

Bird Migration and the incidence of H5N1 HP Avian Influenza



Colin Poole, Director, Asia Program, WCS



Avian Influenza



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Conservation Perspective
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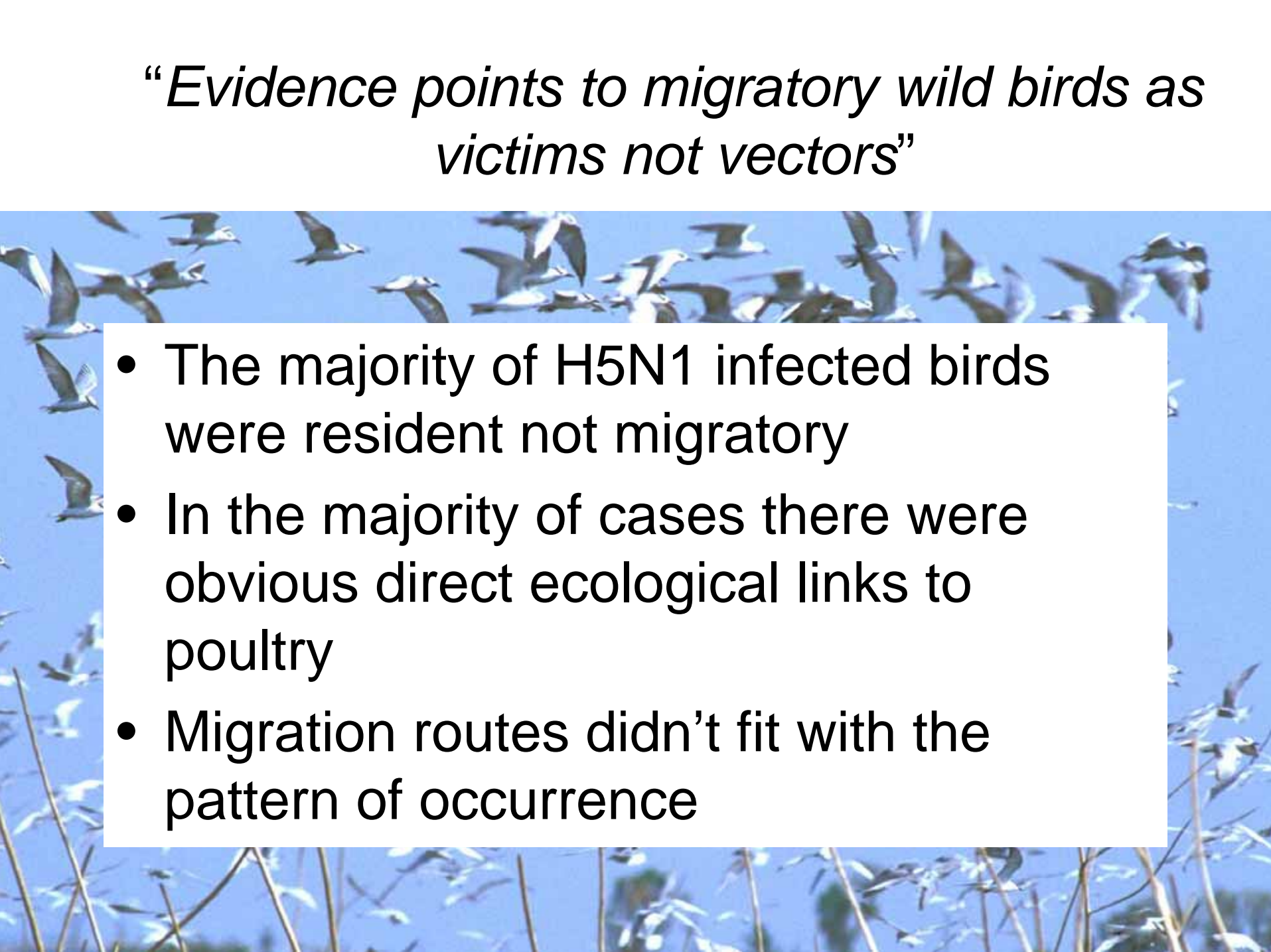
The Conservation Implications of Avian Influenza (H5N1)

