

THE ROLES OF VETERINARY QUARANTINE SERVICES IN MONITORING THE MOVEMENTS OF ANIMALS AND DISEASE PREVENTION IN NIGERIA

OGUNDIPE, G. A. T.

Department of Veterinary Public Health and Preventive Medicine
University of Ibadan, Ibadan (NIGERIA)

SUMMARY

A study of the National Veterinary Quarantine Services (NVQS) revealed the existence of 44 functional International Veterinary Control Posts (INVCP) in Nigeria's 4, 857km border length, 111 Inter-State Veterinary Control Posts (ISVCP) and 905 State Veterinary Check points (SVCP). A total of 3,065,599 animals were imported through the recognised INVCP between 1986 and 1997, while 10,781 other animals and 586, tonnes of hides and skins were exported. The illegal entry points were estimated at 3,445 or one per each 1.13km border. The levels of functional efficiency of the quarantine services were rated high for revenue collection, medium for animal movement monitoring and low for disease monitoring. Whereas the control posts have served as early warning mechanism against the spread/ of some disease epizootics, the introduction and re-introduction of many hitherto exotic diseases have been traced to the animals that entered the country through the porous borders. Consequently, the establishment of more INVCP and ISVCP, to be located in areas of high livestock traffic, the provision of clinical and diagnostic facilities in major INVCP and ISVCP and employment of more Veterinary personnel for the NVQS were recommended.

KEY WORDS: Disease prevention, Quarantine, Animal movements, Control posts, Disease monitoring

INTRODUCTION

Movement of animals across international frontiers occurs to supplement local supplies of animal protein, for transportation, for games and religious rituals. Today, the volume and the frequency have increased, increasing the risks of spreading animal diseases to other countries (Schwabe *et al.*, 1977). Inter-territorial movements of animals has been blamed for the resurgence of rinderpest in West Africa (after the JP15 eradication

programme of 1962-72) which quickly spread from the foci of enzootic infection in Southern part of Mauritania and Mali to Burkina Faso, Nigeria, Ghana, Togo, Ivory Coast, Senegal and Benin between 1980 and 1984 (Halpin, 1987). The Classical Swine Fever also spread from the foci of enzootic infection in Belgium along the routes of trade in live pigs and fresh pig meat to Netherlands, Germany and France within two years (1981-82) (Bendixen, 1989).

Quarantine refers to the placing of restraint on the movements of exposed or infected animals, animal products, vectors and fomites, to prevent any direct or indirect contact with indigenous animal population for a specified period (Schwabe *et al.* 1977). In the United States, *Brucella melitensis* infection, Surra and exotic tick vectors of piroplasmiasis and Nairobi Sheep disease have been among the infections and infestations intercepted at quarantine stations (Gee, 1973). Strict enforcement of quarantine regulations prevented the spread of Foot-and-Mouth disease and Swine Vesicular Disease from countries bordering the Mediterranean sea to Malta for about 30 years prior to 1975 (Ford, 1976) and the spread of New World Screwworm (*Cochliomyia hominivora*) infestation from Libya to neighbouring countries has also been prevented (Lindquist and Abusowa, 1991).

Nigeria's Veterinary quarantine service has grown significantly from the Cattle movement-permit system that was introduced in 1927, initially to prevent unauthorized movements of cattle to the rinderpest immunization camps in Northern Nigeria (Henderson, 1928), to a more complex system with an expanded mandate (in 1933) covering the regulation of importation and exportation of animals and animal products and the movements of trade animals within the country (Henderson, 1934). In 1967, the Federal Department of Livestock and Pest Control Services (FDL & PCS) assumed exclusive responsibilities and later (in 1991) set up the NVQS to administer the INVCP, ISVCP and national quarantine stations. Intra-state movements of animals and

animal products through the numerous SVCP were to remain as the responsibilities of each of the 36 state veterinary services. The Animal Diseases (Control) Act (FGN, 1988) was enacted to back the existence of the NVQS, its activities and preventive veterinary medicine in general. There is no published information on the operation and efficiency of the NVQS. This study was therefore undertaken to assess its activities in the areas of disease surveillance, monitoring of animal traffic and revenue collection.

