WOAH Collaborative Centre Reports Activities 2023

Activities in 2023
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Centre Information

Title of WOAH Collaborating Centre	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale"
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Name of the writer:	Paolo Calistri

TOR1 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
Epidemiology, surveillance, risk assessment, (true)	Defining Ecoregions and Prototyping on EO-based Vector-borne Disease Surveillance System for North Africa (PROVNA)	In the framework of the project titled "Defining Ecoregions and Prototyping on EO-based Vector-borne Disease Surveillance System for North Africa (PROVNA)" satellite data of various climatic and environmental indexes have been analysed with the production of dynamic maps representing the "eco-regions" of the six countries (Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt) of North Africa region. These "eco-regions" will be used to guide the surveillance for vector-borne diseases, and in particular for Rift Valley fever.
Training, capacity building (true)	Twinning Project on Epidemiology and risk assessment between Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" (IZS-Teramo) and the Department of Animal Resources Risk Assessment (KSA ARRAD), Kingdom of Saudi Arabia	Three training sessions have been carried out for a total of 9 personnel of KSA ARRAD: - Statistics and GIS, I edition. Teramo, 27-31 March 2023. - Statistics and GIS, II edition. Teramo, 16-20 October 2023 - Training on Rapid Risk Assessment. Teramo. 13-22 November 2023.
Epidemiology, surveillance, risk assessment, modelling (true)	EquiTracing application for the visualization and management of tracing activities in horses	During 2023 a new web application, named "EquiTracing", has been developed. It allows the synamic exploration of data for trace-forward e trace-back and the identification of spatio-temporal patterns of spreading of infectious diseases in horses. A promotional video on Equitracing is available on: https://www.youtube.com/watch?v=JGjsNg9vxlk

Epidemiology, surveillance, risk assessment, modelling (true)	African Swine Fever (ASF) epidemiological bulletin	An epidemiological bulletin has been developed and constantly updated with the most recent data on the situation of African Swine Fever (ASF) in Italy, showing monitoring results using maps, tables, graphs and narrative text. The bulletin is available (English version) on https://storymaps.arcgis.com/stories/9fe6aa3980ca438cb9c7e8d656358f35
Epidemiology, surveillance, risk assessment, modelling (true)	West Nile disease and Usutu epidemiological bulletins	A dedicated website, with story maps with the annual reports summarizing the results of West Nile virus and the Usutu virus surveillance activities in Italy have been developed and available on https://storymaps.arcgis.com/collections/b50666024702441dac792d0cb3aee32c
Epidemiology, surveillance, risk assessment, modelling (true)	Management of the Veterinary National Epidemiological Bulletin	The Veterinary National Epidemiological Bulletin is published quarterly and contains the main figures regarding the epidemiological situation of animal diseases in Italy and some articles on main emerging arguments. https://www.izs.it/BENV_NEW/index_en.html
Training, capacity building (true)	Training course on "Rapid Risk Assessment Methods and Approaches", held in Teramo (Italy) from 11 to 15 September 2023	The specific objectives of the training were: - to acquire the necessary knowledge and skills to design an RRA study; - to apply effectively the RRA tool in response to animal health emergency threats, such as an outbreak situation. During the training, the participants were guided step-by-step along all topics foreseen by the FAO guidelines. The target group was represented by 15 persons (5 from Armenia, 4 from Azerbaijan, 4 from Georgia and 4 from Ukraine), usually involved in providing risk assessment studies and related expertise to the decision-makers in the animal health sector and belonging to national veterinary authorities or related national bodies.
Training, capacity building (true)	Regional training course on "Cours de formation régionale sur la fièvre de la vallée du Rift (FVR)", held in Teramo (Italy) from 25 to 26 September 2023	The overall aim of this training course was to enhance the capacity of the countries in RVF management and to provide the technical inputs for the preparation of the preliminary countries' action plan. Four countries of North Africa (Algeria, Tunisia, Mauritania, and Morocco) were the beneficiaries of the RVF training workshop.
Training, capacity building (true)	Organization of the GEOVET 2023 Conference	Organization of the GEOVET 2023 Conference: "International Conference of Spatial Epidemiology, Geostatistics and GIS applied to animal health, public health and food safety. Expanding boundaries: Interdisciplinary geospatial research for the One Health Era", held in Silvi Marina, Teramo, Italy, September 19th – 21st 2023.

