World Organisation for Animal Health

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WOAH Collaborative Centre Reports Activities 2024

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CENTRE INFORMATION

***Title of WOAH Collaborating Centre**	Epidemiology Emerging Avian Diseases
***Address of WOAH Collaborating Centre**	Istituto Zooprofilattico Sperimentale delle Venezie
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***Name of the writer:**	Paolo Mulatti

TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

Category	Title of activity	Scope
		1. Support to the Italian MoH for the

Disease control (true)	1. Control measures for HPAI introduction and spread in the poultry production sector; 2. GIS and spatial analysis services; 3. West Nile Disease (WND) control activities in Northeast Italy.	drafting of Provisions to prevent the introduction and spread of AI into, and within, the poultry sector, following the implementation of the new European Animal Health Law (Regulation 429/2016/EC); 2. Support the management of 2023-2024 H5N1 Highly Pathogenic Avian Influenza (HPAI) emergency by means of GIS applications, technical support services, desktop GIS and web-based GIS services; 3. Coordination of 2024 WND surveillance and control activities in Northeast Italy. The main aim is to obtain information on the circulation of WND virus in the area through i) entomological surveillance, ii) clinical surveillance of WND virus in equine farms, iii) passive and active surveillance of WND virus in wild birds
Epidemiology, surveillance, risk assessment, (true)	1. National surveillance plan for avian influenza (AI); 2. Epidemiological support for HPAI in domestic poultry; 3. Evaluation of the genetic characteristics of avian reoviruses in the North-East of Italy.	1. Support the planning of 2024 AI surveillance activities in Italy by using a risk-based approach to define the risk level of different regions and poultry categories and the sample size for both domestic poultry and wild birds, with a particular focus on the application of active surveillance in wild birds; 2. Support for the collection and processing of epidemiological information and risk contacts during outbreaks of HPAI in poultry farms during the H5N1 HPAI epidemic in northern Italy; 3. Application of statistical and mathematical models to assess the potential spread of HPAI, to further inform the implementation of disease control measures Molecular investigation on the genetic charachteristics of avian reoviruses affecting broiler flocks in the North-East of Italy and comparison of field strains with available vaccine strains.
	1. Collaboration with the Regional Public Health Service for the prevention of WND transmission to	1. Based on information of WNV circulation in 2023 in Veneto and Friuli Venezia Giulia regions, definition of the best time interval to implement WNV controls on human blood donors maximizing the benefit-cost ratio; 2. Early

Zoonoses (true)	humans; 2. National surveillance plan for Aborvirus infections; 3. Collaboration with EFSA and ECDC for drafting a scientific opinion on zoonotic avian influenza.	warning for WNV circulation in vectors, equine and wild birds acting as trigger factor for organs transplantation and/or blood transfusion in human; 3. Contribution to the Scientific opinion adopted in December 2024 on "Preparedness, prevention and control related to zoonotic avian influenza".
Wildlife (true)	1. Active surveillance for avian influenza (AI) in wild birds; 2. Active surveillance for AI in hunted wild birds; 3. Study of ornithocoenosis in proximity to poultry farms; 4. Implementation of network for collaborating with Wild life Rescue Centres located in geographical areas classified at high-risk of AI exposure; 5. Participation in the EFSA – Sentinel wild bird project; 6. Implementation of a framework for early detecting Avian Influenza viruses in environmental sampling.	1. Implementation of an active surveillance plan in wild birds in the geographical areas classified at high-risk of AI exposure, by means of tracheal, cloacal and feather swab collection from trapped wild waterfowl; 2. Implementation of a plan to monitor the AI presence in asymptomatic hunted birds, in geographical areas considered exposed to a higher risk of AI introduction and with higher wild birds density; 3. Application of Species Distribution Models to assess the geographical distribution of wild bird species most commonly detected in proximity to poultry farms and the potential role in the spread of Avian Influenza Viruses; 4. Scientific support for implementation of diagnostic protocols and biosecurity protocols in Wild life Rescue Centres to avoid introduction and spread of HPAI infection among animal patients (avian and mammal species) and pathogen dissemination into the environment; Specific protocol for the workers of the Wild life Rescue Centres for prevention of human infection by potential zoonotic HPAI strains and pathogen dissemination into the environment/domestic birds; 5. Coordinating the consortium (IZSVe – ISPRA) for Node 7 (Veneto Region) of the SENTINEL project; designing pilot surveillance activities: definition of area of study and sampling plan, collection and processing of samples from wild waterfowl, definition of a communication plan; 6. Definition of a probabilistic framework for the definition of sampling points in proximity to poultry farms and in wetlands of ecological interest to detect the presence of AIV.