MATERIALS AND METHODS

Synopsis of the National Veterinary Quarantine Service

The activities of the NVQS can be classified broadly into pre-importation and post-importation procedures (Fig. 1), quarantine activities, post-importation surveillance and monitoring of movements of animals in the hinterland. Obtaining import or export permits from the NVQS requires the exporting countries to be certified free of highly contagious diseases of great socio-economic consequences (e.g. African swine fever, rinderpest, and contagious bovine pleuro-pneumonia (CBPP) for at least six months prior to exportation; it is only the farm of origin that must be free of less-infectious diseases (e.g. brucellosis and infectious bursitis) at time of export. In all cases, imported animals must be accompanied by certificates of health. Licenced importers of trade cattle, sheep and goats could import them without permits, because they were not expected to have any contact with the national herd before they were slaughtered for food within a short period

of time (usually less than 2 months). All animals that were suspected of being infected with a disease or that were fatigued due to transportation stress were to be sent to quarantine for observations for varying periods (Table I). They could be given prophylactic and curative treatments as may be necessary. Because some notifiable diseases could manifest unusually long incubation periods, post-incubation surveillance may be carried out for specified periods by the nearest veterinary office. Control posts (both ISVCP and SVCP) were expected to monitor the volume, health status of animals and direction of movements, collect revenue and ensure full compliance with regulations on management of animals in transit (such as truck space allowance per stock, enforcement of mandatory rest and off-loading for feeding and watering when journeys exceed 12 hours). Cases suspected to be due to communicable diseases such as rinderpest, rabies, foot and mouth disease, CBPP and Newcastle were to be reported to the state disease monitoring officers by the fastest possible means. Reports on other non-notifiable diseases were to be made monthly. The quarantine staff was expected to work in close collaboration with officers of other national security outfits.

Data collection and analysis

Relevant data on the location, facilities and manpower available, volume and direction of animal traffic, diseases intercepted, number of illegal entry points in the area and revenue generated by all the control posts and quarantine stations were collected from the 18 border states and at the six functional ISVCP located

along the North-South stock routes (Fig. 2). The data collected covered a period of ten years (1986-1997). The major control post and quarantine station in each sampled state were visited to interview control post officers on the number of illegal entry points in the area and to observe routine inspection activities. Collated data collected at the office of the NVQS or the FDL & PCS in each state were updated where necessary with raw data obtained at the various control posts. The degree of porosity of each border was based on the average distance between each illegal entry point. The presence of one veterinary officer was considered crucial to the activities at each of the INVCP, and in a major ISVCP and a quarantine station (Dorman, 1969). The presence of an Animal health assistant was considered adequate for a minor ISVCP and a SVCP.

RESULTS

International borders and quarantine facilities in Nigeria

Nigeria is located approximately between longitude $2^{\circ} 45'$ and $14^{\circ} 03'$ East of the Greenwich and between latitudes $4^{\circ} 15'$ and $13^{\circ} 45'$ North of the Equator and shares 1,691km of land border in the east with Cameroon, 98km in the north - east mainly with Chad, 1,497km in the north with Niger, 711km in the west with Benin and has 860km maritime boundary in the south. The border lines split many ethnic groups into parts for a total of 1,967km or 40.5% of its total length and each was lumped with other dissimilar ethnic groups in Nigeria and the neighbouring countries (Figure 2; Table II). A total of 1,519km or 31.3% of the land border were

either not demarcated or have had their pillars removed by farming activities and environmental degradation. Indeed, the ownership of about 435 sqkm of border area is disputed between Nigeria and Cameroon, Benin and Niger.

The country has 44 INVCP (consisting of 35 designated land borders, 4 functional International air ports and 5 sea ports) 111 ISVCP (consisting of 85 and 26 along major roads and rail lines, respectively) and 905 SVCP. The locations of quarantine stations are shown in Fig. 2. Fifteen of the control posts at the land borders were located along the northern, 14 in both Eastern and north-eastern and 6 in the western borders. All the recognised land borders were located far (20-30km) into the hinterland. All the ISVCP and SVCP were strategically located along traditional routes of trade animals. The number of illegal entry points were estimated at 3,445. The northern boundary with about 1,560 or one per 0.96km of border length was the most porous followed by western with 605 or one per 1.18km and the eastern with 1,280 or one per 1.32km (Table II). The roads leading to 10 out of the 18 of these border posts visited during this study were in deplorable conditions. The manpower distribution of the NVQS showed that 22.73 (10/44) of the INVCP, 4.50% (5/111) of the ISVCP, 4.86% (44/905) of the SVCP and 71.43% of the quarantine stations were manned by appropriate veterinary staff. Only 20.41% of the INVCP, 6.31% of the ISVCP and SVCP and all the quarantine stations have access to clinical facilities of any kind but all the ISVCP and SVCP were equipped for revenue collection.

