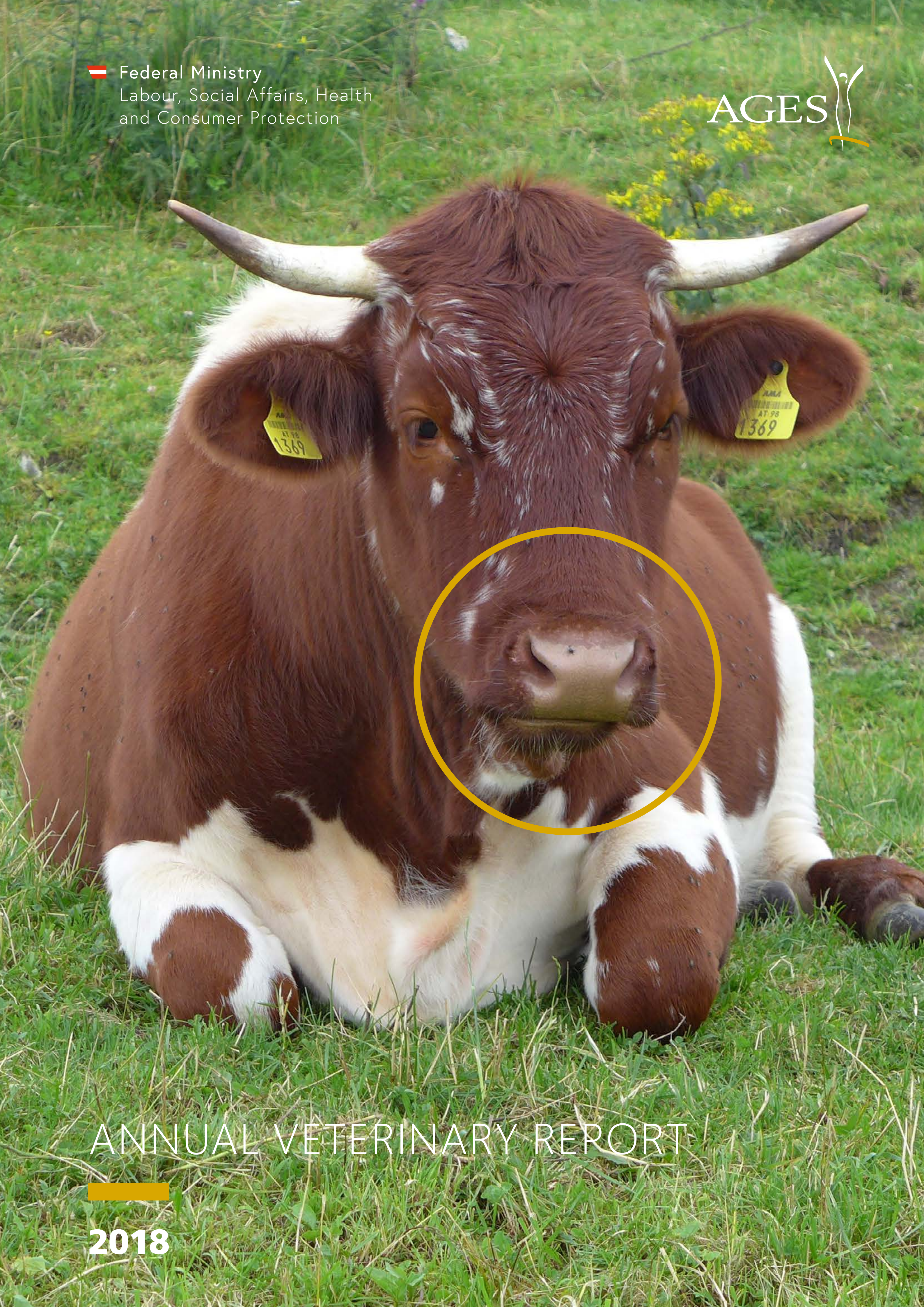
Federal Ministry
Labour, Social Affairs, Health and Consumer Protection

AGES



ANNUAL VETERINARY REPORT

2018

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Federal Ministry of Labour, Social Affairs, Health and Consumer Protection
Austrian Agency for Health and Food Safety (AGES)

CONTENT

LIST OF ABBREVIATIONS

Abs.	Absatz
AGES	Agentur für Gesundheit und Ernährungssicherheit GmbH (Austrian Agency for Health and Food Safety)
AI	Aviäre Influenza (Avian Influenza)
AIV	Aviäre Influenzavirus (Avian Influenzavirus)
Ak (Ab or AB)	Antikörper (Antibody)
AmpC	Aminopenicilline und Cephalosporine [β-Lactamase] (Aminopenicilline und Cephalosporine [β-Lactamase])
Art.	Artikel (article)
ASP (ASF)	Afrikanische Schweinepest (African Swine Fever)
ASPV (ASFV)	Afrikanische Schweinepestvirus (African swine fever virus)
atyp.	atypisch (atypical)
B.	*Brucella*
BGBL.	Bundesgesetzblatt (Federal Law Gazette)
BMASGK	Bundesministerium für Arbeit, Soziales, Gesundheit und Konsumentenschutz (Federal Ministry for Labour, Social Affairs, Health and Consumer Protection)
BMNT	Bundesministerium für Nachhaltigkeit und Tourismus (Federal Ministry for Sustainability and Tourism)
BoHV-1	Bovines Herpesvirus Typ 1 (Bovine Herpesvirus 1)
BRO	Biorisk Officer
BSE	Bovine Spongiforme Enzephalopathie (Bovien spongiform encephalopathy)
BSL	Biosafety Level
BT	Blauzungenkrankheit (Bluetongue)
BTV	Bluetongue virus
BVD	Bovine Virusdiarrhoe (Bovine viral diarrhoea)
BVD/MD	Bovine Virusdiarrhoe/Mucosal Disease (Bovine viral diarrhoea/Mucosal Disea-se)
B-VG	Bundesverfassungsgesetz (Federal Constitutional Law)
C.	*Campylobacter*
CNS	Central Nervous System
CSF	Classical Swine Fever
CSFV	Classical Swine Fever virus
DNA	Desoxyribonukleinsäure (Deoxyribonucleic acid)
E.	*Escherichia*
ECDC	Europäisches Zentrum für die Prävention und die Kontrolle von Krankheiten (European Centre for Disease Prevention and Control)
EFSA	Europäische Behörde für Lebensmittelsicherheit (European Food Safety Autho-rity)
EEC	European Economic Community
EG	Europäische Gemeinschaft (European Community)
EIA	Equine Infektiöse Anämie (Equine infectious anemia)
ELISA	Enzyme Linked Immunosorbent Assay
ESBL	Extended Spectrum β-Lactamase (Enzym)
EU	Europäische Union (European Union)
EuFMD	Europäischen Kommission zur Bekämpfung der Maul- und Klauenseuche (European Commission for the Control of Foot-and-Mouth Disease)
EWG	Europäische Wirtschaftsgemeinschaft
HAH	Hämagglutinationshemmungstest
HAI	Haemagglutination inhibition test
HPAIV	Hochpathogenes Aviäres Influenzavirus (high pathogenic avian influenza virus)
HTLV-BLV	synonym Genus Deltaretrovirus
IBR/IPV	Infektiöse Bovine Rhinotracheitis / Infektiöse Pustulöse Vulvovaginitis (infecti-ous bovine rhinotracheitis/infectious pustulous vulvovaginitis)

idgF.	in der geltenden Fassung
IgG	Immunglobulin G
IgM	Immunglobulin M
IHN	Infektiöse Hämatopoetische Nekrose (Infectious Hematopoietic Necrosis)
IVET	Institut für Veterinärmedizin (Institute for veterinary Disease Control)
KHV	Koi-Herpesvirus
KHVI	Koi-Herpesvirus Infektion (Koi-Herpesvirus infection)
KSP	Klassische Schweinepest
KSPV	Klassische Schweinepestvirus
KVG	Kommunikationsplattform VerbraucherInnengesundheit (Communications Platform Consumer Health)
LSD	Lumpy Skin Disease
LSDV	Lumpy Skin Disease Virus
M.	*Mycobacterium*
NCD	Newcastle Disease
NRL	Nationales Referenzlabor (National Reference Laboratory)
OIE	Weltorganistation für Tiergesundheit (World Organisation for Animal Health)
ÖTGD	Österreichischer Tiergesundheitsdienst (Austrian Animal Health Service)
Para	Paragraph
PCR	Polymerase-Kettenreaktion (Polymerase Chain Reaction)
PI	persistent infiziert (persistently infected)
RL	Referenzlabor (Reference Laboratory)
RT-PCR	Reverse-Transkriptase-Polymerase-Kettenreaktion (Reverse transcription polymerase chain reaction)
S.	*Salmonella*
SBV	Schmallenberg-Virus
SNT	Serumneutralisationstest (Serum neutralization test)
spp.	Arten von... (species pluralis, species of…)
SuHV-1	*Suid Herpesvirus* 1
T.	*Tropilaelaps*
TBC	Tuberkulose (Tuberculosis)
TGD	Tiergesundheitsdienst (Animal Health Service)
TKH-V	Tierkrankheitsverdachtsuntersuchung (Survey of suspected animal disease)
VHS	Virale Hämorrhagische Septikämie (Viral hemorrhagic septicemia)
VIS	Veterinärinformationssystem (Veterinary Information System)
VO	Verordnung (Regulation)
WNV	West Nil Virus (West Nile Virus)
ZbS	Zentrum für biologische Sicherheit (Centre for Biological Safety)
ZNS	Zentralnervensystem

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MAINTENANCE AND ROMOTION OF LIVESTOCK HEALTH

INTRODUCTION

ONE OF THE BASIC PREREQUISITES FOR THE PRODUCTION OF HIGH-QUALITY, SAFE FOOD OF ANIMAL ORIGIN IN AUSTRIA IS THE MAINTENANCE AND PROMOTION OF LIVESTOCK HEALTH.

Similarly, ensuring freedom from animal diseases is also necessary for trade in animals and makes a fundamental contribution to the value added by livestock production.

The monitoring and surveillance of animal health and combating of animal diseases are conducted on the basis of European Union and national legislation, and through the application of recommendations from the International Office of Epizootic Diseases (OIE), and are undertaken in close cooperation between the Austrian federal government (Federal Ministry of Labour, Social Affairs, Health and Consumer Protection, BMASGK), the federal provinces, the veterinary research facilities of the Austrian Agency for Health and Food Safety GmbH (AGES) and the laboratories based in individual federal provinces.

It should be stressed that the official veterinarians of the relevant veterinary authorities in all the federal provinces are the enforcing agents in Austria.

The nationwide guarantee that the health status of Austrian livestock is tested annually is ensured by means of statistically verified sampling and monitoring plans. The number of samples taken and analysed from Austrian livestock, including fish and bees, is published in this Annual Veterinary Report, together with the results of the tests.

STRUCTURE OF VETERINARY ADMINISTRATION IN AUSTRIA

ENFORCING OF LEGISLATION

AUSTRIA IS A REPUBLIC WITH NINE FEDERAL PROVINCES (BURGENLAND, CARINTHIA, LOWER AUSTRIA, UPPER AUSTRIA, SALZBURG, STYRIA, TYROL, VORARLBERG AND VIENNA) AND 94 DISTRICTS.

Based on Article 10 Para. 1 (2) and (12) of the Austrian Federal Constitution Act (B-VG), Fed. Law Gazette 1/1930, as amended, the food sector (including food control) and the veterinary sector (including the measures necessary to preserve the health of animals and combat the animal diseases affecting them, as well as the prevention of indirect hazards to human health resulting from animal husbandry and from the utilisation of animal body parts and animal products), the regulation of trade with feeds, as well as cross-border trade with animals and products, are a federal competence in terms of legislation and enforcement. In other words, the federal authorities are responsible for the passing and enforcing of legislation in these areas within the scope of the federal structure.

Where there are no federal authorities in place, the relevant provincial governor and provincial authorities reporting to the governor (including the district administrative authorities) are responsible for enforcement on behalf of the federal government, pursuant to Art. 102 Para. 1 B-VG. This system is referred to as indirect federal administration.

In this context, the provincial governor is bound by the instructions issued by the federal minister, and is responsible for organising and implementing monitoring and checks as required.

The functions of the central veterinary authorities in respect to the conducting of controls are limited to planning and coordination within the indirect federal administration system. The areas in which enforcement is carried out by the federal government's own authorities (direct federal administration) include import controls for live animals, foods of animal origin, foods of plant origin (those that are subject to increased levels of controls under EU legislation) and animal by-products.

Pursuant to Art. 11 BV-G, animal welfare is a matter of federal legislation and provincial enforcement. In other words, the federal authorities are responsible for the passing of legislation, and the provinces for the enforcement of the regulations.

The provinces carry the sole responsibility for the enforcement of the regulations in certain fields. This includes monitoring and control measures for plant diseases and animal protection; the provincial govern-

ment is the supreme authority and the subordinate district authority acts as the authority of first instance in such cases.

The Federal Ministries Act defines the fields of responsibility of the individual ministries. The responsibilities of the Federal Ministry of Labour, Social Affairs, Health and Consumer Protection (BMASGK) include food controls, animal health and animal protection, and – from 2007 – animal protection during transportation, which is subject to material detailed in the annex of transport regulations. The subjects of feed and plant health are among the responsibilities of the Federal Ministry of Sustainability and Tourism (BMNT).
The Austrian Agency for Health and Food Safety (AGES) and the Federal Office for Food Safety (BAES) were established under the Health and Food Safety Act (GESG).

AGES comprises all the federal laboratories for food testing, veterinary and human medicine testing, as well as the agricultural laboratories of the BMNT.

The BMASGK employs 23 veterinarians in five departments, who deal with veterinary matters, as well as seven border veterinarians at the two remaining border control posts at Vienna-Schwechat and Linz-Hörsching airports, where consignments imported from third countries which are subject to controls are inspected.

The wide variety of functions carried out by the veterinary administration are conducted by 220 official veterinarians employed by the provincial governments and their districts. A total of 1,013 official contracts were awarded to practising veterinarians to meet monitoring obligations in accordance with the Austrian Animal Health Act (e.g. ordinances on bovine health monitoring, BVD, sheep and goat health and poultry hygiene), the TB ordinance and the Animal Transportation Act.

The total number of veterinary practitioners in Austria is just under 3,000; about 50 vets work in veterinary laboratories.

OVERVIEW OF ANIMAL DISEASE SITUATION IN AUSTRIA

NUMBER OF ANIMALS AND HOLDINGS:

Survey data for animal numbers and holdings in Austria (see Table 1) are based on the analyses carried out by Statistics Austria using the BMASGK's Veterinary Information System (VIS).

Table 1:
Livestock in Austria

Species	Livestock	Holdings
Cattle[1]	1,931,616	59,519
Pigs[1]	2,862,415	28,692
Sheep[1]	465,854	17,220
Goats[1]	115,259	10,286
Sheep & goats[2]	581,113	24,495
Equidae[3]	92,544	18,660
Poultry[3]	20,751,015	69,355
Farmed wild ruminants	47,395	2,002
New world camelids	5,649	857

1 Cattle, pigs, sheep, goats: numbers of animals and holdings from VIS, cut-off date 1 April of the calendar year 2018, including the average stocks of those holdings at which a pen was empty on the sampling day, but which held replacement animals again in the course of the year.
2 Sheep and goats: holdings with both sheep and goats were counted only once.
3 Equidae, poultry: numbers of animals and holdings taken from VIS entries from previous years (no annual survey).

IN 2018, AUSTRIA WAS FREE FROM THE FOLLOWING, HIGHLY CONTAGIOUS ANIMAL DISEASES:

- Foot and mouth disease
- Vesicular stomatitis
- Swine vesicular disease
- Cattle plague
- Peste des petits ruminants
- Contagious bovine pleuropneumonia
- Lumpy skin disease
- Rift Valley fever
- Sheep and goat pox
- African swine fever
- Classical swine fever
- Newcastle disease
- African horse sickness

OFFICIALLY RECOGNISED FREEDOMS, ADDITIONAL GUARANTEES

As a result of the strict eradication programmes that were carried out in the past and subsequent annual monitoring, Austria is officially recognised as being free from certain diseases, such as bovine tuberculosis (*Myobacterium bovis*), bovine brucellosis (*Brucella abortus*), and enzootic bovine leukosis (all since 1999), as well as small ruminant brucellosis (*Brucella melitensis* since 2001). Austria was granted additional guarantees from the EU for other diseases, such as infectious bovine rhinotracheitis (since 1999), and Aujeszky's disease (since 1997). The receiving of disease-free official status and the granting of additional guarantees eases conditions in the national livestock industry, as well as providing trade benefits. The maintenance of this outstanding animal health status is one of the fundamental goals of the Austrian veterinary authorities and considerable attention will continue to be paid to monitoring to identify any newly occurring or re-introduced diseases as quickly as possible before they can cause serious economic damage. Austria is also free from foot and mouth disease, African horse sickness, peste des petits ruminants and classical swine fever, according to the World Organisation for Animal Health (OIE). The good health of the Austrian livestock population has to be reconfirmed annually, on the basis of the results of the monitoring programmes that must be conducted every year.

STATUS RECOGNITION

IN ADDITION TO ITS OFFICIALLY RECOGNISED "DISEASE-FREE" STATUS AND ADDITIONAL GUARANTEES, THE EUROPEAN COMMISSION HAS ALSO GRANTED AUSTRIA THE FOLLOWING SPECIAL ANIMAL HEALTH STATUS RECOGNITION:

1) Negligible BSE risk: since August 2012, based on the Implementing Decision 2012/489/EU. (OIE recognition was already granted as of May 2012.)
2) Negligible risk of classical scrapie: Austria has maintained this status since the coming into effect of Regulation (EU) No. 1148/2014 on 18.11.2014. Finland and Sweden also obtained this status in 2016.

QUALITY MANAGEMENT SYSTEM AND ACCREDITATION

Under the Austrian Health and Food Security Act, the Austrian Agency for Health and Food Safety (AGES), which is responsible for the protection of the health of humans, animals and plants, is required to carry out analyses in line with the relevant legislation, for which the application of accredited methods is required – e.g. tests directed at the combating of animal diseases and zoonoses.

"Accreditation is the formal recognition by the accreditation body (Federal Ministry of Science, Research and Economics) that the test centres meet the appropriate requirements regarding qualification and equipment and may, thus, be considered competent to carry out the activities included in the notice of accreditation."

The basis for accreditation is derived from requirements stated in the Austrian ÖVE/ÖNORM EN ISO/IEC 17025:2007 "General requirements for the competence of test and calibration laboratories".
The procedural rules required are laid down by the Austrian Accreditation Act (AkkG F.L.G. (BGBl.) I No. 28/2012) by way of supplement to Regulation (EC) No. 765/2008.

Accredited test centres must demonstrate to an independent accreditation body that they perform their activities at a professionally competent level, in compliance with statutory and standardised requirements and that this level is comparable internationally. Thus, accreditation guarantees the comparability of results within the EU and confidence in the quality and reliability of the tests conducted. Accreditation therefore means that, within the EU, Austrian test reports have the same status as those from other countries. This is proving to be increasingly important for successful participation in international competition.

All three institutes in the Animal Health Division of AGES (Institutes for Veterinary Disease Control Innsbruck, Linz and Mödling) were combined into a joint test centre with effect from 14 January 2015 within the framework of a multi-site accreditation system. This was seen as the logical consequence of developments in AGES over the last few years, which have led to increasingly close cooperation between the different sites. The need for common procedures and regulations has resulted in a joint quality management system with uniform procedures and processes, as well as harmonised test methods. The current joint quality management system and its competences are checked and audited regularly by the accreditation body at all the different sites.