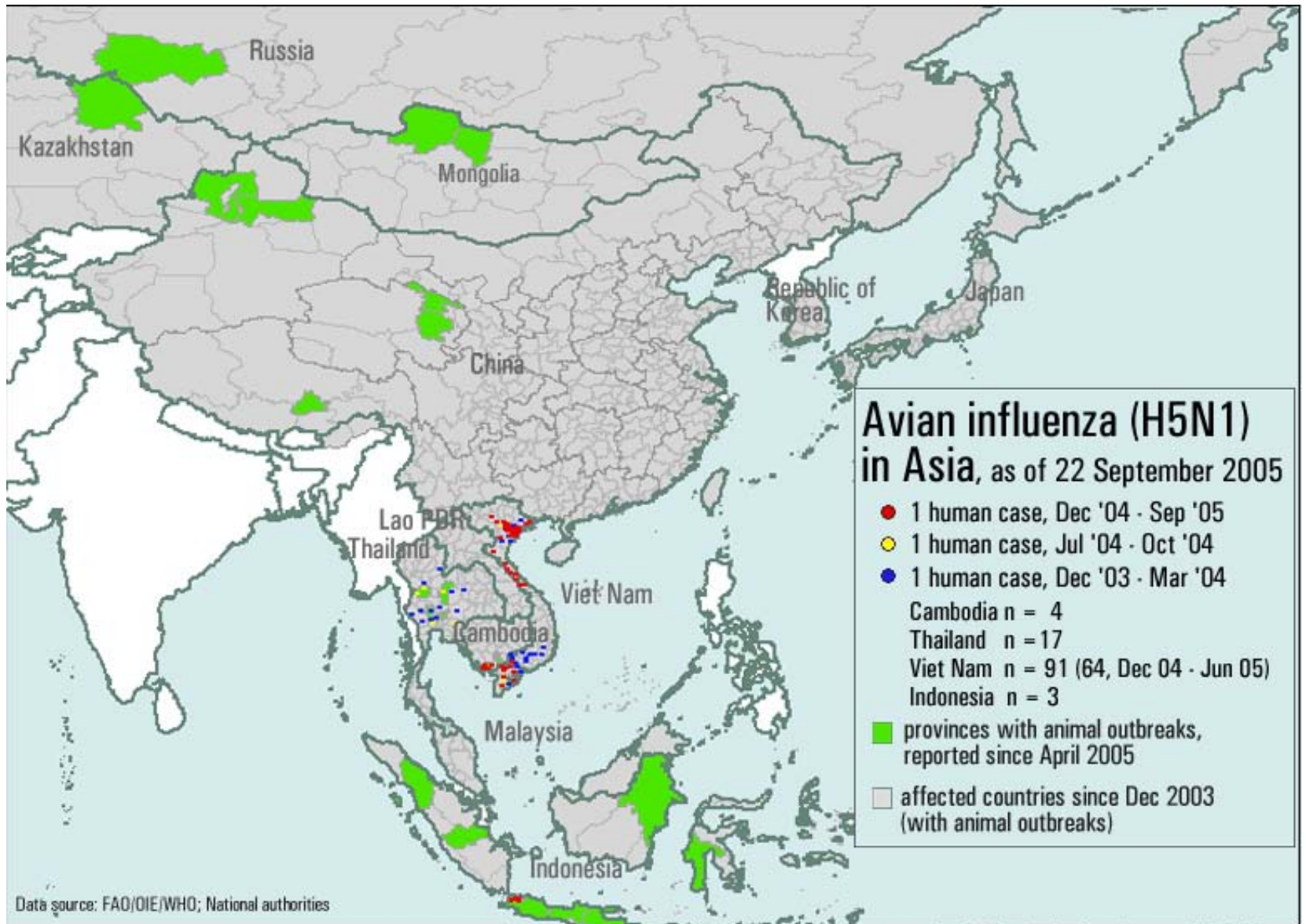


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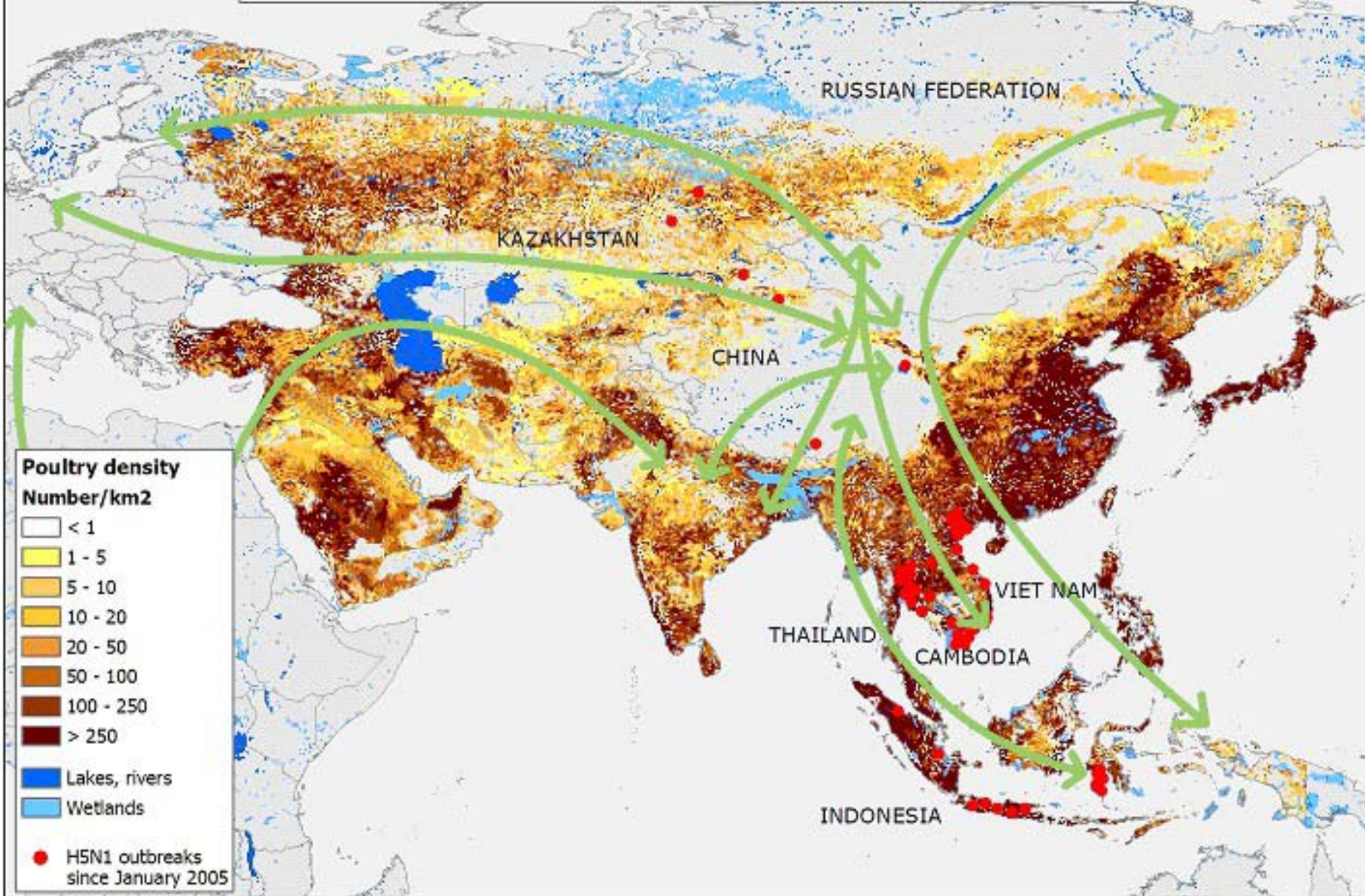
“Evidence points to migratory wild birds as victims not vectors”

