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CURRENT ANIMAL HEALTH SITUATION WORLDWIDE: ANALYSIS OF EVENTS AND TRENDS

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This report has been prepared based on the notifications and reports that countries submitted to the OIE via the World Animal Health Information System (WAHIS) for the period 2021 and up to and including 3 February 2022. The report begins with an analysis of Members' reporting through the OIE-WAHIS early warning system. This is followed by a description of the global situation regarding three diseases and infections of major interest, for which epizootic situations were observed in 2021 and early 2022, namely infection with African swine fever (ASF) virus, infection with high pathogenicity avian influenza (HPAI) viruses, and infection with SARS-CoV-2 in animals. The report continues with an analysis of Members' reporting on diseases in aquatic animals and ends with an update on OIE-WAHIS state of play. During the period covered by this report, many countries were impacted by the COVID-19 crisis. In this context, ensuring the global continuity of animal health surveillance and notification has been particularly challenging. This exceptional situation may have resulted in gaps of information in OIE-WAHIS.

1. Members' reporting through the OIE-WAHIS early warning system

This section of the report evaluates the reporting behaviour of Members and non-Members using, in particular, the information derived from the submission of early warning reports (Immediate Notifications [INs] and Follow-Up Reports [FURs]). The focus on these reports is justified by their pivotal importance in ensuring efficient and timely sharing of animal health data with the global community, thereby enabling effective prevention and control of relevant animal diseases at country, regional and global level. A recent study published in *Science Advances* has highlighted the crucial role of prevention actions in avoiding the spread of pathogens, including spillover to humans, and in reducing pandemic threats[1]. The authors highlighted that "*prevention actions cost less than 1/20th the value of lives lost each year to emerging viral zoonoses and have substantial co-benefits*". Early detection and rapid response, including timely and proper disease notification at global level, clearly form part of such prevention actions.

This section begins by examining the historical trend of reports submitted since 2005, followed by a more focused analysis of the most recent reporting period (2021 and up to 3 February 2022).

[1] Bernstein, A.S., Ando, A.W., Loch-Temzelides, T., Vale, M.M., Li, B.V., Li, H., Busch, J., Chapman, C.A., Kinnaird, M., Nowak, K. and Castro, M.C., 2022. The costs and benefits of primary prevention of zoonotic pandemics. *Science Advances*, 8(5), p.eabl4183.

The main objectives in this section are as follows: to provide global figures on the reporting situation and their trend over time; to evaluate differences in reporting behaviour for aquatic and terrestrial animal diseases; and to identify the diseases of current global concern.

The section ends with an evaluation of Members' efficiency in reporting information to the OIE, in terms of timeliness in report submission after disease confirmation.

Description of the historical reporting of INs/FURs and the trend since 2005 for terrestrial and aquatic animal diseases

Since 2005, 4054 INs (yearly average and standard deviation of 226 ± 117.7) and 11 297 FURs (yearly average and standard deviation of 628 ± 516.3) have been submitted by Members and non-Members to the OIE, through OIE-WAHIS. On average, 2.8 FURs have been submitted for each IN sent to the OIE.

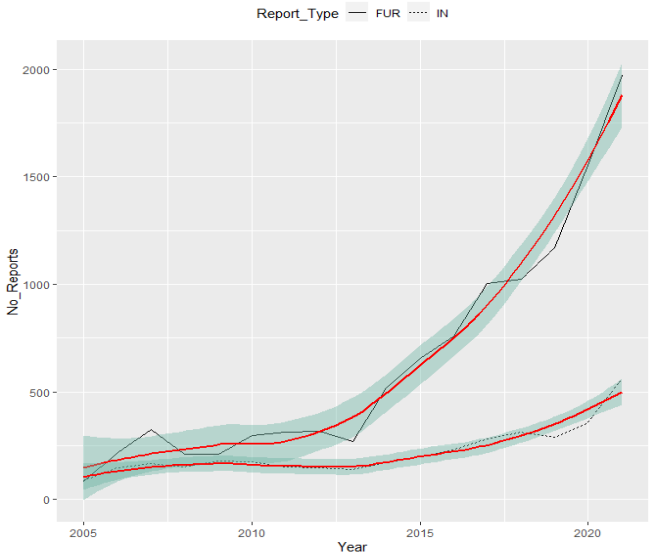
Since 2005, a large majority of early warning reports have been for terrestrial animal diseases, representing the 93.7% of all INs (3798/4054) and 99% of all FURs (11 185/11 297). A similar disparity between aquatic and terrestrial animal diseases reporting is observed regarding the average number of FURs submitted per IN: 2.9 for terrestrial animal diseases vs 0.4 for aquatic animal diseases. In other words, in the case of aquatic animal diseases, most IN reports did not give rise to any FURs to provide an update on the evolution of the epidemiological situation of the event.

During the period analysed, the most frequently reported terrestrial animal diseases are as follows: avian influenza (AI)[2], with 31% of all the terrestrial INs submitted; infection with African swine fever (ASF) virus, with 12% of all INs; and infection with foot and mouth disease (FMD) virus, with 10% of INs. These three diseases alone represent more than 50% of the INs submitted to the OIE since 2005. Regarding aquatic animal diseases, the three most frequently reported diseases through INs are as follows: infection with koi herpesvirus (15% of the aquatic INs), infection with viral haemorrhagic septicaemia (9%), and infection with infectious salmon anaemia (9%).

The trend in terms of the number of INs and FURs submitted per year during the period 2005 to 2021 is shown in Figures 1 and 2, for terrestrial and aquatic animal diseases, respectively. A significant rise in the number of INs and FURs for terrestrial animal diseases occurred during this period: the increase is particularly notable for FURs since 2013, while for INs the increase was more regular and homogeneous throughout the period. A historical maximum was reached in 2021, with 562 INs and 1970 FURs. To explain this increase, besides the changes in the global epidemiological situation, it is worth bearing in mind that since 2005 the OIE has implemented various communication and training strategies designed to increase reporting by its Members.

[2] For the purposes of this section, avian influenza includes: infection with high pathogenicity avian influenza (HPAI) viruses in poultry / infection with HPAI viruses in birds other than poultry, including wild birds, and infection with low pathogenicity avian influenza (LPAI) viruses, including low pathogenicity avian influenza viruses having proven natural transmission to humans associated with severe consequences.

Figure 1. Evolution in the number of Immediate notifications (INs) and Follow-up reports (FURs) reported during the period 2005–2021 for terrestrial animal diseases. *Black lines represent the original data, while red lines represent the trend interpolated using the loess approach. Light green areas represent the standard error of the interpolation.*



The reporting of aquatic animal diseases shows a totally different behaviour from that observed for terrestrial animal diseases: a marked variability was observed throughout the period, even if the loess interpolation highlights a tendency for a slight increase in the number of INs and FURs submitted. Another notable observation is that more INs than FURs were submitted, meaning that a majority of events involving aquatic animal diseases were reported by INs without any further information provided through FURs.

Figure 2. Evolution in the number of Immediate notifications (INs) and Follow-up reports (FURs) reported during the period 2005–2021 for aquatic animal diseases. *Black lines represent the original data, while red lines represent the trend interpolated using the loess approach. Light green areas represent the standard error of the interpolation.*

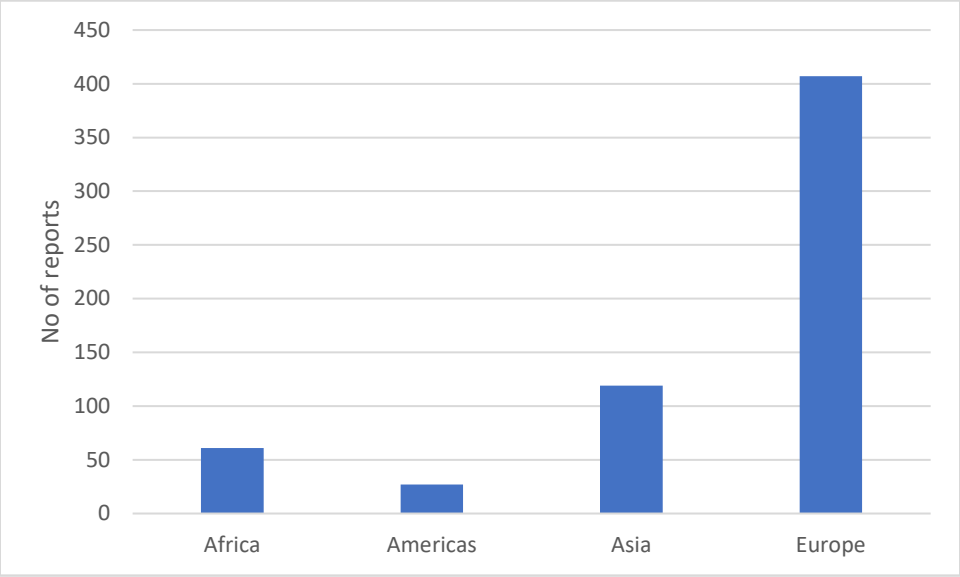
Description of the recent reporting situation of INs/FURs (2021 and early 2022)

During 2021 and early 2022, 635 INs were submitted: 614 (96.7%) for terrestrial animal diseases and 21 (3.3%) for aquatic animal diseases, thus confirming for the recent reporting period the specific reporting behaviour for each of the two groups of diseases. INs were submitted for 39 different terrestrial animal diseases; 51% of all INs (312/614) related to AI[2], 19% (114/614) to ASF, 8% (50/614) to SARS-CoV-2 in animals, and 4% (22/614) to FMD.

For aquatic animals, five diseases were the most frequently reported (each with three reports, accounting for 14% of the total number of aquatic reports, respectively): acute hepatopancreatic necrosis disease; epizootic ulcerative syndrome; infectious haematopoietic necrosis; koi herpesvirus; and viral haemorrhagic septicaemia.

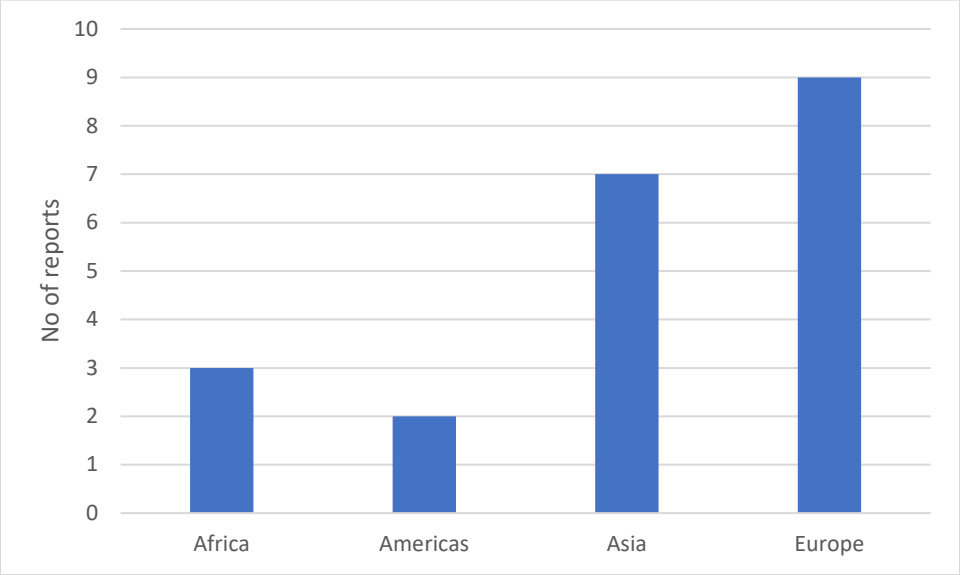
The most frequently reported terrestrial animal diseases have occurred in most of the geographical regions. The distribution of terrestrial animal diseases in terms of the number of INs submitted by region is shown in Figure 3, with Europe being the Region that has submitted the highest number.

