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NEWCASTLE DISEASE OUTBREAK
IN
GREECE

Prepared by:
Dr Mirzet Sabirovic
Simon Hall

Approved by:
Dr Nick Coulson
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Table of Contents

1	SUMMARY	3
2	INTRODUCTION	4
3	HAZARD IDENTIFICATION.....	4
3.1	NEWCASTLE DISEASE IN GREECE – OFFICIAL DISEASE REPORT.....	4
3.2	NEWCASTLE DISEASE – BACKGROUND INFORMATION	4
4	RISK ASSESSMENT	5
4.1	RELEASE ASSESSMENT – LEGAL TRADE (CURRENT SITUATION)	5
4.1.1	<i>Live birds.....</i>	6
4.1.2	<i>Hatching eggs.....</i>	7
4.1.3	<i>Table eggs.....</i>	8
4.1.4	<i>Poultry meat/meat products.....</i>	8
4.1.5	<i>Other relevant pathways.....</i>	9
4.1.5.1	Illegal trade	9
4.1.5.2	Migratory wildfowl and feral pigeons	10
4.1.6	<i>Completion of release assessment.....</i>	11
4.2	RISK ESTIMATE AND CONCLUSION	11
5	REFERENCES	13
6	ANNEX 1. BACKGROUND NOTE ON NEWCASTLE DISEASE.....	14
7	ANNEX 2. ND – DETAILED EU RULES.....	15
7.1	INITIAL INVESTIGATION	15
7.2	ND CONFIRMATION.....	15
7.2.1	<i>Protection zone.....</i>	15
7.2.2	<i>Affected holding.....</i>	15
7.2.3	<i>Surveillance zone.....</i>	16

1 Summary

Greece has reported an outbreak of Newcastle disease (ND) in a free-range commercial broiler flock located in the southern part of the country (Peloponnisos region) on 5 January 2005. The disease was suspected in mid December 2004 and officially confirmed by laboratory testing at the EC Reference Laboratory for ND in Weybridge, UK, on 29 December 2004. There is no information on the intra cerebral pathogenicity index (ICPI) of the virus isolate.

Greece has introduced control measures as per EU rules (92/66/EEC) (European Commission, 1992) in the affected area. Greece reports that this outbreak is confined to this single free-range broiler flock. There are no reports of disease in other commercial poultry operations.

Trade between Greece and the UK is subject to EU rules. The likelihood of introducing ND virus to the UK from Greece via legal trade before and after the ND detection is considered negligible. The risk of ND introduction to the UK via migratory and wild birds or feral pigeons or illegal trade continues to exist and remains difficult to quantify (Table 1). The evidence to support this estimate is presented in Section 4.1 of this document.

Table 1: Risk pathway and summary of release assessment

There is a negligible likelihood of ND introduction by imports of live birds to the UK from Greece before and after the outbreak
There is a negligible likelihood of ND introduction by imports of fresh, chilled and frozen poultry meat, and poultry meat products and preparation to the UK from Greece before and after the outbreak
There is a negligible likelihood of ND introduction by imports hatching eggs from Greece to the UK before and after the outbreak
There is a negligible likelihood of ND introduction by table eggs to the UK from Greece before and after the outbreak
There is an indeterminable likelihood of ND introduction to the UK by migratory waterfowl, wild birds or feral pigeons
There is an indeterminable likelihood of ND introduction to the UK by illegal trade

An outbreak of ND in any Member State is of concern. However, the Veterinary Directorate considers the risk of ND spread from this outbreak to UK through legal trade to be negligible. The Veterinary Directorate continues to monitor developments and will provide an update on the situation if considered to be required.

2 Introduction

This qualitative risk analysis considers the likelihood of Newcastle disease (ND) introduction to the UK via various pathways following an outbreak in Greece.

3 Hazard identification

3.1 Newcastle disease in Greece – Official Disease Report

Greece has reported an outbreak of Newcastle disease (ND) in a free-range broiler flock located in the southern part of the country (Peloponnisos region) (Fig.1) on 5 January 2005 (European Commission, 2005). The disease was suspected in mid December and confirmed by laboratory testing on 29 December 2004 at the EC Reference Laboratory, Weybridge, UK.