The role of control posts in monitoring animal movements

A total of 1,649,602 cattle, 1,180,182 pets (dogs and cats), 149,095 transport animals (horses, camels and donkeys) and 25 wild animals were imported while 2,642 pets, 167 wild animals (monkeys, duickers, lions etc), 7,972 ornamental birds and 586,410 tonnes of hides and skins were exported through the INVCP between 1986 and 1997 (Table III). With the exception of the general declines recorded in 1993-94, import data of animals increase continuously (Fig. 3a) whereas export data on animals and animal by-products increase steadily (Figure 3b). Trade animals (consisting of cattle, sheep and goats), camels and donkeys were imported mainly through the northern and eastern borders after which they were transported by road, by rail and on hoof to the southern cities. On the other hand, pets and ornamental animals such as dogs, cats monkeys, parrots, peacocks, eagles and duickers were exported mainly through the sea and air ports.

Other movements of animals across the Nigerian borders for which there were no reliable data included those by smugglers, migration of wild animals, of herdsmen and their animals during political unrest, wars and drought which occur frequently in Africa and by Fulani pastoralists on grazing runs. The latter avoided (and if detected) resisted any form of inspection or quarantine of their animals. The recorded trade animal traffic were up to 75% and 65% of the estimated actual imports and exports, respectively. It was also observed that other non-ruminant species; dogs, cats, horses, camels and birds, constituted about seven percent of

UGUNDIPE: ROLES OF VETERINARY QUARANTINE SERVICES IN MONITORING ANIMAL MOVEMENT

total recorded for animals in transit that passed through the ISVCP and SVCP without any inspection.

The role of control posts in disease monitoring

Although, available records were scanty in many control posts, some records of notifiable diseases intercepted at some control posts and quarantine stations were documented. These included rinderpest outbreaks involving 45 cattle at Dikwa INVCP Borno state in 1981 and in 43 cattle at IIIela INVCP in Sokoto state, Foot and mouth disease in 16 cattle at Ibadan in Oyo state in 1992 and rabies in 5 dogs at the quarantine station in Lagos in 1993-94. Since 1990, the control posts at the northern border have remained on alert to prevent the incidental spread of Screwworm *Cochliomyia hominivora* infestation (which has been reported in Libyan cattle) to Nigeria. Many diseases which were hitherto exotic to Nigeria (Table IV) have been reported and were undoubtedly imported through the porous borders. Although appropriate details could not be obtained, it is a well known fact that Nigeria has inadvertently served as sources of infection of such diseases as anthrax, rinderpest, rabies, Newcastle and CBPP to neighboring countries and her other importers of animals and their by-product.

DISCUSSION

The international borderline appears too artificial to the many Nigerian indigenous ethnic groups (Table II), who found themselves split into different countries. They still maintained strong socio-cultural relationships with their kith and kin across

the border with disregard for border protocols. The splitting of ethnic groups by international borderline and its consequent implications for weakening enforcement of quarantine regulations also exist in other places where nomadic tribes such as Masai of East Africa which are split between Kenya and Tanzania; and the Kurds of the Middle east split between Iraq, Iran and Turkey (Dorman, 1970).

While the numbers of ISVCP and SVCP were considered adequate for now, the 35 land INVCP (at an average of one for every 115.66km) were too few for the extensive (3,899km) border length. These were probably responsible for the existence of the estimated 3,445 illegal entry points through which men and animals move freely in and out of Nigeria. The northern border line (most porous) has open vegetation and undefined boundary which may aid illegal movements for up to 160 kilometers whereas the eastern border (least porous) has rugged topography and which may hinder illegal movements for most of its length. Although Nigeria cannot afford to erect control posts at every illegal points and neither is this necessary, there is need to set up new INVCP especially in areas of high livestock traffic. The location of INVCP far away from the borderline were probably made to avoid possible clashes with the security forces of neighboring countries in view of the fact that substantial parts of Nigeria's border area were either not demarcated (Table II) or even in dispute. This has cut off many Nigerian towns between the INVCP and the borderline and many animals that were imported on hoof could have interacted

with the national herd before reaching the first INVCP. It is necessary to effect some boundary adjustments (though difficult) in line with ethnic realities, make some clear-cut border demarcations, effect significant improvements on the conditions of the roads in the border areas to ease effective border patrol and introduce the use of satellite imagery and remote sensing to monitor the movements of animals. These will then ensure that INVCP could be safely located at about 10km distance to the borderline.

The procedures for the certification of imported animals and by-products (Figure 1) are generally in line with the zoo-sanitary rules recommended by the OIE for international trade in animals (OIE, 1983). Although, the potentials of veterinary control posts in disease monitoring were under-utilized while the number of cases trapped were grossly under-reported due to the poor prevailing record keeping and inefficient disease reporting system in Nigeria (Ogundipe *et al.*, 1989), it was obvious from available reports and from previous studies (Oluokun, 1980) that the monitoring activities at the control posts have served as early-warning mechanism against the entry of some disease epizootics in the past. The inadequate veterinary manpower and clinical/diagnostic facilities have however seriously limited the ability of Nigerian quarantine services to serve as efficient disease monitoring mechanism. These have to be rectified.

