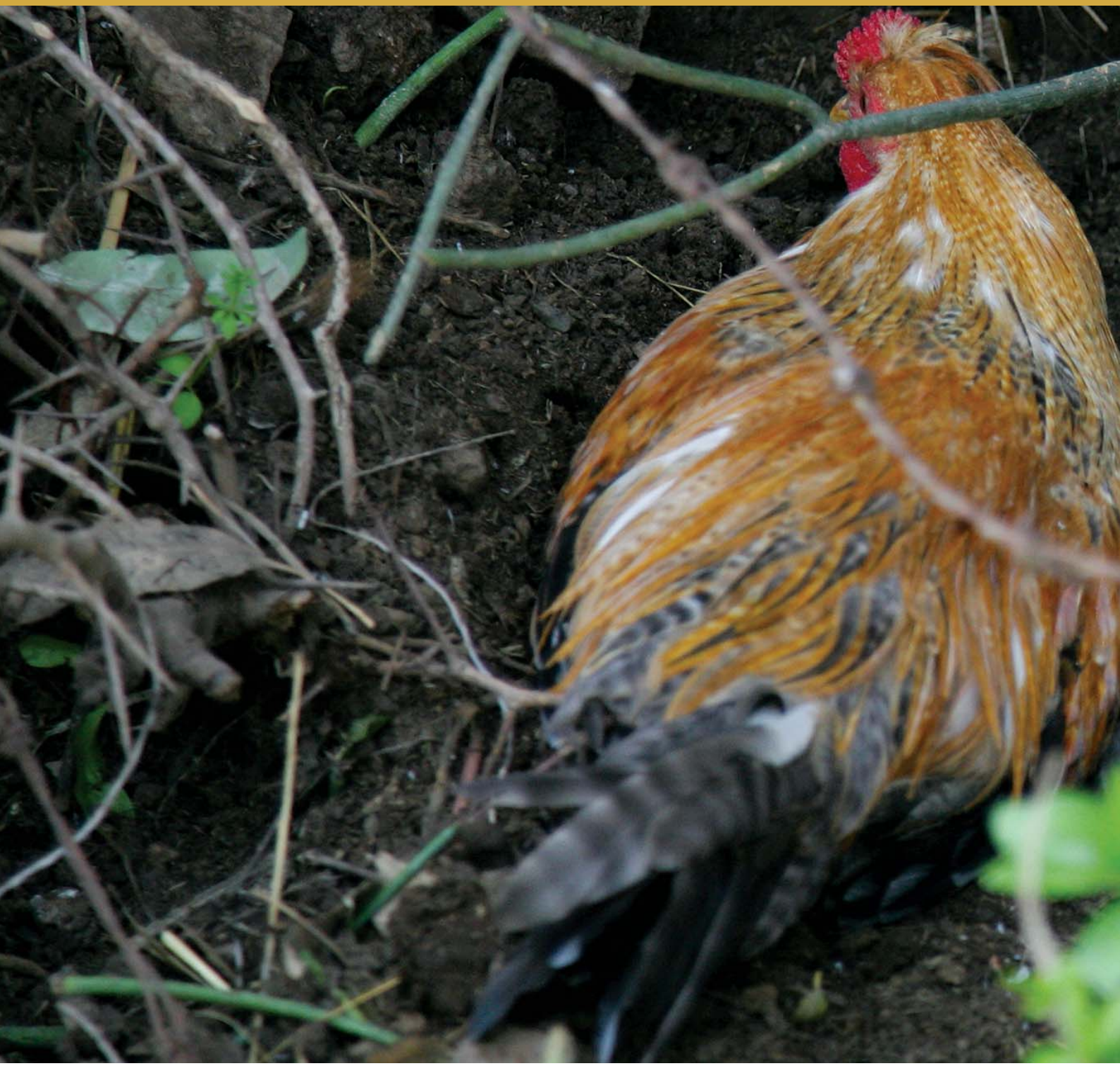
Risk Mapping for HPAI H5N1 in Africa
Improving surveillance for bird flu

User Guide for Initial Bird Flu Risk Maps



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The project: This publication is part of a series developed to support decision-making for the prevention and control of highly pathogenic avian influenza through the use of risk mapping, and is an output of the Early Detection Response and Surveillance of Avian Influenza in Africa (EDRS-AIA) project, implemented by the International Livestock Research Institute (ILRI) in collaboration with African Union Interafrican Bureau for Animal Resources (AU/IBAR).

