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AGES

ANNUAL VETERINARY REPORT 2016

Federal Ministry of Health and Women´s Affairs
Austrian Agency for Health and Food Safety

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FOREWORD

I would like to dedicate this year's report to my predecessor, Dr. Sabine Oberhauser, who passed away far too early after a severe illness at the beginning of 2017. As the Federal Minister for Health and Women's Affairs, she was also responsible for veterinary affairs in Austria. The central topics of animal health and animal protection were always a great concern to her as minister.

I too, also place great importance on providing all Austrians with food from healthy and properly kept animals. The prerequisite for this is that the animal stock in Austria is kept healthy in compliance with all animal welfare regulations.

Numerous veterinarians carry out their practical work, for example in the Animal health services, as official veterinarians who perform so-called „official" tasks and as members of the scientific staff at the Austrian Agentur für Gesundheit und Ernährungssicherheit (AGES - Agency for Health and Food Safety) and the University of Veterinary Medicine Vienna.

The good cooperation between all the stakeholders with representatives of other authorities as well as the business sector ensures that the challenges of an epidemic, such as avian influenza, which occurred again at the end of 2016, are also managed efficiently.

I would like to take this opportunity to also thank all of those involved in preserving and promoting animal health for their dedication and commitment.

Sincerely,

Dr. Pamela Rendi-Wagner, MSc
Minister for Health and Women

FOREWO

INTRODUCTION

One of the basic prerequisites for the production of high-quality, safe foods of animal origin is the maintenance and promotion of the health of Austrian livestock. Similarly, ensuring freedom from animal diseases is also a prerequisite for trade in animals and makes a fundamental contribution to added value in the context of livestock production. Monitoring animal health and combating animal diseases are undertaken on the basis of EU and national legislation, and of recommendations from the International Office of Epizootic Diseases (OIE), and are implemented in close cooperation between the Austrian national government (Federal Ministry of Health and Women´s Affairs), the federal provinces, the veterinary research facilities of the Austrian Agency for Health and Food Safety GmbH (AGES) and the laboratories in the individual federal provinces.

The official veterinarians of the competent veterinary authorities in all the federal provinces must be highlighted here as the implementing agencies.
The annual testing of the health status of Austrian livestock, guaranteed for the entire country, is ensured by means of statistically verified sampling and monitoring programmes.

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 these tests.

STRUCTURE OF VETERINARY ADMINISTRATION IN AUSTRIA

Austria is a republic with 9 federal provinces (Burgenland, Carinthia, Upper Austria, Lower Austria, Salzburg, Styria, Tyrol, Vorarlberg and Vienna) and 95 districts.

Based on Articles 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 to combat animal diseases affecting them, as well as to prevent indirect hazards to human health resulting from animal husbandry and from the utilisation of animal body parts and animal products), regulation of trade with feeds, as well as foreign trade with animals and products, are a federal competence in terms of legislation and enforcement. In other words, the federal authorities are responsible for passing and enforcing legislation in these areas within the scope of the federal structure.

Where there are no federal authorities in place, the relevant provincial governor and the provincial authorities reporting to him (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 the monitoring.

Within the indirect federal administration system, the functions of the central veterinary authorities with regard to the implementation of controls are limited to planning and coordination. The areas in which enforcement is implemented by the federal government's own authorities (direct federal administration) include import control of live animals, foods of animal origin, foods of plant origin (those which 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 passing legislation, the provinces for enforcement of the regulations.

In these areas, the provinces are solely responsible for enforcement of the regulations, including the plant disease and animal protection monitoring and control measures; in these cases, the provincial government is the supreme authority and the subordinate district authority acts as the authority of first instance.

The Federal Ministries Act defines the functional areas of the individual ministries. The responsibilities of the Federal Ministry of Health and Womens´s Affairs include food control, animal health and animal protection, and – since 2007 – animal protection during transportation, which subject matter is annexed to the transport sector. The areas of feed and plant health are among the responsibilities of the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW).
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 Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW).

The Federal Ministry of Health and Women´s Affairs employs 25 veterinarians in three departments, who deal with veterinary matters, as well as 13 border veterinarians at the two remaining border inspection posts at the Vienna-Schwechat and Linz-Hörsching airports, where consignments subject to control, imported from third countries, are inspected.

The widely varied functions of veterinary administration are carried out by 214 official veterinarians employed by the provincial governments and their districts.

In addition, the federal provinces of Styria and Tyrol employ a total of 28 provincial district veterinarians.
A total of 1,087 official contracts were awarded to practising veterinarians to meet the monitoring obligations in accordance with the Austrian Animal Health Act, the ordinances on TB, BVD, poultry hygiene, and the Animal Transportat Act.
The total number of veterinary practitioners in Austria is just under 3,000; some 50 vets work in veterinary laboratories.

OVERVIEW OF ANIMAL DISEASE SITUATION IN AUSTRIA

Number of animals and holdings

The survey of animal numbers and holdings in Austria (see Table 1) is based on the analyses by Statistics Austria of the Federal Ministry of Health and Womens´s Affairs´ Veterinary Information System (VIS).

Table 1:
Livestock in Austria

Species	Livestock	Holdings
Cattle[1]	1.954.008	61.919
Pigs[1]	2.950.354	32.725
Sheep[1]	485.044	18.136
Goats[1]	106.479	11.009
Sheep & Goats[2]	591.523	25.834
Equidae[3]	89.103	17.947
Poultry[3]	19.284.384	64.240
Farmed wild ruminants	44.117	1.935
New world camelids	4.494	715

1 Cattle, pigs, sheep, goats: Numbers of animals and holdings from VIS, cut-off date 1 April of the calendar year 2015 including the average stocks of those holdings in which a pen was empty on the sampling day but which replaced animals in the pen 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 2016, 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
- Avian influenza
- Newcastle disease
- African horse sickness

OFFICIALLY RECOGNISED FREEDOMS, ADDITIONAL GUARANTEES

As a result of the strictly implemented eradication programmes in the past and subsequent annual monitoring programmes, Austria is officially recognised as being free from certain diseases, such as bovine tuberculosis (*Myobacterium bovis*), bovine brucellosis (*Brucella abortus*), enzootic bovine leukosis (all since 1999) as well as small ruminant brucellosis (*Brucella melitensis* since 2001). For other diseases, such as infectious bovine rhinotracheitis (since 1999), Aujeszky's disease/pseudorabies (since 1997) and scrapie (since 2006), Austria was granted additional guarantees from the EU. The official recognition of disease freedom and granting of additional guarantees is associated with easements for the national livestock industry as well as economic trade benefits. Maintenance of the outstanding animal health status is one of the fundamental aims of the Austrian veterinary authorities and major attention will continue to be focused on monitoring in order to identify any newly occurring or re-introduced diseases as quickly as possible before they can cause serious economic damage.
At the start of 2015, after years without any outbreaks of IBR/IPV in Austria, IBR/IPV-positive animals were detected, originating from a dealer´s premises. Comprehensive investigations and enquiries initiated promptly by the veterinary authorities were successful and were quickly able to contain the outbreak. The additional guarantees recognised by the EU with respect to IBR/IPV were maintained.
The good health of the Austrian livestock population must be reconfirmed annually on the basis of the results of the monitoring programmes that have to be implemented every year.

STATUS RECOGNITION

In addition to the officially recognised freedoms and additional guarantees, the European Commission has also recognised the following special animal health status for Austria:

1) Negligible risk of BSE: since August 2012 on the basis of Implementing Decision 2012/489/EU. (OIE recognition was already granted with effect from May 2012).
2) Negligible risk of classical scrapie: Austria is once again in 2015 the only EU Member State to hold this status from the date on which Regulation (EU) No. 1148/2014 came into force on 18.11.2014. In 2016, Finland and Sweden also received this status.

QUALITY MANAGEMENT SYSTEM AND ACCREDITATION

Under the Austrian Act relating to Health and Food Security, in its duty to protect the health of humans, animals and plants, the Austrian Agency for Health and Food Safety must carry out analyses in accordance with the relevant legislation, for which the use of accredited methods is required, e.g. in tests in the context of combating animal diseases and zoonoses.

„Accreditation is the formal recognition by the accreditation body (Federal Ministry of Science, Research and Economy) that the test centres meet the relevant requirements regarding qualification and equipment and may thus be considered competent to perform the activities contained in the notice of accreditation."

The basis for accreditation is derived from the requirements of the Austrian ÖVE/ÖNORM EN ISO/IEC 17025:2007 "General requirements of the competence of test and calibration laboratories".
The procedural rules required are laid down by the Austrian Accreditation Act (AkkG 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 internationally comparable. Accreditation thus guarantees comparability of results within the EU and confidence in the quality and reliability of the tests. Accreditation therefore means that, within the EU, Austrian test reports are regarded as

equivalent to those from foreign countries.
It is hence proving to be increasingly important for successful participation in international competition.

All three institutes in the Animal Health Divisions of AGES (Institutes for Veterinary Disease Control Innsbruck, Linz and Mödling) have been combined into a joint test centre with effect from 14.1.2015 within the framework of a multi-site accreditation. This took place as a logical consequence of the developments in AGES in recent years, which led to increasingly close cooperation between the sites. The need for common procedures and regulations resulted in a joint quality management system with uniform procedures and processes and harmonised test methods. The functioning joint quality management system and competence are regularly checked and confirmed by the accreditation body at all the sites.

NATIONAL REFERENCE LABORATORIES

The competent authority of each Member State designates National Reference Laboratories (NRL) for each EU Reference Laboratory (EU-RL). The Austrian Federal Ministry of Health and Women´s Affairs has designated the sites of the AGES Animal Health divisions as the National Reference Laboratory for 31 diseases.

The tasks of both the EU-RLs and the NRLs are laid down in Regulation (EC) No. 882/2004, Articles 32 and 33, and in additional pertinent legislation.
This Regulation (EC) No. 882/2004 created the basis for ensuring high quality and international comparability of test results by means of 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 comparison tests organised across the whole of Europe and themselves regularly organise national comparison tests for the official test centres. This serves both quality control purposes and also aids the development of standardised methods within the EU.

Additional tasks of the NRLs are laid down via international and national legislation and include, for example, regular monitoring of the official test centres, making standards available, batch testing and storing samples.

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

CENTRE FOR BIOLOGICAL SAFETY IN MÖDLING (ZBS)

With the completion of the new high-security laboratory, the Centre for Biological Safety in Mödling (ZbS) has taken a further step towards the efficient monitoring of animal health in Austria. The ZbS conducts inspections for zoonotic agents from the risk group BSL 3 as well as the inspection of highly contagious animal diseases from the risk groups BSL3ag and BSL4ag.

The building was designed and constructed in compliance with the EUFMD Directives (Minimum Biorisk Management Standards for Laboratories Working with FMD Virus) and has been in operation since October 2015. In order to prevent the escape of airborne diseases (Aeorsole), the laboratory is under a permanent vacuum with inward air currents. An air-tight outer casing and personnel and material sluices with counter-locking doors ensure maximum safety. The building consists of three floors, with the ventilation system located on the top floor and the waste water decontamination system in the cellar. Both systems are redundant. Access controls at various levels ensure that only trained and trustworthy personnel can reach potentially contaminated areas. Particularly critical are all laboratory areas and the technical decontamination areas in the basement and the top floor. When leaving the laboratory and some of the technical systems areas, a shower is mandatory and a quarantine for 72 hours must also be observed in order to prevent the spread of disease and thus an outbreak of disease in Austrian livestock.