TOR3: 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

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?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
WOAH CC on Epidemiology Emerging Avian Diseases	Italy	Europe	Implementation of a standard for the collection and sharing of zone geographic

			component (GeoZone)
National Center for Global Health Istituto Superiore di Sanità (ISS)	Italy	Europe	Project "Preventing biological risks increased by environmental and climate change in the Mediterranean, Black Sea and Sahel regions by strengthening a structured, inclusive and institutionalized One Health approach" (MediLabSecure)
European Space Agency (ESA)	France	Europe	Collaboration in the framework of various project initiatives in the fields of Earth Observation Data and Satellite Imagery.
Goddard Earth Sciences Technology and Research (GESTAR) II Center	United States of America	Americas	The Goddard Earth Sciences Technology and Research (GESTAR) II Center is a cooperative entity between University of Maryland, Baltimore County (UMBC) and NASA Goddard Space Flight Center. The collaboration is established in the framework of the project: "Defining Ecoregions and Prototyping on EO-based Vector-borne Disease Surveillance System for North Africa (PROVNA)".

TOR4 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 CC on Reduction of the Risk of Disasters in Animal Health	Cuba	Americas	Collaboration in the framework of the OIE Collaborating Centre network on Veterinary Emergencies (OIE EmVetNet)
WOAH Reference Laboratory for Viral Encephalopathy and Retinopathy of Marine Fish	Italy	Europe	Strengthening capacity on aquatic animal health and epidemiological surveillance (Aquae strength)
WOAH Collaborating Centre on Biological Threat Reduction	United States of America	Americas	Collaboration in the framework of the OIE Collaborating Centre network on Veterinary Emergencies (OIE EmVetNet)
WOAH CC on Animal Production Food		Europe	Development of risk

Safety	Italy		assessment models in food safety
WOAH CC on Veterinary Training and Capacity Building	Italy	Europe	Collaboration on international training initiatives with particular focus on the development of e-learning contents on epidemiology, surveillance and risk analysis
ERFAN - Enhancing Research for Africa Network	Italy	Europe	Collaboration with training initiatives and project activities.
Anses - Agence nationale de sécurité sanitaire de l'alimentation	France	Europe	Project for provision of support to EFSA and to ECDC in the production of the EU One Health Zoonoses report and in related zoonoses online interactive data visualisation dashboards and zoonoses
Istituto Superiore di Sanità	Italy	Europe	Project for provision of support to EFSA and to ECDC in the production of the EU One Health Zoonoses report and in related zoonoses online interactive data visualisation dashboards and zoonoses
Istituto Zooprofilattico Sperimentale delle Venezie	Italy	Europe	Project for provision of support to EFSA and to ECDC in the production of the EU One Health Zoonoses report and in related zoonoses online interactive data visualisation dashboards and zoonoses
Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna	Italy	Europe	Project for provision of support to EFSA and to ECDC in the production of the EU One Health Zoonoses report and in related zoonoses online interactive data visualisation dashboards and zoonoses

TOR6: EXPERT CONSULTANTS

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

Yes

NAME OF EXPERT	KIND OF CONSULTANCY	SUBJECT
Daria Di Sabatino	Consultancy and support mission in Jordan 13 - 16 February 2023	On-site mission for supporting the Jordan Veterinary Services in the epidemiological investigations following the outbreaks of FMS SAT-2 in Jordan.

Paolo Calistri	Participation at the 27th JPC REMESA Meeting (online). 12-13 December 2023	Defining Ecoregions and Prototyping on EO-based Vector-borne Disease Surveillance System for North Africa (PROVNA). Updates and next steps.
Paolo Calistri	Participation at the Meeting of the WOAH Emerging Diseases Group (EDG). 5-7 December 2023 - WOAH, Paris	The PROVNA initiative in North Africa.
Alessandro Ripani	Inception workshop - Fortifying institutional resilience against biological threats (FIRABioT) project Kenya, 14-16 March 2023.	Defining Ecoregions and Prototyping on EO-based Vector-borne Disease Surveillance System for North Africa (PROVNA).
Alessandro Ripani	26th JPC REMESA Meeting. Ioannina (Grecia), 15 June 2023.	Defining Ecoregions and Prototyping on EO-based Vector-borne Disease Surveillance System for North Africa (PROVNA)
Paolo Calistri	Rift Valley fever: online fora, Jointly presented by Enhancing Research for Africa Network (ERFAN) and the designated RVF European Union Reference Laboratory (EURL). Teramo, 23 May 2023.	Factors triggering the spread of RVF
Annamaria Conte	Rift Valley fever: online fora, Jointly presented by Enhancing Research for Africa Network (ERFAN) and the designated RVF European Union Reference Laboratory (EURL). Teramo, 25 July 2023.	Modelling and prediction of RVF outbreaks.
Paolo Calistri Daria Di Sabatino	WOAH Inter-Regional Roundtable Discussion Meeting. Tiblisi, Georgia, 13 November 2023	Defining Ecoregions and Prototyping on EO-based Vector-borne Disease Surveillance System for North Africa (PROVNA)
Paolo Calistri	OIE Laboratory Reference Twinning Project btw IZSAM and National Animal Health Diagnostic and Investigation Centre (NAHDIC)/Ethiopia Strengthening the capacity of Contagious Bovine Pleuro-Pneumonia (CBPP) diagnosis including development of reagents for serological tests and enhance the surveillance in Ethiopia	To discuss with the Ethiopian veterinary authorities the possibility of establishing an active surveillance for CBPP
Annamaria Conte	Wildlife Conservation Society. Conference on Breaking Barriers: Advancing the One Health Agenda with a Focus on Environment. Berlin, 12-13 October 2023	OH surveillance: using environment data for defining ecoregions and prototyping an EO-based VBD surveillance system for North Africa (PROVNA)

