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February 1982

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Funmilayo, Oluwadare, "COMMENSAL RATS: A THREAT TO POULTRY PRODUCTION IN NIGERIA" (1982). *Proceedings of the Tenth Vertebrate Pest Conference (1982)*. 16.

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COMMENSAL RATS: A THREAT TO POULTRY PRODUCTION IN NIGERIA

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ABSTRACT: Rats are now found in the majority of poultry houses in Nigeria. They usually inhabit roofs, interior of cupboards, electrical and gas appliances, holes in the soil and in walls and rubbish dumps. Extensive rat trapping yielded only two species, the cosmopolitan roof/ship rat (*Rattus rattus*) and the multimammate rat (*Mastomys natalensis*). The most outstanding types of damage, resulting in much economic loss, were the killing of chicks by decapitation and the infliction of deep wounds on adult birds. Breaking of eggs became a serious problem in a few cases. Damage to containers, bags and feed consumption was usually of small proportions. Relief from damage in well-proofed and partially-proofed premises was obtained with the application of 5% alpha-chloralose in 95% milled maize or poultry feed or with Tomorin (a coumarin-derivative anticoagulant) applied at the ratio of 1 g. Tomorin in 19 g milled maize. Reinfestation within a few months was common in partially-proofed and unproofed premises, indicating a need for proper rat-proofing of poultry houses.

INTRODUCTION

The traditional method of poultry-keeping in Nigeria is by the free-range system. The free-range birds are small in size, need little care or food because they usually feed on available scraps of food around human habitations and inside the bush, and sleep and roost in any available space. Free-range poultry are molested by a number of vertebrate pests, particularly domestic pets like dogs and cats, and wild animals like snakes and raptorial birds. The carnivorous birds like the black kite (*Milvus migrans*) and the kestrel (*Falco tinnunculus*) usually attack the young chicks, kill and devour them.

Recently, however, as a result of Government encouragement and the availability of financial assistance, poultry-keeping, under the cage system, has gained wide acceptance throughout Nigeria. Many large poultry establishments are now found in Nigeria in addition to small units which are found in many domestic premises. Caged birds are free of pestiferous activities of dogs, cats and carnivorous birds but they are attacked at all stages by commensal rats. These commensal rats were relatively unimportant in poultry until recent times when several farmers started to request assistance for the eradication of these rats from poultry houses. This paper gives an account of the current state of knowledge on the occurrence, role and control of commensal rats in poultry establishments in Nigeria.

METHODS

The frequency of occurrence of rats in poultry houses was determined from questionnaires. The habits and habitats of rats and the types and seriousness of damage were determined during visits to several poultry houses.

Control of rats was done in four poultry houses in Ibadan. Rats were controlled with baited snap traps, Tomorin (a coumarin-derivative anticoagulant rodenticide) and alpha-chloralose (a soporific). The Tomorin was mixed at the ratio of 5% Tomorin to 95% ground maize while the alpha-chloralose was mixed at the rate of 5% alpha-chloralose to 95% poultry feed. Both poisons were applied in dishes and kept in infested areas until there were no further signs of damage.

RESULTS Pest Species

Commensal rats were found in all the poultry houses examined. The ages of the poultry houses varied from two to twenty years, with the average age being four years. The twenty-year old poultry house was in the Teaching and Research Farm, University of Ibadan.

Two species of rats, the roof/ship rat (*R. rattus*) and the multimammate rat (*M. natalensis*) were found. Both species were nocturnal but a few were seen occasionally during the day. The rats lived in holes in the ground, in the bush, in rubbish dumps, inside cupboards and appliances, and in the roof. *R. rattus* was more commonly found in the roof while *M. natalensis* was found mainly in extensive burrows in the ground. *R. rattus* was found alone in a majority (92%) of the poultry houses examined. It occurred in three color forms: black, blue-black and brown. *R. rattus* and *M. natalensis* occurred together in the same poultry in only two instances. In one case *M. natalensis* formed 25% of the rat populations while in the other case it formed 96.4% of the populations.

Types of Damage

Damage caused by commensal rats included damage to building structures, containers, bags and equipment by biting and chewing, but these usually never assumed serious proportions. Rats consumed feed and also broke and consumed eggs and these resulted in substantial economic losses in a few instances. The most serious types of damage were the killing of chicks and the wounding of adult birds. The rats killed the chicks and consumed only the heads. They bit and consumed the flesh of the adult birds in the fleshy dorsal region close to the tail.

Killing of chicks was done by *R. rattus*. This was a common problem in many places, but it assumed serious economic proportions many times at the Teaching and Research Farm of the University of Ibadan where up to 25% of experimental chicks were killed and decapitated.

Biting and consumption of the flesh of adult birds was done by *M. natalensis*. The layers thus attacked were unable to feed well, became restless and lean and were unable to lay eggs. The rats usually continued to remove the flesh from the same spot on the bird until a sizable hole appeared at the point of attack. The birds usually died prematurely if not protected from further attacks. One method of control adopted was to quickly isolate attacked birds in individual rat-proof cages to prevent further attacks.

Control of Rats

Baited metal snap traps were effective for small and discrete infestations. Trapping was found effective when it was started with a large number of traps so that the rats were eliminated quickly before trap-shyness developed in some of them.

Tomorin was fairly effective in protecting eggs and adult birds, and it was left at permanent baiting points in some poultries. It was ineffective for protecting young chicks because many of the chicks were killed before hemorrhage leading to death developed in the rats. This was why it was replaced with the quick-acting alpha-chloralose in the areas where day-old chicks were kept.

Alpha-chloralose was very effective in controlling both *R. rattus* and *M. natalensis*. When alpha-chloralose was applied (at 200 g per baiting point located 5 m apart) in the afternoon/evening, relief from damage was obtained as from the next day and damage was totally eliminated within one week.

Reinfestation occurred gradually in all premises, with rat population densities and damage rates returning to precontrol levels within a few months. This was because there were many suitable habitats for commensal rats in most areas and the poultry houses were inadequately rat-proofed in all cases. Even where the rat-proofing was originally adequate, rats have managed to undermine the nets in many places and quite often proper repairs were not carried out.

DISCUSSION

One of the constraints to self-sufficiency in poultry production in Nigeria is the attack of diseases and pests on the birds (Oluyemi and Roberts 1979).

R. rattus and *M. natalensis* are omnivorous in diet. *R. rattus* has been reported to kill and consume young rabbits (Funmilayo and Akande 1974) and both *R. rattus* and *M. natalensis* are cannibalistic (Funmilayo and Akande 1975). The present observations on poultry damage are therefore in line with the known trophic habits of the rats.

The species of rats involved in poultry damage are prolific breeders and could therefore replace their members lost in control operations within a short period of time. The surest protection for poultry against these rats is proper rat-proofing which should be inspected and maintained regularly for continuous effectiveness. Detailed methods for rat-proofing of buildings have been given by Jensen (1965) and Funmilayo and Akande (1978).

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