- 
- The majority of H5N1 infected birds were resident not migratory
 - In the majority of cases there were obvious direct ecological links to poultry
 - Migration routes didn't fit with the pattern of occurrence



Disclaimer: The presentation of material on the maps contained herein does not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or areas or its authorities of its frontiers or boundaries.

Possible spread of HPAI along major flyways of migrating birds



What species were involved?

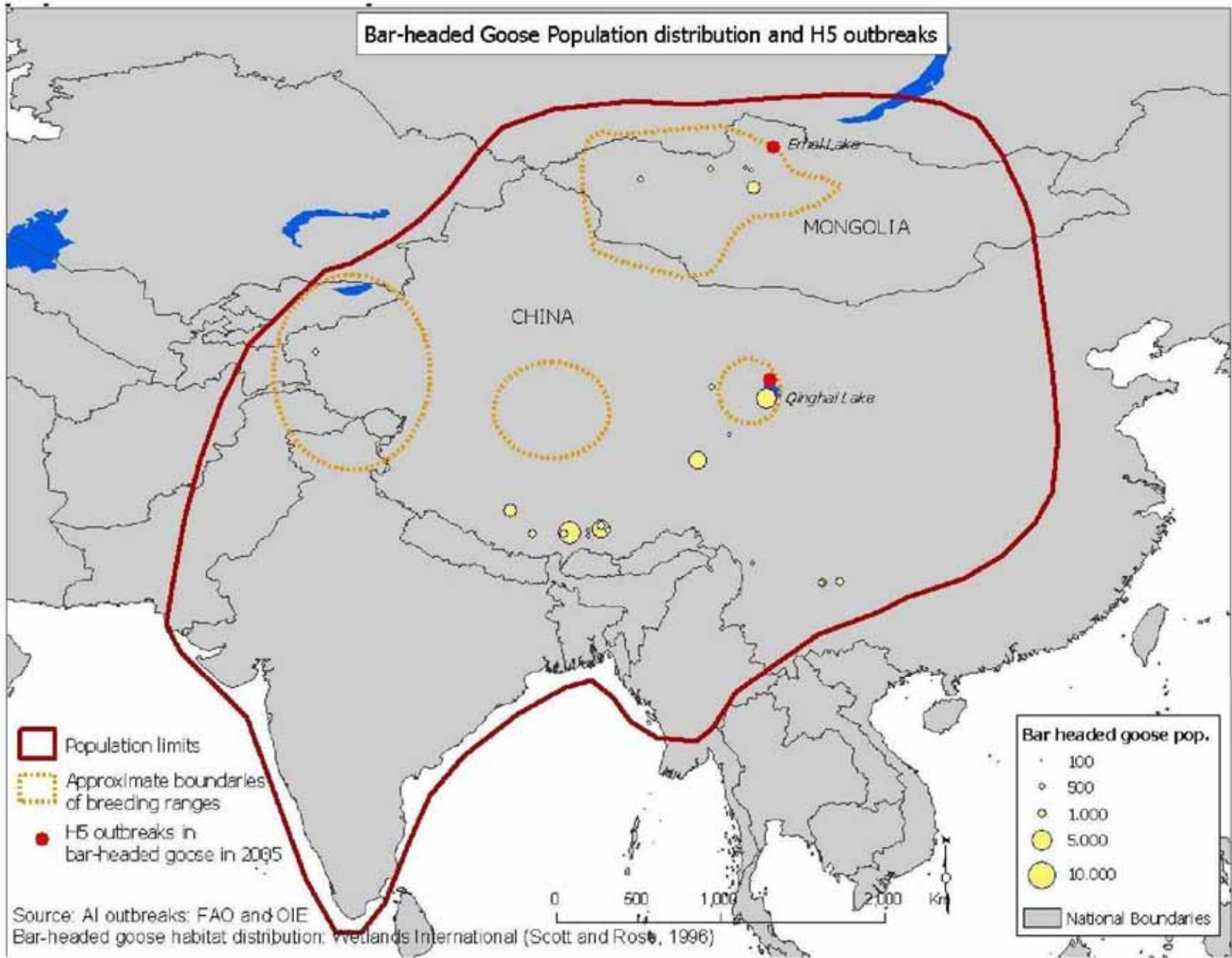
Qinghai Hu

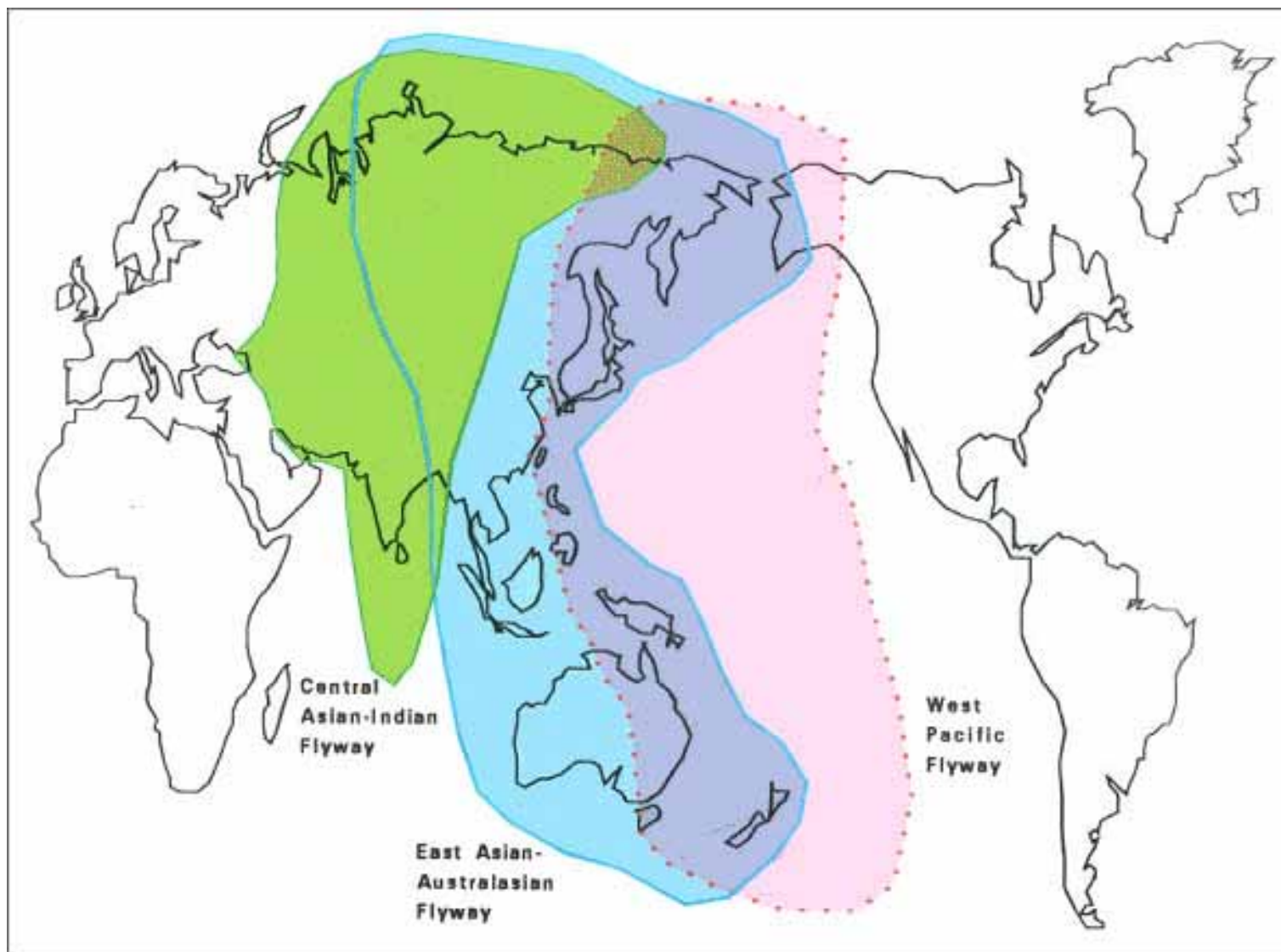
- Great Black-headed Gull *Larus ichthyaetus*
- Brown-headed Gull *Larus brunnicephalus*
- Bar-headed Goose *Anser indicus*

Mongolia

- Whooper Swan *Cygnus cygnus*

Bar-headed Goose Population distribution and H5 outbreaks

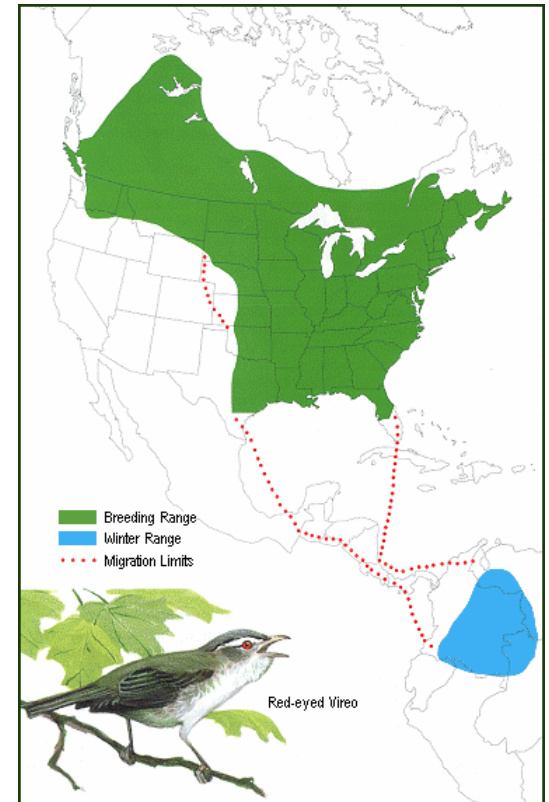
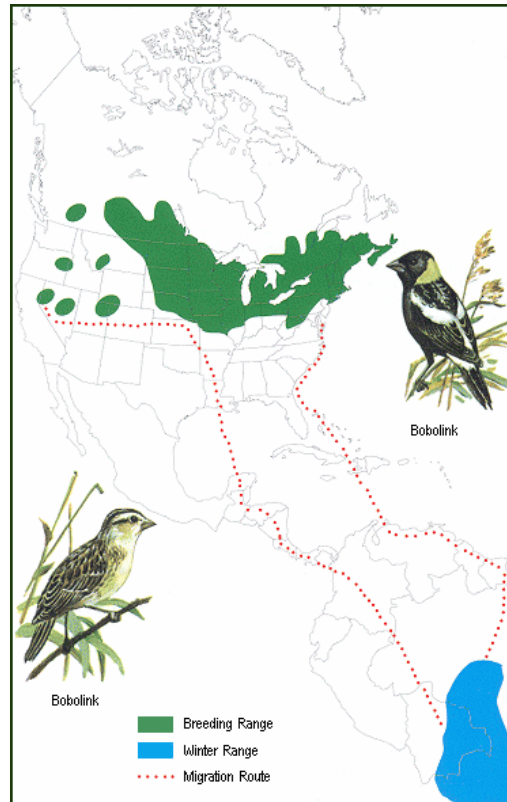
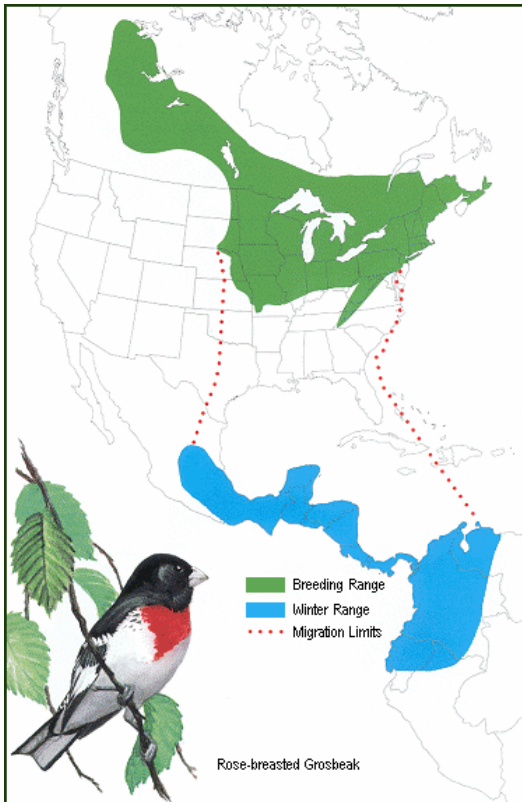




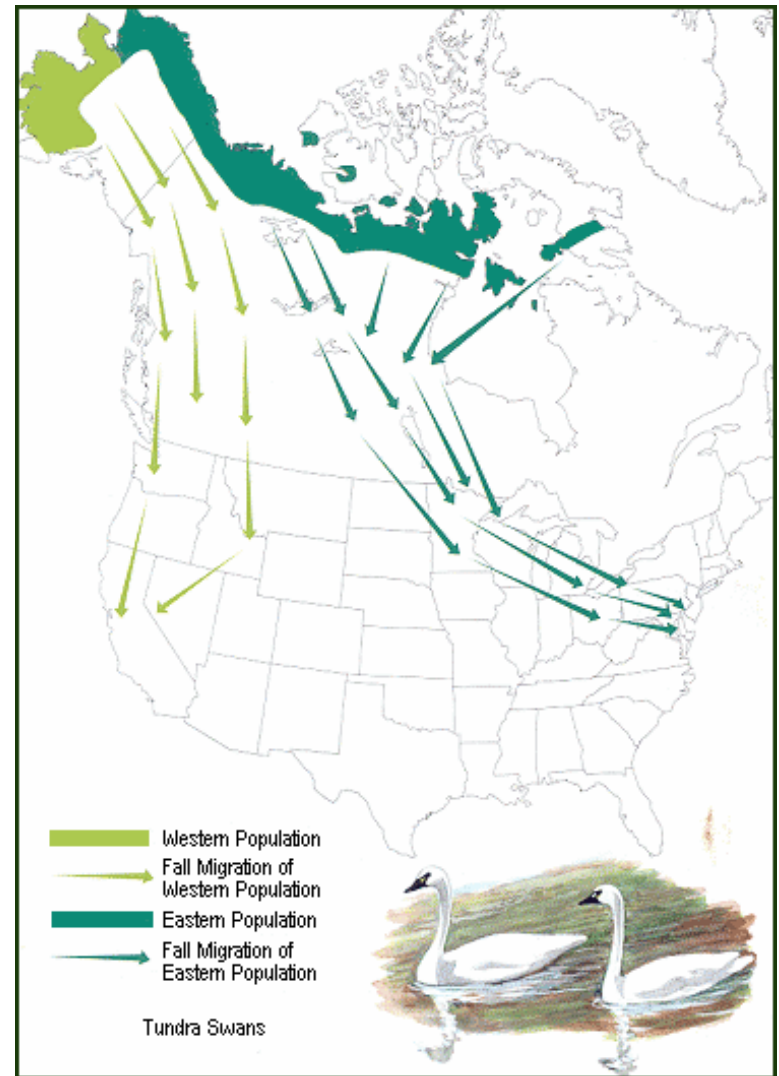
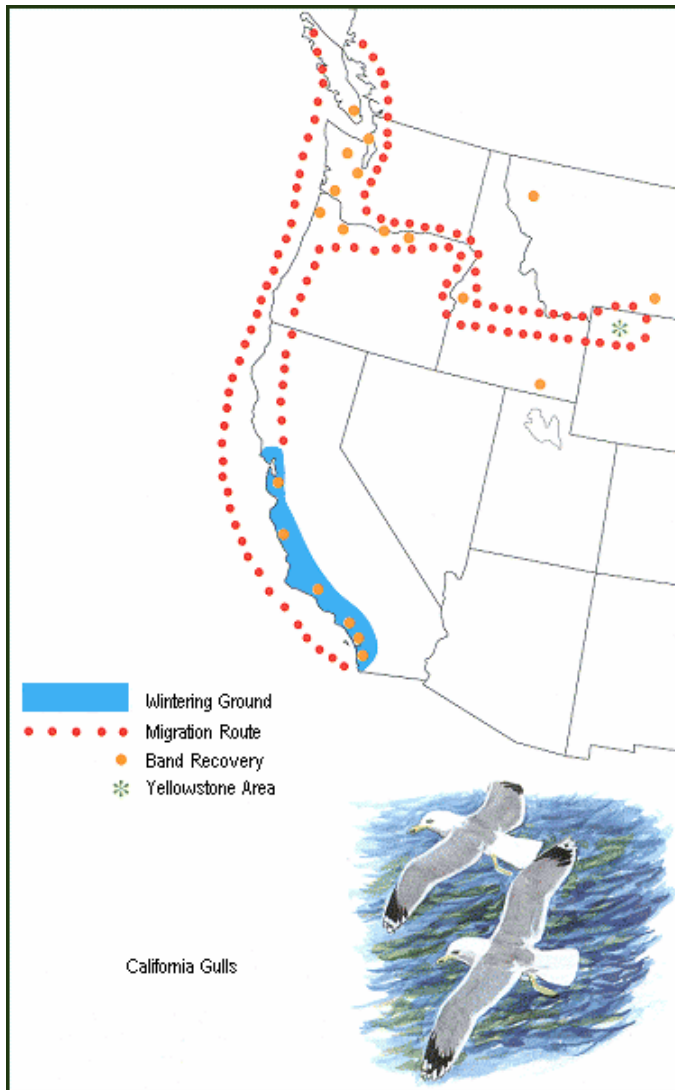
Central
Asian-Indian
Flyway