NATIONAL REFERENCE LABORATORIES

The authority of each Member State responsible for testing designates National Reference Laboratories (NRL) for each EU Reference Laboratory (EU-RL). The BMASGK has designated the different laboratories of the AGES Animal Health Division to be the National Reference Laboratories for 31 diseases.

The designation, responsibilities and tasks of both the EU-RLs and the NRLs are laid down in Regulation (EC) No. 882/2004, Articles 32 and 33, and, as of 29 April 2018 in Regulation (EC) No. 2017/625 Articles 92-101, and in additional legislation pertinent to these matters.

These regulations form the basis for ensuring the high quality and international comparability of test results via the network of EU and national reference laboratories.

The National Reference Laboratories serve as a communications and information hub between the EU Reference Laboratories and the national, official test centres and national authorities. They coordinate the activities of the official test centres and provide scientific and technical support to the national authorities.

The NRLs regularly take part in comparative tests organised across Europe and they themselves regularly organise national comparative tests for the official test centres. This serves both quality control purposes and aids the development of standardised methods within the EU.

Additional tasks of the NRLs are defined via international and national legislation and include – for example – the regular monitoring of the official test centres, the provision of standards, batch testing and sample storage.

Non-negative test results are verified by the NRL and forwarded to the EU-RL, as necessary.

CENTRE FOR BIOLOGICAL SAFETY IN MÖDLING (ZBS)

AGES's ZbS is an ultra-modern institution for research into the work of Austria's National Reference Laboratories. The Centre for Biological Safety in Mödling (ZbS) ensures that Austria is well-prepared for any suspicion of an outbreak of a notifiable animal disease. The laboratory carries out testing for zoonoses in the risk group BSL -3 (e.g. bovine TB and brucellosis), as well as highly contagious diseases in the risk groups BSL-3 and BSL 3+, such as foot and mouth disease and African swine fever.

A Bio Risk Officer (BRO) must be appointed, if an organisation operates a laboratory for handling the infectious foot and mouth disease virus, in accordance with the directives of the EUFMD. The BRO has special expertise in all possible questions relating to biohazards. The BRO advises the management on biosafety matters, prepares risk assessments and recommendations for subsequent biosafety measures. In the event of imminent danger, the BRO reports directly to the highest veterinary authority (BMASGK). The Bio Risk Office contributes – both within and outside AGES – to the protection of Austria's livestock health and to the maintenance of the highest biological safety standards.

The annual maintenance and validation of the BSL -3+ laboratory and its technical equipment guarantees that the testing institutions and technical safety measures retain their licensed status. The protection of laboratory personnel and the environment from dangerous biological substances has to be guaranteed on a continual basis. Refresher training for all affected staff members is carried out during the laboratory maintenance window. A special focus is placed on exercises relating to medical emergencies and fires, as well as joint exercises with the local fire brigade and other emergency services.

As part of permanent standby measures to fight disease, cross-discipline, competent staff are also available at all times at the National Reference Laboratory in Mödling to deal effectively with the potential breakout of a disease. Samples from local and international sources are tested for diseases, export, import, research and ring trials in the ZbS, during the course of the year. These analytical activities ensure that the expertise of all the staff – from the reception of suspicious samples to the conducting of tests – is maintained in the ZbS, alongside the functionality of the laboratory equipment and that the tests are validated to the highest possible standards. The cooperation between AGES and its partners working in the ZbS – for example the IAEA (International Atomic Energy Agency) – contributes considerably to the further development of diagnostics for a wide range of notifiable animal diseases. The validation of new inactivation methods designed to be used worldwide can also be advanced and costs relating to the transportation of live biological substances can be reduced. The ZbS is a resource that enables the AGES Department for Animal Health to form collaborations with external partners for research into BSL -3 and 3+ pathogens, in addition to the fulfilment of reference laboratory tasks.

Figure 1:
Laboratory Level – Centre for Biological Safety in Mödling

Figure 2:
Entrance to Laboratory via Personnel Showers

RISK ASSESSMENT IN THE VETERINARY SECTOR

Risk assessments create an important basis for decision-making by legislators. In Austria, for example, they are used to assess the risk of the recurrence of animal diseases, assess the risk of the introduction of a disease through transportation or trade or evaluate different control, banning and vaccination strategies. This allows for both the planning and evaluation of possible measures and courses of action.

The preparation of risk assessments is usually carried out in accordance with the guidelines of the World Organization for Animal Health (OIE). These guidelines begin with in-depth hazard identification and are then composed of four phases of release assessment, exposure assessment, impact assessment and risk assessment.

AGES provides the Federal Ministry of Labour, Social Affairs, Health and Consumer Protection (BMASGK) and – via the AGES homepage – the general public regular updates on animal diseases in and around Austria for current and potential animal disease epidemics. As a result, Animal Disease Notification System (ADNS) reports for African swine fever (ASF), blue tongue disease (BTV), lumpy skin disease (LSD) and avian influenza (AI) are evaluated on a regular basis depending on the epidemic situation and the results are made available in report form.

Epidemiologic spread models can be used to evaluate the potential extent of animal disease epidemics and the efficiency of intervention measures within the context of epidemiological preparation. The results can also be used to estimate the resources necessary and identify risk regions.

In the event of a crisis, AGES composes assessments and analyses of animal movement data to identify contact establishments by means of forward and backward tracing. The data from the official veterinary information system (VIS), cattle database and European Trade Control and Expert System (TRACES) allow the rapid tracing of animal transportation activities within, as well as beyond, Austria's borders. Furthermore, AGES provides evaluations and maps of affected, inspected and vaccinated establishments including restricted zones and prepares sample recommendations. Information such as the geographical proximity to outbreak sources, analysis of direct or indirect contact and animal disease related information, such as the vaccination status of animals, is used for classification and prioritisation in visiting establishments.

In addition, risk-based sampling plans are used every year to monitor classic scrapie, bovine brucellosis, enzootic bovine leukosis, IBR/IPV, bovine viral diarrhoea (BVD) and bovine TB and Brucella melitensis in sheep and goats.

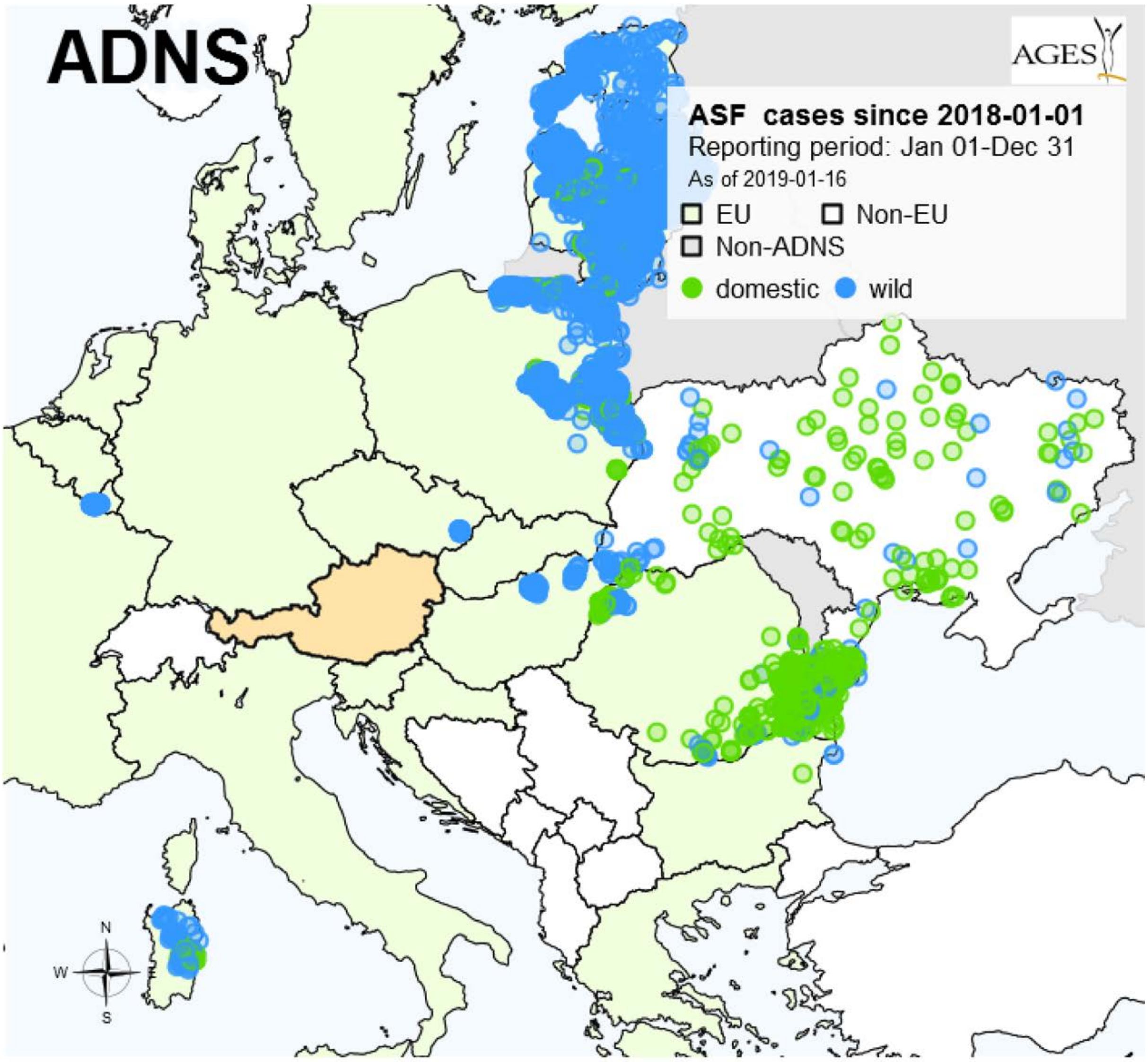

Figure 3:
Cases of ASF in domestic pigs and wild boars in Europe, reporting period 2018-01-01 to 2018-12-31, as of 2019-01-16

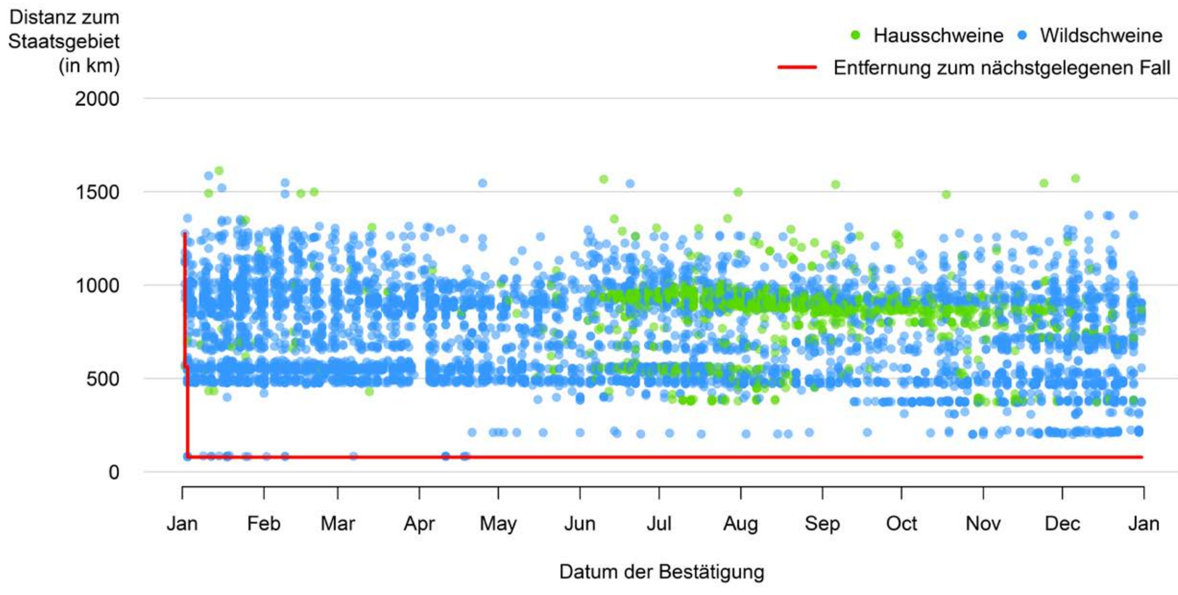

Figure 4:
Distance of ASF cases (pigs and wild boars) to Austrian territory, reporting period 2018-01-01 to 2018-12-31, as of 2019-01-16

AUSTRIAN ANIMAL HEALTH SERVICES

Austria's animal health services (TGD) are permanent institutions located in each province with the exception of Vienna. Participation is voluntary. They offer services to owners of farm animals (cattle, pigs, sheep, goats, poultry, farmed game, fish and bees) and veterinarians within a precisely defined legal framework. A nation-wide poultry health service based in Lower Austria was established for poultry holdings.

As part of this framework, veterinarians and farmers are committed to keeping and handling livestock in ways that try to minimise the use of veterinary medicine products and prevent animal health impairment due to holding conditions in animal production. The legal basis for this is defined in the Veterinary Medicinal Products Control Act (TAKG, F.L.G. I 2002/28 last amended by F.L.G. I 2008/36) and in the Animal Health Services Regulation (TGD VO 2009, Federal Law Gazette II 2009/434).

In 2018, 72.3 % of cattle, 93.8 % of pigs, 33.5 % of sheep and goat stocks, 81.9 % of poultry and 24 % of farmed game in Austria were monitored within the animal health service network. The 675 veterinarians active in this support system regularly advise TGD animal owners and care for their livestock.

The veterinarians carry out documented visits to inspect and document compliance with legal requirements: most notably, the documentation of the correct use of medicine products, the following of animal welfare regulations, animal health status checks and hygiene and feeding checks several times a year, depending on the size of the holding.

Such documented visits may also focus on "biosecurity at agricultural holdings," a topic for which specially developed checklists, e-learning programmes and lectures are available. This way, farmers should be made more aware of the potential sources and pathways through which pathogens could find a way into their holdings.

Numerous health programmes, leaflets and comprehensive information materials have been developed to support effective stock management by the animal health services, maintain and improve animal health and increase the profitability and competitiveness of Austrian agricultural holdings. (Table 3).

In accordance with the Veterinary Medicinal Product Application Ordinance 2010, the veterinary medicine products referred to in the programmes may be administered by a TGD livestock owner as part of the relevant animal health programme under the conditions outlined therein, provided that the training requirements outlined in the Animal Health Services Regulation are met.

The TGD animal health services offer training and further education events in cooperation with numerous training facilities in Austria.

Livestock holders must attend a minimum of four hours of specific further training every four years and veterinarians must attend at least 30 hours of specific further training every four years.

Regularly updated control regulations are used to monitor compliance with the legal requirements within the framework of the internal and external controls. The external controls of the branch offices of the animal health services and the random checks by TGD participants (veterinarians and livestock holders) are carried out annually by accredited companies on behalf of the BMASGK.

Depending on the results of the audits and checks, the branch offices of the animal health services may be obliged to take different measures up to the exclusion from participation in the TGD and, where appropriate, to involve the relevant district administrative authority.

FOR FURTHER INFORMATION AND AN IMAGE FILM ABOUT THE TGD, PLEASE VISIT:

https://www.verbrauchergesundheit.gv.at/tiere/tiergesundheitsdienst/
http://www.tgd.at

Table 2:
Percentage of animals managed in TGD establishments (based on livestock levels on reporting date)

Species	Livestock on reporting date TGD livestock owners	Livestock on reporting date non-TGD livestock owners	Percentage of TGD Total
Poultry	10,289,153	2,275,641	81.9 %
Small ruminant	191,666	380,643	33.5 %
Cattle	1,395,709	535,108	72.3 %
Pig	2,550,846	167,379	93.8 %
Farmed Game	9,193	29,095	24.0 %

Table 3:
The following TGD programmes, leaflets and information materials are available at the time of reporting

Species	Programmes and Information materials
Bees	Austrian Bee Health Programme 2016
Fish	Fish Health Programme
Poultry	Poultry Health Programme "Overall concept for monitoring and reducing antibiotic use, salmonella, campylobacter and optimising animal welfare indicators"
	Programme of the Poultry Health Service (QGV) for the optimisation of conditions and product quality of broilers (*Gallus gallus*) and turkeys (*Meleagris gallopavo*)
	Programme for the control of salmonella in poultry farming and slaughtering in Austria and for the improvement of the health status of poultry stocks, including measures to ensure and improve the quality of products (eggs and poultry meat)
	Supplement to the Poultry Health Programme Salmonella Control - Sampling of Turkeys
	Programme of the Poultry Health Service (QGV) for combating salmonella and other pathogens in broilers (*Gallus gallus*), laying hens, water fowl and turkeys (*Meleagris gallopavo*) in accordance with the principles of competitive exclusion (CE)
	Poultry Health Programme "Antibiotics"
	Poultry Health Programme "Blackhead Disease"
	Poultry Health Programme "Restructuring problem flocks of laying hens"
	Poultry Health Programme "Infantis"

Species	Programmes and Information materials
Poultry	Poultry Health Programme "All-in-One Concept"
Pigs	ÖTGD programme for the prevention of *E. coli*-related diseases in the pig programme
	ÖTGD Programme "Circovirus Vaccination for Piglets"
	Programme for the monitoring of PRRS in Austrian herd book breeding holdings
	Programme for monitoring the mange status in Austrian piglet holdings
	Programme for the monitoring and control of progressive rhinitis atrophicans in breeding pigs
	Programme "Animal Health and Management in Pigs"
	Programme "Vaccination Prophylaxis"
Cattle	Programme for the collection, production and transfer of embryos
	TGD Fertility Programme
	Programme "Module Udder Health for Cattle"
	Programme "Health Monitoring for Cattle"
	TGD leaflet Dermatitis digitalis (DD, Mortellaro, strawberry disease)
	TGD leaflet Parasites in Cattle
Sheep and Goats	Programme for the control and monitoring of Maedi/Visna (MV), Caprine Arthritis Encephalitis (CAE) and *Brucella ovis* in sheep and goats
	Programme "Endo- and Ectoparasite Control in Small Ruminants"
Farmed Game	Austria-wide TGD programme for keeping game animals in enclosures (immobilization and ante mortem inspection)

AUJESZKY'S DISEASE

Aujeszky's disease or pseudorabies is caused by a herpes virus (*Suid herpes virus 1*, SuHV-1) from the sub-family Alphaherpesvirinae. Pigs (domestic and wild) are the natural reservoir for SuHV-1. Carnivores and ruminants are the end hosts. There is no transmission from an infected end host to healthy carnivores or ruminants. The outcome for the host is usually fatal. Humans are not susceptible to SuHV-1 infection.

Pigs that survive an SuHV-1 infection retain at minimum a latent infection for the rest of their lifetime. The reactivation and spread of the infection in these animals is possible. It is prohibited to vaccinate pigs against this disease in Austria.

An outbreak of Aujeszky's disease in domestic pig stocks in Austria is notifiable, pursuant to Art.16 of the Austrian Animal Diseases Act. A permanent monitoring programme for domestic pig stocks in Austria has been in place since 1997. The Aujeszky situation in Austria is assessed on the basis of the annual monitoring programme. Based on the results of these tests, Austria has been officially recognised as being free from Aujeszky's disease in domestic pigs since 1997 (additional guarantees).

DOMESTIC PIGS – MONITORING:

A total of 13,404 pigs from 3,838 establishments were tested as part of the monitoring programme in 2018. Also, 3,598 blood samples and 95 pig foetuses were tested as part of miscarriage examinations. Overall (even as part of other examinations, e.g. at insemination centres), serological tests for antibodies (AB) for Aujezky's disease were carried out on 20,154 pigs. All the tests yielded negative results.

CLASSICAL SWINE FEVER (CSF)

The Institute for Veterinary Disease Control in Mödling has been taking and testing samples in four categories as part of the Austrian monitoring programme for classical swine fever, using a risk-based sampling plan since 2010.

In doing so, the IVET Mödling tested a total of 7,277 blood samples from pigs for CSF antibodies in 2018. Of this number, 1,806 tests were private and 5,471 were commissioned officially. A total of 2,305 samples were tested using RT-PCR for the detection of CSF virus. Neither the antibodies nor the virus were detected in any of the samples.

CSF MONITORING IN DOMESTIC PIGS:

Tables 4 and 5 show the test results. The NRL in Mödling developed and validated a new triplex PCR due to the occurrence of cases of African Swine Fever (ASP) in Eastern Europe and because it is not possible to distinguish clinically between the symptoms of CSF and ASF. This method can be used to test for CSF, ASF and an extraction control simultaneously from a single sample, thus saving both time and financial resources. This triplex PCR has been used as the screening method for all official testing at the NRL in Mödling since 2014.

Table 4:
CSF – Number of official samples taken from domestic pigs 2018. All the samples tested negative for the CSF virus or CSFV antibodies.

Category	Group of monitoring	Target pop.	Diagnostics	Number of Tests Samples – half-year and total		
				1. HY	2. HY	Σ
I	Monitoring as part of ante and post mortem inspection	Slaughtered pigs	Virus detection using PCR (Ag)	36	38	74
II	Monitoring at rendering plants	All ages	Virusnachweis mit PCR (Ag)	493	538	1,031
		Regau Upper Austria		170	124	294
		Tulln Lower Austria		154	124	294
		Landscha Styria		53*	223	276
		Unterfrauenhaid Burgenland		31	9	40
		Klagenfurt Carinthia		85*	61	146
III	Resulted from AGES routine diagnostics**	All ages	Virusnachweis mit PCR (Ag)	175	149	324
IV	Samples from AGES routine diagnostics	All ages	Antibody detection (Ab)	3,317	2,154	5,471

* = 2 samples each could not be analysed
** incl. pig abortion examinations

Ag = antigen, Ab = antibody

Table 5:
Number of CSF tests on domestic pigs (official and private commissions) in Austria in 2018. All the samples tested negative for the CSF virus or CSFV antibodies.

<table>
<tr><th>Diagnostic method</th><th>Samples in CSF-Surveillance</th><th>Other samples</th><th>Total</th></tr>
<tr><td>AB-ELISA</td><td>5,471</td><td>1,806</td><td>7,277</td></tr>
<tr><td>PCR</td><td>1,429</td><td>876</td><td rowspan="2">2,305</td></tr>
<tr><td>Virus isolation</td><td>0</td><td>0</td></tr>
<tr><td>Total</td><td>6,900</td><td>2,682</td><td>9,582</td></tr>
</table>

AFRICAN SWINE FEVER (ASF)

African swine fever (ASF) is a general medical condition in epidemic form that occurs only in members of the pig family (Suidae). It is caused by the *African swine fever virus* (ASFV), an enveloped virus with a double-stranded DNA genome and currently the only known DNA arbovirus in the Asfarviridae family. The natural hosts are various species of African wild pigs, particularly warthogs and bushpigs, but all species of pig are susceptible to infection. ASFV infection normally causes an illness with a high fever, and high levels of morbidity and mortality in both the European wild boar and domestic pigs. There is no risk of infection for other domestic animals or humans.
The virus is transmitted via direct contact or animate (Ornithodoros ticks) and inanimate vectors. ASFV remains infectious for a long time even outside a living host, especially in meat and raw meat products.

African swine fever was observed in the region between the Black Sea and Caspian Sea, known as the Transcaucasian region, in 2007. Since then, ASF has spread further northwards, including to Russia, Ukraine and Belarus, close to the borders of EU Member States. No EU Member State had been affected by ASF up to 2013, with the exception of Sardinia (Italy), where the disease has been present since 1978. The first cases of ASF were seen in Lithuania, Latvia and Poland in 2014, near the border with Belarus. These developments in ASF in Eastern Europe led the EU to commission a scientific report from the EFSA on the spread of the disease, which was published on 14 July 2015, see the following link:
(http://www.efsa.europa.eu/de/efsajournal/pub/4163). This science publication was complemented by additional reports (https://www.efsa.europa.eu/de/topics/topic/african-swine-fever). ASF is endemic in two regions in Eastern Europe: southwest and central Russia. In these regions, both domestic (especially free-range domestic pigs) and wild boars are affected, while the disease has mainly been found in wild boars in the Baltic States and Poland. The cause of the ASFV outbreak in the Czech Republic in 2017 could be traced with high probability to the further spread of the disease through the illegal feeding and improper disposal of ASF-infected food scraps. The first confirmed ASF outbreak was reported near Zlin close to the Austrian border (distance of ca. 80 km) on 26 June 2017.

The last ASF-positive wild boars in Czechia were detected in spring 2018. Since then, no further infected animals have been identified and Czechia has subsequently been declared free of ASF since the end of February 2019, which has increased the distance between Austria and the closest, known outbreak herds. However, Belgium, Hungary and Bulgaria have also reported cases of ASF. Although these cases have been limited to the wild boar population in Belgium and Hungary, no improvement in the situation is expected to be seen in the near future and new cases had been reported on an ongoing basis to the end of the reporting period. Furthermore, Romania has also been one of the EU Member States affected since 2017. Domestic and wild pigs have been infected in both Romania and neighbouring Bulgaria. The spread of ASF in China and other East-Asian countries, such

as Vietnam, has to be taken into consideration on a global level.

The regions in the administrative districts of Hollabrunn, Tulln, Korneuburg, Mistelbach, Bruck/Leitha, Gänserndorf and Vienna located north of the River Danube were declared risk areas at the beginning of July 2017 to prevent the spread of ASF in Austria. All pig holdings with outdoor livestock and 10 % of the free-range farms in the specified risk areas were obligated to undergo ASF inspections. The location (settlements, remote location, close to the forest, etc.) and the closeness to the Czech border – in particular to the place where the disease was detected in Czechia – were essential factors in the selection of the free-range farms inspected. Moreover, animals on free-range farms were held indoors in their pens overnight as a biosecurity measure. Official veterinarians also ran an information campaign aimed at individuals who are part of the rapid alert system (finding wild boar cadavers) or involved directly in hunting or the processing of hunt products (meat, trophies,…). The passive monitoring (reporting and examining wild boars found dead and timely identification of diseases with high fever symptoms in domestic pigs) is of great importance in the early detection of imported diseases into Austria. The interest groups include forest rangers, law enforcement officers, the road maintenance department, army personnel, farmers and other businesses dealing with pigs (domestic pigs and/or wild boars), in addition to hunters.

FURTHER INFORMATION (FOLDERS, TALKS, VIDEO MATERIALS ETC.) IS AVAILABLE ON THE HOMEPAGE OF THE COMMUNICATIONS PLATFORM CONSUMER HEALTH (KVG) OF THE BMASGK AND ON THE AGES HOMEPAGE

→ https://www.verbrauchergesundheit.gv.at/tiere/krankheiten/asp_allg.html

→ https://www.ages.at/themen/krankheitserreger/afrikanische-schweinepest/

The National Reference Laboratory for ASF at the Institute of Veterinary Disease Control in Mödling ensures that ASF can be detected rapidly and reliably using lab tests, should the worst case occur, through its regular participation in international interlaboratory tests. A triplex PCR (ASF, CSF and internal control) was developed at the National Reference Laboratory of AGES IVET Mödling in 2014 for the differential diagnosis of "swine fever" (classical and African) and incorporated into the accreditation scope in line with EN/ISO 17025. An exclusion test for differential diagnosis purposes is carried out in the case of suspected cases reported by an official veterinarian or in the case of pathological laboratory dissection findings that do not rule out any suspicion. An exclusion test of this type was performed on five domestic pigs in 2018 – all the samples were assessed as negative for ASF (Table 6).

Table 6:
ASF – Domestic pig examinations of suspected case reports and exclusion tests from 2011 to 2018

Year	Number of serological analyses (ASP-AK)	Number of tests for ASFV using PCR analyses	Species
2011	0	0	Pig
2012	0	5	
2013	0	5	
2014	0	10	
2015	0	13	
2016	0	9	
2017	0	8	
2018	0	5	

A total of 859 samples from free-range pigs were tested as part of the inspections carried out in the risk area (see above) in 2018, of which 835 samples tested negative for ASF. Twenty-four samples could not be assessed because of PCR inhibition (= inadequate sample quality). Twenty-three samples taken from farmed game (wild boars) were tested, 21 of which were negative and two could not be analysed.

A further 1,429 pig samples were also tested for the ASF virus as part of the CSF monitoring programme using PCRs (see Figure 5). A total of 1,425 samples were assessed as ASF negative and four samples could not be assessed.

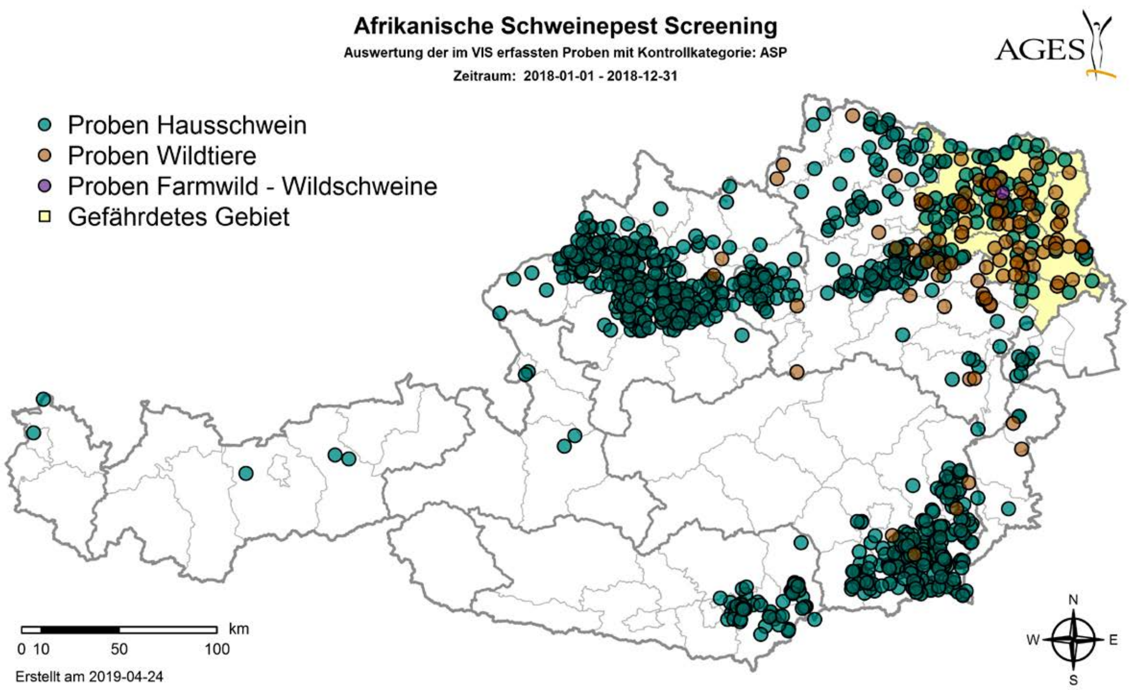

Figure 5:
Representation of the distribution of official tests for ASF in domestic pigs (teal dots) and wild boars (brown dots).

Table 7:
Screening pigs/wild boars, 2018

Province	Pigs		Wild boars/Farmed game		Wild boars	
	No. of farms	No. of samples	No. of submissions	No. of samples	No. of sample submissions	No. of samples
Burgenland	14	48			2	2
Carinthia	55	150				
Lower Austria - areas at risk	96	895	4	21	64	87
Lower Austria - areas not at risk	167	276			24	33
Upper Austria	336	510			2	2
Salzburg	4	6				
Styria	225	328			4	4
Tyrol	3	4				
Vorarlberg	2	3				
Vienna	1	44			5	13
Total	903	2,264	4	21	101	141

Starting in 2011, an extensive wildlife survey was conducted, which included tests for the presence of the ASF virus. Tests of this type were carried out on a smaller scale in the subsequent years 2012 and 2013. However, the figure increased again in 2014 as a result of epidemiological developments in Eastern Europe and a monitoring programme for swine fever in wild boars that was established at the time. The 2018 wild boar swine fever monitoring programme analysed 152 samples, all of which tested negative.

Table 8:
ASF – Examinations in Wild Boars from 2011 to 2018

Year	Number of serological analyses (ASP-AK)	Number of tests for ASFV using PCR analyses	Species
2011	223	298	Wild boar
2012	43	2	
2013	32	2	
2014	0	98	
2015	0	74	
2016	0	45	
2017	0	68	
2018	0	152	

SWINE BRUCELLOSIS

Swine brucellosis is a notifiable animal disease caused by bacteria. However, reports of this disease in domestic pigs caused by *Brucella* (*B.*) *suis* biovar 2 are rare in Europe. Swine brucellosis was first detected in Austria in a breeding sow in Styria in the 1990s. Several pig holdings in the Lower Austrian Waldviertel region experienced outbreaks in 2003 and there was one outbreak in the Schärding District (Upper Austria) in 2004. One outbreak was detected at a breeding farm in the district of Grießkirchen, Upper Austria, with a total of nine contact establishments in the year 2017. An outbreak of the disease causes increased numbers of abortions in domestic pigs at all stages of pregnancy. The pathogen is detected using molecular biological methods and by growing on cell cultures from abortion material or indirectly by serological tests for antibodies.

B. suis biovar 2 is common in wild boars and hares in Europe and can be transmitted to domestic pigs and humans (zoonosis) from these wild animals. While *B. suis* biovar 2 has only a minor pathogenic effect in humans, *B. suis* biovar 1, which has been detected in wild and domestic animals in Europe only in Croatia up to now, is highly pathogenic for humans. Hares infected with brucellosis show differently sized, yellow-brownish lumps, especially in their liver and spleen, and a purulent inflammation of their genitalia.

Brucellosis cases were observed in greater numbers in Upper Austria, Lower Austria and Burgenland between 1990 and 1993.

B. suis biovar 2 was last detected in hares in Upper Austria in 2017. In wild boars, the bacteria are found in the lymph nodes, seminal vesicles, the prostrate or the testicles, even though these organs might appear unchanged. The detection of *B. suis* biovar 2 in the mandibular lymph nodes of 12 wild boars that were killed in the wild in 2011 and 2012 in eight districts in Lower Austria, Upper Austria and Burgenland was reported in 2016.

Transmission potential is more prevalent in the case of free-range or outdoor holdings of domestic pigs in endemic areas. The pathogen may also be introduced via contaminated green feed or a chronically infected boar that is introduced into a herd of breeding sows. The unsafe disposal of animal by-products from slain wild boars and hares also presents a risk of the introduction of the bacteria into the livestock population. Ensuring basic hygiene standards during hunting and in the processing of wild game meat by hunters is the most important measure in preventing the introduction of the pathogen into domestic pig livestock and its transmission to humans.

BRUCELLOSIS OF SMALL RUMINANTS

BRUCELLA MELITENSIS

Brucellosis in small ruminants is an infectious disease that can be also transmitted to humans (zoonosis) and is caused by the bacterium *Brucella melitensis*. Typical symptoms of the disease – also known as Malta fever – in humans are high fever, shivering, headaches and muscle pain. Sources of infection are raw sheep and goat's milk and products made from them, as well as infected animals which are suffering from reproductive organ disorders and, in rare cases, inflammation of the joints. The pathogen causing brucellosis is found predominantly in the Mediterranean area and the Tropics.

Austria has been officially recognised as being free from *Brucella melitensis* since 11 April 2001, pursuant to Commission Decision 2001/292/EC. This status has to be confirmed with annual, representative sample tests. The sample size is published by the competent federal ministry in the official veterinary bulletin. A total of 21,133 blood samples from sheep and goats from 1,719 holdings were tested for antibodies to *B. melitensis* in 2018.

There were no positive cases of *Brucella melitensis* in goats and sheep.

BRUCELLA OVIS

In rams, brucellosis takes the form of infectious epididymitis caused by *Brucella ovis*. This disease is not a zoonosis. A total of 4,108 rams from 2,152 holdings were tested serologically in 2018 and seropositive sheep were identified at one establishment.

ENZOOTIC BOVINE LEUKOSIS, IBR/IPV AND BOVINE BRUCELLOSIS

Enzootic bovine leukosis (EBL), infectious bovine rhinotracheitis/pustulous vulvovaginitis (IBR/IPV) or balanoposthitis (IBP) and bovine brucellosis (Abortus Bang) are notifiable animal diseases.

Enzootic bovine leukosis is a viral disease in cattle. The pathogen belongs to the family of the Retro-viridae, genus HTLV-BLV group. The tumours that develop are malignant B-cell lymphomas.

IBR/IPV or IBP (red nose) is a viral disease in cattle, caused by Bovine herpesvirus Type 1 (BHV-1). This disease complex manifests in acute inflammation of the upper respiratory passages (IBR) or genitalia (IPV and IBP) caused by BoHV-1.

Austria has been officially recognised as being free from bovine brucellosis and enzootic bovine leukosis since 1999 and holds additional guarantees for IBR.

Annual monitoring programmes are undertaken to preserve this status, in accordance with the specifications of Directive 64/432/EEC and the National Regulation on Monitoring of Bovine Health, and this was also the case in 2018.

Holdings supplying milk and those not supplying milk are sampled in accordance with a risk-based random sampling plan drawn up by the AGES Data and Statistics and Risk Management Division (AGES-DSR). Holdings that supply milk are screened through testing samples from bulk tank milk using ELISA tests. Non-milk supplying holdings are monitored through testing blood samples, again using ELISA tests. The tests are conducted at the Institute for Veterinary Disease Control in Linz.

Table 9 provides an overview of the number of tests for enzootic bovine leucosis and IBR/IPV within the framework of the annual monitoring programme.

Table 9:
Tests for enzootic bovine leucosis and IBR/IPV in the reporting period.

	Blood samples/cattle tested	Bulk milk samples/pools
Enzootic Bovine Leukosis	10,244	1,281
IBR/IPV (Red Nose)	10,884	1,284

Bovine brucellosis is a notifiable animal disease and zoonosis. It is a bacterial infection caused by *Brucella abortus*, and more rarely by *Brucella melitensis* or *Brucella suis*. A risk-based monitoring programme is conducted throughout Austria on an annual basis. Bovine brucellosis is mostly responsible for frequent, contagious late abortions in cattle. Individuals in close contact with animals, such as farmers, vets and abattoir staff, are at particular risk of this disease. Brucella abortus infections are known as Bang's disease in humans.