Figure 3. Number of IN reports for terrestrial animal diseases submitted by Region during the period 2021 and early 2022



The distribution of aquatic animal diseases in terms of the number of INs submitted by Region is shown in Figure 4. Also in this case, Europe is the Region with the highest number of INs submitted.

Figure 4. Number of IN reports for aquatic animal diseases submitted by Region during the period 2021 and early 2022

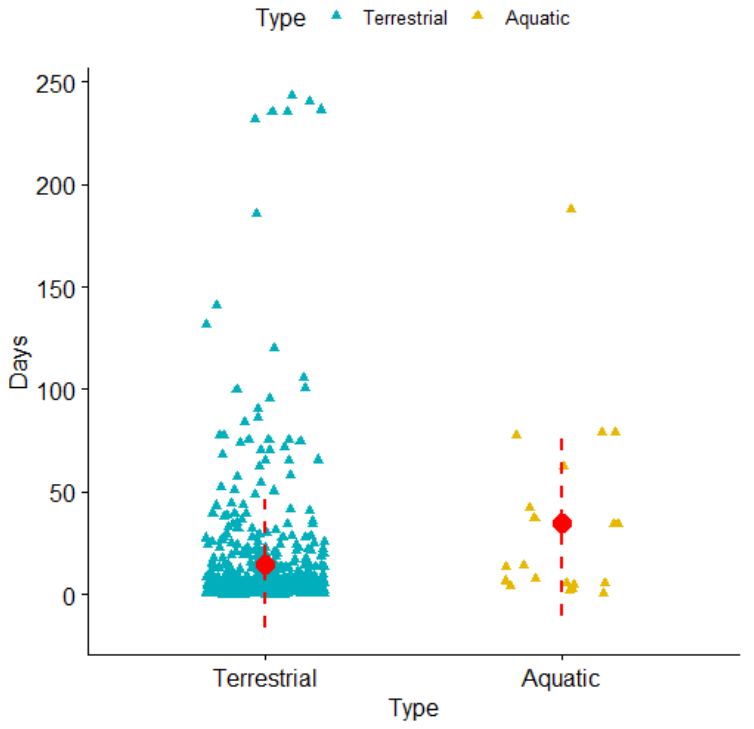


Patterns in IN submission time (time from disease confirmation to report submission to the OIE – ST)

In accordance with Chapter 1.1. of the OIE *Terrestrial Animal Health Code* and the *Aquatic Animal Health Code* OIE Members are required to submit an immediate notification (IN) for any of the exceptional events of OIE-listed diseases described in the OIE *Codes*, within 24 hours of confirmation of the event. However, this requirement is not always complied with, for reasons such as a lack of proper communication at country level among diagnostic laboratories, local and central Veterinary Services, technical delays in filing the information in OIE-WAHIS, and a lack of country transparency.

Considering all the INs for OIE-listed diseases submitted during the period 2021 and early 2022, the median time from disease confirmation to report submission (ST) was 5 days: 4.8 days for terrestrial animal diseases and 13.9 days for aquatic animal diseases. Considering specifically the most frequently reported diseases (AI, ASF and FMD) the ST was respectively 4.4, 4.5, and 4.7 days (SARS-CoV-2 was not considered for this specific analysis, being an emerging disease with no obligation for notification within 24 h after confirmation). For the sake of comparison, the median ST for the period 2005-2020 was 3 days for terrestrial animal diseases and 10 days for aquatic animal diseases. The distribution of ST values is shown in Figure 5.

Figure 5. Distribution of ST values (days) for terrestrial animal diseases and aquatic animal diseases during the period 2021 and early 2022. The red dots represent the average submission time, while the dashed red lines represent the standard deviation.



Contribution of epidemic intelligence to transparency and timeliness in reporting

In 2002, with the aim of minimising the number of unreported events meriting an IN and improving the transparency and timeliness of the notifications, the OIE established active searching activities to track non-official information, rumours and signals relating to animal health and public health events around the world. Since 2018, advanced software applications have been used to perform epidemiological intelligence activities. Currently, the OIE retrieves information from a variety of sources, using two platforms for automatic search (the International Biosecurity Intelligence System [IBIS], managed by the government of Australia, and Epidemic Intelligence from Open Sources [EIOS], managed by the World Health Organization [WHO]), as well as formal communications from the network of OIE Reference Laboratories and Collaborating Centres. Another important source of information is the Global Early Warning System (GLEWS) set up by the Tripartite members (OIE, Food and Agriculture Organization of the United Nations [FAO] and WHO) to enable early detection of high-risk and emergency situations, coordinate the response at the human–animal interface and share information between the three Organisations to ensure transparency.

Whenever the OIE detects relevant non-official information from a reliable source, the country concerned is contacted for clarification and subsequent action if appropriate (i.e. submission of an IN or FUR).

Thanks to this activity, the verification went from 10,000 news items per year verified manually to 120,000 in 2021 verified automatedly. All this information was used to follow-up with the countries concerned in the event of any discrepancies being observed with the official information reported to the OIE. The impact of this activity is seen primarily in an improved capacity of the OIE to be aware of any unofficial information related to OIE-listed diseases but also of other potential animal and public health threats.

The constant communication between the OIE and its Members improves reporting transparency as well as the timely submission of communications on exceptional epidemiological events. Six percent of all the INs submitted to the OIE in 2021 were due to the OIE's epidemic intelligence activity.

In order to understand the barriers to disease reporting and take appropriate actions, the OIE has established the "OIE Aquatic Animal Health Strategy"

for the period 2021–2025. The vision of the strategy is to "improve aquatic animal health and welfare worldwide, contributing to sustainable economic growth, poverty alleviation and food security, thereby supporting the achievement of the UN Sustainable Development Goals".

Conclusions

Thousands of INs and FURs have been submitted to the OIE since 2005, enabling Members to i) share alerts on exceptional epidemiological events; ii) provide information on the epidemiological evolution of the events until their resolution or stabilisation; and iii) help reduce the transboundary spread of animal diseases.

The submission of alerts through OIE-WAHIS has constantly increased over time, giving the OIE an increasingly central role in providing an accurate picture of the occurrence and evolution of exceptional epidemiological events throughout the world.

The analysis presented has nevertheless highlighted some discrepancies in disease reporting between aquatic and terrestrial animal diseases, even if these differences have to be considered in light of the diverse ways in which data on these two groups of diseases are collected:

- Number of reports: only a very small percentage of alert reports concern aquatic animal diseases. This is evident in both the historical trend and the current reporting behaviours;

- Geographical distribution of reports: alert reports relating to aquatic animal diseases are submitted by a comparatively small number of countries, with almost a complete absence of reports from some Regions;

- Timely submission of reports: during the period 2021 and early 2022, the median submission time after confirmation was almost 3 times higher for aquatic animal diseases than for terrestrial animal diseases.

In order to improve the reporting of aquatic animal diseases, disease surveillance and data collection at country level, and their reporting to the OIE, it is recommended that Members inform the OIE of any barriers and difficulties they may encounter in reporting correctly.

Actions undertaken by the OIE to improve reporting include the epidemic intelligence activity, through which improvements on timely reporting and country transparency are already occurring.

The OIE recommends its Members to continue sharing information on exceptional epidemiological events for both OIE-listed diseases and *emerging diseases* in a timely and transparent way.

2. Description of the global situation regarding three diseases and infections of major interest

2.1. Infection with African swine fever virus

Brief introduction on the global evolution of ASF distribution since 2005

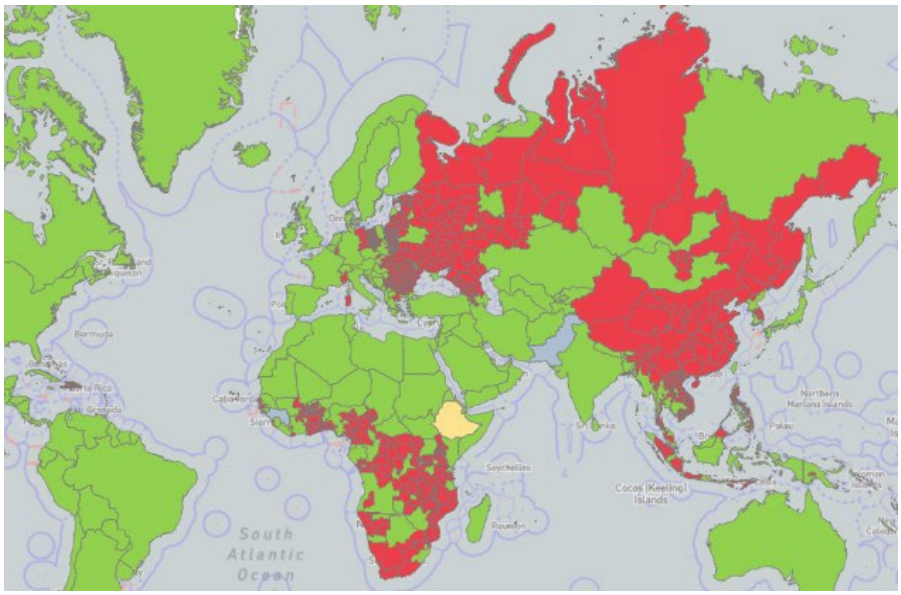
African swine fever (ASF) has traditionally been present in the African continent, where, since 2005, the disease has been reported in 32 countries. In 1978, the disease was introduced to the Italian island of Sardinia and has since become endemic in this island. In 2007, the disease was confirmed in the Caucasus region of Georgia. From there, the ASF virus gradually spread to neighbouring countries (i.e., Armenia, Azerbaijan, Russia and Belarus), affecting domestic pigs and wild boar. The first occurrence of ASF in the European Union (EU) was reported in 2014 and, since then, numerous EU Member States have been affected by this devastating pig disease, which continues to be reported in 16 countries (during 2020/2022). Two European countries have managed to eradicate the disease: Belgium (event resolved in March 2020) and Czech Republic (event resolved in April 2018).

In August 2018, the virus leapt to China (People's Rep. of), which represented the first occurrence of ASF in Asia. Since then, the disease has continued to spread in the Region, affecting 16 countries as of 3 February 2022.

In September 2019, the first occurrence of ASF in Oceania was reported by Timor-Leste, followed by Papua New Guinea (March 2020). In July 2021, the disease was reported in the Americas, after an absence of almost 40 years, by Dominican Republic and later by Haiti (August 2021). In January 2022, ASF genotype II was notified on the Italian mainland after around 40 years of absence.

The cumulative global situation of ASF since 2005 is presented in Figure 6.

Figure 6. Global cumulative distribution of African swine fever since 2005. Infected areas (reported at least once) are shown in red, suspected areas in yellow and free areas in green.



