Rajasthan while very little rain had fallen in the western districts of Jaisalmer and Barmer, in Gujarat and in Pakistan. Dry conditions prevailed in southeast Iran.

Area Treated

No control operations were carried out in July.

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During the first decade of July, residual populations of isolated fifth instar hoppers, immature and mature solitarious adults persisted in the north near Zouerate (2244N/1221W) while immature solitarious adults continued to be present in western Tagant. During the remainder of the month, an increasing number of mature solitarious adults were seen in the two Hodhs between Tintane (1623N/1009W) and Nema (1636N/0715W). Hatching commenced during the last decade northwest of Nema where first to third instar hoppers were seen on the 30th.

• **FORECAST**

Additional laying and hatching will occur in the south, causing locust numbers to increase slightly. Fledging will commence during the second half of August and continue into September.

Mali

• **SITUATION**

On 7 July, there was an unconfirmed report of immature and mature adults that were said to be

concentrating and forming groups at four places near Gourma (1653N/0155W).

• **Forecast**

Low numbers of adults are likely to be present and breeding is likely to have commenced in parts of the Adrar des Iforas, Tilemsi Valley, Timetrine and Tamesna where hatching is expected during the forecast period, causing locust numbers to increase slightly.

Niger

• **Situation**

On 30 July, isolated immature and mature solitarious adults were seen at one place northwest of Agadez (1658N/0759E) and isolated adults were reported to be laying eggs north of Filingué (1421N/0319E) in the western part of the country.

• **Forecast**

Small-scale breeding is likely to have commenced on the Tamesna Plains and in central areas where hatching is expected during the forecast period, causing locust numbers to increase slightly.

Chad

• **Situation**

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

• **Forecast**

Small-scale breeding may have commenced in northern portions of Kanem and Batha, in Biltine and in the northeast where hatching is expected during the forecast period, causing locust numbers to increase slightly.

Senegal

• **Situation**

No reports were received in 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, low numbers of mature solitarious adults were present near irrigated perimeters in the Adrar (2753N/0017W) area of the central Sahara.

• **Forecast**

Low numbers of adults may persist near irrigated areas in the central Sahara. Small-scale breeding may occur in the extreme south if more rains fall.

Morocco

• **Situation**

No locust activity was reported during July.

• **Forecast**

No significant developments are likely.

Libya

• **Situation**

No reports were received in July.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No locust activity was reported during July.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During the second half of July, scattered mature solitarious adults were present near Kassala (1527N/3623E) and the Eritrean border, and in the Nile Valley between Shendi (1641N/3322E) and the Egyptian border at Wadi Halfa (2147N/3122E). No locusts were seen in the Baiyuda Desert, on the western side of the Red Sea Hills and in North Kordofan and White Nile states.

• **Forecast**

Small-scale breeding will commence in West and North Darfur, West and North Kordofan and White Nile states as well as near Kassala, causing locust numbers to increase slightly. Small-scale breeding may also occur near cropping areas in the Nile Valley.

Eritrea

• **Situation**

No locusts were seen during a survey in the western lowlands on 26-29 July

• **Forecast**

Low numbers of adults are likely to appear in the western lowlands and breed on a small scale in areas that receive summer rains. There is a low risk that adult groups and perhaps a small swarm could appear on the southern coastal plains from Yemen.

Ethiopia

• **Situation**

During July, isolated solitarious adults were seen near Ayasha (1045N/4234E) and scattered adults were reported in Teru district of Afar Region.

• **Forecast**

Low numbers of adults may persist in Ayasha and Teru areas and could breed on a limited scale in areas of recent rainfall. There is a low risk that adult groups and perhaps a small swarm could appear from Yemen.

Djibouti

• **Situation**

No locust activity was reported during July.

• **Forecast**

There is a low risk that adult groups and perhaps a small swarm could appear from Yemen.

Somalia

• **Situation**

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

• **Forecast**

There is a low risk that adult groups and perhaps a small swarm could appear from Yemen.

Egypt

• **Situation**

During July, no locusts were seen near irrigated farms in the Tushka (2247N/3126E) area.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

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

• **Forecast**

There is a low risk that a few small swarms could appear in areas adjacent to Yemen.

Yemen

• **Situation**

On 1-2 July, adult groups and a few immature swarms from the interior appeared in the central highlands near Taiz (1335N/4401E), and groups of adults also arrived on the southern coast near Mukalla (1431N/4908E). On the 26th, a large immature swarm was reported in Taiz. On the 28th, low numbers of mature solitarious adults were seen on the northern coastal plains of the Red Sea to the west of Suq Abs (1600N/4312E). It is difficult to have a complete picture of the situation as ground operations remain problematic in all areas.

• **Forecast**

More groups and small swarms are likely to form in the interior between Marib and Thamud. Some of these are expected to remain in areas of recent rainfall while others will move into the central highlands and continue to the Red Sea coast. Breeding is expected to occur in both areas and band formation is likely. There remains a moderate risk that some groups and small swarms could move to the southern coast.

Oman

• **Situation**

During July, no locusts were seen during surveys carried out in the northern interior near Buraimi (2415N/5547E) and on the Musandam Peninsula.

• **Forecast**

There remains a low risk that a few small swarms from Yemen may appear in some areas of the south.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

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

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

During the second half of July, isolated mature solitarious adults were reported at a few places near the Indian border in the Nara Desert east of Sukkur (2742N/6854E) and in Cholistan near Islamgarh (2751N/7048E). Isolated mature solitarious adults were also seen near the coast west of Karachi (2450N/6702E).

• **Forecast**

Small-scale breeding is likely to have commenced and will continue during the forecast period in parts of Tharparkar, Nara and Cholistan deserts. Consequently, hatching will occur in August, causing locust numbers to increase slightly.

India

• **Situation**

No locusts were seen during surveys carried out in Rajasthan and Gujarat during the first fortnight of July.

During the second fortnight, isolated mature solitarious adults were seen at one place near Bikaner (2801N/7322E).

• **Forecast**

Small-scale breeding is likely to have commenced and will continue during the forecast period in parts of Rajasthan and Gujarat. Consequently, hatching will occur in August, causing locust numbers to increase slightly.

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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **eLocust3 training videos.** A set of 15 introductory training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT
- **RAMSESv4 training videos.** A set of basic training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So
- **RAMSESv4 and eLocust3 updates.** Updates can be downloaded from https://sites.google.com/site/rv4elocust3updates/home
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

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

- **Desert Locust situation updates, 3 and 18 June.** Archives – Briefs
- **Current threats.** Information
- **Yemen outbreak.** Archives – Threats
- **Summer-winter outlook**. Information – Latest additions
- **SWAC Iran/Pakistan Joint Survey 2016 final report**. Publications – Reports

- **CRC/SWAC 8th inter-regional workshop for Desert Locust Information Officers final report**. Publications – Reports
- **Results of Desert Locust Information Officer questionnaire on DLIS**. Activities – DLIS

2016 events. The following activities are scheduled or planned:

- **CLCPRO.** Regional training on crisis communication, Oran, Algeria (31 Jul - 3 Aug)
- **CLCPRO.** Regional training of trainers on Health and Environment standards, Agadir, Morocco (5-9 September)
- **CLCPRO.** Regional training for new survey officers on survey techniques, Aioun, Mauritania (19-25 Sep)
- **CRC.** Regional workshop on Health and Environment Standards, Hurghada, Egypt (25-29 Sep)
- **SWAC.** 30th session, Islamabad, Pakistan (12-14 December)

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

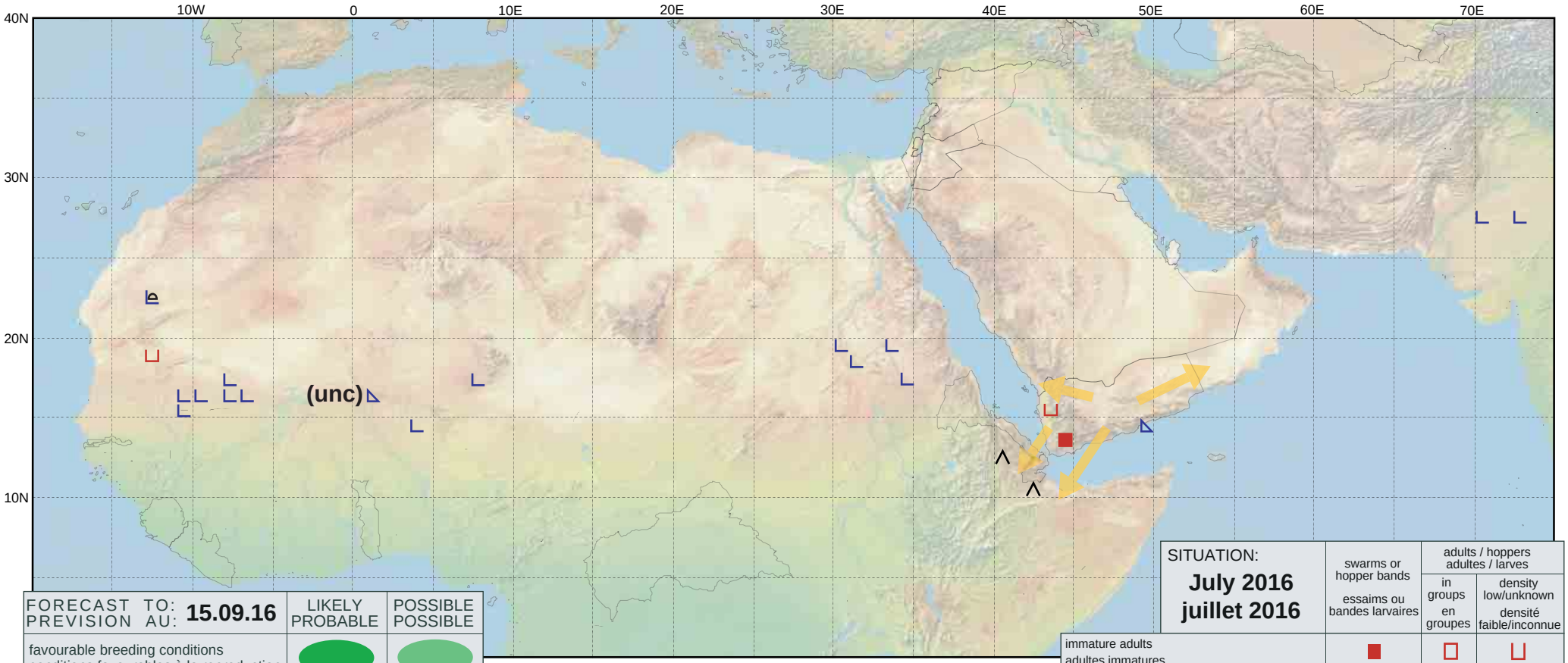
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

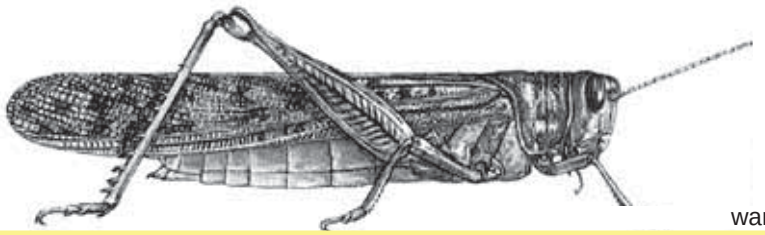
Desert Locust Summary
Criquet pèlerin - Situation résumée

454



FORECAST TO: / PREVISION AU: **15.09.16**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **July 2016 / juillet 2016**	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**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 455**

(2.09.2016)

General Situation during August 2016
Forecast until mid-October 2016

The Desert Locust situation remained very serious in Yemen during August. Another generation of breeding occurred, causing hopper bands to form in the interior and on the southern coast; however, the situation remained unclear because it was not safe to carry out surveys. At least one swarm migrated to Pakistan and a smaller swarm reached northern Somalia, eastern Ethiopia and perhaps Djibouti. Control operations were initiated in Pakistan and Ethiopia. There remains a risk that more swarms could form in Yemen and move to the Horn of Africa and the Red Sea coast. All countries should remain extremely vigilant. Elsewhere, the situation remained calm. Low numbers of adults were widely distributed throughout the summer breeding area of the northern Sahel in West Africa and Sudan, and along the Indo-Pakistan border due to widespread rainfall and favourable ecological conditions. During the forecast period, small-scale breeding will continue in these areas, causing locust numbers to increase, and a few adult groups could appear in west and northwest Mauritania by mid-October.