If an organisation operates a laboratory of this risk group, in accordance with the EUFMD a BioRiskOfficer (BRO) must be appointed. The BRO is a member of the institute and is an expert in all the possible biohazards that might occur in the organisation. They advise the management in biosafety matters, prepare risk assessments and biosafety measures. In the event of imminent danger, they report directly to the authority (FMHW).

Figure 1:
AGES Centre for Biosafety in Mödling

Figure 2:
Thermal sewage disinfection in the Center for Biosafety

RISK ASSESSMENT IN THE VETERINARY SECTOR

Risk assessments form an important basis for the decision making of legislators. In Austria, for example, they are used to assess the risk of the recurrence of animal diseases in order to assess the risk of introduction by transport and trade or to assess different control, prohibition and vaccination strategies. This makes it possible to evaluate possible measures and options for 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 an in-depth hazard identification and are then composed of four phases of release assessment, exposure assessment, impact assessment and risk assessment.

In the context of current and threatened animal disease epidemics, AGES provides the Federal Ministry of Health and Women's Affairs (FMHW) and the public with regular updates on animal disease in and around Austria. For example, based on reports of animal diseases the Animal Disease Notification System (ADNS) of the European Commission provides daily evaluations of the propagation situation regarding the European epidemic of the highly pathogenic avian influenza (HPAI, avian influenza) and a bi-weekly evaluation of the HPAI situation in Austria. In addition, the ADNS animal disease reports for blue tongue disease (BTV) and lumpy skin disease (LSD) are evaluated weekly and the results are provided in report form.

Especially in the event of a crisis, additional assessments and analyses of animal movement data are often required. This includes the identification of contact establishments by means of forward and backward tracing, or the simulation of animal disease outbreaks along commercial networks. In the case of BTV-4 for example, data from the official veterinary information system (VIS), the cattle database and the European Trade Control and Expert System (TRACES) made it possible to very quickly identify contact holdings and draw up lists of animals arriving for calf auctions. In addition, AGES provided maps of the affected establishment including restricted zones as well as sample recommendations adapted to current events.

Furthermore, each year risk-based sampling plans are used to monitor classical scrapie, bovine brucellosis, enzootic bovine leukosis, IBR/IPV and tuberculosis in cattle and to monitor *Brucella melitensis* in sheep and goats.

AUSTRIAN ANIMAL HEALTH SERVICES

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

Within this framework, veterinarians and farmers are committed to keep and handle livestock with the aim of minimizing the use of veterinary medicinal products and the prevention of animal health impairment due to holding circumstances in animal production. The legal basis for this is laid down in the Veterinary Medicinal Products Control Act (TAKG, BGBl I 2002/28 last amended by BGBl I 2008/36) and in the Animal Health Services Regulation (TGD VO 2009, Federal Law Gazette II 2009/434).

In 2016, 66 % of cattle, 92 % of pigs, 30 % of sheep and goat stocks, 85 % of poultry and 21 % of farmed wild in Austria were maintained as part of the animal health services. 712 active contracted attending veterinarians constantly advise TGD animal owners and care for their livestock.

Several times a year (depending on the size of the holding), veterinarians carry out documented visits to inspect and document compliance with the legal requirements, in particular the documentation of the correct use of medicinal products, animal welfare regulations, animal health status and hygiene and feeding.

Such documented visits may also focus on „biosafety on agricultural holdings“, a topic for which specially developed checklists, e-learning programmes and lectures are available. In this way, farmers should be made more aware of the sources of pathogens on their holdings.

In order to maintain and improve animal health and increase the profitability and competitiveness of Austrian agricultural holdings, numerous health programmes, leaflets and information materials have been developed to support effective stock management in animal health services. (Table 2).

In accordance with the Veterinary Medicinal Product Application Ordinance 2010, the veterinary medicinal 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 animal health services offer training and further education events in cooperation with numerous training facilities in Austria.

Livestock holders must attend at least four hours of specific further training every four years and veterinarians must attend at least 30 hours of specific further training within 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 samples taken by TGD participants (veterinarians and livestock holders) are carried out annually by accredited companies on behalf of the FMHW.

Depending on the results of the controls, the branch offices of the animal health services are obligated to take different measures up to 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:
The following TGD programmes, leaflets and information materials are implemented at the time of reporting:

Species	Programmes and Information Material
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 optimizing animal welfare indicators"
	Programme of the Poultry Health Service QGV for the optimization of the conditions and the product quality of broilers (*Gallus gallus*) and turkeys (*Meleagris gallopavo*)
	Programme for the control of salmonella in poultry farming and slaughtering in Austria and to improve the health status of poultry stocks, including measures to ensure and improve the quality of the 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 pathogenic germs in broilers (*Gallus gallus*), laying hens, water fowl and turkeys (*Meleagris gallopavo*) in accordance with the principles of competitive exclusion (CE)
Pigs:	ÖTGD programme for the prevention of *E. coli*-related diseases in the pig programme "Animal Health and Management in Pigs"
	ÖTGD Programme "Circovirus Vaccination for Piglets"
	Programme for the monitoring of PRRS in Austrian stud 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
Cattle:	Programme for the collection, production and transfer of embryos
	TGD information 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 herpesvirus (*Suid herpesvirus 1*, SuHV-1) from the subfamily 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 least latent infection throughout their lifetime. Reactivation and spread of the infection in these animals is possible. It is prohibited to vaccinate pigs in Austria.

Under §16 of the Austrian Animal Diseases Act, an outbreak of Aujeszky's disease in domestic pig stocks in Austria is notifiable. 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.

Domestic pigs - Monitoring:

13,284 pigs from 5,327 holdings were serologically tested for antibodies (Ab) to Aujeszky's disease in 2016. All the tests returned negative results.

BOVINE BRUCELLOSIS, ENZOOTIC BOVINE LEUKOSIS AND IBR/IPV

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

Bovine brucellosis is a bacterial, zoonotic infection. Individuals in close contact with animals are at particular risk, for example farmers, vets and abattoir staff. It is caused by Brucella abortus, which is responsible for contagious abortion in cattle and causes the sickness known as Bang's disease in humans.

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

IBR/IPV or IBP (red nose) is a viral disease of cattle, caused by Bovine herpesvirus Type 1 (BHV-1). The pathogen belongs to the family of the Herpesviridae, genus Varicellovirus. Austria has been officially recognised as being free of bovine brucellosis and enzootic bovine leukosis and holds additional guarantees for IBR. Annual monitoring programmes are undertaken in order 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 2016.

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

Table 3 below provides an overview of the number of tests for bovine brucellosis, enzootic bovine leucosis and IBR/IPV within the framework of the monitoring programme.

Table 3:
Tests for bovine brucellosis, enzootic bovine leucosis and IBR/IPV

	Blood samples	(Bulk milk samples)
Bovine Brucellosis	11.805	1.287
Enzootic Bovine Leukosis	11.778	1.288
Red Nose	11.185	1.288

Austrian cattle were once again officially recognised as being free from bovine brucellosis, enzootic bovine leucosis and IBR/IPV in 2016.

TUBERCULOSIS (TB)

Human and animal tuberculosis are caused by 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 various molecular biological methods.

In Austria, the entire *Mycobacterium tuberculosis* complex – which also includes bovine tuberculosis – is a notifiable disease. Pursuant to Decision 1999/467/EC by the EU Commission, Austria has been recognised as being free of bovine tuberculosis (*M. bovis*) since 1999.

cases of tuberculosis – caused by *M. caprae* – in wild red deer in certain regions of the federal provinces of Tyrol and Vorarlberg, the Federal Ministry of Health and Women´s Affairs has ordered annual testing of cattle in specific risk areas (special TB testing zones and special TB monitoring zones) using the comparative (intradermal) test.

In 2016, in the context of these tests, the tuberculosis pathogen *M. caprae* was detected in a total of 37 animals in 17 cattle holdings.

In Tyrol, two cattle holdings were affected by infection in the districts of Reutte and Landeck. In Vorarlberg, eight cattle holdings were affected in the district of Bludenz, two each in the districts of Bregenz and Feldkirch and one holding in the district of Dornbirn.

2011 was the first time that an infection zone with reference to 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). In 2015, infection with *M. caprae* was detected in 27 red deer in this infection zone. Tyrol has also carried out red deer screening since 2012 (2015: hunting grounds in the Karwendel mountains and in the Innsbruck-Land, Schwaz, Landeck and Kufstein districts), with *M. caprae* being detected in 3 red deer during the 2016 hunting season.

Since 2009, the federal province of Vorarlberg has also run a provincial red deer TB monitoring programme, with a control zone being set up in the district of Bludenz in 2013. Distinctions are made in the affected red deer areas of the control zone – in a similar fashion to the infection zone in Tyrol – between core, monitoring and observation areas. During the 2016 hunting season, infection with *M. caprae* was found in 62 red deer tested in Vorarlberg.

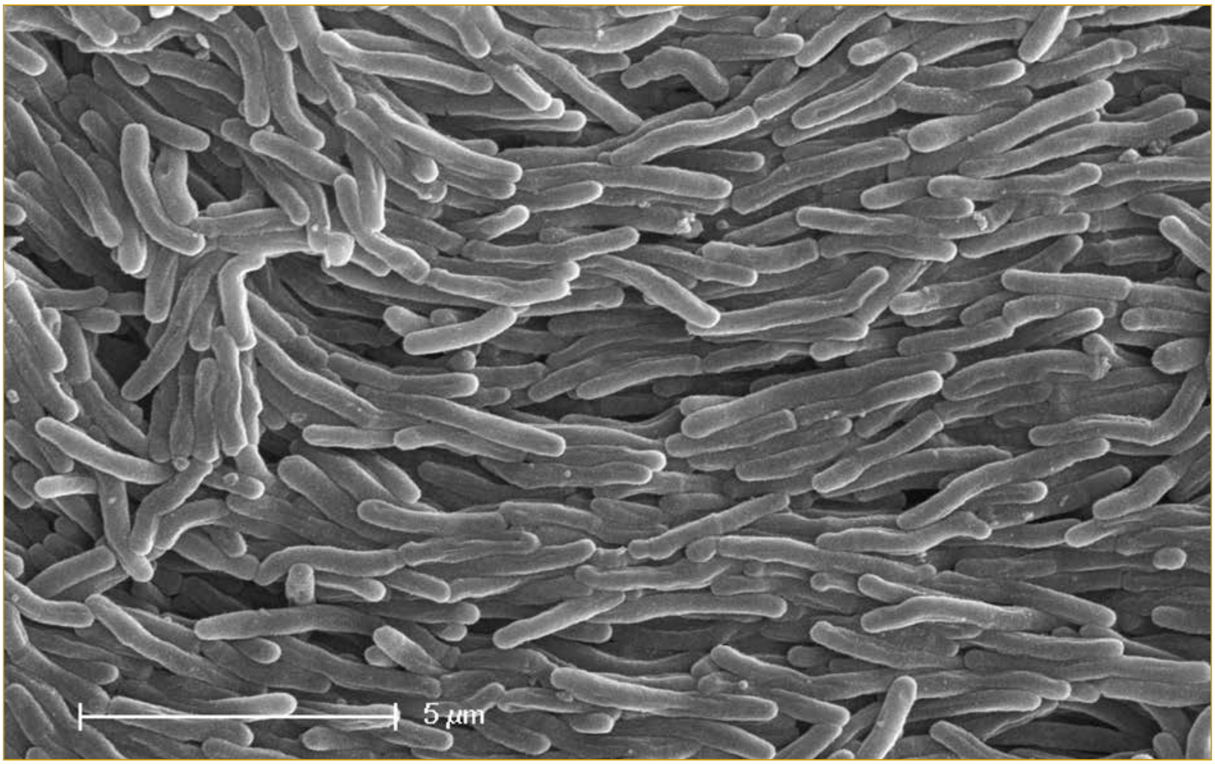

Figure 3:
Scanning electron microscope image of individual *M. caprae*.