The introduction and re-introduction of hitherto exotic diseases into Nigeria (Table IV), attest to the poor efficiency. High porosity of borders is typical of

many countries of Africa and the Middle East who found it difficult due to small veterinary services and in most cases limited resources to effectively supervise movements of livestock and livestock products across their usually long frontiers. The unrestricted movements including widespread nomadism together with ineffective disease reporting systems have been blamed for the ease with which outbreaks of such diseases as FMD, rinderpest, CBPP spread in Africa and the Middle east (Dorman, 1970; Durojaiye, 1998).

The apparent success of the NVQS in preventing the spread of Screwworm infestation to Nigeria is not necessarily implying the efficiency of the border surveillance activities, because the direct cattle trade between Nigeria and Libya is indeed not significant while the adult fly of the Screw worm by its flight limitation to 288km in its life time (Hightower *et al.*, 1965), cannot easily cover the more than 2,000km of Saharara desert which separate the two countries.

The increasing uses of modern aircraft and fast moving vehicles to transport animals have created additional loopholes for veterinary quarantine services. In the past, importation of trade cattle from Niamey (the capital of Niger) to Lagos (Nigeria), a distance of about 1,500Km on hoof would take a minimum of six weeks which incidentally served as extra quarantine periods for cattle traders and their animals. These modern means of transportation have reduced the times required to hours and have consequently increased the risks of disease spread many folds. There is need to intensify on sub-regional disease

OGUNDIPE: ROLES OF VETERINARY QUARANTINE SERVICES IN MONITORING ANIMAL MOVEMENT

prevention and control efforts with the neighboring countries.

The continuous increases and decreases in the volumes of animals imported and exported respectively are reflections of increasing deficits in the supplies and demands for animal protein in Nigeria (Ikede, 1987). The fact that 73.59% of the revenue generated by the Veterinary department was through the activities of the NVQS underscores its role to the country. The continuous increases over time is due to regular increases in tariffs and the volumes of animal traffic within the country. The sharp decline in revenue collected in 1993-94 (Figure 3) could be attributed to the political crisis in the country at that time and which also affected other veterinary services. Efforts should also be made to improve livestock production in Nigeria to reduce deficit in animal protein supplies.

ACKNOWLEDGEMENTS

Many thanks to Mr. Gbenga Moses of the Federal Office of Statistics, Ibadan, Dr (Mrs) D. A. Ajiboye, Dr. C. O. Akeredolu, Dr. M. O. Sule and Dr. Ademola Majasan of the Federal Department of Livestock and Pest Control Services for rendering valuable assistance in data collection. I also express my sincere appreciation for the assistance provided by the following officers in the various states sampled during the study: Dr. Abiodun Sanu (Oyo), Dr. C. O. Osunfisan (Ogun), Dr. A. O. Adeoye (Kwara), Dr. A.A. Olopade (Lagos), Dr. Musa Mamman (Bauchi), Dr. J. A. Mamza (Borno), Dr. F. E. Airhienbuwa (Bendel), Dr. S. N. Sani (Kaduna), Dr. U. A. Maidugu (Kano), Dr.

E. O., Oruwari (Rivers), Dr. C. D. Iwuoha (Imo) and Dr. S. N. C. Okoye (Anambra). Special thanks to Mr. Opeolu Akintola, now of the Department of Veterinary Public Health and Preventive Medicine, University of Maiduguri, who accompanied me on many of the trips to the Veterinary control posts.

REFERENCES

- BENDIXEN, H. J. (1989): Incidence and classical swine fever with special reference to the situation in the ECC. *Outlook on Agriculture* **18** (1): 12-17.
- DORMAN, A. E. (1969): Permanent quarantines with particular reference to the Near East and Middle East. *Trop. Anim. Hlth. Prod.* **1**: 103-108.
- DORMAN, A. E. (1970): The meat trade in the near east and Middle East region and animal health considerations. *Trop. Anim. Hlth. Prod.* **2**: 182-188.
- DUROJAIYE, O. A. (1988): Control of virus diseases of livestock in Africa: Problems and Prospects. In: *Viral disease of animals in Africa*. Publ. OAU/STRC, Lagos Nigeria 173-182.
- FGN (1988): Animal Diseases (Control) Act (Decree No 10), Official Gazette No. 13, Vol. 75, of 26th February, 1988, A477-501.

