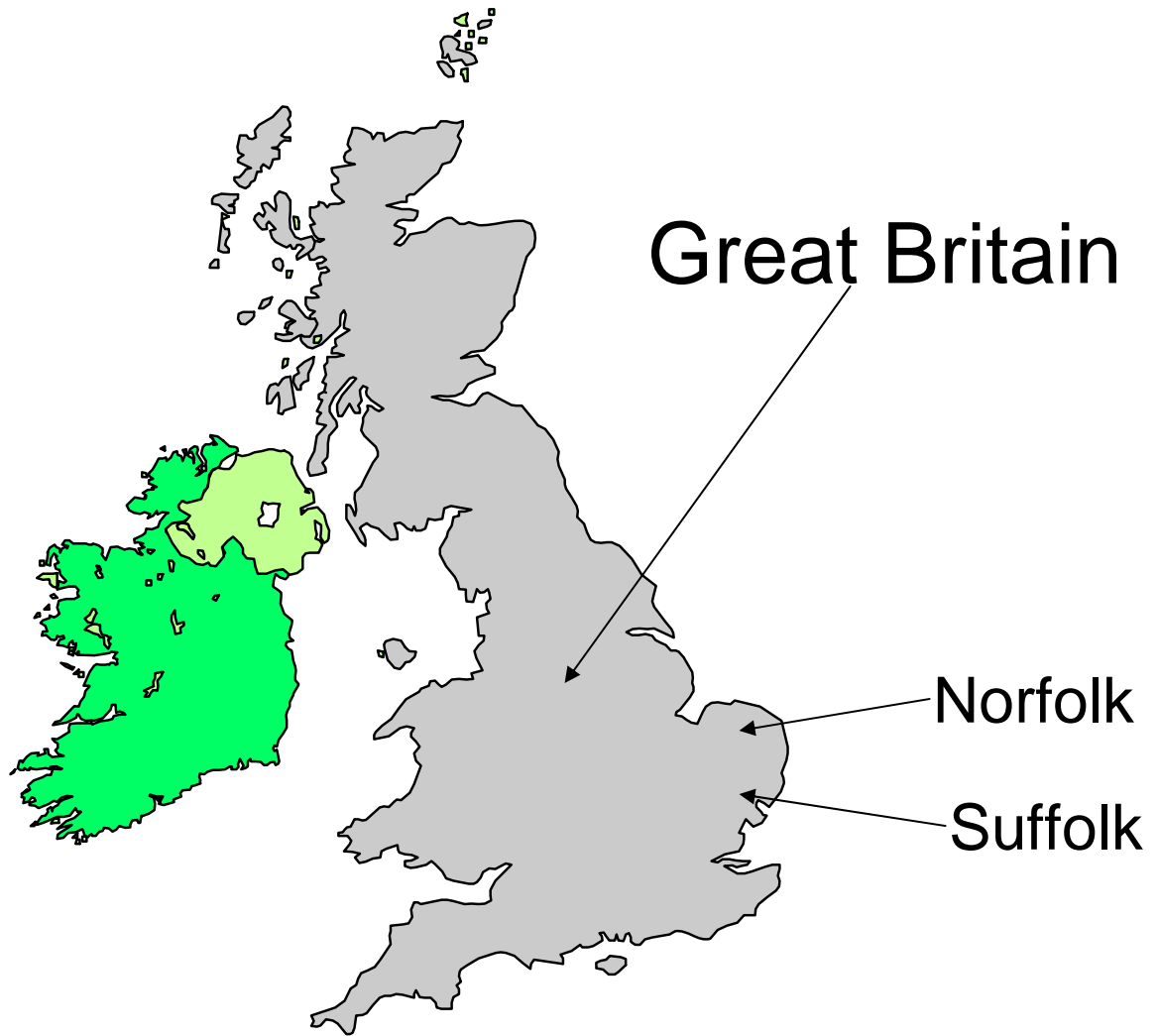


# HPAI in Great Britain from 1959 to 2008

*from H5N1 to H5N1*

Dennis Alexander

*VLA Weybridge*



Great Britain

Norfolk

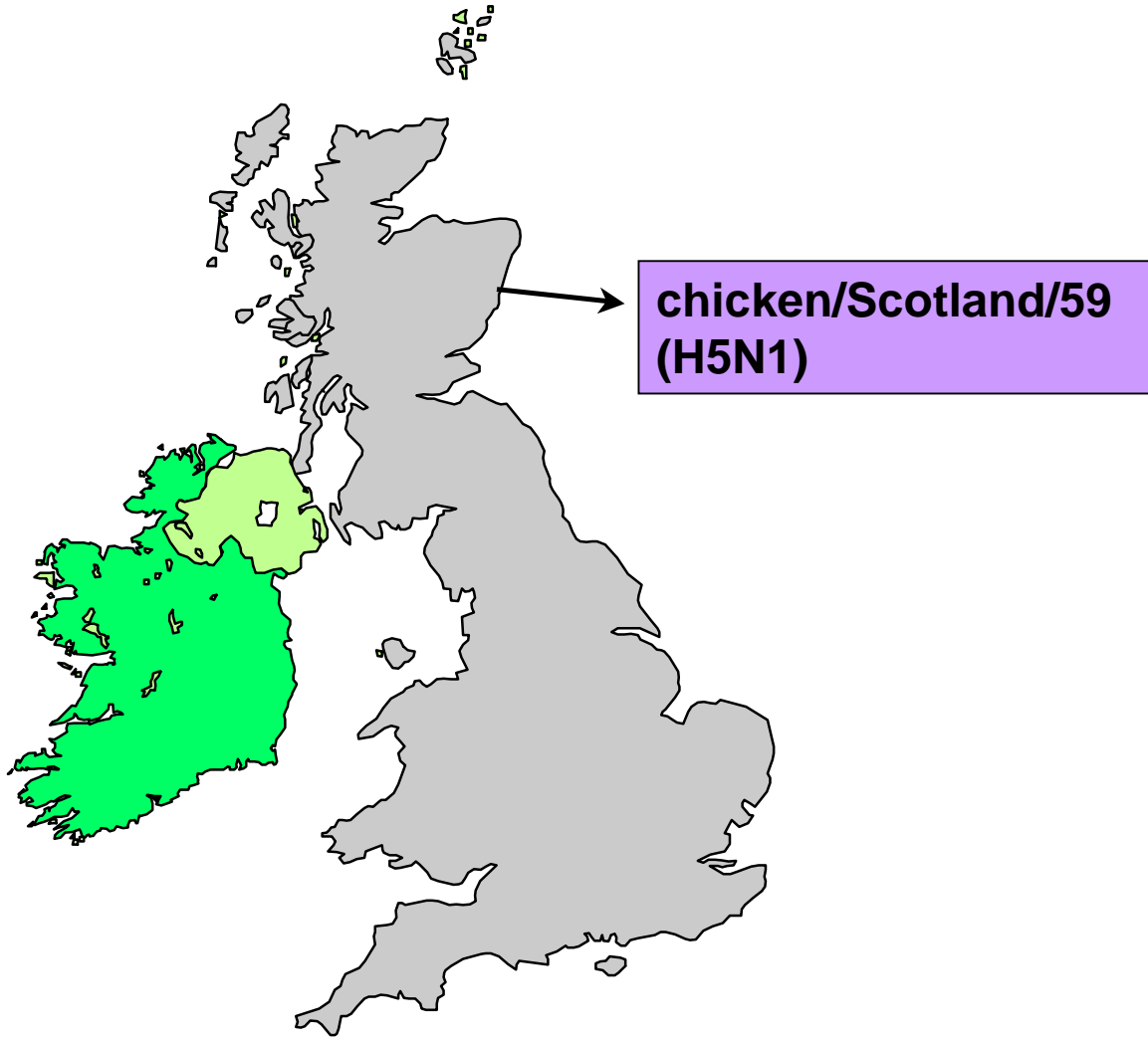
Suffolk

# HPAI in Great Britain since 1959

- Outbreaks in poultry
  - 1959 H5N1
  - 1963 H7N3
  - 1979 H7N7
  - 1991 H5N1
  - 2007 H5N1 x 2
- Incidents in wild and other birds
  - 2005 H5N1 Q
  - 2006 H5N1
  - 2008 H5N1

# A/chicken/Scotland/59

- first recorded infection of birds with H5 subtype virus
- 1 small chicken farm on coast near Aberdeen
- December 1959
- self limiting
- HA0 cleavage site PQRKKR\*GLF