Figure 4:
Red deer – spherical enlargement of 2 mediastinal lymph nodes

BRUCELLOSIS OF SMALL RUMINANTS

BRUCELLA MELITENSIS

Brucella melitensis is a small ruminant infection that can also be transmitted to humans (zoonosis). It is caused by the bacterium *Brucella melitensis*. Typical symptoms of the disease, also known as Malta fever, in humans are high fever, shivering, headache and muscle pain. Sources of infection are raw sheep and goat's milk and products derived from them, as well as infected animals, suffering from reproductive organ disorders and, in rare cases, inflammations of the joints. The pathogen causing brucellosis is principally found in the Mediterranean area and the tropics.

Pursuant to Commission Decision 2001/292/EC, Austria has been officially recognised as being free of *Brucella melitensis* since 11 April 2001. 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. In 2016, 20,551 blood samples from sheep and goats from a total of 1,559 holdings were tested for antibodies to *B. melitensis*. There were no positive cases of *Brucella melitensis*.

BRUCELLA OVIS

In rams, brucellosis takes the form of infectious epididymitis caused by *Brucella ovis*. This disease is not a zoonosis. A total of 3,293 animals were serologically tested in 2016 and 3 seropositive animals from 3 holdings were found.

RABIES

As a result of the good epidemiological situation in Austria's neighbouring countries and the fact that Austria has been declared rabies-free for the past five years, oral vaccination of foxes was suspended at the start of 2013. The monitoring programme was shifted at the same time from a sampling plan to the examination of indicator animals and suspected clinical 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 the release of rabies in Austria as a result of the disease situation of immediately adjacent neighbouring countries is classed as low, the possibility of its release as a result of legal or illegal animal imports and of latent persistence of rabies in the population is classed as very low.

In 2016, a total of 308 animals were tested for rabies using FAT (Fluorescence Antibody Test); 162 of these animals were suspected cases. All the tests yielded negative results.

With 196 animals, foxes were the species most frequently submitted for testing, followed by 24 dogs, 24 cats, 21 badgers, 13 martens, 10 horses, 7 bats and 13 other animals. No racoons or racoon dogs were tested.

No statistically proven statement could be made in 2016 with respect to the occurrence of rabies in the Austrian bat population. The tests of 7 bats were all negative for rabies.

In 2016, 57 animals that had bitten a human being were examined.

In total, the Rabies Tissue Culture Inoculation Test (RTCIT) was carried out 57 times in these animals in addition to FAT, and a PCR test in 40 cases. All the tests yielded negative results.

Within the scope of the animal movement tests, a total of 558 serum samples from dogs and cats were checked for rabies antibodies using the FAVN (Fluorescence Antibody Virus Neutralisation) test in 2016. Of these, 472 samples displayed a sufficiently high antibody titre of more than 0.5 IU/ml, but 56 samples had a lower titre and no antibodies could be detected in 30 animals (quarantined animals).

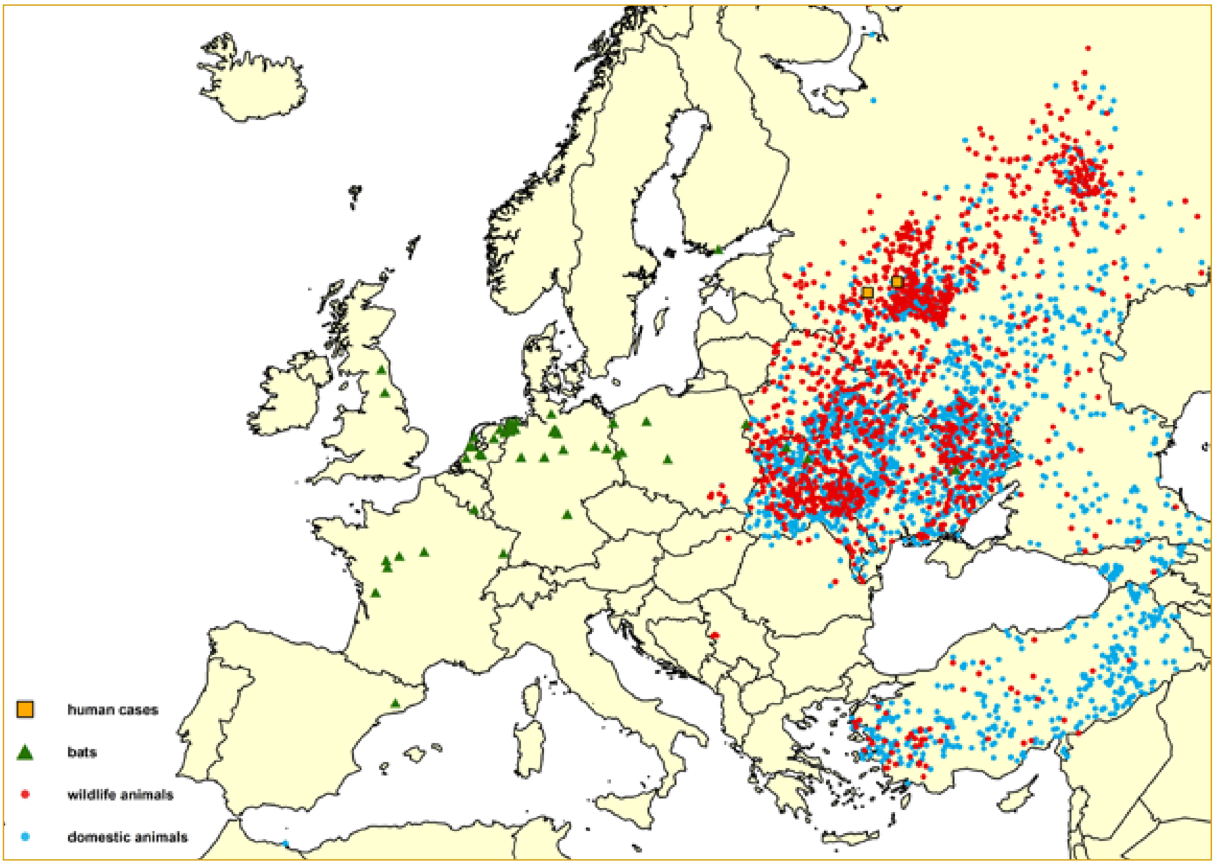

Figure 5:
Prevalence of rabies in Europe in 2016 based on reported evidence from the individual countries (Source: Rabies Information System of the WHO Collaboration Centre for Rabies Surveillance and Research, © Friedrich-Loeffler-Institut)

The AGES was commissioned by the FMHW in January 2016 to establish an inspection/quarantine station in Mödling for live animals for the holding and inspection of animals by the border veterinary services.

The quarantine of the animals being held normally lasts for several weeks to months, until it can be ensured through controls of the vaccination success or various animal-disease analyses in the laboratory that they no longer represent a danger to the animal health and public health status of animals in Austria and can be cleared by the border veterinarians.
For dogs, cats or ferrets, the EU entry requirements must be met. Each animal must be vaccinated against rabies and the vaccination must be valid. In addition, the 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 2016, 11 cats and 8 dogs were held at the AGES inspection Centre.

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 2015. Pursuant to the Regulation on the Monitoring of Bovine Health (Federal Law Gazette (BGBl.) II No. 334/2013) and Announcement GZ BMG-74.600/0007-II/B/10/2014 dated 24 January 2014, animals that died or were slaughtered, aged 48 months or above, and were born in Austria or the following countries: B, CY, CZ, DK, D, EE, FIN, F, GR, H, IRL, I, LV, LT, LUX, M, NL, P, PL, S, SK, SLO, SP, UK, Channel Islands, Isle of Man, and bovines aged 24 months or above slaughtered as an emergency or special measure or on health grounds, were subject to testing for BSE. For cattle from EU states without a revised monitoring programme (BG, HR, 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 normally slaughtered animals, 24 months for all other categories). In accordance with the Commission Implementing Decision (EU) 2016/851 of 26 May 2016, Croatia can also carry out a revised monitoring programme. Therefore, the investigations have been adapted accordingly. This was also updated accordingly in the Notification GZ BMG-74.600/0064-II/B/10/2016.
Tests of younger cattle, from the age of 20 months, continued to be possible at the expense of the designated authority, however in 2015 no animal was submitted for testing at the request of the designated authority.

Table 4:
Numbers with respect to BSE tests

Categories cattle	Analysed samples	Age limit in months
Healthy slaughter	3.355	30[1]
Emergency slaughter and slaughter with clinical signs at ante mortem	3.088	24
Fallen stock	13.456	48 bzw. 24[1]
Eradication	0	
Suspects	15	
Voluntary tests	0	ab 20
Total	19.914	

[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 2016. As of May 2012, Austria has been classed by the OIE as a country with a "negligible BSE risk".
At the request of the consignee, suspect animals that test negative for TSE can be subjected to further differential diagnostic tests with respect to other CNS agents.

Figure 6:
Submission of a suspect clinical sample: Opening of the cranial vault in order to take samples

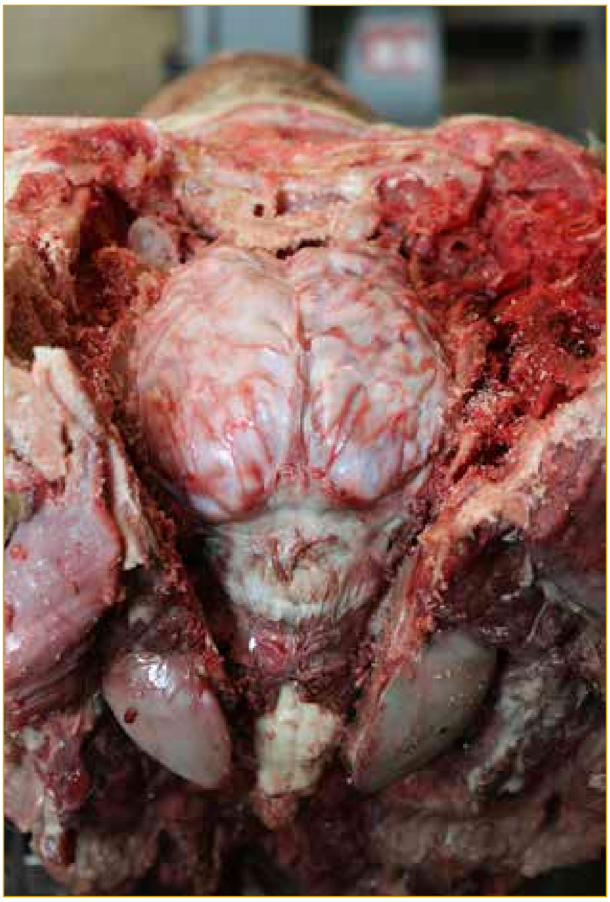

Figure 7:
Submission of a suspect clinical sample: Image of the brain in the cranial vault before samples are taken

SCRAPIE

In 2016 one case of "atypical scrapie" was detected in a fallen sheep in Austria that had died / been killed at 20 months old.
The diagnosis was made at NRL Mödling using Western Blot and confirmed by an immunohistochemistry examination.
Austria is the only EU member state to have held the status of "negligible risk of classical scrapie" since Commission Regulation (EU) No. 1148/2014 came into force on 18.11.2014.
The examination obligations for scrapie were conducted in accordance with Annex 1 of the Sheep and Goat Health Monitoring Regulation (BGBl. II No. 308/2015) of 1 November 2015.

Within the framework of a risk-based random sampling plan, which can be found in Annex 12 of the respective Notification in force (see under „BSE"), in addition to sheep and goats that had died or where killed, pigs and goats aged over 18 months were also examined in 2016.

Genotyping was carried out in accordance with the provisions of Regulation (EC) No. 999/2001 of the European Parliament and the Council.

Table 5:
Numbers of Scrapie tests

Categories sheep and goats	Analysed samples	Positive samples
Slaughtered	180	0
Fallen stock	3.395	1 (atyp. Scrapie)
Suspects	2	0
Total	3.577	1 (atyp. Scrapie)

ZOONOSES: CAMPYLOBACTER, VTEC/ EHEC AND SALMONELLA

Protection of human health against diseases and infections that can be directly or indirectly transferred between animals and humans (zoonoses) is extremely important. Priority should be given to those zoonoses that constitute the greatest risk to human health. The monitoring systems should also, however, facilitate recognition of emerging or re-emerging zoonoses and new strains of pathogen. The worrying development of resistances to antimicrobial substances (for example, medicines and feed additives with antimicrobial action) should be monitored. It should be ensured that this monitoring covers not only zoonotic pathogens but also other pathogens if they constitute a hazard to public health. Monitoring indicator organisms may be particularly advisable. These organisms form a reservoir for resistance genes that they can transmit to pathogenic bacteria.

As the focus of surveys of the prevalence of selected zoonotic pathogens has shifted across the whole of the EU to monitoring and combating antimicrobial resistance, national zoonosis monitoring has been adapted accordingly. Implementing Decision 2013/652/EU has been in force since 2014, which stipulates the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria in animals and foodstuffs. Table 6 provides an overview of the combinations of pathogens and animal populations/food categories to be tested.

Table 6:
Overview of combinations of strains of bacteria and animal populations/food categories, 2014-2018

Species	*C. jejuni*	*E. coli*	Salmonella	ESBL, AmpC, carbapenemase-forming *E. coli*[1]
Broiler Flocks	2014, 2016 etc.	2014, 2016 etc.	2014, 2016 etc.	2016, 2018 etc.
Layer Flocks	-	-	2014, 2016 etc.	-
Fattening Turkey Flocks[2]	2014, 2016 etc.	2014, 2016 etc.	2014, 2016 etc.	2016, 2018 etc.
Fattening Pigs	-	2015, 2017 etc.	-	2015, 2017 etc.
Calfs[2]	-	2015, 2017 etc.	-	2015, 2017 etc.
Broiler Carcases	-	-	2014, 2016 etc.	-
Fattening Turkey Carcases[2]	-	-	2014, 2016 etc.	-
Pig Carcases	-	-	2014, 2016 etc.	-
Calf Carcases[2]	-	-	2014, 2016 etc.	-
Broiler Meat	-	-	-	2016, 2018 etc.
Pork	-	-	-	2015, 2018 etc.
Beef	-	-	-	2015, 2018 etc.

[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 at Abattoir
Sampling in Retail

In 2016, a certain number of caecum samples from broilers and turkeys were sampled in the veterinary field, so that 170 isolates each (maximum of 1 isolate per herd) of *Campylobacter* (*C.*) jejuni and indicator bacteria *E. coli* were recovered and their sensitivity against antibiotics could be examined. 300 of these samples were also tested for the presence of ESBL/AmpC and carbapenemase-forming *E. coli*. The test results are shown in Tables 7 - 9.

Table 7:
Results of the tests for thermotolerant Campylobacter in broilers and turkeys, 2016

Animal Species	Analyzed Samples	Isolated thermotolerant Campylobacter		*C. jejuni*		*C. coli*	
	n	n	%	n	%	n	%
Broiler flocks	491	231	47,0	175	35,6	56	11,4
Turkey flocks	199	102	51,3	56	28,1	46	23,1

For broilers, 170 *C. jejuni* isolates were obtained, although the prevalence of *C. jejuni* decreased from 46.4 % to 35.6 % during the reference period 2014 and during the course of the year the sampling plan had to be adjusted to the reduced prevalence through the increase in the number of samples tested. For turkeys, only 102 isolates could be obtained, although almost every fattened and slaughtered flock in Austria was tested.

Table 8:
Results of the tests for ESBL-/AmpC and carbapenemase forming *E. coli* in broilers and turkeys, 2016

Category	Received Samples	Analysed Samples	presumptive ESBL-/AmpC-producing *E. coli* isolates obtained	carbapenemase-producing *E. coli* isolates obtained
Broiler Flocks	329[1]	306 (100 %)	160 (52,3 %)	0
Turkey Flocks	191	183	80 (43,7 %)	0

[1] Not all samples corresponded to the technical specifications of the Commission decision or the laboratory regulations of the European Reference Laboratory for Antimicrobial Resistance (EURL-AR)

Table 9:
Results of the differentiation of ESBL-/AmpC-forming *E. coli* in broilers and turkeys, 2016

Species	ESBL-former		ESBL- and AmpC-former		AmpC-former		pAmpC[1]-former	
	n	%	n	%	n	%	n	%
Broiler Flocks 160 Isolates	82	51,3	5	3,1	4	2,5	69	43,1
Turkey Flocks 80 Isolates	60	74,1	1	1,2	3	3,7	16	19,7

[1] pAmpC = plasmid-encoded AmpC-forming agent

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 the EU Regulation 2160/2003. The results of *Salmonella* sp. and the target serotypes per poultry population are shown in Table 9.

Table 10:
Results of the tests for salmonella in parental animals of chickens, laying hens, broilers and turkeys, 2016

	Parent Broilers	Parent Laying Hens	Laying Hens	Broilers	Turkeys
Number of Flocks	116	30	2.876	4.666	406
N *Salmonella* spp.	1	1	44	177	10
% *Salmonella* spp.	1,4		1,5	3,8	2,5
N SE/ST positive Flocks	0[1]	0[1]	13	7	2
% SE/ST positive Flocks (target)	0,0[2] (1 %)		0,5 (2 %)	0,15 (1 %)	0,5 (1 %)

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

[1] 5 target serotypes: *S.* Enteritidis, *S.* Typhimurium including monophasic variant, *S.* Infantis, *S.* Hadar and *S.* Virchow
[2] The calculation of the prevalence applies to all parent animals and all 5 target serotypes (fattening and laying parent animals)

As in recent years, the EU targets could be achieved for all poultry populations. The target serovars were detected in 0 % of the flocks of breeding chickens, in 0.5 % of the flocks of laying hens (13 flocks), in 0.15 % of the broilers (7 flocks) and 0.5 % of the flocks of turkeys (2 flocks). *Salmonella* sp. was isolated in two breeding flocks (1.4 %), 44 laying hens (1.5 %), 177 broiler flocks (3.8 %) and 10 turkey herds (2.5 %). As in previous years, the share of *Salmonella*-positive flocks remained similarly low in populations of parent animals. For laying hens, the share of flocks in which salmonella was detected continued the long-term trend with a further decrease, although in comparison with 2015 (0.9 % of the flocks tested positive for salmonella), in 2016 salmonella was detected in 1.5 % of the flocks. Broilers had the highest proportion of *Salmonella* positive flocks since the introduction of the salmonella control programme with 3.8 %, and an increasing trend can be observed in recent years. The success of the control programme for turkeys is demonstrated by the impressive reduction in *Salmonella* sp. positive flocks, from 10.1 % in 2013 to 2.5 % in 2016. Particular attention must be paid to the avoidance of horizontal transmission of Salmonella via humans, feed or rodent pests, and to control the persistence of the pathogens in animal housing. Comprehensive hygiene measures in the sense of „bio-security“, as also outlined in the Poultry Hygiene Regulation, are indispensable.

Figure 8:
Campylobacter incubation under microaerophilic conditions in a CO^2 pot

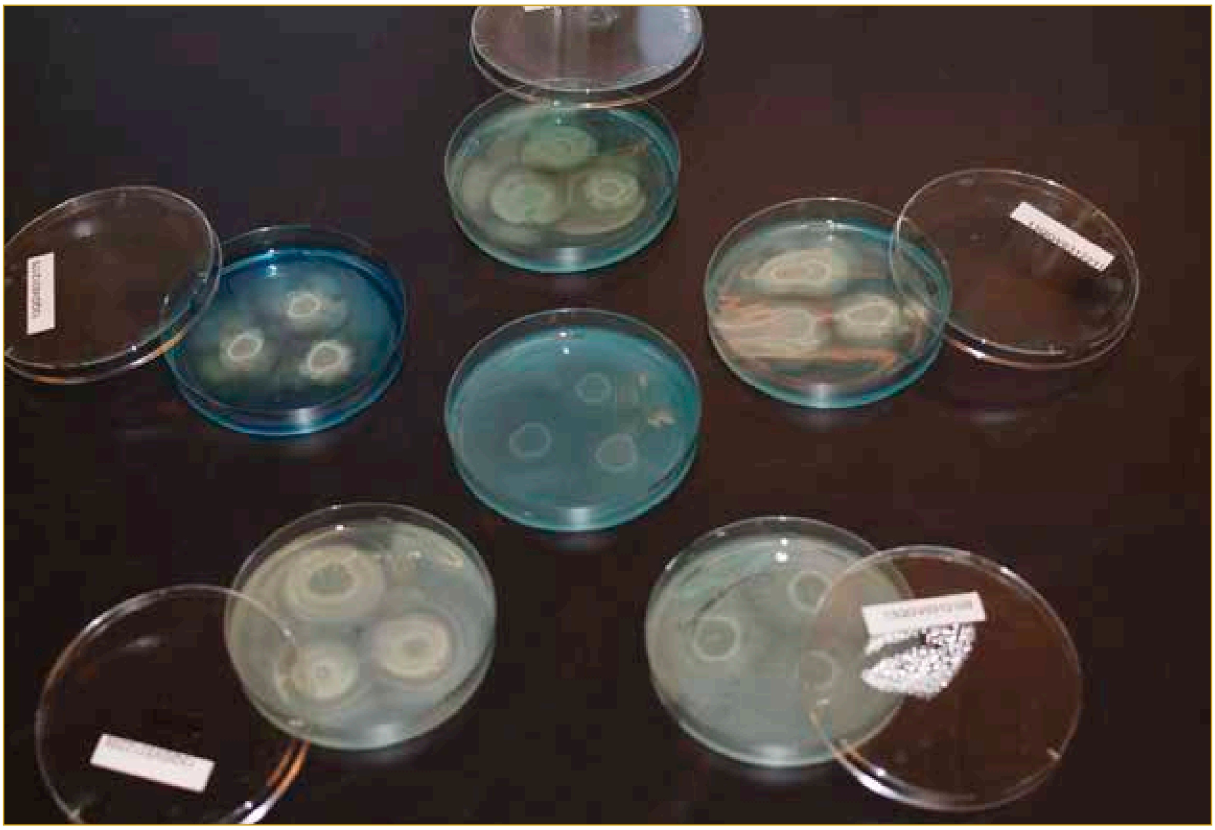

Figure 9:
Reading of the Salmonella - Selective enrichment with MSRV agar

TRICHINAE MONITORING

Trichinosis is a human disease caused by food 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 to date and are differentiated using molecular diagnostic methods. Humans are infected by eating raw or insufficiently heated meat products (e.g. bacon, sausage) 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 fox, bear and badger) and rodents (rats).

Trichinae are principally found in the muscles of these animals, usually surrounded by 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 which 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 disease in humans involve fever, abdominal pain and diarrhoea initially, followed, in the advanced stage of the disease, by muscle and joint pain, in particular, together with a typical facial oedema. Humans are 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, the majority of cases occurring in the EU Member States of Bulgaria and Romania and frequently being caused by meat products derived from wild pigs. In Austria, human cases of the disease are very rare. Only "imported" cases of trichinosis have been recorded by the health authorities in Austria in 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.