Researchers and writers: A joint research team from the Royal Veterinary College (RVC) in London and ILRI prepared this publication series under the guidance of Professor Dirk Pfeiffer. Team members included Solenne Costard, Kim Stevens, Raphaelle Metras, Wachira Theuri, Russ Kruska, Tom Randolph, Delia Grace, and Saskia Hendrickx.

Editor: Carole Douglis

Graphic Design: Lilian Ohayo, Eric Ouma

Photographer: Stevie Mann/ILRI

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User Guide for Initial Bird Flu Risk Maps

These initial risk maps are guides to regions in Africa where bird flu is more likely to be introduced, and where it has the potential to spread, once introduced.

These maps are based on our current understanding of the risk factors involved in the introduction and spread of bird flu in Africa and the relative importance of each factor.

However, they are guides only: they do not consider all risk factors (e.g. cooking habits) and should always be used in conjunction with ground-truthing and other tools such as risk assessment.

Contents

Risk factors for introduction and spread of bird flu

The maps take into account the known risk factors that can be mapped, and the degree of risk that each represents at any one point. These risk factors include:

Places where poultry is imported, traded (legally or illegally), produced, and consumed

- Main roads
- Major markets and major metropolitan areas—places of dense human populations where a lot of poultry is likely to be concentrated, traded and consumed
- Ports
- Airports

Major global flyways for migratory birds

At their resting places, wild birds that might carry the virus could transmit it to domestic birds, including poultry. The higher the concentration of birds, the more likely this is to happen. Places of concern include:

- Wetlands
- Lakes, rivers and other water bodies, whether standing or flowing
- Irrigated fields

What do the risk maps show?

If avian influenza was to be introduced into Africa...

- in which area(s) of the continent is it most likely to be introduced - based on the risk factors considered
- in which area(s) of the continent is it least likely to be introduced - based on the risk factors considered.

Once avian influenza has been introduced into Africa...

- in which area(s) of the continent does the outbreak have the greatest potential to spread - based on the risk factors considered
- in which area(s) of the continent does the outbreak have the least potential to spread (i.e. remain an isolated case) - based on the risk factors considered.

Key findings from the initial risk maps

Areas at higher risk of introduction and spread of bird flu

Areas identified as having the highest risk of introduction of bird flu include the Nile Delta, the coastline of Northern Africa, Western Africa, and parts of South Africa (Figure 1 on page 6).

Areas identified as having the lowest risk include Northern Africa, Somalia, Ethiopia and Botswana (Figure 1).

Areas with the potential for spread of bird flu once the disease has been introduced

Most of sub-Saharan Africa was identified as having the highest risk for the spread of bird flu (Figure 2 on page 7). In other words, most areas of the continent are more vulnerable to spread than to initial introduction of bird flu.

Regions with the lowest risk of spread include Northern Africa, Somalia, Angola, Namibia and the south-west parts of South Africa (Figure 2).

Recommendations for use

These preliminary risk maps show only the relative likelihood of introduction or spread of bird flu in a region. They cannot predict where actual outbreaks will occur. Similarly, the risk maps for spread of bird flu show areas at risk of spread, but not the extent of spread in any one area.

Although they are based on our current understanding of the risk factors involved in the introduction and spread of bird flu in Africa and the relative importance of each factor, our understanding of the epidemiology of bird flu in Africa is still only partial. In addition the data needed to produce such maps are frequently incomplete, out of date, and in some cases flawed. The risk maps will be validated during the next step of the project.

Use: These maps can be used to help identifying areas where veterinary health officials and workers can target their surveillance efforts, in conjunctions with complementary tools and considering other factors that influence the risk of introduction or spread of bird flu.

Limitations of the risk maps are discussed in more detail in the Initial Report.

1) Identification of areas in Africa at risk of introduction of bird flu

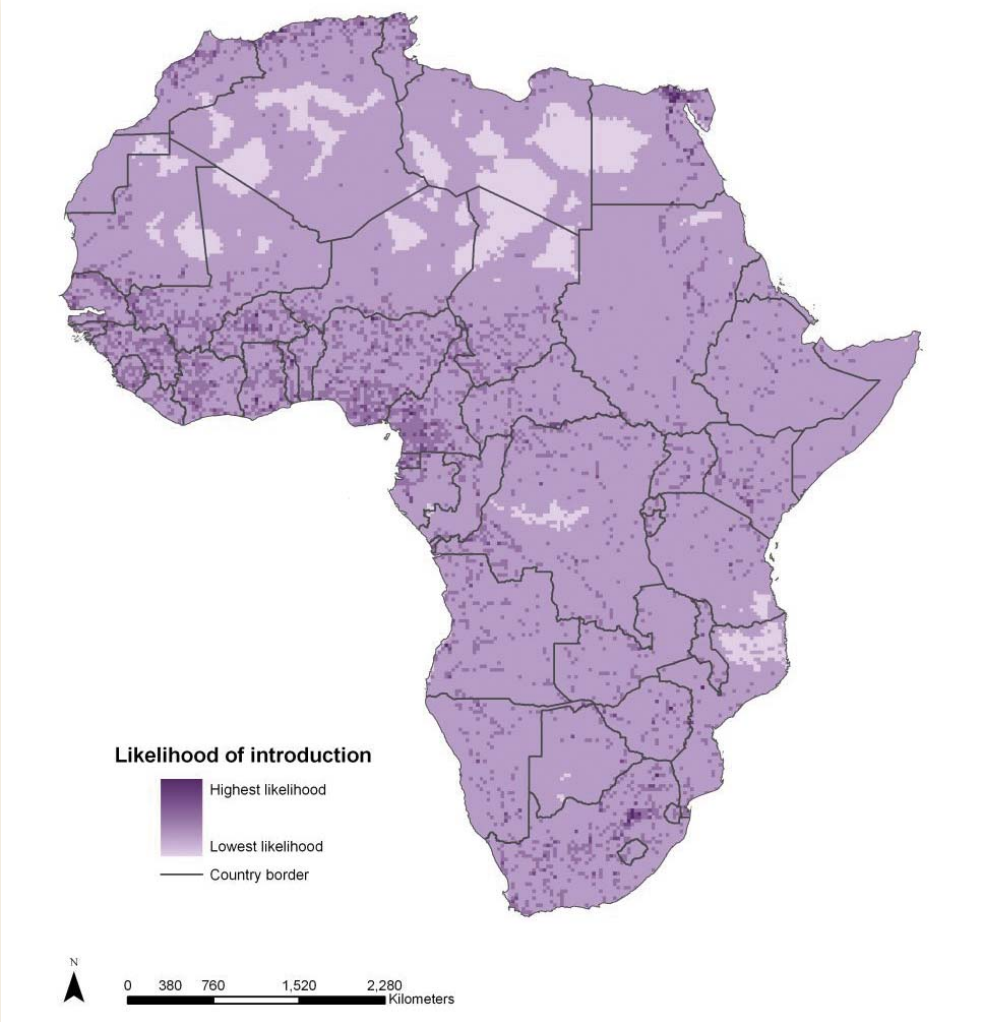


Figure 1:
Map showing relative likelihood of introduction of bird flu in Africa

Note

This map shows only relative likelihood of introduction. It cannot predict where actual outbreaks will occur. Although it is based on our current understanding of the risk factors involved in the introduction of bird flu in Africa and the relative importance of each factor, our understanding of the epidemiology of bird flu in Africa is still only partial. In addition the data needed to produce such maps are frequently incomplete, out of date, and in some cases flawed. The risk map will be validated during the next step of the project.

Key findings for risk of introduction at the continental level

Areas identified as having the highest risk of introduction of bird flu include the Nile Delta, the coastline of Northern Africa, Western Africa, and parts of South Africa.

Areas identified as having the lowest risk include Northern Africa, Somalia, Ethiopia and Botswana.

