

OIE Collaborating Centres Reports Activities

Activities in 2018

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Title of collaborating centre:	Epidemiology Emerging Avian Diseases
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Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):	Dr Stefano Marangon, DVM, Director of Epidemiological Surveillance Department
Name of writer:	Guido Di Martino, DVM, MSc, Epidemiological Surveillance, Veterinary Legislation and Animal Welfare Unit of IZSve

ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories

ToR: To identify and maintain existing expertise, in particular within its region

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

Disease control	
Title of activity	Scope
Biosecurity measures applied in poultry holdings to prevent Avian Influenza (AI) introduction	Assessment of the application of biosecurity measures in poultry farms; investigation of the major determinants that impact on the level of compliance
GIS and spatial analysis services	Support the management of 2018 H5N8 Highly Pathogenic Avian Influenza (HPAI) emergency by means of GIS applications, technical support services , desktop GIS and web-based GIS services
Implementation of a geo-database for the collection and management of data during a HPAI epidemic	Management of an AI geo-database, which uses a specifically implemented (VetEpiGIS) suite. The VetEpiGIS is a tool for the management of spatial data developed by IZSve and made free available (GNU license) through the QGIS plugin portal (https://plugins.qgis.org/plugins/VetEpiGIS-Tool/)
West Nile Disease (WND) surveillance and control activities in Northeast Italy	Planning and coordination of 2018 WND surveillance and control activities in Northeast Italy. Definition of areas at-risk for WND virus using spatial information obtained from previous surveillance activities. The main aim is to obtain information on the circulation of WND virus in the area through i) entomological surveillance, ii) control activities in the case of WND virus detection in equine farms, iii) screening for WND in dead wild birds
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope
National surveillance plan for AI	Planning of the 2018 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 to be tested
Epidemiology and ecology of HPAI in domestic poultry	Application of statistical models (e.g. Non Linear Multi-Dimensional Scaling) to assess how environmental factors could have affected the occurrence of outbreaks during the 2016-2017 H5N8 HPAI epidemic in EU
Phylogeographic analysis of HPAI in domestic poultry	Application of discrete and continuous phylogenetic traits methods to epidemiological data of the 2016-2017 H5N8 HPAI epidemic to better define the geographical dynamics of the disease spread, and the impact of environmental drivers
Training, capacity building	

Title of activity	Scope
Distance learning course: The use of GIS in animal disease response. An empirical approach for the implementation of a GIS project	The course endorsed by OIE intended to present an empirical approach to implement a GIS project to capture, manage and analyse spatial data related to disease events. In particular, this course provides an introduction to QGIS (Quantum GIS, an Open Source GIS software for viewing, editing, and managing spatial data), a practical training on a specific QGIS plug-in (https://learningstore.izsvenezie.it/2-the-use-of-gis-in-animal-disease-response-detail)
Course: The use of GIS in animal disease response	A free of charge course for 25 trainees was held in Shenzhen (People's Republic of China) from 12 to 16 March 2018 (further details are provided at the following website http://gis.izsvenezie.it/gis-courses/course.php?courseid=3&mvid=16&lan=EN) The aim of the course was to provide basic knowledge on GIS for veterinarians and technicians from local or central veterinary organisations, who require core training and skills in planning and developing GIS projects to support animal disease control activities
Training of staff from National Veterinary Research Institute (NVRI, Vom, Nigeria) on epidemiology applied to avian influenza	The training is part of the activities included in the OIE twinning project between IZSve and NVRI. NVRI scientists were trained on epidemiology and Geographic Information System (GIS) applications to support avian influenza surveillance and disease response. The training was held in Padua from 12 to 16 November 2018
IZSve and Chinese Academy of Inspection and Quarantine (CAIQ) Cooperation project final meeting: "Capacity development for implementing a Geographic Information System (GIS) applied to surveillance, control and zoning of avian influenza and other emerging avian diseases"	IZSve and CAIQ have organized the cooperation project final meeting, with the aim to present the main issues on zoning, share the project results, and discuss ideas and proposals to improve trade relationships in Asia. The final meeting was held in Beijing, P.R. China, at the CAIQ Headquarter, on 18th October 2018. (Further details are provided at the following website http://gis.izsvenezie.it/cooperation/oie/izsve-caiq/finalmeeting.php)
Zoonoses	
Title of activity	Scope
Collaboration with the Regional Public Health Service for the prevention of WND transmission to humans	Based on information on WNV circulation in 2018 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
Evaluation of poultry farmers' occupational risk of generating AMR	Evaluation of the husbandry practices at risk of generating and transmitting antimicrobial resistant bacteria in poultry; development of guidelines of good practice for farmers.
Wildlife	
Title of activity	Scope
AI surveillance in wild birds	Application of epidemiological and spatial analyses, GIS methods and remote sensing techniques to preliminarily identify wetlands considered of interest for AI virus dynamics, to be targeted for surveillance activities and organization of the AI surveillance in wild birds
Study of AI virus dynamics at the domestic-wild bird interface	Study of ornithocenosis in proximity to poultry farms: the role of some species of wild birds as a bridge (bridge species) among the wetlands frequented by waterfowl and other species that can play an important role in AI introduction and spread to poultry farms
Avian diseases	
Title of activity	Scope