Avian diseases (true)	1. Study of Minimum inhibitory concentration in avian bacterial pathogens; 2. Pathogens detection in biological matrices sampled from wild birds (active-passive surveillance) through collaboration with others National Research Institutions.	1. Monitoring the minimum inhibitory concentration in avian bacterial pathogens isolates in our competence area; 2. Detection of relevant pathogens in wild birds harbouring the local wildlife, transboundary production (interface wild-domestic) and zoonotic potential.
Animal welfare (true)	1. Risk factors associated with keel bone and foot pad disorders in laying hens.	1. Evaluation of the prevalence of keel bone disorders (severity of deviation and/or deformation and/or protrusion) and foot pad lesions in laying hens (white feathered breed vs brown feathered breed) reared in different housing systems (aviary system vs cage system vs free range), by visual scoring at the abattoir and the application of artificial intelligence.
Diagnosis, biotechnology and laboratory (true)	1. Development of new diagnostic methods to implementing the survey on avian mycoplasmosis.	1. Application and standardization of molecular genotyping technique in avian mycoplasma species for epidemiological purposes. Development and application of a new method for the evaluation of biofilm synthesis ability in avian mycoplasma species.

TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main fucus area for which you were designated

Proposal title	Scope/Content	Applicable Area
GEOZONE - Implementation of a standard for the collection and sharing of zone geographic component	The aim of the project is to develop a data model to spatially represent a zone, to explore both its applicability and validity, and to evaluate the resources needed for its full-scale implementation. GeoZone project – Development of the GeoZone data product specification document	Training and Education Health Management

3. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

No

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

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Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Italian Institute for Environmental Protection and Research (ISPRA)	Italy	Europa	Desiging and optimising Surveillance activities for Avian Influenza in Wild Birds, partnership in EFSA-SENTINEL project

TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
WOAH Collaborating Centre for Diseases at the Animal/Human Interface	Italy	Europe	Studies and training activities on West Nile Virus
WOAH Reference laboratory for Avian mycoplasmosis	Italy	Europe	Studies and training activities on avian mycoplasmosis
WOAH-FAO Reference Laboratory for Avian Influenza and Newcastle Disease	Italy	Europe	Studies, training activities on Avian Influenza and Newcastle Disease
WOAH Collaborating Centre for Diagnosis and Control of Animal Diseases and Related Veterinary product assessment in Asia	Japan	Asia and Pacific	Partnership in the GeoZone WOAH Project
WOAH Collaborating Centre for Diagnosis, Epidemiology	France	Europe	Partnership in the GeoZone

and Control of Animal Diseases in Tropical Regions			WOAH Project
WOAH Collaborating Centre for Veterinary Epidemiology and Public Health	New Zealand	Asia and Pacific	Partnership in the GeoZone WOAH Project
WOAH Collaborating Centre for Animal Disease Surveillance Systems, Risk Analysis and Epidemiological Modelling	United States of America	Americas	Partnership in the GeoZone WOAH Project
WOAH Collaborating Centre for Epidemiology, modelling and surveillance	Italy	Europe	Partnership in the GeoZone WOAH Project

TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?

Yes

Name of expert	Kind of consultancy	Subject
Matteo Mazzucato, Claudia Casarotto, Nicola Ferrè	WOAH-WHAIS administrative boundaries geospatial data update	To support WOAH GIS technician in updating the WOAH-WHAIS administrative boundaries geospatial data
Mazzucato Matteo, Bonato Paola, Mulatti Paolo, Trolese Matteo, Sbettega Federica, Tomasin Alberto, Lorenzetto Monica, Ferrè Nicola, Scolamacchia Francesca, Fornasiero Dlletta	GIS-Mapping project	Enhance geospatial data management and communication within WOAH.

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

No

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members?

Yes

a) Technical visit : 0

b) Seminars : 0

c) Hands-on training courses: 1

d) Internships (>1 month) : 0

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
C	GIS course: The use of GIS in animal disease response - https://www.izsvenezie.com/online-training-course-gis-oie/	Italy	20

TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

No

TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

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1. Exploring the role of wild bird species in the transmission of Avian Influenza to poultry – Transboundary and emerging diseases [under review]

2. Preparedness, prevention and control related to zoonotic avian influenza. EFSA Journal, 23(1), e9191. https://doi.org/10.2903/j.efsa.2025.9191

3. Empowering veterinary clinical diagnosis in industrial poultry production by ambient mass spectrometry and chemiometrics: a new approach for precise poultry farming. Poult Sci. 2024 Apr 1;103(6):103709. doi: 10.1016/j.psj.2024.103709. Epub ahead of print. PMID: 38598914.