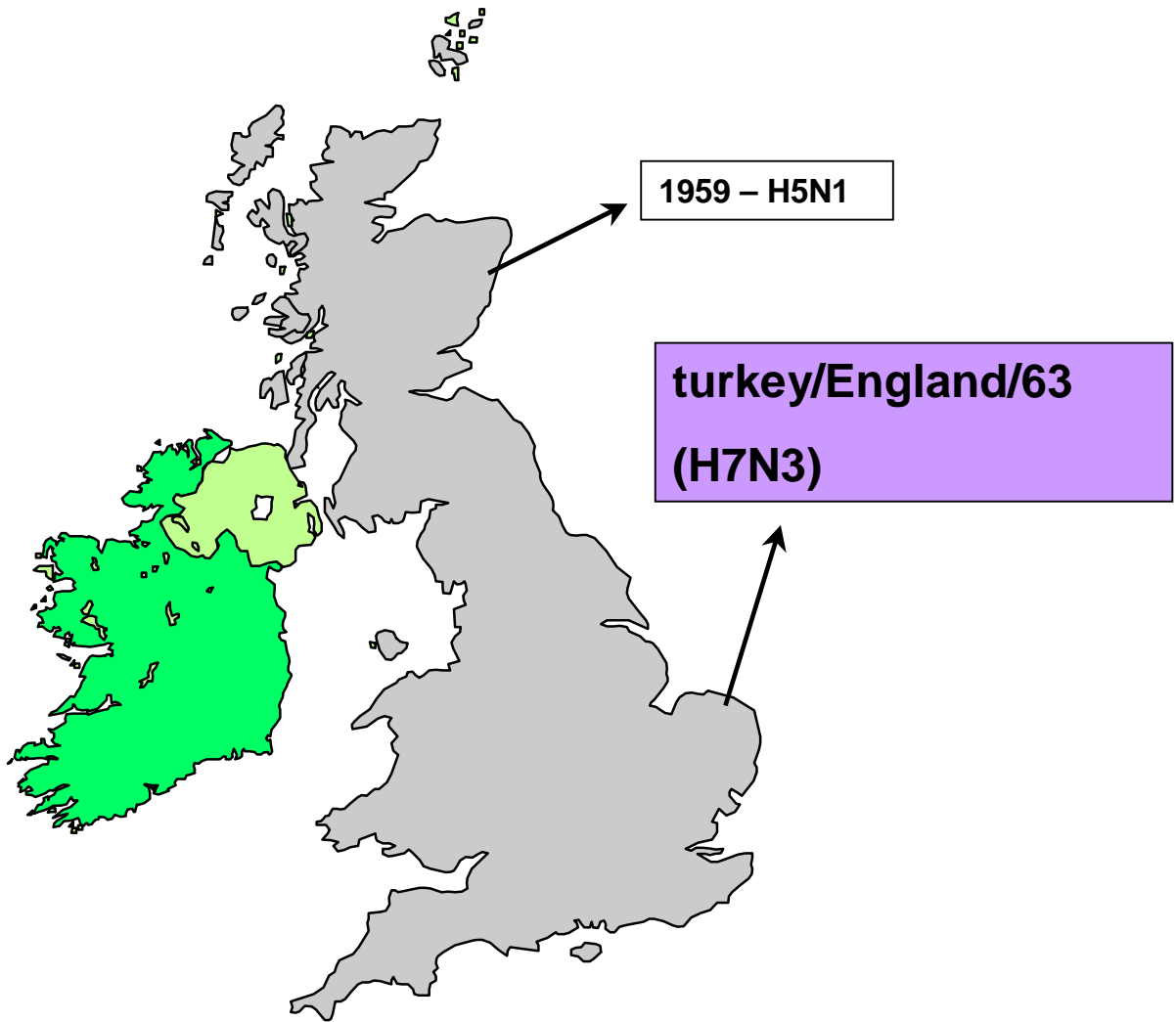
# A/turkey/England/63 (H7N3)

- turkey farm near Langham Norfolk
- late May 1963 after worst winter on record
- farm 3 kilometres from coast
- 29,000 turkeys slaughtered or died
- spread to one other small turkey farm
- HA0 cleavage site PETPKRRRR\*GLF

# A/turkey/England/63 (H7N3)

## SPREAD TO 2<sup>ND</sup> SMALL FARM

- no direct links to 1<sup>st</sup> farm
- turkeys had been moved to 2<sup>nd</sup> farm from 3<sup>rd</sup> farm
- truck used had moved infected birds from 1<sup>st</sup> farm to be slaughtered
- truck had been cleaned and disinfected
- but cab of truck had not and driver wore same clothes



1959 - H5N1

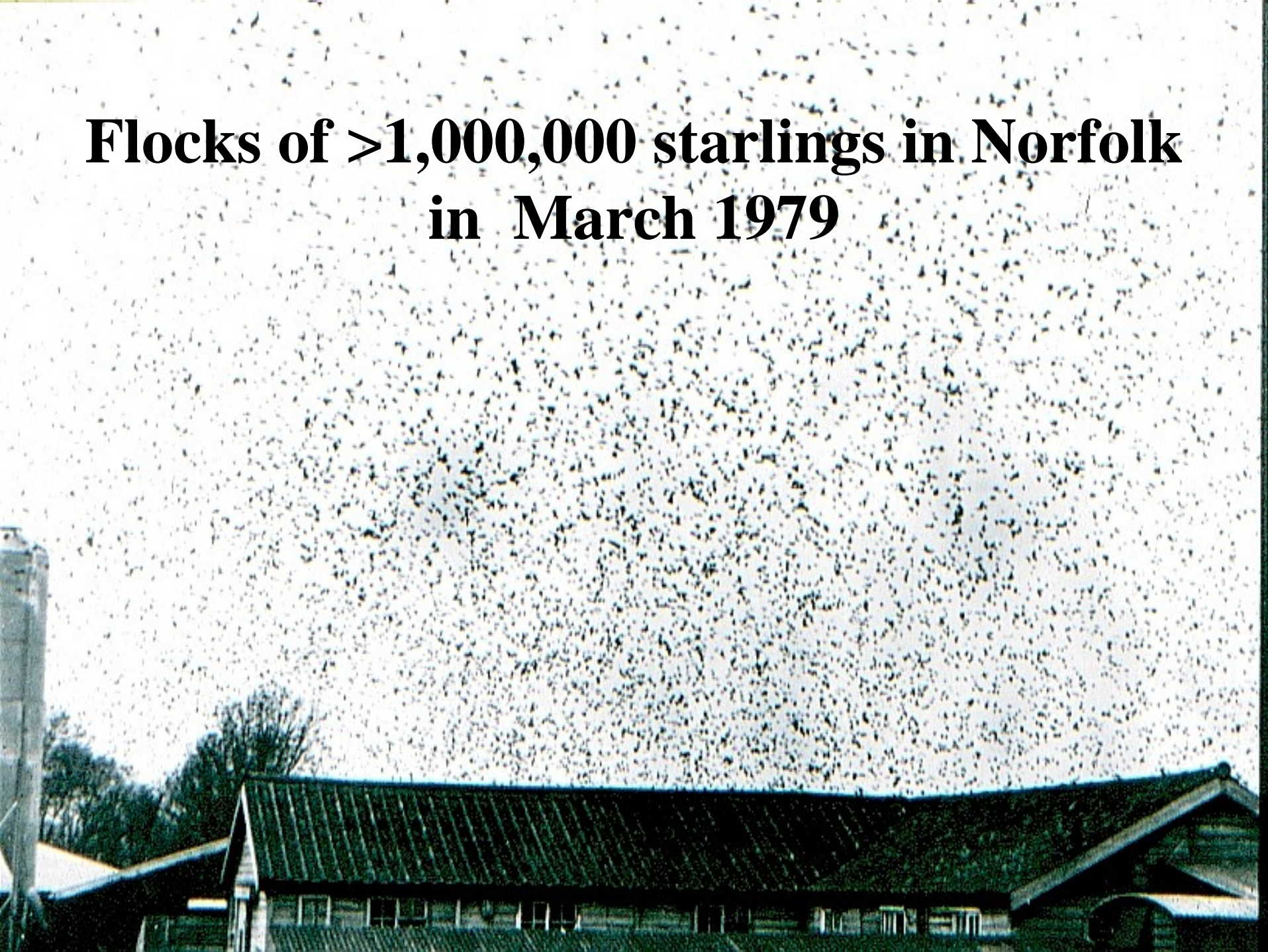
turkey/England/63  
(H7N3)