Development of new diagnostic methods for avian mycoplasmosis	<p>Application and standardization of multilocus sequence typing (MLST) method to genotype and classify <i>Mycoplasma gallisepticum</i> and <i>Mycoplasma synoviae</i> isolates.</p> <p>Development of a new diagnostic method for the diagnosis of <i>Mycoplasma</i> spp. including avian mycoplasmosis, using micro latex beads, coated with specific antibodies.</p> <p>Application and standardization of minimum inhibitory concentration in avian mycoplasma species such as <i>Mycoplasma gallisepticum</i> and <i>Mycoplasma synoviae</i>.</p>
OIE Terrestrial Manual - Chapter revision	Revised version of the OIE Terrestrial Manual chapter on Avian mycoplasmosis (<i>Mycoplasma gallisepticum</i> , <i>M. synoviae</i>).
Animal welfare	
Title of activity	Scope
Analysis of broiler vocalizations	Preliminary study (determination of basal levels) of decoding broiler vocalizations for future research on possible application as a health and welfare tool of assessment
Other (Name the category)	
Title of activity	Scope
Monitoring the trend and of antimicrobial usage in a major poultry company	Quantification of antimicrobial usage during the last 3 years in a representative number of broiler and turkey farms by means of standardized units (DDDita). Statistical analysis of risk factors and spatial distribution of critical areas

ToR : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare

Proposal title	Scope/Content	Applicable area
The development of a standard for the zoning geographical component	<p>Development of a spatial application scheme related to the zoning concept, based on the structures and rules defined by the ISO Technical Committee 211 (ISO/TC211). The proposed Spatial Application Scheme could be used both to define the logical structure of geographic data and to promote the harmonization and technical coherence of the zoning spatial information</p> <p>In the framework of the OIE Cooperation project with the Chinese Academy of Inspection and Quarantine (CAIQ), a specific workshop was organized in Beijing, P.R. China, at the CAIQ Headquarter, on 17th October 2018 with the presence of OIE headquarters and experts from five OIE Collaborating Centers for veterinary epidemiology</p>	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare

ToR: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines

ToR: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations

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

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
OIE-FAO Reference Laboratory for Avian Influenza and Newcastle Disease	Italy	<input checked="" type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East	Provision of diagnostic testing and expert advice on AI and ND Coordination of technical studies, proficiency tests and researches Evaluation of vaccines Organization of training activities

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

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
OIE Collaborating Centre for Diseases at the Animal/Human Interface	Italy	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Studies and training on vector-borne diseases (e.g. WND)
OIE Reference Laboratory for Viral Encephalopathy and Retinopathy, Istituto Zooprofilattico Sperimentale delle Venezie (IZSVE)	Italy	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	In the framework of the twinning project between IZSVE and the Institute of Veterinary Research of Tunisia (IRVT), on Viral Encephalopathy and Retinopathy (VER) of marine fish, GIS experts were placed as expert consultants at the disposal of the project

ToR: To place expert consultants at the disposal of the OIE.**5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?**

Yes

Name of expert	Kind of consultancy	Subject
Nicola Ferrè Stefano Marangon	Training of the CAIQ staff on GIS applications and GIS office organisation	OIE Cooperation project with the Chinese Academy of Inspection and Quarantine (CAIQ)
Matteo Mazzucato Paolo Mulatti	Training of staff from National Veterinary Research Institute (NVRI, Vom, Nigeria) on epidemiology and Geographic Information System (GIS) applications to support avian influenza surveillance and disease response	OIE twinning project between IZSve and National Veterinary Research Institute (NVRI, Vom, Nigeria)