During the period 1 January 2021 to 3 February 2022, 114 events were reported to the OIE by 22 countries and territories in Africa, the Americas, Asia, the Far East and Oceania and Europe through the early warning system. The disease spread to four previously unaffected countries during this period. Malaysia reported the first occurrence of ASF in February 2021. It was detected in the area of Sabah in domestic pigs and wild boar. As of 3 February 2022, 52 outbreaks had been reported in the same area and the event was still on-going. Bhutan then reported the first occurrence of ASF in May 2021, in the area of Chhukha. No other outbreaks were found, and the event was resolved in July 2021. Thailand reported the first occurrence of ASF in November 2021, in the area of Bangkok Metropolis. The disease was first detected in pigs bought for companion purposes. As of 3 February 2022, 19 outbreaks had been reported to the OIE in villages in several areas of the country and the event was still on-going. Finally, North Macedonia (Rep. of) reported the first occurrence of ASF in December 2021. One outbreak was detected in backyard pigs in the area of Delčevo. The Delegate of the country informed the OIE in the report that the most likely source of the event was contact with wild boar. As of 3 February 2022, the event was still on-going. Other events were mainly for recurrences of ASF within countries already affected.

ASF dynamics in space and time

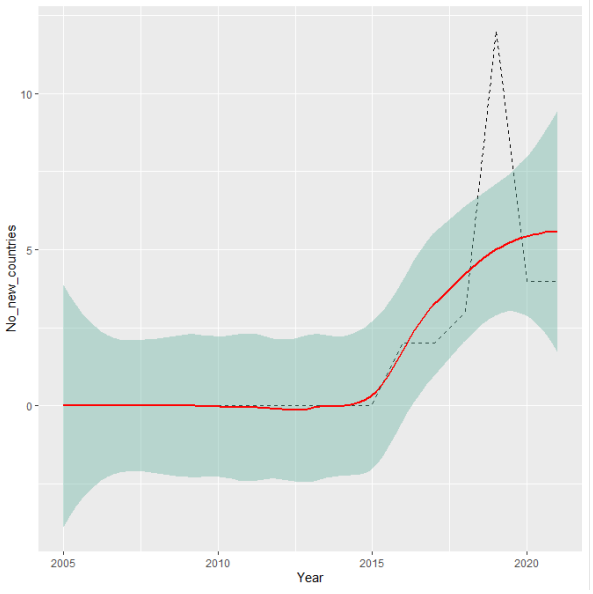
Since 2007, with the "jump" from Africa to Europe (Georgia), the ASF global epidemiological situation has been progressively deteriorating. The major factors that increase the risk of international and regional spread in the current scenarios are livestock management systems with inadequate biosecurity measures, and human behaviour.

In order to translate and describe the dynamics of this disease with numbers, some indicators are proposed in this section including:

- The trend in the number of previously free countries reporting the first occurrence of the disease
- The trend in the number of reports submitted by affected countries to report the first occurrence of the disease in a new zone
- The spatial dynamics of the disease at the continental, regional and national level

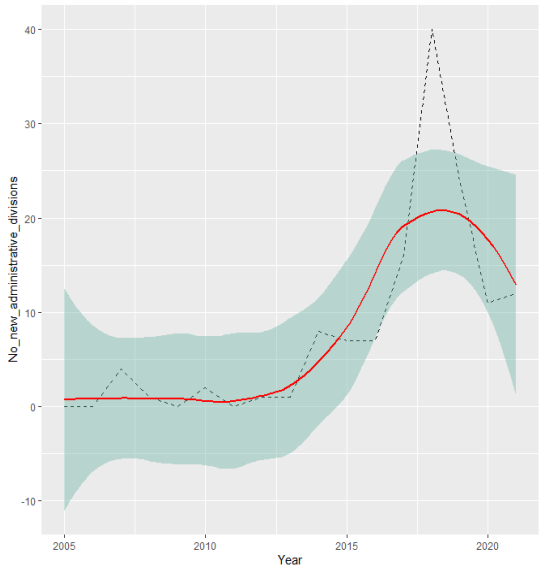
Since 2005, 27 OIE Members and non-Members have reported the first occurrence of the disease in the country, with a peak in 2019 with the spread to 12 Members and non-Members and corresponding mainly to the expansion of ASF in Asia (Figure 7).

Figure 7. Trend in the number of OIE Members and non-Members reporting the first occurrence of ASF in the country, during the period 2005–2022. *Dashed line represents the original data, while red line represents the trend interpolated using the loess approach. Light green areas represent the standard error of the interpolation.*



A similar trend is observed for the number of new administrative divisions where the disease occurred for the first time. Since 2005, ASF has spread to 135 new administrative divisions. A peak was observed in 2018, with 40 newly reported infected areas (Figure 8).

Figure 8. Trend in the number of new administrative divisions where the first occurrence of ASF was reported, during the period 2005–2022. *Dashed line represents the original data, while red line represents the trend interpolated using the loess approach. Light green areas represent the standard error of the interpolation.*



From a spatial point of view, ASF has shown a double dynamic: a slow and steady progressive expansion inside the affected areas (at country or between-country level) on the one hand, and a sudden jump outside the affected areas (spread to new areas or regions) on the other hand.

To give an idea of the disease dynamics at country or between-country level we calculated the spatial spread of ASF in 10 countries randomly selected among those affected. This analysis is not intended to provide an exhaustive description of the disease dynamics but simply to provide examples illustrating the variability of disease spread in different countries. Disease spread is calculated for each Member as the maximum distance reached by ASF outbreak(s) from the index outbreak. The dynamics of the disease appear to be highly variable, ranging from a minimum disease speed of 4 km/month to a maximum of 96 km/month (average speed for the selected countries is 32 ± 31 km/month). Several factors may have influenced these values, including the epidemiological cycle of the disease (domestic, sylvatic, or both), environmental factors, the biosecurity and animal management measures in place, the application of preventive and control measures, as well as the country's efficiency in monitoring the disease and reporting it to the OIE. However, an evaluation of the influence of these factors is beyond the scope of this analysis.

In contrast to this progressive and constant expansion at country level, ASF has demonstrated the ability to "jump" into new areas, mainly due to a lack of proper livestock management, human activities and a lack of biosecurity.

To illustrate this, we present below some notable cases of unexpected ASF occurrence remote from other reported outbreaks. This "jump" has been calculated as the distance from an index outbreak occurring outside the known ASF range to the closest outbreak reported during the period.

- Georgia – first recurrence in Europe, in April 2007 (more than 4500 km from any other known affected location);
- China (People's Rep. of) – first occurrence in Asia, in August 2018 (more than 5500 km from any other known affected location);
- Dominican Republic – first recurrence in the Americas, in April 2021 (more than 8000 km from any other known affected location);
- Papua New Guinea – first occurrence in Oceania, in March 2020 (more than 2200 km from any other known affected location),
- Czech Republic – first occurrence in the country; regional spread in Europe in June 2017 (more than 400 km from any other known affected location);
- Belgium – recurrence in the country; regional spread in Europe in September 2018 (more than 900 km away from any other known affected location)
- Germany – first occurrence in a new area; regional spread in Europe in November 2021 (more than 150 km from any other known affected location);
- Italy – recurrence in the country; regional spread in Europe in January 2022 (more than 800 km from any other known affected location).

One of the OIE's main missions is "scientific information". To this end the OIE collects and analyses the latest scientific information on animal disease control. This information is then made available to Members to help them improve the methods they use to control and eradicate these diseases. Guidelines are prepared by the network of OIE Collaborating Centres and Reference Laboratories across the world. In line with this central role, the OIE has prepared, and made available in a dedicated repository[3] on it website, a wide range of resources, such as communication material and training resources. These resources include, among others:

- Communication materials for the general public, professionals working in the travel sector, and professionals working with pigs;
- Technical resources (e.g. compartmentalisation guidelines; ASF in wild boar ecology and biosecurity; *OIE Panorama* issue on ASF; technical document produced by the Global Framework for Transboundary Animal Diseases [GF-TADs]);
- Links to dedicated pages on OIE Regional websites; Links to training materials and capacity building initiatives (e.g., Regional training on Import Risk Analysis for African swine fever - Africa[4])

ASF bi-weekly situation report

To ensure Members and non-Members and other stakeholders and the international community are kept as fully informed as possible on the global situation of African swine fever, a bi-weekly update is produced by the OIE and made available on the OIE website[5]. These reports provides a historical background of the disease situation, followed by a more specific update on the recent situation (2020-2022) in terms of the geographical occurrence and impact of the disease. The final section of each report provides an update on epidemiological changes during the previous two weeks. The disease situation and dynamics are commented on, providing a brief epidemiological interpretation and recommendations. It is worth highlighting that the African swine fever page, including the ASF situation report, is one of the most visited pages on the OIE website, with more than 2000 visits/week.

[3] https://www.oie.int/en/disease/african-swine-fever/#ui-id-5
[4] https://rr-africa.oie.int/wp-content/uploads/2020/08/regional-training-workshop-ira-on-asf-africa-gftads-report.pdf
[5] https://www.oie.int/en/disease/african-swine-fever/#ui-id-2

Conclusions

All the indicators presented in this chapter point to a clear, steady and progressive deterioration of the epidemiological situation of African swine fever at global level, in terms of an increase in the geographical range of the disease, including its spread to new countries as well as its progression to new areas in countries already affected.

The data on disease spread confirm the capacity of the virus to make big jumps and suddenly appear in areas far away from its known range. These big jumps have caused the first occurrence or recurrence in new continents (resulting in the current panzootic distribution of ASF), but also a sudden and significant progression of the disease at national and regional level.

These data demonstrate the importance of human activities in the global spread of the disease and highlight the importance of raising awareness among the general public, in particular travellers, and enforcing strict biosecurity measures along the pig supply chain.

In this context, the OIE recommends its Members to use OIE-WAHIS to promptly and transparently notify any relevant information on the occurrence and epidemiological evolution of ASF. Early detection and early reporting of the disease, enabling a rapid response for disease prevention and control purposes are of crucial importance to avoid any further dissemination of the disease.

The role of OIE in disseminating the most recent advances in scientific knowledge and communicating in an understandable way the factors responsible for the spread of ASF is crucially important in providing evidence and tools to help reduce and stop the massive spread of the disease and to make progress with the GF-TADs "*Strategy for the global control of ASF".*

Recognising the heightened global risk of ASF to all countries, the OIE and FAO continue to collaborate under the FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) to assist countries in the prevention and control of ASF, and to minimise the adverse impacts of the disease on the health and welfare of pigs and on international trade.

The OIE recommends its Members to:

- Recognise the importance of risk communication in addressing high risk practices and strengthening biosecurity measures, and use communication materials developed by the OIE to raise awareness of key stakeholder groups on ASF and the relevant preventive and control measures.

- Implement science-based international standards and OIE guidelines to strengthen Members' early detection and control.

- Implement strict biosecurity measures, including vigilance at borders to prevent the illegal movement of ASF-infected commodities.

- Implement relevant OIE standards and guidelines to ensure safe international trade in pig commodities and mitigate the risk of ASF incursion, while avoiding unjustified sanitary barriers to trade. This includes the use of OIE guidelines on compartmentalisation as well as all the technical documentation produced by the OIE to inform Members.

- Leverage private-public partnerships (PPP) and promote inter-sectoral collaboration at the national, regional and global level to enable ASF control to be achieved more rapidly and efficiently.

- Adapt ASF surveillance and the associated awareness campaigns to the local epidemiological context, taking into account the presence of low virulent strains that could preclude clinical surveillance.

- Sustain commitment and resources and involve all relevant public and private sector stakeholders in efforts to control the disease. Surveillance programmes should also cover wild and feral suid populations where these are involved in the disease epidemiology. OIE Members should also ensure access to quality laboratory diagnosis for ASF, capable of identifying ASF virus in accordance with the standards contained in the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*.

2.2. Infection with high pathogenicity avian influenza viruses

Infection with high pathogenicity avian influenza (HPAI) viruses is caused by influenza A virus in the family Orthomyxoviridae.