For the first time in many decades, bovine brucellosis was confirmed at two establishments in Upper Austria in the reporting period: in June 2018, there was an outbreak of bovine brucellosis in a milk herd in Upper Austria (Rohrbach district) caused by *Brucella melitensis*, the test results for which were confirmed by AGES. There had been abortions and deaths in calves for some time at the establishment affected by the disease. The animals at the establishment were culled and the site cleaned and disinfected. The source of the pathogen's introduction could not be determined for certain – illegal movements of sheep or goats could not be ruled out. More than 1,500 holdings in the districts in surrounding the region of Urfahr and Rohrbach were examined as part of the epidemiological evaluation. There were also examinations in sheep and goat herds because the pathogen *Brucella melitensis* is more typically found in goats and sheep. In July 2018, further establishments were identified as suspicious. The suspicion of brucellosis was confirmed

at a cattle holding in the district surrounding Urfahr – close to the first outbreak – and the pathogen was also *Bruella melitensis*. One cow was identified as a reactor?. This cow and its calf (reactor pursuant to the Regulation on the Monitoring of Bovine Health, Federal Law Gazette II No. 334/2013) were culled and removed without further spread. Follow-up examinations conducted after the appropriate cleaning and disinfecting of the establishment were negative. The holding was subject to restrictions and was under the supervision of the authorities.

As long as an establishment has reactors, holdings are classed as "not recognised as free from brucellosis." They are subject to restrictions in animal trading and are only permitted to deliver processed (pasteurised) milk from animals that are verified as healthy. This means it can be guaranteed that the further spread of the disease and any danger to humans can be avoided – but also through compliance with biosecurity measures. The local authorities undertook a comprehensive range of measures at the holdings affected. Brucellosis is a zoonosis that can be transmitted to humans. The pathogen is transmitted by infected animals, especially at births, and as a result, livestock owners, their staff and veterinarians are particularly at risk of exposure. Humans who come into direct contact with infected animals are also examined for brucellosis, in addition to the epidemiological tests conducted on animals. The infection is mostly without visible symptoms in humans, although they occasionally develop feverish, flu-like symptoms. In the case described above, the blood tests carried out on the persons in direct contact with the first, identified infection holding yielded a positive result. Good co-operation between the different authorities can prove valuable.

Austria’s cattle population has been free from *bovine brucellosis* since 1999. The sheep and goat population has been officially recognised as free from *Brucella melitensis* since 2001. An annual monitoring and surveillance programme is conducted. The fight against animal diseases in the above-mentioned case concentrated on recognition, isolation and eradication of the animal disease, as well as the checking of animal transportations to prevent the spread of the pathogen. Comprehensive epidemiological testing and examination of the surroundings (special monitoring), as well as laboratory analyses, were carried out. In addition, a specially established monitoring programme for game samples and examinations of sheep and goat herds, as well as alpaca herds, produced negative results.

Further focal points of the examinations: strengthened monitoring of milk-cattle holdings in the two districts containing the diseased establishments; checks at direct marketers of raw milk and raw-milk products in the surrounding districts; checks at suckler cow holdings in the surrounding districts (should there be suspicious notifications of calf deaths in the last half year) and in a radius of 4 km; checks at all holdings with the same veterinarian as the establishment with the outbreak, game monitoring in the surrounding hunting grounds in the months from August through September 2018: 76 deer and nine foxes were tested bacteriologically and serologically. No signs of the brucellosis pathogen were found.

In total, tests were carried out on 11,305 cattle blood samples from 1,503 establishment at non-milk cattle holdings, in line with the risk-based sample plan and in connection to the of the *B. melitensis* cases described in 2018. A further 1,082 cattle were tested as part of the epidemiological tests using blood serum methods. A total of 2,705 tank milk samples from 2,704 holdings were examined. Tests on small ruminants for sheep and goats are covered by the section on *Brucella melitensis*.

Austria’s cattle continued to be recognised as free from bovine brucellosis, enzootic bovine leucosis and IBR/IPV in 2018.

TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHIES (TSE)

BSE

The statutory framework conditions of Regulation (EC) No 999/2001 and Commission Decision 2009/719/EG continued to apply in 2018, as amended. Pursuant to the Regulation on the Monitoring of Bovine Health (Federal Law Gazette II No. 334/2013) and Announcement GZ BMG-74.600/0007-II/B/10/2014, animals that died or were slaughtered, at the age of 48 months or above, and were born in Austria or the following countries: B, CY, CZ, D, DK, E, EST, FIN, F, GR, H, HR, I, IRL, L, LT, LV, M, NL, P, PL, S, SK, SLO, UK, Channel Islands, Isle of Man, and bovines aged 24 months or above slaughtered as an emergency or special measure or were culled on health grounds during a slaughtering ban, were subject to testing for BSE. For cattle from EU countries without a revised monitoring programme (BG, RO), as well as Switzerland and other non-EU countries, the age limits in Regulation (EC) No 999/2001 continued to apply (30 months for animals slaughtered normally, 24 months for all other categories). Tests on younger cattle, from the age of 20 months, continued to be possible at the expense of the person authorised. Three animals were submitted for testing at the request of the authorised person in 2018.

Table 10:
Number of Tests in Respect to BSE

Categories cattle	Analysed samples	Age limit in months
Healthy slaughter	46	30
Emergency slaughter and slaughter with clinical signs at ante mortem	3,862	24
Fallen stock	14,588	48 bzw. 24[1]
Eradication as part of BSE programme	0	
Clinical suspicion	17	
Voluntary tests	3	ab 20
Total	18,516	

[1] Age limit dependent on country of origin and legal basis (Commission Decision 2009/719/EC as amended)

Once again, no cases of BSE were found in Austria in 2018. As of May 2012, Austria was classed as a country with a "negligible BSE risk" by the OIE.

When requests are submitted for testing, suspect animals that test negative for TSE can be subjected to further differential diagnostic tests with respect to other CNS agents.

SCRAPIE

One case of "atypical scrapie" was detected in a five year old, fallen/killed sheep in Austria in 2018.

The diagnosis was made at the NRL Mödling using Western Blot and confirmed using an immunohistochemical test.

Austria has held the status "negligible risk of classical scrapie" since Regulation (EU) No. 1148/2014 came into effect on 18 November 2014.

Examination obligations for scrapie were conducted in line with Annex 1 of the Sheep and Goat Health Monitoring Regulation (Fed. Law Gazette II No. 308/2015) and Regulation (EC) No. 999/2001.

In 2018, sheep and goats over 18 months that were slaughtered were also inspected as part of a risk-based random sampling plan, found in Annex 12 of the relevant Notification in force (GZ BMGF-74.600/0090-II/B/10/2017), in addition to fallen/killed animals.

Genotyping was carried out on sheep in accordance with the provisions of Regulation (EC) No. 999/2001 of the European Parliament and the European Council – a total of 14 private samples were submitted for genotyping.

Table 11:
Numbers of Tests in Respect to Scrapie

Categories sheep and goats	Analysed samples	Positive samples
Slaughtered sheep and goats	155	0
Fallen/killed stock	3,572	1 (atyp. Scrapie)
Clinical scrapie – clinical suspicions	0	0
Total	3,727	1 (atyp. Scrapie)

Figure 6:
Opening of skull for sampling in a case of suspected clinical BSE

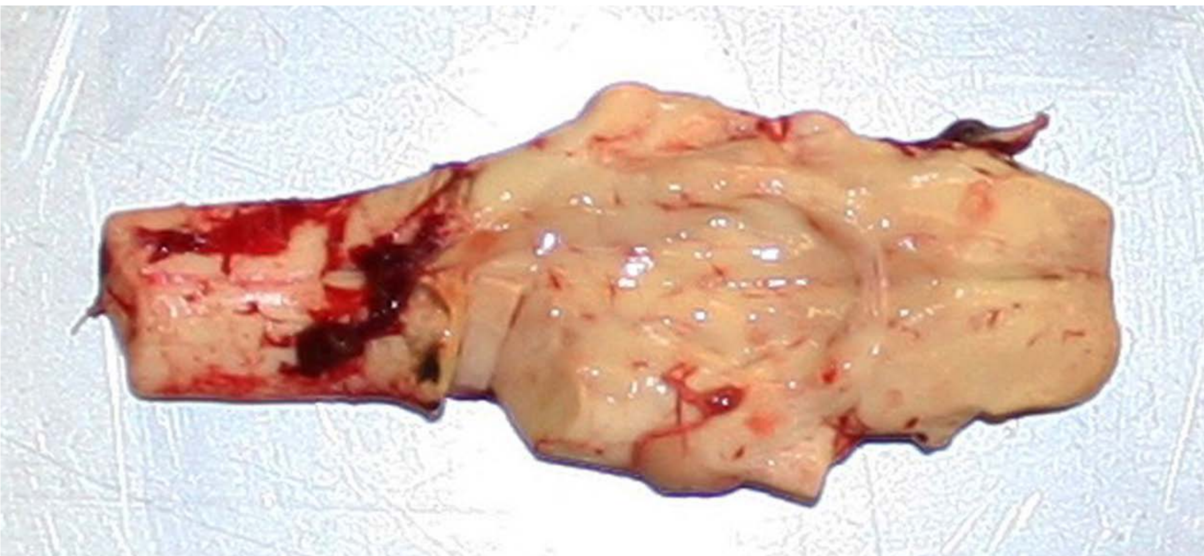

Figure 7:
Brain stem sample from a cow with the laboratory sample removed from the Obex region

TUBERCULOSIS (TB)

The pathogens for human and animal tuberculosis are closely related species of mycobacteria that are combined in what is known as the *Mycobacterium tuberculosis* complex (MTBC). This complex includes the following species: *Mycobacterium* (*M.*) *tuberculosis*, *M. africanum*, *M. canettii*, *M. bovis*, *M. caprae*, *M. pinnipedii*, *M. mungi*, *M. orygis*, *M. suricattae* and *M. microti*. Identification of the *Mycobacterium* species and genotyping of the strains is undertaken using a variety of molecular biological methods.

The entire *Mycobacterium tuberculosis* complex – also including ovine tuberculosis – is a notifiable disease in Austria. Austria has been officially free from bovine tuberculosis (*M. bovis*) since 1999 pursuant to EU Commission Decision No. 467/1999/EC.

However, the Federal Ministry of Labour, Social Affairs, Health and Consumer Protection has ordered the examination of cattle in certain risk areas (special testing zones and special monitoring zones) using simultaneous (intradermal) tests since the occurrence of tuberculosis infections in wild red deer caused by *M. caprae* in certain areas of the federal provinces of Tyrol and Vorarlberg.

The tuberculosis pathogen *M. caprae* was detected in a total of 11 animals from three cattle farms in the Bludenz and Dornbirn districts in Vorarlberg as part of these tests in 2018.

In 2011 was the first time that an infection zone referring TB was defined and identified in the federal province of Tyrol on the legal basis of the Austrian Red Deer TB Ordinance (Rotwild-TBC-Verordnung). Infections with *M. caprae* were detected in six red deer in this infection zone during the hunting season of 2018. Additionally, Tyrol has carried out red deer screening (hunting grounds in the Karwendel mountain range and the districts of Innsbruck-Land, Schwaz, Landeck and Kufstein) since 2012, with *M. caprae* having been detected in eight red deer in the 2018 hunting season.

The federal province of Vorarlberg has also been running a province-wide red deer TB monitoring programme since 2009, with a control zone set up in the district of Bludenz in 2013. Distinctions are made between core, monitoring and observation areas in the affected red deer areas in the control zone – in a similar fashion to the infection zone in Tyrol. In total (province-wide monitoring, deer culling, control zones), an *M. caprae* infection was detected in 27 red deer in Vorarlberg in the 2018 hunting season.

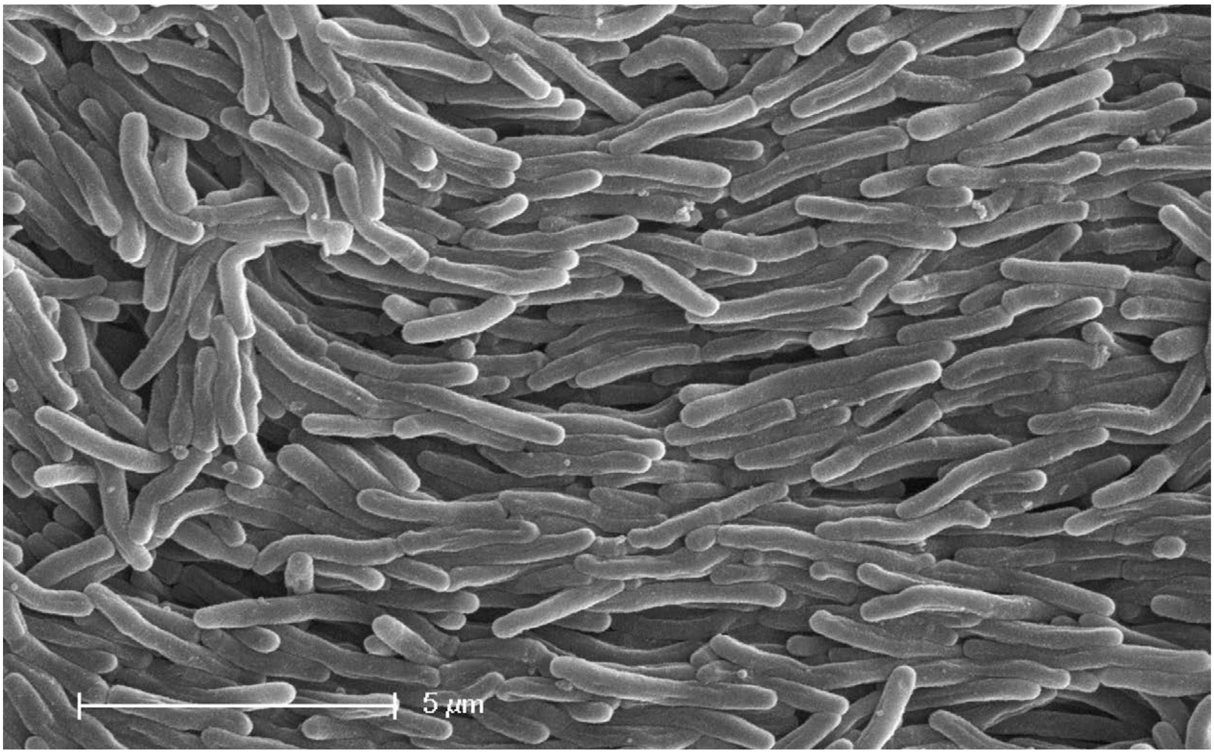

Figure 8:
Scanning electron microscope image of *M. caprae*

Figure 9:
M.caprae-infected cattle: cattle lung with multi-focal, up to 3x4 cm wide, cheesy, miliary tuberculosis cavities

BOVINE VIRAL DIARRHOEA (BVD)/ MUCOSAL DISEASE (MD)

BVD/MD is one of the most commercially damaging infectious diseases in cattle. Consequently, several European countries, such as Austria, the Scandinavian countries, Switzerland and, since 2011, Germany have opted to eradicate the disease actively.

Corresponding national legislation, the BVD Regulation, based on the Animal Health Law, has regulated the control measures and procedures for the prevention of BVD/MD throughout Austria since 2004. It is required to notify any suspicion of BVD/MD.

The disease occurs globally and is caused by a pestivirus of the *Flaviviridae* family. Persistently infected cattle (PI animals) play a key role in the spread of the disease as they excrete large amounts of the virus continuously throughout their entire lives via all of their bodily excretions and secretions.

Respiratory tract infections, diarrhoea, fever, loss of appetite, reduced milk production and a general weakening of the immune system are all possible symptoms. Fertility problems occur in most cases, and pregnant animals may abort or give birth to deformed and sickly calves. BVD infections in early pregnancy may result in the birth of PI animals. Many of the diverse clinical symptoms often go unrecognised, which is why early detection is so important.

Infection of immunocompetent animals with the BVD virus usually triggers only a transitory infection (transient viraemia) and this acute or transient infection subsequently results in the creation of antibodies that can be detected in the blood or milk. In PI animals, mutations of the virus or superinfections with an additional viral strain can result in mucosal disease. This disease is particularly severe, resulting in the death of the infected animals. Typical symptoms are massive and often bloody diarrhoea, high fever, extreme mucosal erosions and subsequent secondary infections.

Diagnosis is made on the basis of the detection of antibodies in blood, individual milk or bulk tank milk samples. Blood, tissue, secretion and organ samples from the affected animals are suitable for ascertaining the presence of the virus (antigen detection).

The successful and continuously positive development of BVD controls (in 2006, two years after the start of the nationwide eradication programme, 2,600 PI were still detected at about 1,700 holdings, for example) can also be seen in 2018: the Austrian holdings subject to the BVD Regulation were almost all officially recognised as being free from BVDV – no new outbreaks occurred in 2018.

Table 12:
BVD – positive trend over the past seven years

Year	No. of PI animals	No. of holdings with PI animals
2012	62	41
2013	62	23
2014	33	14
2015	11	6
2016	4	3
2017	3	3
2018	0	0

Exemptions from the compulsory testing of individual cattle in the event of movement of the animals were granted in accordance with Art. 14 para. 6 of the BVD Regulation 2007 (F.L.G. II No. 178/200, as amended) for officially recognised BVD-free stocks from specific regions, as a result of the good BVD situation in Austria. These exemptions are granted for one year and are published in the Official Veterinary Bulletin and can be found in the Legal Information System (RIS). Some provinces that met the criteria defined in the BVD Ordinance were allowed to change the monitoring to a risk-based random sample programme, for the first time: Burgenland, Carinthia, Styria and Vorarlberg.

The further improvement of this situation and the prevention of the reintroduction of the disease into livestock is of the utmost importance and will also pose a major challenge in the years ahead.

PARATUBERCULOSIS

Paratuberculosis is a chronic, incurable bacterial infection in domestic and wild ruminants caused by Mycobacterium avium subspecies paratuberculosis (MAP). Clinical symptoms usually only appear after an incubation period of 2 to 10 years and are characterised by uncontrollable diarrhoea despite the maintenance of appetite, emaciation, lower milk production, reduced weight gain, fertility disorders and death. The infection is usually transmitted during the first few months of the life of the animal from faeces containing the pathogen and milk or teats contaminated with faeces.

Clinical paratuberculosis in cattle, sheep, goats and game ruminants in game holdings has been notifiable in Austria since 2006. Testing within the scope of this monitoring programme as detailed in the regulation is performed centrally at the AGES IVET Linz. Clinically suspect cases can be investigated diagnostically by submitting blood and faecal samples to the testing laboratory. Organ materials (intestinal samples, lymph nodes) are submitted for animals which have died or have been killed.

Samples from 45 cattle from 36 holdings and five goats from three holdings were examined in 2018. The clinical suspicion of MAP infection was diagnostically confirmed in 12 cattle from 10 holdings and three goats from two holdings. Figure 10 depicts the clinically suspect cases in the individual federal provinces submitted for lab testing (numbers in black), the number of animals that tested positive for MAP (numbers in red) and the number of holdings with confirmed suspected cases (numbers in blue).