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

The WOAH CC provide advice and/or services mainly in the establishment of the surveillance systems, including the design and development of supporting information systems, and risk assessment methodologies, providing advice to the competent authorities of WOAH Members and through specific capacity building initiatives. These activities are carried out in the framework of various project upon different funding lines and other opportunities provided by international workshops and conferences. The WOAH Member Countries mainly involved in these activities are those belonging to the following geographical areas: North Africa, the Balkans, the Middle East and Arabic Peninsula. Sub-Saharan countries are involved through the ERFAN initiative.
In addition, between 13 and 16 February 2023, Daria Di Sabatino, on behalf of the WOAH CC provide on-site assistance to the Jordan Veterinary Services in the epidemiological investigations following the outbreaks of FMS SAT-2 in Jordan.

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 : 3

b) Seminars : 370

c) Hands-on training courses: 34

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	Statistics and GIS, I edition. Teramo, 27-31 March 2023.	Kingdom of Saudi Arabia	3
C	Statistics and GIS, II edition. Teramo, 16-20 October 2023.	Kingdom of Saudi Arabia	3
C	Training on Rapid Risk Assessment. Teramo. 13-22 November 2023.	Kingdom of Saudi Arabia	3
C	Surveillance and surveillance systems. Addis Ababa. 8 February 2023.	Ethiopia	5
C	Training course on "Rapid Risk Assessment Methods and Approaches", held in Teramo (Italy) from 11 to 15 September 2023	Armenia, Azerbaijan, Georgia and Ukraine	15
C	Regional training course on "Cours de formation régionale sur la fièvre de la vallée du Rift (FVR)", held in Teramo (Italy) from 25 to 26 September 2023	Algeria, Tunisia, Mauritania, and Morocco	5
B	Rift Valley fever: online ERFAN webinar Factors triggering the spread of RVF, 23 May 2023. Modelling and prediction of RVF outbreaks, 25 July 2023.	Algeria, Morocco, Senegal, Myanmar, Tunisia, Libya, Namibia, Mauritania, Sudan, South Africa, Tanzania, Mozambique, Angola, Zimbabwe, Botswana, Egypt, Turkey, Ivory Coast	370
A	Technical visits of two epidemiologists from Ethiopia 29-31 May 2023	Ethiopia	2
A	Technical visits of one epidemiologist from CENSA (Cuba) 21-22 September 2023	Cuba	1

TOR8: 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

TOR9: 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:

18

1. De Ascentis M, Quaglia M, D'Alessio SG, Iapaolo F, Pizzurro F, Ruggeri F, et al. Species of mosquitoes present in Abruzzo and Molise and their possible role as vector of Usutu and West Nile viruses. Veterinaria italiana. 2023 July 10,;58(4).

2. Bonicelli L, Porrello A, Vincenzi S, Ippoliti C, Iapaolo F, Conte A, et al. Spotting Virus from Satellites: Modeling the Circulation of West Nile Virus Through Graph Neural Networks. TGRS [GRANT IZSAM 01/18 RC]. 2023 Jan 1,;61:1.

3. De Massis F, Sacchini F, D'Alterio N, Migliorati G, Ferri N, Rossi E, et al. Brucella abortus Strain RB51 Administered to Prepubescent Water Buffaloes, from Vaccination to Lactation: Kinetics of Antibody Response and Vaccine Safety. Microorganisms (Basel). 2023 Aug 01,;11(8).

4. Perletta F, Di Pancrazio C, Rodomonti D, Di Febo T, Luciani M, Krasteva IM, et al. Evaluation of Three Serological Tests for Diagnosis of Canine Brucellosis. Microorganisms

(Basel). 2023 Aug 26,;11(9).

5. Di Lorenzo A, Zenobio V, Cioci D, Dall'Acqua F, Tora S, Iannetti S, et al. A web-based geographic information system monitoring wildlife diseases in Abruzzo and Molise regions, Southern Italy. BMC veterinary research [Piano regionale di prevenzione della Regione Abruzzo]. 2023 Oct 02,;19(1):183.

6. Di Lorenzo A, Mangone I, Colangeli P, Cioci D, Curini V, Vincifori G, et al. One health system supporting surveillance during COVID-19 epidemic in Abruzzo region, southern Italy. One health [Fondi Open Accesso Biblioteca]. 2023 Jun 1,;16:100471.

7. Schiavano GF, Guidi F, Pomilio F, Brandi G, Salini R, Amagliani G, et al. Listeria monocytogenes Strains Persisting in a Meat Processing Plant in Central Italy: Use of Whole Genome Sequencing and In Vitro Adhesion and Invasion Assays to Decipher Their Virulence Potential. Microorganisms. 2023 -06-26;11(7).

8. Cocco A, Alessiani A, Salini R, Iapaolo F, Averaimo D, Pompilii C, et al. Detection of Potential Zoonotic Agents Isolated in Italian Shelters and the Assessment of Animal Welfare Correlation with Antimicrobial Resistance in Escherichia coli Strains. Antibiotics. 2023 -05-06;12(5).

9. Manna L, Rizzi E, Bafile E, Cappelleri A, Ruscica M, Macchi C, et al. Lentilactobacillus kefiri SGL 13 and Andrographis paniculata alleviate dextran sulfate sodium induced colitis in mice. Frontiers in Nutrition. 2023 FEB 13;10:1072334.

10. Dorotea T, Riuzzi G, Franzago E, Posen P, Tavornpanich S, Di Lorenzo A, Ferroni L, Martelli W, Mazzucato M, Soccio G, et al. A Scoping Review on GIS Technologies Applied to Farmed Fish Health Management. Animals. 2023; 13(22):3525. https://doi.org/10.3390/ani13223525

11. Marotta F, Janowicz A, Romantini R, Di Marcantonio L, Di Timoteo F, Romualdi T, Zilli K , Barco, L, Incau M, Mangone I, Cito F, Di Domenico M, Pomilio F, Ricci L, Garofolo G. Genomic and Antimicrobial Surveillance of Campylobacter Population in Italian Poultry. Foods. 2023 Jul 31;12(15).

12. Cantelmi MC, Merola C, Averaimo D, Chiaverini A, Cito F, Cocco A, Di Teodoro G, De Angelis ME, Di Bernardo D, Auzino, D, Petrini A. Identification of the Novel Streptococcus equi subsp. zooepidemicus Sequence Type 525 in Donkeys of Abruzzo Region, Italy. Pathogens. 2023 -05-23;12(6).

13. Amato L, Benedetti G, Di Giuseppe P, Hénaux V, Lailler R, Nordeng Z, , Scharffenberg TAZ, Skjerdal T, & Cito F. et al. Mapping food surveillance chains through different sectors. Frontiers in public health. 2023 Apr 18, 11:1129851.

14. Bosica S, Chiaverini A, De Angelis ME, Petrini A, Averaimo D, Martino M, Rulli M, Saletti MA, Cantelmi MC, Ruggeri F, Lodi F, Calistri P, Cito F, Cammà C, Di Domenico M. Severe Streptococcus equi Subspecies zooepidemicus Outbreak from Unpasteurized Dairy Product Consumption, Italy. Emerging infectious diseases. 2023;29(5):1020-4.

15. Calistri P. La valutazione del rischio lungo la catena di produzione degli alimenti. In: Longeri M, editor. Valutazione e comunicazione del rischio in sicurezza alimentare. Milano: Milano University Press; 2023. p. 91.

16. Calistri P. L'analisi del rischio: definizione di rischio, campi e ambiti d'applicazione. In: Longeri M, editor. Valutazione e comunicazione del rischio in sicurezza alimentare. Milano: Milano University Press; 2023. p. 91.

17. Calistri P, Gill H, Lorusso A. Special Issue "SARS-CoV-2: Epidemiology and Pathogenesis": Editorial. Microorganisms. 2023 Apr 3;11(4):927. doi: 10.3390/microorganisms11040927.

18. Lorusso A, Cappai S, Loi F, Pinna L, Ruiu A, Puggioni G, Guercio A, Purpari G, Vicari D, Sghaier S, Zientara S, Spedicato M, Hammami S, Ben Hassine T, Portanti O, Breard E, Sailleu C, Ancora M, Di Sabatino D, Morelli D, Calistri P, Savini G. Epizootic Hemorrhagic Disease Virus Serotype 8, Italy, 2023. Emerging Infectious Disease journal. 2023;29(5):1063.

b) International conferences:
10

1. Conte A. "Earth Observation data in emergency preparedness". WOAH Global Conference on Emergency Management "Tackling shared threats for a safer world". Paris, France, from 3 to 5 April 2023.

2. Ippoliti C. "Satellite Earth Observation data and Deep Learning methods for suitable environmental conditions: mapping Culex pipiens distribution in central Italy". Invited speaker 45'. Joint ICTP-IAEA Workshop on Accounting for Climate in Vector-borne Disease Intervention Planning Including the Sterile Insect Technique (SIT) | Trieste, 22-26 May 2023.

3. Ippoliti C., Candeloro L., Tora S., Iapaolo F., Monaco F., Morelli D., Conte A. "Earth Observation Data and Extreme Gradient Boosting Model: innovative methods predicting West Nile Virus Circulation in Italy." 2023-06-12, GEOdaysIT 2023 (11° Convegno AIT), Bari 12-14 June 2023.

4. Luca Candeloro, Carla Ippoliti, Susanna Tora, Markus Metz, Laura Amato, Romolo Salini, Valentina Zenobio, Paolo Calistri, Nicola D'Alterio, Alessandro Ripani, Annamaria Conte "Earth Observation-based Self Organising Map for Northern Africa regions." GeoVet2023 International Conference, 19–21 September 2023, Silvi Marina (TE).

5. Ippoliti Carla, Tora Susanna, Filipponi Federico, Di Giacinto Federica, Romolo Salini, Di Silvestro Daniela, Di Filippo Francesco; Conte Annamaria and Giansante Carla "Use of satellite Earth Observation to monitor aquaculture sites in coastal Abruzzo region, Adriatic Sea." GeoVet2023 International Conference, 19–21 September 2023, Silvi Marina (TE).

6. Luca Candeloro, Annamaria Conte, Maria Goffredo, Lara Savini. "A raster-based compartmental model combining the host's density and movements, driven by vector suitability." GeoVet2023 International Conference, 19–21 September 2023, Silvi Marina (TE).

7. Giacomo Zoppi, Luca Candeloro, Lara Savini, Vittoria Colizza, Mario Giacobini. "On the interaction between bovine and bubaline trade network in epidemic spreading." GeoVet2023 International Conference, 19–21 September 2023, Silvi Marina (TE).

8. Angelo Porrello, Carla Ippoliti, Lorenzo Bonicelli, Federica Iapaolo, Daniela Morelli, Federica Monaco, Simone Calderara, Annamaria Conte. "Forecasting West Nile Virus Circulation through Sentinel and Landsat Imagery and Graph Neural Networks." GeoVet2023 International Conference, 19–21 September 2023, Silvi Marina (TE).

9. A. Conte. OH surveillance: using Earth Observation data for vector-borne diseases in North Africa. Breaking Barriers: Advancing the One Health Agenda with a Focus on Environment. Berlin, 12-13 October 2023.

10. P. Calistri, A. Conte. The use of new diagnostic technologies and Earth observation data in Africa to strengthen zoonoses surveillance. Africa BIO Signature Initiative 5th Meeting (Surveillance and Epidemic Intelligence). 26 June 2023.

c) National conferences:
2

1. Di Teodoro G., Cito F., Salini R., Defourny S., Martino M. Romeo G. D'Innocenzo V., Tieri E., Cocco A., Petrini A. (2023) Nove anni di attività (2014-2022) del registro tumori animali delle regioni Abruzzo e Molise preliminari - SIDILV 2023, Brescia, 11-13 Ottobre 2023.

2. Lara Savini, Luca Candeloro, Diana Palma, Luigi Possenti, Samuel Perticara, Annamaria Conte. Network analysis e modellizzazione per la prevenzione e il controllo delle malattie infettive equine in italia: Un approccio data-driven. Convegno "Salute e benessere del cavallo non DPA in Italia: un contributo concreto dai progetti di ricerca" tenutosi il 26 giugno 2023, presso il Ministero della Salute, Roma.

d) Other (Provide website address or link to appropriate information):

11. What have you done in the past year to advance your area of focus, e.g. updated technology?
More efforts and studies have been put into the application of Machine Learning techniques for the interpretation and modelling of big data coming from different sources (e.g. satellites, genome sequencing, etc.), with the more general aim of enhancing the efficiency and the capacity of risk-based surveillance systems at local, national and international levels.

12. Additional comments regarding your report: