

VECTOR AND NUISANCE PEST MANAGEMENT IN THE REPUBLICS OF THE EX-SOVIET UNION, PRESENT AND FUTURE

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Abstract—The rapid breakdown of the Soviet Union into many independent, mostly ethnic states, heralded a new historical era with tremendous political, social and economic anomalies. And while the newly formed entities are being hailed as a triumph for individual freedoms and political democracy, the social and economic costs to individuals and communities are yet to be quantified and addressed at least short term. This fallout should have been expected given the extent and scope of centralization of planning and resourcing of pest control. This sector are among those state functions which suffer most today in the independent republics, due to shortage of local know-how and means, though the environment and pollution attract special attention. Environmental health as it relates to vector and nuisance pest control, does not seem to feature as a priority in newly proposed health projects. Yet across the geographic map of the ex-Soviet Union, resurgence of vector populations and epidemic incidence of diseases are both alarming and frequent.

Foci of Bubonic Plague in Kazakhstan are attributed to increasing rat/flea populations. The Civil War in Tajikistan is certainly contributing to the levels of anopheline mosquitoes and resurgence of malaria. And at the doors of Scandinavia and Western Europe, rat-transmitted Leptospirosis is now epidemic in Latvia (Baltics) killing tens every year. Perhaps less deadly but still nuisance are the common encounters with mosquito bites and German cockroaches throughout the urban centres.

In the past foreign travellers did not visit much to experience such dangers of disease or nuisance, but no doubt past authorities kept pest thresholds under manageable levels. Both stringent regulations and free availability of locally manufactured insecticides and rodenticides helped. Local authorities face immense and costly challenges in pressing with economic and social reforms to have time or resource to prioritize and tackle pest resurgence.

Moreover those municipal or provincial pest control entities known as *D*-insecticiding, *D*-ratization and *D*-isinfestation (DDD) are being cut from governmental financial resources and asked to become self-sufficient then privatize.

Given the above, the future of vector disease and pest management will very much depend on:

1. Transformation of existing DDD's to viable business oriented pest control companies.
2. Recognition by local authorities of this sector and integration in health reforms and prioritization.
3. Development of local urban pest control research, institutions or degree courses.
4. Recognition and initial funding by donors and international agencies.
5. Investment by Western professional pest control ventures in this sector.

Much work and investment are needed, however, the surrounding world cannot ignore the threat of disease resurgence in this part of the world.

INTRODUCTION

DDD Stations varied in their size and emphasis relative to the size of the region or city (generally each had about 25 permanent staff including their chief, accountants, biologists, drivers and application staff). DDD's also occupied separate offices with warehouses and garages.

Equipment used comprised namely of high volume, vehicle-mounted sprayers with long lances, 20 litre knapsack sprayers and in some cases cumbersome and inefficient fog generating devices mounted on trucks.

Procurement of pesticidal formulations was conducted centrally in Moscow then supplied to the Republics.

Products would vary but were mainly based on the locally manufactured carbafos (malathion equivalent), DDT and dichlorvos. Zinc phosphide was supplied for local formulation into cereal baits. In the later years of the USSR some permethrin was procured.

Organization

Despite some national variations, ex-Soviet Republics copied organizational structures for planning and delivering pest control strategies and campaigns.

Individual regions and major cities within the republics established specialized pest control organizations known as DDD Stations (Dezinfektia). These stations planned, budgeted and sourced from the centre to apply pest control campaigns. These organizations were often headed by Medical doctors who were trained in communicable diseases and/or public hygiene. The DDD's were aided by the region's (city) Chief Sanitary (Health) Inspectors.

Though linked to a nationwide network within the republic (i.e. Republic Association Dezinfektia of Kazakhstan) they followed formally Ministries of Health and were autonomous, benefited from Municipal taxes and levied own fees for contracts. Special campaigns to combat epidemics or eliminate pests during social and political seasons were also eligible for funding from the respective Ministry of Health via the Republic Association. The usual and main contracts were state hotels, conference centres, ministries, factories, parks and water estuaries.

The economics of control and post service assessment were hardly a concern since contracts were assumed and granted regularly.