4. Mycoplasma gallisepticum and Mycoplasma synoviae in commercial poultry: current control strategies and future challenges. Avian Pathol. 2024 Nov 25:1-7. doi: 10.1080/03079457.2024.2419037.

5. Pathogenic avian mycoplasmas show phenotypic differences in their biofilm forming ability compared to non-pathogenic species in vitro. Biofilm. 2024 Mar 6;7:100190. doi: 10.1016/j.bioflm.2024.100190. PMID: 38515541;

b) International conferences:

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1. Fornasiero D, Zecchin B, M, Pastori A, Manca G, Monne I, Dellicour S, Ducatez M, Mulatti P, Guinat C (2024). Exploring the Influence of

Environmental and Climatic Factors on Highly Pathogenic Avian Influenza Outbreaks in Italy. 16th EPIZONE Annual Meeting "Viruses, vectors and wildlife". 25-27 September 2024 - Uppsala, Sweden
2. Franzoso A, Crimaudo M, Fornasiero D, Panzarin V, Martelli L, Manca G, Marciano S, Scolamacchia F, Mulatti P (2024). A Scoping Review and Narrative Synthesis on Environmental Sampling for Avian Influenza Surveillance in Wild and Domestic Settings and their Interface. 16th EPIZONE Annual Meeting "Viruses, vectors and wildlife". 25-27 September 2024 - Uppsala, Sweden
3. Martelli L, Fornasiero D, Martínez-Lanfranco JA, Spada A, Franzoso A, Scarton F, Scolamacchia F, Manca G, Mulatti P (2024). Unraveling the Role of Wild-Domestic Interface in the Spread of High Pathogenicity Avian Influenza. ModAH 2024 – 3rd Modelling in Animal Health Conference, 27-29 August, Nantes - France
4. Bennani H, Scolamacchia F, Brouwer A, Pohlmann A, Staubach C, Mulatti P, Guitian J and Alarcon. Datasets, Databases and Repositories on Avian Influenza in England, Italy and Germany: availability , accessibility , and potential use in epidemiological research. SVEPM Conference 2024; 20-22 March 2024 - Uppsala, Sweden
5. Mazzucato M, Tomasin A. Implementing the AIV H5 HPAI genotype dashboard in the EURL Avian Influenza Data Portal. 30th Annual Meeting of the National Reference Laboratories for Avian Influenza and Newcastle Disease of European Union Member States - Mestre (Italy) 10-11 October 2024

c) National conferences:
2
1. Trogu T., Bellini S., Canziani S., Carrera M., Chiapponi C., Chiari M., Farioli M., Fusaro A., Nucci A., Soliani L., Bortolami A., Terregino C., Lavazza A., Moreno A. Surveillance for Avian Influenza in Wild Birds in the Lombardy Region During the Period 2022-2024. IX SIPA Scientific Symposium, 12-13 September 2024, Lodi (Italy).
2. Bortolami A., Viel L., Zandonà L., Leardini S., Castaldello I., Franzo G., Gavazzi L., Luisetto P., Pastori A., Fusaro A., Cecchinato M., Rinaldi E., Catania S., Terregino C. Avian Reoviruses Isolated in Broiler Farms in Northeastern Italy from 2019 to 2024: Genetic Characteristics and Clinical Cases. IX SIPA Scientific Symposium, 12-13 September 2024, Lodi (Italy).

d) Other (Provide website address or link to appropriate information):
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11. What have you done in the past year to advance your area of focus, e.g. updated technology?
1. In 2004, experts from the CC participated in an EFSA project (SENTINEL – Wild Birds) aimed at establishing a network of laboratories, ornithologists, and epidemiologists in key areas for migratory wild birds across Europe. The goal was to initiate a series of coordinated activities to support the development of an early warning system at the European level.

2. An ongoing PhD project has been launched in collaboration with the National Veterinary School in Toulouse (France) and the Istituto Zooprofilattico Sperimentale delle Venezie, which hosts the CC. The project aims to develop expertise in phylogeographic methods for analyzing the spread of avian diseases, incorporating data on wild birds.

12. Additional comments regarding your report: