

warning level: **THREAT**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 410



**General Situation during November 2012
Forecast until mid-January 2013**

(3 Dec 2012)

The Desert Locust situation remained serious during November as small swarms formed in Mali, Niger, and Chad, and adult groups moved north to Libya, Tunisia and Algeria. An increasing number of adults were seen in Morocco and the Western Sahara. Locusts formed groups and small hopper bands in western Mauritania. More groups and small swarms are likely to form in the Sahel during December and move to Northwest Africa and northwest Mauritania. In the Central Region, groups and swarms formed in northern Sudan and moved to Egypt and the Red Sea coast where winter breeding will occur during the forecast period. One group crossed the sea to the Saudi Arabian coast. Aerial control operations commenced in Algeria, Niger and Sudan. Ground control operations were also undertaken in Mauritania, Libya, Chad and Egypt. All efforts are required to monitor the situation and undertake the necessary control operations.

Western Region. Second generation breeding continued to cause locust numbers to increase in the northern Sahel of Mali, Niger and Chad during November. As vegetation dried out, hoppers and adults formed groups and a few hopper bands and small swarms. Small adult groups moved north into southeastern and western Libya, southern Tunisia, and Algeria. In Mauritania, locust infestations increased in the west and northwest due to breeding and the arrival of adults from the summer breeding

areas in the south, causing hopper and adult groups to form as well as a few hopper bands. Aerial control operations commenced in Niger and Algeria, supplementing ground efforts. Ground control was also carried out in Chad and Mauritania. During the forecast period, more groups and swarms will form in the northern Sahel and move into Northwest Africa where breeding could occur if temperatures remain warm. Breeding will continue in northwest Mauritania, causing locusts to increase further.

Central Region. Hopper and adult groups, bands and swarms continued to form during November in the summer breeding areas in the interior of Sudan. Although ground and aerial control operations were undertaken, groups of adults moved north to southern Egypt while other groups and small swarms migrated to the winter breeding areas in northeast Sudan and on the Red Sea coast in southeast Egypt. At least one group crossed the Red Sea to the northern coastal plains in Saudi Arabia. During the forecast period, small to moderate scale breeding will cause locust numbers to increase along both sides of the Red Sea as hatching commences in December.

Eastern Region. Isolated adults persisted in a few places of the summer breeding areas in Rajasthan, India near the border with Pakistan. 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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Weather & Ecological Conditions in November 2012

Good rains fell in parts of the winter breeding areas along both sides of the Red Sea and in some places in Northwest Africa. Consequently, ecological conditions started to become favourable for breeding in both areas.

In the **Western Region**, light showers fell in parts of Northwest Africa while vegetation dried out in the summer breeding areas of the Sahel in West Africa. Light rain occurred in northeastern Morocco and parts of the northern Western Sahara. Vegetation was green and ecological conditions were favourable for breeding in the southern part of the Western Sahara and along the southern side of the Atlas Mountains, including Oued Draa, the Ziz-Ghris Valley and the northeast near Bouarfa. In Algeria, light to moderate rains fell in the Sahara near Tindouf, Bechar, and north of Illizi and Tamanrasset. Consequently, limited areas of green vegetation were present in parts of the southern and central Sahara in Algeria. In Libya, rains fell at the end of the month in the west and south. In Mauritania, ecological conditions were favourable for breeding in the northwest while conditions were drying out in centre, and dry in the southeast. In Mali, vegetation was drying out but remained green in the main wadis of the Adrar des Iforas and in a few places on the Tamesna Plains. In Niger, vegetation was drying out in all areas except in interdunal areas in the Tamesna and in parts of the Air Mountains and the Ténéré Desert. In Chad, annual vegetation was drying out in most areas and only small patches of green vegetation were present in the north.

In the **Central Region**, good rains fell in some of the winter breeding areas along the Red Sea coast in November. Light to moderate rains fell during the second week on the Red Sea coast and subcoastal areas in southeast Egypt and northeast Sudan. Moderate to heavy showers fell on the northern Red Sea coast of Saudi Arabia between Rabigh and Duba at times during the first two decades of the month. As a result, breeding conditions were improving along the coast as well as in subcoastal areas of northeast Sudan and southeast Egypt along Wadi Oko/Diib. Although vegetation dried out in most of the summer

breeding areas in the interior of Sudan, sufficiently green patches allowed locusts to concentration in some places. Elsewhere, conditions were mainly dry and unfavourable for breeding.

In the **Eastern Region**, no significant rain fell during November. Consequently, vegetation continued to dry out in the summer breeding areas along both sides of the Indo-Pakistan, and remained dry in most of the spring breeding areas in western Pakistan and southeast Iran.



Area Treated

Algeria	1,110 ha (November)
Chad	227 ha (November)
Egypt	2,866 ha (November)
Libya	74 ha (November)
Mauritania	4,725 ha (October, revised) 14,663 ha (1-26 November)
Niger	42,819 ha (November)
Sudan	2,024 ha (October, revised) 26,289 ha (3-28 November)



Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• SITUATION

During November, late instar hopper and immature solitarious adult infestations gradually declined in the summer breeding areas of northern Hodh El Gharbi and Assaba. In the west and northwest, locust numbers continued to increase in Tagant, Trarza, Inchiri and southwest Adrar where egg-laying and hatching were reported. Solitarious and *transiens* hoppers and adults formed many small groups at densities of up to 500 hoppers/m² and 50,000 adults/ha between Nouakchott (1809N/1558W) and Atar (2032N/1308W). A few hopper bands formed after mid-month on the coast south of Nouakchott and in the interior between Tidjikja (1833N/1126W) and Akjoujt (1945N/1421W) at densities of up to 30 hoppers/m². Scattered immature and mature solitarious adults were present in Inchiri. There were unconfirmed reports of small swarms in the oases of southern Adrar. Ground teams treated 14,663 ha from 1 to 26 November.

• FORECAST

Small to moderate scale breeding will cause locust numbers to increase further in Trarza, northern

Brakna, western Tagant, Inchiri, Dakhlet Nouadhibou and southwest Adrar. Small groups, bands and swarms may form in some areas. Infestations could also extend further north to Tiris-Zemmour. There is a high risk of small groups and swarms arriving from the northern Sahel during December.

Mali

• SITUATION

During the first two decades of November, many hopper groups and small bands at densities of up to 65 hoppers/m² mixed with immature and mature solitary and *transiens* adult groups at densities up to 15 adults/m² were present in the northeast. A medium density immature swarm was seen flying to the northwest on the 9th and 13th, and another swarm was reported on the 22nd. No locusts were seen during surveys in western and central areas between Kayes (1426N/1128W) and Mopti (1430N/0415W).

• FORECAST

Groups of adults and small swarms will continue to form in the Adrar des Iforas and Tamesna during December. Most of the adults are expected to migrate to the northwest, north and northeast while a few residual populations could persist in those areas that remain green in the northeast.

Niger

• SITUATION

During the first decade of November, additional hatching caused locust numbers to increase further in the Tamesna between In Abangharit (1754N/0559E), Tassara (1650N/0550E) and Agadez (1700N/0756E) and, to a lesser extent, in the Air Mountains, in central areas near Tanout (1458N/0852E), and in the southeast near Ngourti (1519N/1312E) and the Chad border. During the remainder of the month, second generation solitary, *transiens* and gregarious hoppers developed and adults matured, forming an increasing number of groups in all of these areas. Hopper densities reached 50 hoppers/m² while adult densities were up to 20,000 adults/ha. Late instar hopper bands were present near Tahoua (1457N/0519E). A few low-density immature swarms formed at mid-month in the Tamesna. Control operations treated 42,819 ha during November of which 5,500 ha were treated by air during the last decade.

• FORECAST

Groups of adults and small swarms will continue to form during December in Tamesna, the Air Mountains, near Tahoua and, to a lesser extent, near Tanout and perhaps in the southeast. Most of the adults are expected to migrate to the northwest, north and northeast while a few residual populations could

persist in those areas that remain green in Tamesna and Air.

Chad

• SITUATION

During the first half of November, a few low to medium density immature and maturing swarms, up to 10 km² in size, were seen in the northeast near Fada (1714N/2132E). Scattered mature gregarious adults were present south of Fada. During the second half of the month, several maturing swarms and adult groups were reported west of Fada near Faya (1756N/1907E), reaching as far north as Gouro (1932N/1933E). Lower numbers of immature and mature solitary adults were reported in southern BET and northern Batha and Kanem. Ground teams treated 227 ha.

• FORECAST

Locust infestations will decline as vegetation dries out and the remaining adults form small groups and swarms that will migrate towards the northwest in the coming weeks. Thereafter, only a few residual populations may persist in those areas that remain green in the northeast.

Senegal

• SITUATION

No reports were received during 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.

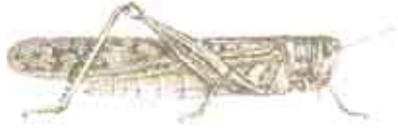
Algeria

• SITUATION

In early November and again later in the month, a few small groups of immature and mature adults at densities of up to 2,500 adults/ha appeared in the extreme south near the Niger border and In Guezzam (1937N/0552E). Concentrations of solitary adults were present near the Malian border and Tin Zaouatene (1957N/0258E) as well as in irrigated areas in the central Sahara south of Adrar (2753N/0017W). Control teams treated 960 ha by ground and 150 ha by air. Scattered immature and



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mature solitary adults were reported southeast of the Hoggar Mountains near Djanet (2434N/0930E), and isolated adults were seen by locals in the northern Sahara near Bechar (3135N/0217W), Ghardaia (3225N/0337E), El Oued (3323N/0649E) and Ouargla (3157N/0520E).

• **FORECAST**

Low numbers of adults will persist in the southern, central and eastern Sahara, and are likely to be supplemented by groups of adults and small swarms arriving from current infestations in the northern Sahel during December. Small to moderate scale breeding could occur in areas of recent rainfall if temperatures remain warm.

Morocco

• **SITUATION**

During November, scattered immature and mature solitary adults persisted in southern Western Sahara between Bir Gandouz (2136N/1628W) and Tichla (2137N/1453W), in central areas near Guelta Zemmur (2508N/1222W), and in the north near Laayoune (2709N/1311W) and Haouza (2707N/1112W). Small-scale breeding was detected near Guelta Zemmur where isolated solitary hoppers of all instars were present. Scattered immature adults were present in Oued Draa from Tantan (2826N/1106W) to east of Tata (2944N/0758W) while adults persisted and were maturing along the Algerian border between Zagora (3019N/0550W) and Figuig (3207N/0113W) in the northeast.

• **FORECAST**

Small-scale breeding will cause locust numbers to increase in the Western Sahara. There is a moderate risk that a few groups and perhaps small swarms could appear from the northern Sahel. If temperatures remain warm, there is a possibility that small-scale breeding could occur along the southern side of the Atlas Mountains and in Oued Draa; otherwise, adults will persist, perhaps form a few small groups, and slowly mature until spring.

Libya

• **SITUATION**

On 13 November, a group of solitary adults was seen in the northwest near the Algerian and Tunisian borders at Ghadames (3010N/0930E). Scattered adults and groups were subsequently reported to

north, reaching Tiji (3200N/1120E). During the third week, groups of immature solitary and *transiens* adults were seen at a few places in the southeast near Kufra oasis (2411N/2315E) and 74 ha were treated. In the southwest, scattered immature adults were present near Ghat (2459N/1011E) during the third week. There was an unconfirmed report of locusts in the northeast near Al Jaghub (2944N/2431E) and the Egyptian border on 23 November.

• **FORECAST**

During periods of warm southerly winds, a few groups of adults and small swarms are likely to arrive in western and central areas from current infestations in the northern Sahel.

Tunisia

• **SITUATION**

During November, a few isolated solitary adults were reported in the south on the 14th as a result of warm southerly winds. No further locusts were reported during the last decade of the month.

• **FORECAST**

Scattered adults and groups may appear in the south during periods of warm southerly winds.

CENTRAL REGION

Sudan

• **SITUATION**

During November, hopper and adult groups, bands and a few swarms continued to form in the summer breeding areas northwest of Khartoum (1533N/3235E) and in the Baiyuda Desert. Some of these infestations may have formed in insecure areas of Darfur and northwest Kordofan. As vegetation dried out, locust densities increased, reaching 5,000 adults/ha. Many of these populations moved north, reaching Wadi Halfa (2147N/3122E) and the Egyptian border and northeast, reaching the winter breeding areas in Wadi Oko/Diib by mid-month. Scattered mature solitary adults were present along the Atbara River and on the Red Sea coast in the Tokar Delta and Khor Baraka. Control teams treated 26,289 ha on 3-28 November of which 16,800 ha were undertaken by air.

• **FORECAST**

Adult groups and small swarms will form in parts of the summer breeding area and move to the winter breeding areas in the northeast and along the Red Sea coast during December. Small to moderate scale breeding will occur in Wadi Oko/Diib and, to a lesser extent, on the central and southern Red Sea coastal plains where rains fall, causing locust numbers to increase.

Eritrea

• **SITUATION**

No reports were received during November.

- **FORECAST**

Low numbers of solitary adults are likely to appear in the winter breeding areas along the central and northern Red Sea coast and breed on a small scale in areas that receive rainfall or runoff during the forecast period.

Ethiopia

- **SITUATION**

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

- **FORECAST**

No significant developments are likely.

Djibouti

- **SITUATION**

No reports were received during November.

- **FORECAST**

No significant developments are likely.

Somalia

- **SITUATION**

No reports were received during November.

- **FORECAST**

Isolated adults may appear in areas of recent rainfall on the northwest coast and breed on a small scale if more rains occur.

Egypt

- **SITUATION**

During the first half of November, about a dozen groups of medium to high density immature and mature solitary and *transiens* adults appeared in the south near Abu Simbel (2219N/3138E), Lake Nasser and, to a lesser extent, in the Allaqi area. A few adults were seen on the Red Sea coast south of Shalatyn (2308N/3535E). During the second half of the month, immature and mature adult groups moved further north in the Western Desert, reaching Kharga oasis (2525N/3034E). Adult groups and mature swarms arrived on the coast between Berenice (2359N/3524E) and the Sudanese border where copulating was reported. Ground teams treated 2,866 ha in November.

- **FORECAST**

Additional adult groups and small swarms may arrive on the Red Sea coast and in adjacent subcoastal areas between Shalatyn and the Sudanese border during December. Small to moderate scale breeding will cause locust numbers to increase in these areas. Hatching will commence in early December and continue throughout the forecast period. Breeding on a smaller scale may occur in the Allaqi area and near Lake Nasser. During periods of warm southerly winds, a few groups may move northwards in the Western Desert while others may

appear in the northwest from Libya.

Saudi Arabia

- **SITUATION**

On 18 November, a group of mature adults was reported on the northern Red Sea coast near Yenbo (2405N/3802E), which probably crossed the Red Sea from northeast Africa. Scattered immature and mature solitary and *transiens* adults were present on the north coast between Thuwal (2215N/3906E) and Umm Lajj (2501N/3716E).

- **FORECAST**

A few groups and small swarms could arrive on the Red Sea coast from Sudan and concentrate in areas of recent rainfall or move to the central coast. Small-scale breeding will cause locust numbers to increase during the forecast period.

Yemen

- **SITUATION**

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

- **FORECAST**

Low numbers of adults are likely to appear in the winter breeding areas on the Red Sea coast and breed on a small scale in areas that receive rainfall.

Oman

- **SITUATION**

During November, no locusts were seen during surveys carried out on the Musandam Peninsula, in the northern interior south of Adam (2223N/5731E), and in the south near Salalah (1700N/5405E).

- **FORECAST**

No significant developments are likely.

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

- **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

- **SITUATION**

No reports were received during November.

- **FORECAST**

No significant developments are likely.



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Pakistan

• SITUATION

No reports were received during November.

• Forecast

Locust numbers will decline in Cholistan and Khairpur as vegetation dries out. No significant developments are likely.

India

• SITUATION

During the second fortnight of October and throughout November, isolated and scattered immature and mature solitary adults persisted near the Rajasthan Canal and the Pakistani border.

• FORECAST

Locust numbers will decline in Rajasthan as vegetation dries out. 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/ECLC Desert Locust Information Service (eclc@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://www.devcoast.eu/user/images/dl/Form.do>)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (<https://sites.google.com/site/faodlis>)
- **FAOLOLUST 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>)

SWAC website. The FAO Commission for Controlling the Desert Locust in South-West Asia (SWAC) website (<http://www.fao.org/ag/locusts/SWAC>) is now available in French.

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

- **Desert Locust situation updates.** Archives Section – Briefs
- **Sahel crisis.** Information Section
- **Photos of Sahel crisis.** Archives Section – Outbreaks

Sahel locust threat. An updated information package explains the current threat to the Sahel in West Africa by Desert Locust. It is available at: <http://www.fao.org/ag/locusts/en/info/2002/index.html>.

2012-13 events. The following activities are scheduled or planned:

- **SWAC.** 28th Session, New Delhi, India (5-7 December)
- **EMPRES/WR.** 11th Liaison Officer Meeting, Dakar, Senegal (21-25 January)
- **EMPRES/WR.** 8th Steering Committee Meeting, Dakar, Senegal (28-29 January)

Mansour Liravi. It is with deep regret that we announce the death of Mansour Liravi in November. Mansour dedicated more than 30 years to the national locust programme in Iran, and was the Head of the Locust and Migratory Pests Section before his retirement in the mid 1990s. 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 km² • band: 1 - 25 m²

SMALL

- swarm: 1 - 10 km² • band: 25 - 2,500 m²

MEDIUM

- swarm: 10 - 100 km² • band: 2,500 m² - 10 ha

LARGE

- swarm: 100 - 500 km² • band: 10 - 50 ha

VERY LARGE

- swarm: 500+ km² • band: 50+ ha

RAINFALL

LIGHT

- 1 - 20 mm of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

DECLINE

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

OUTBREAK

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

UPSURGE

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

PLAGUE

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

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

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



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WARNING LEVELS

GREEN

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

YELLOW

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

ORANGE

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

RED

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

REGIONS

WESTERN

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

CENTRAL

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

EASTERN

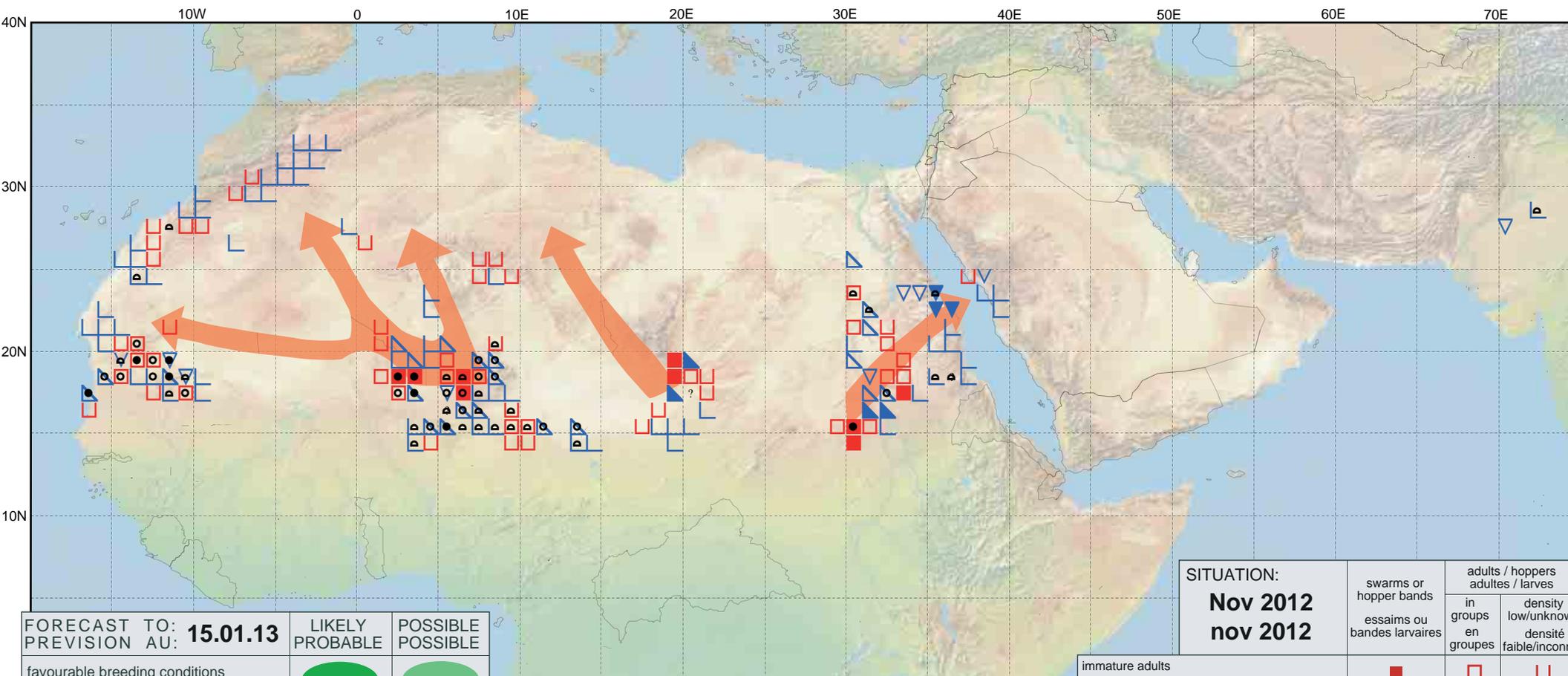
- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.



Desert Locust Summary

Criquet pèlerin - Situation résumée

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

SITUATION: Nov 2012 nov 2012	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)				