Arthropod Pests

The target pests in urban communities and buildings are namely German and Oriental cockroaches indoors and mosquitoes in basements and outdoors. Bedbugs, lice and flies are also widespread but fleas are by far the most important.

Visitors to these regions would not miss to notice the high level of cockroach infestation indoors and suffer the nuisance of biting mosquitoes outdoors (as well as indoors).

Vectors, namely ticks, fleas and anopheling mosquitoes, transmitting respectively diseases such as leptospirosis, bubonic plague and malaria required and enjoyed central planning and guidance from Moscow by the All Union Co-ordinating Center on Tropical Diseases, USSR Ministry of Health with collaboration among the stations in neighbouring regions.

Rodents as Vectors

Rats continue to be a substantial economic and vector problem in urban sites as well as the perimeter of towns and cities. The level of infestations in community, meat and produce markets are often beyond belief.

Rats namely *Rattus norvegicus* are by far the largest and most common pest problem posing serious threats to Public Health, structures and harvest in the CIS countries.

As recent as 1993/1994 localized epidemics of bubonic plagues were being reported from Almaty, Kazakhstan and to an extent which warranted closure of the borders of the affected areas.

Equally serious is the endemic state of leptospirosis in the Baltic state of Latvia. At least 1033 cases were recorded in the period between 1975 and 1994 with 118 fatalities. The rat population is particularly high in inhabited areas, food production sites and animal farms.

Tick-borne encephalitis also poses problems in rural areas and parks. Lyme disease is suspected to be widely spread but not properly identified. The overlap of urban and rural rat populations increase the likelihood of transmission in cities.

Table 1. Key Mosquito Vectors in the Southern Republics and Regions of Ex-USSR

Republic	Vector/Nuisance Species	Disease transmitted/situation
Azerbaijan	<i>An. sacharovi</i>	Malaria
Karakal pakia	<i>An. martinius</i> <i>An. pulcherimus</i> <i>Culex pipiens</i>	Malaria Malaria Nuisance
Tajikistan	<i>An. superpictus</i>	Malaria
Uzbekistan	<i>Aedes caspius</i>	Nuisance