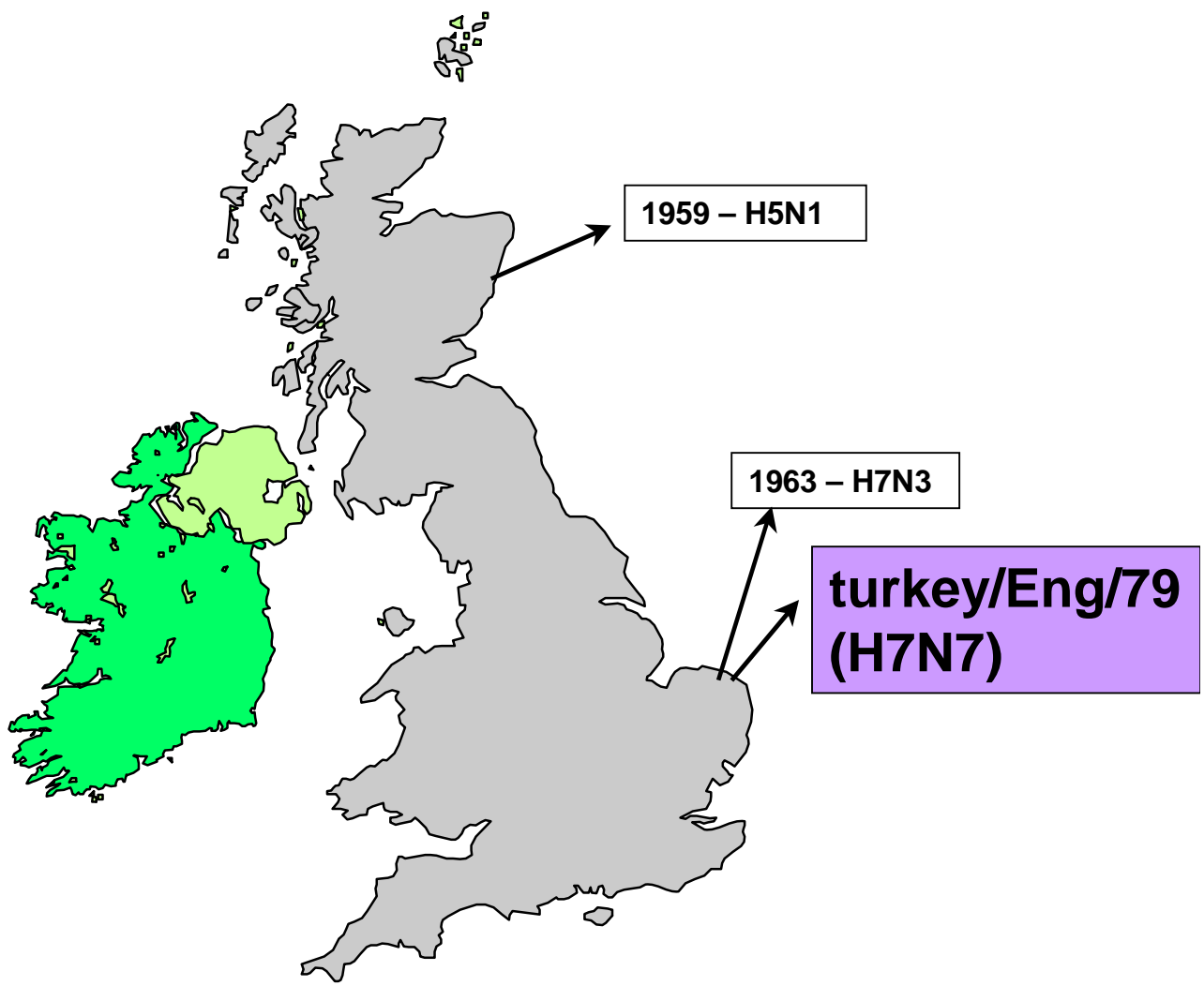


# A/turkey/England/79 (H7N7)

- 3 turkey farms on Norfolk coast
- March 1979 following severe weather
- farms under same ownership
- 9,262 turkeys slaughtered or died
- HA0 cleavage site PEIPKKRKR\*GLF, PEIPKRRRR\*GLF, PEIPKKREKR\*GLF
- surveillance showed 15 farms in area infected with LPAI viruses none H7N7

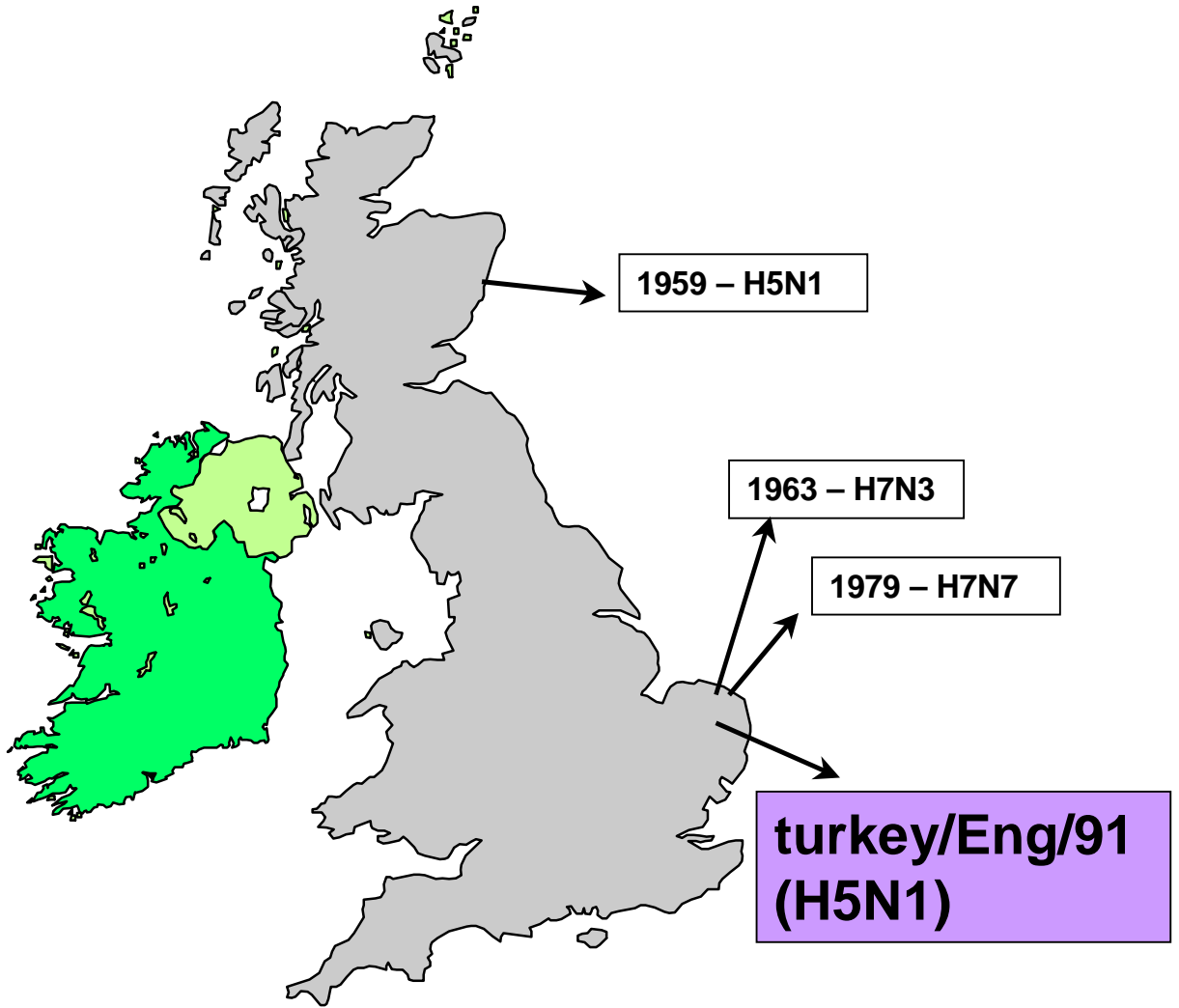
**Flocks of >1,000,000 starlings in Norfolk  
in March 1979**





# A/turkey/England/91 (H5N1)

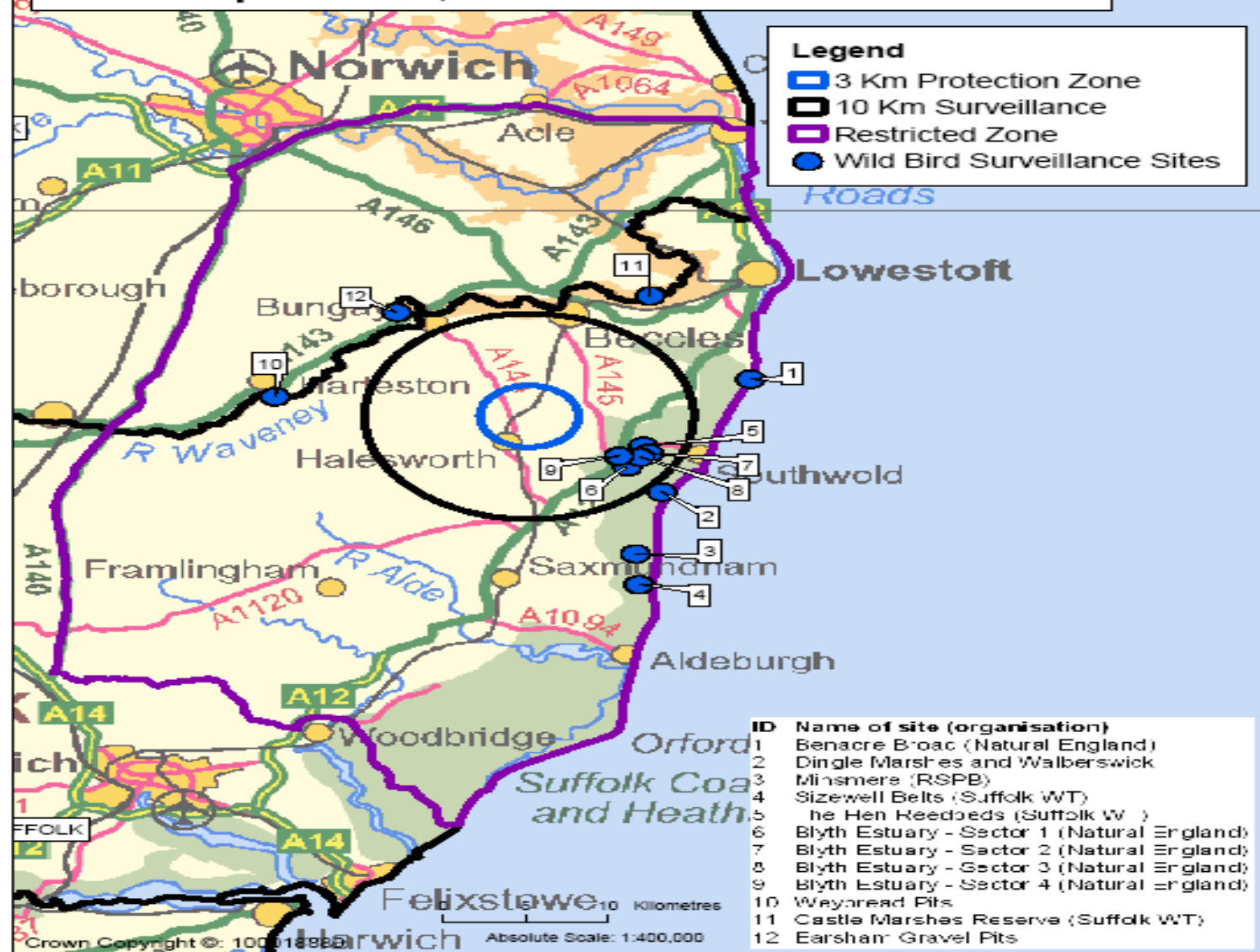
- turkey farm near Weston Longville Norfolk
- December
- farm <30 kilometres from coast
- Only one house of ~8,000 18-w-o turkeys affected
- 7,129 birds died 624 slaughtered
- HA0 cleavage site PQRKRTR\*GLF