According to OIE-WAHIS data, HPAI resulted in the death and culling of more than 246 million poultry within affected farms, backyards, markets and villages worldwide between 2005 and 2020, with peaks in 2006 and 2016. Moreover, preventive killing around outbreaks has been applied in several countries, drastically increasing the disease impact.

During these two years, in 2006 and 2016, about a quarter of the world's countries were affected by HPAI[6] in poultry. In addition, avian influenza (AI) continues to be major public health concern. In the past 20 years and as of 3 February 2022, humans have occasionally been infected with subtypes H5N1 (around 850 cases reported, of which half died), H7N9 (around 1500 cases reported) and H5N6 (around 65 cases reported, of which about half died), and sporadic cases have been reported with a few other subtypes.[7,8,9.]

Based on the data reported to the OIE since 2005, HPAI spread in poultry is lowest in September, begins to rise in October, and peaks in February[10]. Figure 9 provides a summary of the situation reported through the early warning system during each seasonal wave, between 2005 and 2022, as of 3 February. As shown in the Figure 9, the number of countries affected by HPAI in poultry and non-poultry birds in 2020/2021 was very high, and comparable to previous peaks observed in 2005/2006 and 2016/2017. Similar results are observed for the number of outbreaks in poultry, while the number of poultry losses in 2020/2021is higher than in all previous seasonal waves. Although the data for the 2021/2022 wave were still only partial as of 3 February 2022, the figures show that the disease was already very impactful.

Figure 9. Evolution in the number of countries and territories affected by HPAI, in the number of outbreaks in poultry and in the corresponding losses*, by AI seasonal wave – between 1 October 2005 and 3 February 2022

**Losses are defined as the sum of the number of poultry dead and killed and disposed of within outbreaks. Preventive killing in surrounding areas is not included in the losses.*

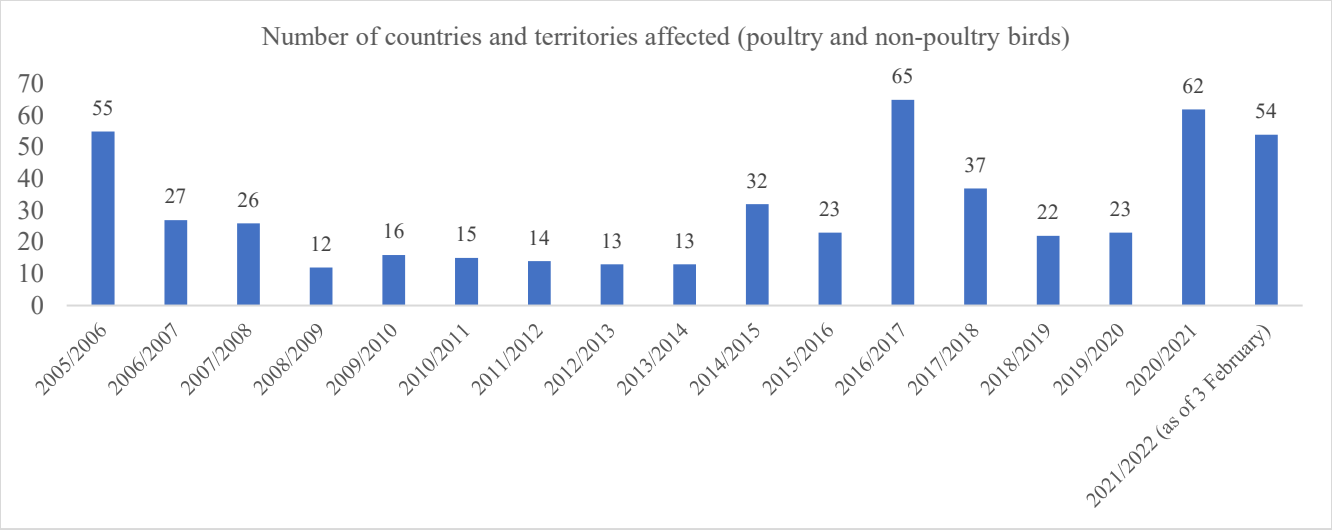
[6] Awada L, Tizzani P, Noh SM, Ducrot C, Ntsama F, Caceres P, Mapitse N and Chalvet-Monfray K, 2018. Global dynamics of highly pathogenic avian influenza outbreaks in poultry between 2005 and 2016—focus on distance and rate of spread. *Transboundary and Emerging Diseases*, 65, 2006–2016. https://doi.org/10.1111/tbed.12986

[7] WHO, Cumulative number of confirmed human cases for avian influenza A(H5N1) reported to WHO, 2003-2021, https://cdn.who.int/media/docs/default-source/influenza/h5n1-human-case-cumulative-table/2021_april_tableh5n1.pdf?sfvrsn=fc40672c_5&download=true

[8] WHO, Influenza (avian and other zoonotic), https://www.who.int/health-topics/influenza-avian-and-other-zoonotic#tab=tab_1

[9] WHO, Avian Influenza Weekly Update Number 830, https://www.who.int/docs/default-source/wpro---documents/emergency/surveillance/avian-influenza/ai-20220204.pdf?sfvrsn=223ca73f_183

[10] OIE, High Pathogenicity Avian Influenza (HPAI)- Situation Report 25, https://www.oie.int/en/document/high-pathogenicity-avian-influenza-hpai-situation-report-25/


Number of countries and territories affected (poultry and non-poultry birds)
70
60
50
40
30
20
10
0
55
27
26
12
16
15
14
13
13
32
23
65
37
22
23
62
54
2005/2006
2006/2007
2007/2008
2008/2009
2009/2010
2010/2011
2011/2012
2012/2013
2013/2014
2014/2015
2015/2016
2016/2017
2017/2018
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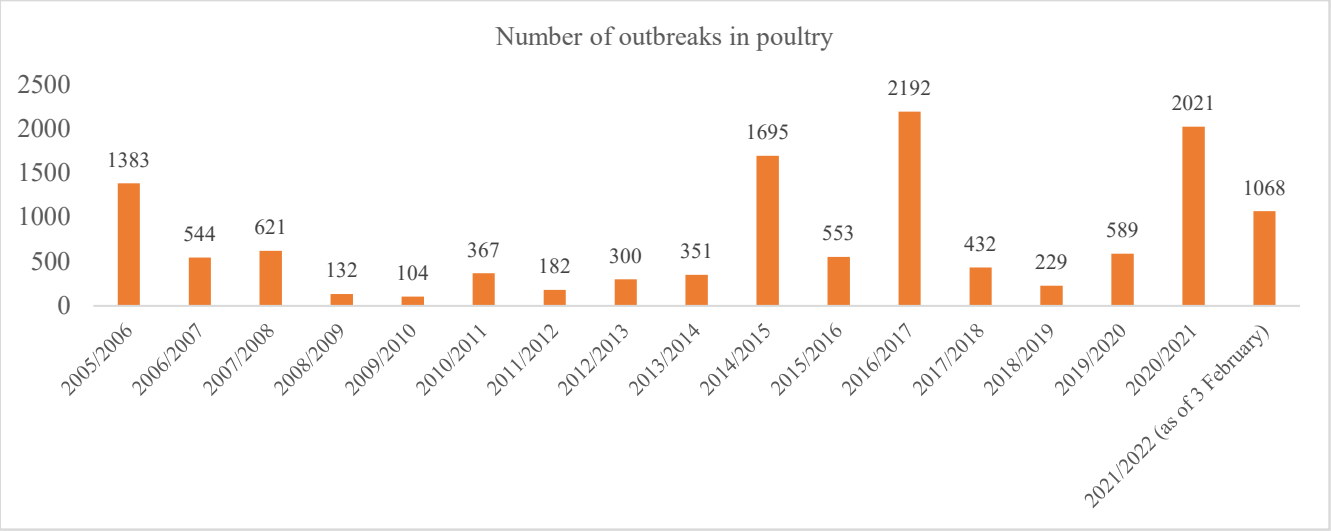
2019/2020
2020/2021
2021/2022 (as of 3 February)


Number of outbreaks in poultry
2500
2000
1500
1000
500
0
1383
544
621
132
104
367
182
300
351
1695
553
2192
432
229
589
2021
1068
2005/2006
2006/2007
2007/2008
2008/2009
2009/2010
2010/2011
2011/2012
2012/2013
2013/2014
2014/2015
2015/2016
2016/2017
2017/2018
2018/2019
2019/2020
2020/2021
2021/2022 (as of 3 February)

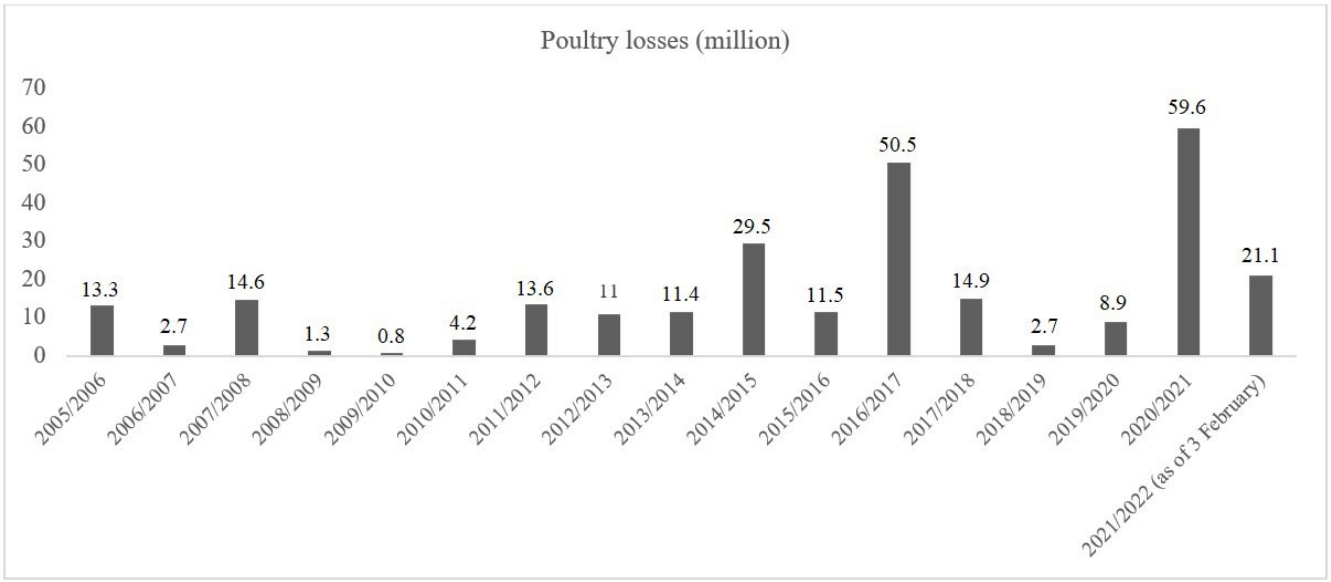

Poultry losses (million)
70
60
50
40
30
20
10
0
13.3
2.7
14.6
1.3
0.8
4.2
13.6
11
11.4
29.5
11.5
50.5
14.9
2.7
8.9
59.6
21.1
2005/2006
2006/2007
2007/2008
2008/2009
2009/2010
2010/2011
2011/2012
2012/2013
2013/2014
2014/2015
2015/2016
2016/2017
2017/2018
2018/2019
2019/2020
2020/2021
2021/2022 (as of 3 February)

Figure 10 shows the global distribution of HPAI outbreaks reported to the OIE through the early warning system, and the corresponding circulating subtypes, between 1 October 2021 and 3 February 2022. As shown in the figure, most world regions were affected by HPAI, but by far the highest number of outbreaks was reported in Europe.