ToR: To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries**6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?**

Yes

- a) Technical visits: 2
 b) Seminars: 0
 c) Hands-on training courses: 2
 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	The Use of GIS in animal diseases response. An empirical approach to implement a GIS project to capture, manage and analyse spatial data relate to disease events - A distance learning course	Italy	199
c	Five days training course "The use of GIS in animal disease response". The course provided basic knowledge on GIS for veterinarians and technicians from local or central veterinary organisations	Italy, China, New Zealand	25
a	Technical visit to the Changchun Veterinary Research Institute (CVRI) - OIE Reference Laboratory for Rabies - with the aim to exchange expertise on wildlife vaccination and GIS applications for rabies control	Italy	20

a	Study visit of a delegation from Saudi Arabia Veterinary Services 17-18/09/2018	Italy	6
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ToR: To organise and participate in scientific meetings and other activities on behalf of the OIE

7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?

Yes

National/International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
International	Technical workshop "The development of a standard for the zoning geographical component"	CAIQ	10/18	CAIQ headquarters in Beijing (China)	15

ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty

8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE

a) Articles published in peer-reviewed journals: 9

Mulatti P, Fusaro A, Scolamacchia F, Zecchin B, Azzolini A, Zaperin G, Terregino C, Cunial G, Monne I, Marangon S (2018). Integration of genetic and epidemiological data to infer H5N8 HPAI virus transmission dynamics during the 2016-2017 epidemic in Italy. *Sci. Rep.* 8 (1), 18037 (2018).

Adlhoch C, Brouwer A, Kuiken T, Miteva A, Mulatti P, Smietanka K, Staubach C, Gogin A, Muñoz Guajardo I, Baldinelli F, 2018. Scientific report: Avian influenza overview August – November 2018. *EFSA Journal* 2018;16(12):5573, 40 pp. doi:10.2903/j.efsa.2018.5573

Adlhoch C, Kuiken T, Mulatti P, Smietanka K, Staubach C, Munoz Guajardo I, Amato L and Baldinelli F, 2018. Scientific report: Avian influenza overview May - August 2018. *EFSA Journal* 2018;16(9):5430, 43 pp. doi:10.2903/j.efsa.2018.5430

Adlhoch C, Brouwer A, Kuiken T, Mulatti P, Smietanka K, Staubach C, Muñoz Guajardo I, Verdonck F, Amato L and Baldinelli F, 2018. Scientific report: Avian influenza overview February - May 2018. *EFSA Journal* 2018;16(6):5358, 50 pp. doi:10.2903/j.efsa.2018.5358

Adlhoch C, Brouwer A, Kuiken T, Mulatti P, Smietanka K, Staubach C, Willeberg P, Barrucci F, Verdonck F, Amato L and Baldinelli F, 2018. Scientific report: Avian influenza overview November 2017 – February 2018. *EFSA Journal* 2018;16(3):5240, 55 pp. doi:10.2903/j.efsa.2018.5240

Di Martino G., Crovato S., Pinto A., Dorotea T., Mascarello G., Brunetta R., Agnoletti F., Bonfanti L. (2018).

Farmers' attitudes towards antimicrobial use and awareness of antimicrobial resistance: a comparative study among turkey and rabbit farmers. *Italian Journal of Animal Science*, DOI10.1080/1828051X.2018.1504236.

Di Martino G., Piccirillo A., Giacomelli M., Comin D., Gallina A., Capello K., Buniolo F., Montesissa C., Bonfanti L. (2018). Microbiological, chemical and physical quality of drinking water for commercial turkeys: a cross-sectional

study. *Poultry Science* 97, 2880–2886.

Kreizinger Z, Sulyok KM, Bekó K, Kovács ÁB, Gróznér D, Felde O, Marton S, Bányai K, Catania S, Benčina D, Gyuranecz M. Genotyping *Mycoplasma synoviae*: Development of a multi-locus variable number of tandem-repeats analysis and comparison with current molecular typing methods. *Vet Microbiol.* 2018 Nov; 226:41-49. doi: 10.1016/j.vetmic.2018.10.012. Epub 2018 Oct 15.

Moronato ML, Cecchinato M, Facchetti G, Mainenti M, Gobbo F, Catania S. Application of different laboratory techniques to monitor the behaviour of a *Mycoplasma synoviae* vaccine (MS-H) in broiler breeders. *BMC Vet Res.* 2018 Nov 20;14(1):357. doi: 10.1186/s12917-018-1669-8.

b) International conferences: 15

N. Ferrè, M. Mazzucato, M. Trolese, P. Mulatti, S. Marangon - Implementation of a spatial data warehouse for avian influenza response - Oral presentation in proceedings of "The 15th International Symposium

of Veterinary Epidemiology and Economics - ISVEE 15", 12 - 16 November 2018, Chiang Mai, Thailand

N. Ferrè, Q. Songyin, M. Mazzucato, P. Mulatti, J. Fan - A GIS framework for evaluation of spatial factors that affect the quarantine station selection - Poster presentation in proceedings of "The 15th International Symposium of Veterinary Epidemiology and Economics - ISVEE 15", 12 - 16 November 2018, Chiang Mai, Thailand

N. Ferrè, M. Mazzucato, P. Mulatti, N. Solymosi - A GIS tool to support epidemic disease response - Oral presentation in proceedings of "Practical Geography and XXI Century Challenges. International Geographical Union Thematic Conference dedicated to the Centennial of the Institute of Geography of the Russian Academy of Sciences", 4-6 June 2018, Moscow.

Mulatti P, Montarsi F, Cunial G, Da Rold G, Fornasiero D, Gagliazzo L, Mazzucato M, Barbujani M, Marciano S, Terregino C, Russo F, Bricchese M, Capelli G, Bonfanti L, Marangon S (2018). West Nile Virus in North-eastern Italy: Preliminary Results of Surveillance Activities in 2018. First Scientific Symposium - Health and Climate Change. Istituto Superiore di Sanità, Rome, December 3-5, 2018.

Scolamacchia F, Monne I, Azzolini A, Dalla Costa A, Cunial G, Caucci C, Milani A, Drago A, Mulatti P (2018).

Surveillance for Avian Influenza in Wild Birds: an Overview of Strategies in Italy in 2017-18. 11th International Congress for Veterinary Virology - 12th Annual Meeting of EPIZONE. 27-29 August 2018. Vienna, Austria.

Azzolini A, Mulatti P, Fornasiero D, Cunial G, Bonato P, Fusaro A, Zecchin B, Scolamacchia F (2018). Characteristics of H5N8 Highly Pathogenic Avian Influenza Epidemic Waves in Italy in 2017. 11th International Congress for Veterinary Virology - 12th Annual Meeting of EPIZONE. 27-29 August 2018. Vienna, Austria.

Cunial G, Amato L, Montarsi F, Carlin S, Gagliazzo L, Mazzucato M, Scolamacchia F, Mulatti P (2018). West Nile Virus in North-eastern Italy: Overview of Surveillance Activities in 2017. 11th International Congress for Veterinary Virology - 12th Annual Meeting of EPIZONE. 27-29 August 2018. Vienna, Austria.

Mulatti P, Azzolini A, Zecchin B, Mazzucato M, Fusaro A, Monne I, Terregino C, Bonfanti L, Marangon S (2018). Epidemiological situation of Highly Pathogenic Avian Influenza H5N8 in Italy in 2016-2017. 10th International Symposium on Avian Influenza. 15-18 April 2018, Brighton, UK

Mazzucato M, Casarotto C, Bonato P, Mulatti P, Cunial G, Bassan M, Ferrè N (2018). A web based Spatial Support Decision System for managing the H5N8 Highly Pathogenic Avian Influenza epidemic in Italy. 10th International Symposium on Avian Influenza. 15-18 April 2018, Brighton, UK

Fusaro A, Zecchin B, Zampierin G, Schifo A, Salomoni A, Salviato A, Ormelli S, Marciano S, Bonfanti L, Azzolini A, Cunial G, Mulatti P, Terregino C, Monne I (2018). 10th Strengthening outbreak investigations using a next generation approach. International Symposium on Avian Influenza. 15-18 April 2018, Brighton, UK

Di Martino G., Bonfanti L. (2018) Biosecurity: structural and management measures to control diseases in poultry sector. Atti del "Ninth International Conference on Antimicrobial Agents in Veterinary Medicine". Roma 17-20 ottobre 2018.