Western Region. Ecological conditions became favourable throughout most of the northern Sahel of West Africa during August as a result of good widespread rains. Consequently, low numbers of solitarious adults were scattered throughout most of southern **Mauritania** and **Chad**. A similar situation may be present in northern **Mali** and **Niger**. Summer breeding will cause locust number to increase throughout the forecast period in all areas and could extend to southern **Algeria**. By mid-October, an increased number of locusts may suddenly appear in west and northwest Mauritania as vegetation rapidly dries out in the south, leading to the potential formation of small groups.

Central Region. The locust situation remained serious during August in **Yemen** where a second generation of breeding took place in the interior and on the southern coast, giving rise to hopper bands. Few surveys could be carried out due to insecurity. At least one first-generation swarm migrated to Pakistan while other smaller swarmlets moved to the Horn of Africa along the borders of **Djibouti**, **Ethiopia** and northern **Somalia** where they laid eggs that hatched, causing small hopper bands to form in eastern Ethiopia and northwest Somalia. Ethiopian teams treated 208 ha. More groups and small swarms are likely to form in Yemen that could move through the highlands and onto the Red Sea coast and into adjacent areas of Saudi Arabia while other swarms could move to the Horn of Africa. Elsewhere, scattered adults were present in the interior of **Sudan** and on the Red Sea coastal plains in **Saudi Arabia** where small-scale breeding will cause locust numbers to increase.

Eastern Region. In late July, at least one mature swarm from Yemen arrived on the Uthal coast of **Pakistan** where local breeding was already in progress and laid eggs that hatched and hopper groups formed. Ground teams treated 410 ha. A few gregarious adults reached the Indus Valley while scattered mature adults were present in Cholistan and, to a lesser extent, in adjacent areas of Rajasthan, **India**. Small-scale breeding will continue along both sides of the Indo-Pakistan border, causing locust numbers to increase slightly. Adult groups could form near Uthal.

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 are available on the Internet.
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Twitter: twitter.com/faolocust

Weather & Ecological Conditions in August 2016

Green vegetation and good breeding conditions were present throughout the northern Sahel of West Africa and Sudan as a result of widespread rains that fell much further north than usual. Heavy rains and flooding occurred in Yemen. Good monsoon rains fell along both sides of the Indo-Pakistan border.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) was located up to 300 km further north than usual over Mauritania and Mali during August while it remained slightly above or nearly at its long-term mean position over Niger and Chad. By the end of the month, it had reached north of Ouadane in Mauritania, north of the Algeria-Mali border, near Iferouane and Bilma in Niger and south of Fada in northeast Chad. As a result, good rains fell south of the northern limit of the ITCZ throughout the summer breeding areas. Good rains also fell in northwest and northern Mauritania, southern Algeria, the Djado Plateau in northeast Niger and near Tibesti in northwest Chad. Heavier showers fell in northwest Mali near Taoudenni, in the southern Adrar des Iforas and near Abeche in eastern Chad. Flooding occurred in parts of southern Algeria and in Adrar, Mauritania. Consequently, breeding conditions were favourable over a widespread area of the northern Sahel in West Africa.

In the **Central Region**, the Inter-Tropical Convergence Zone (ITCZ) was located slightly south of its long-term mean position during the first two decades of August, and retreated some 150 km further south than normal during the third decade, reaching Khartoum and north of Hamrat Esh Sheikh in North Kordofan. Widespread, good rains fell throughout the month in all summer breeding areas from West Darfur to the Red Sea Hills, reaching almost as far north as Dongola. Similar rains fell in the western lowlands of Eritrea. Consequently, breeding conditions were favourable over a widespread area of Sudan and western Eritrea. In Yemen, moderate to heavy rains continued to fall at the beginning of August and again at mid-month, causing flooding in many areas including the interior from Bayhan to Al Jawf, Wadi Hadhramaut and Thamud plateau as well as Sana'a and parts of the Red Sea coast. This should allow breeding conditions to remain favourable in most areas. Showers fell at times in northern Oman. In the Horn of Africa, good rains fell in the Afar Region, along the railway and in parts of the Somali region of eastern Ethiopia, extending to southern Djibouti and the escarpment and plateau areas in northwest Somalia near the Ethiopian border. As a result, conditions were favourable for breeding.

In the **Eastern Region**, good rains associated with the seasonal southwest monsoon continued to fall in the summer breeding areas along both sides of the Indo-Pakistan border during August. In India, normal amounts were received in Barmer and Jaisalmer districts while above-normal rains fell in Bikaner and Jodhpur as well as in other districts. In Pakistan, good rains fell mainly during the first and third decades in Cholistan, Nara and Tharparkar deserts and in the Uthal area. As a result, breeding conditions were favourable in both countries. Dry conditions prevailed in southeast Iran.

Area Treated

Ethiopia	208 ha (August)
Pakistan	410 ha (August)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During August, mature solitarious adults were scattered throughout the summer breeding areas of the south between Boutilimit (1732N/1441W) and Rosso (1629N/1553W) in Trarza, north of Magta Lahjar (1730N/1305W) in Brakna, north of Kiffa (1638N/1124W) in Assaba, east of Aioun El Atrous (1639N/0936W) in Hodh El Gharbi, and near Nema (1636N/0715W) and Oualata (1717N/0701W) in Hodh Ech Chargui. Hatching occurred early in the month on the coast north of the Senegal River and in the southeast on the plateau east of Nema.

• **FORECAST**

Small-scale breeding will continue over a widespread area of the south, causing locust numbers to increase. As vegetation starts to dry out, an increasing number of adults are expected to appear in the west and northwest where small groups may form by the end of the forecast period.

Mali

• **Situation**

No reports were received in August.

• **Forecast**

Low numbers of adults are likely to be present and breeding in the Adrar des Iforas, Tilemsi Valley, Timetrine and Tamesna, causing locust numbers to increase slightly.

Niger

• **Situation**

During August, isolated immature and mature solitarious adults were present in a few places on the western edge of the Air Mountains north of Agadez (1658N/0759E), on the Tadress plains south of Agadez and northeast of Filingué (1421N/0319E) in the western part of the country.

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly on the Tamesna and Tadress plains and in the Filingué area.

Chad

• **Situation**

During August, isolated immature and mature solitarious adults were scattered in Kanem, Batha, Bilthine and the northeast between Mao (1406N/1511E) and Fada (1714N/2132E). Small-scale hatching occurred from late July onwards, and isolated fifth instar solitarious hoppers were reported at two places after mid-August. Adults were seen laying eggs between Moussoro (1338N/1629E) and Salal (1448N/1712E), and near Fada during the last week of August.

• **Forecast**

Locust numbers will increase slightly as small-scale breeding continues in Kanem, Batha, Bilthine and in the northeast. A new generation of adults will appear from early September onwards and continue during October.

Senegal

• **Situation**

A late report indicated there was no locust activity 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 August, isolated immature solitarious adults were present near Silet (2201N/0409E) west of Tamanrasset (2250N/0528E) in the southern Sahara.

• **Forecast**

Small-scale breeding is likely to cause locust numbers to increase in the south between Tamanrasset and the Malian border.

Morocco

• **Situation**

No locust activity was reported during August.

• **Forecast**

No significant developments are likely.

Libya

• **Situation**

A late report indicated that low-density adults were seen in the southwest in W. Tanzoft just north of Ghat (2459N/1011E) on 13 July and low-density hoppers were reported on the 26th just south of Ghat in W. Essyen. No locust activity was reported during August.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No locust activity was reported during August.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During August, scattered mature solitarious adults were present near Kassala (1527N/3623E), in the Nile Valley between Ed Debba (1803N/3057E) and Dongola (1910N/3027E), and mixed with some immature adults in North Kordofan and White Nile states between Abu Uruq (1554N/3027E) and Ed Dueim (1400N/3220E). No locusts were seen in the Baiyuda Desert and east of the Nile to the Red Sea Hills.

• **Forecast**

Locust numbers will increase slightly as a result of small-scale breeding that is almost certainly in progress in West and North Darfur, West and North Kordofan and White Nile states as well as near

Kassala and near cropping areas in the Nile Valley. Once vegetation begins to dry out in summer breeding areas, locusts could concentrate between the Nile Valley and the Red Sea Hills towards the end of the forecast period.

Eritrea

• **SITUATION**

During August, no locusts were seen on the Red Sea coast between Sheib (1551N/3903E) and the Sudanese border except for a few isolated immature solitarious adults in the north near Mehimet (1723N/3833E) and isolated mature solitarious adults in the centre near Shelshela (1553N/3906E).

• **FORECAST**

Low numbers of adults are likely to be present and breeding on a small scale in the western lowlands. There is a low risk that adult groups and perhaps a small swarm could appear on the southern coastal plains from Yemen.

Ethiopia

• **SITUATION**

On 10 August, a medium-density mature swarm of about 200 ha was seen in the railway area near Ayasha (1045N/4234E) that laid eggs, giving rise to dozens of small second instar hopper bands by the end of the month. Ground teams treated 208 ha. In the Afar Region, low numbers of solitarious adults and second to fifth instar hoppers were present near Sifani (1216N/4021E).

• **FORECAST**

Breeding will cause locust numbers to increase along the railway where small groups, bands and perhaps swarmlets could form. There is a low to moderate risk that adult groups and perhaps a few small swarms could appear from Yemen.

Djibouti

• **SITUATION**

During the last week of July and in early August, locust adults were reportedly seen moving in the south near Ali Sabieh (1109N/4242E) towards Ethiopia.

• **FORECAST**

There is a low to moderate risk that adult groups and perhaps a few small swarms could appear in coastal or interior areas.

Somalia

• **SITUATION**

During August, isolated immature and mature solitarious adults were seen at four place on the northwest coastal plains southwest of Lughaye (1041N/4356E). At the end of the month, a second instar hopper band, a fifth instar band and isolated mature solitarious adults were present on the escarpment in the Jidhi (1037N/4304E) area near the Ethiopian border where there had been earlier unconfirmed sightings of mature swarmlets moving back and forth across the Ethiopian border. On the plateau to the east, there was an unconfirmed report of hopper bands at two places between Burao (0931N/4533E) and the Ethiopian border on the 29th.

• **FORECAST**

A few groups and perhaps a small swarm could form on the escarpment near the Ethiopian border. There is a low to moderate risk that a few adult groups and perhaps a small swarm could appear from Yemen.

Egypt

• **SITUATION**

During August, no locusts were seen near Lake Nasser in the Tushka (2247N/3126E) and Abu Simbel (2219N/3138E) areas, and on the Red Sea coast between Abu Ramad (2224N/3624E) and the Sudanese border.

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During August, scattered immature solitarious adults were present on the Red Sea coastal plains near Lith (2008N/4016E) while scattered mature solitarious adults were reported further south near Jizan (1656N/4233E) where some adults were seen laying eggs at mid-month.

• **FORECAST**

Small-scale breeding with hatching from early September onwards will cause locust numbers to increase slightly in areas of recent rainfall on the Red Sea coastal plains between Lith and Jizan. There is a low to moderate risk that a few small swarms could appear in areas adjacent to Yemen.

Yemen

• **SITUATION**

During August, the situation remained unclear throughout the country. Locals and scouts reported hatching and numerous small hopper groups and bands on the southern coastal plains to the west of Aden (1250N/4503E) between W. Am Shaibi (1304N/4437E) and Am Rija (1302N/4434E) on the 20th. Scattered mature solitarious adults were seen

nearby during a survey. In the interior, hatching and first to second instar hopper groups were reported on the plateau west of Thamud (1717N/4955E) in the Khaf Al Awamer area (1625N/4849E) on the 21st.

• **Forecast**

More groups and small swarms are likely to form in the interior between Marib and Thamud as well as on the Aden coastal plains. Some of these are expected to remain in areas of recent rainfall while others will move into the central highlands and continue to the Red Sea coast. Breeding is expected to occur in both areas and band formation is likely.

Oman

• **Situation**

During August, no locusts were seen during surveys carried out in North and South Sharqiya regions and on the Musandam Peninsula.

• **Forecast**

There remains a low risk that a few small swarms from Yemen may appear in some areas of the south.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During August, no locusts were seen on the southeast coast near Chabahar (2517N/6036E) and Jask (2540N/5746E) or in the Jaz Murian Basin in the interior near Ghale Ganj (2731N/5752E).

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

At least one mature swarm arrived on about 27 July in coastal areas of Uthal (2548N/6637E) and subsequently dispersed, mixing with local populations of solitarious hoppers and adults, and laid eggs. Hatching commenced during the second week of August, giving rise to groups of *transiens* and gregarious hoppers. Groups of mature adults and a mature swarm were reported on the 11th. Ground teams treated 410 ha.

In the summer breeding areas, gregarious adults appeared on the eastern side of the Indus Valley south of Sukkur (2742N/6854E) on the 10th, probably arriving from Uthal. Throughout the month, isolated mature solitarious were present in a few places near the Indian border in Cholistan and Nara deserts. Adults were seen laying eggs at one place in the Nara Desert on the Indian border at the end of August.

• **Forecast**

Small-scale breeding will continue during the forecast period in Tharparkar, Nara and Cholistan deserts as well as Uthal, causing locust numbers to increase slightly. Small adult groups could form in Uthal from mid-September onwards.

India

• **Situation**

During the first fortnight of August, isolated mature solitarious adults persisted at one place near Bikaner (2801N/7322E). No locusts were seen during the second fortnight.

• **Forecast**

Small-scale breeding will continue in parts of Rajasthan and Gujarat, causing locust numbers to increase slightly.

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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **eLocust3 training videos.** A set of 15 introductory training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT
- **RAMSESv4 training videos.** A set of basic training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So
- **RAMSESv4 and eLocust3 updates.** Updates can be downloaded from https://sites.google.com/site/rv4elocust3updates/home
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

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

- **Desert Locust situation updates, 9 and 12 August.** Archives – Briefs
- **Current threats.** Information
- **Yemen outbreak.** Archives – Threats
- **Climate change and Desert Locust (infographic)**. Activities – Climate change

2016 events. The following activities are scheduled or planned:

- **CLCPRO.** Regional training of trainers on Health and Environment standards, Agadir, Morocco (5-9 September)
- **CLCPRO.** Regional training of trainers on survey techniques, Aioun, Mauritania (19-25 Sep)
- **CRC.** Regional workshop on Health and Environment Standards, Hurghada, Egypt (25-29 Sep)
- **SWAC.** 30th session, Islamabad, Pakistan (12-14 December)

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

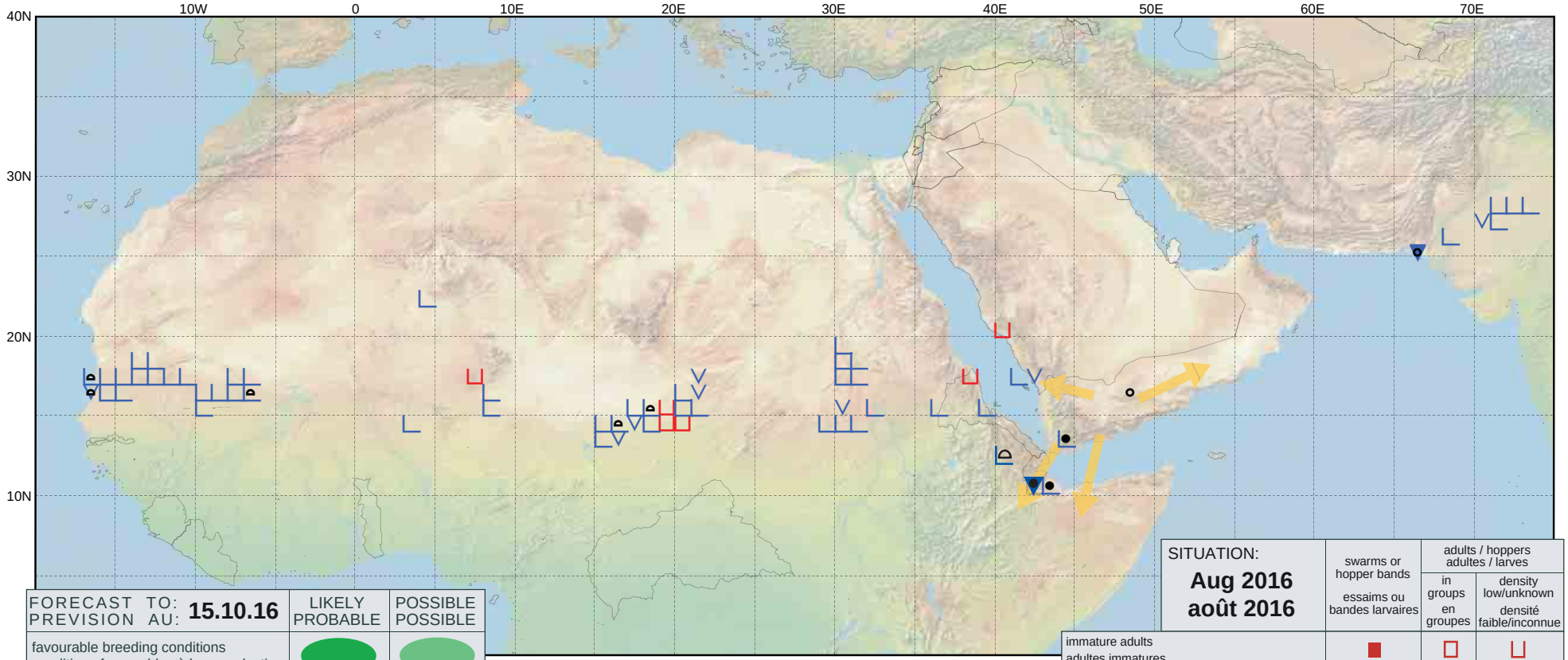
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

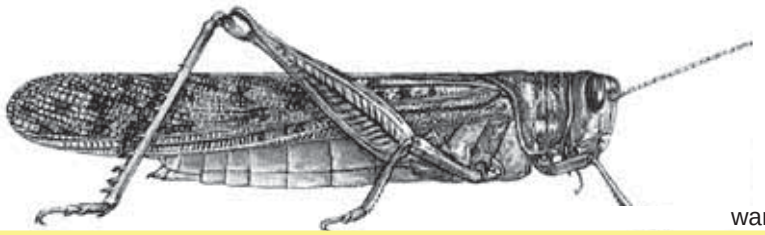
Desert Locust Summary
Criquet pèlerin - Situation résumée

455



FORECAST TO: PREVISION AU: **15.10.16**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Aug 2016 août 2016**	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**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 456**

(4.10.2016)

General Situation during September 2016 Forecast until mid-November 2016

The Desert Locust situation remained very serious in Yemen during September and there were signs that an outbreak was developing in Mauritania. In Yemen, hopper groups, bands and adult groups continued to form. More adult groups and perhaps a few small swarms are expected and will move to the Red Sea coast, into adjacent areas of Saudi Arabia and perhaps to the Horn of Africa where breeding will cause a further increase in locust numbers. Ground and aerial control operations were carried out in adjacent coastal areas of Saudi Arabia against hopper groups, bands and adult groups. In Mauritania, there was a sudden increase in locust densities in the summer breeding areas, causing adult groups to form. An increasing number of adults and groups subsequently appeared in the northwest and laid eggs. This is expected to develop into an outbreak by mid-October. As vegetation dried out, a few groups also formed in western Mali, northeast Chad and the interior of Sudan. Large numbers of grasshoppers were present in several countries. Elsewhere, the situation remained calm.

Western Region. Scattered locusts were distributed widely throughout the summer breeding areas in the northern Sahel of West Africa because of good rains and green vegetation in September. Adult groups formed in **Mauritania**, western **Mali** (mixed with grasshoppers) and **Chad**. Control operations were undertaken in Mali (810 ha) and Mauritania (263 ha). An outbreak is expected to develop by mid-October in northwest Mauritania where an increasing number of adults and groups appeared during September and laid eggs. There was a report of a very small swarm on the 30th near Nouakchott. In **Niger**, small-scale breeding occurred on the Tamesna Plains. In Northwest Africa, isolated adults were present in southern **Algeria**.

Central Region. The situation continued to remain serious in **Yemen** during September where hopper and adult groups formed in the interior and hopper bands formed on the southern coast. An increasing number of adults arrived on the Red Sea coast and at least one adult group was seen in the highlands moving towards the coast. Only limited survey and control operations could be undertaken due to insecurity. Good rains fell in all areas that will allow more groups, bands and perhaps a few small swarms to form. Most of these are likely to move to the Red Sea coast of Yemen and Saudi Arabia while some could stay in the Yemeni interior and others could migrate to the Horn of Africa. Limited control operations were carried out against hopper groups and bands in eastern **Ethiopia** and northwest **Somalia**. Hopper groups and bands and adult groups formed on the southern Red Sea coast in **Saudi Arabia**, and ground and aerial control operations treated 3,000 ha. In **Sudan**, hoppers and adults were forming groups at a few places in the Baiyuda Desert north of Khartoum.

Eastern Region. The situation remained calm in the region during September. Only low numbers of solitarious adults were present in Cholistan, **Pakistan** near the border of India. No significant developments are likely.

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 are available on the Internet.
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No. 456

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in September 2016

Breeding conditions remained favourable in much of the northern Sahel in West Africa and Sudan. Good rains fell and breeding conditions were favourable in northwest Mauritania and along both sides of the southern Red Sea. The Indo-Pakistan monsoon ended but conditions remained favourable.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) began its seasonal retreat southwards in September. By mid-month, it was some 100 km further north than usual between Mauritania and Niger while in Chad it was located at its long-term average position. Consequently, good rains fell in most areas but less so when compared to August. Nevertheless, breeding conditions remained favourable over a widespread area of the northern Sahel in West Africa but were starting to dry out in parts of southeastern Mauritania and in Chad. Good rains fell for the second consecutive month in north and northwest Mauritania and adjacent areas of Western Sahara and southern Morocco. As a result, ecological conditions became favourable for breeding in west and northwest Mauritania. Light rain fell in parts of central and southern Algeria.

In the **Central Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its southward retreat over the interior of Sudan and by the end of the month it was nearly south of the summer breeding areas. At mid-month, the ITCZ was some 150 km further south than usual. Nevertheless, good rains fell throughout most of the summer breeding areas in Sudan and western Eritrea. As a result, ecological conditions remained favourable for breeding. Heavy rains fell along both sides of the southern Red Sea in Yemen and Eritrea, extending to Djibouti and the Jizan area of Saudi Arabia. Good rains fell elsewhere on the coastal plains of Saudi Arabia as far north as Lith, and in the Eritrean Highlands that could runoff onto the coastal plains north of Massawa. Ecological conditions were favourable for breeding on the eastern side of the Red Sea from Qunfidah to Bab Al Mandab and were likely to improve on the western side. Good rains also fell in Ethiopia from the Afar region to Jijiga and adjacent areas of northwest Somalia where conditions were favourable for breeding. Conditions also remained favourable in the interior of Yemen.

In the **Eastern Region**, the southwest monsoon began to withdraw from west Rajasthan, India in mid-September, which is about two weeks later than normal. Consequently, rainfall ended in the summer breeding areas along both sides of the Indo-Pakistan border but vegetation is expected to remain green slightly longer than normal due to the late monsoon withdrawal.

Area Treated

Ethiopia	1 ha (September)
Mali	810 ha (September)
Mauritania	263 ha (September)
Saudi Arabia	3,000 ha (September)
Somalia	53 ha (September)
Yemen	50 ha (September)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During September, isolated mid to late instar solitarious hoppers were present in the southeast between Aioun El Atrous (1639N/0936W) and Nema (1636N/0715W) and at one place on the Trarza coast as a result of small-scale breeding in August. Immature and mature solitarious adults were also present at densities less than 200 adults/ha. As the month progressed, an increasing number of mature solitarious adults appeared in the western portion of the country, particularly in southwest Adrar. During the last week, there was a sudden increase in densities in the southeast to 1,500 adults/ha as vegetation dried out and a few small groups formed near Nema. Other immature and mature groups formed at densities up to 7,000 adults/ha in the west between Aguilal Faye (1827N/1444W) and Atar (2032N/1308W), some of which were laying eggs. On the 30th, a very small swarm of 50 ha was reported near Nouakchott. Ground teams treated 263 ha in September.

• **FORECAST**

As vegetation dries out in the south, more adults will appear in the west and northwest where small groups

will continue to form and breed in areas of recent rainfall that is likely to lead to an outbreak.

Mali

• **Situation**

During September, immature and mature solitarious and *transiens* adults mixed with high densities of grasshoppers were present north of Nara (1510N/0717W) near the Mauritanian border at densities up to 700 adults/ha. Some adults were copulating and laying eggs. Ground teams treated 810 ha.

• **Forecast**

Low numbers of adults are likely to be present and breeding in the Adrar des Iforas, Tilemsi Valley, Timetrine and Tamesna, causing locust numbers to increase slightly.

Niger

• **Situation**

During September, scattered immature and mature solitarious adults were present on the Tamesna Plains between Tassara (1650N/0550E) and In Abangharit (1754N/0559E). Small-scale breeding occurred at a few places and low numbers of third and fourth instar solitarious hoppers were seen.

• **Forecast**

Low numbers of adults are likely to be present and breeding on a small scale elsewhere on the Tamesna and Tadress plains and in the Filingué area. Breeding will decline as conditions dry out.