To protect consumers and human health, there is an obligation under European legislation (Regulation (EU) No. 1375/2015 for animals that might be carriers of trichinae and that are intended for human consumption to be tested for trichina larvae after slaughter or death and prior to marketing of the meat. Pursuant to this statutory requirement, 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. Testing uses the digestion technique in which a quantity of muscle from the carcass that has to be tested (usually from the pillar of the diaphragm) is precisely defined by weight and then broken down by artificial digestion. The sediment of the digestion fluid is microscopically examined for the presence of trichina larvae. In the case of 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 cases in Austria in recent years, and, with two exceptions, the positive animals were of foreign origin: wild pigs from Germany and Hungary that had been butchered in Austria for onward marketing. No positive trichina findings have been reported for decades in Austrian breeding or fattening pigs or in horses.

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

Trichinae were not detected in wild boars or in breeding or fattening pigs or in horses in Austria in 2016.

Figure 10:
Positive result using the digestion method – *Trichinella pseudospiralis*

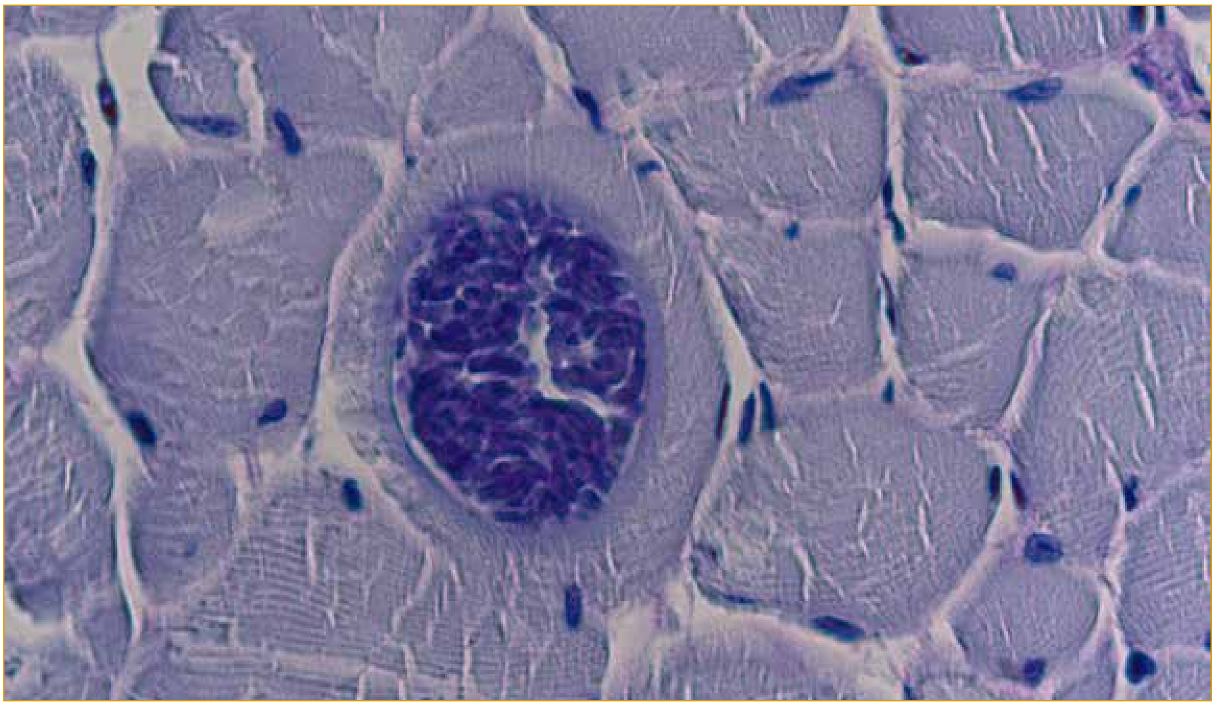

Figure 11:
Histological investigation, PAS staining – *Trichinella pseudospiralis*

PSITTACOSIS (ORNITHOSIS, PARROT DISEASE)

This disease is notifiable when detected in psittaciforms (parrots and parakeets). The disease is known as ornithosis in other birds. 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, to name but a few. The disease occurs globally.

Humans are usually infected by aspirating infectious faeces and dust. The resulting symptoms are usually a general fever and subsequent pneumonia.

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

The incubation period is usually 3-29 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 by immunofluorescent testing (IF) of organ casts (spleen, liver, any aborted material), immunohistochemistry and differentiation of species by means of molecular biology (PCR). When dissecting birds, an enlarged spleen and liver are specific indicators for psittacosis and such changes must always be considered in differential diagnostics.

In the reporting year 2016, a total of 105 molecular biology tests were conducted with 9 samples testing positive and 96 testing negative for *Chlamydophila psittaci*.

AVIAN INFLUENZA (AI)

Avian influenza or fowl plague was seen for the first time in Italy in 1878. The pathogens are Influenza viruses. Sixteen haemagglutinin and 9 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 either rarely develop the disease or exhibit no symptoms but they are important with respect to the spread of the pathogens.

H5N8 was found in Germany at the start of 2015 and 3 cases of avian influenza, types H5N1, H5N2 and H5N5, occurred simultaneously in the south west of France between the end of 2015 and the start of 2016. The Austrian authorities worked intensively with poultry farmers and their specialist organisations, and with ornithologists, in order to discover as early as possible any infiltration of the animal disease into Austrian stocks. Increased vigilance and increased bio-security measures on the holdings and along the whole of the meat and egg production chain reduces the risk of the virus entering and spreading.

At the beginning of November 2016, a number of dead wild waterbirds were suddenly 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 in an Austrian poultry holding near the shores of Lake Constance. On 11 November 2016, an area along the shore of Lake Constance was defined as at increased risk and a mandatory indoor confinement of poultry and increased biosecurity measures were put into force.

Through the measures to be taken in accordance with Council Directive 2005/94/EC and the extension of the area at increased risk, a further infection of other Vorarlberg farms could be prevented. 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. The two outbreaks were very far apart both in terms of time (10 Nov. 2016 versus 17 Jan. 2017) and location (Vorarlberg and Burgenland), however they both occurred in immediate proximity to a lake (Lake Constance and Neusiedlersee) in a region where dead wild waterbirds were found that tested positive for avian influenza.

Further cases of HPAIV H5N8 also occurred in wild birds in November 2016 in the provinces of Salzburg and Upper Austria. As a result, extensive cross-provincial areas near lakes and certain waterways in Salzburg, Upper Austria and Vorarlberg were defined as at increased risk, which remained in effect beyond the end of the 2016 reporting year.

Figure 12:
Section and sampling for subsequent further laboratory tests on turkeys at the National Reference Laboratory for Avian Influenza in Mödling.

The pan-European AI screening programme consists of an active and a passive component.
4,220 blood samples were tested for AI antibodies in 2016 – 3,327 screening samples and 789 private samples with the ELISA and 104 with the haemagglutination inhibition test (HAI). Thirty-five samples were tested for virus propagation in egg culture, and 93 dead wild birds, 316 swabs from wild birds and 432 poultry and other bird samples for the viral genome in real-time RT-PCR.

COMMERCIAL POULTRY

In the **active surveillance programme**, serological testing was undertaken on the slaughter blood of 1,250 laying hens from 126 holdings (including 62 free-range holdings), 240 parent hens from 24 parent holdings, 600 fattening turkeys from 60 holdings, 1,209 geese and ducks from 70 holdings, and 28 ostriches from 5 holdings. No AI antibodies were detected.

WILD BIRDS

In passive surveillance, 193 samples from dead wild birds (93 organ pools, 100 swabs) were tested using real time RT-PCR.
In addition, 216 swab samples were tested from sentinel ducks from the Constanze Project in the Lake Constance area.
Genomes of highly pathogenic AI viruses of the H5N8 strain were detected in 30 dead wild birds and 2 sentinel ducks and genomes of non-pathogenic AI viruses were detected in 12 animals.

Table 11:
Number of tests for avian influenza in Austria, 2016

	Poultry	Wild Birds		Routine Diagnostic	Sum
Surveillance	**active**	**active**	**passive**		
AB-ELISA	3.327			789	4.220
AB-HAI				104	
PCR	52 Organpools 380 Tupfer	216	93 Organpools 100 Tupfer		841
Virusisolation – egg culture				35	35
Total	3.759	216	193	928	5.096

PARATUBERCULOSIS

Paratuberculosis is a chronic and incurable bacterial infection in domestic and game ruminants that is caused by Mycobacterium avium subspecies paratuberculosis (MAP). Clinical symptoms usually only appear after an incubation period of 2 – 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 to young animals from faeces containing the pathogen and milk or teats contaminated with faeces.

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

Samples from 134 cattle from 60 holdings, 22 goats from 3 holdings, 4 sheep from 1 holding and 5 wild ruminants (from game holdings) from 5 holdings were tested in 2016. The clinical suspicion of an MAP infection was diagnostically confirmed in 29 cattle from 26 holdings, in 14 goats from 2 holdings as well as 2 sheep from 1 holding. Figure 13 shows the clinically suspected cases for the individual federal provinces submitted for laboratory testing (numbers in black), the number of animals testing MAP-positive (numbers in red) and the number of holdings with confirmed suspected cases (numbers in blue).

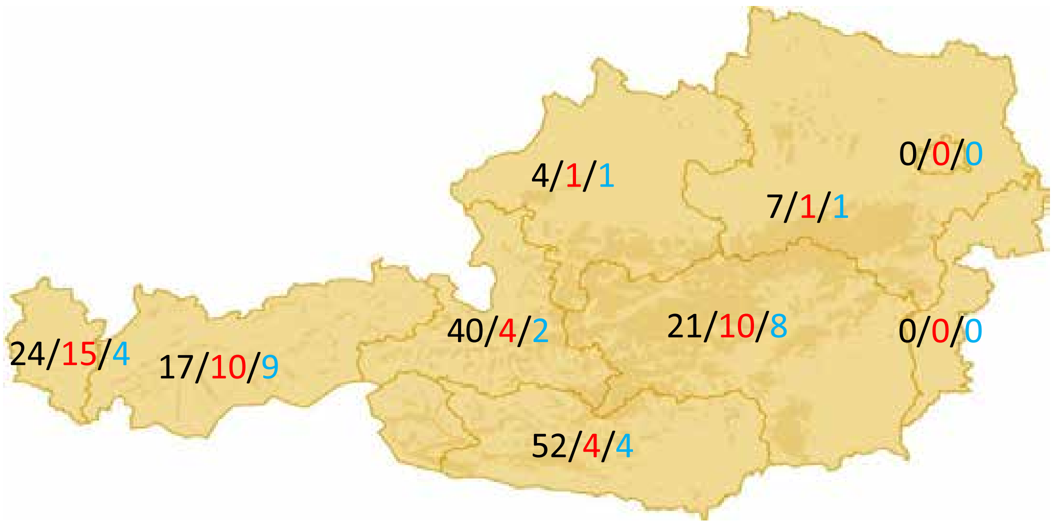

Figure 13:
Number of suspected cases of paratuberculosis submitted (black), of animals confirmed by a positive laboratory finding (red) and of positive holdings (blue)

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

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

Corresponding national legislation, the BVD Regulation, based on the Animal Health Law, has stipulated 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 worldwide 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 since 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 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 pictures often go unrecognized, 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 in the milk. In PI animals, mutation of the virus or superinfection 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 the BVD-control (10 years ago in 2006 for example, 2,600 PI were detected in 1,700 holdings) can also be seen in the year 2016: the Austrian holdings subject to the BVD Regulation were almost all officially recognised as being free of BVDV. The number of PI animals decreased further in 2016 to a total of 4 animals in a total of 3 holdings, with new outbreaks only occurring in 2 holdings.

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

Year	Number of PI	Number of holdings with PI
2012	62	41
2013	62	23
2014	33	14
2015	11	6
2016	4	3

As a result of the good BVD situation in Austria, exemptions from the compulsory testing of individual cattle in the event of movement of the animals were granted in accordance with § 14 para 6 of the BVD Regulation 2007 (BGBl. II No. 178/200, as amended) for officially recognised BVD-free stocks from specific regions. These exemptions are granted for one year (from 1 April of the current year to 31 March of the following year) and are published in the Official Veterinary Bulletin and can be found in the Legal Information System (RIS).

For 2016, a total of only 0.005 % (3 holdings) of all the holdings subject to the BVD Regulation 2007 as amended are still infected.

Further expanding this good situation and preventing a reintroduction into the holdings is of the utmost importance and will therefore pose a major challenge also in the coming years.

BLUETONGUE (BT)

Bluetongue (BT) is a viral disease of ruminants (cattle, sheep and goats) that is spread by midges of the Culicoides genus. The pathogenic agent is an RNA virus of the Orbivirus genus and 24 serotypes are currently known. Experts are already debating additional serotypes (25 - 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, were not seen until 2006 when they occurred in the border area of Germany, Belgium and the Netherlands (north of 40°N).

Austria reported its first case of BT to the EU and the OIE on 07.11.2008; a total of 14 outbreaks (28 animals) were found in the federal provinces of Upper Austria, Salzburg and Vorarlberg. In order to prevent any further spread of the disease, compulsory vaccination of all cattle, sheep and goats was ordered in 2008. Two years after the last BT case, Austria was able to regain a BT-free status on 17 March 2011.

A new BTV-4 epidemic developed in the second half of 2014 in south-east Europe and spread rapidly from Turkey, via Greece, Romania, Bulgaria and the Balkan states into Hungary and Croatia. Serotype 8, which had no longer been present in central Europe up to this time, also led to the re-introduction of restriction zones in France in 2015.In the course of the current outbreak of bluetongue disease in eastern Europe, serotype 4 was also found for the first time in Austria on 17.11.2015.

A total of four BTV-4 outbreaks were recorded in the federal provinces of Styria and Burgenland in 2015 as well as three outbreaks in the provinces of Burgenland and Carinthia in 2016. Table 13 provides an overview of the BTV-4 cases from 2015 to 2016.

Table 13:
Number of BT cases in the relevant Austrian federal provinces, districts and holdings of Austria

Federal Provinces	District	Year	Holding	Animals infected	BTV-Serotype
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

After the outbreaks were found, a restriction zone was set up in the east of Austria in accordance with Regulation (EC) No. 1266/2007, with the aim of preventing any spread into disease-free areas by means of restricting livestock trading. No compulsory vaccination against serotype 4 of bluetongue disease was established although vaccination is possible on a voluntary basis. Figure 14 below illustrates the BTV-4 restriction zone in eastern Austria.

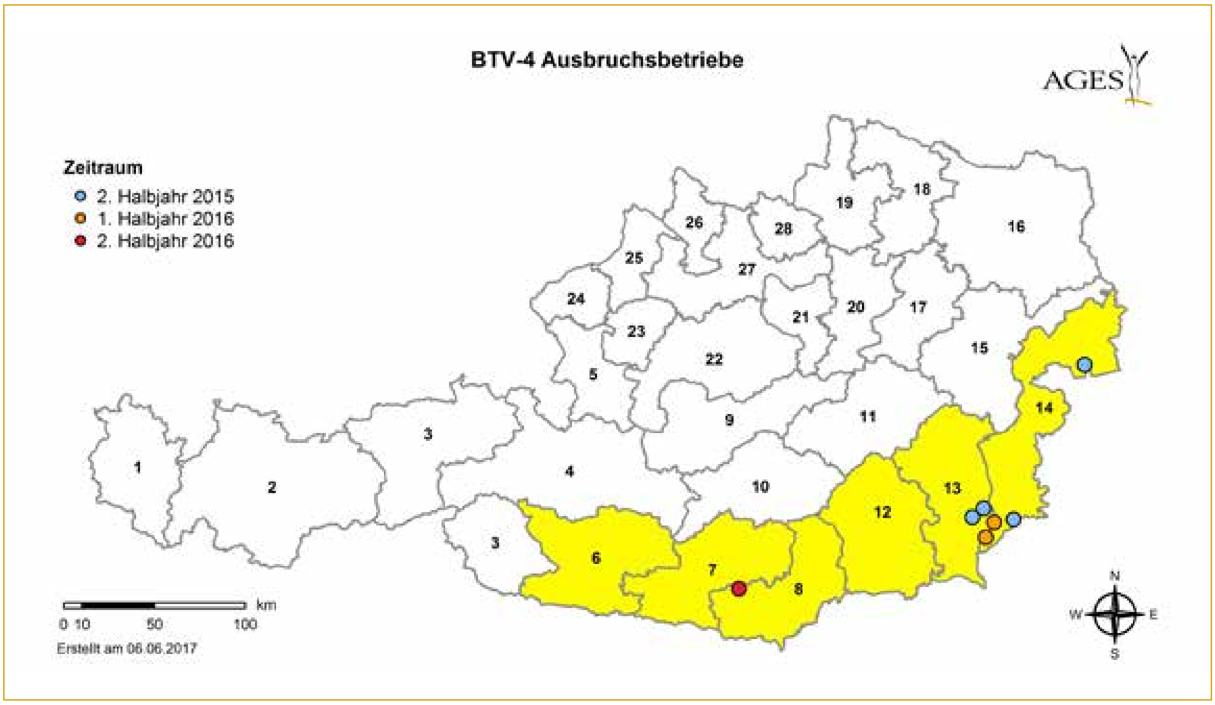

Figure 14:
BTV-4 restriction zone and regional units for BT monitoring, as at: 31 December 2016

After the first BTV-4 cases were detected in Austria, the monitoring programme was adjusted in order to be able to accurately isolate the precise extent of the BT virus circulation. Recourse was made to a monitoring schedule that had already been used in the BTV-8 epidemic in 2008. Twenty-eight regions were established, the size of which took into account area, topographic factors, cattle density and political districts (see also Fig. 14) and 60 unvaccinated animals from each region – in addition to those involved in the monitoring programme that was already in progress – were subjected to serological and virological testing.

A total of 5,424 cattle from 91 political districts and 1,258 holdings were assessed as serologically BTV negative (Figure 15).

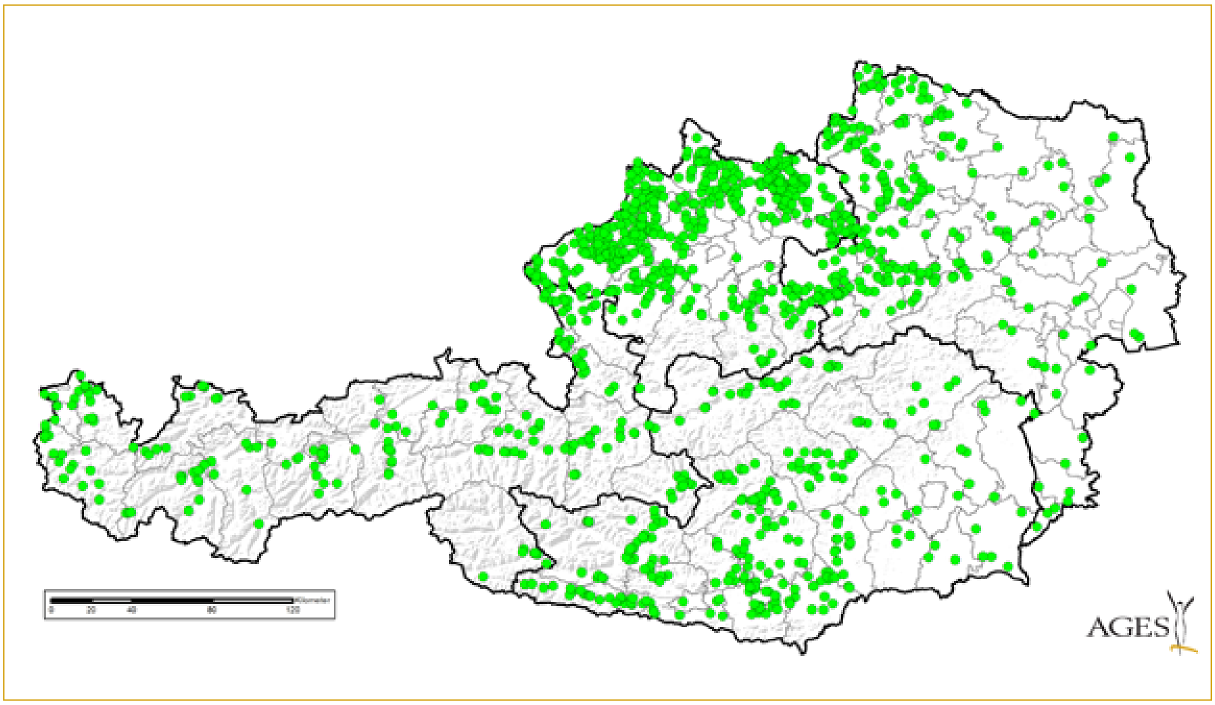

Figure 15:
Holdings sampled in 2016 within the framework of the active BT monitoring programme

Cattle from 38 holdings in the provinces of Tyrol, Styria, Upper Austria, Burgenland and Lower Austria were tested within the framework of passive monitoring for bluetongue disease, which is undertaken all year round on the basis of the notifying requirement under § 17 of the Austrian Act on Animal Diseases and of livestock testing in holdings where outbreaks occur. A total of 165 serological tests and 180 molecular biology tests were implemented to this end.

The cases of BT mentioned above on the outbreak holdings in the provinces of Styria and Burgenland were confirmed in the context of these tests, while BT virus circulation was ruled out in all the other holdings.

A vector monitoring programme was carried out in Austria between 2008 and 2011 in order to acquire information about the occurrence and the activity periods of the insects transmitting the virus. On the basis of the results of this programme, a "vector-free period" was again declared on 15 December 2016, which allowed additional movement options for animal trading. Mosquito traps were installed at selected locations and temperature monitoring was also carried out at the same time, in order to be certain that no vector activity was to be expected. The vector-free time lasted till 14 th April 2017.

SCHMALLENBERG VIRUS (SBV)

Schmallenberg virus (SBV) is a member of the *Bunyaviridae* family, 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 has – after having spread across large parts of Europe - so far been detected in cattle, sheep and goats, as well as alpacas, and other ruminants, in zoos, in game farms and in the wild. SBV antibodies have also already been detected in dogs and wild boar.

The possibility of the virus being transferred to humans is categorised as fairly unlikely by the European Centre for Disease Prevention and Control (ECDC). Blood-sucking midges (*Cullicoides* spp.) act as vectors for SBV as in the case of BTV. Horizontal transmission without vectors does not appear to occur.

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 it is presently estimated, on the basis of data from the closely related Akabane virus, that they then develop antibodies protecting against future infection.

Virus can usually no longer be detected in the blood as little as 6 days post infection.

Infection of an immunologically naive animal during pregnancy causes transplacental infection of the foetus. Depending on the stage of pregnancy, this may result in foetal death and reabsorption at very early stages and ranges as far as the development of hydranencephaly and arthrogryposis (after infection of cattle between the 62^{nd} and 173^{rd} days 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 malformations.