Fig. 1. Newcastle disease in Greece, January 2005

Epidemiological investigation revealed that the disease was observed in a free-range broiler flock. There are no reports of the disease in other commercial poultry operations. Greece has applied ND control measures as per EU rules (92/66/EEC)(European Commission, 1992) (refer to Annex 2).

Vaccination against ND is not compulsory in Greece.

However, live or inactivated vaccines are used in most poultry operations (European Commission, 1995). The last reported outbreak of ND in Greece was in 1986.

3.2 Newcastle disease – background information

ND is present in many countries worldwide in many wild and domestic bird species. Vaccination against ND is used in many countries worldwide, including the UK.

Depending on the severity of the disease in chicken, there are three pathotypes of the virus: lentogenic (usually do not cause disease), mesogenic (cause respiratory disease), and velogenic (neurotropic and viscerotropic forms of virus that cause high mortality) (various authors quoted in Seal and others, 2000). Refer to Annex 1 for more details on the disease. The last outbreak of ND in the UK occurred in 1997 and the most recent in the EU occurred in Finland and Sweden in 2004. In Europe, the most recent reported outbreak occurred in Bulgaria in December 2004.

4 Risk assessment

For the purpose of the release assessment section (Section 4.1) of this qualitative risk analysis, the following definitions will apply (OIE, 2004a):

Term	Definition
ND	Newcastle disease - means an infection of poultry caused by any avian strain of the paramyxovirus 1 with an intracerebral pathogenicity index (ICPI) in day-old chicks greater than 0,7 (92/66/EEC)(European Commission, 1992)
Incubation period for ND	21 days (OIE, 2004a)

4.1 Release Assessment – Legal trade (Current situation)

This release assessment considers the trade in risk commodities between Greece and the UK to date including the six weeks before mid December, the time when the ND virus infection was first suspected. This estimated risk period is just over twice the time of the maximum incubation period for ND, as specified by the OIE.

For the purpose of the release assessment section (Section 4.1) of this qualitative risk assessment, the following terminology will apply (OIE, 2004b):

Term	Definition
Likelihood	Probability; the state or fact of being likely
Likely	Probable; such as well might happen or be true; to be reasonably expected
High	Extending above the normal or average level
Highly	In a higher degree
Low	Less than average; coming below the normal level
Negligible	Not worth considering; insignificant
Remote	Slight, faint
Would	To express probability; past of Will: expressing a wish, ability, capacity, probability or expectation

4.1.1 Live birds

Conclusion:

There is a negligible likelihood of ND introduction by imports of live birds from Greece to the UK before and after the outbreak

Key factors:

- a) *Regular trade in live poultry is subject to EU rules;*
- b) *EU rules prevent trade in susceptible species during an outbreak;*
- c) *There have been no imports of live poultry during the past two months (estimated risk period);*
- d) *There have been no imports of Psittacine and non-Psittacine birds during the past two months (estimated risk period).*

Supporting evidence:

Trade in live poultry between Member States is subject to EU rules (90/539/EEC) (European Commission, 1990). These rules require that live poultry must come from flocks that have been held for more than six weeks in an establishment approved under the Poultry Health Scheme operated by approved services within a Member Country.

In case of an ND outbreak, the EU rules (92/66/EEC)(European Commission, 1992a) define control measures against ND in poultry, racing pigeons and other birds in captivity (refer to Annex 2).

EU rules (92/65/EEC) allow for Intra-Community trade in Psittacines and non-Psittacines captive birds (including racing pigeons) (European Commission, 1992b). The premises of origin must be officially registered. Traded birds are subject to pre-export inspection and the certificate stating that birds do not come from a holding subject to restrictions because of an outbreak of ND. These birds will not usually be inspected in the destination Member State unless there is an outbreak in the member State of origin.

TRACES, (the European Commission electronic system for notification of movements of live animals, their products and germplasm - within the European Union and from third countries) shows no direct imports of susceptible live poultry or Psittacines or non-Psittacines captive birds from Greece to the UK. This is within the period starting six weeks before mid December, the time when the ND was first suspected. This period is twice the time of the maximum incubation period for ND, as specified by the OIE.