Chad

• **Situation**

During September, isolated immature and mature solitarious adults were scattered throughout the northern Sahel between Nokou (1435N/1446E) in the west to Fada (1714N/2132E) in the northeast. Small-scale breeding continued near Salal (1448N/1712E) and between Kalait (1550N/2054E) and Fada. During the last decade, vegetation began to dry out and small groups of mature adults formed and were copulating north of Fada.

• **Forecast**

As vegetation continues to dry out, adults will concentrate in areas that remain green and form a limited number of small groups.

Senegal

• **Situation**

No reports were received in 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, isolated mature solitarious adults were present southwest of Tamanrasset (2250N/0528E) in the south. No locusts were seen in the central Sahara near Adrar (2753N/0017W), in the east near Illizi (2630N/0825E) and in the extreme south near the Mali border.

• **Forecast**

No significant developments are likely.

Morocco

• **Situation**

No locust activity was reported during September.

• **Forecast**

An increasing number of adults are likely to appear in the Adrar Settouf of the extreme south and breed on a small scale in areas of recent rainfall.

Libya

• **Situation**

No locust activity was reported during September.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No locust activity was reported during September.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During September, low numbers of solitarious mature adults were present in the summer breeding areas in North Kordofan near Sodiri (1423N/2906E), and in a few places of the Nile Valley near Shendi (1641N/3322E) and Dongola (1910N/3027E). At the end of the month, mature adult groups were laying eggs in the Baiyuda Desert and groups of first and second instar solitarious and *transiens* hoppers were present. No locusts were seen elsewhere in the Nile

Valley or between Atbara (1742N/3400E) and the Red Sea Hills.

• **Forecast**

As vegetation begins to dry out in summer breeding areas, locusts could concentrate between the Nile Valley and the Red Sea Hills towards the end of the forecast period and perhaps a few small groups could form. Low numbers of adults are likely to appear in winter breeding areas along the Red Sea coast.

Eritrea

• **Situation**

During September, no locusts were seen on the southern Red Sea coast between Massawa (1537N/3928E) and Assab (1301N/4247E).

• **Forecast**

Low numbers of adults are likely to be present and breeding on a small scale in the western lowlands but will decline as conditions dry out. There is a low risk that adult groups and perhaps a small swarm could appear on the southern coastal plains from Yemen. Small-scale breeding will commence on the Red Sea coast in areas of recent rainfall.

Ethiopia

• **Situation**

In September, a few small hopper groups and bands persisted in the railway area near Ayasha (1045N/4234E). Ground teams treated 1 ha. In the Afar Region, low numbers of solitarious hoppers and adults persisted near Sifani (1216N/4021E).

• **Forecast**

Breeding will cause locust numbers to increase along the railway where small groups, bands and perhaps swarmlets could form. There is a low to moderate risk that adult groups and perhaps a few small swarms could appear from Yemen.

Djibouti

• **Situation**

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

• **Forecast**

There is a low to moderate risk that adult groups and perhaps a few small swarms could appear from Yemen in coastal or interior areas.

Somalia

• **Situation**

During September, an immature swarm was seen on the northwest escarpment near the Ethiopian on the 6th. A few third to fifth instar hopper bands were present in the Jidhi (1037N/4304E) area where breeding occurred in August. On the plateau, adult groups were seen copulating near the Ethiopian border west of Boroma (0956N/4313E). Ground teams treated 53 ha with Green Muscle.

• **Forecast**

A few groups and perhaps a small swarm could form on the escarpment near the Ethiopian border. There is a low to moderate risk that a few adult groups and perhaps a small swarm could appear from Yemen.

Egypt

• **Situation**

During September, no locusts were seen near Lake Nasser in the Tushka (2247N/3126E) and Abu Simbel (2219N/3138E) areas, and on the Red Sea coast between Abu Ramad (2224N/3624E) and the Sudanese border.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

During September, a few small hopper groups, bands and immature adult groups formed on the southern coastal plains of the Red Sea coast north of Jizan (1656N/4233E) where breeding occurred in August. Control operations treated 3,000 ha of which 400 ha were by air. Low numbers of solitarious hoppers were present nearby. No locusts were seen further north near Mecca (2125N/3949E).

• **Forecast**

Small-scale breeding will occur in areas of recent rainfall on the Red Sea coast between Lith and Jizan, causing locust numbers to increase with the possibility of group and band formation. There is a moderate risk that a few small swarms could appear in areas adjacent to Yemen.

Yemen

• **Situation**

During September, limited ground control operations treated 50 ha of scattered immature and mature adults and groups of low to medium densities of mid-instar *transiens* and gregarious hoppers in the interior of Shabwah region to the north of Nisab (1430N/4629E) and Ataq (1435N/4649E). Small groups of immature transiens and gregarious adults were seen between Bayhan (1452N/4545E) and Marib (1527N/4519E). Nine very small second and third instar hopper bands mixed with low numbers of immature and mature

transiens and gregarious adults were present on the coastal plains northwest of Aden (1250N/4503E). On the Red Sea coast, low numbers of immature and mature solitarious adults were seen between Bayt Al Faqih (1430N/4317E) and Suq Abs (1600N/4312E). On the 27th, there was an unconfirmed report of immature groups flying west in the central highlands north of Sana'a (1521N/4412E).

• **Forecast**

More groups and small swarms are likely to form in the interior between Marib, Ataq and Thamud as well as on the Aden coastal plains. Some of these are expected to remain in areas of recent rainfall while others will move into the central highlands and continue to the Red Sea coast. Breeding is expected to occur in both areas and band formation is likely.

Oman

• **Situation**

No locusts were seen in the Musandam Peninsula, in the north near Buraimi (2415N/5547E) and in the south near Thumrait (1736N/5401E) in early September.

• **Forecast**

There remains a low risk that a few small swarms from Yemen may appear in adjacent areas of the south.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During September, no locusts were seen on the southeast coast near Chabahar (2517N/6036E) and Jask (2540N/5746E), and in the Jaz Murian Basin of the interior near Ghale Ganj (2731N/5752E).

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

During September, low numbers of mature solitarious adults were present in Cholistan south of Bahawalpur (2924N/7147E) near the border of India.

• **Forecast**

Locust numbers will decline as vegetation dries out in the summer breeding areas.

India

• **Situation**

No locusts were seen during September.

• **Forecast**

Low numbers of adults may be present in parts of Rajasthan but will decline as vegetation dries out.

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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)

- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **eLocust3 training videos.** A set of 15 introductory training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT
- **RAMSESv4 training videos.** A set of basic training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So
- **RAMSESv4 and eLocust3 updates.** Updates can be downloaded from https://sites.google.com/site/rv4elocust3updates/home
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

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

- **eLocust3 good practice fact sheet.** Activities – DLIS – eLocust3
- **1972-2005 upsurge and plague maps.** Archives – Upsurges & Plagues

2016 events. The following activities are scheduled or planned:

- **SWAC.** Regional contingency planning workshop, Tehran, Iran (5-9 November)
- **SWAC.** 30th session, Islamabad, Pakistan (12-14 December)

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

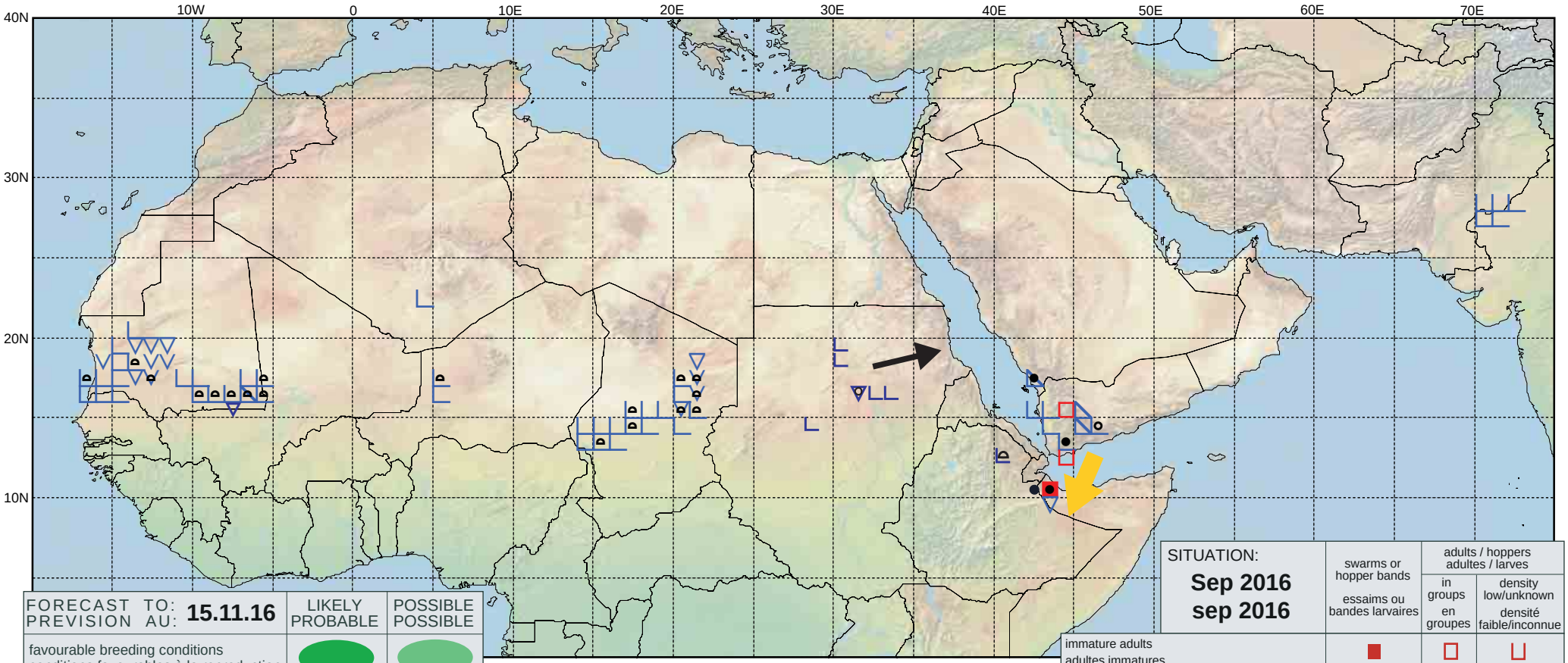
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

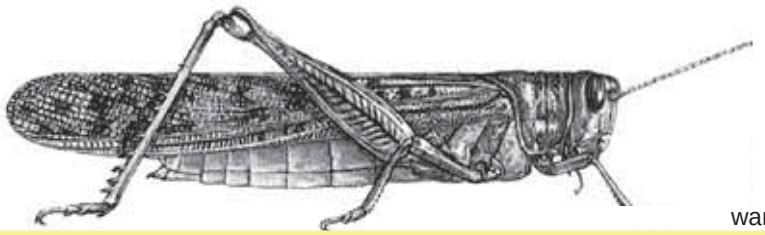
Desert Locust Summary
Criquet pèlerin - Situation résumée

456



FORECAST TO: / PREVISION AU: **15.11.16**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Sep 2016** **sep 2016**	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**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 457

(3.11.2016)

General Situation during October 2016 Forecast until mid-December 2016

As a result of summer breeding, two Desert Locust outbreaks developed during October, one in western Mauritania and one in northern Sudan. In both countries, additional survey teams were immediately mobilized and control operations were launched. It is likely that the Mauritanian outbreak will extend into areas of recent heavy rains in the north of the country as well as in Western Sahara where further breeding is expected. A failure to control the outbreak combined with unusually heavy and widespread rainfall might eventually lead to an upsurge in northwest Africa next spring but this is far from certain. In Sudan, adult groups and perhaps a few small swarms are expected to form and move to winter breeding areas along the Red Sea coast, especially in northeast Sudan and southeast Egypt where heavy rains fell in late October. Elsewhere, the situation remained calm.

Western Region. An outbreak developed in western **Mauritania** in early October as a result of widespread egg-laying and hatching by summer-bred gregarizing adults, including a few swarms that may have originated from undetected areas or from northern Mali where insecurity prevents regular surveys. Control operations intensified in Mauritania, treating more than 8,100 ha of hopper and adult groups, and small bands and swarms. Smaller infestations were seen in adjacent areas of **Western Sahara** in southern **Morocco** where limited control operations were carried out against adult groups. A new generation of adult groups and small swarms is likely to form from about mid-November onwards in western Mauritania and are likely to move into Western Sahara and northern Mauritania where good rains fell and further breeding could occur. Scattered adults were present along the southern side of the Atlas Mountains in Morocco and in western **Algeria**. Control operations were undertaken along the Mali border in southern Algeria against high densities of hoppers. Locust numbers declined in the summer breeding areas of northern **Niger** and **Chad** where primarily low numbers of adults persisted.