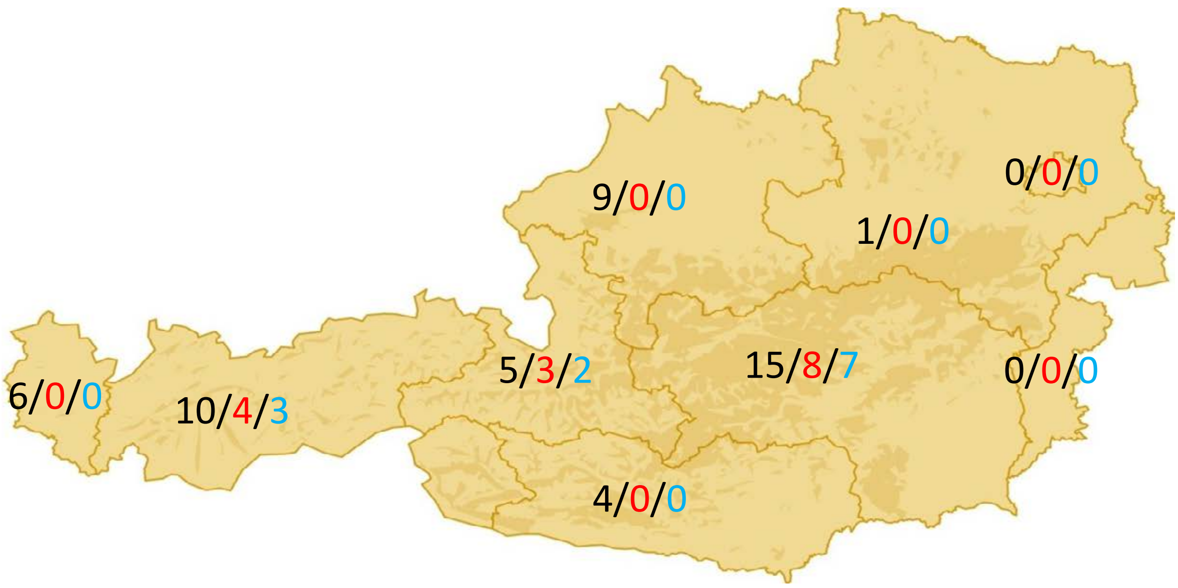

Figure 10:
Number of suspected cases of paratuberculosis submitted (black), of animals confirmed by positive laboratory findings (red) and of positive holdings (blue)

BLUETONGUE (BT)

Bluetongue (BT) is a viral disease of ruminants (cattle, sheep and goats) that is spread by midges of the *Culicoides* genus. The pathogen is an RNA virus of the *Orbivirus* genus and 24 serotypes are currently known. Experts are already debating additional serotypes (more than 27). The pathogen responsible for BT in Europe was detected in Greece in 1998. The first outbreaks of BTV 8, an "exotic" BTV serotype that had not previously been found in Europe, occurred for the first time in the border region of Germany, Belgium and the Netherlands (north of 40°N) in 2006. Austria reported its first BT case to the EU and the OIE on 7 November 2008 and regained its "BT-free" status on 17 March 2011.

A new BTV-4 epidemic occurred in south-eastern Europe in the second half of 2014 and spread rapidly from Turkey via Greece, Romania, Bulgaria and the Balkan countries to Hungary and Croatia.

During the spread of bluetongue across Eastern Europe, serotype 4 was also detected in Austria on 17 November 2015 for the first time. A total of four BTV 4 outbreaks in the federal provinces of Styria and Burgenland were recorded in 2015 and three outbreaks in Burgenland and Carinthia in 2016. Table 13 and Figure 11 below provide an overview of BTV cases from 2008 to 2018. No BTV cases were recorded in 2017 and 2018.

Table 13:
Number of all BT cases 2008 to 2018 in the respective federal provinces, districts and holdings

Province	District	Year	Holdings	Animals infected	BTV Serotype
Upper Austria	Schärding	2008	5	10	BTV-8
Vorarlberg	Bregenz	2008	1	1	BTV-8
Upper Austria	Schärding	2009	8	14	BTV-8
Vorarlberg	Bregenz	2009	1	1	BTV-8
Vorarlberg	Bludenz	2009	1	1	BTV-8
Salzburg	Hallein	2009	1	1	BTV-8
Burgenland	Neusiedl/See	2015	1	1	BTV-4
Burgenland	Jennersdorf	2015	1	1	BTV-4
Styria	Hartberg-Fürstenfeld	2015	1	2	BTV-4
Styria	Südoststeiermark	2015	1	2	BTV-4
Burgenland	Jennersdorf	2016	2	3	BTV-4
Carinthia	Klagenfurt	2016	1	1	BTV-4

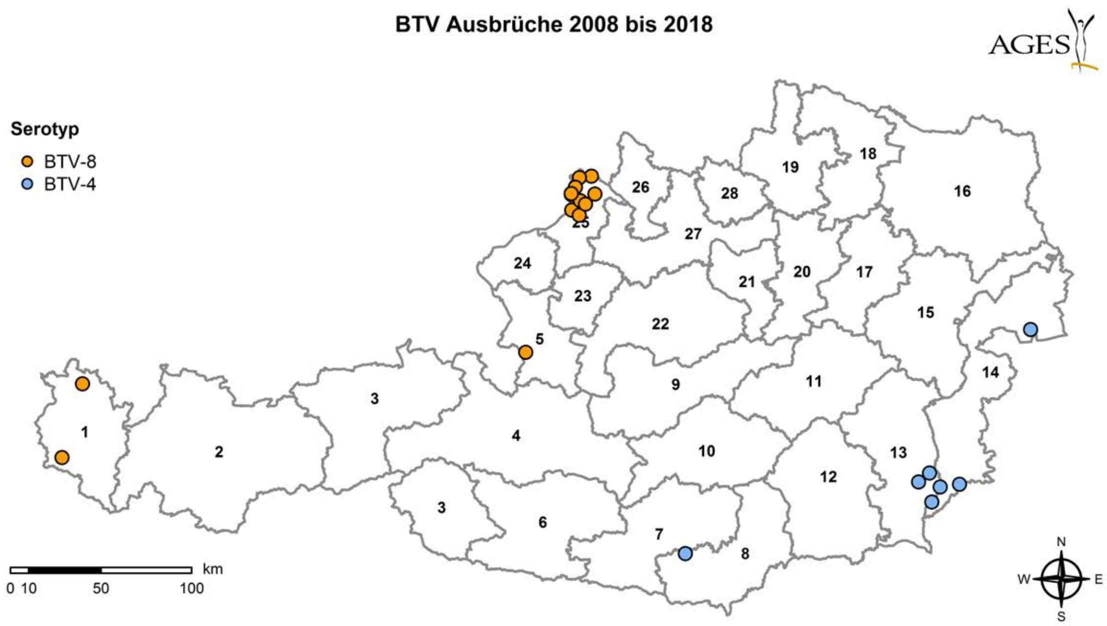

Figure 11:
Regional units and BTV outbreaks in Austria between 2008-2018

Upon detecting the first BTV 4 cases in the southeast of Austria, the monitoring programme was adjusted to be able to accurately isolate the precise extent of BT virus circulation. To do this, a monitoring scheme that had been used during the BTV 8 epidemic in 2008 was reintroduced. A total of 28 regions, the size of which took into account the topographic situation, cattle density and political districts, were defined (see also Figure 11) and 60 unvaccinated cattle from each region were subjected to serological BTV-AB examinations, in addition to the monitoring that was already in progress. The BTV-4 restriction zone could be reduced in size and lifted completely in December 2018 after two years without any BTV cases in the southeast of Austria.

In total, 6,983 cattle from 1,401 holdings from all 28 regional units were tested serologically BTV negative in 2018.

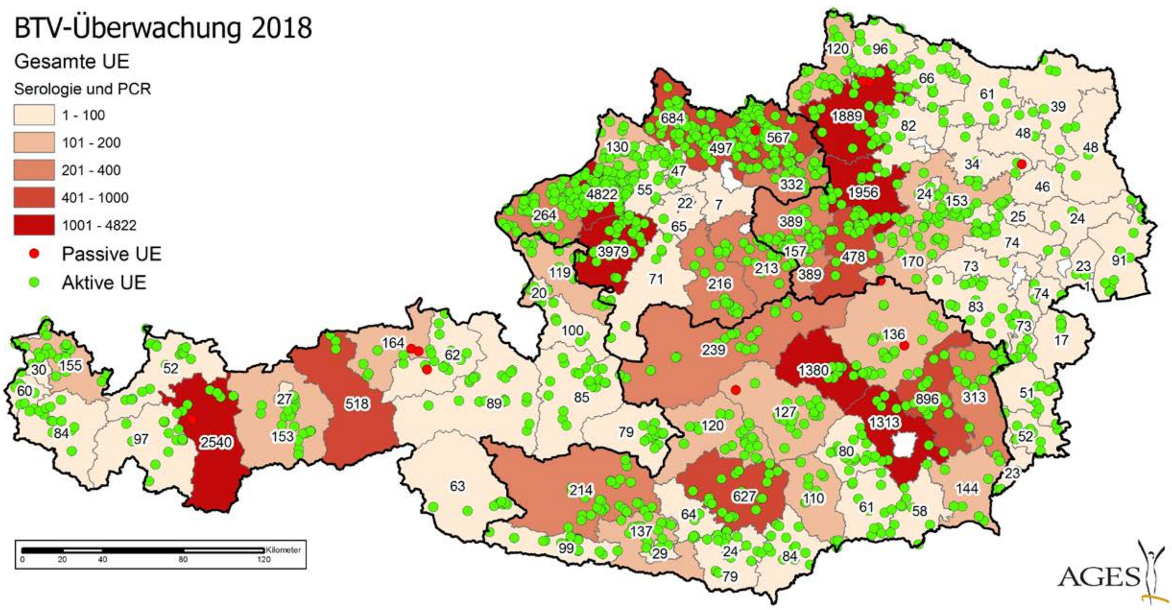

Figure 12:
Holdings sampled within the framework of the active BT monitoring programme in 2018 (marked green) and holdings sampled within the framework of the passive BT monitoring programme in 2018 (marked red); the number of private tests are marked in colour in the respective districts

Cattle from 11 holdings in the provinces of Tyrol, Styria, Lower and Upper Austria were tested within the framework of passive monitoring for bluetongue disease, which is undertaken all year round on the basis of the notification obligation under Art. 17 of the Austrian Act on Animal Diseases and of livestock testing in holdings where outbreaks have occurred. A total of 42 serological tests and 47 molecular biological tests were carried out to this end.

All the tests done on samples taken as a result of suspicions and for eliminations yielded negative results.

In addition, Austria also runs a vector monitoring programme to acquire information on the occurrence and activity periods of the insects transmitting the virus (mosquitoes from the species *Culicoides spp*.). The seasonal, vector-free period 2017/2018 – from 01.12.2017 to 30.04.2018 – could be declared based on the results of this programme. Mosquito traps were installed at selected locations and temperature monitoring introduced at the same time to make sure that no vector activity was to be expected. For 2018/2019, the vector free period has started on 01.12.2018 and is expected to end on 30.4.2019.This also allowed for additional movement options in animal trading.

SCHMALLENBERG VIRUS (SBV)

The Schmallenberg virus (SBV) is a member of the Bunyaviridae family of the genus Orthobunyavirus and, like the bluetongue virus (BTV) and West Nile virus (WNV), is transmitted via vectors. The virus was first identified in Germany by the Friedrich Loeffler Institute (FLI) at the end of 2011 and – after having spread across large parts of Europe – has so far been detected in cattle, sheep and goats, as well as alpacas, and other ruminants, at zoos, game farms and in the wild. However, SBV antibodies have already been detected in dogs and wild boars, too.

The possibility of the virus being transferred to humans is categorised as fairly unlikely by the European Centre for Disease Prevention and Control (ECDC).

Bloodsucking midges (*Cullicoides spp.*) act as vectors for SBV as with BTV. Horizontal transmission without vectors does not appear to take place.

The infection may take a subclinical course in adult animals or may cause clinical symptoms, such as diarrhoea and moderate to severe milk drop, combined with an elevated internal body temperature. Immunocompetent animals eliminate the virus in the body after a short phase of viraemia and, based on the data from the closely related Akabane virus, it is presently estimated that they develop antibodies protecting them against future infection. Usually, the virus can no longer be detected in the blood within as little as six days post infection.

The infection of an immunologically naive animal during pregnancy causes transplacental infection to the foetus. Depending on the stage of pregnancy, this may result in foetal death and reabsorption at very early stages of pregnancy and ranges as far as the development of hydranencephaly and arthrogryposis (after the infection of cattle between the 62nd and 173rd day of pregnancy and in small ruminants between days 28 and 56). In addition, it may result in malformed aborted foetuses or neonates that are not viable in the long-term owing to their deformities. The first SBV antibodies were detected in an Austrian animal in mid-September 2012 and the spread of initial infections was quickly seen right across Austria. Serological screening for SBV antibodies was carried out in cattle in the autumn of 2013 and 2014 for epidemiological assessment. Antibody prevalence in young animals, in particular, were investigated within the framework of this autumn monitoring programme, so as to obtain an overview of the associated immunological protection among young groups of animals that would be productive in the future. Annual waves of infections of different extents could be seen between late summer and late autumn.

On top of that, tests for SBV antibodies and antigens are carried out in the course of investigations of abortions and export tests. As a result, 19,688 blood samples were tested for SBV-Ag and 21,106 samples for SBV Ab, as part of export tests in 2018. Of these samples, 56 samples showed positive or inconclusive reactions to SBV Ag (0.3 %) and 5,653 samples yielded positive or inconclusive results for SBV Ab (26.8 %). Moreover, SBV Ag could be detected in four samples taken from abortions from cattle. The sequencing of one section of the virus genome in selected cases only showed minimal genetic mutations of the virus compared to the previous years.

Additionally, the testing of bull semen intended for export for SBV Ag has great importance, as a SBV transmission via the semen cannot be ruled out. A total of 770 semen samples were tested for SBV Ag in the reporting year, four of which showed positive or inconclusive results (0.5 %).

LUMPY SKIN DISEASE (LSD)

Lumpy skin disease (LSD) is a highly infectious viral disease in ruminants and is a notifiable disease just like sheep- and goatpox. The LSD virus (LSDV) belongs to the genus *Capripoxvirus*, along with the *Sheeppox virus* and *Goatpox virus*. The disease affects domestic cattle, zebus, bison and water buffalos, as well as wild ruminants kept in captivity.

The bovine Capripox infection, aka Lumpy skin disease (syn. Dermatitis nodularis), was endemic only to East, South and West Africa for a long period. The first case of lumpy skin disease detected in the EU was in August 2015 in the Evros Delta in Greece, near the Turkish border. The disease spread rapidly – starting in Greece and spreading throughout southeastern Europe. Several outbreaks were reported in Albania, Bulgaria, Greece, Kosovo, North Macedonia (FYROM), Montenegro and southern Serbia in 2016. Most outbreaks that occurred in Europe were between May and August, at the time with the highest vector density. A number of control measures to combat LSD were put in place by the countries affected. Bosnia and Herzegovina, Croatia, Hungary and Romania were free of LSD according to Animal Disease Notification System (ADNS), as was Austria, which has yet to report any cases of lumpy skin disease to date. The mortality and morbidity in infected European cattle herds varied in the epidemic years 2016 and 2017 regionally between 0-100 %. On average, the morbidity rate was – for example – 0.8-7.2 % in Albania and the mortality rate 0.3-2.9 %. However, the commercial damage of the outbreak was very high and was mainly due to trade restrictions and losses in the making of animal products, in addition to the loss of the cattle (also see EFSA J. 2015;13(1):3986; EFSA J,2017;15(4):4773; EFSA J. 2018; 16(2):5176; EFSA J. 2019; 17(3):5638; FAO Animal Production and Health Position Paper 2017;2).

According to current epidemiological knowledge, the indirect spread of the pathogen by piercing and biting sangivorous arthropods, insects and mites plays the most important role in the spread of LSD. The diversity of arthropod species as vectors is wide and also includes mites (Ixoidae), in addition to horseflies (Tabanidae), flies (Muscidae, Sciomyzidae), biting midges (Culicoides) and mosquitoes (Culicidae). The fight against LSD vectors is a major challenge for the EU countries concerned, given the diversity of the vectors and control methods needed to combat them. Relatively little scientifically valuable data has been collected in Europe so far because vector research requires lots of resources and the top priority in the countries concerned has been to fight the animal disease directly. Comprehensive vaccination (95 % coverage) with a homologue, attenuated LSDV strain *Neethling* is considered the most effective measure to combat the disease, in addition to the culling of infected and susceptible animals in animal stocks ("total stamping out") and transportation restrictions for susceptible animals and animal products. However, the vaccine has not been approved in Europe and its use is subject to the approval of the relevant authorities.

The BMASGK and AGES have taken a number of measures in preparation for a potential outbreak (preparation of a crisis plan, risk analysis and vaccination plan; dissemination of information via publications, providing sample sets and instructions for biosafety at holdings etc.). The national Lumpy Skin Disease Ordinance (F.L.G. II No. 315/2017) has been in effect since 1 December 2017. This ordinance regulates official measures for early identification (LSD monitoring) in the case of disease suspicions and outbreaks, setting up zones and implementing movement restrictions – it also provides information on the implementation of EU regulations and laws and on regaining disease-free status. The National Reference Laboratory for Capripox at the AGES IVET Mödling is responsible for LSD lab tests in line with the regulations. Skin changes, blood and excretions (lacrimal fluid, saliva) are used for the diagnostic tests. Such samples are analysed using internationally approved molecular biology (PCR and sequencing), electron microscopy, virological (isolation by cell culture) and serological methods (SNT, ELISA). The NRL can distinguish between the field and vaccination strains by means of PCR. The diagnostic methods are also used for exclusion testing. The exclusion testing not only helps with the early identification of an epidemic, it also helps maintain diagnostic laboratory test competence and emergency plan competence. As a result, 15 cattle with noticeable skin symptoms were examined as part of exclusion testing in 2017 and again in 2018 (Figure 14). All the cases tested negative for LSD.

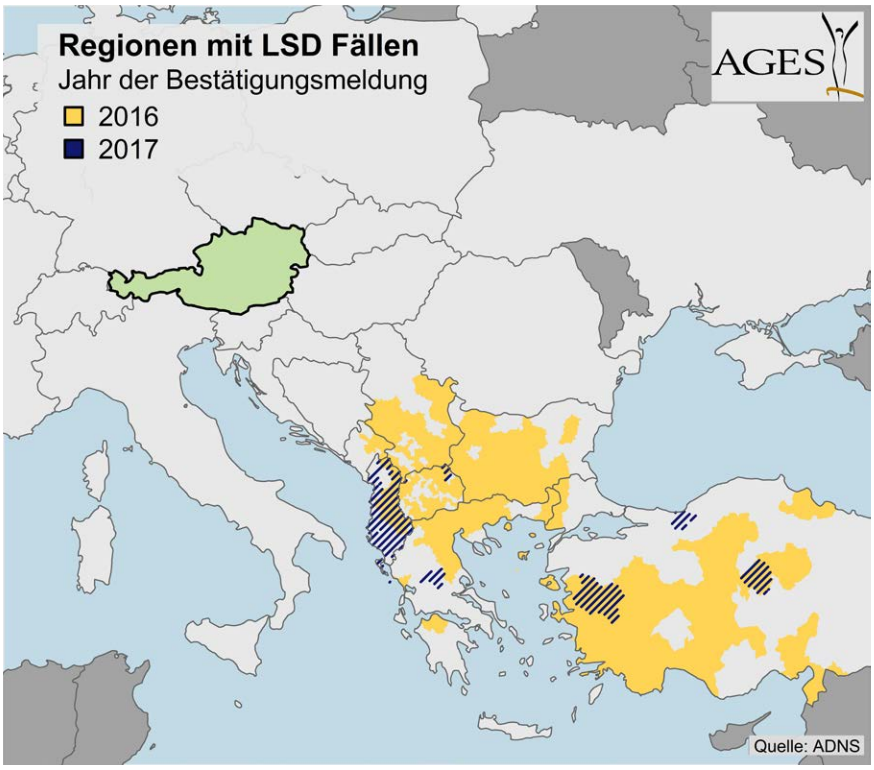

Figure 13:
Comparison of the spread of lumpy skin disease in Southern Europe in 2016 & 2017; no outbreak was reported in Europe in 2018;
Graphics © AGES/DSR (I. Kopacka)

Figure 14:
Exclusion testing – Austrian cattle infected with parapox

AVIAN INFLUENZA (AI)

Avian influenza or fowl plague was observed for the first time in Italy in 1878. The pathogens are Influenza viruses. Sixteen haemagglutinin and nine neuraminidase subtypes are known to date. Influenza A viruses, subtypes H5 and H7 occur in chickens, turkeys and numerous wild bird species. Ducks, geese and other wild birds rarely develop the disease or exhibit no symptoms, but they are important with respect to the spread of the pathogens.