Forty countries and territories reported HPAI outbreaks in poultry between 1 October 2021 and 3 February 2022. Moldova reported the first occurrence of the disease in the country on 1 January 2022. Subtype H5N1 was detected in backyard birds and, as of 3 February 2022, one outbreak had been reported and the event was still on-going. In addition, Bulgaria, Russia, and Spain each notified that HPAI in poultry had reached new areas of the country, while Norway notified the first occurrence of subtype H5N1.

Forty-two countries and territories reported HPAI outbreaks in birds other than poultry (including wild birds) between 1 October 2021 and 3 February 2022. China (People's Rep. of), France, Germany, Namibia, Portugal, Russia, Spain, and the United Kingdom each notified that the disease had reached new areas of the country. In addition, Chinese Taipei, Ireland, Luxembourg, and Norway each notified the first occurrence of subtype H5N1.

Concerning, HPAI in wild birds, an unprecedented number of outbreaks killed thousands of wild birds in Israel (more than 8000 common cranes (*Grus grus*), due to H5N1, between November 2021 and January 2022) and the United Kingdom (several hundred birds, due to H5N1, between October 2021 and January 2022). In addition, an H5N1 HPAI virus detected in Canada and the United States of America (in December 2021) marked the first identification of goose/Guangdong/1/96-lineage H5 HPAI virus in the Americas since June 2015, indicating that the disease was being spread around the globe by wild birds.

In response to these outbreaks, experts from the OIE/FAO global network of expertise on animal influenza (OFFLU) exchanged epidemiological and experimental data and diagnostic protocols needed to inform surveillance and control policies and build technical partnerships among laboratories[11].

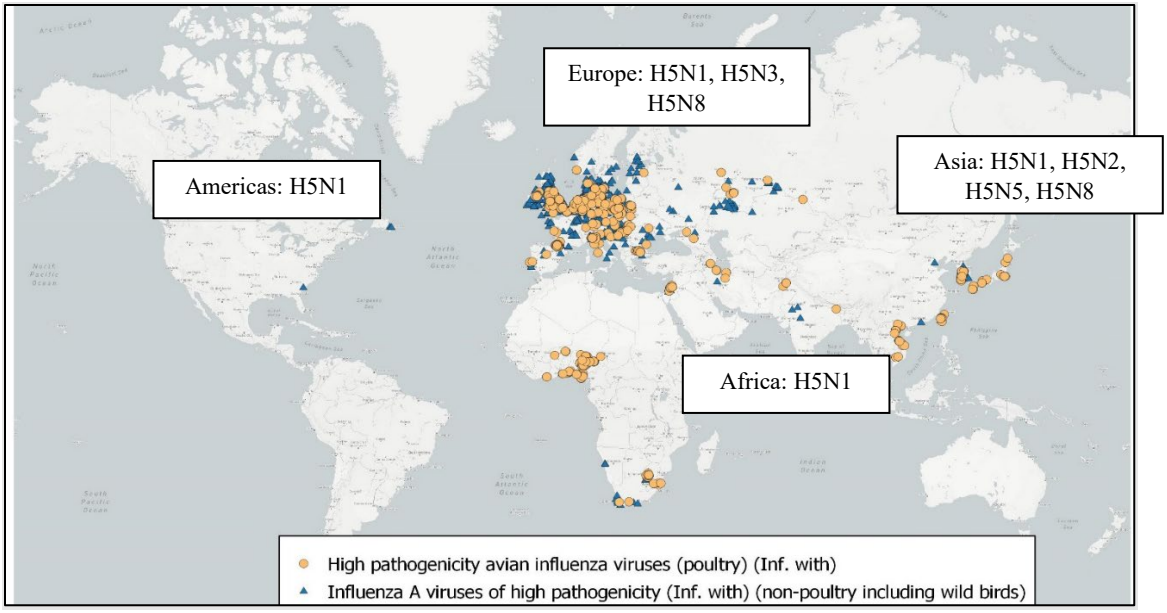
The OIE has a procedure that enables its Members to publish a self-declaration of freedom from HPAI (among other OIE-listed diseases) for their country, or a zone or compartment in their country, in accordance with the provisions of the *Terrestrial Animal Health Code*. These declarations provide the documented evidence of compliance with the provisions of the relevant chapters of the *Codes* as considered by the submitting country. As of 3 February 2022, 22 OIE Members[12] had published a self-declaration of freedom from HPAI in poultry[13].

Figure 10. Global distribution of HPAI outbreaks (and the corresponding circulating subtypes, by region) reported to the OIE through the early warning system, and between 1 October 2021 and 3 February 2022

[11] OFFLU avian influenza statement, 10 November 2021, https://www.offlu.org/wp-content/uploads/2021/11/OFFLU-November2021-Final.pdf

[12] Austria, Bolivia, Burkina Faso, Chile, Colombia, Ecuador (for a zone), Egypt (for compartments), El Salvador, Finland, Guatemala, Honduras, Indonesia, Ireland, Malaysia, Pakistan (for H5N1), Peru, Spain, Sri Lanka, Ukraine, Thailand, Turkey (for zones), and Uruguay

[13] https://www.oie.int/en/what-we-offer/self-declared-disease-status/



Details of subtypes circulating in poultry by geographical region are presented in Table 1. As of 3 February 2022, the predominant subtype observed in the current epidemic season had been subtype H5N1, with 94% of the outbreaks reported during this wave associated with this subtype. This had been the only subtype circulating in poultry in Africa, while more viral diversity had been observed in Asia and Europe. It is interesting to note that this subtype was less frequently reported the previous year, far behind H5N8[14]. This illustrates the changes observed in the viral diversity of HPAI over the years. In total, most of the outbreaks (74%) were reported in Europe.

Table 1. Number of outbreaks of HPAI in poultry, by subtype, by geographical region, between 1 October 2021 and 3 February 2022

Subtype	Africa	Asia	Europe	Total
Not typed			10	**10**
H5		5	9	**14**
H5N1	111	123	774	**1008**
H5N2		13		**13**
H5N5		7		**7**
H5N8		15	2	**17**
Total	**111**	**163**	**795**	**1069**

The OIE produces regular syntheses of the information reported through OIE-WAHIS and publishes them on the OIE website[15].

In 2021, after an assessment of low pathogenicity avian influenza's compliance with OIE criteria for listing, Chapter 1.3 of the OIE *Terrestrial Animal Health Code* was amended, and *"infection of domestic and captive wild birds with low pathogenicity avian influenza viruses having proven natural transmission to humans associated with severe consequences"* was adopted for inclusion in the OIE list of diseases. The requirement to notify the disease came into force in January 2022. As of 3 February, no such event had been detected and reported to the OIE.

[14] OIE, Current animal health situation worldwide: analysis of events and trends, 2021, https://web.oie.int/downld/SG/2021/A_88SG_2.pdf
[15] OIE situation reports for avian influenza, https://www.oie.int/en/disease/avian-influenza/#ui-id-5

In this context, as of 3 February 2022, the seasonal wave 2021/2022 had also been marked by an increase in the number of humans infected with H5N6 subtype viruses in China (People's Rep. of)[16]. As explained by WHO, the rise in numbers of reported human cases of A(H5N6) infection may have reflected the continued circulation of the virus in birds, and the enhanced surveillance system and diagnostic capacity as a direct outcome of the response to the COVID-19 pandemic[9]. Also, on 6 January 2022, the United Kingdom notified WHO of the detection of a laboratory-confirmed human case of avian influenza A(H5) in South West England. This was later confirmed as H5N1. The most recently reported case in humans prior to that case was in October 2020 in Laos. The case in the United Kingdom was the first reported case of human infection with influenza A(H5) in the country. The case remained clinically asymptomatic and the virus was not detected beyond this single case. Fortunately, none of these waves have had any sustained transmissibility in humans. Nevertheless, the OFFLU network continued to contribute genetic and antigenic data of zoonotic animal influenza viruses reported in 2021 to WHO for pandemic preparedness purposes.

Conclusions

Considering the evolution of the global avian influenza situation described above, and the importance of the disease in terms of its implications for animal and human health, the OIE recommends that its Members ensure the timely sharing of information through OIE-WAHIS as well as the overall monitoring of the situation in their territories.

In 2021, the avian influenza epidemic continued to threaten animal health worldwide with a high number of detections reported and millions of poultry affected throughout the continents of Europe, Asia, Africa and the Americas.

Concerning the zoonotic threat associated with avian influenza viruses, as of 3 February 2022 WHO had assessed that it remained elevated due to the spread of the viruses among birds, but considered that the overall pandemic risk associated with A(H5) was not significantly changed in comparison to previous years[9].

In this context, the OIE recommends that its Members intensify their surveillance efforts, implement strict biosecurity measures at farm level to prevent the introduction of the disease, continue timely reporting of avian influenza outbreaks in both poultry and non-poultry species, and maintain the high quality of the information provided to support early detection and rapid response to potential threats to both animal and public health.

The work of OFFLU is also important in helping to reduce the negative impacts of animal influenza viruses through early recognition and characterisation of emerging influenza viral strains and promoting effective collaboration between animal health experts and the human health sector for the purpose of pandemic preparedness.

2.3. Infection with SARS-CoV-2 in animals

COVID-19, caused by infection with SARS-CoV-2, is a human disease which most likely emerged from an animal source and, through widespread human-to-human transmission, became a pandemic. As of 3 February 2022, around 390 million confirmed human cases had been reported worldwide, with more than 5.7 million human deaths. The nature of this new zoonotic virus, together with its widespread distribution and the susceptibility of some animal species to infection, manifests in animal infections arising from close contact between people and animals. Conversely, there is also evidence that, for some animal species, close contact with infected animals can represent a potential source of infection in humans.

[16] WHO Assessment of risk associated with highly pathogenic avian influenza A(H5N6) virus, https://cdn.who.int/media/docs/default-source/influenza/avian-and-other-zoonotic-influenza/a(h5n6)-risk-assessment.pdf?sfvrsn=e945a0b9_12&download=true

Based on the OIE definition in the *Terrestrial Animal Health Code*, the OIE considers SARS-CoV-2 as an *emerging disease*. As infection with SARS-CoV-2 is considered an *emerging disease*, the OIE strongly encourages its Members to report through OIE-WAHIS the occurrence of any cases in animals that comply with the case definition provided in the OIE guidelines[17]. These notifications are important as they allow a better understanding of the epidemiological significance of these cases for animal health, biodiversity, and human health.

This section will provide an overview of the global evolution on the occurrence of SARS-CoV-2 in animals officially reported to the OIE by its Members. OIE-WAHIS is currently one of the most comprehensive databases on SARS-CoV-2 cases in animals and it is one of the reference sources for the general public and for the international scientific community.

While the main driver of community and international spread in the current pandemic is human-to-human transmission, the number of animal cases of infection with SARS-CoV-2 continues to rise, even if such cases are still only occasional occurrences. Most of the cases have been reported in pets and zoo animals, while some countries have experienced a high prevalence of outbreaks in mink farms, and variant strains have now been identified in mustelids. The virus has also been identified in free ranging populations of white-tailed deer, raising concerns on the potential establishment of a wildlife reservoir. Evidence from risk assessments, epidemiological investigations, and experimental studies indicates that animals do not play a significant role in the spread of SARS-CoV-2, which is sustained by human-to-human transmission.

