2019

REGIONAL WORKSHOP FOR DESERT LOCUST INFORMATION OFFICERS

FAO COMMISSION FOR CONTROLLING THE DESERT LOCUST IN SOUTH-WEST ASIA (SWAC)

No. 2

26–28 November 2019
Tehran, I.R. Iran

Food and Agriculture Organization
of the United Nations

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Rome, 2019

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SWAC Regional Workshop for Desert Locust Information Officers

26–28 November 2019 (Tehran, I.R. Iran)

1. Introduction

In 2016, the 30th session of the FAO Commission for Controlling the Desert Locust in South-West Asia (SWAC) agreed that the FAO Senior Locust Forecasting Officer and SWAC Executive Secretary conduct a regional workshop on an annual basis for Desert Locust Information Officers (DLIOs) in SWAC funded by the Trust Fund. The first workshop was held in January 2018 in Tehran, I.R. Iran. Given the good facilities at the Plant Protection Organization and the relative ease for DLIOs from India and Pakistan to obtain visas, I.R. Iran agreed to host the DLIO workshop on an annual basis at the Plant Protection Organization in Evin, Tehran.

The objective of the annual workshops is to provide refresher and new training to DLIOs in data management and analysis using the custom RAMSES GIS (Rv4.1), remote sensing, eLocust3, and the MacOS. This is critical in order to ensure the smooth functioning of the national and global Desert Locust early warning systems.

This year's three-day workshop was the second one to be held. It was especially timely given the increased Desert Locust activity that threatens the region as a result of exceptional breeding during the past spring and summer in I.R. Iran, Pakistan and India.

2. Participants

The workshop was attended by the two designated DLIOs from India, one from Pakistan and two from I.R. Iran. An additional officer also attended from I.R. Iran:

- Mohammad Ahmadifar, I.R. Iran
- Mahmoud Chalaki, I.R. Iran
- Ali Babali Fashki, I.R. Iran
- Pankaj Salunke, India
- Shahbaz, Pakistan
- Chandra Shekhar Sharma, India

The FAO Senior Locust Forecasting Officer, Keith Cressman, conducted the workshop assisted by the RAMSES GIS developer, Mehdi Ghaemian, from I.R. Iran.

3. Programme

As the previous SWAC DLIO regional workshop in January 2018 focussed on using the MacBookPro lap and its operating system and built-in apps, this workshop concentrated primarily on training DLIOs in using Rv4.1 for analyzing ecology and locust data with specific emphasis on spring breeding in 2019. During the workshop, a variety of topics was discussed, including Mac tips, data management and reporting during the current period of increased locust activity, and the use of a Numbers macro to summarise Rv4.1 data sent to DLIS.

4. Training

The three-day workshop was organised as a morning session (0830-1230/1300h) and an afternoon session (14-1730h) at the PPO. DLIOs reviewed and practiced using a variety of

functionalities of the MacOS, built-in apps, and the Rv4.1 GIS for data management and analysis of the locust situation.

Principles of locust analysis

DLIOs learned how to systematically analyse a specific locust situation, commencing with a starting point that usually coincides with the first rains or when swarms invade from another country. Rv4.1 is used to extensively to query locust, vegetation and soil data. If the analysis period is short, say 1–3 months, then data are queried and displayed on a decadal basis. If the analysis is longer, say for 3–9 months or more, then data are organised in a monthly manner. The Breeding Query function is used to estimate when laying, hatching and fledging occurred and when the next generation of breeding could commence. From this information, DLIOs were shown how to construct a Breeding Calendar in the Numbers app that displays visually the timing and duration of each generation of breeding. Once these initial steps have been taken and everything is well-organised and displayed in Rv4.1 as layers, then the data can be visually analysed to look for trends, comparisons and relationships in order to understand how and why the situation developed.

After a sound and complete analysis has been completed and the DLIO has a thorough understanding of the current situation and how it developed, then the next step of forecasting future locust developments can be taken. A good forecast will address the issues of what, when, where and how much. In other words, locust breeding and migration (the what), the timing (the when), potential locations or areas affected (the where), and the scale (the how much).

The DLIOs practiced applying these principles and steps by using Rv4.1 to analyse the Desert Locust situation in the spring breeding areas of I.R. Iran and Pakistan in 2019 (Annex 1).

5. Discussion

As usual, the workshop was a good opportunity for participants to openly and frankly discuss operational issues concerning Rv4.1, eLocust3, training, Desert Locust management, and the present Desert Locust threat in the region.

RAMSES (Rv4.1)

This year, there is a large volume of data due to the increased Desert Locust activity and associated survey and control operations within the region. While the DLIOs indicated they were able to manage the data load so far but they do not have sufficient time or capacity to analyse or interpret the data. The latter is absolutely critical in order to provide sound advice to national decision makers for effective, efficient and timely survey and control operations as well as contributing to the global Desert Locust early warning system.