The Austrian authorities worked intensively with poultry farmers and their specialist organisations, and with ornithologists to discover any infiltration of the animal disease into Austria's stocks as early as possible. Increased vigilance and increased biosecurity measures at holdings and along the entire meat and egg production chain reduces the risk of the virus entering it and spreading along it.

At the beginning of November 2016, a number of dead wild water birds were found along the shores and in the region of Lake Constance (Bodensee). Laboratory analyses showed that the cause of death of the wild birds sent for testing was predominately an acute infection with the pathogen influenza A virus of the highly pathogenic subtype H5N8 (HPAIV H5N8). This was also true for the shore regions in Germany and Switzerland, as well as in Austria. On 11 November 2016, avian influenza was confirmed for the first time at an Austrian poultry holding near the shores of Lake Constance. An area along the shore of Lake Constance was defined as showing increased risk and a mandatory indoor confinement of poultry and increased biosecurity measures were put into force. Further infection of other farms in Vorarlberg could be prevented through the measures taken in accordance with Council Directive 2005/94/EC and the extension of the area of increased risk. The restriction zones around the infected holding could be lifted again on 24 December 2016.

During the 2016/17 epidemic, HPAIV H5N8 was detected in only two agricultural holdings in Austria. However, the two outbreaks (10.11.2016, 17.01.2017) in Vorarlberg and Burgenland have in common that they both occurred in immediate proximity to a lake (Lake Constance and Neusiedlersee) in a region where dead wild birds were found that tested positive for avian influenza.

Additionally, HPAIV H5N8 was detected in wild birds in the lake regions of Salzburg and Upper Austria. However, there was no recorded introduction of the virus into farms in this area.

A total of 4,117 blood samples were tested for AI antibodies in 2018 using ELISA and three samples were tested using the haemagglutination inhibition test (HAI). Two samples were tested by virus propagation in egg culture.

The pan-European AI screening programme consists of an active and a passive component.

Figure 15:
Dissection and sampling for subsequent further laboratory tests on turkeys at the National Reference Laboratory for Avian Influenza in Mödling

COMMERCIAL POULTRY

In the **active surveillance programme**, serological testing was undertaken on the slaughter blood of 1,251 laying hens from 124 holdings (including 62 free-range holdings), 370 parent hens from 37 parent holdings, 600 fattening turkeys from 60 holdings, 1,249 geese and ducks from 69 holdings, and 85 ostriches from 16 holdings. No AI antibodies were detected. An additional 200 poultry samples that were tested for the AI virus genome, produced negative results.

WILD BIRDS

In **passive surveillance**, 109 samples from dead and three from live wild birds were tested for Avian Influenza A virus genome using real time RT-PCR. Genome of non-pathogenic AI viruses was found in seven dead wild birds, with only the sample of one mallard duck was sub-typed as low-pathogenic H5 virus (LPAI H5).

Table 14:
Numbers of tests for Avian Influenza in Austria in 2018

Surveillance	Poultry	Wild birds		Routine diagnostics	Sum
	active	active	passive		
AK-ELISA	3,555			562	4,120
AK-HAI	3				
AIV Realtime-RT-PCR	200	3	109		312
HPAI H5N8-Viruses	0	0	0		0
LPAI H5N*-Viruses	0	0	1		1
Non-pathogenic AIV	0	0	6		6
Virus isolation – egg culture			1	1	2
Total	3,758	3	117	563	4,441

NEWCASTLE DISEASE (NCD)

Newcastle disease (NCD, atypical fowl pest) is a highly contagious acute to chronic avian disease. The virus belongs to the paramyxovirus family. A distinction is made between the apathogenic, lentogenic (marginally pathogenic), mesogenic (medium virulence) and velogenic (highly virulent) virus types.

The disease is characterised by rhinitis symptoms, CNS symptoms and diarrhoea. High morbidity and mortality may be expected, particularly among pigeons. The NCD virus is discharged in large quantities in all bodily fluids – in particular faeces, eye, nasal and pharyngeal secretions – and it is spread both directly and indirectly. The incubation period is four to seven days. The symptoms depend on the virulence of the pathogen.

NCD is a notifiable disease. The appearance of clinically suspicious symptoms must be reported to the official veterinarian, who will take and submit samples for diagnosis. Only highly pathogenic types of virus are reported as notifiable, when the virus has a pathogenicity index (ICPI) of 0.7 or above, and/or a velogenic pathotype of the virus strain is identified using sequencing.

Different provisions apply to commercial poultry from those applicable to pigeons kept in captivity (carrier pigeons). Prophylactic immunisation is permitted in Austria, and is also carried out on chickens, turkeys and pigeons (carrier pigeons and breeding pigeons).

The laboratory diagnosis is determined by detecting the pathogen from tracheal / oropharyngeal swabs and cloacal swabs, as well as from animal bodies (CNS, lung, liver, spleen, gut) by breeding viruses in egg culture and subsequent haemagglutination (HA) and haemagglutination inhibition (HAI) tests, and molecular biology methods (RT-PCR and additional pathotyping).

The detection of antibodies using ELISA and HAI is possible, but must be evaluated depending on if vaccination has been permitted.

Table 15:
Number of samples tested for NCD in Austria in 2018

AB – HAI/AB - ELISA	Virus isolation – egg culture	PCR
600 / 160	9 (2 cases in pigeons positive)	235 (5 pigeons positive)

Antibody detection is performed primarily to check the effectiveness of the vaccination.

The virus detection test was positive for five samples from pigeons and wild pigeons.

PSITTACOSIS (ORNITHOSIS, PARROT DISEASE)

This disease is notifiable when detected in psittaciforms (parrots and parakeets). The disease is known as ornithosis in other bird species. Psittacosis is a zoonosis.

The pathogen is the gram-negative bacterium *Chlamydophila psittaci*. It appears in different forms and is inevitably intracellular. The individual species of Chlamydophila adapt very well to their host: *Chl. psittaci* to psittacidae, *Chl. abortus* to sheep/goats, *Chl. trachomatis* to the human eye, and many more. The disease occurs globally.

Humans are usually infected through the inhaling of infectious faeces particles and dust. The resulting symptoms are commonly general fever followed by pneumonia.

All secretions and excretions are infectious. The pathogen is usually picked up via a droplet infection, in other words by inhalation of infectious faeces and dust or aerosols.

The incubation period is usually three to 29 days, but periods of up to 100 days have also been observed. Symptoms in birds include pneumonia, coughing, emaciation, ruffled feathers, diarrhoea, ophthalmic and nasal discharge. Death can occur from between a few days to several weeks, or the disease may become chronic with the animals appearing to recover, but continuing to discharge pathogenic agents.

Prevention involves birds being quarantined and tested for *Chlamydophila*. Standard hygiene measures for working with animals must be observed.

Laboratory diagnostics to detect *Chlamydophila sp.* are performed using immunohistochemistry testing (IHC) and pathogen tests, including the differentiation of species by means of molecular biology (PCR). When dissecting birds, an enlarged spleen and liver are specific indicators of psittacosis, thus, such changes must always be taken into account in differential diagnostics.

A total of 86 molecular biological tests on various birds (parakeets, parrots, flamingos, budgies, other exotic pet birds) were carried out in the reporting year 2018, 15 of which tested positive for *Chlamydophila psittaci*. Out of these 15, ten pet birds came from the same aviary.

ZOONOSIS: CAMPYLOBACTER, SALMONELLA AND *E. COLI* WITH EXTENDED EFFICACY SPECTRUM TOWARDS ß-LACTAMASE AND CARBAPENEMASE

The protection of human health against diseases and infections that can be directly or indirectly transferred between animals and humans (zoonoses) is of the utmost importance. Priority should be given to those zoonoses that constitute the greatest risk to human health. The monitoring systems should also identify any new zoonoses and new strains that appear. Any resistance to antimicrobial substances must also be monitored. This monitoring not only covers zoonotic pathogens, but also other agents that pose a danger to public health. The monitoring of indicator organisms, such as commensal *Escherichia* (*E.*) *coli*, is generally advisable. These organisms could form a reservoir for resistance genes that can then be transferred to bacteria pathogenic to humans and animals. As the focus of data collection on the prevalence of selected zoonotic pathogens has shifted across the whole of the EU to the monitoring and combating of antimicrobial resistance, national zoonosis monitoring has been adapted accordingly. Implementing Decision 2013/652/EU has been in force since 2014, regulating the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria in animals and foodstuffs. Table 16 provides an overview of the combinations of pathogens and animal populations/ food categories to be tested.

Table 16:
Overview of combinations of strains of bacteria and animal populations/food categories, 2014-2020

Species	*C. jejuni*	Indicator *E. coli*	*Salmonella* spp.	ESBL, AmpC, carbapenemase-producing *E. coli*[1]
Broiler flocks	2014, 2016, 2018, 2020	2014, 2016, 2018, 2020	2014, 2016, 2018, 2020	2016, 2018, 2020
Layer flocks	-	-	2014, 2016, 2018, 2020	-
Fattening turkey flocks[2]	2014, 2016, 2018, 2020	2014, 2016, 2018, 2020	2014, 2016, 2018, 2020	2016, 2018, 2020
Fattening pigs	-	2015, 2017, 2019	-	2015, 2017, 2019
Bovines under 1 year[2]	-	2015, 2017, 2019	-	2015, 2017, 2019
Broiler carcases	-	-	2014, 2016, 2018, 2020	-
Fattening turkey carcases[2]	-	-	2014, 2016, 2018, 2020	-
Carcases of fattening pigs	-	-	2015, 2017, 2019	-
Carcases of bovines under one year of age[2]	-	-	2015, 2017, 2019	-
Samples of fresh meat of broilers	-	-	-	2016, 2018, 2020
Samples of fresh meat of pigs	-	-	-	2015, 2017, 2019
Samples of fresh meat of bovines	-	-	-	2015, 2017, 2019

[1] 300 samples of each of the food producing animal populations or food thereof
[2] If more than 10.000 t/y slaughtered

Sampling at farm
Sampling in abattoir
Sampling at retail

In 2018, a number of caecum samples from herds of broiler chicken and turkeys were examined by veterinarians. Additionally, intestinal bundles and appendices were collected from 10 animals over the year in poultry abattoirs where more than 80 % of fattening hens and turkeys are slaughtered in line with a randomised sampling plan. The intestines were cooled and transported to the Department of Veterinary Biology (VEMI) at the AGES Institute for Medical Microbiology and Hygiene in Graz under controlled conditions. The contents of the appendixes of a flock were pooled and inoculated onto culture media. The contents of the pooled appendixes of 449 flocks of broiler chicken were tested for thermo-tolerant Campylobacter (C.), 314 of which for *E. coli* with extended efficacy spectrum towards β-lactamase, 305 for carbapenemase-producing *E. coli* and 179 for commensal *E. coli*. All pooled caecum samples from 204 turkey flocks were also tested for the same bacteria.

The isolates recovered were tested for their sensitivity to antimicrobial substances in line with the requirements, and the results will be published in the Austrian Resistance Report 2018 (AURES 2018) in detail. The test results are illustrated in Tables 17 and 18.

Table 17:
Results of the tests as part of AMR monitoring in line with EU Decision 2013/652/EU, 2018

	Broiler chickens			Turkeys		
	N[1]	n[2]	%[3]	N	n	%
Thermo-tolerant Campylobacter	449	249	55.5	204	112	54.9
C. jejuni	449	181	40.3	204	66	32.4
C. coli	449	84	18.7	204	54	26.5
Commensal *E. coli*	179	179	100	204	203	99.5
β-Laktamase-producing *E. coli*	314	114	36.3	204	33	16.2
Carbapenemase-producing *E. coli*	305	0	0.0	204	0	0

1 Number of flocks examined
2 Number of flocks in which the respective bacteria species was detected
3 Prevalence of the respective bacteria species

The national control programme for salmonella in poultry stipulates that the target serovars *S.* Enteritidis, *S.* Typhimurium including its monophasic variant, *S.* Infantis, *S.* Hadar and *S.* Virchow may be detected in a maximum of 1 % of the flocks of parent animals of chickens (*Gallus gallus*). The target serovars *S.* Enteritidis and *S.* Typhimurium, including its monophasic variant, may be detected in a maximum of 2 % of the flocks of laying hens, as well as in a maximum of 1 % of the flocks of broilers and fattening turkeys. The programme was developed in accordance with the Poultry Hygiene Regulation 2007, as amended, and EU Regulation 2160/2003. The results for *Salmonella* sp. and the target serotypes per poultry population are depicted in Table 18.

Table 18:
Results of the tests for salmonella in parental animals of *Gallus gallus*, laying hens, broilers and turkeys, 2018

	Parent broilers	Parent laying hens	Laying hens	Broilers	Turkeys
Number of flocks	127	36	2,946	5,237	456
N *Salmonella* spp.	2	1	40	240	15
% *Salmonella* spp.	1.8		1.4	4.6	3.3
N SE/ST positive flocks	2[1]	0[1]	25	2	2
% SE/ST positive flocks	1.2[2]		0.8	< 0.1	0.4

SE *S.* Enteritidis
ST *S.* Typhimurium incl. monophasic variant

1 5 Target serotypes: *S.* Enteritidis, *S.* Typhimurium incl. monophasic variant, *S.* Infantis, *S.* Hadar and *S.* Virchow
2 Calculation of the prevalence refers to all parent animals and all five target serotypes (broiler and laying parent animals)

In 2018, the target serovars were detected in 1.2 % of the flocks of breeding chickens (one flock with *S.* Enteritidis and one flock with *S.* Infantis), in 0.8 % of flocks of laying hens (17 flocks with *S.* Enteritidis and eight with *S.* Typhimurium), in <0.1 % of broilers (one flock with *S.* Enteritidis and one with *S.* Typhimurium) and in 0.4 % of fattening turkeys (two flocks with *S.* Enteritidis). Consequently, the targets set for laying hens, broilers and turkeys by the EU were achieved, although the targets for breeding chickens were missed. *Salmonella* spp. was isolated from three breeding flocks (1.8 %), 40 flocks of laying hens (1.4 %), 240 broiler flocks (4.6 %) and 15 turkey flocks (3.3 %).

The success of the control programme is demonstrated clearly in turkeys with the reduction of *Salmonella* spp.-positive flocks from 10.1 % in 2013 to 3.6 % to 2.5 % in the years 2014 to 2018. All other poultry populations showed a trend towards a worsening of the situation in recent years, underscoring that the measures put in place, such as immunisation programmes and the application of strict hygiene inspections at farms, must not be softened: the number of salmonella-positive flocks remained unchanged in parent animal populations (three flocks) when compared to last year. The share of salmonella-positive flocks in laying hen flocks decreased slightly when compared to 2017 (from 1.15 % to 1.4 %). However, the share of laying hen flocks with target serovars has more than doubled from 0.35 % to 0.8 % since 2014. In broilers, the share of salmonella and target serovar-positive flocks increased in 2017, however, the highest ever number of salmonella-positive flocks was counted at n=240 and an increasing trend (2018: 4.6 % positive flocks) has been recorded since 2011 (2.4 %).

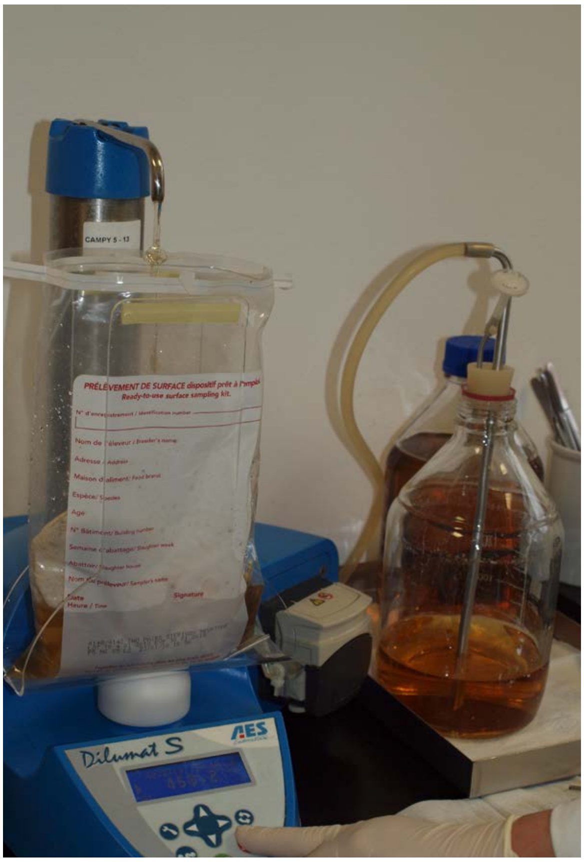

Figure 16:
Filling peptone water into a plastic bag with boot swab samples

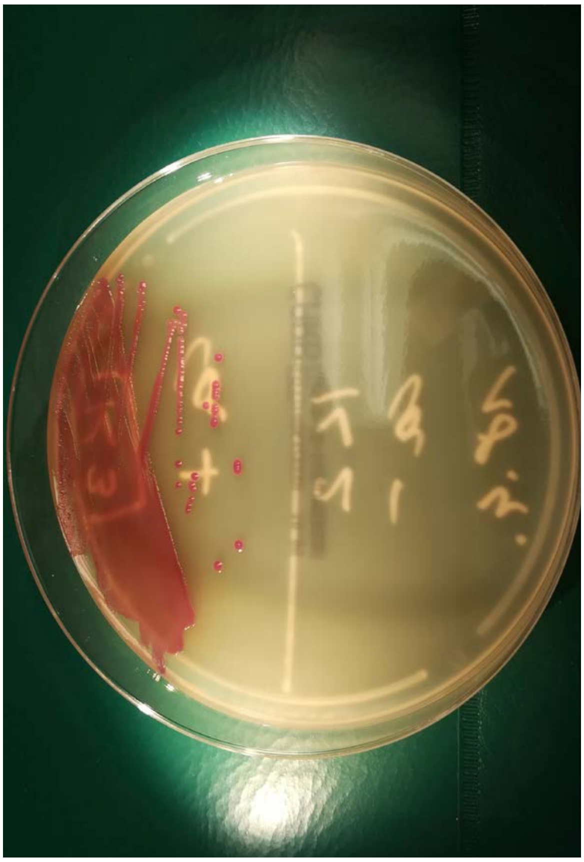

Figure 17:
Carbapenemase-producing *E. coli* on selective agar

TRICHINAEA MONITORING

Trichinosis is a food-borne, human disease with outcomes ranging from mild to fatal. It is caused by microscopically small nematode worms of the genus Trichinella. Four species of trichinae are known in Europe and are differentiated using molecular diagnostic methods. Humans are infected by eating raw or insufficiently heated meat products (e.g. bacon or sausages) from animals that may be carriers of these parasites. The principal hosts for these parasites are domestic and wild pigs and horses, as well as various wild animals (including foxes, bears and badgers) and rodents (rats).

The trichinae are predominantly found in the muscles of these animals, usually enveloped in a capsule (with the exception of *Trichinella pseudospiralis*). The larvae are ingested with food and released from the muscle during the digestion process in the stomach. The larvae then bore into the intestinal wall where they develop to the adult stage, capable of reproduction. Subsequently, the females give birth to large numbers of live larvae that disperse throughout the body in the bloodstream. They tend to lodge in the skeletal musculature where a capsule forms around the larvae. The symptoms of the disease in humans initially involve fever, abdominal pain and diarrhoea, followed by muscle and joint pain, in particular, together with a typical facial oedema in the advanced stage of the disease. Humans are considered highly receptive hosts and the severity of the infection depends on the number of larvae ingested, on the one hand, and on the specific resistance of the host, on the other. The disease can be treated with drugs and treatment is more likely to be successful the earlier it is commenced.

Trichinosis is a parasitic disease found throughout the world. Several hundred people develop this zoonosis in Europe each year, and the majority of cases occur in the EU Member States of Bulgaria and Romania and are frequently caused by meat products derived from wild pigs. Human cases of the disease are very rare in Austria. Only "imported" cases of trichinosis have been recorded by the health authorities in Austria during the past 40 years. These have involved people who became infected with trichina larvae abroad or who brought infected meat products back to Austria, usually after visiting their home country, and became ill in Austria after eating these products.
There is an obligation under European legislation (Implementation Regulation (EU) No. 1375/2015) for animals that might be carriers of trichinae and that are intended for human consumption be tested for trichina larvae after slaughter or death and prior to the marketing of the meat to protect consumers and human health. More than 5 million domestic pigs, about 1,000 horses and the majority of wild pigs killed by hunters are tested for trichinae in Austria every year, pursuant to this statutory requirement. Testing uses the so-called digestion technique in which a quantity of muscle from the carcass that has to be examined (usually from the pillar of the diaphragm) is defined precisely by weight and then broken down by artificial digestion. The sediment of the digestion fluid is examined microscopically for the presence of trichina larvae. Should there be positive trichina detection, the whole carcass is confiscated by the competent veterinary authority and passed on for verifiable disposal. Trichinae have only been detected in wild pigs in a few instances in Austria in recent years, and, with two exceptions, the positive animals were of foreign origin. These animals were wild pigs from Germany and Hungary that had been butchered in Austria for onward sale. No positive trichina findings have been reported for decades in Austrian breeding or fattening pigs or horses.

Scientific studies have shown that the parasite is also found in the Austrian fox population, and that there is a clear west-east decline in terms of its distribution. The continuous monitoring of these wild animals a random sample basis is recommended from an epidemiological standpoint in order to observe any changes in pathogen frequency and the geographical occurrence of this zoonotic parasite.

No trichinae were detected in breeding or fattening pigs or horses and wild boars in Austria in 2018.

Figure 18:
Positive result of the digestion method – *Trichinella pseudospiralis*

Figure 19:
Histological examination, HE colouring – *Trichinella pseudospiralis* in striated muscle tissue

RABIES

Thanks to the good epidemiological situation in Austria's neighbouring countries and the fact that Austria has been declared rabies-free since 2008, monitoring was switched from a random sampling plan to the examination of indicator animals and clinically suspected cases in 2013 (after the oral vaccination of foxes was suspended). At the same time, the monitoring programme was altered from a sampling plan to the examination of indicator animals and clinically suspect cases. Indicator animals include foxes, badgers, racoons and racoon dogs killed on the roads or found dead. Clinically suspect cases are confirmed by the official veterinarian and recorded in the VIS (Veterinary Information System).

The overall risk of an outbreak of rabies in Austria as a result of the disease situation in immediately adjacent neighbouring countries is classed as low, the possibility of its release as a result of legal or illegal animal imports or of latent persistence of rabies in the population is classed as very low. The exposure risk of the animal population is classed as ranging from moderate (import via movement of wild animals, persistence of the wild animal population) to low (domestic pet imports) and negligible (import via humans), but overall as moderate.

However, the consequences of a new rabies outbreak must be assessed as severe, given the considerable financial and logistical costs of achieving rabies-free status again and the highly probable, fatal end of an infection with the rabies virus.

A total of 480 animals were submitted for rabies testing in 2018, 144 of which were suspected cases (i.e. either from a clinical or laboratory diagnostic perspective). The sample quality for three animals (two bats, one fox) was not good enough to be tested. All other tests yielded negative results.

For the first time, bats (192) were the most frequent species submitted for testing, in addition to 179 foxes, followed by 30 dogs, 21 cats, 16 badgers, 15 martens, nine horses, four cattle, three squirrels and 11 other wild animals and pets. Racoons and racoon dogs were not examined.

No statistically proven statement could be made with respect to the occurrence of rabies in the Austrian bat population in 2018. All 190 bats tested negative for rabies. The FAT quick testing method (Fluorescent Antibody Test), which is considered the gold standard, was used to test 477 animals. One test on a bat sample produced no result due to the poor sample quality. In this case the test was carried out only using the PCR method, meanwhile also considered a gold standard.

A total of 57 animals that had bitten humans were tested in 2018. A PCR test was carried out on all animals in addition to the FAT and a Rabies Tissue Culture Inoculation Test (RTCIT) in 55 samples. All the tests yielded negative results.

A total of 778 serum samples from cats and dogs were examined for rabies antibodies using the FAVN (fluorescence antibody virus neutralisation test) in 2018, in the course of animal movement inspections. Of these, 669 samples displayed a sufficiently high antibody titre of more than 0.5 IU/ml, 78 samples had a lower titre and no antibodies could be detected in 19 animals, the remaining samples could not be evaluated.

AGES (Mödling) was commissioned with establishing an inspection / quarantine station for live animals by the BMASGK in 2016, as part of the official monitoring programme. Animals seized by border officials are kept under surveillance in Mödling for a number of weeks to several months until it can be confirmed that they do not pose a risk to Austria's animal health status.

EU entry regulations must be met for dogs, cats and ferrets. Every animal must be vaccinated against rabies and the vaccination must be valid. Additionally, a serum test (FAVN) is used to check the success of the vaccination, followed by a waiting period of three months between blood sampling and official movement. In 2018, no animals that were to be tested for rabies were held at the AGES inspection centre in Mödling.

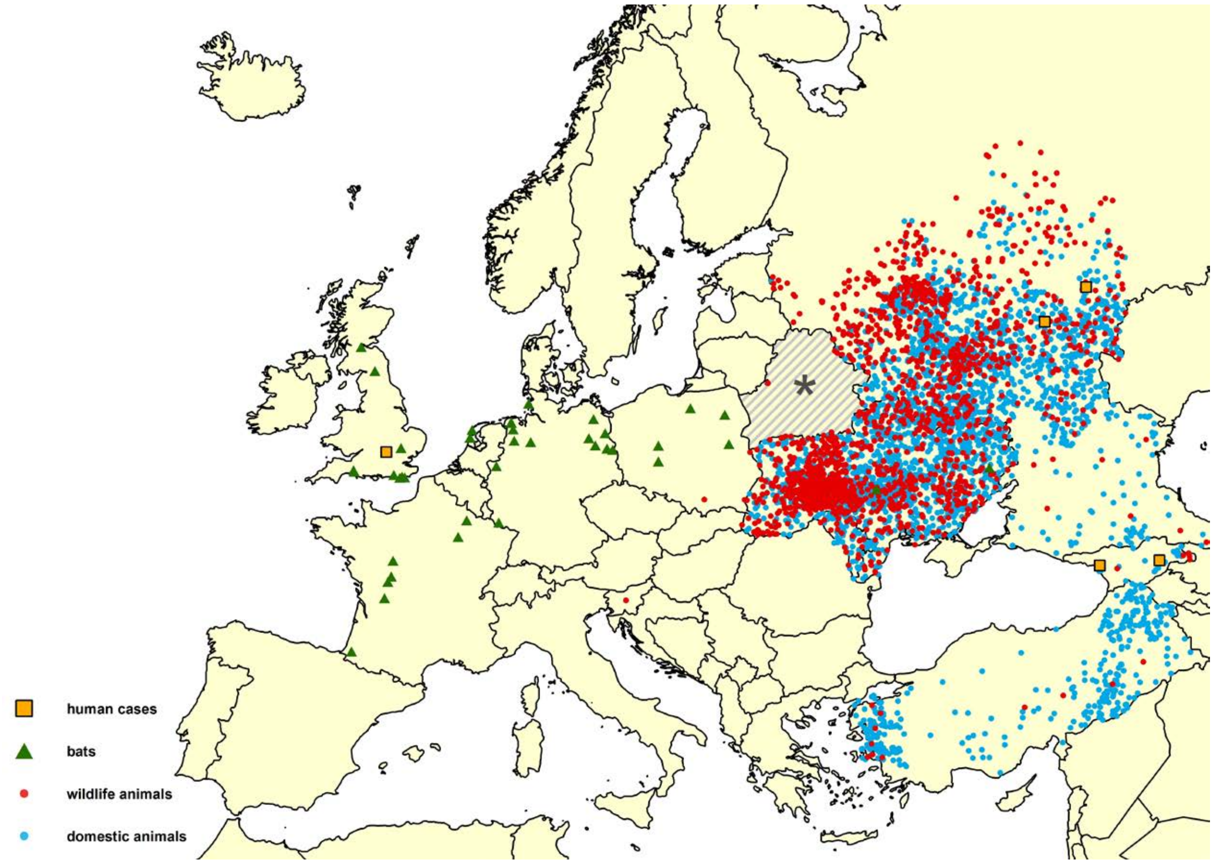

Figure 20:
Prevalence of rabies in Europe in 2018 (Source: Rabies Information System of the WHO Collaboration Centre for Rabies Surveillance and Research, © Friedrich-Loeffler-Institut) * = no data received

WEST NILE VIRUS (WNV)

The West Nile virus (WNV) was first described in humans in the North of Uganda's West Nile District in 1937. Currently, WNV strains are classified in four genetic lines, with lineage 1 being subdivided into three clusters, 1a, 1b and 1c. Endemic occurrence of lineage 1 WNV in humans and horses has been confirmed in the north of the Italian province of Ferrara since 2008. In Europe, lineage 2, which originated in Africa, was isolated for the first time in birds of prey in Hungary in 2004 and has since been detected in various species of animals (corvids, horses, cattle, sheep, dogs). Lineage 3 WNV ("Rabensburg virus") has been detected in midges from the Czech Republic.

WNV is transmitted from infected birds via midge bites to humans and animals which are dead-end hosts. The disease has an incubation period of two to 14 days. In horses with the clinical disease, the infection is lethal for up to 40 % of animals.

In humans, the infection is asymptomatic or the symptoms are similar to those of mild flu in more than 80 % of cases, with just a few exceptions.

The ECDC (European Centre for Disease Prevention and Control) reported an above-average increase in human WNV infections (n=2083) compared to the total sum of cases in the past seven years (n=1832) in 2018 (https://ecdc.europa.eu/en/news-events/epidemiological-update-west-nile-virus-transmission-season-europe-2018). According to the ECDC, 1,503 WNV human cases were reported in Italy, Greece, Romania, Hungary, Croatia, France, Austria (20), Bulgaria, Czechia, Slovenia and Cyprus. An increase in equine outbreaks of 30 % was observed compared to 2017, with a total of 285 outbreaks.

WEST NILE VIRUS – BIRDS

Clinical lineage 2 WNV infections were detected for the first time in raptors in Austria in 2008 and, since that time, a WNV monitoring programme for wild birds has been conducted at IVET Mödling on behalf of the BMASGK, as well as for horses since 2011.

The programme focuses on raptors (Falconiformes), passerines (Passeriformes) and corvids (Corvidae) that are considered to play an essential role in the spread of the pathogen. In addition, other bird species are tested for WNV, such as free-range geese and ducks from at-risk regions from the passive avian influenza monitoring programme via abattoir blood samples.

In 2013 and 2014, PCR examinations of wild birds and raptors detected lineage II WNV in one northern goshawk in each of the two years in the reporting period. A higher incidence of lineage II WNV was detected between 2015 and 2017. A total of 36 birds were tested using WNV or Flavivirus PCR in 2018. WNV lineage 2 was detected again in seven wild birds (three goshawks, two sparrows, one crow, one Tengmalm's owl) (data source AGES and the University of Veterinary Medicine Vienna). Indications of longer circulating WNV antibodies could be found (IgG AB ELISA positive or questionable, IgM Flavivirus ELISA negative) in eight slaughter blood samples taken from ostriches, three from ducks and three from geese in the province of Lower Austria as part of the serological tests carried out in 92 wild birds, free-range geese, ducks and ostriches in 2018.

WEST NILE VIRUS – HORSES

The occurrence of any type of clinical equine encephalomyelitis in Austria is notifiable and all forms of equine encephalomyelitis are also tested for WNV and other flaviviruses on a routine basis. There had been no clinical cases in horses in Austria until 2015.

However, evidence of individual, mild (2016: one, 2017: two) and also fatal (2016: one – confirmed January 2017; 2017: one) forms of WNV infections could be found in Austria on a regular basis.
In the reporting year 2018, three fatal WNV encepha-

Figure 21:
Brain removal in from a suspect horse in the dissection theatrepost mortem room under strict safety precautions

litides were detected in horses in the east of Austria (Lower Austria, Vienna, Styria), while five other cases were negative.

Clinical WNV cases in horses have also been reported in Italy, Hungary, France, Greece, Portugal, Spain over the past 15 years and also more recently in Romania, Slovenia and Germany – most of them were accompanied by simultaneous human infections.

A total of 171 horse blood samples were tested for flavivirus antibodies as part of the serological blood screening programme in 2018. Forty of these samples reacted positively in the IgG Flavivirus ELISA, two more were questionable, but were negative in the IgM Flavivirus ELISA. Many of them also showed positive results in the FSME AK ELISA. Horses can be vaccinated against WNV (lineage 1) in Austria.

EQUINE INFECTIOUS ANAEMIA (EIA)

Equine infectious anaemia (EIA) is a viral disease of equidae (horses and donkeys) transmitted by midges.

EIA is listed as a notifiable animal disease in Austria (Art. 16 of the Austrian Animal Diseases Act). The AGES Institute for Veterinary Disease Control (IVET) Mödling has been designated as the National Reference Laboratory (NRL) for it. In addition, there are other private laboratories and the Institute of Virology at the University of Veterinary Medicine, Vienna, which undertake EIA diagnostics for tests relating to the transportation of livestock.

The following test systems are used for antibody detection in Austria:

1) Coggins test (agar gel – immunodiffusion assay) and
2) ELISA (competitive ELISA)

In In Europe, the Coggins test is mandatory for international animal movement.

Polymerase chain reaction (PCR) from EDTA blood is used for virus detection.

Table 19:
EIA Tests using the Coggins Test at the National Reference Laboratory in Mödling from 2010 to 2018.

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Tests	149	199	157	154	121	120	150	142	129

There was no EIA monitoring programme for equidae was in place in Austria in 2018. Two positive cases (in 2002) have been reported in Austria to date in a holding in Lower Austria (district of Wiener Neustadt).

A total of 129 antibody tests were performed for EIA in 2018. All 129 horses tested were negative. The tests included 66 import inspections, one official inspection (BH Rohrbach), 53 private examinations and nine export examinations.

VIRAL HAEMORRHAGIC SEPTICAEMIA (VHS)

VHS is a notifiable viral disease caused by a novirhabdovirus. Rainbow trout (*Oncorhynchus* mykiss), Pacific salmon (*Oncorhynchus* species), trout (*Salmo trutta*), grayling (*Thymallus thymallus*), the Coregonus species (*Coregonus* spp.), pike (*Esox lucius*) and various marine fish species are considered susceptible, according to Annex I, List II, Aquaculture Disease Ordinance (Aquakultur - Seuchenverordnung), Federal Law Gazette II, No. 315/2009. The clinically visible signs of the disease are mostly seen in rainbow trout. The clinical course of the disease affects all age classes. Losses of up to 90 % are possible in young fish (fry) and at temperatures of < 14 °C. Genotype virulence and the condition and immune status of the fish, together with stress situations relating to living conditions are also decisive with respect to the outbreak and course of this disease, in addition to temperature.

A total of two cases of VHS were diagnosed at the National Reference Laboratory for Fish Disease at the University of Veterinary Medicine, Vienna, in 2018.

INFECTIOUS HAEMATOPOETIC NECROSIS (IHN)

IHN is a notifiable viral disease of various salmonid species, caused by a novirhabdovirus. Rainbow trout (*Oncorhynchus* mykiss), Atlantic salmon (*Salmo salar*), and various species of Pacific salmon are considered susceptible, according to Annex I, List II, Aquaculture Disease Ordinance (Aquakultur - Seuchenverordnung), Federal Law Gazette II, No. 315/2009. The clinical course of the disease affects all age classes, but particularly the size class < 100 g. The course of the disease is temperature-dependent: within the critical temperature range (10 to 15 °C), losses of up to 100 % may be observed among fish in the susceptible size class. Stress-inducing factors, such as stock density, transportation and sorting, promote outbreaks of the disease.

There were no IHN outbreaks in Austria in 2018.

KOI HERPESVIRUS INFECTION (KHV)

KHV, known colloquially as koi disease, is a highly infectious, notifiable viral disease that affects commercial carp (common carp, *Cyprinus carpio*) and coloured carp (koi). Carp of all age classes can be affected and losses may range between 80 % and 100 %. It can cause substantial economic losses and is extremely important in the international trade and transportation of carp.
The pathogenic agent is known as Koi herpesvirus (KHV). The scientific name is *Cyprinid herpesvirus* 3 (CyHV–3) from the family of Herpesviridae. Viruses of varying virulence have been confirmed depending on their origin (European, Asian, Israeli), but a comparison of genomes from different regions shows that they are virtually identical.

The first koi herpesvirus infection in Austria was reported in 2015. There was no koi herpesvirus infection in 2018. The import of infected koi carp poses a major risk in terms of introducing the pathogen.

AQUACULTURE REGISTER

A public register of approved fish farms in Austria can be found at http://aquakultur.ehealth.gv.at/. The legal basis of the Aquaculture Register is Directive 2006/88/EC; the formal requirements can be found in Commission Decision of 30 April 2008 implementing Council Directive 2006/88/EC as regards an internet-based information page to make information on aquaculture production businesses and authorised processing establishments available by electronic means (2008/392/EC).

The registers for the other Member States published on the EU Commission homepage are available at http://ec.europa.eu/food/animal/liveanimals/aquaculture/register_aquaculture_establishments_en.htm

The publication of all approved fish farms and processing facilities is intended to facilitate internal EU animal trade in the field of aquaculture.

AMERICAN FOULBROOD (*PAENIBACILLUS LARVAE*)

American foulbrood is a brood disease caused by the *Paenibacillus larvae* bacteria and can be found around the globe. Outbreaks or suspected outbreaks are notifiable under the Bienenseuchengesetz (Austrian Bee Diseases Act) (Federal Law Gazette No. 290/1988, as amended). The clinical symptoms are an incomplete brood nest (brood cells with sunken, perforated cell caps, ropey masses in sealed brood cells (Figure 22)) and firmly attached scales.

If the disease cannot be confirmed on-site, test material must be sent to the test centres listed in the Bee Diseases Act. At present, these tests are carried out at the AGES Institute for Seeds and Plants, Plant Protection Services and Bees, Apiculture and Bee Protection Department, Spargelfeldstrasse 191, A-1220 Vienna.

P. larvae is a gram-negative, peretrichous, flagellated, rod-shaped bacterium that develops spores in its permanent form; these are highly resistant and can remain infectious for over 40 years.

An outbreak of the disease has extensive economic consequences for the beekeeper involved and also for beekeepers located within the restricted area (establishment of a restricted area with a 3 km radius, restrictions in bee migration, costly and time-consuming remedial and disinfection measures).