- FORD, G. W. (1976): The outbreaks of foot- and -mouth disease and swine vesicular disease in Malta. *World Animal Review* No. 20, 42-44.
- GEE, R. W. (1973): Animal quarantine stations. *World Animal Review*. **8**: 17-23.
- HALPIN, B. (1987): Combating the cattle plague in Africa. *Outlook on Agriculture*. **16** (4): 173-177.
- HENDERSON, W. W. (1928): Annual report of the Veterinary Department for the year 1927. The Crown Agents for the Colonies. London, 54p.
- HENDERSON, W. W., (1928): Annual report of the Veterinary Department for the year 1933. The Government Printers, Lagos, p 15.
- HIGHTOWER, B. G.; ADAMS and ALLEY, D. A. (1965): Dispersal of released irradiated larva of reared Screwworm flies. *J. Econ. Ent.* **58**: 373-377.
- IKEDE, B. O. (1987): The Nigerian Livestock Industry: Assets, Liabilities and Potentials. 1987 University Lecture. Publ. Ibadan University Press Limited. 96p.
- LINDQUST, D. A. and ABUSOWA, M. (1971): The New World Screwworm in North Africa. *World Anim. Rev.* 2-7.
- OGUNDIPE G. A. T., S. B. OLUOKUN and ESURUOSO, G. O. (1989): The development and efficiency of the animal health information system in Nigeria. *Prev. Vet. Med.* **7**: 121-135.
- OLE. (1983): Extracts from the International Zoo-sanitary code of the OIE. *World Anim. Rev.* (Special Issue) 26-29.
- OLUOKUN, S. B. (1980): Economic evaluation of animal disease control programme in the developing countries: A case study in Nigeria. *Bull. Off. Int. Epiz.* **92**: 5-6.
- SCHWABE, C. W., RIEMANN, H.P. and FRANTI, C. E. (1977): Epidemiology in Veterinary Practice. Lea and Febiger, Philadelphia, USA. 303p.