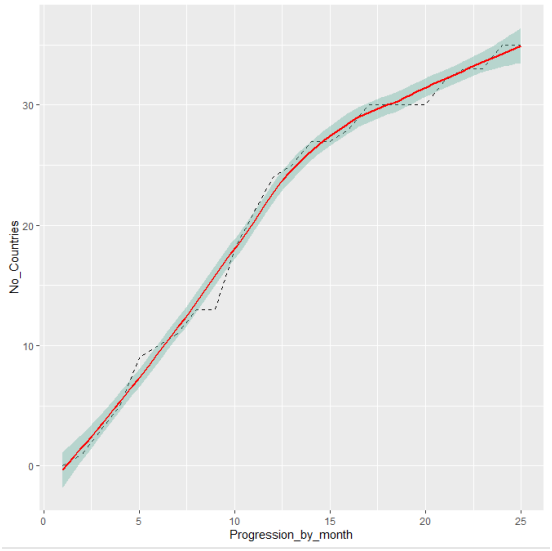
Evolution of the reporting situation since the beginning of the pandemic in humans

Since the beginning of the SARS-CoV-2 pandemic in humans, several countries have reported the occurrence of the disease in animals either based on Article 1.1.5.[18] of the *Terrestrial Animal Health Code* or through OIE-WAHIS, in compliance with Article 1.1.4. As of 3 February 2022, 35 countries in the Americas, Africa, Asia, and Europe had reported the occurrence of the disease, involving a total of 645 outbreaks in 19 different animal species. The evolution in the cumulative number of countries reporting the presence of SARS-CoV-2 in animals is presented in Figure 11. The progressive increase in the number of reporting countries is likely due to an improvement of specific surveillance activity in animals. It is important to highlight that the COVID-19 pandemic continues to be considered as mainly human driven, and monitoring disease activity in animals needs to be carried out with the main objectives being to understand: 1) the susceptibility of different domestic and wild animal species; 2) the transmission dynamics within susceptible animal populations and to other susceptible species, including humans; and 3) the consequences of SARS-CoV-2 infection, including clinical presentation, virus shedding, and viral evolution.

Figure 11. Evolution of the cumulative number of countries reporting the presence of SARS-CoV-2 in animals during the period 2020–2022 (as of 3 February 2022). *The dashed line represents the original data, while the red line represents the trend interpolated using the loess approach. Light green areas represent the standard error of the interpolation*

[17] https://www.oie.int/en/document/monitoringsarsanimals/

[18] Although Member are only required to notify listed diseases and emerging diseases, they are also encouraged to provide the OIE with other important animal health information.

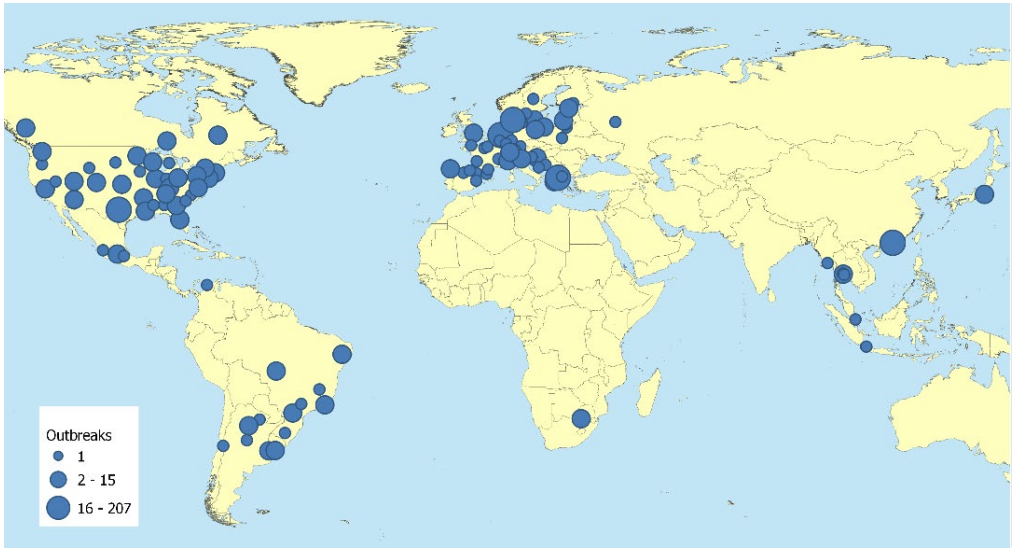


During the period from January 2020 to 3 February 2022, 69 INs and 107 FURs (i.e., an average of 1.5 FURs submitted for each IN), in addition to 46 reports in accordance with Article 1.1.5. of the *Terrestrial Code*, were submitted to the OIE.

It is important to highlight that SARS-CoV-2 was the 3rd most frequently reported disease in 2021 and early 2022, after AI and ASF. Following the guidelines provided by the OIE[17], Members and non-Members have shared several important details on the occurrence of the disease in animals, using the free text option in the "epidemiological comments" section.

Finally, the global geographical distribution of SARS-CoV-2 outbreaks in animals is shown in Figure 12. Most of the outbreaks were reported in Europe and North America, followed by South America and South-East Asia. Considering the accuracy of the information reported, OIE-WAHIS is now the most comprehensive database on officially confirmed cases of SARS-CoV-2 in animals worldwide.

Figure 12. Worldwide distribution of SARS-CoV-2 outbreaks in 19 animal species reported to the OIE (as of 3 February 2022). Note that dot size on the map is proportional to the number of outbreaks reported.



SARS-CoV-2 evolution in host species reported to the OIE

In terms of disease evolution and trends, it is also important to highlight the progressive increase in the number and variety of susceptible hosts since the first reported case in a dog in Hong Kong (SAR-PRC) in February 2020. Table 2 shows the number of species (N=19) susceptible to SARS-CoV-2 as officially reported to the OIE. The list of susceptible animals includes pets (cats, dogs, hamsters, pet ferrets), several zoo species (felids in particular), and wildlife (white-tailed deer).

Table 2. Number of species (N=19) susceptible to SARS-CoV-2 as officially reported to the OIE, by region (as of 2 February 2022)

Species / Region	Cat	Dog	Mink	Otter	Pet ferret	Lion	Tiger	Puma	Snow leopard	Gorilla	White-tailed deer	Fishing cat	Binturong	South American coati	Spotted hyena	Eurasian lynx	Canada lynx	Hippopotamus	Hamister
Africa						Yes		Yes											
Americas	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		
Asia	Yes	Yes				Yes	Yes												Yes
Europe	Yes	Yes	Yes		Yes	Yes	Yes									Yes		Yes	

Specific epidemic intelligence activity on SARS-CoV-2 in animals

To better monitor the occurrence of SARS-CoV-2 in animals, the OIE Epidemic Intelligence Team created a specific search algorithm in EIOS to identify and monitor news published in the media and in scientific publications. For this purpose, a search category related to "animals and coronavirus" was included in the EIOS system[19]. The search category was created on October 2020 and as of 3 February 2022 had already collected more than 41 500 items of news for screening and analysis by the OIE Epidemic Intelligence Team. As is the case with the OIE's other active search activities, when discrepancies were detected with the official reports the OIE contacted the countries concerned, asking for clarifications and, if relevant, for submission of official information.

OIE actions on SARS-CoV-2, guidelines, and advisory groups

In addition to the actions undertaken in a reporting perspective, the OIE has been working intensively with its network of experts and liaising closely with its Members to better understand the virus and its emergence and to enhance the capacity of countries to respond to this multifaceted crisis. To this end, the OIE established an **Incident Management System** to coordinate its response to COVID-19 internally and with key external partners. In this framework, several expert Advisory Groups have been established. The outputs of the advisory group meetings as well as the relevant OIE guidance are published on the OIE COVID-19 portal[20]. Among the most recent updates on the portal, it is worth mentioning the document "Considerations on monitoring SARS-CoV-2 in animals".

[19] See Section one for more information on the EIOS system
[20] https://www.oie.int/en/what-we-offer/emergency-and-resilience/covid-19/#ui-id-4

SARS-CoV-2 monthly situation report

In order to communicate to partners, external stakeholders and the general public important updates on the evolving situation of SARS-CoV-2 in animals, the OIE has, since May 2021, published a monthly report that includes the major updates on the disease situation at global level with a specific focus on the recent evolution during the previous month. All the situation reports are available on the COVID-19 portal[21].

Conclusions

Official reports of SARS-CoV-2 occurrence in animals have continued to increase since the beginning of the COVID-19 pandemic. Official information submitted to the OIE shows an increasing trend in terms of the geographical range, the number of susceptible species identified, as well as the number of reports received. SARS-CoV-2 constitutes today the third most frequently reported disease through OIE-WAHIS.

The OIE recommends its Members to keep informing the global community in the event of SARS-CoV-2 cases occurring in animals, in order to collect and share any relevant information that might help in better understanding the disease epidemiology and dynamics.

The OIE also recommends its Members to share as much additional, detailed information as possible by completing the epidemiological comments sections in their IN and FUR reports. Within the framework of One Health collaboration with WHO, specific attention should be given to providing details of the strain isolated in animals, so that any potential strain of concern can be carefully monitored.

3. Members' reporting on diseases in aquatic animals

In compliance with the relevant OIE standards, Members are required to report aquatic animal disease data through OIE-WAHIS, via 2 main channels:

a) Immediate notifications and follow-up reports: these reports are required from Members only in the case of exceptional events concerning OIE-listed diseases and emerging diseases (as described in Chapter 1.1. of the OIE *Aquatic Animal Health Code*). Only a limited number of Members notify these exceptional events throughout the year.

b) Six-monthly reports: for each OIE-listed disease, OIE Members are required to send, every six months, information on the disease situation (present/absent/no information collected), preventive and control measures implemented, and in case of disease presence, aggregated data on the number of outbreaks, cases, deaths, etc. This information is for all OIE-listed diseases and covers stable animal health situations as well as evolving situations.

This section of the report provides an overview of OIE Members' reporting of aquatic animal diseases through six-monthly reports.

Between 2005 and 2019, an average of 142 Members and 14 non-Members per semester submitted six-monthly reports for aquatic animal diseases. As of 3 February 2022, only 56 and 48 Members (and a few non-Members) had submitted their reports for 2020 and 2021, respectively. These numbers were much lower than in previous years but were expected to increase in the subsequent months. Indeed, the submission of these reports usually takes time. In addition, as part of the transition from the former WAHIS to the new OIE-WAHIS in 2021, the OIE asked its Members to temporarily suspend the submission of their six-monthly reports between June 2020 and February 2021. Finally, the disruption caused by the COVID-19 pandemic understandably increased the reporting delays for 2020 and 2021.

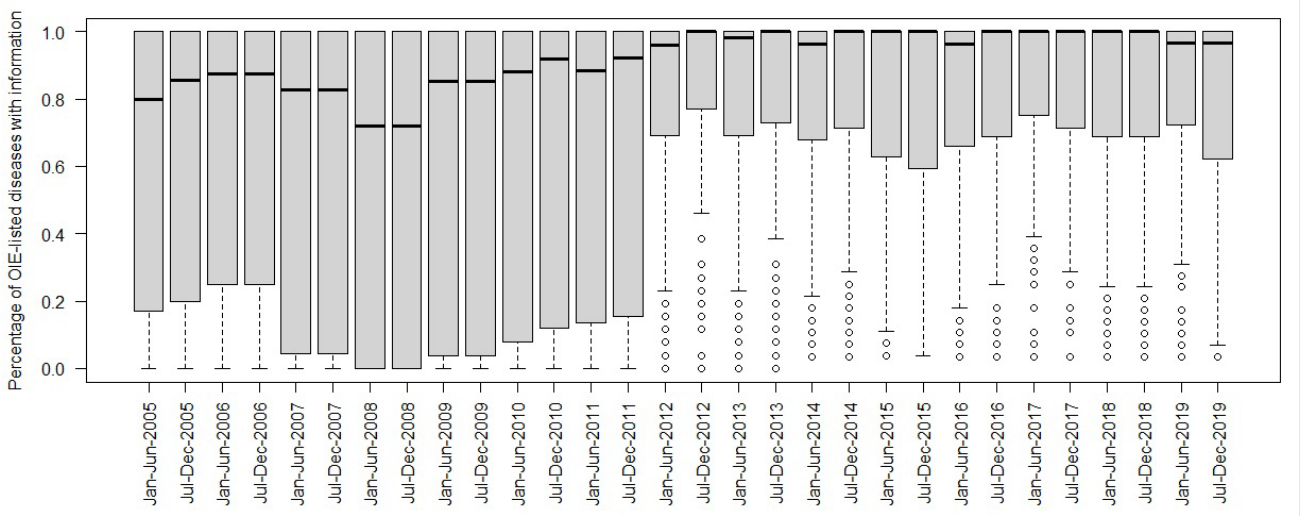
[21] https://www.oie.int/en/what-we-offer/emergency-and-resilience/covid-19/#ui-id-3

Figure 13 shows, for each semester between 2005 and 2019, the distribution of reporting countries/territories based on the percentage of OIE-listed diseases with information within their report. As shown on the graph, the medians and first quartiles were smaller between 2005 and 2011 compared with the period between 2012 and 2019. In other words, countries were providing information for a smaller percentage of OIE-listed diseases before 2012. This might be explained by the evolution of WAHIS that occurred during that year, when six-monthly information was split into two reports: one for terrestrial animals and one for aquatic animals (while the information was provided through the same report before 2012). This change facilitated the flow of information for aquatic animals. Also, at the time, the OIE had invested resources in additional training and support programmes for its Focal Points involved in notification. Since 2012, the median has constantly been high (close to 100%) and the first quartile close to 70%. In other words, 75% of the reporting countries and territories have been reporting information for more than 70% of the OIE-listed diseases, and half of the countries have been reporting information for nearly all OIE-listed diseases during this period.

Figure 13. Distribution of reporting countries and territories, based on their percentage of OIE-listed aquatic animal diseases with information in six-monthly reports, for each semester between 2005 and 2019, as of 3 February 2022

For each semester, the results are presented in the form of boxplots. The country with the minimum percentage of OIE-listed diseases with known situations is shown at the end of the bottom "whisker". The first quartile, Q1, is the bottom of the box. The median is shown as a line in the centre of the box. The third quartile, Q3, is shown at the top of the box. The country with the maximum percentage is shown at the end of the top "whisker". Outliers are shown as dots.

As of 3 February 2022, the results for 2020 and 2021 were based on a small number of reports compared to the other years, due to reporting delays. Therefore, the results for these two years were excluded from the analysis.



The results were broken down by geographical world regions, and by animal groups (fish, crustaceans, molluscs, amphibians). Medians are presented in Figure 14. As shown in the graphs, between 2005 and 2012, marked disparities were observed between world regions. Between 2005 and 2007, the medians for Africa and Asia were lower than those for Americas, Europe, and Oceania. Between 2008 and 2011, the median for Africa (between 5% and 25%) was much lower than those for other world regions. In other words, during this period, more than half of the reporting countries and territories in Africa reported information on less than 25% of OIE-listed aquatic animal diseases. Starting from 2012, such regional disparities have no longer been observed, all world regions having comparable medians. Concerning animal groups, some disparities were also observed for the period between 2005 and 2011.

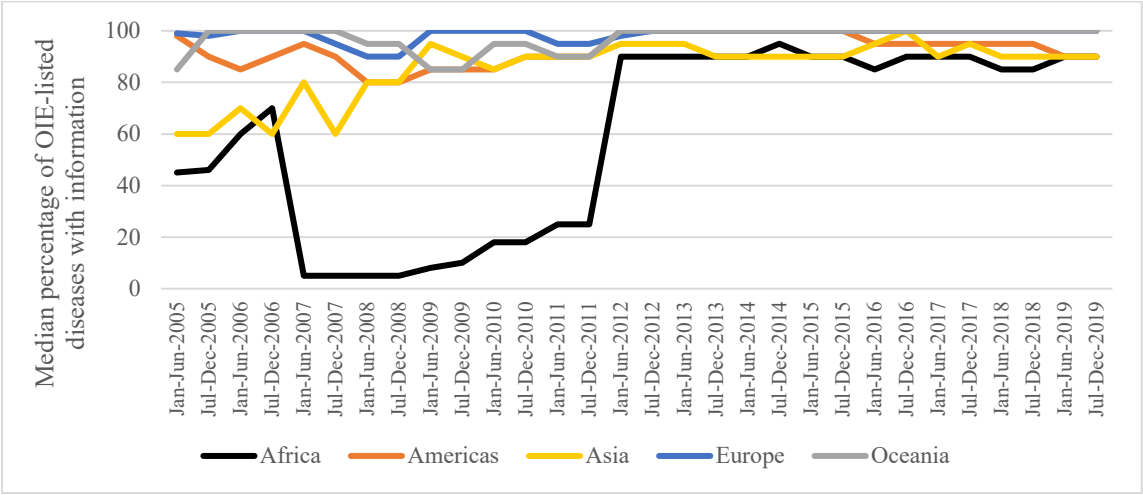
In 2005, medians were lower for amphibians compared with other animal groups and, between 2007 and 2011, medians were lower for crustacean diseases, compared with mollusc and fish diseases. Similarly to the world regions, as of 2012, such disparities between animal groups were no longer observed.

Although discrepancies between world regions and animal groups were observed during the period between 2005 and 2011, they have not been observed since 2012, probably as a result of the improvements made to WAHIS, and the OIE's training and support programmes for its Focal Points since then.

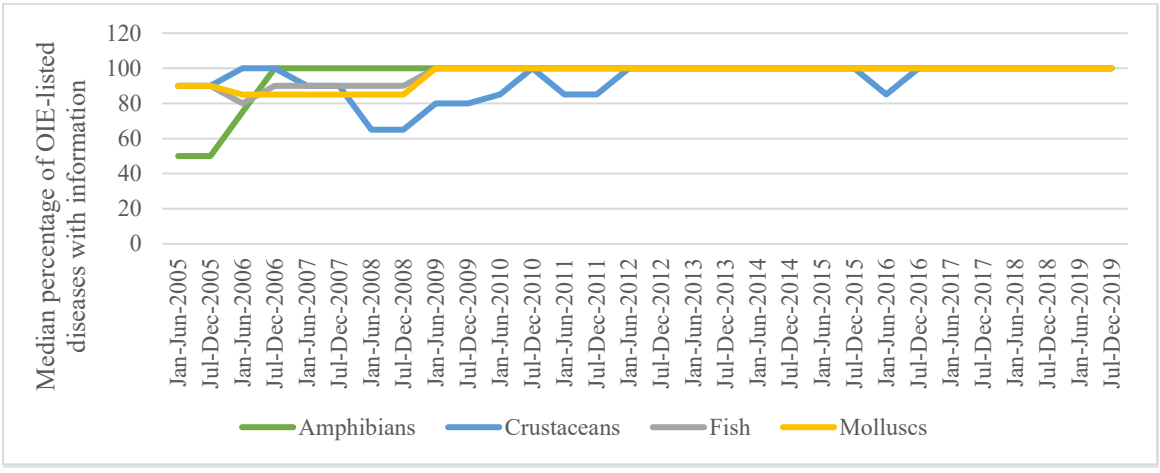
Figure 14. Median percentages of OIE-listed aquatic animal diseases with information in six-monthly reports, for each semester between 2005 and 2019, as of 3 February 2022, by geographical world region (A) and by animal group (B)

As of 3 February 2022, the results for 2020 and 2021 were based on a small number of reports compared to the other years, due to reporting delays. Therefore, the results for these two years were excluded from the analysis.

(A)



(B)



Acknowledging the need to build more sustainable aquatic animal health systems, the OIE launched its first Aquatic Animal Health Strategy in May 2021[22], at the 88th General Session. This Strategy will improve aquatic animal health and welfare worldwide, contributing to sustainable economic growth, poverty alleviation and food security, thereby supporting the achievement of the Sustainable Development Goals (SDGs). The Strategy has been designed to guide collaborative actions by the whole of the OIE Community – OIE Members (including both the public and private sectors), OIE Reference Laboratories and Collaborating Centres, international partners and OIE staff –, to strengthen four areas of the aquatic animal health system: Standards, capacity building, resilience, and leadership.

The identification and review of barriers to timely reporting of aquatic animal diseases and the identification of measures for improvement will have special focus in the implementation of the Strategy. To this end, a survey was designed by the OIE in 2022 to ask Focal Points for Aquatic Animals about barriers to surveillance, notification, implementation of OIE standards, trade measures and certification and the use of the PVS pathway.

Conclusions

During the period 2005–2019, an average of 80% of Members submitted their six-monthly reports for aquatic animal diseases.

These reporting countries and territories have been providing information on most OIE-listed diseases through their six-monthly reports, since 2012, in a regular way. Half of the countries have been reporting information for nearly all OIE-listed diseases during this period. This reporting is essential in order to monitor the global situation of OIE-listed aquatic animal diseases over time.

Since 2019, countries have been submitting their reports with an increased delay. This is mainly explained by the transition from the former WAHIS to the new OIE-WAHIS in 2021, and the challenges linked to the COVID-19 pandemic. To achieve its mission of ensuring transparency in the global aquatic animal disease situation, the OIE urges its Members to pursue their efforts with the support of the OIE to send their pending reports and to continue sharing the information in a timely manner, providing quality data, best reflecting the reality of the situation.

Members are urged to comply with their reporting obligations for OIE-listed diseases, through the submission of early warning and six-monthly reports. The OIE expects that the number of reports submitted will progressively increase in the coming months and reach the same level as previous years. Moreover, immediate notification of emerging diseases is key to the implementation of measures to prevent the spread of new diseases.

The OIE has initiated activities for the identification of barriers to aquatic animal disease reporting and the identification of improvement measures, in the context of the first *OIE Aquatic Animal Health Strategy*, launched in May 2021.

[22] OIE Aquatic Animal Health Strategy 2021–2025, https://www.oie.int/en/document/oie-aquatic-animal-health-strategy-2021-2025/

4. OIE-WAHIS state of play

On 9 March 2021, the OIE launched the first release of the renovated OIE-WAHIS (https://wahis.oie.int/). This enabled Members and non-Members to report important animal disease incursions in an easy and transparent manner within 24 hours and to provide their regular six-monthly overview of the disease situation in their country or territory.

Figure 15 shows the number of immediate notifications and follow-up reports submitted via OIE-WAHIS since the launch of the system. In total, 3995 reports were submitted up to 7 March 2022. Due to the low number of aquatic reports (30), the Figure does not distinguish between terrestrial and aquatic reports.

Figure 15. Number of early warning reports, by month, since the launch of OIE-WAHIS on 9 March 2021 (up to 7 March 2022)

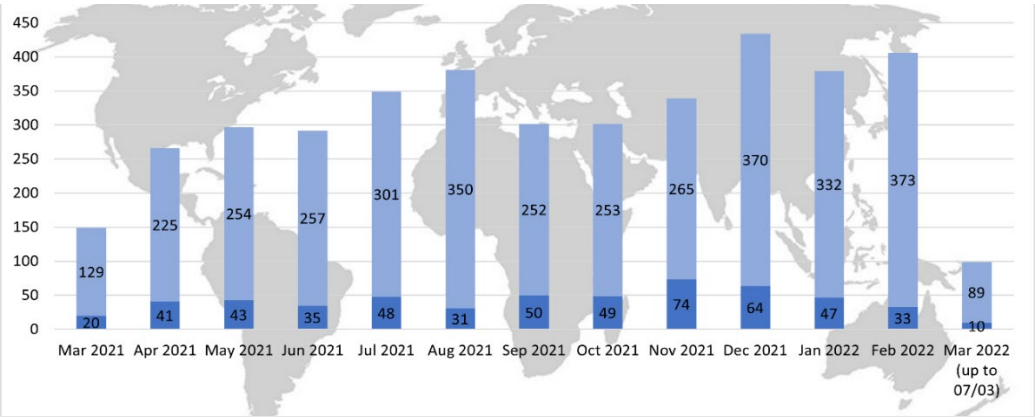
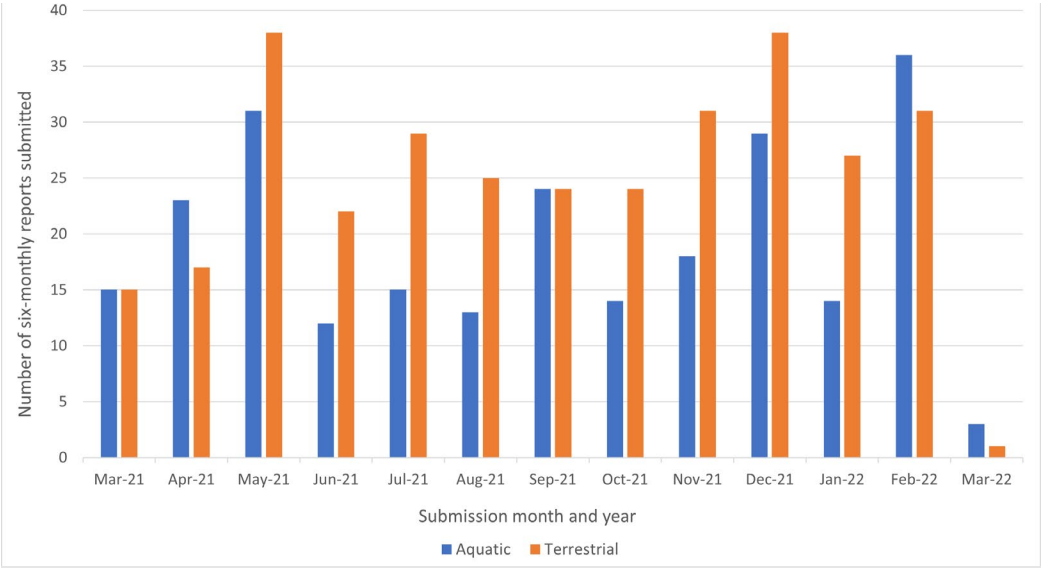


Figure 16 shows the number of six-monthly reports submitted by Members from the launch of the platform until 7 March 2022, by type of report (Terrestrial or Aquatic). In total, 569 six-monthly reports were submitted up to 7 March 2022 (247 aquatic six-monthly reports and 322 terrestrial six-monthly reports).

Figure 16. Number of six-monthly reports, by month, since the launch of OIE-WAHIS on 9 March 2021 (up to 7 March 2022)



The new platform features a renovated public interface with analytic and dashboard capability, and a state-of-the-art mapping system. It contains all historic information since 2005.

Since the launch, OIE has worked with a new IT provider to put in place a solid maintenance plan for the live platform and to fix important bugs of the existing functionalities. The focus of the remainder of the project will be on:

(1) Stabilising and optimising the existing modules and improving the platform's performance;

(2) Developing future evolutions, taking into account feedback from users, and developing remaining functionalities (establishing interconnectivity with the European Union's Animal Disease Information System [ADIS]; annual report, alert app, mapping feature evolutions);

(3) Linking up with the global health community by rolling out public interoperability.

The OIE anticipates that this work will be completed by mid-2023.

A quality data platform is essential to the OIE to enhance its role of data steward and is inextricably linked to the rolling out of the OIE digital transformation strategy. During the COVID-19 pandemic, the role and contribution of the OIE in providing a platform interconnecting with other international organisations have become increasingly relevant. The OIE must continue to provide its Members with the ability to report easily on animal diseases to facilitate transparency, access, and analysis. The knowledge generated should support the OIE, its Members and other stakeholders in the decision making process and inform efforts to improve system performance.

The OIE is monitoring weekly the usage of OIE-WAHIS using Google analytics technology. The resulting information is useful to understand how users are using the new platform and guide the OIE in promotion of the platform.

Figure 17 shows the number of pages viewed between the 1 June 2021 and the end of February 2022; the trend in the number of visits has increased since the start of this period, with the highest number of visits in November 2021 and January 2022 (91 000 visits and 86 000 visits, respectively). A substantial drop in the number of visits can be seen at the end of December, which corresponds to a global holiday period.

The most visited pages are: the Public Interface and the Home page followed by the Dashboard selection page, the Dashboard disease situation and the event management page.

Figure 17. Number of OIE-WAHIS pages visited by users, by week, between 1 June 2021 and end of February 2022

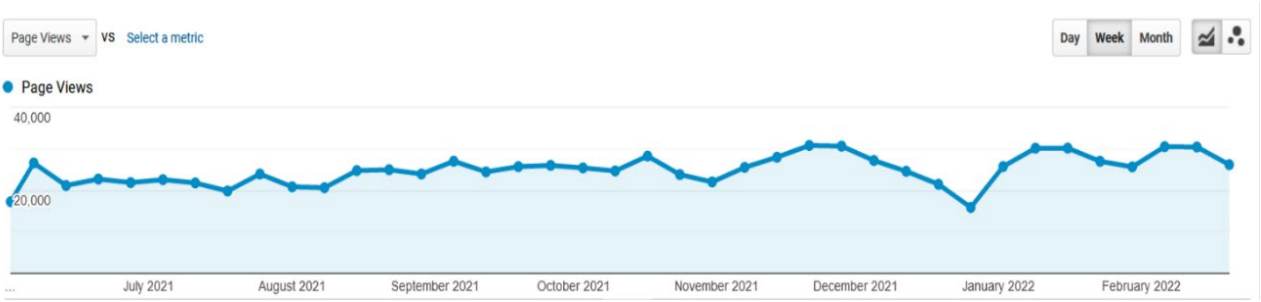


Figure 18 shows the number of visitors that use the Public Interface. The trend is similar to, and correlated with, the trend for page views. The figure shows a clear increase in terms of the number visitors over time, with the highest numbers of visitors in November 2021 and January 2022.

Figure 18. Number of visitors using the Public Interface, by week, between 1 June 2021 and end of February 2022

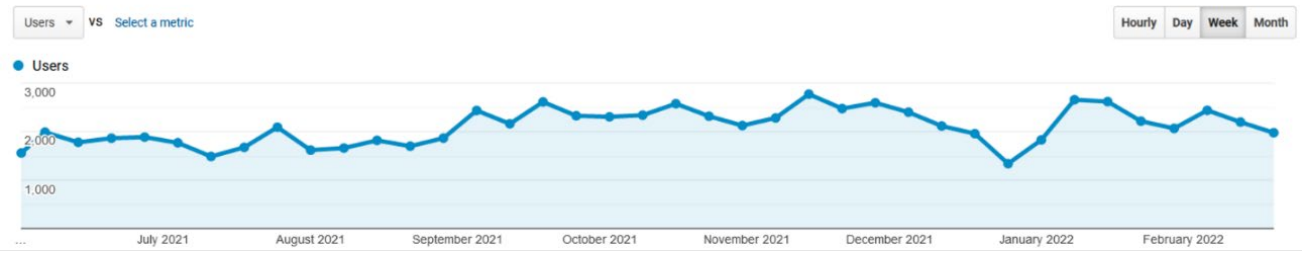
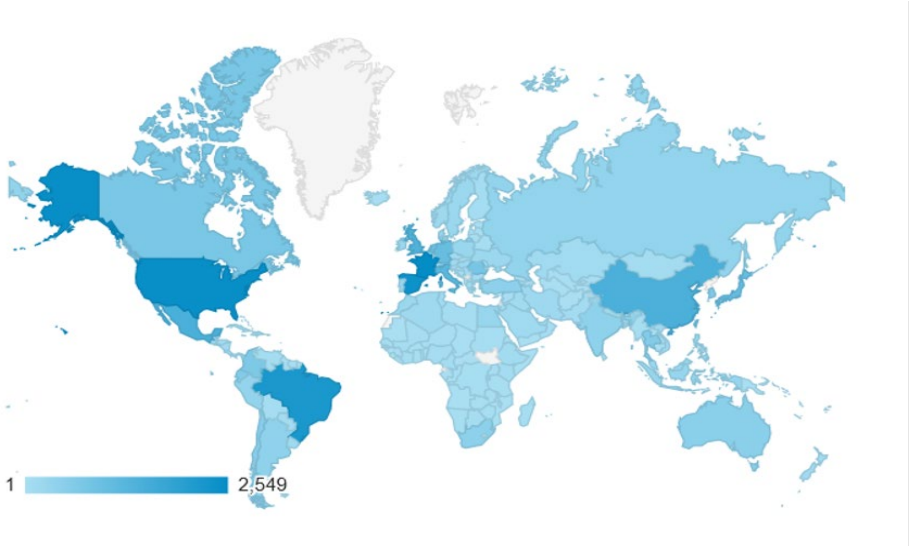


Figure 19 shows the geographical distribution of visitors to OIE-WAHIS over the same period (June 2021 to February 2022). The system is now consulted by users from a total of 207 countries.

Figure 19. Geographical distribution of visitors to OIE-WAHIS (June 2021 to February 2022)



The OIE recognises the challenges faced by Focal Points and Delegates when reporting via the new platform. The OIE actively engages with users to support reporting procedures as follows:

Challenges	Actions
Knowledge acquisition	Training; e-learning materials and courses; FAQs, videos
Performance issues	Ongoing optimisations of infrastructure and functional modules
Anomalies with the platform	Data and code fixes applied where possible; optimisation of functional modules will remove the majority of existing anomalies in the platform
Limited user experience	Feedback from the support desk and observation sessions is taken into account as part of optimisation work

To support Delegates and Focal Points, the OIE has implemented a dedicated support desk (https://wahis-support.oie.int/) to respond to any queries that may arise while using the OIE-WAHIS platform (818 requests for support were registered in support desk tool since 9 of March 2021 till 15 of March 2022). Business support is available via information.dept@oie.int

To ensure optimal use of the new system, OIE-WAHIS e-learning courses have been created and are available to OIE Delegates and Focal Points on the OIE Training Portal. The OIE is currently organising refresher training webinars for Members in all OIE Regions. The content of these training webinars has been developed taking into account feedback collected through: (i) reporting users at OIE Regional Conferences; (ii) the OIE-WAHIS support desk; (iii) shared information by OIE Regional and Sub-Regional OIE-WAHIS "champions". These webinars will continue throughout 2022.

To maintain OIE-WAHIS relevance over time, continuous investment is needed to allow OIE-WAHIS to evolve and align with the needs of its Members and public users.