No drug is licensed in Austria to combat American foulbrood.

American foulbrood is treated either by destroying colonies that have been infected or decontaminating them by means of the "shook swarm" procedure and additional, concomitant disinfection measures and the replacement of the entire comb structure.

A DETAILED DESCRIPTION OF THIS CAN BE FOUND IN THE GUIDELINES FOR COMBATING AMERICAN FOULBROOD, SEE LINK:

https://www.verbrauchergesundheit.gv.at/tiere/recht/oe/bienen.html

There are various strains and genotypes of P. larvae which differ in terms of virulence, and this also influences symptoms and discovery by the beekeeper or bee expert. Research projects have detected five different genotypes in Austria to date. They are not routinely distinguished in the course of the analysis of official samples. If the ERIC I genotype is present, most of the diseased larvae reach the capping and only die afterwards, resulting in a massive formation of spores. Typical signs are capped cells with ropey masses and static cells (see Figure 22). The disease can spread like wildfire though the colony.

In the case of ERIC II genotype, diseased larvae usually die before sealing and the cells containing dead brood are cleared out. This results in an incomplete brood nest. Since this is a nontypical symptom, there is a risk that the disease will not be recognised for a fairly long time.

Control measures should be taken as soon as possible following an outbreak, as the pathogen can be dispersed by bees landing at the wrong colony or through robbing. As a result, unattended, rundown apiaries could be a potential source for the spread of American foulbrood. Such apiaries and comb material that is stored in a way that it is freely accessible to bees is often discovered when controlling the 3 km restricted zone.

Figure 22:
Ropey masses in American foulbrood (match test)

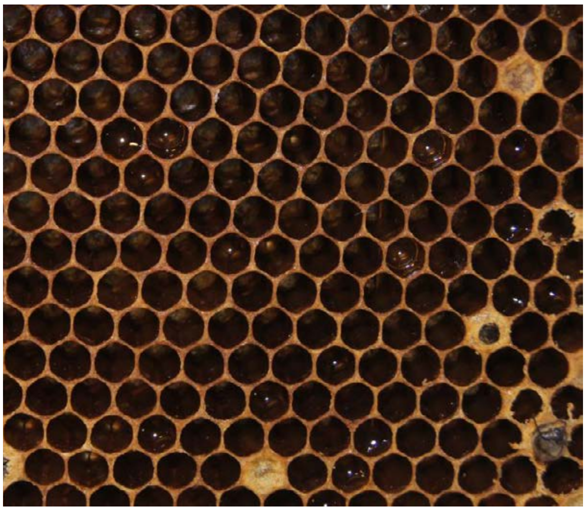

Figure 23:
American foulbrood: Static cells; brood cells with sunken, perforated capping

A total of 48 new outbreaks were recorded in Austria in 2018. This is another decrease in outbreaks when compared to 2017 (70 outbreaks). The course of outbreaks in recent years can be seen in Figure 24.

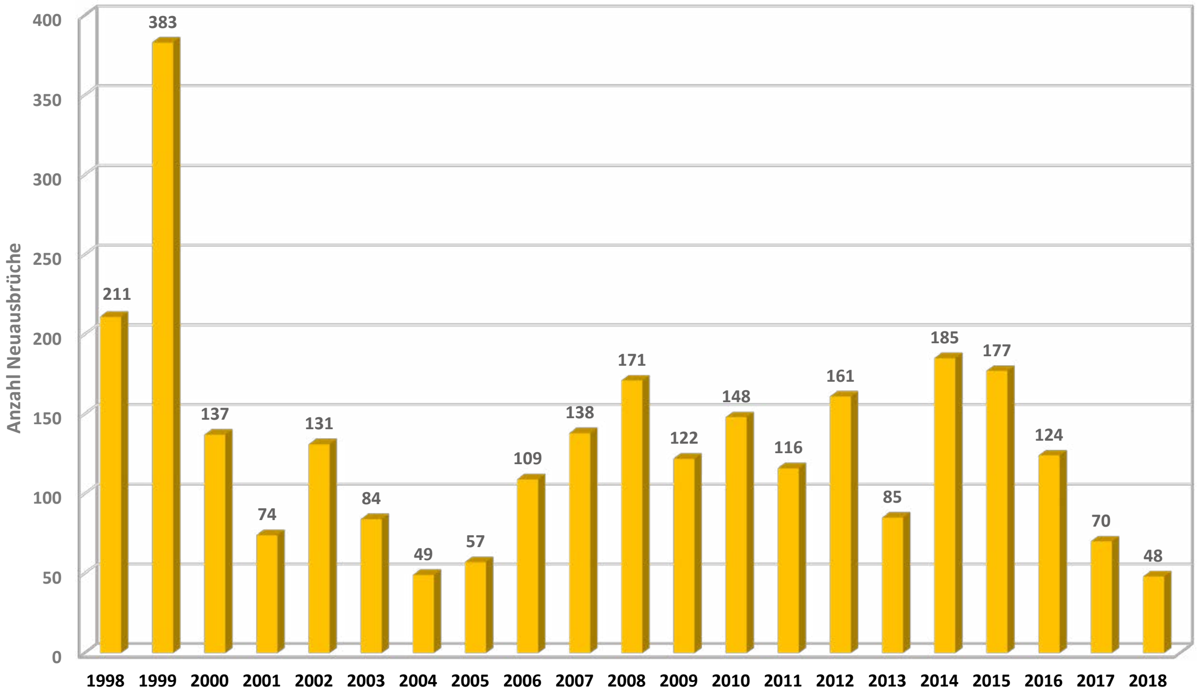

Figure 24:
A long-term overview of outbreaks of American foulbrood in Austria (source: BMASGK, AGES)

SMALL HIVE BEETLE INFESTATION (*AETHINA TUMIDA* MURRAY)

Synonyms: SHB

The infestation of bee colonies with small hive beetle is notifiable under the Bee Diseases Act (F.L.G. No. 290/1988, as amended).

If it is suspected that the small hive beetle is present, the official veterinarian should send the suspect material to the test centres named in the Bee Diseases Act after it has been killed.

NATIONAL REFERENCE LABORATORY FOR BEE DISEASES IN AUSTRIA:

AGES Institute for Seeds and Plants, Plant Protection Services and Bees, Apiculture and Bee Protection Department Spargelfeldstrasse 191, A-1220 Vienna; Tel.: 05 0555-33122.

The official veterinarian must decide whether to request a test to rule out or confirm the suspected disease (TKH-V), based on the clinical symptoms and epidemiological setting. In the case of a test to rule out the disease, the entry in the VIS is made as "TKH-V uncertain". The transportation and test costs are borne by the federal government just as they are for tests for suspected disease.

THE EU REFERENCE LABORATORY FOR BEE HEALTH HAS DRAWN UP GUIDELINES WHICH ARE AVAILABLE ON THE AGES WEBSITE:

https://www.ages.at/themen/krankheitserreger/bienenbeutenkaefer/

The small hive beetle (Coleoptera: Nitidulidae) is a honey bee pest. Clinical symptoms are feeding tunnels made by the larvae in the cells, brood combs destroyed by larval feeding, contaminated, fermented honey and a rotting smell.

The adult beetles (Figure 25) are 5 to 7 mm long and 2.5 to 3.5 mm wide (about one-third of the size of a worker bee (Figure 26). The brood, honey, pollen and even fruit serve as food sources for the beetles and their larvae (Figure 27). The eggs are laid in the hive and hatch into larvae – this is the stage that is harmful to the bee colony. Pupation takes place in the ground in front of the hive. The beetles can fly independently up to 15 km in order to infest bee colonies. Given favourable conditions, the small hive beetle can proliferate massively in a bee colony, in honeycomb storage systems, and in honeycombs stored before centrifuging.

In practice, the most sensitive diagnosis method for identifying a beetle infestation in Italy was the examination of the bee colonies by trained personnel in comparison to the use of beetle traps in bee colonies. The disease has already spread to other regions (the USA, Canada, Australia, Mexico, Central America, the Caribbean, Brazil, the Philippines, Hawaii) from its original distribution area of South Africa, where it does no damage, and major losses have been reported in these countries in some cases.

Since the small hive beetle was detected on 5 September 2014 in the region of Calabria in southern Italy for the first time, the Italian veterinary authorities have introduced massive control measures in coordination with the EU authorities. They have not been able to eradicate the pest. While the annual number of SHB positive apiaries has not grown since 2014, their distribution area in the region of Calabria has increased slightly. The detection of the SHB in wild bee colonies (2014, 1026, 2017) has raised questions about whether the disease has been eradicated successfully. Protected zones were set up around the infested areas where the transporting of bees and beekeeping materials is prohibited (a radius of 10 km in the region of Consenza, a 30 km radius in the area of Gioia Tauro). In addition, there is a monitoring zone, into which transportation of bee colonies is prohibited. EU regulations for the trading of live bees and bumble bees in the common market require that "bees/bumble bees must come from an area of at least 100 km radius which is not subject to any restrictions associated with the suspicion or confirmed occurrence of the small hive beetle and where these infestations are absent" (Part 2 of ANNEX E of the Council Directive 92/65 EEC). The monitoring zone has encompassed the entire region of Calabria since 2018. Additionally, so-called sentinel colonies that are examined by the veterinary authorities on a regular basis have been placed in the region since 2015.

The minimum distances to areas infested by the small hive beetle for the transportation of queens in cages (individual queens with a maximum of 20 attendants) were reduced with the amendments made to the regulations for trade with bees and bumble bees on 20 November 2017: the minimum distance to the borders of a protected zone with a radius of minimum 20 km around an area with a regular SHB presence must be at least 30 km. This means a minimum of 50 km distance to a confirmed case. However, this only applies if the area is subject to regular official inspections with precisely defined statistical reliability. The only restriction for the movement of bumble bee colonies is that breeding must be carried out in a facility sealed off from the outside world. Link: EU Implementation Regulation 2017/2174 from 20 November 2017 amending Annex E of Regulation 92/65/EEC.

The situation in southern Italy has not changed substantially. The large number of monitored colonies with negative results has persuaded the Italian authorities to continue with their eradication strategy. Link: Commission Implementing Decision (EU) 2019/469 from 29 March 2019 amending Implementing Decision 2014/090/EU as regards the period of application of the protective measures in relation to small hive beetle in Italy.

An extract:
"(2) Italy notified the Commission of several new occurrences of small hive beetle in Calabria in the second half of 2018 and also informed about the epidemiological situation in February 2019, showing that small hive beetle infestations still occur in Calabria.

(3) therefore, the application of protective measures provided for in Implementing Decision 204/909/EU should be prolonged until April 2021, taking into account that Regulation (EU) 2016/429 of the European Parliament and of the Council, (4), which provides for safeguard measures in the event of animal diseases, applies from April 2021."

The Italian "Istituto Zooprofilattico Sperimentale delle Venezie" publishes the current state of the distribution of the small hive beetle in southern Italy on its website: http://www.izsvenezie.it/aethina-tumida-in-italia/

Europe has established various monitoring programmes for early detection, such as APINELLA in Switzerland and Bee Warned in Bavaria. A monitoring programme using molecular biologic methods/PCR is carried out in Austria as part of an EU project (BPRACTICES): 60 honey farms from different Austrian focus regions were being examined in the period 2017-2019. The first results for 2017 are already available and none showed evidence of Aethina tumida.

In 2018, two beetle samples (two submissions) with suspected small hive beetle were submitted for examination as official samples at the Apiculture and Bee Protection Department of AGES. Both samples were negative. One case was shown to be *Gymnopleurus geoffroyi* (Scarabaeidae or scarab beetle) and the other was the sap-feeding beetle *Cychramus luteus*, which also comes from the *Nitidulidae* family like *Aethina tumida* and can easily be mistaken for *Aethina tumida*. *Cychramus luteus* is frequently found in hives by beekeepers, but is harmless to bees.

Link: Einfachen Bestimmungshilfe für den Kleinen Beutenkäfer/Simple guide to the small hive beetle (Boecking 2005) and for distinguishing between *Aethina tumida* and *Cychramus luteus*:
Suspicious beetles, larvae or eggs must be killed (by placing the sample in 70 % alcohol or a freezer overnight) before sending.

Current reports on the introduction and spread of the pest in various countries show that the beetle is even able to reach remote areas. Possible distribution routes are the global trade in queens, package bees, bee colonies, swarms, honeycombs, beeswax and beekeeping equipment. However, other routes must also be considered (worldwide ship and container transportation, soil, and fruit). The extent to which alternative hosts (e.g. bumble bees) are also actively infested under natural conditions and might contribute to the spread is unclear.

Its distribution in North America extends to the border with Canada. This illustrates the risk that it might also become indigenous in Europe in areas with similar climate conditions. According to estimates in the EFSA study (EFSA Journal 2015;13(12):4328), two-generation cycles are likely to be possible in temperate latitudes in Europe.

Figure 25:
Small hive beetle – adult

Figure 26:
Size comparison between small hive beetle – bees

Figure 27:
Small hive beetle larvae

VARROOSIS (PARASITOSIS CAUSED BY *VARROA DESTRUCTOR*)

The symptoms of varroosis are caused by a mass infestation of bee colonies by *Varroa destructor*. Varroosis outbreaks are notifiable under the Austrian Bee Diseases Act (F.L.G. No. 290/1988, as amended), if they occur to an epidemic extent.

V. destructor has a horizontal, oval shape and is 1.1 x 1.6 mm in size (Figure 32). Egg laying, development and mating all take place in the sealed brood cell. When the bees hatch, the mother mite leaves the cell with several daughters and infests adult bees (Figures 28 and 29).

The mite parasitizes both the adult bees and the brood. In the case of adult bees, it has been shown that they dissolve fat from the abdominal segments of the animal using their digestive juices and absorb it. This may result in pathogens being transmitted, causing secondary diseases (e.g. viral diseases). Thus, the deformed wing virus (DWV) cripples the bee brood (Figure 30) or adult bees (wings are undeveloped or not fully developed, Figure 31), for instance. Additional harmful effects of the varroa mite are a shortening of the lifespan of individual bees, a reduction in the performance of the colony and the creation of infertile drones. A varroa infestation may increase by a factor of more than 100 in a single season as a result of proliferation in the colony and the introduction of mites from other colonies.

The successful combating of a varroa infestation can only be achieved using a multi-stage concept, which should be conducted comprehensively and simultaneously by all beekeepers. This concept includes biotechnical measures during the nectar-foraging period, primary mite elimination after the last honey extraction process and residual mite elimination in the winter when there is no brood. Infestation monitoring using mesh-protected floor panels provides information about natural mite decline and the success of the control measures.

Varroa was detected for the first time in Austria in 1983 and it can be expected to occur in every apiary in the country today.

With the amendment of the Austrian Medicinal Products Act, pharmacologically active substances used to combat varroa have had to be authorised as veterinary medicines (Tierarzneimittel – TAM) from 1 January 2014 onwards.

However, a veterinarian may import products licensed as veterinary drugs for bees in other EU states, if no suitable licensed product is available in Austria ("treatment emergency"). It is also possible to use a magistral preparation made up by a pharmacy to a prescription by a veterinarian. Only those substances may be used in this instance that are listed in Commission Regulation (EU) No. 37/2010 of 22 December 2012 on pharmacologically active substances and their classification regarding maximum residue limits in foodstuffs of animal origin for all food-producing species (formic acid, lactic acid, thymol) and for bees (oxalic acid). A total of 15 authorised products made with diverse substances (oxalic acid, formic acid and essential oils, such as thymol, camphor, menthol, eucalyptus, amitraz and flumethrin) have been made available in Austria to date (as of 28 March 2019).

It is essential to bear in mind that in certain areas the varroa mite has acquired resistance to some active substances (e.g. amitraz und flumethrin indications on the information sheet: Link to Special Medicines Register), when selecting a product and prior to its purchase.

A total of five officially submitted samples (brood and bees) were tested for varroa infestation in 2018. Two new varroa outbreaks were notified.

Figure 28:
Female varroa mites on bee larvae

Figure 29:
Bee with adult varroa mites between abdominal segments

Figure 30:
Bee pupae crippled by varroa

Figure 31:
Heavily varroa-infested bee showing typical changes to its wings and hind segment (signs of chronic bee paralysis virus/CBPV

TROPILAELAPS MITE INFESTATION (PARASITOSIS CAUSED BY *TROPILAELAPS* SPP.)

There are various species of tropilaelaps mites. Any infestation with one of these species is notifiable under the Austrian Bee Diseases Act (F.L.G. No. 290/1988, as amended).

No infestation with tropilaelaps mites has yet taken place in Europe. However, there is a serious risk that they will be introduced as a result of the international bee trade.

THE EU REFERENCE LABORATORY FOR BEE HEALTH HAS DRAWN UP GUIDELINES, WHICH ARE AVAILABLE ON THE AGES WEBSITE:

https://www.ages.at/themen/krankheitserreger/tropilaelapsmilben/

The clinical symptoms are malformations, such as stunted abdomens and wings, deformed or missing limbs, crawling bees that are incapable of flight at the hive entrance, incomplete brood nest and dead brood. An *Apis mellifera* colony may die out after just one year of infestation.

If it is suspected that tropilaelaps mites are present, the suspect material should be sent to the test centres named in the Bee Diseases Act, after the killing of the animals. At present, these tests are carried out at the AGES Institute for Seeds and Plants, Plant Protection Services and Bees, Apiculture and Bee Protection Department (= National Reference Laboratory).

Adult tropilaelaps mites (Figure 32) are 1 x 0.5 mm in size, reddish brown in colour and move quickly in the hive. Four species have been identified to date: *T. thaii*, *T. koenigerum*, *T. clareae* and *T. mercedesae*. Originally, they were only found in tropical and subtropical regions of Asia in colonies of *Apis dorsata Apis laboriosa* and *Apis cerana*. Today, colonies of *Apis mellifera* brought to Asia have also been infested with Tropilaelaps mites (*T. koenigerum*, *T. clareae* and *T. mercedesae*). Their westernmost location is Iran.

Tropilaelaps mites feed only on bee brood by sucking the haemolymph, but not on adult bees. Reproduction takes place in the bee brood cells, very much like the varroa mite. They can survive for a maximum of nine days without brood. This is why a brood-free period stops their numbers rising. If increasing climate change results in the loss of the current brood-free period in the winter months in Austrian bee colonies, there is a very real risk that this mite could settle permanently here if it is introduced.

The test methods for varroa can also be used for tropilaelaps (checking the brood and mesh-protected floor panels for mites that look suspicious).

Biotechnical methods, such as interrupting the brood, are available as potential measures to combat the mites. Varroacides are also used in Asia.

The most effective method for preventing tropilaelaps infestation is to avoid importing any bees from the mites' natural distribution regions or from areas in which they have been introduced.

In 2018, there were no officially submitted brood and bee samples sent in for the testing of these parasites.

Figure 32:
Varroa mite (horizontal oval) in comparison to tropilaelaps mite (longitudinal oval)

SPORADICALLY OCCURRING ANIMAL DISEASES

The following animal diseases were detected sporadically in the reporting year:

1	outbreak of equine herpesvirus
24	outbreaks of blackleg
14	outbreaks of mange in sheep

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IMPRINT

Publisher:

Federal Ministry of Labour, Social Affairs, Health and Consumer Protection

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Photos: BMASGK, AGES, Dr. Ernst Hüttinger, Dr. Karl Bauer, Dr. Katharina Brugger, Fotolia, Shutterstock, Ingimage

Graphic Design: strategy-design

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