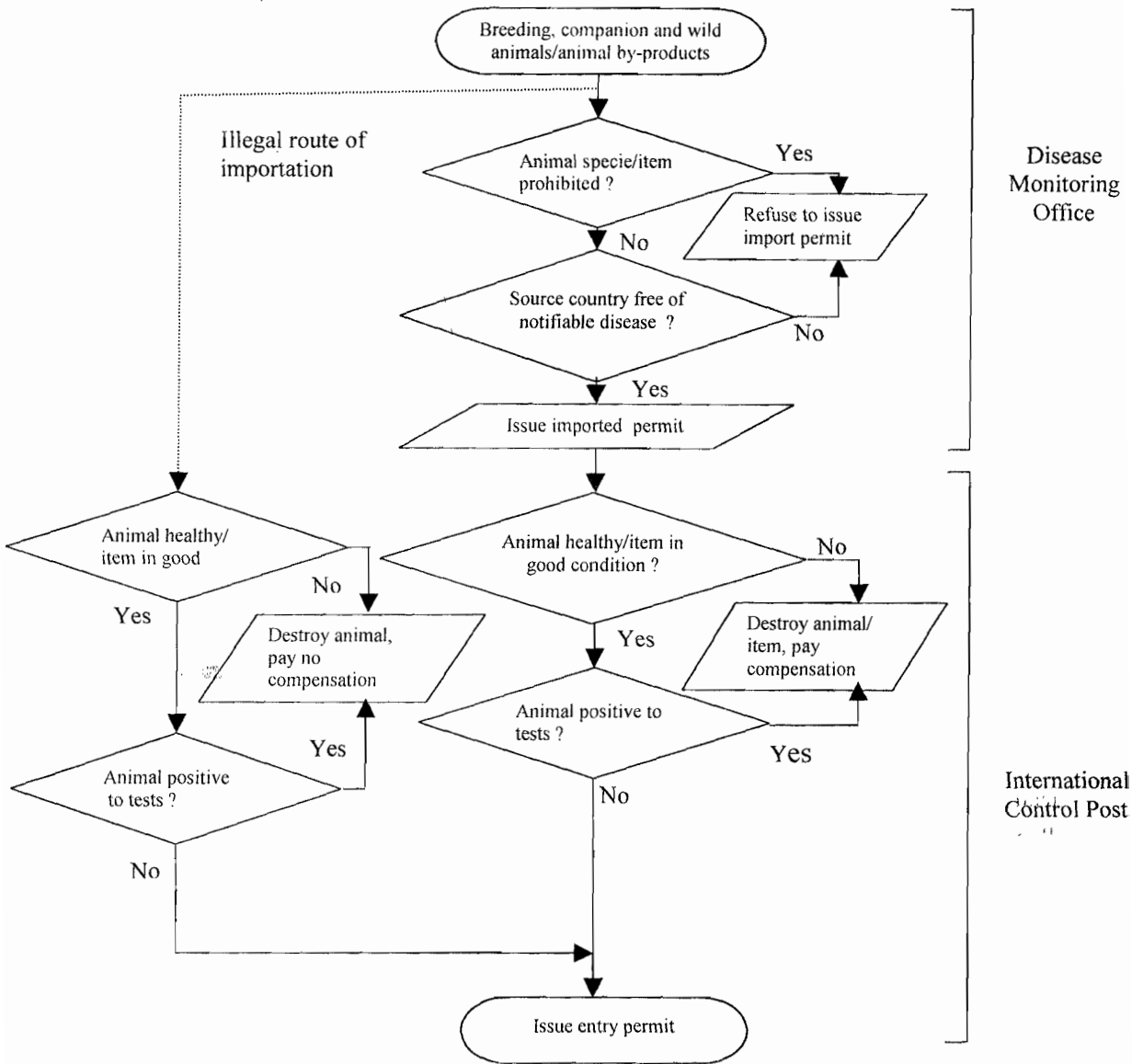


Figure 1. Flow chart illustrating the procedure for the certification of imported domestic and wild animals and animal by-products in Nigeria (1964 to date).

TABLE I: Incubation periods of some quarantinable diseases of animals and the specified quarantine periods in Nigeria

Quarantinable diseases	Incubation periods (days)		Quarantine periods (days) for the species in Nigeria
	Usual cases	Sporadic cases	
Cattle			90
Anthrax	7 – 15	-	
Blackquater	1 – 5	-	
Contagious bovine pleuro-pneumonia*	21 – 90	240	
Foot and mouth disease*	3 – 8	21	
Rinderpest*	6 – 9	180	
Vesicular stomatitis*	2 – 5	21	
Sheep and Goats			30
Blue tongue	2 – 10	-	
Kata	6 – 10	-	
Dogs			30
Canine distemper	3 – 21	-	
Rabies*	9 – 21	180	
Horses			30
African horse sickness	5 – 7	21	
Dourine*	7 – 30	60	
Glanders*	7 – 42	150	
Strangles	4 – 8	120	
Pigs			15
African swine fever*	5 – 10	15	
Swine erysipelas	1 – 7	-	
Transmissible gastro-enteritis	1 – 2	-	
Poultry			
Blackhead (Turkey)	1 – 30	30	30
Psitacosis (Psitacines)	2 – 5	-	45
Infectious bursitis (Chicken)	4 – 11	-) 15
Newcastle disease* (Chicken)	2 – 18	21)

*These are notifiable diseases in Nigeria

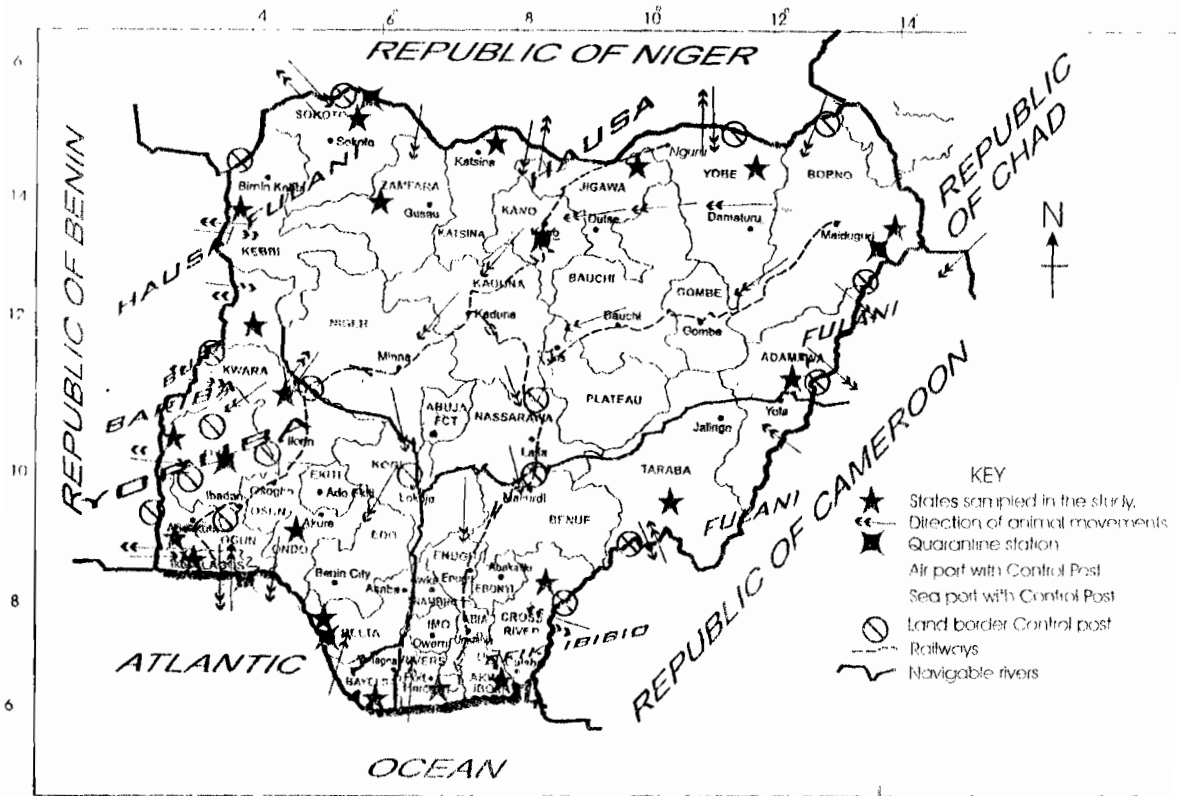


Figure 2. Map of Nigeria showing the States sampled in this study, the Quarantine stations and the Control posts.

TABLE II: The status of Nigeria's border sections with her neighbours

Border section	Border (km)	Undemarcated portion		Ethnic group split by the border line		Approximate length of border section involved		As % of border section		Official entry points Estimated No.	Per distance (km)	Illegal entry points	
		Estimated length (km)	As % total length	border line	border line	border section	border section	Estimated No.	Per distance (km)				
Eastern section with Cameroon	1,691	1,100	65.05	Efik-Ibibio Fulani	55 120	31.43 68.57	14	120.79	1,280	1.32			
North-eastern with Chad	98	98	100.0	None	0	0	0	N.A.	N.A.*	N.A.			
Northern section with Niger	1,497	160	10.69	Hausa	1,082	72.28	15	99.80	1,560	0.96			
Western section with Benin	711	161	22.64	Yoruba Bariba Busa Hausa/Fulani	200 275 61 175	28.13 38.68 8.58 24.61	6	118.50	605	1.18			
Southern maritime with Garbon and Equatorial Guinea	860	0	0	None	850	100.0	5	172.0	*	N.A.			
Airports	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4	N.A.	0	N.A.			
Total for land border	4,048	1,421	35.10	-	1,967	48.59	35	1.36	3,445	1.13			
Total for all borders	4,856	1,519	31.28	-	1,967	40.51	44	1.13	3,445	1.41			

N.A. = Not Applicable; * Illegal points for maritime borders could not be determined

OGUNDIPE: ROLES OF VETERINARY QUARANTINE SERVICES IN MONITORING ANIMAL MOVEMENT

TABLE III: Animals and animal products imported and exported through the various border sections (1986 - 1997)

Border section	Imports				Exports				Revenue (₦)	
	Cattle	Sheep/ goats	Pets	Transport animals	Wild animals	Hides/ Skins	Pets	Wild animals		Ornamental birds
Eastern)										Not
North-eastern*)	317,984	102,651	5,021	18,316	0	N.A.	130	6	95	Applicable
Northern	1,054,883	911,983	776	127,621	0	N.A.	66	0	13	Not
Western	273,109	165,593	10,517	2,993	0	N.A.	357	21	1,556	Applicable
Southern	13,626	0	61,151	165	25	N.A.	595	140	3,774	Not
Airports	0	0	9,232	0	0	N.A.	1,494	0	593	Applicable
Total	1,649,602	1,180,182	86,697	149,095	25	586,410@	2,642	167	6,972	106,167,926**

N.A. = The breakdown for each border section was not available

*Animals and materials imported into Nigeria from Chad pass through Cameroon in the east.

@metric tonnes

**The revenue was collected from the SVCPC and INVCPC

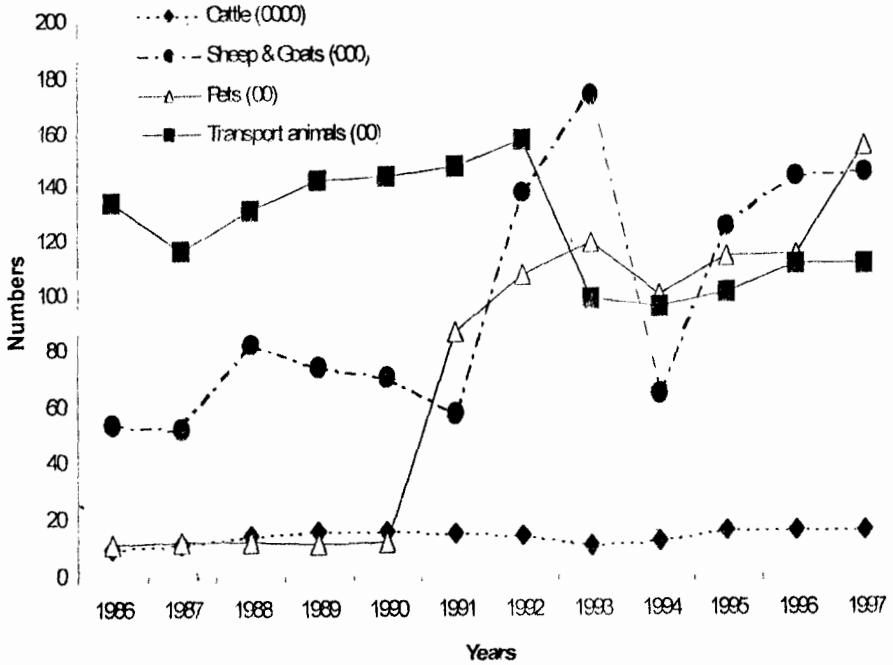


Figure 3a. Trends in the records of animals imported into Nigeria (1986-1997)

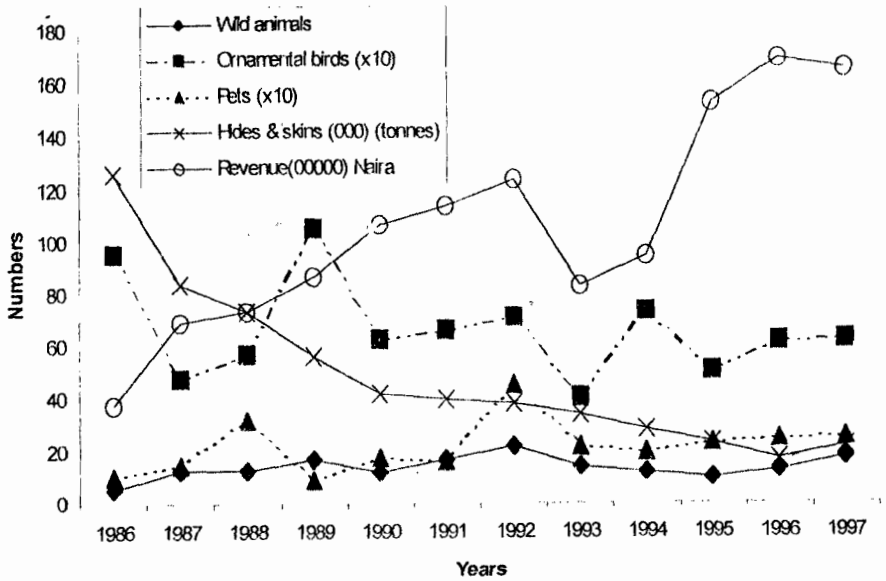


Figure 3b. Trends in the records of animals and by-products exported and revenue collected by the Quarantine Services in Nigeria (1986-1997).

TABLE IV: Some hitherto exotic diseases introduced into Nigeria through uncontrolled entry of live animals

Disease	Date of first report in Nigeria*	Entry border section	Source country or origin	Mode of spread to Nigeria	Present status
Cattle					
Contagious bovine pleuro-pneumonia	1850	Northern	Chad	Nomadism	Enzootic
Foot and mouth disease	1924	Eastern**	Cameroon	Trade	Enzootic
Lumpy skin disease	1974	Northern	Niger	Nomadism	Enzootic
Rinderpest	1886, 1980, 1982	Northern	Mali and Chad	Nomadism/trade	Eradicate
Sheep and goats					
Blue tongue	1927, 1943, 1973	Unknown	Unknown	Trade	Sporadic
Goat pox		Northern	Niger	Nomadism	Sporadic
Sheep pox		Northern	Niger and Chad	Nomadism	Sporadic
Pigs					
African Swine fever	1998	Western	Benin	Trade	Sporadic
Poultry					
Gumboro disease	1969, 1980	Southern	Europe	Trade	Enzootic
Marek's disease		Southern	Europe	Trade	Sporadic
Egg drop syndrome		Southern	Europe	Trade	Sporadic
Dogs					
Canine parvo virus enteritis	1978	Southern	Europe	Imported pets	Sporadic

*Include all subsequent reports after each eradication.

**Animals and materials imported into Nigeria from Chad often pass through Cameroon on the eastern border.