2 FAO’s Perspective on Migratory Pests

Clive C. H. Elliott

Migratory Pests, Plant Protection Service, AGPP, FAO, Rome, Italy
(email: clive.elliott@fao.org)

ABSTRACT

FAO has a global mandate to provide development/emergency assistance on locusts to its 176 member nations, to provide fora for meetings on locusts and to collect, analyse, forecast and disseminate information on locusts. FAO is recognised as having a comparative advantage over other bodies in this work because success in combating locusts depends on international collaboration, which FAO can most easily foster. Up to now, the focus of attention has been the Desert Locust because it is perceived as posing the greatest threat to the greatest number of countries, but FAO has also recently provided assistance with problems caused by five other species of locust, and also by armyworm and by quelea. For this group of migratory pests, FAO’s priorities are to provide a satisfactory service to member countries and to limit the effect of the pests on food security. In respect of the Desert Locust, these priorities are expressed through a Special Programme EMPRES (Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases – Desert Locust component). The Locust and Other Migratory Pests Group at FAO HQ also includes a Desert Locust Information Service which produces a monthly Bulletin plus Updates and Alerts. Emphasis in the field is on achieving preventive control at the least cost and most environmentally friendly manner, and to implement this through strengthened national locust units. For quelea, the introduction of Integrated Pest Management approaches, which does not rule out but limits pesticide use, is seen as the best way forward. For armyworm, the strategy developed by the Regional Armyworm Programme under the Desert Locust Control Organisation for Eastern Africa (DLCO-EA) is supported. The various ways in which FAO can provide assistance is also described.

INTRODUCTION

As the Agency of the United Nations that specialises in food and agriculture, FAO has three main roles within its specialisation. One is to provide development/emergency assistance, including independent advice, to its 176 member nations. The second is to provide fora for its members to meet, discuss and agree on how to approach different agricultural problems. The third is to provide a service to them by collecting, analysing and disseminating global information on agriculture. In the realm of migratory pests, this same principle applies.

In terms of priorities, in recent years it has become important for UN agencies to identify the areas in which they have a comparative advantage over other international or national
bodies concerned with development assistance, such as bilateral agencies, research institutions and non-governmental organizations. Some effort was made to do this when the current FAO Director-General was elected in 1994. Among other topics, it was agreed that transboundary pests and diseases, i.e. those that regularly cross national frontiers and require collaboration between countries to combat them successfully, were particularly appropriate to FAO. This recognition led to the establishment of a Special Programme, the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases, otherwise known as EMPRES. This programme has two elements, one on animal diseases and one on the Desert Locust, *Schistocerca gregaria*.

The comparative advantage that FAO has as a co-ordinator of work on migratory pests, specifically locusts, has been in existence at least since about 1955, when the FAO Desert Locust Control Committee first met. For example, in 1972 the Anti-Locust Research Centre in London agreed to devolve its role as collector, collator and forecaster of Desert Locust outbreaks, and transferred its Desert Locust Information Service to FAO in Rome. The General Assembly of the United Nations also formally gave the mandate for co-ordination of locust management to FAO. Given this background, this paper will review FAO’s present-day perspective on migratory pests.

**WHICH MIGRATORY PESTS?**

FAO, as an international organisation, has in theory a global mandate, insofar as any of its member nations may ask for help. If one wanted to prepare a list of migratory pests globally, the first step of course would be to define what is meant by the term. Normally migration is defined as a two-way movement with some directional element, which distinguishes it from nomadism and species’ irruptions or expansions. It is usually used to describe long-distance movements of several hundred kilometres. There are plenty of exceptions to these generalities such as altitudinal migration which may involve a movement of only a few hundred metres, and the point at which migration ends and nomadism begins has always been uncertain. For example, the movements of gregarious Desert Locusts (COPR, 1982; Steedman, 1990) certainly cover hundreds, sometimes thousands, of kilometres, and there is a directional element since the swarms fly downwind and the winds tend to blow in a certain direction at a certain season. The movement is not strictly two-way as swarms may only return to their place of origin after several generations or may never return at all if ecological conditions do not favour repeated breeding and the wind does not carry them there. In the place of origin, a permanent population of the species in its solitary form maintains the locusts’ presence.

The Red-billed Quelea, *Quelea quelea*, qualifies as a migrant by distance, and in other aspects of its biology such as pre-migratory fattening, but the direction taken appears to be to some extent adjustable according to rainfall patterns (Bruggers and Elliott, 1989). Areas suffering from drought are probably over-flown and the species ranges widely to find suitable breeding locations. Even so, breeding sites, if they receive adequate rains around them, will be used regularly and seasonally, giving a directional element to the movements. The African Armyworm, *Spodoptera exempta*, again qualifies by distance, with a similar directional element to the Desert Locust, caused by the winds tending to blow in a certain direction at a certain season (Rose *et al.*, 1997). A return migration does not occur.