# A/turkey/England/2007 (H5N1)

- turkey farm near Holton Suffolk
- January
- farm <10 kilometres from coast
- large commercial meat turkey site consisting of 24 houses (two of which were empty) stocked with 159,000 birds
- all birds slaughtered
- HA0 cleavage site      PQGERRRKKR\*GLF

# Wild Bird Surveillance Sites with the Protection, Surveillance and Restricted Zones around infected premises, Suffolk



**Legend**

- 3 Km Protection Zone
- 10 Km Surveillance
- Restricted Zone
- Wild Bird Surveillance Sites

*Roads*

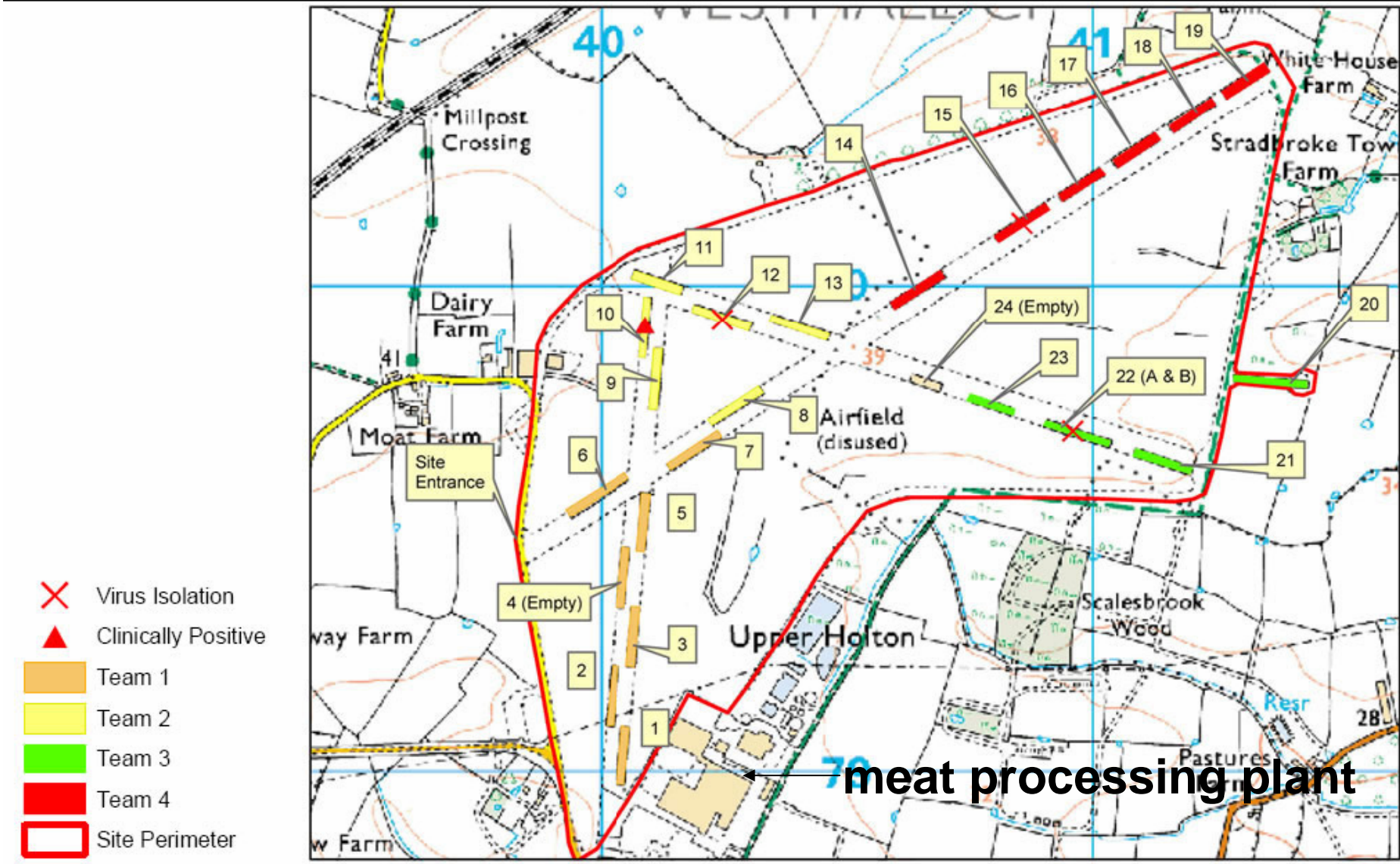
ID	Name of site (organisation)
1	Benacre Broac (Natural England)
2	Dingle Marshes and Walberswick
3	Minsmere (RSPB)
4	Sizewell Belts (Suffolk WT)
5	The Hen Redbeds (Suffolk W )
6	Blyth Estuary - Sector 1 (Natural England)
7	Blyth Estuary - Sector 2 (Natural England)
8	Blyth Estuary - Sector 3 (Natural England)
9	Blyth Estuary - Sector 4 (Natural England)
10	Weybread Pits
11	Castle Marshes Reserve (Suffolk WT)
12	Earsham Gravel Pits