Di Martino G., Caucci C., Mughini Gras L., Cibin V., Capello K., Moscati L., Bonfanti L. (2018). Antimicrobial Resistance against Critical Antibiotics in the Environment of Intensive and Organic Turkey Farms. International Meeting on Emerging Diseases and Surveillance (IMED). Vienna, 9-12 novembre 2018.

Caucci C., Avetta M., Di Martino G., Capello K., Gavazzi L., Bonfanti L. (2018). Evaluation of antimicrobial consumption in broiler farms using the EMA dose-based method. In: Quantification, Benchmarking and Stewardship of Veterinary Antimicrobial Usage First International Conference, 27-28 Febbraio 2018, Ghent, p.29.

Catania S., Fincato A., Germanà G., Laurà R., Levanti M., Abbate F. (2018) Avian *Mycoplasma* and biofilm: an ultrastructural approach. In: Proceedings of the 32nd Conference of the European Association of Veterinary Anatomists, Hannover, Germany, July 25-28 2018. Hannover, Germany, 25-28 July 2018, 12-13 DOI: 10.1111/ahe.12369.

Catania S., Moronato M.L., Fincato A., Boscarato M., Tonellato F.R., Gobbo F., Nicholas R.J. (2018) Atypical clinical and gross pathological features in a group of rearing layers infected by *Mycoplasma synoviae*. In: 22nd Congress of the International Organization for Mycoplasmaology, Program and Abstracts. Portsmouth, New Hampshire, USA, 9-12 July 2018, 34-35.

c) National conferences: 6

Bonato P., Trolese M., Mazzucato M., Marchioro M., Barbujani M., Lorenzetto M., Casarotto C., Bassan M., Rizzo S.,

D'Este L., Ferrè N. (2018) Impiego di tecniche di data warehousing per i dati di laboratorio. In: XVIII Congresso Nazionale S.I.Di.L.V. - Volume degli Atti, 30, Perugia, 7-9 novembre 2018, Italy

Caucci C., Brunetta R., Di Martino G., Zandonà L., Dalla Costa A., Capello K., Stefani A.L., Moronato M.L., Gobbo F., Catania S., Bano L., Bonfanti L. (2018). Comparazione dei profili di farmacosenibilità di *Escherichia coli* ed *Enterococcus faecalis* isolati da polli da carne all'inizio e alla fine del ciclo produttivo. In: III Simposio scientifico SIPA. Parma, 14 settembre 2018.

Di Martino G., Crovato S., Dalla Costa A., Caucci C., Pinto A., Mascarello G., Brunetta R., Agnoletti F., Bonfanti L. (2018). Percezione dell'uso del farmaco e consapevolezza dell'antibioticoresistenza: studio comparativo tra allevatori di tacchini e conigli. In: XVIII congresso SIDILV 2018. Perugia, 7-9 novembre 2018.

Moronato M.L., Fincato A., Boscarato M., Tonellato F.R., Catania S., Gobbo F. (2018) Indagine sulla presenza di *Mycoplasma spp.* nell'avifauna selvatica: risultati preliminari. In: 3° Simposio Scientifico SIPA, Atti della Società Italiana di Patologia Aviaria 2018. Parma, Italia, 14 September 2018.

Tonellato F.R., Moronato M.L., Zanardello C., Sturaro A., Catania S., Gobbo F. (2018) Micobatteriosi aviare: quadri anatomo-patologici a confronto. In: 3° Simposio Scientifico SIPA, Atti della Società Italiana di Patologia Aviaria 2018. Parma, Italia, 14 September 2018.

D'Este L., Gagliazzo L., Tiozzo B., Ruzza M., Mantovani C., Agnoletti F., Bano L., Barberio A., Catania S., Vio D., Vicenzoni G. (2018) La gestione del dato di antibiotico-sensibilità come strumento decisionale per una corretta terapia. In: XVIII Congresso Nazionale S.I.Di.L.V. - Volume degli Atti. Perugia, Italy, 7-9 November 2018, 22-24.

d) Other

(Provide website address or link to appropriate information): 1

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