Central Region. An outbreak developed in North Kordofan and the Baiyuda Desert of northern **Sudan** as a result of summer breeding and drying conditions. The outbreak may extend east of the Nile Valley. Ground and aerial control operations were immediately mounted, treating nearly 3,000 ha of hopper groups and bands. Some of the hoppers have already fledged and immature adults are forming groups and perhaps a few small swarms that will move to the winter breeding areas along the Red Sea, initially to northeast Sudan and southeast **Egypt** where good rains will allow adults to mature and lay eggs that should hatch by the end of the forecast period. Breeding was in progress on the southern Red Sea coast of **Saudi Arabia** where control operations treated 3,400 ha and on the Gulf of Aden coast in southern **Yemen**. A few adult groups were breeding on the Red Sea coast of **Eritrea** while locust numbers declined in eastern **Ethiopia**. During the forecast period, breeding will occur along both sides of the Red Sea as well as in coastal areas of southern Yemen and northwest **Somalia** if rains occur.

Eastern Region. The situation remained calm in the region during October. No significant developments are likely.

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 are available on the Internet.
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No. 457

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in October 2016

Vegetation dried out in summer breeding areas in the northern Sahel in West Africa and Sudan and along the Indo-Pakistan border. Breeding conditions remained favourable in northwest Mauritania. Good rains fell in northern Mauritania and Western Sahara.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) retreated further south and was located south of the summer breeding area in the northern Sahel during September. Consequently, no significant rain fell, annual vegetation continued to dry out and conditions became unfavourable for breeding. Nevertheless, there were relatively small areas where vegetation remained green, primarily in parts of northern Mali and Niger, in southern Algeria near the border of Mali, and in northeast Chad.
In Mauritania, breeding conditions remained very favourable in the centre and west of the country. Good rains fell in northern Mauritania several times during the month, including heavy showers and flooding between Zouerate, Bir Moghrein and Ain Ben Tili where some 150 mm fell on 25-26 October. The rains extended to the Western Sahara as well as along the southern side of the Atlas Mountains in Morocco. As a result, breeding conditions are expected to become favourable in these areas. Summer breeding declined in northern Niger and Chad where only scattered adults were present.

In the **Central Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its southward retreat during September over the interior of Sudan where it was south of Nyala, Ed Nahud and Gedaref, which is outside of the summer breeding area. Nevertheless, a few showers continued to fall in North Kordofan between El Obeid and Sodiri. More importantly, good rains fell in northeast Sudan near Sufiya and in adjacent areas of southeast Egypt on the Red Sea coast as far north as Shalatyn on 26-27 October. This should allow annual vegetation to start to become green and could provide suitable breeding conditions. Showers fell at times in the highlands of Yemen and Eritrea that may have extended to coastal areas, which should allow ecological conditions to remain favourable for breeding in Yemen and improve in Eritrea.

In the **Eastern Region**, primarily dry conditions prevailed as very little rain fell during October except for light showers at times in the mountains surrounding the Jaz Murian Basin in southeast Iran.

Area Treated

Algeria	280 ha (October)
Ethiopia	30 ha (October)
Mauritania	8,187 ha (October)
Morocco	72 ha (October)
Saudi Arabia	3,420 ha (October)
Sudan	2,900 ha (October)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **Situation**

During October, hatching commenced in areas of previous egg laying in the west, causing an outbreak to develop between Nouakchott, Tidjikja (1833N/1126W) and Atar (2032N/1308W) where hopper groups and small bands were forming. Widespread egg laying by scattered adults and groups continued within this large area as well as along the coast south of Nouakchott where two swarms were also seen laying eggs on the 2nd and 11th. There were reports of an immature swarm southwest of Oujeft (2003N/1301W) on the 4th and a mature swarm laying eggs nearby on the following day. In the southeast, immature and mature adults continued to form small groups between Nema (1636N/0715W) and Oualata (1717N/0701W) where some adults were seen laying eggs up until about mid-month. Ground control operations intensified during October and treated 8,187 ha.

• **Forecast**

Hatching will continue in early November in the west where hopper groups and small bands will form until about mid-December. Fledgling should commence in early November and new adult groups and small swarms are likely to form from mid-month onwards. Some of these could mature and lay eggs before the end of the forecast period. Infestations will extend into areas of recent rainfall in Inchiri and Tiris-Zemmour.

Mali

• **Situation**

During October, no locusts were seen during surveys close to the Mauritanian border in the west near Nara (1510N/0717W) and Nioro (1512N/0935W). The situation remains unclear in the north due to insecurity.

• **Forecast**

Adults and perhaps a few small groups may be present in parts of the Adrar des Iforas where some may persist while other could move towards the north and northwest.

Niger

• **Situation**

During October, small-scale breeding continued and scattered solitarious hoppers of all instars were present on the Tamesna Plains between Tassara (1650N/0550E) and In Abangharit (1754N/0559E), along the western side of the Air Mountains east of Arlit (1843N/0721E) and in parts of the Air Mountains between Timia (1809N/0846E) and north of Iferouane (1905N/0824E). Solitarious adults were seen laying eggs and a group of mature adults was reported south of In Abangharit early in the month.

• **Forecast**

Low numbers of adults are likely to persist in the Air Mountains and in a few places of Tamesna.

Chad

• **Situation**

During the first decade of October, small-scale breeding continued in the northeast where solitarious hoppers of all instars and a few very small hopper groups were present south of Fada (1714N/2132E). Thereafter, only low numbers of immature and mature solitarious adults mixed with a few *transiens* adults were scattered throughout the Sahel between Fada and Mao (1406N/1511E).

• **Forecast**

Locust numbers will continue to decline as vegetation dries out. No significant developments are likely.

Senegal

• **Situation**

No reports were received in 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, there was a slight increase in locust populations as scattered mature solitarious adults appeared in the west near Tindouf and Beni Abbes (3011N/0214W), in the central Sahara near Adrar (2753N/0017W) and irrigated crops, and in the south near Tamanrasset (2250N/0528E). Small-scale breeding occurred along the Mali border between Bordj Badji Mokhtar (2119N/0057E) and Timeiaouine (2026N/0148E) where adults were copulating at densities up to 500 adults/ha and solitarious hoppers of all instars were present at densities of 50–100 hoppers/m^2. Ground teams treated 280 ha in October.

• **Forecast**

Groups of hoppers and adults are likely to form early in the forecast period along the Mali border. Locust numbers may increase from small-scale breeding in the west and centre, supplemented by adults arriving during periods of warm southerly winds.

Morocco

• **Situation**

During October, isolated immature solitarious adults were seen along the southern side of the Atlas Mountains between Zag (2800N/0920W) and Zagora (3019N/0550W) as well as in the northeast near Bouarfa (3232N/0159W) and Figuig (3207N/0113W). In the extreme south, isolated mature solitarious adults were present in the Adrar Settouf between Aousserd (2233N/1419W) and Bir Gandouz (2136N/1628W). Adult groups were first seen copulating near Bir Gandouz on the 22nd. Ground teams treated 72 ha in October.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in central and southern portions of Western Sahara where hatching will commence in early November, causing small groups to form. Breeding may extend further north in areas of recent rainfall. Local infestations may be supplemented by an increasing number of adults, including groups and perhaps a few small swarms, appearing from adjacent areas of northwest Mauritania. Scattered adults will persist along the southern side of the Atlas Mountains.

Libya

• **Situation**

No locust activity was reported during October.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No locust activity was reported during October.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During October, groups of second to fifth instar hoppers and late instar hopper bands formed in the Baiyuda Desert, primarily in the Wadi Muqaddam (1653N/3139E) area northwest of Khartoum, and in North Kordofan near Abu Uruq (1554N/3027E) early in the month. Similar hopper groups were also seen west of the Red Sea Hills between Kassala (1527N/3623E) and Derudeb (1731N/3607E). Scattered immature and mature solitarious adults were seen in more places in North Kordofan between Sodiri (1423N/2906E) and the Nile Valley, in the Baiyuda Desert, along the Nile Valley from Atbara (1742N/3400E) to north of Dongola (1910N/3027E), and in the east between Kassala and Derudeb. By the end of the month, immature groups were forming and aerial control operations commenced in North Kordofan. Control operations treated 2,900 ha in October of which 2,200 ha were by air.

• **Forecast**

Hopper and adult groups, small bands and perhaps a few small swarms are likely to form in North Kordofan and the Baiyuda Desert, and possibility extend east of the Nile Valley to the Red Sea Hills. As vegetation dries out, adult groups and perhaps a few small swarms will appear on the Red Sea coast and in subcoastal areas of the northwest, and breed in areas of recent rainfall.

Eritrea

• **Situation**

During October, isolated mature solitarious adults were present on the central coastal plains of the Red Sea between Sheib (1551N/3903E) and Mersa Gulbub (1633N/3908E). Groups of adults were seen laying at two locations.

• **Forecast**

Small-scale breeding on the Red Sea coastal plains will cause locust numbers to increase slightly. Hatching will commence by mid-November and a few small hopper groups could form.

Ethiopia

• **Situation**

During October, scattered immature solitarious adults were present in the eastern region near Aysha. In the Afar region, scattered immature and mature adults mixed with low numbers of second to fourth instar hoppers were present at a few places on the Danakil Plain where ground teams treated 30 ha.

• **Forecast**

Isolated adults may persist in few areas of previous breeding near Ayasha and in the Afar region.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

No locust reports were received during October.

• **Forecast**

Small residual populations may be present in areas of previous breeding on the northwest plateau and escarpment.

Egypt

• **Situation**

During October, isolated mature solitarious adults were seen at two places near El Sheikh El Shazly (2412N/3438E) in the Red Sea Hills of the southeast. No locusts were seen on the Red Sea coast, near Lake Nasser and in the northwest near Siwa (2912N/2531E) and Salum (3131N/2509E).

• **Forecast**

Scattered adults and perhaps few groups or small swarms are likely to appear near Lake Nasser and on the southeast coastal plains of the Red Sea. Small-scale breeding will occur if rains fall.

Saudi Arabia

• **Situation**

During the first half of October, ground teams treated 3,420 ha of scattered solitarious hoppers of all instars mixed with immature and mature solitarious and gregarizing adults on the Red Sea coast north of Jizan (1656N/4233E). Scattered mature solitarious adults were present near Lith (2008N/4016E) and to a lesser extent near Qunfidah (1909N/4107E).

• **Forecast**

Small-scale breeding will occur in areas of recent rainfall on the Red Sea coast between Lith and Jizan, causing locust numbers to increase with the possibility of group and band formation in some areas. There is a moderate risk that a few small groups could appear in areas adjacent to Yemen.

Yemen

• **Situation**

During October, there were confirmed and unconfirmed reports of hopper groups on the northern Red Sea coast between Al Zuhrah (1541N/4300E) and Midi (1619N/4248E). On the Gulf of Aden coast, low numbers of mature solitarious and *transiens* adults were copulating at one place northwest of Aden (1250N/4503E). Surveys could not be undertaken elsewhere in the country due to insecurity.

• **Forecast**

Small-scale breeding will occur in areas of recent rainfall on the Red Sea and Gulf of Aden coastal plains, causing locust numbers to increase and small groups to form. Residual populations are likely to be present in parts of the interior in Marib, Shabwah and Hadhramaut.

Oman

• **Situation**

During October, no locusts were seen in the Musandam Peninsula and in the south near Thumrait (1736N/5401E).

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During October, no locusts were seen on the southeast coast near Chabahar (2517N/6036E).

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

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

• **Forecast**

No significant developments are likely.

India

• **Situation**

No locusts were seen during October.

• **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.

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- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
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- **Current threats updated.** Locust Watch home page
- **Mauritania outbreak.** Archives – Threats

2016 events. The following activities are scheduled or planned:

- **SWAC.** Regional contingency planning workshop, Tehran, Iran (5-9 November)
- **SWAC.** 30th session, Islamabad, Pakistan (12-14 December)

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

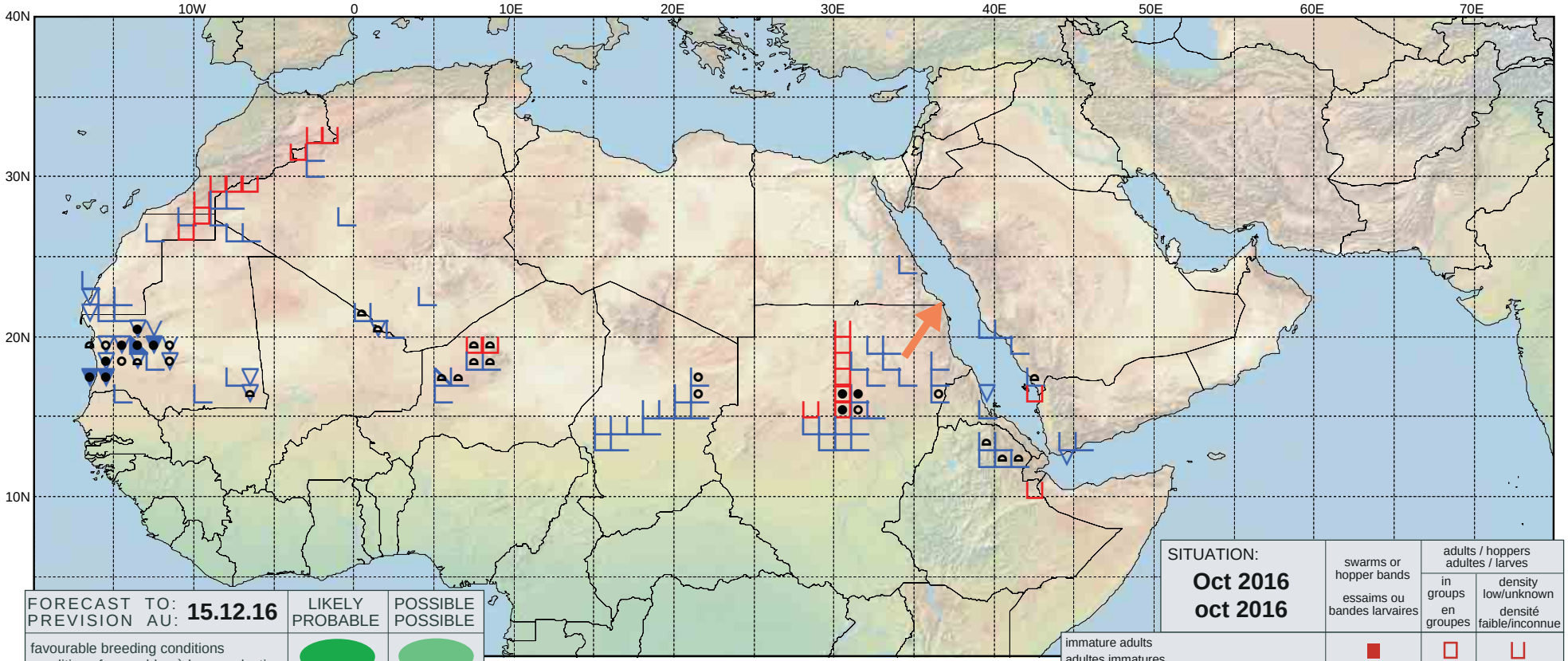
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

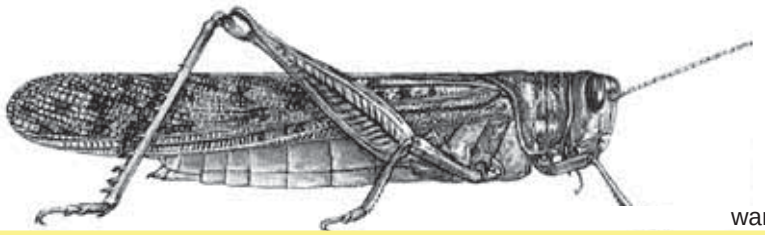
Desert Locust Summary
Criquet pèlerin - Situation résumée

457



FORECAST TO: PREVISION AU: **15.12.16**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Oct 2016 oct 2016**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partly mature adults adultes matures ou partiellement matures	◣	◺	L
adults, maturity unknown adultes, maturité inconnue	▲	△	⋀
egg laying or eggs pontes ou œufs	▼	▽	⋁
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊎



warning level: **CAUTION**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 458

(2.12.2016)

General Situation during November 2016 Forecast until mid-January 2017

A Desert Locust outbreak continued in western Mauritania during November and breeding extended into adjacent areas of southern Morocco. Although control operations were in progress in both countries, another generation of breeding could occur if temperatures remain warm. This will cause more hopper groups and bands as well as adult groups and perhaps a few small swarms to form. The outbreak could spread to northern Mauritania and further north in the Western Sahara where good rains fell in October and breeding is likely. In the Central region, small local outbreaks developed on the Red Sea coast in Yemen and Eritrea while a short-lived outbreak from last month subsided in Sudan. Small-scale breeding will cause locust numbers to increase along both sides of the Red Sea and Gulf of Aden coasts during the forecast period.

Western Region. An outbreak in western **Mauritania** continued during November as ground teams treated 10,100 ha of hopper bands and groups of hoppers and adults. Hatching occurred in some adjacent areas of areas of **Western Sahara** in southern **Morocco** and limited control operations (75 ha) were undertaken against small hopper bands that formed. More groups, bands and perhaps a few small swarms are expected to form in the outbreak area. Adult groups and perhaps a few small swarms may move progressively northwards during periods of warm southerly winds and reach northern Mauritania and adjacent areas of the Western Sahara where breeding will occur in areas that received heavy rains in October. Scattered adults persisted along the southern side of the Atlas Mountains in Morocco and in western **Algeria**. Small-scale breeding continued in the extreme south of Algeria near the Malian border and control was carried out on 422 ha. Elsewhere, local breeding occurred in Tamesna and the Air Mountains of northern **Niger** where teams treated 50 ha.

Central Region. Local outbreaks developed in early November on the Red Sea coast in **Eritrea** and **Yemen**. Hopper groups formed in both areas while bands also formed in Yemen. Control operations were undertaken in Eritrea (850 ha) but were limited in Yemen (40 ha) due to insecurity. Breeding will continue and more groups are expected to form in both countries as well as the possibility of a few small swarms in Yemen that could threaten adjacent areas in **Saudi Arabia**. The short-lived outbreak in the interior of **Sudan** last month subsided and so far, only low numbers of adults have appeared in winter breeding areas on the Red Sea coast in Sudan and southeast **Egypt**. Breeding will occur along the coast and in subcoastal areas, causing locust numbers to increase slightly. Elsewhere the situation remained calm.

Eastern Region. The situation remained calm in the region during November. No significant developments are likely.

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 are available on the Internet.
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Facebook: www.facebook.com/faolocust
Twitter: twitter.com/faolocust

No. 458

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in November 2016

Although little rain fell during November, conditions were favourable for breeding in parts of Northwest Africa and along both sides of the Red Sea.

In the **Western Region**, very little rain fell during November in West and Northwest Africa. Light showers may have occurred at times in a few places of northwest Mauritania and adjacent parts in the extreme south of Morocco. Breeding conditions were favourable in both areas. In Algeria, light to moderate rain fell in the west and northwest, and breeding conditions were favourable near Tindouf, between Beni Abbes and Bechar, on the edge of irrigated perimeters in the Adrar area of the central Sahara and along the Malian border near Timeiaouine. Dry conditions prevailed in the northern Sahel of West Africa.

In the **Central Region**, only light showers fell at times in a few places of the Red Sea coast during November, Nevertheless, ecological conditions were improving during the month in the winter breeding areas along both sides of the Red Sea. Breeding conditions became favourable on the central coast in Eritrea, in the Tokar Delta and on the southern coastal plains near Aiterba of Sudan, on the coastal plains in southeast Egypt and probably in adjacent areas of northeast Sudan where good rains fell in late October. Conditions remained favourable on the Red Sea coast in Yemen but mainly dry on the central and northern coast of the Red Sea in Saudi Arabia.

In the **Eastern Region**, primarily dry conditions prevailed as very little rain fell during November except for light showers at mid-month in the mountains surrounding the Jaz Murian Basin in southeast Iran.

Area Treated

Algeria	422 ha (November)
Eritrea	850 ha (November)
Mauritania	8,252 ha (October, revised)
	10,107 ha (1-28 November)
Morocco	112 ha (October, revised)
	75 ha (November)
Niger	50 ha (November)
Sudan	4,525 ha (October, revised)
	800 ha (November)
Yemen	40 ha (November)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During November, an outbreak continued in the west between Nouakchott (1809N/1558W) and Atar (2032N/1308W) within an area of about 300 x 200 km as well as along a 100 km stretch of coast south of Nouakchott. In both areas, egg-laying continued to about mid-month and hoppers continued to form groups and bands. As the month progressed, hoppers fledged and there was an increasing number of immature adult groups that formed, and some of these adults were becoming mature. No locusts were seen in the north. Ground teams treated 10,107 ha in November.

• **FORECAST**

Hopper groups and bands will decline as fledging occurs and new adult groups and perhaps a few small swarms form. Some of the adults are expected to move northwards during periods of warm southerly winds, reaching Inchiri and Tiris-Zemmour where breeding is likely while the remaining adults will stay in currently infested areas, mature and lay eggs that will hatch by the end of the forecast period if temperatures remain warm.

Mali

• **SITUATION**

During the first decade of November, small groups of immature and mature adults mixed with scattered solitarious hoppers of all instars were reported in the north in W. Igharghar (1944N/0037E), northwest of Aguelhoc (1927N/0052E).

• **FORECAST**

Adults and perhaps a few small groups may persist in parts of the Adrar des Iforas while others could

move northwards during periods of warm southerly winds.

Niger

• **Situation**

During November, small-scale breeding continued and low numbers of solitarious hoppers of all instars persisted on the Tamesna Plains between Tassara (1650N/0550E) and In Abangharit (1754N/0559E), and in the southeastern Air Mountains near Timia (1809N/0846E). As vegetation dried out, locust densities increased in Tamesna, reaching 1,200 adults/ha and a few mature adult groups formed south of In Abangharit. Ground teams treated 50 ha.

• **Forecast**

Low numbers of adults are likely to persist in the Air Mountains and in a few places of Tamesna.

Chad

• **Situation**

No locust activity was reported during November.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

No reports were received in November.

• **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, scattered immature and mature solitarious adults persisted in the west near Tindouf and Beni Abbes (3011N/0214W), in the central Sahara near Adrar (2753N/0017W) and irrigated crops, and west of Tamanrasset (2250N/0528E) in the south. Small-scale breeding continued in the extreme south along the Malian border near Timeiaouine (2026N/0148E) where third to fifth instar hoppers and mature solitarious adults at densities up to 500 adults/ha were present. Hopper densities had declined from 50–100 hopers/m^2 in October to 5–15 hoppers/m^2. Ground teams treated 422 ha near Adrar and Timeiaouine.

• **Forecast**

Locust numbers are expected to increase in the western and central Sahara as adults and perhaps a few small groups arrive during periods of warm southerly and southwesterly winds. This will be supplemented by limited breeding in areas of recent rainfall if temperatures remain unusually warm.

Morocco

• **Situation**

During November, hatching commenced during the second week in the extreme south near Bir Gandouz (2136N/1628W) where egg-laying was reported during the second half of October. By late November, first to third instar hoppers had formed numerous but small groups up to 400 m^2 in size at densities of up to 150 hoppers/m^2. Low numbers of mature solitarious and transiens adults and a few small groups were seen copulating nearby. Ground teams treated 75 ha. Scattered immature and mature adults were present between Bir Gandouz and Aousserd (2233N/1419W). In the northeast, isolated immature solitarious adults persisted near Figuig (3207N/0113W).

• **Forecast**

Small-scale breeding will cause locust numbers to increase further in central and southern portions of Western Sahara where groups and perhaps small bands will form. If temperatures remain warm, fledging could commence in late December and groups of immature adults are likely to form. Additional groups and perhaps a few small swarms may appear from adjacent areas of Mauritania during periods of warm southerly winds and move progressively northwards. Scattered adults will persist along the southern side of the Atlas Mountains.

Libya

• **Situation**

No locust activity was reported during November.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No locust activity was reported during November.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During the first week of November, scattered mature solitarious were seen close to irrigated areas in the Nile Valley near Abu Hamed (1932N/3320E).

No locusts were seen in previously infested areas of the Baiyuda Desert. In the remainder of the month, medium-density groups of immature adults mixed with solitarious hoppers were treated by air (800 ha) north of Kassala (1527N/3623E). Scattered mature solitarious adults were present on the Red Sea coast in the Tokar Delta, on the southern coast near Aiterba (1753N/3819E), on the central coast near Eit (2009N/3706E), and in a few places along the western side of the Red Sea Hills. Isolated third instar solitarious hoppers were seen at one place in Tokar, suggesting that egg-laying commenced in late October.

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly on the Red Sea coastal plains. Locusts may be present and breeding in the northeast (Wadi Oko/Diib).

Eritrea

• **Situation**

During November, an outbreak developed on the central Red Sea coast where small groups of hoppers of all stages formed north of Shelshela (1553N/3906E) on the Akbanazouf Plain from laying during October. Hatching continued throughout November. A few small groups of immature adults started to form during the last decade of the month. Ground teams treated 850 ha.