East Asian-
Australasian
Flyway

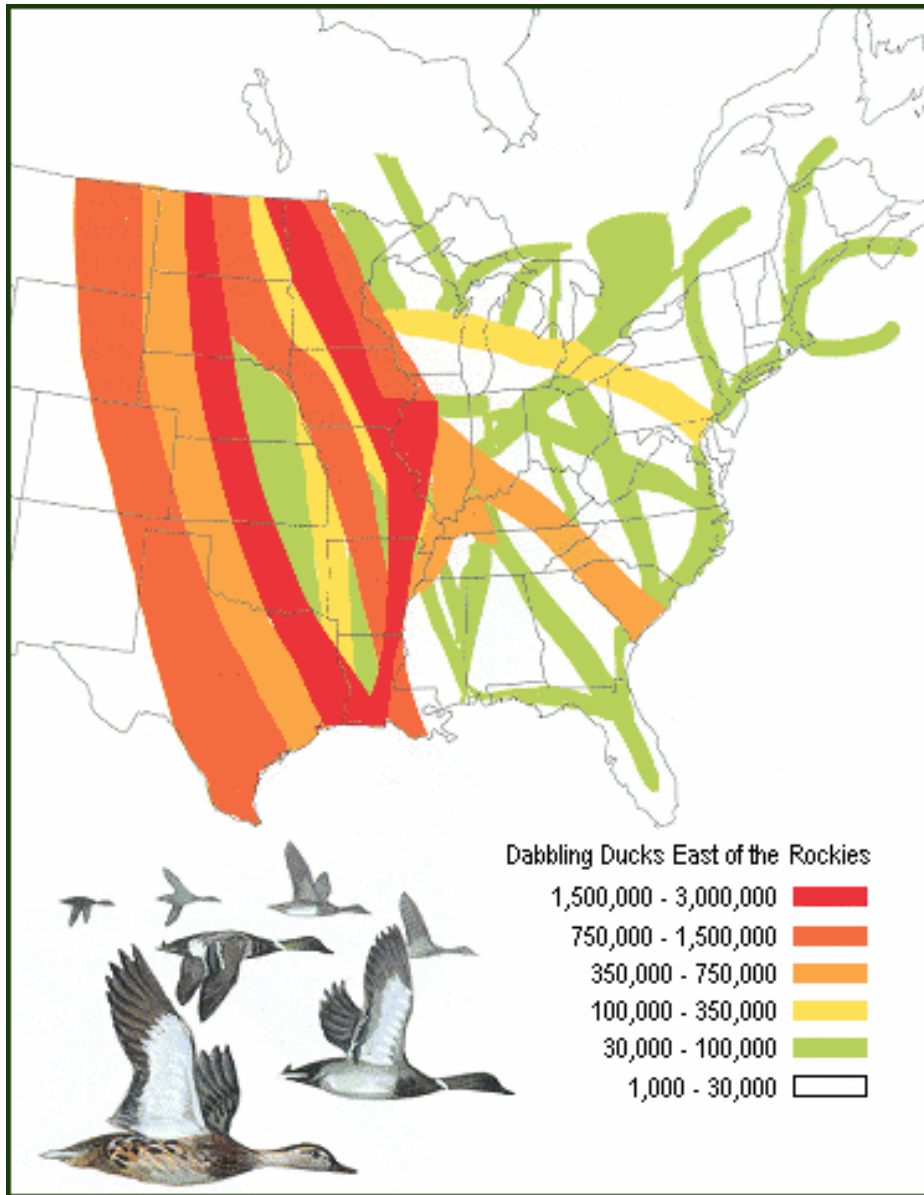
West
Pacific
Flyway



<http://www.npwrc.usgs.gov/resource/othrdata/migratio/patterns.htm>



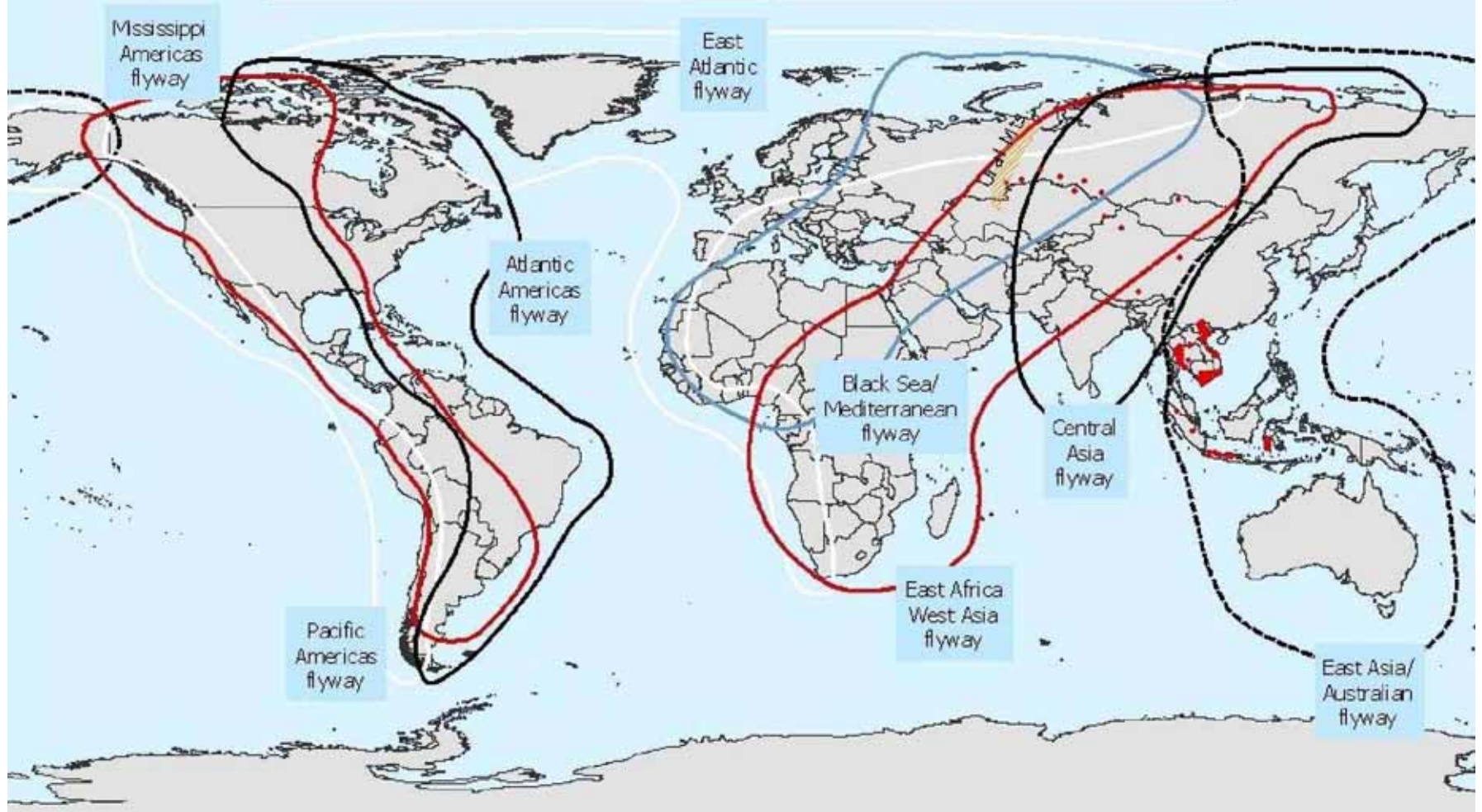
<http://www.npwrc.usgs.gov/resource/othrdata/migratio/patterns.htm>



<http://www.npwrc.usgs.gov/resource/othrdata/migratio/routes.htm>

H5N1 outbreaks in 2005 and major flyways of migratory birds

Situation on 30 August 2005



How prevalent is HP H5N1 in wild migratory birds?

Figures are hard to come by, but:

- Over the last two years well over 100,000 wild birds must have been tested across the region
- Plus now any dead bird found almost anywhere globally will be tested
- Yet only a few hundred have tested +ve for HP H5N1 (and reported to OIE)
- Of those the great majority have been resident species and ecologically linked to poultry

- Of 7000 predominantly migratory wild birds tested at the Mai Po Nature Reserve by the Hong Kong Government between 1997 and Jan 2004, none tested positive for HP H5N1.
- In Mongolia in August 2005 over 850, predominantly faecal samples were collected from wild birds, yet only one sample tested +ve for HP H5N1
- An isolation rate of 20% of chickens and 5% of domestic waterfowl in Hong Kong live poultry markets before the 1997-1998 poultry depopulation
- A study last year of domestic ducks in the Vietnamese Mekong Delta showed that over 70% tested serologically +ve for H5N1

The '*migration*' of birds in trade – Oct 2005

- Eight of 46 birds tested in shipment of 1037 being smuggled by ship along with “a number of mice and turtles” to Taipei were positive for H5N1. Species included Hill Myna, Black-naped Oriole and Red-billed Leiothrix