4.1.2 Hatching eggs

Conclusion:

There is a negligible likelihood of ND introduction by imports of hatching eggs from Greece to the UK before and after the outbreak

Key factors:

- a) *Regular trade in hatching eggs is subject to EU rules;*
- b) *EU rules prevent trade in susceptible species during an outbreak;*
- c) *There have been no imports of hatching eggs during the past two months (estimated risk period)*

Supporting evidence:

Trade in hatching eggs between Member States is subject to EU rules (90/539/EEC) (European Commission, 1990). These rules require that hatching eggs must come from flocks that have been held for more than six weeks in an establishment approved under the Poultry Health Scheme operated by an approved service within a Member Country.

EU rules (92/66/EEC)(European Commission, 1992) regulate trade in hatching eggs from areas under restriction for ND (refer to Annex 2).

ND virus replicates in the intestine and may be transmitted by ingestion of contaminated faeces. In infected breeder farms, presence of ND virus contaminated faeces on the surface of eggs is considered a major mechanical source of the virus to progeny (Chen and Wang, 2002). Vertical transmission of the virus through the reproductive tract is believed not to occur (Alexander, 1997).

TRACES shows no imports of these commodities from to the UK from Greece for the past two months.

4.1.3 Table eggs

Conclusion:

There is a negligible likelihood of ND introduction by table eggs from Greece to the UK before and after the outbreak

Key factors:

- a) *There have been no reports of ND in laying hen flocks;*
- b) *Regular trade in table eggs is subject to EU rules;*
- c) *EU rules prevent trade in table eggs during an outbreak.*

Supporting evidence:

There are no reports of ND outbreaks in laying hen operations in Greece.

Intra Community trade in poultry meat is not subject to border inspection controls or electronic notification of consignments. Intra-Community trade rules minimise the risk of mechanical transmission of the virus on eggs, packaging or means of transport.

EU rules (92/66/EEC) (European Commission, 1992) prohibit trade in table eggs from areas under restriction for ND (refer to Annex 2). Table eggs from ND infected holdings are destroyed. ND virus replicates in the intestine and may be transmitted by ingestion of contaminated faeces. In infected laying hen farms, presence of ND virus contaminated faeces on the surface of eggs is considered a major mechanical source (Chen and Wang, 2002).

4.1.4 Poultry meat/meat products

Conclusion:

There is a negligible likelihood of ND introduction by imports of fresh, chilled and frozen poultry meat, and poultry meat products from Greece to the UK before and after the outbreak

Key factors:

- a) *Trade in poultry meat (fresh, chilled, frozen), and poultry products is subject to EU rules;*
- b) *EU rules prevent trade in these commodities during an outbreak;*
- c) *The virus is susceptible to heat-treatment.*

Supporting evidence:

Intra Community trade in poultry meat is not subject to border inspection controls or electronic notification of consignments. Customs estimate that 50 tonnes of poultry meat and meat products are exported from Greece to the UK per annum.

Intra-Community trade in poultry meat is subject to EU animal health rules. Slaughter of poultry is subject to ante-mortem inspection and post-mortem inspection that should be carried out under veterinary supervision. Only healthy poultry may be slaughtered.

At this stage, it appears that this outbreak is limited to a free-range broiler flock. The actions taken by the Greece veterinary authority to control the outbreak appear to be swift.

ND virus may be present in fresh and frozen meat. The virus is stable at pH between 3 to 9. Its survival is unlikely to be affected by pH changes of meat after slaughter (various reports in Christensen and others, 1999). Historic data (quoted in Kinde and others, 2004) indicate that ND virus could survive on skin and bone marrow of chilled chicken carcasses for 98 to 134 days. The virus may survive for months if present in frozen poultry carcasses. However, various heat-treatments (56⁰C/5 minutes to 6 hours; 60⁰C/7-30 minutes; 70⁰C/50 seconds; 100⁰C/1 second) destroy the virus (various reports in Christensen and others., 1999).

In the case of ND outbreaks, affected Member States are required to impose EU rules (92/66/EEC) (European Commission, 1992), including the protection and surveillance zones around outbreaks (refer to Annex 2) that prevent export of fresh, chilled or frozen poultry meat from the affected areas.

4.1.5 Other relevant pathways

4.1.5.1 Illegal trade

Conclusion:

There is an indeterminable likelihood of ND introduction to the UK by illegal trade

Assumption:

- a) *Illegal movements of poultry meat/meat products pose a risk for the introduction of the disease from any infected countries worldwide,*
- b) *The likelihood of the ND introduction to the UK exists and is difficult to estimate.*

We cannot rule out the possibility that fresh poultry meat may be imported illegally to the UK from any country and may contain ND virus. Cooking of meat for human consumption destroys the virus.

The virus survival is unlikely to be affected by pH changes of meat after slaughter. However, various heat-treatments (56⁰C/5 minutes to 6 hours; 60⁰C/7-30 minutes; 70⁰C/50 seconds; 100⁰C/1 second) destroy the virus (various reports in Christensen and others., 1999)

4.1.5.2 Migratory wildfowl and feral pigeons

Conclusion:

There is an indeterminable likelihood of ND introduction to the UK by migratory waterfowl, wild birds or feral pigeons

Key factors:

- a) *ND has a worldwide distribution and a wide host range;*
- b) *Wild and migratory birds and feral pigeon are often considered to be the most likely source of infection for back-yard or commercial poultry*
- c) *ND introductions into domestic poultry are a chance event and difficult to predict.*

Supporting evidence:

ND is a viral disease affecting a wide range of bird species, including domestic poultry and many wild and migratory birds in which a long-term carrier state may exist (Seal and others, 2000).

Pigeon paramyxovirus type 1 (PPMV-1) is an antigenic and host variant of ND virus of chickens. PPMV-1 has possibly originated as a result of multiple chicken to pigeon transmissions (Ujvari and others, 2003). A summary of data from the literature indicates that the virus was isolated for the first time from pigeons in the Middle East in 1978, from where it spread rapidly throughout Northern Africa. In 1981, it was isolated from racing pigeons in Italy. Within the next three years, the virus spread throughout Europe. In 1984, the PPMV-1 virus was epidemiologically linked to outbreaks of ND in chickens in the UK (Seal and others, 2000).

PPMV-1 has been isolated from doves and ornamental birds, in addition to isolates from commercial and feral pigeons. Vaccination of commercial pigeons against PMV-1 is used as a prophylactic measure to control the infection, however, the use of this vaccine is sporadic. PPMV-1 strain circulation among racing and show pigeons is possible (Ujvari and others, 2003).

The risk of the introduction of ND strain to the UK by wildfowl is difficult to quantify. However, the type of risk posed is unlikely to exceed the level of the existing risk posed by wild birds migrating to, or through, the UK.

4.1.6 Completion of release assessment

According to the OIE recommended methodology (OIE, 2004b), if the likelihood is assessed negligible at any step of the release assessment pathway or exposure assessment pathway the risk assessment may be completed at that step.

In our release assessment pathway, we arrived at the conclusion that there is a negligible likelihood of ND introduction from Greece to the UK via legal trade. This is due to several risk reduction measures embedded in the EU rules and the fact that there were no shipments of high risk commodities during the estimated risk period.

4.2 RISK ESTIMATE AND CONCLUSION

Trade between Greece and the UK is subject to EU rules. The likelihood of introducing ND virus to the UK from Greece via legal trade before and after the ND detection is considered negligible.

The risk of ND introduction to the UK via migratory and wild birds or feral pigeons or illegal trade continues to exist and remains difficult to quantify.

Greece has reported an outbreak of Newcastle disease (ND) in a free-range commercial broiler flock located in the southern part of the country (Peloponnisos region) on 5 January 2005. The disease was suspected in mid December 2004 and officially confirmed by laboratory testing at the EC Reference Laboratory for ND in Weybridge, UK on 29 December 2004. There is no information on the intra cerebral pathogenicity index (ICPI) of the virus isolate. Greece has introduced control measures as per EU rules (92/66/EEC) (European Commission, 1992) in the affected area.

Greece reports that this outbreak is confined to this single free-range broiler flock. There are no reports of the disease outbreak in other commercial poultry operations. Vaccination programme against ND is not compulsory in

Greece, however, live or inactivated vaccines are used in most poultry operations.

An outbreak of ND in any country within the EU is of concern. However, the Veterinary Directorate considers the risk of ND spread from this outbreak to UK through legal trade to be negligible. The Veterinary Directorate continues to monitor developments and will provide an update on the situation if considered to be required.

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6 Annex 1. Background note on Newcastle Disease

ND causes respiratory and/or nervous signs with gasping and coughing, drooping wings, dragging legs, twisting of the head and neck, circling, depression, inappetence and complete paralysis. There may be swelling of the tissues around the eyes and in the neck and a partial or complete cessation of egg production. Eggs from diseased birds may be misshapen, rough-shelled, thin-shelled and contain watery albumen. The birds may have a greenish watery diarrhoea.

The degree to which birds become affected and the mortality within a flock depend on virulence of the virus strain, degree of vaccinal immunity, environmental conditions, and condition of the flock .

Like avian influenza (to which the Newcastle disease virus is NOT related), the disease is primarily spread by contact with faeces or respiratory secretions from infected birds. Contaminated feed or water may also spread the disease. It is the movement of contaminated people, vehicles and things between flocks that is most likely to spread disease. Flock owners should always follow the principles of good biosecurity already published on the Defraweb <http://defraweb/animalh/biosecurity/farmguidance/poultrybiosec.pdf>

Unlike avian influenza, an effective commercial vaccine is available. Because of the constant threat of introduction of disease by wild birds, breeding flocks and commercial egg laying flocks (which have a life expectancy of some 60 – 72 weeks) are invariably vaccinated in the UK. Broiler flocks tend not to be for two reasons: first the cost and effectiveness of vaccination set against their relatively short life; second, the potential adverse effect on bird health of adding to the list of vaccines these birds are already subject to and which have to be given when they are newly hatched.

To a large extent, therefore, the National flock has a good degree of protection against incursion of disease. There are a number of Newcastle Disease vaccines authorised for use on the market in the UK and there are no restrictions on their use in accordance with any Marketing Authorisation.

7 Annex 2. ND – Detailed EU rules

The Council Directive (92/66/EEC) defines control measures against ND in poultry, racing pigeons and other birds in captivity. It does not apply if ND is detected in wild birds.

7.1 Initial investigation

Following a suspicion of ND, an affected holding is quarantined and movement of poultry, poultry meat, animal feed and litter/manure from the affected holding is prohibited. During this phase, transport of eggs destined for further processing in an approved establishment may be allowed. These measures remain in place until the disease is either ruled out or confirmed.

7.2 ND confirmation

If ND is confirmed (any PMV1 with an intracerebral pathogenicity index in day-old chicks greater than 0.7), the following measures apply:

7.2.1 Protection zone

A Protection zone must be established around the infected holding. This zone has a minimum radius of 3km.

7.2.2 Affected holding

All birds on the affected holding must be killed and destroyed. The meat of slaughtered poultry during the presumed incubation period must be traced and destroyed. The same applies to hatching eggs and table eggs. Poultry that have already been hatched are subject to official surveillance. Table eggs may be exempted from destruction if proper disinfection was carried out. Any waste is subject to traceability and appropriate treatment to destroy the virus. If that is not possible, such waste is destroyed. Cleaning and disinfection of the holding, equipment and transport vehicles must be thoroughly carried out. Any neighbouring and other identified traceforward holdings may be subject to the above measures.

If the virus has an intracerebral pathogenicity index (ICPI) of >0.7 and <1.2 , the holding may be exempted from above measures if the European Community Reference laboratory considers that an outbreak was caused by a vaccinal strain of the virus. In these cases, the affected holding is placed under official surveillance for 30 days, and remains quarantined with restrictions imposed on all movements. Appropriate cleaning and disinfection is required. Poultry may be sent to slaughter, however they must be kept and slaughtered separately. Meat of such poultry is given a special health mark

and must be subjected to a specified heat treatment, or sold only on the national market.

7.2.3 Surveillance zone

The surveillance zone that surrounds a protection zone must be established taking into account geographical, administrative, ecological and epidemiological factors relevant to ND. This zone includes the protection zone and has a radius of at least 10km from the affected holdings.

All poultry holdings within surveillance zone must be subjected to clinical examination and laboratory testing. Movement restrictions must apply to poultry handlers, poultry, poultry meat, hatching eggs, litter/manure, and transport vehicles. Poultry may be sent directly to slaughter at an approved establishment. This poultry meat is subject to a special health mark and must be subjected to a specified heat treatment, or sold only on the national market. Cleaning and disinfection activities must be carried out under official supervision. Fairs, markets, shows or other gatherings of poultry and other birds are prohibited.

Vaccination of poultry and commercial pigeons is subject to authorisation of the competent authority.