• **Forecast**

Groups of hoppers and adults and perhaps a few small hopper bands will continue to form on the central Red Sea coast. A second generation of breeding could commence by the end of the year, causing a further increase in locust numbers.

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 locust reports were received during November.

• **Forecast**

Small-scale breeding is likely to take place in areas that receive rainfall on the northwest coast, causing locust numbers to increase slightly.

Egypt

• **Situation**

During November, low numbers of mature solitarious adults were seen on the Red Sea coast between the Sudanese border and Marsa Alam (2504N/3454E), and isolated immature adults were present in subcoastal areas near El Sheikh El Shazly (2412N/3438E) and in the Nile Valley near Aswan (2405N/3256E). No locusts were seen elsewhere in the Red Sea Hills, near Lake Nasser and in the northwest near Siwa (2912N/2531E) and Salum (3131N/2509E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly on the Red Sea coast south of Berenice.

Saudi Arabia

• **Situation**

During November, no locusts were seen on the central and northern coast of the Red Sea between Lith (2008N/4016E) and Al Wajh (2615N/3627E).

• **Forecast**

Small-scale breeding will occur in areas of recent rainfall on the Red Sea coast, causing locust numbers to increase slightly. There is a moderate risk that a few small groups or swarms could appear in coastal areas adjacent to Yemen.

Yemen

• **Situation**

A local outbreak developed during the first decade of November when mid to late instar small hopper groups and bands formed at densities up to 50 hoppers/m^2 on the northern Red Sea coast between Al Zuhrah (1541N/4300E) and Midi (1619N/4248E). Fledging was reported at two places. Some areas could not be surveyed due to insecurity. Limited ground control operations were conducted by farmers and treated 40 ha. Low numbers of immature and mature solitarious adults were present on the central Red Sea coast between Bajil (1458N/4314E) and Zabid (1410N/4318E). Scattered mature solitarious adults were present on the southern coastal plains

and local breeding was in progress near Aden (1250N/4503E).

• **Forecast**

Groups of adults and perhaps a few very small swarms are expected to form on the northern coast of the Red Sea. Breeding will continue along the Red Sea and Gulf of Aden coasts, causing locust numbers to increase further.

Oman

• **Situation**

During November, no locusts were seen in the Musandam Peninsula, on the northern Batinah coast north of Sohar (2421N/5644E) and in the northern interior near Buraimi (2415N/5547E).

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During November, no locusts were seen on the southeast coast near Chabahar (2517N/6036E).

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

No locust reports were received during November.

• **Forecast**

No significant developments are likely.

India

• **Situation**

No locusts were seen during November in Rajasthan and Gujarat.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

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2016 events. The following activities are scheduled or planned:

- **SWAC.** 30th session, Islamabad, Pakistan (12–14 December)

Zafar Ali Khan. It is with deep regret that we announce the death of Zafar Ali Khan who was the former Locust Head of the Department of Plant Protection in Karachi, Pakistan from 1997 to 2010. We would like to express our sincere condolences to his family and government.

Glossary of terms

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

NON-GREGARIOUS ADULTS AND HOPPERS

ISOLATED (FEW)

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

SCATTERED (SOME, LOW NUMBERS)

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

GROUP

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

ADULT SWARM AND HOPPER BAND SIZES

VERY SMALL

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

SMALL

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

MEDIUM

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING AREAS

- July - September/October
  (Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border)

WINTER RAINS AND BREEDING AREAS

- October - January/February
  (Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara)

SPRING RAINS AND BREEDING AREAS

- February - June/July
  (Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border)

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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

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.

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.

WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

- Threat. Threat to crops. Survey and control operations must be undertaken.

RED

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

REGIONS

WESTERN

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

CENTRAL

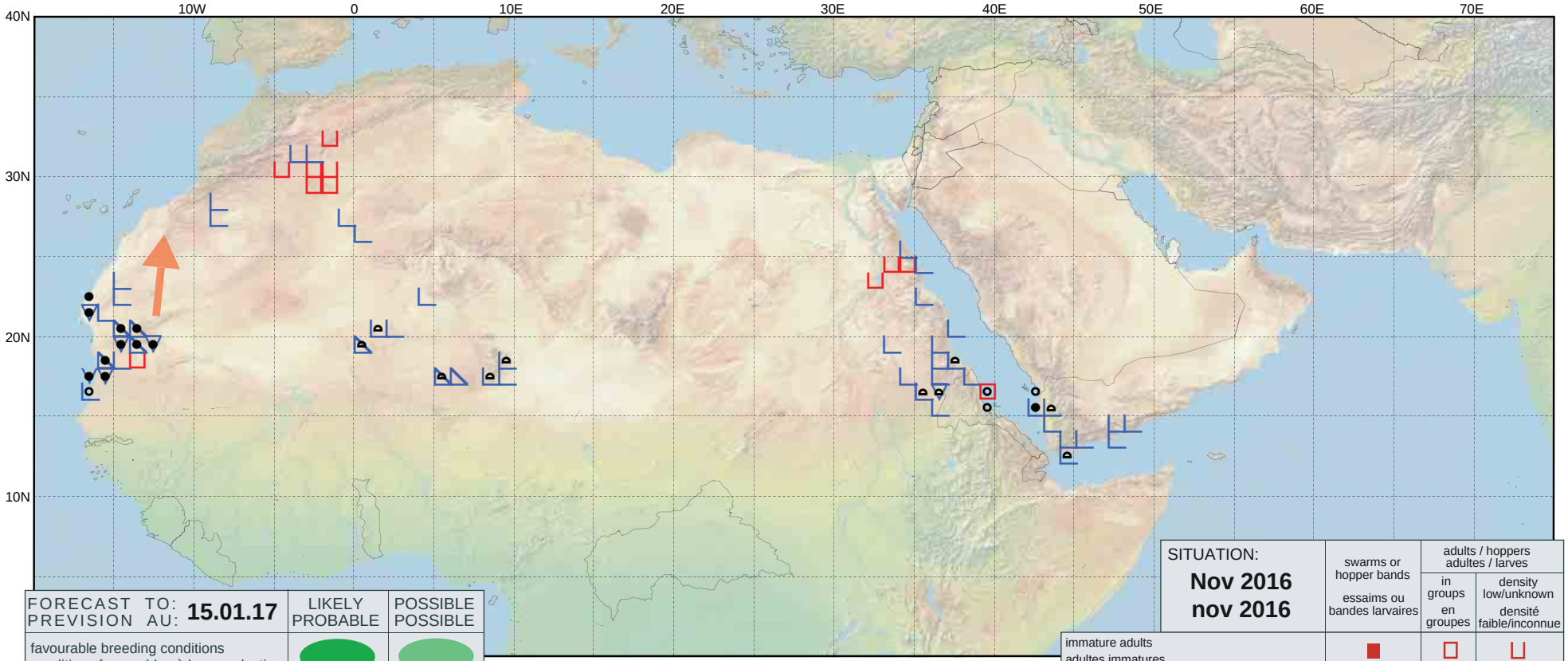
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

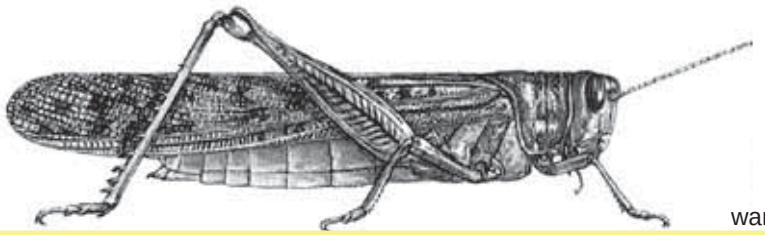
Desert Locust Summary
Criquet pèlerin - Situation résumée

458



FORECAST TO: PREVISION AU: **15.01.17**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Nov 2016 nov 2016**	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**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 459

(3.1.2017)

General Situation during December 2016 Forecast until mid-February 2017

Desert Locust infestations declined during December in the areas affected by the current outbreaks in Mauritania, extending to southern Morocco, and Eritrea due to ongoing control operations. Nevertheless, strict vigilance should be maintained as ecological conditions continue to remain favourable and another generation of breeding is likely to take place during the forecast period. Small-scale breeding occurred in Sudan, Saudi Arabia and Yemen where limited control operations were undertaken. Elsewhere, low numbers of adults were present in Algeria, Niger and northern Somalia.

Western Region. Although groups of hoppers and adults as well as some hopper bands formed in northwest **Mauritania**, infestations declined and less control was required in December compared to the previous month. However, another generation of breeding is likely to occur in the northwest and breeding should commence in the north. Numerous hopper groups and small bands formed, control operations increased slightly, and relatively large areas of vegetation became green during December in adjacent areas of **Western Sahara** in southern **Morocco**. Consequently, locust numbers could increase further in both areas and countries should remain alert. Once temperatures increase, small-scale breeding is expected to commence in western and central **Algeria** where solitarious adults are present. Isolated adults persisted in northern **Niger** where local breeding was reported.

Central Region. An outbreak on the central Red Sea coast of **Eritrea** continued during December and hoppers and adults formed numerous small groups. By mid-month, control operations had reduced the infestations, preventing crop damage but breeding occurred further north near the Sudanese border where hatchlings were forming small bands late in the month. Several adult groups appeared in adjacent coastal areas of **Sudan** and laid eggs while small-scale breeding was in progress further north along the coast. Small-scale breeding was also underway in a few places on the Red Sea coast in **Yemen** and **Saudi Arabia** where limited control was carried out. Scattered adults were seen on the coast in northwest **Somalia**. During the forecast period, small-scale breeding will continue on both sides of the Red Sea, causing locust numbers to increase slightly. Breeding will also occur on the northwest coast of Somalia in areas that receive rainfall.

Eastern Region. The situation remained calm in the region during December. No significant developments are likely. A few adults could appear at the end of the forecast period in spring breeding areas along the coast of southeast **Iran** and southwest **Pakistan**.

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 are available on the Internet.
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Twitter: twitter.com/faolocust

No. 459

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in December 2016

Although little rain fell for a second consecutive month in December, breeding conditions remained favourable in parts of Northwest Africa and along both sides of the Red Sea.

In the **Western Region**, very little rain fell during December in West and Northwest Africa. In Mauritania, light rain fell at times in parts of the northwest (Adar, Inchiri) where ecological conditions remained favourable for breeding. Further north, conditions were improving in Tiris Zemmour where vegetation became green between southwest of Bir Moghrein to Tamreiket, Vegetation also became green within relatively large areas of Western Sahara between Aousserd and Haouza, including Wadi As Saquia Al Hamra. Vegetation was also green south of the Atlas Mountains in parts of the Draa, Ziz and Ghris valleys and in northeast Morocco. In Algeria, light to moderate rains fell in parts of the northern Sahara where temperatures remained low. Breeding conditions remained favourable in the west near Tindouf, between Beni Abbes and Bechar, and on the edge of irrigated perimeters in the Adrar area of the central Sahara. In the northern Sahel, green vegetation persisted in some wadis of the Adrar des Iforas in northeast Mali and in adjacent border areas of southern Algeria near Timeiaouine as well as on the Tamesna Plains between In Abangharit and Agadez in northern Niger and in some wadis of the Air Mountains.

In the **Central Region**, very little rain fell in the winter breeding areas along both sides of the Red Sea and Gulf of Aden during December but breeding conditions were favourable in many areas. In Sudan, ecological conditions remained favourable on the Red Sea coast between Tokar Delta and the Eritrean border, and improved further north along the coast to Suakin. Conditions were mainly dry in subcoastal areas of the northeast. In Egypt, green vegetation was present in coastal and subcoastal areas of the southeast. In Eritrea, breeding conditions remained favourable on the central and northern coastal plains. In Saudi Arabia, light rains fell in early December on the coast between Jeddah and Yenbo. Breeding conditions remained favourable in most coastal areas. In Yemen, ecological conditions were favourable for breeding on the northern Tihama coast while drier conditions prevailed on the central coast as well as on the southern coast in Al Maharah. Light rain fell on the northwest coastal plains of Somalia where breeding conditions were improving. Generally dry conditions prevailed in eastern Ethiopia and in Oman.

In the **Eastern Region**, primarily dry conditions prevailed as very little rain fell during November except for light showers at mid-month in the mountains surrounding the Jaz Murian Basin in southeast Iran.