The first SBV antibodies were detected in an Austrian animal in mid-September 2012 and spread of initial infections was quickly seen widely across Austria. Serological screening for SBV antibodies was carried out in cattle in the autumn of 2013 and 2014 for an epidemiological assessment. Antibody prevalences in young animals, in particular, were investigated within the framework of this autumn monitoring, so as to obtain an overview of the associated immunological protection among the up and coming groups of animals that would be productive in the future. Annual courses of infection of different extents could be seen between late summer and late autumn.

Tests for SBV antibodies and antigens are also carried out in the course of investigations of abortions and export tests.
The results of serological tests for SBV antibodies in the 2016 reporting year were predominantly negative.

LUMPY SKIN DISEASE (LSD)

Lumpy skin disease (LSD) is a highly infections viral disease in ruminants and it is obligatory to notify any suspicious symptoms to the official veterinarian. The LSD virus (LSDV), along with the *Sheeppox virus* and the *Goatpox virus*, belongs to the genus *Capripox* virus. For a long time the bovine *Capripox* infection, Lumpy Skin Disease (Dermatitis nodularis), was exclusively endemic in East, South and West Africa. In 2006, the disease passed through Egypt to Israel. Since 2012, LSD has spread to the north-east to the Arabian Peninsula, and in June 2015 it spread via Asia Minor to the European-Turkish mainland for the first time. LSD was first reported in the EU in August, 2015 in Greece in the Evros Delta. In April 2016, infected cattle were also reported in Bulgaria and Macedonia. Serbia, Kosovo, Albania and Montenegro also reported outbreaks during the summer of 2016. Since 2015, 7,600 LSD outbreaks with 12,800 infected cattle have been reported in southern Europe. Most of the disease outbreaks occurred between May and August (Source: EFSA 2017:15(4):4773). However, outbreaks of the disease also occurred during late autumn and winter (e.g. in Albania: November, December 2016, Macedonia: January 2017, Greece: March 2017, etc.). According to ADNS, Romania, Hungary, Bosnia-Herzegovina and Croatia are free of LSD, as is Austria, which until now has not had any cases of Lumpy Skin Disease.

In Europe, the main host are domestic cattle. In addition to cattle, water buffalo and bison have also proven to be susceptible hosts. Giraffes and antelopes are also hosts, but do not play a role in Europe, with the exception of zoo animals. At between 5 and 10 %, the mortality rate among domestic animals in Europe is low. However, the economic consequences of such an outbreak are very high and mainly concern trade restrictions and production.

Papulo-vesicular exanthema in the form of skin swelling (skin nodes) is the main clinical symptom (see figures 16-18). The severity of the disease depends on the individual health of the animals. In many cases the disease may take a subclinical course, however, these animals are viremic and can excrete the pathogen.

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. At present, it is certain that *Aedes aegypti* as well as the African mites *Rhipicephalus appendiculatus* and *Amblyomma hebraeum* play an important role as LSD carriers. A vertical transfer of the pathogen to eggs and larvae among mites could also be proven. Under certain circumstances, mechanical transmission via insects (e.g. stall flies) from infected to healthy cattle can not be ruled out. The following insects as well as mites are currently treated by the EFSA as potential LSD vectors: Ixodidae (ticks), Culicidae (mosquitoes), Ceratopogonidae - genus Culicoides (biting midge), Tabanidae (gadfly) and Muscidae (real flies). Flies, predominantly refers to stable flies (genus Stomoxys) and marsh flies (genus Sciomyzidae). The fight against the LSD vectors is a major challenge because of the diversity of the vectors and the resulting methods for combating them for the EU countries concerned. In summer months with a mild and humid climate, the spread of LSD is highest in regions with standing water and the resulting high insect density (source: EFSA 2017: 15 (4): 4773). Initial statistical analyses showed that in countries with warmer winters the infection rate was significantly higher than in cold regions. The temperature threshold value for the increased survival of the vectors is 10 °C. In Montenegro and Turkey, an occurrence was reported at 1,300 - 1,500 m above sea level. According to EFSA, the disease is spreading in Southern Europe at rate of 2 km/day and in rare cases at a rate of up to 15 km/day has been calculated. Vectors biology and the proximity of the animal holdings to each other are the determining factors for the spread of LSD. The spread of the disease through direct contact (from animal to animal) plays a lesser role. The trade of both asymptomatic infected animals and animal products from infected animals (e.g. untreated hides) is an important factor for the spread of LSD. Trade restrictions are therefore the consequence of LSD outbreaks.

In order to contain the spread of LSD, vaccines are available on the market. Homologous vaccines with the attenuated LSDV strain Neethling are best suited to fight the disease. According to EFSA, the large-scale vaccination with 90 % coverage of bovine populations has proven to be the most successful measure for combatting the disease in the affected EU countries. Adverse effects from the vaccination can not be ruled out: According to experience reports from already affected countries, among other things, fever, drop in milk yield, edema at the injection site and the formation of local skin nodes (in 0.09 % of the vaccinated animals) and in a few cases even death of the animal (0.02 %) may occur up to 2 weeks after the vaccination.

The FMHW and the AGES have taken numerous measures in preparation for a possible outbreak (preparation of crisis plan, risk analysis and vaccination plan, dissemination of information via publications, provision of sample sets and instructions on biosafety at the holding, etc.).

The AGES National Reference Laboratory for LSD in Mödling is responsible for the laboratory analyses of

LSD. Skin changes, blood and excretes (lacrimal fluid, saliva) are used for the diagnostic tests. Tests can be conducted using molecular biology (PCR and sequencing), electron microscopy, virological (isolation by cell culture) and serological methods (SNT). Several scientific institutions and laboratories, including the AGES Institute in Mödling, are working on the development of a practical ELISA test. The NRL can distinguish between field and vaccination virus by means of PCR.

Figure 16:
Simmental with LSD typical skin nodes (Kosovo)

Figure 17:
Holstein-Friesian with skin nodes (Australia)

Figure 18:
Skin nodes on the udder of a brown cow (Kosovo)

CLASSICAL SWINE FEVER (CSF)

7,559 blood samples from pigs were tested for CSF antibodies at the National Reference Laboratory at IVET Mödling. 1,606 of the tests were privately commissioned and 5,953 ordered by the authorities. 1,378 samples were tested using RT-PCR for detection of CSF virus. Neither antibodies nor virus were detected in any of the samples.

Since 2010, the Institute for Veterinary Disease Control in Mödling has been taking and testing samples as part of the Austrian monitoring programme for classical swine fever. A risk-based sampling plan is used and samples are taken in four categories.

CSF monitoring of domestic pigs:
Tables 14 and 15 show the test results. As a result of the occurrence of the first 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, the NRL in Mödling developed and validated a new triplex PCR. 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 14:
CSF – Number of official samples taken from domestic pigs 2016. All the samples were negative.

Category	Group of monitoring	Target population	Diagnostics	Samples – half-year and total		
				1. HJ	2. HJ	Σ
I	post mortem Inspection	Slaughtered pigs	Virusnachweis mit PCR (Ag)	37	38	75
II	Rendering Plant	All ages	Virusnachweis mit PCR (Ag)	476	547	1.023
		Regau Upper Austria		177	108	285
		Tulln Lower Austria		5	269	274
		Landscha Styria		175	99	274
		Unterfrauenhaid Burgenland		31	9	40
		Klagenfurt Carinthia		88	62	150
III	Resulted from routine diagnostic	All ages	Virusnachweis mit PCR (Ag)	118	162	280
IV	Samples from routine diagnostic	All ages	Antikörper – Nachweis (Ab)	3.159	2.529	5.688

Table 15:
Number of CSF tests on domestic pigs in total (official and privately commissioned) in Austria in 2016. All samples returned negative results.

Diagnostic method	Samples in CSF - Surveillance	Other samples	Sum
AB-ELISA	5.688	1.336	7.024
PCR	1.378	11	1.389
Virusisolation		0	
Total	7.066	1.347	8.413

AFRICAN SWINE FEVER (ASF)

African swine fever (ASF) is a highly contagious general illness 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 the infection. In both the European wild boar and in domestic pigs, ASFV infection normally causes a disease with high fever, and high levels of morbidity and mortality. There is no risk of infection to other domestic animals or humans.

Transmission occurs by means of direct contact or via animate (*Ornithodoros* ticks) and inanimate vectors. ASFV remains infectious for a long time even outside a living host, particularly in meat and meat products. In 2007, African swine fever was seen in the region between the Black Sea and the Caspian Sea, known as the Transcaucasus region. Since then, ASF has spread further northwards, including to Russia, Ukraine and Belarus, close to the borders with EU Member States. With the exception of Sardinia (Italy), where the disease has been present since 1978, no other EU Member States had yet been affected by ASF up to 2013. In 2014 the first cases of ASF were seen in Lithuania, Latvia and Poland, at the border with Belarus.

This development of ASF in eastern Europe led to the EU commissioning a scientific report from EFSA which was published on 14 July 2015 (http://www.efsa.europa.eu/de/efsajournal/pub/4163). In Eastern Europe, the ASFV disease is endemic in two regions: Southwest and Central Russia. In these regions both domestic (especially free-range domestic pigs) and wild boars are affected. In the Baltic States and Poland, the disease is mainly found in wild boars. The further spreading through illegal feeding of food residues also represents an infection risk.

By regularly taking part in international collaborative studies, the National Reference Laboratory for ASF at the AGES Mödling Institute of Veterinary Disease Control is ensuring that, in the worst case, ASF can be rapidly and reliably detected with laboratory tests. In 2014 a triplex PCR (ASF, CSF and internal control) was established at the National Reference Laboratory, AGES IVET Mödling, for the differential diagnosis of "swine fever" (classical and African) and was incorporated into the scope of accreditation at the same time. An exclusion test for differential diagnosis purposes is carried out in the case of a suspected case report by an official veterinarian or in the case of pathological laboratory dissection findings that do not rule out the suspicion. An exclusion test of this type was performed on 9 domestic pigs in 2016 – all the samples were assessed as negative for ASP (Table 16).

Table 16:
ASF – investigations of suspected case reports and exclusion tests from 2011 to 2016

Year	Serological Analyses	PCR Analyses	Species
2011	0	0	Pig
2012	0	5	Pig
2013	0	5	Pig
2014	0	10	Pig
2015	0	13	Pig
2016	0	9	Pig

In the course of a domestic pig screening programme, 1,389 official samples and 20 samples commissioned privately were tested using PCR test. 1,407 of these samples were assessed as negative and 2 samples could not be assessed. In addition, six samples from domestic pigs were serologically tested and assessed as negative.