Because migration usually involves long distances, the species concerned typically crosses several national frontiers, and can be defined as transboundary. Again there are exceptions, such as the African Migratory Locust in Madagascar, *Locusta migratoria capito*, which...
remains within the island but moves several hundred kilometres with regularity to the
direction of its movements. The Australian Plague Locust, *Chortoicetes terminifera*, and
the Spur-throated Locust, *Austracris gutulosa*, are similar examples.

In practice, the term ‘migratory pest’ is used somewhat loosely in that the species to which
it is applied may not strictly be migratory according to the precise definition. It is usually
used for only three faunal types, locusts, armyworms and birds. Some pest species of
grasshopper, for example the Senegalese Grasshopper, *Oedaleus senegalensis*, show regular
seasonal movements, but for convenience are not grouped with the migratory pests. FAO
has a Locust and Other Migratory Pests Group, which has provided regular assistance for
the following pests:

- Desert Locust *Schistocerca gregaria*
- Red Locust *Nomadacris septemfasciata*
- African Migratory Locust *Locusta migratoria migratoria*
- Madagascar Migratory Locust *L. m. capito*
- Moroccan Locust *Dociostaurus maroccanus*
- Italian Locust *Calliptamus italicus*
- African Armyworm *Spodoptera exempta*
- Red-billed Quelea *Quelea quelea*.

This list is not all-inclusive in that it does not list all the species that could for practical
purposes be considered migratory pests. The Australian locusts are not mentioned because
the Australian Plague Locust Commission is fully capable of looking after the problem,
without any help from FAO. On the other hand, if FAO receives a request for assistance
from a member nation or a group of nations for a migratory pest not listed, such requests
would always be considered and evaluated. A species not listed, but which is an obvious
candidate for inclusion is the Brown Locust, *Locustana pardalina*. To date, probably for
historical reasons, FAO has not received any direct requests for assistance in combating
the Brown Locust, although it has supported improvements in plant protection in Botswana,
which has included Brown Locust control. On a few occasions in the past 20 years,
though not recently, FAO has also provided assistance in South and Central America for
control of the local locust species.

For the armyworms, only *S. exempta* (covering the Arabian Peninsula south to southern
Africa) is listed. Other species such as *S. litura* (India and the Far East) and *S. frugiperta*
(North America and the Caribbean) have not, to date, been covered.

**FAO’S PRIORITIES AND APPROACHES ON MIGRATORY PESTS**

It could be said that FAO has two major priorities in respect of migratory pests, one to
provide a satisfactory service to its member nations and the other to limit the effect of
migratory pests on food security. Another important role is the provision of fora for
discussion and agreement on migratory pest problems, leading towards these two priorities.
The EMPRES (Desert Locust) Programme is identified as a specific priority within these
general ones, by its classification as a Special Programme of the FAO Director-General.
The Desert Locust receives much more attention than any other species of migratory pest,
through EMPRES, but also as the main species covered by the FAO Desert Locust Infor-
mation Service (DLIS). The reason for this is partly because the Desert Locust is perceived
as posing the greatest threat to the greatest number of countries, but also because of limitations in capacity and resources. The notoriety of the species (COPR, 1982) has been recorded since about 1300 B.C. Between 1860 and 1999, there have been eight major plagues, each lasting from 4 to 22 years. The most recent plague from 1986 to 1989 cost donors more than US$300 million in assistance, and affected countries probably invested a similar amount from their own resources. Since 1989, upsurges in Desert Locust populations have re-occurred in 1992–94 and 1995–98, each requiring further intervention and giving rise to a degree of donor fatigue. Hence the development of EMPRES was perceived as a necessity to try to find a solution to the problem.

FAO headquarters’ input into migratory pests comes from its Locust and Other Migratory Pests Group within the Plant Protection Service (AGPP). The Group has four full-time permanent posts, two of which cover any aspect of migratory pests and two (from the DLIS, which is part of the Group) focus mainly on information collection, analysis, forecasting and dissemination. The functions of the Group cover the production by the DLIS of a monthly Bulletin on the Desert Locust situation and forecast. The Bulletin is based on reports received from affected countries, plus analysis of remotely sensed locust habitat condition, weather reports, rainfall and wind directions. The Bulletin is supplemented by Updates and Alerts, when Desert Locust outbreaks or upsurges begin to develop. There is also an Internet home-page, which gives the latest information and the most recent Bulletin. The staff carries out emergency assessments of reported outbreaks of migratory pests and promotes joint activities by affected countries such as joint surveys along border areas affected by locusts. Staff provide training in making assessments of migratory pest outbreaks to affected countries and train locust officers to carry out improved surveying or control operations.

From time to time, the Group is reinforced by additional staff funded out of Trust Funds supporting emergency programmes (for example, the current outbreak of Migratory Locust in Madagascar) or research-orientated programmes (for example, Belgium’s recent support for research on remote-sensing evaluation of locust habitats). It is also sometimes supported on a temporary basis out of its own funds, for example to strengthen EMPRES implementation. This small staff complement has a limited physical and technical capacity to deal with migratory pest problems other than the Desert Locust. During important upsurges in the Desert Locust population, almost all attention goes on that species. When a recession period occurs, more time can be spent on the other species listed above. Technically, the Group’s expertise reflects the Desert Locust priority, but it also has some expertise in the other species listed, including the Migratory Locust, the Red Locust and quelea birds. FAO is also fortunate, through its status as an international agency, to be able to draw on consultant expertise from anywhere in the world. It is thereby able to fill gaps in the individual technical abilities of its Locust and Other Migratory Pests Group, for example in armyworm management, by recruiting well-qualified consultants, provided the funds are available.

In the field, FAO implements projects, which are supported by donor Trust Funds and by its own Technical Co-operation Programme (TCP). For EMPRES, in addition to these, an allocation is also made from FAO’s core resources (the Regular Programme). The Locust and Other Migratory Pests Group is co-ordinating a major multi-donor programme on the Desert Locust in the nine countries around the Red Sea, designated as the EMPRES Central Region Programme. A similar programme is under formulation for the Western Region (West and Northwest Africa). The Central Region has six international and national staff working closely with Government-appointed Liaison Officers from eight of the nine countries. The Western Region currently has only one donor-supported project.
with two staff, but will expand when/if the multi-donor programme gets off the ground. The only other on-going Trust Fund project involving migratory pests is LOCUSTOX, based in Senegal, which is looking at environmental problems in relation to the side-effects of locust control, and, more recently, to pesticide residues in general.

Technically, the priority in the Desert Locust is, through EMPRES, to limit the possibility that plagues may develop and to eliminate expensive crisis management as the means by which plagues are combated. This is to be achieved primarily through strengthening, in a sustainable way, the capacities of national plant protection departments to carry out effective locust surveys (‘early warning’) and to practise rapid preventive control (‘early reaction’) using the least costly and most environmentally friendly methods that can be developed. In addition, the programme is expected to catalyse and promote research that is likely to contribute to these objectives. While these principles are easy to state, they are highly complex to achieve. Individual donor-supported projects within EMPRES are reviewing locust control strategies to work out when intervention should begin, and examining how to reduce the quantities of pesticide needed for effective control. Emphasis is also being given to alternatives to conventional pesticides especially bio-pesticides and barrier spraying.

Sustainability of capacity is likely to be achieved through sharing resources between the richer countries, which stand to lose heavily in the case of a plague, and the poorer ones, from which many plagues are thought to originate, using FAO’s Desert Locust Commissions as the bodies through which such arrangements are made. All of these topics could be considered as among FAO’s major interests.

For the other species of locusts listed above, it is conceivable that FAO would consider developing an EMPRES Programme for the Red Locust or the Brown Locust, but several provisos would need to be met. These would include a co-ordinated, high-level, request from the affected countries, an indication that donors might be prepared to support such a programme and the willingness of FAO to increase the staff of the Locust and Other Migratory Pests Group, so that the necessary support could be provided.

As a reflection of the importance which FAO attaches to the correct use of pesticides in locust control, an independent group, the Pesticide Referee Group (PRG) was established to review studies on the efficacy of locust pesticides. The Group meets about once a year and is composed of five members who are selected on a personal basis for their knowledge of different aspects of pesticides. They are expected to provide FAO, and, through FAO, all interested parties, with advice on the efficacy of the pesticides. Their report is widely circulated to locust-affected countries and donors. At its Sixth Meeting in 1997, the Group included a first effort at estimating the suitability of the different pesticides in various habitat types in terms of the environmental side-effects. In 1998, this was developed further. The Group is also attempting to expand its advice to include species other than the Desert Locust. It should be noted that the PRG is not a registration body; registration remains a matter for each country’s sovereignty. FAO provides advice on efficacy and countries use that advice as they choose.

In respect of quelea birds, FAO is currently encouraging the use of Integrated Pest Management (IPM) approaches to the problem of bird attacks on cereal crops. This means working with farmers in examining all aspects of farming practices in relation to quelea damage, and seeking to minimise external inputs, especially pesticides. It includes modifying crop husbandry, planting time, weed reduction, crop substitution, bird scaring, exclusion netting, etc., and only using lethal control for birds directly threatening crops.
when the other methods have failed. It is also important for farmers to be aware of the costs of control using pesticides, and in the case of commercial farmers, for them to bear some or all of the costs. A major likely benefit of IPM is reduced environmental side-effects resulting from decreased pesticide use. Although some elements of IPM have been tried in bird pest management, a major effort has yet to be made, for quelea, to focus on farmers in all aspects of the problem. FAO has a draft project prepared for quelea management in the Senegal River valley which will attempt to investigate the problem using IPM techniques, if donor support is eventually forthcoming.

In terms of FAO’s role in providing fora, at present almost all of the effort goes into the Desert Locust. The major forum is the Desert Locust Control Committee which meets about once every 2 years and has over 60 countries listed as members. Its subsidiary Technical Group discusses technical questions handed down to it by the Committee. FAO also has three regional Desert Locust Commissions, one for North-west Africa, one for the Central Region and one for South-west Asia.

WHAT ASSISTANCE DOES FAO PROVIDE?

Misconceptions are often held about what assistance FAO can and cannot support. FAO is primarily an agency designed to provide its member countries with development assistance, but it also has a role to play in giving emergency assistance. Development assistance tends to be longer-term and is normally aimed at building up national capacities, while emergency assistance is always short-term and intended to assist with an immediate crisis caused in this case by a migratory pest. For both sorts of assistance, FAO’s own resources are strictly limited and are provided through one channel only, namely its Technical Co-operation Programme (TCP). TCP assistance funds individual projects for which there is a fixed ceiling budget for all projects and a maximum duration of 24 months. In emergency outbreaks of migratory pests, and following a request from a high level (the Minister of Agriculture or higher) from the affected country, TCP projects can be created and approved very rapidly, in exceptional circumstances in as little as a week, but usually within about a month. Their approval depends in part on a technical evaluation which agrees that a genuine emergency exists. TCP assistance for development projects may take several months to be approved and its approval will depend on a number of factors including the availability of funds and the extent to which a particular country has received other TCP assistance already.

FAO is not an organisation which directly funds research or training, but both of these may be funded if they are an intrinsic part of development TCP projects, or if in the case of training, they are part of the action plan to deal with an emergency. FAO is therefore not normally able to respond to individual requests for funds to cover degree level training, to cover participation by outside staff in research meetings, or to fund research, which is not built in to projects. In connection with its role in collecting and disseminating information on agriculture, which falls under what is nowadays called FAO’s HQ normative activities (as opposed to its operational activities, implementing or supporting agricultural development or emergencies in the field), FAO has a role in disseminating guidelines on correct practices and methodologies for dealing with particular agricultural problems. In this context, if methodologies are lacking or need improving, normative TCP projects can sometimes be approved to support such developments. FAO also has a small budget under its core Regular Programme funding which is allocated to its different specialist Groups, such as the Locust and Other Migratory Pests Group, to cover the operating costs of its normative activities. These funds can be used to a very limited extent to support field
activities, which are linked to the priorities of the Group, such as holding experts’ consultations on technical questions deemed to have critical importance. Experts from anywhere in the world can be invited to contribute to such meetings.

FAO also provides support to projects funded by external donors, which choose to channel their funds through FAO, under what is called the Trust Fund system. Donors usually decide to support such projects because they consider that FAO has more expertise in a particular field than they possess themselves, or because they consider that FAO, because of its mandate and role as an international organisation, is the most appropriate body to execute such projects. Migratory pests are a case in point because they cover several different countries and FAO can often handle the inter-country arrangements more easily.

Trust Fund projects can also be either development or emergency projects, and can incorporate research and training elements into them. Occasionally, Trust Fund projects can be almost purely research orientated, if the donor feels that the technical support that FAO can provide will help to keep the research well directed or if the research is part of a greater whole and is better for its integration into that whole. Finding a donor to support a Trust Fund is often not easy, especially in the present day climate of economic constraint. It is usually most successful when a donor has a demonstrated sympathy with a recipient country and an interest in a particular field. For example, certain donors have a history or tradition of supporting development or research in migratory pests and will take an interest in proposals. On the other hand, new donors may develop from a swing in the political pendulum and can be persuaded to support work on migratory pests, which fit with certain priority interests, such as environmental concerns.

The range of possibilities for FAO to support work on migratory pests is, in conclusion, quite wide. Obtaining approval of TCP or Trust Fund support, however, is an exacting process, which is often not successful because of funding shortages or a failure to develop a convincing justification.

CONCLUSION

The technical cornerstones of FAO’s perspective on locusts is how to achieve preventive control for the least cost and in the most environmentally friendly manner. On quelea, it is how to achieve an IPM approach such that lethal control with pesticides is the option used minimally. For armyworm, FAO supports the strategy of rapid reaction and monitoring developed by the Regional Armyworm Programme under DLCO-EA. Underlining these perspectives is the Organisation’s concern with improving food security.

REFERENCES