Area Treated

Eritrea	7,818 ha (December)
Mauritania	7,380 ha (November, revised)
	1,167 ha (December)
Morocco	189 ha (1-28 December)
Saudi Arabia	10 ha (December)
Sudan	115 ha (December)
Yemen	120 ha (December)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

On 1 December, an immature swarm was reported near Oujeft (2003N/1301W). During the remainder of the month, breeding continued mainly between Akjoujt (1945N/1421W) and Oujeft and to a lesser extent in Dakhlet Nouadhibou near the southern Morocco border. Although some hopper groups, a few bands and groups of immature and mature adults continued to form, infestations declined and mainly solitarious and *transiens* adults remained between Akjoujt and Bennichab (1932N/1512W), Chinguetti (2027N/1221W) and Ouadane (2056N/1137W) at the end of the month. In Tiris Zemmour, immature adults appeared between Zouerate (2244N/1221W) and Bir Moghrein (2510N/1135W). Ground teams treated 1,167 in December.

• **FORECAST**

A few adult groups are likely to persist in the northwest and north while moving back and forth in

adjacent areas of southern Morocco and Western Sahara. Another generation of breeding will occur in Adrar and Inchiri, causing locust numbers to increase slightly. Breeding is also expected to commence in Tiris Zemmour. Hatching and the formation of small hopper groups are likely in the three regions.

Mali

• **Situation**

No locust activity was reported during December.

• **Forecast**

Low numbers of adults may be present and will persist in parts of the Adrar des Iforas.

Niger

• **Situation**

During December, isolated immature and mature solitarious adults persisted at a few places on the Tamesna Plains between Tassara (1650N/0550E), the Mali border and the Tazerzait Plateau (1832N/0449E). Low numbers of third instar solitarious hoppers were seen near In Abangharit (1754N/0559E). No locusts were seen in the northern Air Mountains.

• **Forecast**

Low numbers of adults are likely to persist in a few places of Tamesna and may be present in the Air Mountains.

Chad

• **Situation**

No locust activity was reported during December.

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

A late report indicated that a few adults arrived in the north along the Senegal River Valley and Lac de Guiers southwest of Dagana (1631N/1530W) from adjacent areas of Mauritania during October. No locusts were reported thereafter.

• **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, scattered mature solitarious adults persisted in the west near Tindouf (2741N/0811W) and northwest of Beni Abbes (3011N/0214W), near irrigated crops in the Adrar (2753N/0017W) area of the central Sahara, and in the southern Sahara to the west of Tamanrasset (2250N/0528E).

• **Forecast**

Scattered adults will persist in the western and central Sahara, and are likely to be supplemented by additional adults and perhaps a few small groups appearing during periods of warm southerly and southwesterly winds. As temperatures begin to warm up at the end of the forecast period, small-scale breeding will commence, causing locust numbers to increase.

Morocco

• **Situation**

During December, some 60 hopper groups and small bands were reported in the extreme south where hatching continued near Bir Gandouz (2136N/1628W). The bands varied in size from 1 to 200 m^2 at densities up to 430 hoppers/m^2 and were mixed with scattered immature and mature solitarious and *transiens* adults and groups at densities up to 1,000 adults/ha. Fledgling commenced during the last decade, giving rise to groups of immature *transiens* adults at densities up to 4,800 adults/ha. Ground teams treated 189 ha on 1-28 December.

• **Forecast**

Small-scale breeding will cause locust numbers to increase further in central and southern portions of Western Sahara where groups, small bands and perhaps a few small swarms will form. Additional groups are likely to move back and forth in adjacent areas of Mauritania during periods of warm southerly winds and move progressively northwards. Scattered adults are likely to be present and will persist along the southern side of the Atlas Mountains.

Libya

• **Situation**

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

• **Forecast**

Low numbers of adults may appear in the southwest.

Tunisia

• **Situation**

No locust activity was reported during December.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During December, small-scale breeding continued on the Red Sea coast in Tokar Delta (1827N/3741E) and to a lesser extent on the plains as far north as Port Sudan (1938N/3713E) where scattered solitarious adults were present. Several medium-density groups of mature gregarious adults arrived on the southern coastal plains between Karora (1745N/3820E) and Aiterba (1753N/3819E) from adjacent areas in Eritrea on the 9th. Some of the adults were copulating. Ground teams treated 115 ha. Isolated mature solitarious adults were seen at one location in Wadi Diib north of Tomala (2002N/3551E). In the Nile Valley, adult groups were copulating near Abu Hamed (1932N/3320E) at densities up to 1,000 adults/ha and scattered immature and mature solitarious adults were present between Shendi (1641N/3322E) and Dongola (1910N/3027E) and in W. Muqaddam in the Baiyuda Desert.

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly on the Red Sea coastal plains, mainly between Suakin and Karora, and in subcoastal areas in the northeast. There is a low to moderate risk that a few small groups may appear from Eritrea.

Eritrea

• **Situation**

During December, an outbreak continued on the central Red Sea coast where groups of hoppers and immature adults were present between Shelshela (1553N/3906E) and Mersa Cuba (1616N/3911E) until mid-month; thereafter, infestations declined and only a few immature adult groups remained. On the northern coastal plains, hatching commenced in the last week near the Sudanese border east of Karora (1745N/3820E) where groups of first instar hoppers and small bands formed mixed with groups of gregarious adults that were seen copulating. Ground teams treated 7,818 ha in December and no crop damage was reported.

• **Forecast**

Hopper groups and bands will continue to form on the northern coast near the Sudanese border with fledging starting by mid-February, which could cause small immature groups to form. A small-scale second generation of breeding may occur on the central coast.

Ethiopia

• **Situation**

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

• **Forecast**

Low numbers of adults may appear along the railway area between Dire Dawa and Ayasha.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

During December, scattered mature solitarious adults were present at a few places on the northwest coast and at the base of the escarpment between Lughaye (1041N/4356E) and Bulhar (1023N/4425E). A small group of adults were seen copulating at one place.

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly on the northwest coast. Limited hatching will occur early in the forecast period and perhaps a few small groups could form.

Egypt

• **Situation**

During December, no locusts were seen during surveys on the Red Sea coast between the Sudanese border and Shalatyn (2308N/3535E), in subcoastal areas near El Sheikh El Shazly (2412N/3438E) and near Lake Nasser in the Abu Simbel (2219N/3138E), Tushka (2247N/3126E) and Garf Husein (2317N/3252E) areas.

• **Forecast**

Small-scale breeding is likely to occur on the Red Sea coast south of Berenice, causing locust numbers to increase slightly.

Saudi Arabia

• **Situation**

During December, scattered immature and mature solitarious adults were seen on the Red Sea coast near Lith (2008N/4016E), Qunfidah (1909N/4107E)

and Jizan (1656N/4233E). Small-scale breeding occurred on the coast north of Jizan where scattered late instar solitarious hoppers were present. Ground teams treated 10 ha of adult groups that were laying eggs near Qunfidah. No locusts were seen on the northern coast between Jeddah (2130N/3910E) and Yenbo (2405N/3802E).

• **FORECAST**

Small-scale breeding will continue in areas of recent rainfall on the Red Sea coast, causing locust numbers to increase slightly.

Yemen

• **SITUATION**

During December, small-scale breeding was in progress on the Red Sea coastal plains between Al Zuhrah (1541N/4300E) and the Saudi Arabia border where hopper groups that formed in November were fledging and immature and mature solitarious and *transiens* adults were present at densities of less than 900 adults/ha. Ground teams treated 120 ha. Limited breeding occurred further south near Al Qutai (1454N/4312E) and north of Zabid (1410N/4318E). No locusts were seen along the southern coast during a survey in Al Maharah from west of Sayhut (1512N/5115E) to the Omani border.

• **FORECAST**

Another generation of breeding is expected to occur along the Red Sea coast that will cause locust numbers to increase further.

Oman

• **SITUATION**

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

• **FORECAST**

No significant developments are likely.

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

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During December, no locusts were seen on the southeast coast near Chabahar (2517N/6036E) and in the Jaz Murian Basin of the interior.

• **FORECAST**

Low numbers of adults may start to appear on the southeast coast and in Jaz Murian Basin at the end of the forecast period.

Pakistan

• **SITUATION**

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

• **FORECAST**

Low numbers of adults may start to appear in coastal areas of Baluchistan at the end of the forecast period.

India

• **SITUATION**

No locusts were seen during December 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **eLocust3 training videos.** A set of 15 introductory training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT
- **RAMSESv4 training videos.** A set of basic training videos are available on YouTube: https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So
- **RAMSESv4 and eLocust3 updates.** Updates can be downloaded from https://sites.google.com/site/rv4elocust3updates/home
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

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

- **WMO/FAO Weather and Desert Locusts booklet.** Publications – Documents
- **SWAC 30th session report.** Publications – Reports

2017 events. The following activities are scheduled or planned:

- **EMPRES/WR.** 15th Liaison Officer meeting and 12th Consultative Committee, Ouagadougou, Burkina Faso (30 January – 4 February)
- **CRC.** 50th anniversary and 30th session, Muscat, Oman (19–23 February)
- **CLCPRO.** Desert Locust Information Officer workshop, Algiers, Algeria (March, tbc)
- **CRC/SWAC.** Desert Locust Information Officer workshop, Egypt (May, tbc)

Glossary of terms

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- very few present and no mutual reaction occurring;
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- forming ground or basking groups;
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- swarm: less than 1 km^2 • band: 1 - 25 m^2

SMALL

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

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

LARGE

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

VERY LARGE

- swarm: 500+ km^2 • band: 50+ ha

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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.

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- period without widespread and heavy infestations by swarms.

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- 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.

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- 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.

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.

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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Criquet pèlerin - Situation résumée

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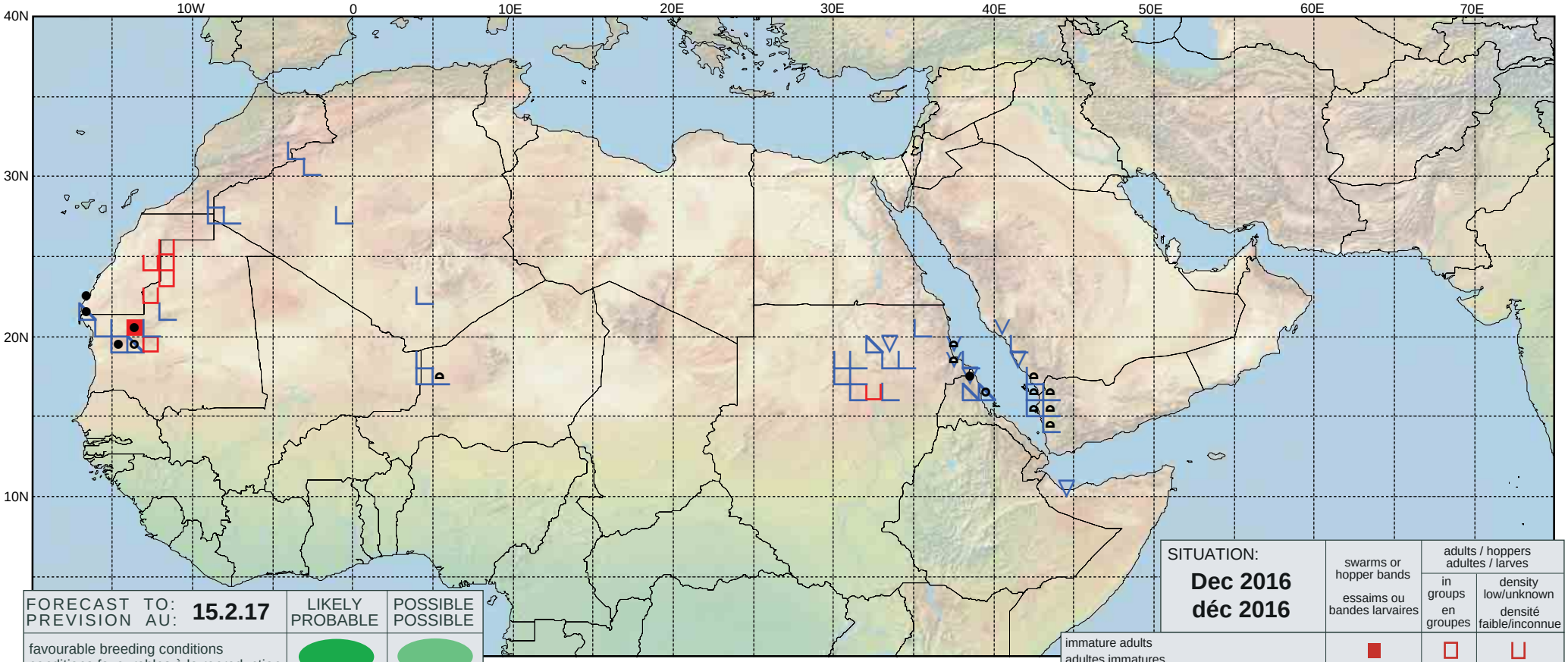

FORECAST TO: / PREVISION AU: **15.2.17**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Dec 2016 déc 2016**	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)			