Crown Copyright © 1000149501

CREATOR: NDCC, Defra  
 DATE CREATED: 2007-02-03  
 PUBLISHER: NDCC, Defra

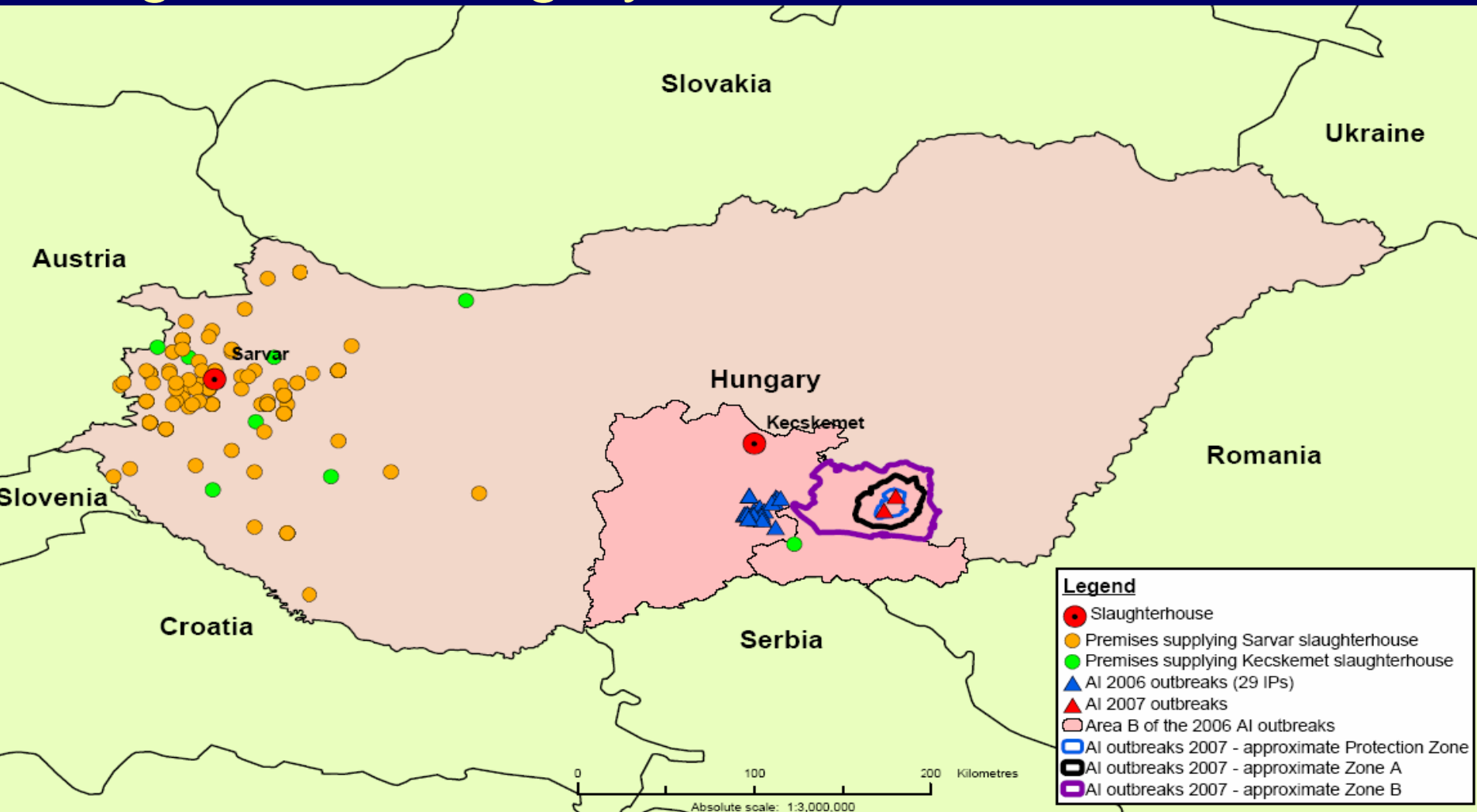


# Plan of affected farm H5N1 2007



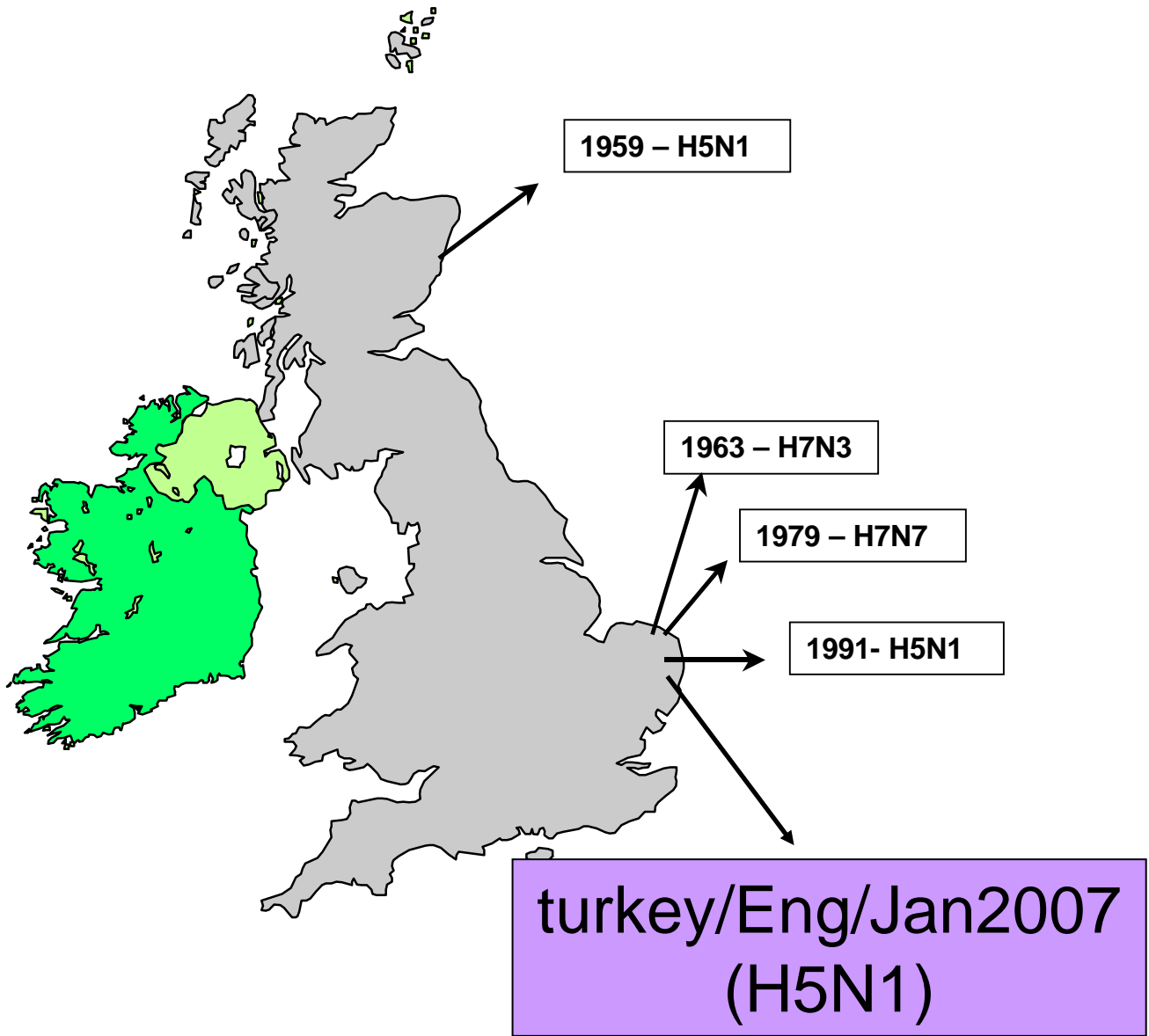


# Viruses from Holton site showed near genetic identity with viruses isolated from geese in Hungary in 2007



# Excerpt from Defra Epidemiology Report April 2007

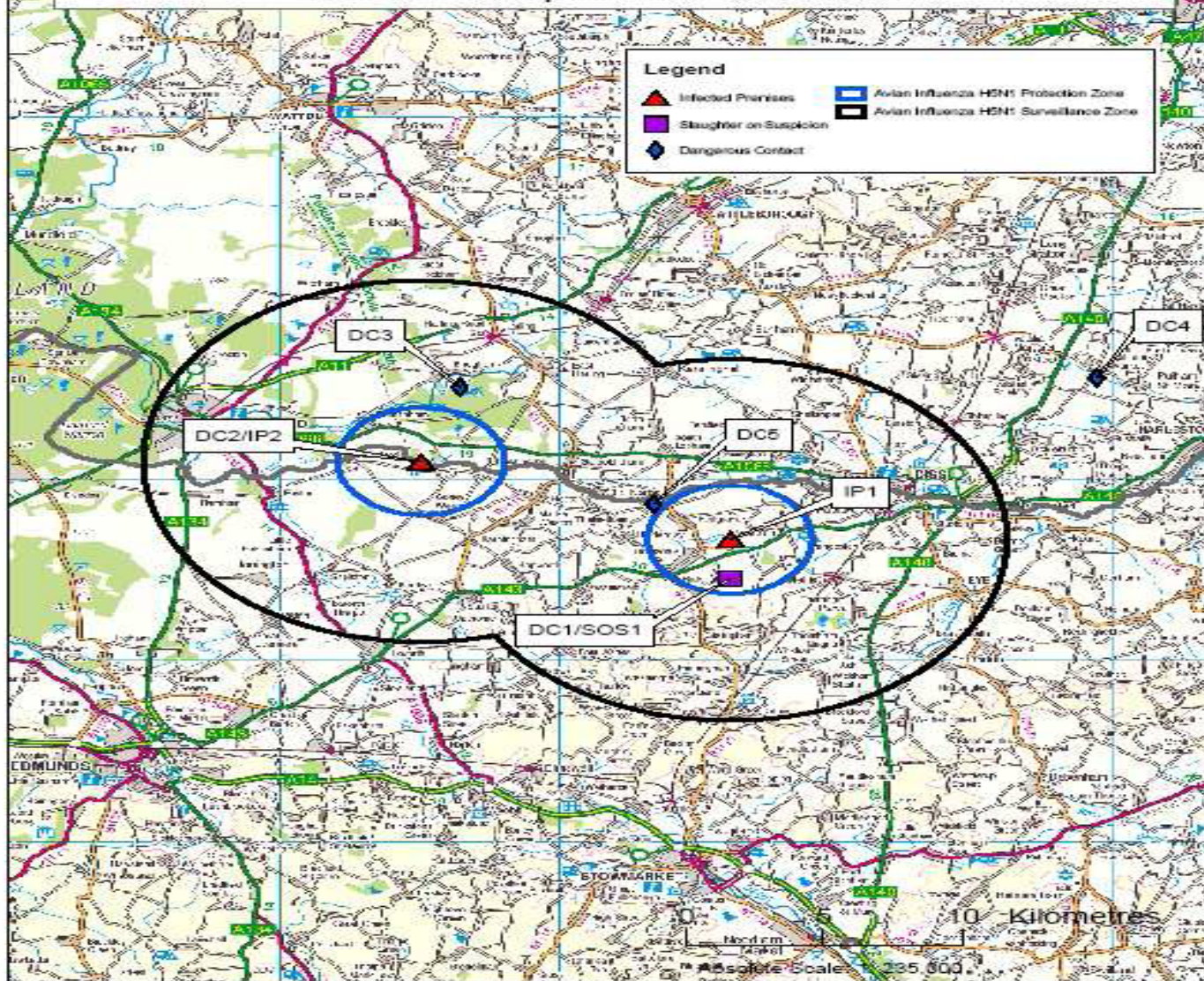
“Our conclusion is that infection was most likely introduced to GB via the importation of turkey meat from Hungary. Such meat could have originated from a sub-clinically infected turkey flock in Hungary which had been infected from a wild bird source which had also infected the two goose farms in Hungary. This is the most plausible explanation although no evidence of undisclosed infection in Hungary has been found and the possibility of infection going undetected in turkeys is considered to be a rare event.”



# A/turkey/England/2007 (H5N1)

- turkey farm near Diss Norfolk, second farm [dangerous contact] also affected
- November
- farm ~40 kilometres from coast
- free range farm with geese and ducks as well as turkeys adjacent to a lake
- all birds slaughtered on 2 infected [10,528] and 3 dangerous contact [75,000] premises
- HA0 cleavage site      PQGERRRKKR\*GLF

# DAY011 - Avian Influenza H5N1 Protection and Surveillance Zones with outbreak premises. 23 Nov 2007.

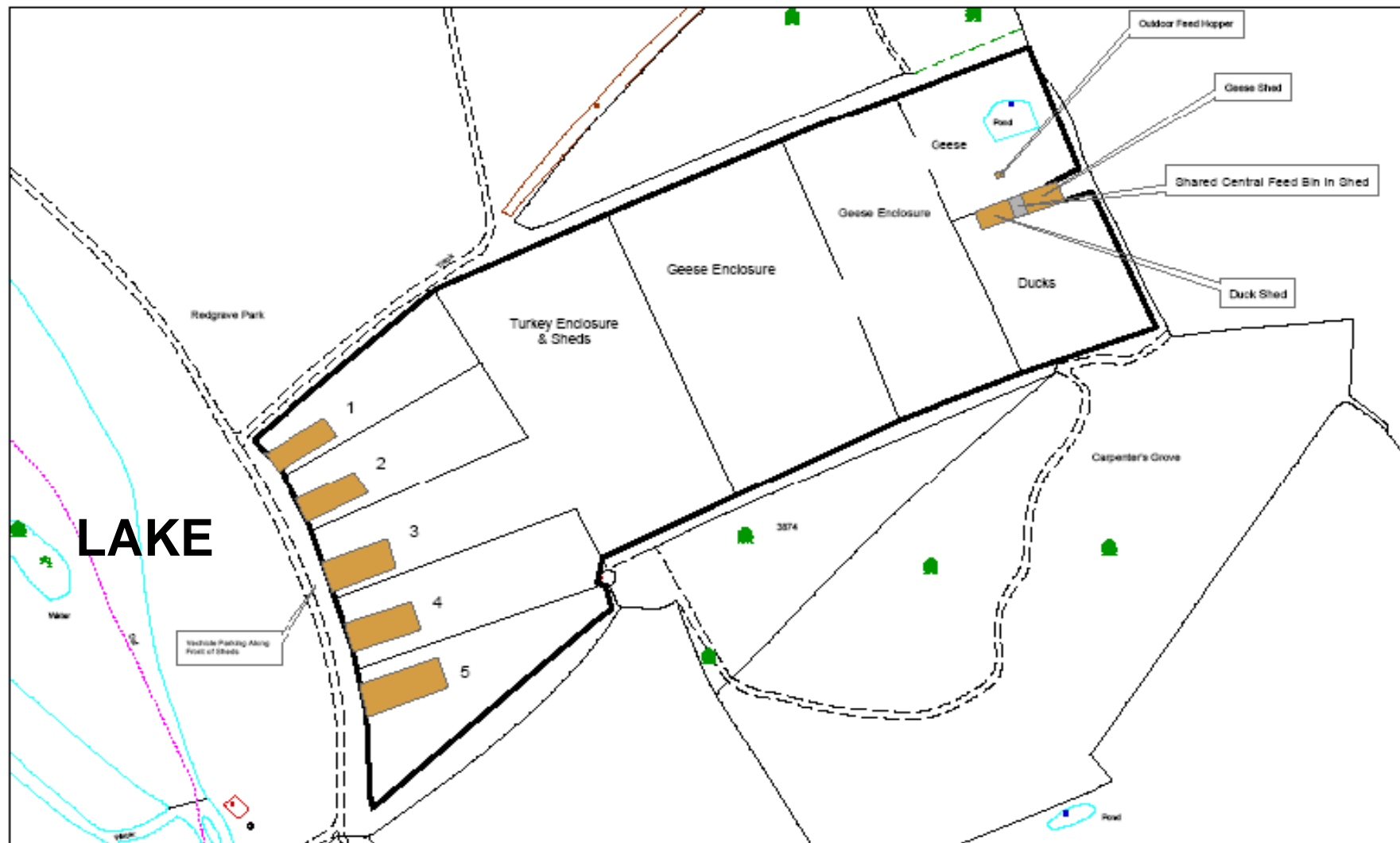


CREATOR: RADAR Team, Defra

DATE CREATED: 2007-11-23

SOURCES: NDI and EXD65 forms





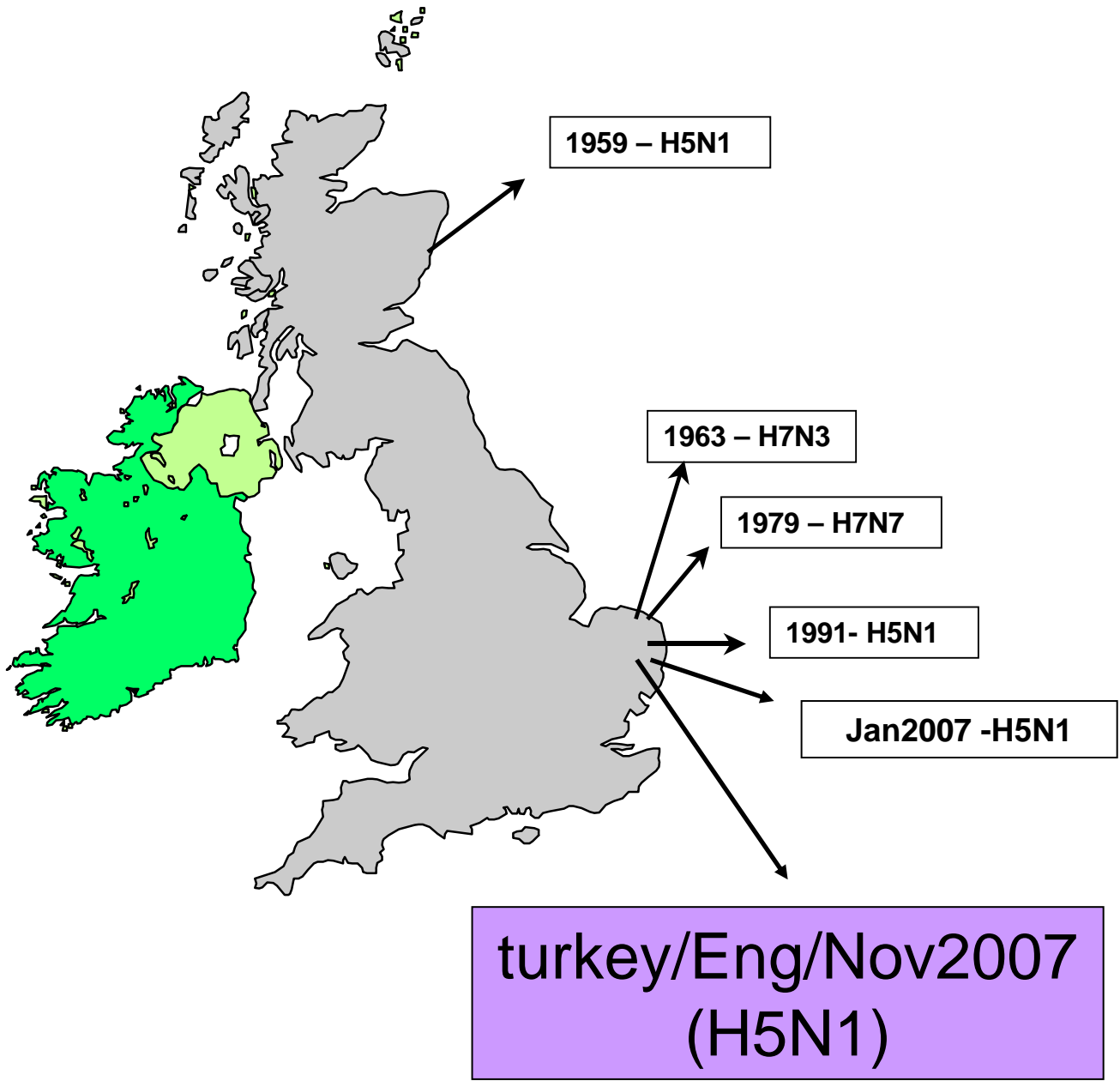
Scale - 1:2,350 0 0.04 0.08 0.16 Kilometers

HPAI H5N1 November 2007 free range turkey farm by lake









# HPAI in Great Britain

Non-poultry incidents

# HPAI H5N1 in Great Britain

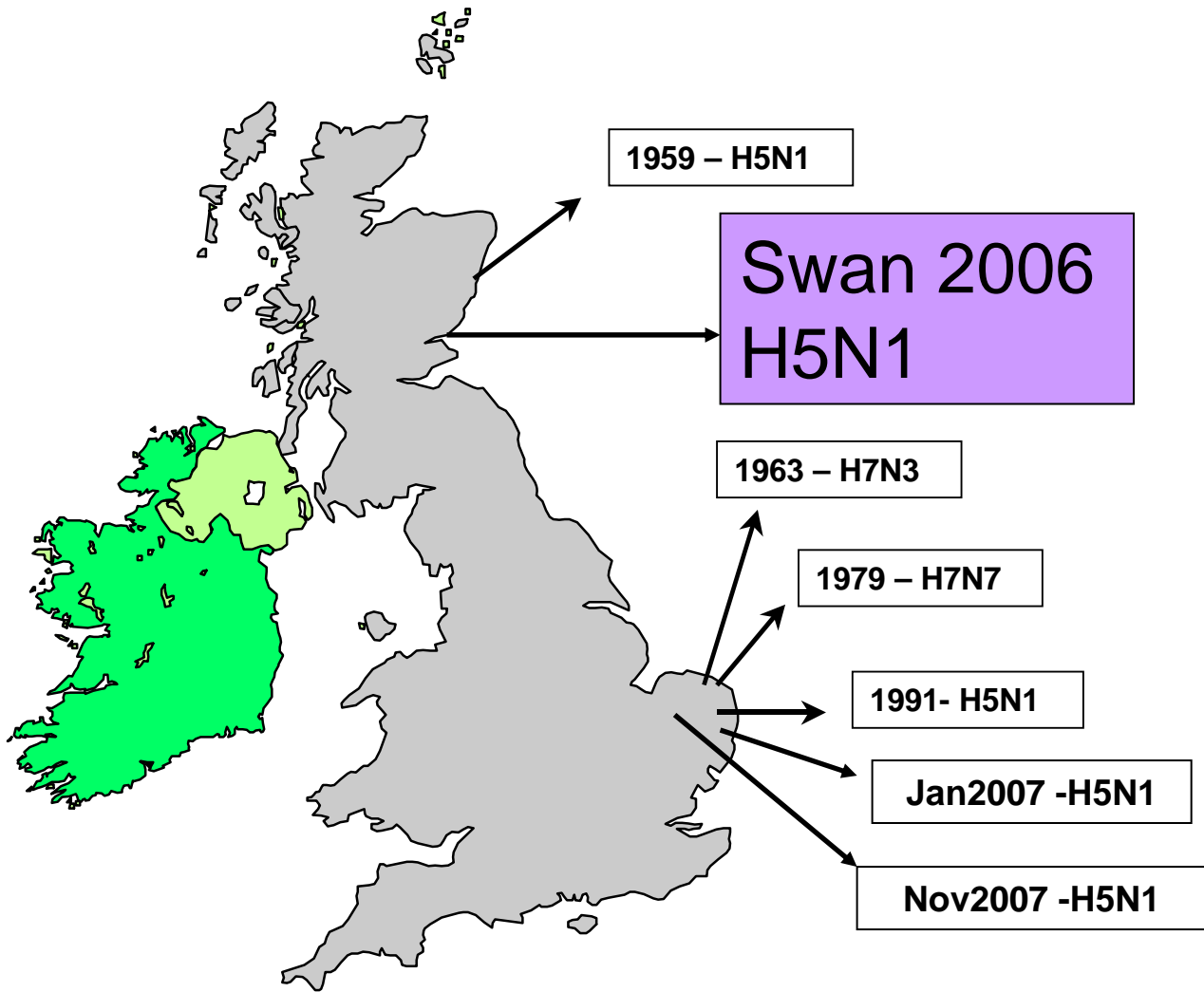
- Isolation of HPAI H5N1 from captive cage birds [mesias] in quarantine in England in October 2005
- Ostensibly these birds came from Taiwan
- Virus closest genetically to a 2005 Chinese duck isolate