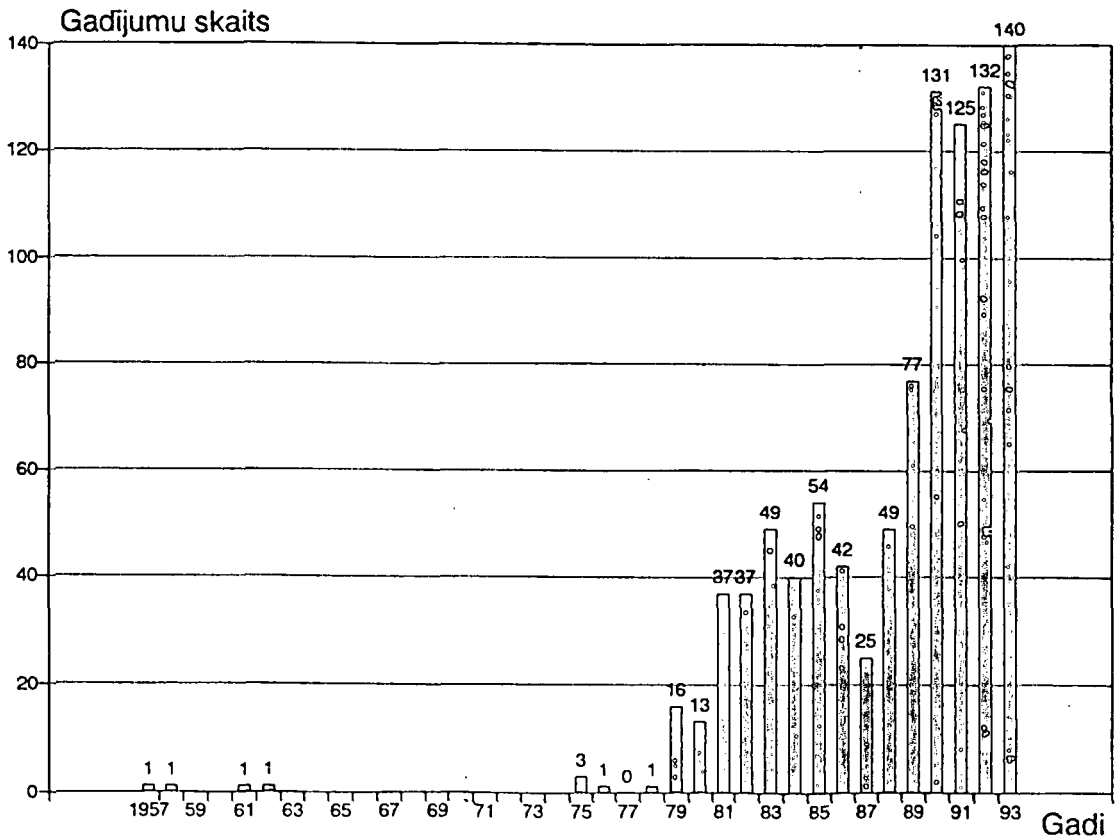


Figure 2. Increase in reported cases of leptospirosis in Latvia.

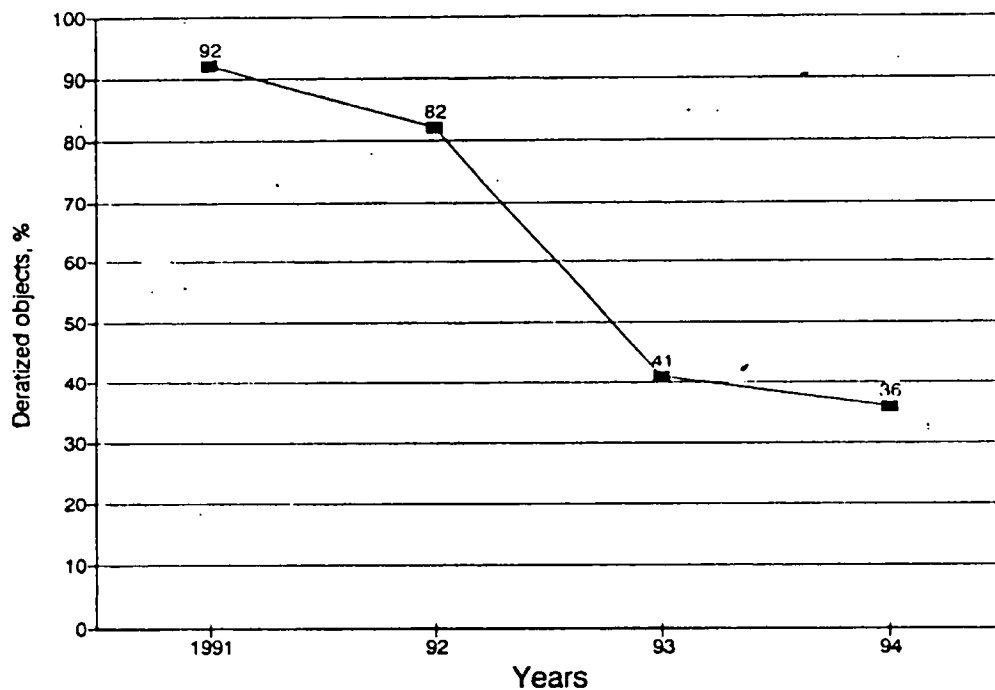
METHODS AND MATERIALS

Two ex-Soviet Republic states, the independent republics of Kazakhstan in Central Asia and Latvia in the Baltics, were chosen respectively for example. Personal visits, interviews, discussions and observations were made to clarify past and current situations as well as predict future trends. Emphasis was placed on organizational structures, vector mediated disease transmission and control strategies and practice.