The introduction and use of a Numbers macro was a welcome feature this year to help DLIOs summarise Rv4.1 data that are sent to DLIS. There is a similar macro available in Excel.

Additional functionality was requested in Rv4.1:

(1) daily survey and control totals from each district
(2) total bands and swarms by date
(3) seasonal spatial breeding query
(4) control by locust type by date (e.g. a table showing date, type, area, pesticide used)
(5) IRIDL rainfall estimates by date period (e.g. daily 1-28/2/19)

(6) multi-user manual data entry
(7) eL3 editor: enter decimal treated area, quantity, etc.

eLocust3

I.R. Iran indicated that they do not have enough eLocust3 devices for all of their teams because the number of field teams have increased significantly in order to respond to the increased locust activity. Some of the existing devices were not working because of battery problems or other technical issues.

Pakistan faced similar constraints. In the case of incorrect date and time, the Department of Plant Protection (DPP) took the devices to local shops for replacing the clock battery, which seemed to be a good work-around solution.

In India, some of the teams do not use eLocust3 because there is no cigarette lighter in the vehicle for the satellite antenna and BT modem while other officers needed more training on how to use eLocust3.

It was felt that eLocust3 could benefit by being available in local languages and a mobile phone version should be developed by DLIS, although this requires funding and much time.

Training

Many of the field teams in each of the countries need to have more training, specifically to identify correctly Desert Locust hopper and adult groups and how to distinguish them from bands and swarms. Currently, some field officers report groups as bands or swarms or vice versa, which causes unnecessary confusion.

Field supervisors and directors may need additional training in the different strategies that can be deployed during Desert Locust control campaign, for example search/destroy versus specific survey and control teams, and when it is appropriate to consider such strategies.

Sensitisation and dissemination of basic Desert Locust information to higher levels in the governments and the general public is required especially during periods of increased locust activity and threat.

Desert Locust management

I.R. Iran noted that most of the control operations are conducted using EC pesticides because ULV pesticides are not available and cannot be imported into the country due to current international sanctions. In addition, I.R. Iran indicated that it would be of benefit to be in closer contact with Iraq regarding the Desert Locust situation in adjacent areas to the west of I.R. Iran. Perhaps the FAO Commission for Controlling the Desert Locust in the Central Region (CRC) and the FAO Desert Locust Control Committee (DLCC) could facilitate increased collaboration and sharing of information between the two countries.

6. Issues and outcomes

Analysis. The workshop focused on how to analyse weather, environmental and locust data from the control campaigns conducted during spring 2019 in Iran and Pakistan and summer 2019 in India. DLIOs practiced using specific techniques and Rv4.1 functions introduced by the FAO Senior Locust Forecasting Officer; however, more practice is needed.

Forecasts. This was the first time in which DLIOs were shown how to make monthly forecasts based on their analysis, which represents an initial step that requires substantial follow up and further practice, which should be the focus of future workshops.

Rv4.1. The DLIOs requested additional functionality and several modifications in Rv4.1 that should be completed, if possible, before next year's workshop under the guidance of the FAO Senior Locust Forecasting Officer.

eLocust3. During outbreaks, there are not enough units for the additional 50–100 survey and control teams that are typically mobilized; therefore, an Android version in local language(s) should be developed for mobile phones in 2020. Additional units should be dispatched to Iran. All DLIOs should check the operational status of their tablets. New mains batteries need to be procured by FAO. As some officers refuse to use eLocust3, a directive may need to be issued by national authorities and additional training and sensitisation should be provided.

Data. For the most part, DLIOs in frontline countries are only managing and summarising data rather than analyzing and interpreting it. Future workshops will focus on this issue as a means to improving early warning and preventive control.

Desert Locust situation. The PPO was advised to take the necessary steps in advance to prepare for a possible swarm invasion in December from the Indo-Pakistan summer breeding areas by immediately deploying survey teams and pre-positioning control resources in the southeast. Lessons learned from the spring campaign should be applied.

7. Conclusion

The annual SWAC DLIO workshop continues to be a very valuable activity that is beneficial to the region as well as to global locust early warning. It is an important opportunity for DLIOs to come together for sharing problems, finding solutions, exchanging tips, and learning from the Senior Locust Forecasting Officer. It is one of the most effective means to insure a smooth functioning early warning system in each country, consisting of high-quality, complete and timely data and information, and contributes to the strengthening of national capacities in locust management. The workshops allow DLIOs to update their skills in order to remain on the cutting-edge of developments and know how to use the latest technologies in their daily work. During the workshop, the DLIOs can show any problems or difficulties they have on their MacBookPro so that the Senior Locust Forecasting Officer can quickly resolve them on the spot, which would take enormous amounts of time and be very difficult to fix remotely due to poor internet connectivity. This clearly shows the importance and value of direct face-to-face workshops. The participants clearly expressed the need for such workshops to continue in the future on an annual basis under the auspices of SWAC and DLIS.

Annex 1. Analysis of 2019 spring breeding in I.R. Iran and Pakistan

I.R. Iran situation analysis (February–April 2019)

FEBRUARY

- Rainfall. At times throughout the month
- Vegetation. Green and greening everywhere
- Breeding conditions. Good - moist soil everywhere
- Desert Locust
  - Breeding. Swarms and groups arrived on the SW coast at the beginning of the month and moved along the southern coast towards the east and also move towards the NW.
  - Distribution. Throughout south
  - Types. No hoppers (but hatching estimated 2nd half of month)
- Forecast. *Laying and hatching will continue, and fledging will start during last week of March throughout southern Iran near the coast. This will cause hopper groups and bands to form, and by the end of the month groups and small immature swarms. There could be a further movement of groups and swarms along the southern coast from west to east. There might be a chance of a few small swarms arriving from Arabia to the southern coast during March.*

MARCH

- Rainfall. Good rains 14-31/3
- Vegetation. Green everywhere
- Breeding conditions. Good everywhere
- Desert Locust
  - Breeding. Laying and hatching continue, early instar hoppers & groups
  - Distribution. Limited but probably throughout the southern coast
  - Types. Groups and swarms moving eastwards along coast; immature and mature groups arrived in SE on 3/3
- Forecast. *Laying, hatching and fledging will continue in the south near the coast and subcostal areas, causing hoppers to form groups and bands, and adults to form groups and swarms. There is a risk that immature groups and small swarms could migrate to spring breeding areas in SW Pakistan. A second generation of breeding could start during the last week of April. There might be a light to moderate risk of a few small swarms arriving from Arabia to the southern coast during April.*

APRIL

- Rainfall. Mainly during the first half of April
- Vegetation. Green but signs of some drying
- Breeding conditions. Still moist soil but some places drying
- Desert Locust
  - Breeding. 1st generation breeding continued with laying, hatching and hoppers forming groups and at least one band. A 2nd generation breeding in progress by laying groups at end of April. In addition, laying groups before that which came from Arabia.
  - Distribution. Still same but more in SE
  - Types. Bands and swarms
- Forecast. *1st generation adult groups and swarms will mature and lay, causing a 2nd generation of breeding to continue with substantial hatching that will give rise to hopper groups, bands. As vegetation dries out, groups and swarms are likely to migrate east towards the Indo-Pakistan border.*

Pakistan situation analysis (March–May 2019)

MARCH

- Rainfall. None
- Vegetation. Mainly dry on coast but greening up in some places; green/greening in interior
- Breeding conditions. Dry mostly on coast except near Pasni; wetter in the interior.
- Desert Locust 1st arrival of immature adults (Lasbela) during 1st week, followed by mature adults during 2nd half of March and groups during the last week (all coming from IRN!). Other DL may be in Baluchistan interior (no surveys).
  - Breeding. Laying near Pasni from mid-month onwards
- Forecast. *1st generation of breeding continues with laying and hatching, causing hopper groups to form. Fledging could start at the end of April. DL are likely to spread into the interior as temperatures warm up and breed. There is a high risk of groups and some swarms arriving into coastal and interior areas of Baluchistan from adjacent areas in Iran.*

APRIL

- Rainfall. Heavy rains in weeks 2 and 3
- Vegetation. Improving on coast and interior
- Breeding conditions. Improved on the coast and a few places in the interior
- Desert Locust
  - Breeding. Continues on coast with hopper groups forming and adult groups laying
  - Distribution. DL increased along the coast. Mature adults reached the interior; at mid-month immature adults and groups on coast that came from IRN
- Forecast. *Laying and hatching continue, forming groups and bands; fledging will occur and adults will mature and form groups, and some could move east to the Indo-Pakistan summer breeding areas. A 2nd generation could start at the end of May with laying. There is a high risk of groups and some swarms arriving from adjacent areas in Iran.*

MAY

- Rainfall. None
- Vegetation. Drying out on the coast but green in a few places and more so in the interior.
- Breeding conditions. Soil remains wet but is drying out, especially on coast
- Desert Locust Mature adults in coast and interior with some forming groups on the coast (from local breeding). Some adults reached Cholistan and laid at end of month
  - Breeding. Hoppers and groups; laying still in coastal Baluchistan at mid-month; immature adults on coast at one place; heavy hatching during 2nd fortnight
  - Distribution. First arrivals in summer breeding areas
- Forecast. *1st generation adults will form immature groups that will mature and move to the Indo-Pakistan summer areas. 2nd generation of laying and hatching in Baluchistan but is likely to be limited. Nevertheless, groups of hoppers are likely to form. Locust numbers will increase in the summer areas from Cholistan to Tharparkar because of hatching and invasion from spring breeding areas.*