Mesia



# HPAI H5N1 in wild birds(1)

- Dead whooper swan found floating in Cellardyke harbour, Fife, Scotland positive for HPAI H5N1 virus
- April 2006
- Genetically closely related to H5N1 viruses in wild birds in Germany



# HPAI H5N1 in wild birds (2)

- sick and dead mute swans [10] and one Canada goose at Abbotsbury, Dorset positive for HPAI H5N1 virus
- January 2008 swans February 2008 goose
- genetically closely related to H5N1 viruses in wild birds on European mainland

# The Swannery at Abbotsbury, Dorset



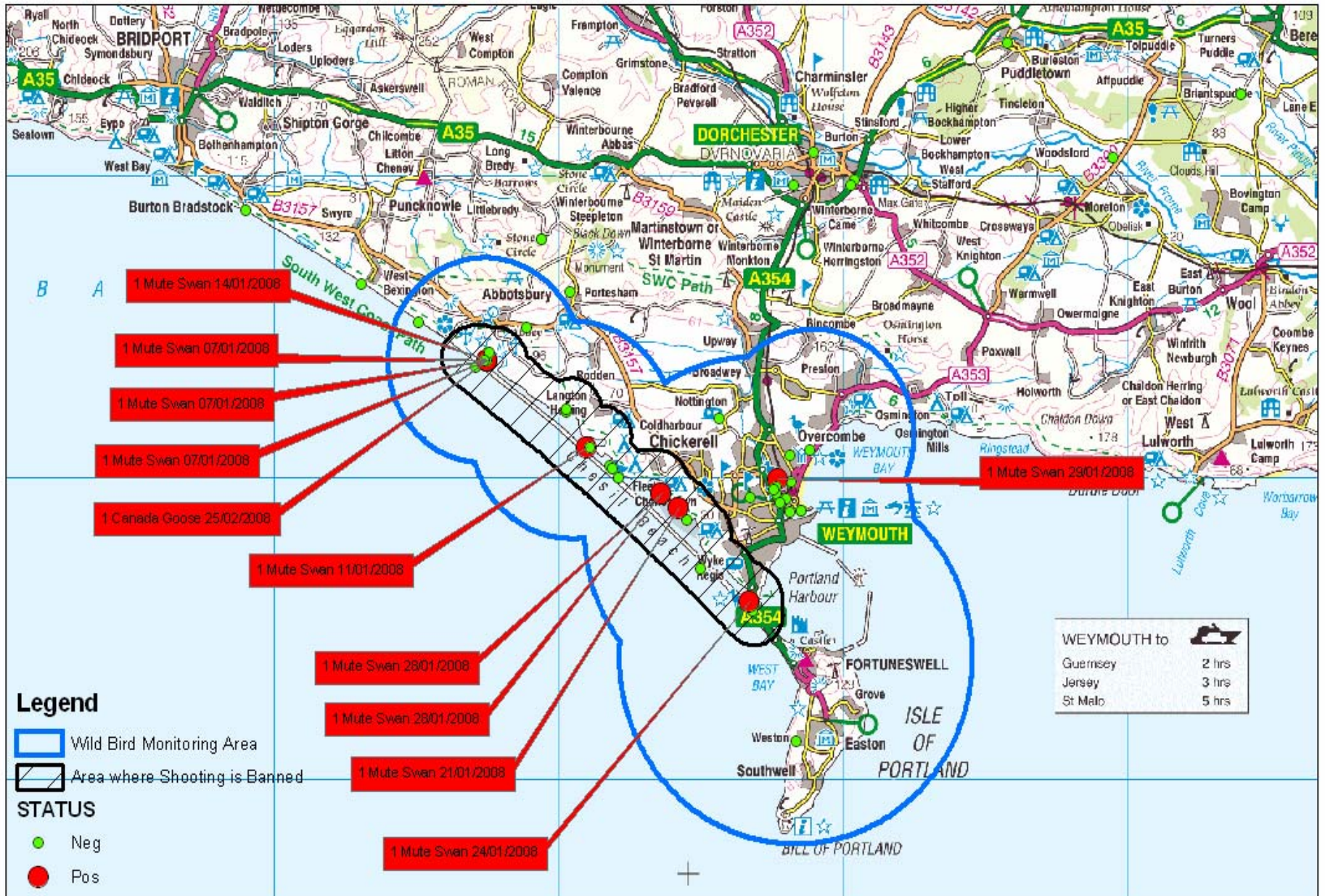
**Mute swans, coots, mallards, pochards, tufted ducks and a spoonbill**

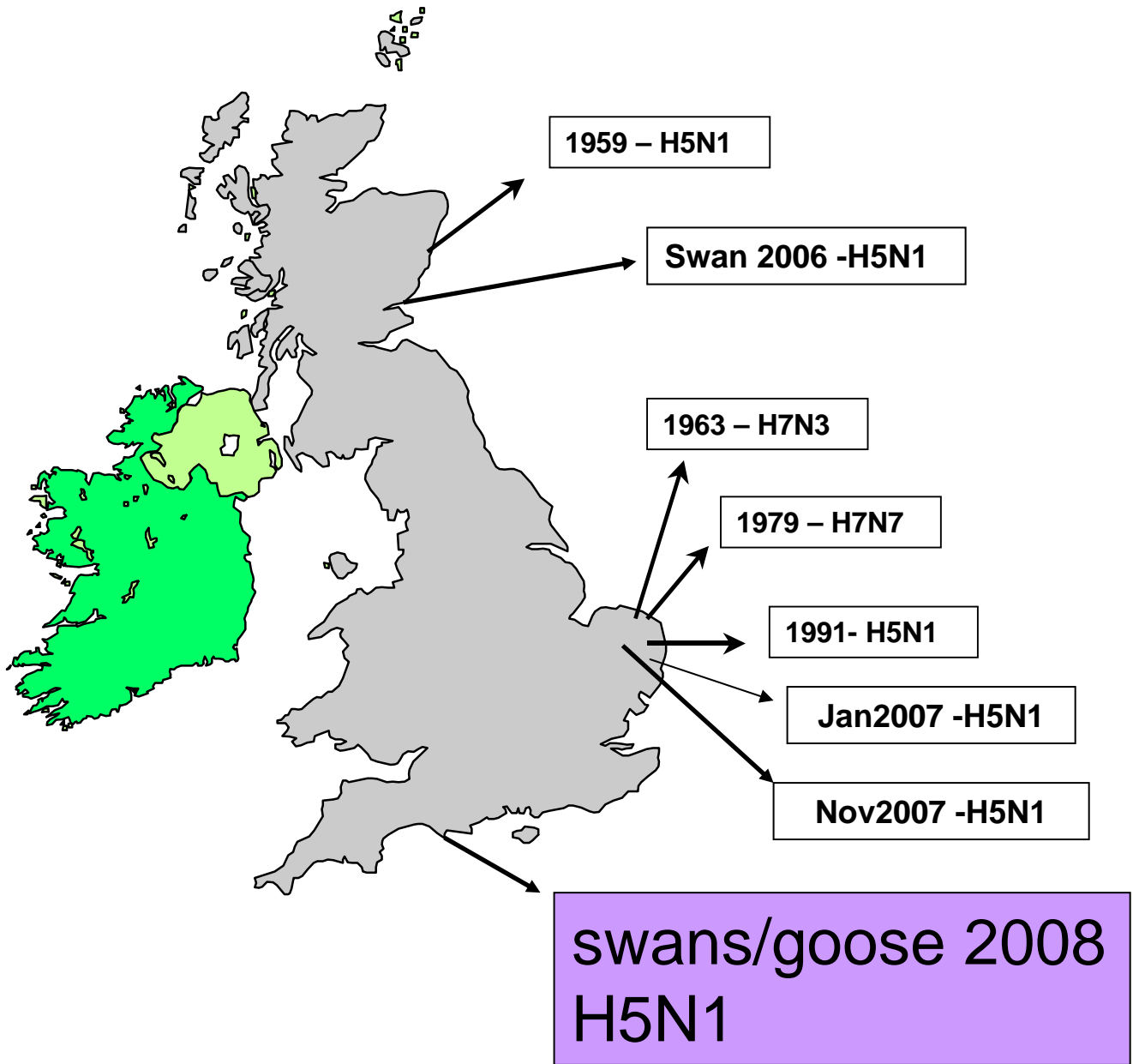
**Abbotsbury, 11 January 2008**





# Wild Bird Collections as at 18th March 2008





# HPAI outbreaks in poultry in Great Britain since 1959

Year	Subtype	Distance from East coast
1959	H5N1	“close”
1963	H7N3	<3 km
1979	H7N7	2 km
1991	H5N1	<30 km
2007 (1)	H5N1	<10 km
2007 (2)	H5N1	~40 km