RESULTS AND DISCUSSION

The breakdown of the ex-USSR had serious impact on the state of pest populations and vector control. With previous centralized monitoring, training, planning, funding and procurement, vector and disease outbreaks were dealt with nationally and promptly. The health services of the new republics had to suddenly address their local pest problems with shortage of funds and material. This while transforming into semi-private and self sufficient joint-stock ventures. Since they could no longer rely on the specialized institutes in Moscow and neither have the past federal funding, the "Dezinfektia" organizations are unable to implement the necessary pest control programs. Malaria outbreaks are now common occurrences in the Southern republics. Moreover, political instability and local wars have aggravated the vector/disease situation, particularly in Tajikistan. Cases of leptospirosis in Latvia spread geographically (Figure 1) and increased by six fold after 1988. In 1994 alone, 62 cases and 12 fatalities were registered during the first 10 months (Figure 2). The increase of such cases could be related proportionally to decreased control effort and area of coverage (Figure 3).

3.1 Deratization in Bauska, Jelgav and Dobele districts



3.2 Deratized areas in Bauska, Jelgava and Dobele districts

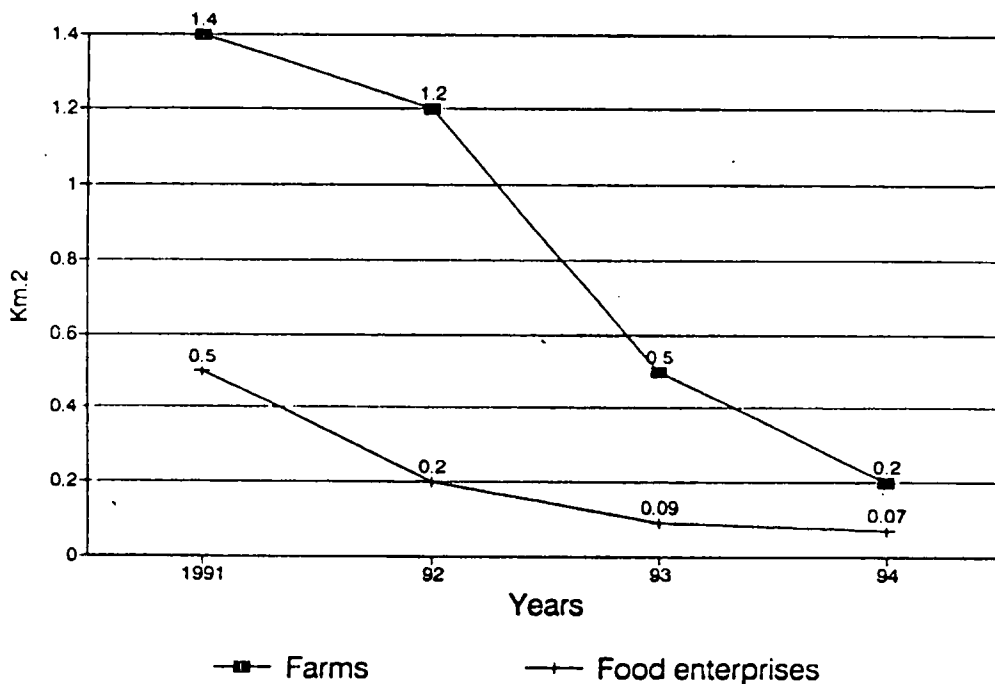


Figure 3. Rat control jobs and total area treated in problem areas in Latvia (3.1) Deratization in Bauska, Jelgava and Dobele districts; (3.2) Deratized areas in Bauska, Jelgava and Dobele districts.

The increased international interest in investment, trade and exchange with the ex-USSR increases necessarily the scope and range of exposure of travellers to vector transmitted diseases. Moreover the risks posed to public health in Europe are particularly realistic given the situation in the Baltic states.

On the other hand the prevalence of pests whether nuisance or vectors in zones of natural resources and economic development naturally hinder development and exploitation of natural resources.

Donors and particularly the European Union, whether bi-laterally or through existing EU Schemes for the CIS, will have to allocate attention and funds for training, building local research institutions and to supplying of commodities in this sector following the collapse of the Centre. Some "Dezinfektia" organizations had stocks of the old products which would have been exhausted by now.

The networks of "Dezinfektia" organizations offer optimal and practical vehicles for the development of a market minded pest control service.

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