- A parrot brought into the UK as part of a mixed consignment of 148 parrots from Surinam (South America) was held in 'quarantine' with 216 birds from Taiwan before dieing of H5N1 after 30 days
- *STOP PRESS* – perhaps not, perhaps “50 finches from Taiwan” (BBC News last night)



Oct 2004 - two Mountain Hawk Eagles smuggled by commercial plane from Thailand to Belgium

Over 650 other birds at the quarantine facility (predominantly parrots from Africa) were euthanised and six other consignments of live birds from Africa had already been shipped to the Netherlands and Russia.



Van Borm S, Thomas I, Hanquet G, Lambrecht B, Boschmans M, Dupont G, et al. Highly pathogenic H5N1 influenza virus in smuggled eagles, Belgium. *Emerging Infectious Diseases* 2005 July. <http://www.cdc.gov/ncidod/EID/vol11no05/05-0211.htm>

What are the solutions?

What NOT to do -

- We can't eliminate birds with forms of avian influenza in wild populations
- We can't stop birds migrating
- There's no point culling wild birds – it just causes them to disperse further

But we CAN do a better job at separating wild and domestic birds by -

- Better controls of the bird trade
- Better controls of live markets
- Increasing biosecurity of poultry
- Including better controls of free range farming and waste products
- Better understanding and monitoring wild bird movements and ecology, so we can better understand the real risk areas, in both directions
- Sharing and publishing the above data accurately, especially –ve data

Migratory birds can be *vectors*, but evidence points to the fact that this is very rare and they are still far more often *victims* of HP H5N1