2) Identification of areas in Africa with the potential for spread of bird flu, once the disease has been introduced

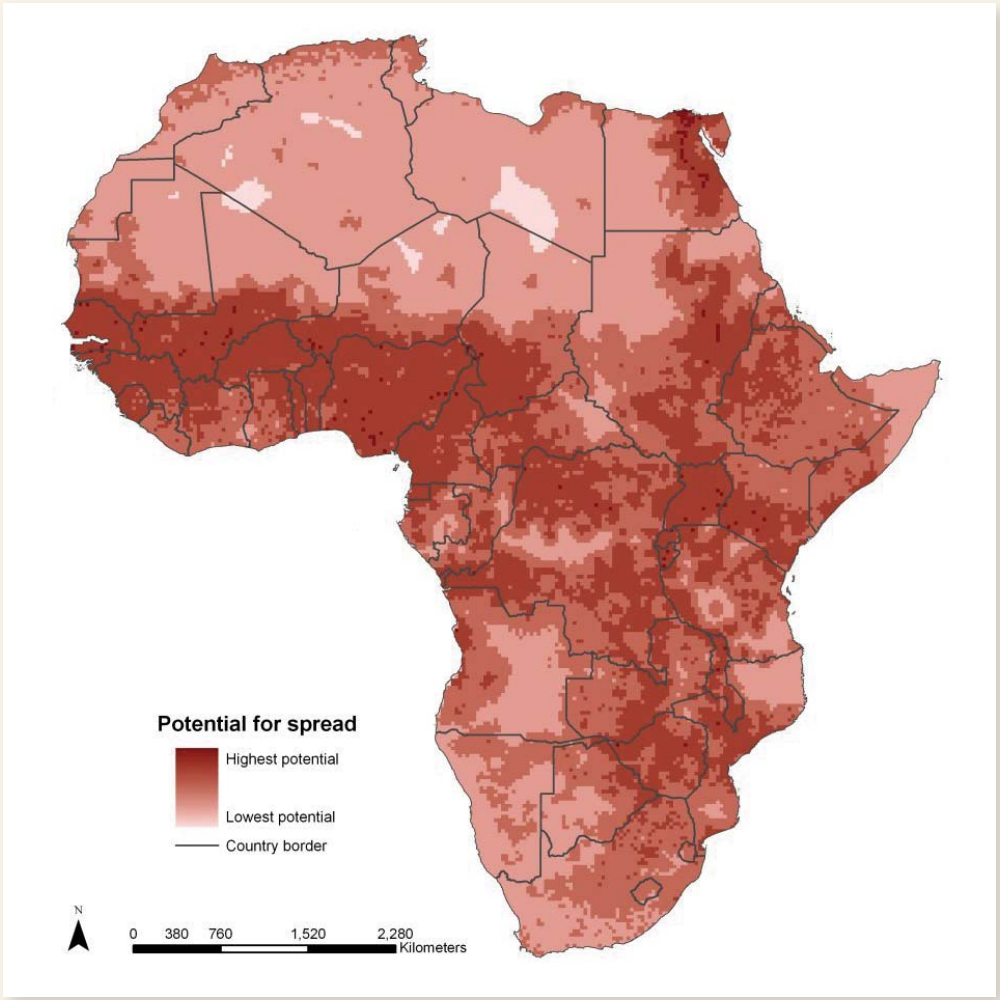


Figure 2:
Map showing relative potential for spread of bird flu in Africa, once the disease has been introduced

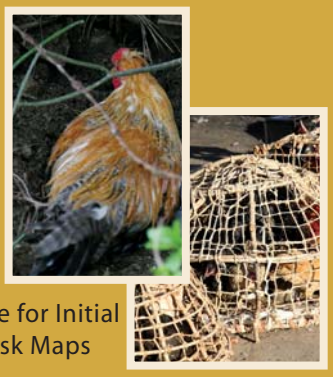
Note

This map shows areas with potential for spread (once the disease has been introduced), but not the extent of spread in any one area. Although it is based on our current understanding of the risk factors involved in the spread of bird flu in Africa and the relative importance of each factor, our understanding of the epidemiology of bird flu in Africa is still partial. In addition the data needed to produce such maps are frequently incomplete, out of date, and in some cases flawed. The risk map will be validated during the next step of the project.

Key findings for risk of spread at the continental level

Most of sub-Saharan Africa was identified as having the highest risk for the spread of bird flu.

Regions with the lowest risk of spread included Northern Africa, Somalia, Angola, Namibia and the south-west parts of South Africa.



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