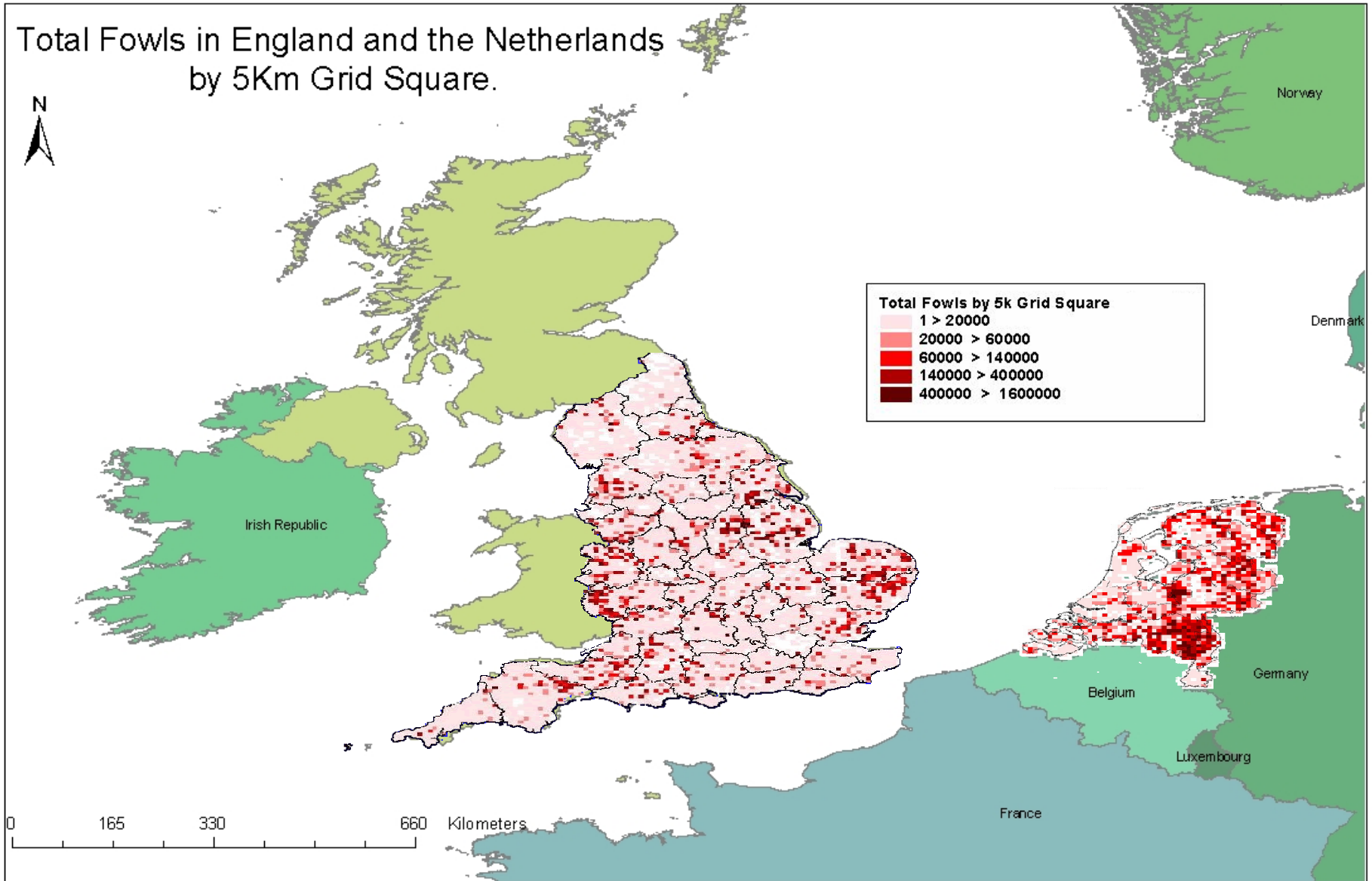
# HPAI outbreaks in poultry in Great Britain since 1959

Year	Subtype	No. Farms	No. birds
1959	H5N1	1	?<100?
1963	H7N3	2	~29,000
1979	H7N7	3	9,262
1991	H5N1	1	7,752
2007 (1)	H5N1	1	159,000
2007 (2)	H5N1	2	85,528

# HPAI outbreaks in poultry in Great Britain

- Why so little spread compared to other outbreaks in Europe?
  - Italy 1999-2000 >13,000,000 birds affected
  - The Netherlands 2003 >25,000,000 birds affected

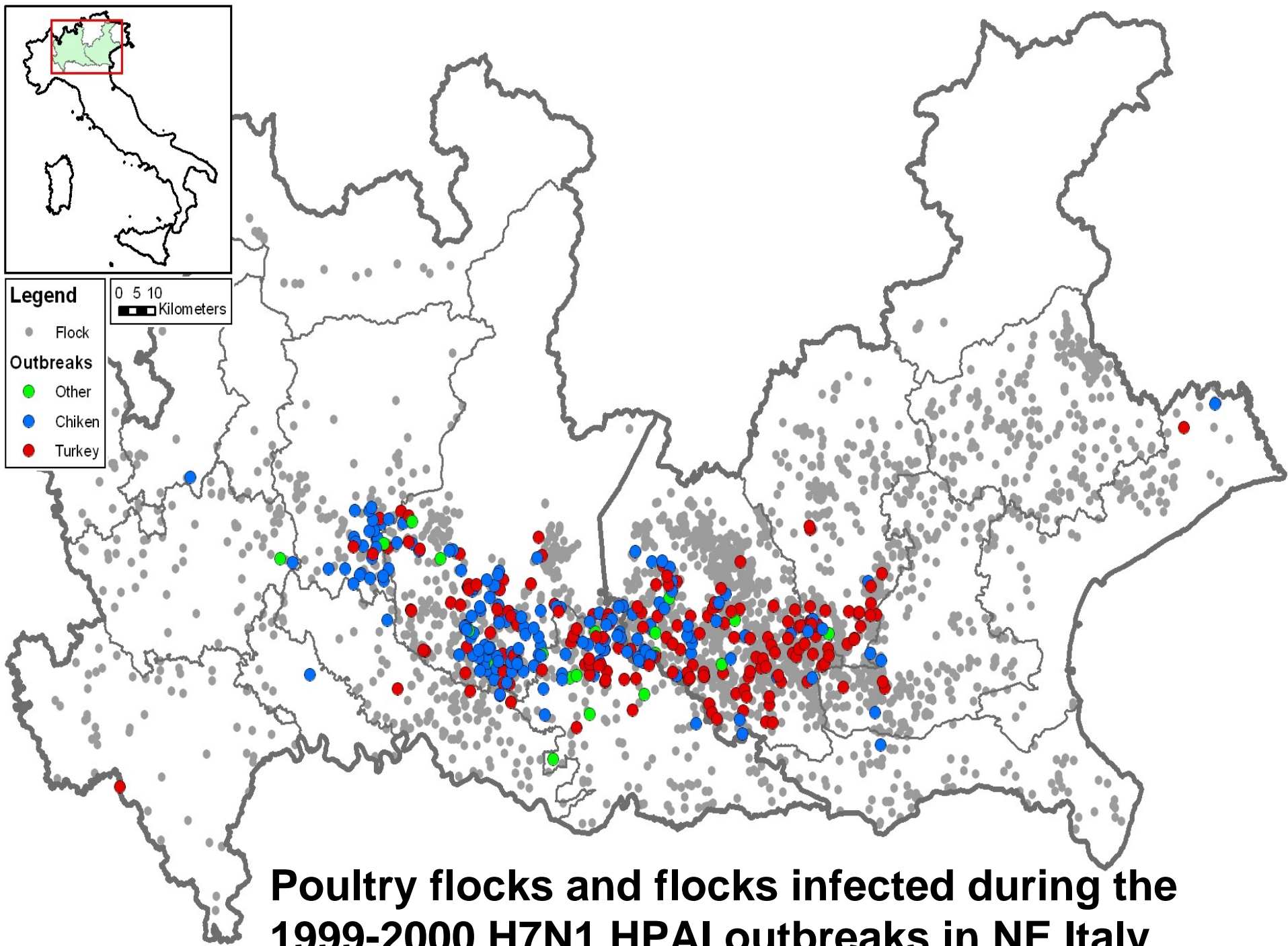
# Total Fowls in England and the Netherlands by 5Km Grid Square.



Data Source: ESRI

Originator: AHWDG GIS Unit  
Veterinary Surveillance Division

Date: 12 May 2003



**Poultry flocks and flocks infected during the 1999-2000 H7N1 HPAI outbreaks in NE Italy**

# HPAI outbreaks in poultry in Great Britain since 1959

- 4/6 H5N1 one H7N3 one H7N7
- 5/6 in turkeys one in chickens
- 4/6 close to East coast, one <30km, one ~40km
- 5/6 in Suffolk or Norfolk
- 5/6 in winter one in May following worst winter on record
- 6/6 wild bird [waterfowl] proximity



# CONCLUSION

- In Great Britain it would seem a good idea not to rear:
  - turkeys on free range or with poor biosecurity
  - near the [East] coast
  - in Norfolk or Suffolk
  - near wild waterfowl

**Thanks for your attention**