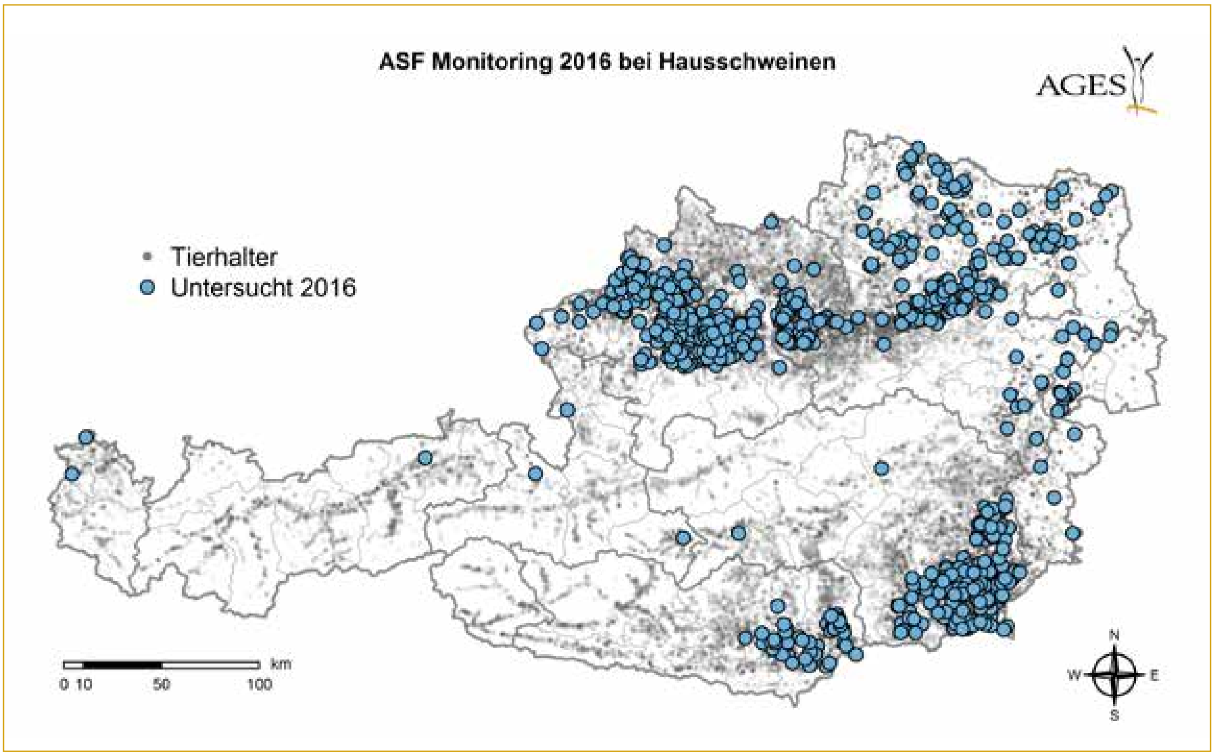

Figure 19:
Representation of domestic pigs (blue dots) examined in the course of a screening for ASF. All domesticated pigs are represented as grey dots.

With effect from 2011 an extensive wildlife survey was conducted, which included tests for the presence of ASF virus. Tests of this type were carried out on a smaller scale in the subsequent years of 2012 and 2013; in 2014 the figure increased again as a result of epidemiological developments in Eastern Europe and a monitoring programme for swine fever in wild boar.

In the 2016 wild boar swine fever monitoring programme, 45 samples were tested; in addition, 4 wild boar samples were tested in the course of an exclusion test at NRL Mödling. All the samples were assessed as negative for ASF; the relevant test figures can be seen in Table 17 below.

Table 17:
ASF – investigations of wild boar from 2011 to 2016

Year	Serological Analyses	PCR Analyses	Species
2011	223	298	Wild Boar
2012	43	2	Wild Boar
2013	32	2	Wild Boar
2014	0	98	Wild Boar
2015	0	74	Wild Boar
2016	0	45	Wild Boar

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 apathogenic, lentogenic (low virulence), mesogenic (moderate virulence) and velogenic (high virulence) virus types.

The disease is characterised by rhinitis symptoms, CNS symptoms and diarrhoea. It may be associated with high morbidity and mortality, particularly amongst pigeons. NCD virus is eliminated in large quantities in the faeces, eye, nasal and pharyngeal secretions, as well as all body fluids, and it is spread both directly and indirectly. The incubation period is 4 to 7 days. 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 submit samples for diagnosis. Only highly pathogenic types of virus are reported as an epidemic when the virus has a pathogenicity index (ICPI) of 0.7 or above, and when pathotyping of the virus strain shows it to be "velogenic" (highly virulent).

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 with hens, 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 as well as molecular biology methods (RT-PCR and additional pathotyping).

Detection of antibodies using ELISA and HAI is possible, but must be evaluated in context where vaccination has been permitted.

Table 18:
Number of samples tested for NCD in Austria in 2016

(AB - HAI)	Virusisolation – Egg Culture	PCR
25	38 (12 cases in pigeons positive)	90 (16 pigeons positive)

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

In 16 samples, the virus detection test was positive in pigeons and wild pigeons.

WEST NILE VIRUS (WNV)

West Nile virus (WNV) was first described in a human in the North of Uganda's West Nile District in 1937. Currently, WNV strains are classified in 4 genetic lines, with lineage 1 being subdivided into three clusters, 1a, 1b and 1c. Since 2008, endemic occurrence of lineage 1 WNV in humans and horses has been confirmed in the north of the Italian province of Ferrara. 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 2 to 14 days. In horses with 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 only a few exceptions. According to ECDC, up to November of the reporting year 2016, 210 WNV human cases were reported in Europe, mainly from Italy, Hungary, Serbia and Romania, and 267 in EU-neighbouring countries such as Turkey, Russia and Israel. 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, and, since 2011, for horses as well, has been implemented at IVET Mödling on behalf of the BMGF.

The programme focuses on birds of prey (Falconiformes), passerines (Passeriformes) and corvids (ravens and crows), since these birds are considered central to the spread of the pathogen. In addition to that also other birds, like for example free-range geese and ducks from at-risk regions from the passive avian influenza monitoring programme via abattoir blood samples, are tested for WNV.

In 2013 and 2014, the PCR examinations of wild birds and raptors detected lineage II WNV in one northern goshawk in each year. Lineage II WNV was also identified in August 2015 at the University of Veterinary Medicine Vienna, again in 2 northern goshawks.

In the course of the 2016 serological tests of 338 wild birds, pasture geese and ostriches, WNV antibodies were detected in 2 slaughter blood samples of ostriches from a farm in the province of Lower Austria. 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 as a matter of routine.

Clinical cases in horses had not occurred in Austria until 2015. In August 2016, WNV was confirmed for the first time in a horse in the east of Austria. The affected animal showed clinical symptoms, responded well to the treatment at the University of Veterinary Medicine Vienna and was able to be cured.

Clinical cases of WNV in horses have also been reported in Italy, Hungary, France and Spain in the past 15 years – the cases in France (2003) and Italy (2009) were also accompanied by human cases at the same time.

In the serological screening programme for WNV in horses in 2016, a total of 122 equine serum samples were tested using Flavivirus antibody ELISA tests. Twenty of these serum samples reacted positively to flavivirus antibody in the IgG Flavivirus ELISA but reacted negatively on IgM Flavivirus ELISA, 8 of them were also tested positive in the WNV neutralisation test. A cross reactivity between TBE and WNV in the neutralisation test cannot be excluded at all.In Austria, horses can also be vaccinated against WNV (lineage I).

EQUINE INFECTIOUS ANAEMIA (EIA)

Equine infectious anaemia (EIA) is a viral disease of equidae (horses and donkeys) transmitted by midges. It is caused by a reovirus, of which 9 serotypes are known. The disease is endemic in Africa, South America, Asia, and also in Eastern Europe.

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

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

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

The Coggins test is prescribed in Europe 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 2016.

Year	2010	2011	2012	2013	2014	2015	2016
AK	149	199	157	154	121	120	150

No EIA monitoring programme for equidae was in place in Austria in 2016. Two positive cases (in 2002) have been reported in Austria to date in a holding in Lower Austria (district of Wiener Neustadt).

In 2016, a total of 148 antibody and 2 PCR tests were performed on EIA. All 146 horses and 4 donkeys tested in Austria were negative, including all the import animals tested.

AQUACULTURE REGISTER

A public register of approved fish farms in Austria can be found at http://aquakultur.ehealth.gv.at/. The statutory basis of the Aquaculture Register is Directive 2006/88/EC; the formal requirements are to be found in Commission Decision of 30 April 2008 implementing Council Directive 2006/88/EC as regards an Internet-based information pageto 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 can be seen at http://ec.europa.eu/food/animal/liveanimals/aquaculture/register_aquaculture_establishments_en.htm

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

VIRAL HAEMORRHAGIC SEPTICAEMIA (VHS)

VHS is a notifiable viral disease caused by a novirhabdovirus. According to Annex I, List II, Aquaculture Disease Ordinance (Aquakultur - Seuchenverordnung), Federal Law Gazette II, No. 315/2009, susceptible species are rainbow trout (*Oncorhynchus mykiss*), Pacific salmon (*Oncorhynchus* species), trout (*Salmo trutta*), grayling (*Thymallus thymallus*), Coregonus species (*Coregonus spp.*), pike (*Esox lucius*) and various marine fish species. Clinically apparent signs of disease are seen in rainbow trout in particular. The clinical course of the disease affects all age classes.

Losses of up to 90 % are possible in young fish (fry) and with temperatures of < 14 °C. In addition to temperature, 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 2016, a total of 4 cases of VHS was diagnosed at the National Reference Laboratory for Fish Disease, which is located at the University of Veterinary Medicine, Vienna.

INFECTIOUS HAEMATOPOETIC NECROSIS (IHN)

IHN is a notifiable viral disease of various salmonid species, caused by a novirhabdovirus. According to Annex I, List II, Aquaculture Disease Ordinance (Aquakultur - Seuchenverordnung), Federal Law Gazette II, No. 315/2009, susceptible species are rainbow trout (*Oncorhynchus mykiss*), Atlantic salmon (*Salmo salar*), and various species of Pacific salmon. 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 of the susceptible size class. Stress-inducing factors, such as stocking density, transport and sorting, promote outbreaks of the disease.

No outbreaks of IHN occurred in Austria in 2016.

KOI HERPESVIRUS INFECTION (KHVI)

KHVI, 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 international trade and traffic with carp.

The pathogenic agent is known as Koi herpesvirus (KHV). The scientific name is Cyprine herpesvirus 3 (CyHV–3) from the family of *Herpesviridae*. Viruses of varying virulence are confirmed depending on their origin (European, Asian, Israeli) but comparison of genomes from different regions shows that they are virtually identical.

A single Koi herpes virus infection was detected again in 2016. The import of infected koi carp poses a major risk of introducing the pathogen.

AMERICAN FOULBROOD, *PAENIBACILLUS LARVAE*)

American foulbrood is a brood disease caused by the Paenibacillus larvae bacteria with a global distribution. Outbreaks or suspected outbreaks are notifiable under the Bienenseuchengesetz (Austrian Bee Diseases Act) (Federal Gazette (BGBl.) No. 290/1988, as amended). The clinical symptoms are an incomplete brood nest (brood cells with sunken, perforated cell cappings (Figure 20), ropy masses in sealed brood cells (Figure 21) and firmly attached scales (Figure 22).

If the disease cannot be confirmed on site, test material must be sent to the test centres named 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.

The outbreak of the disease has extensive economic consequences for the beekeeper involved and also for beekeepers located within the restricted area (setting up 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 replacement of the entire comb structure. A detailed description of this can be found in the Richtlinien zur Bekämpfung der Amerikanischen Faulbrut (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 so far detected 5 different genotypes in Austria. They are not routinely distinguished in the course of analysis of official samples. If the ERIC I genotype is present, most of the diseased larvae reach the capping and die only afterwards, resulting in a massive formation of spores. Typical signs are capped cells with ropy masses and static cells (see Figure 20). The disease spreads like wildfire though the colony.

If the ERIC II genotype is present, 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.

Unmaintained, rundown apiaries may pose a possible source for the spread of American foulbrood, with any residues of honey potentially being taken by bees from stronger colonies. Apiaries such as these and comb material stored so that it is freely accessible to bees are often only discovered on monitoring of the 3 km restricted area.

Figure 20:
American foulbrood (ERIC Type I): static cells; brood cells with sunken, perforated capping

Figure 21:
Ropy masses in American foulbrood

Figure 22:
Queen cell infested with American foulbrood

A total of 124 new outbreaks were recorded in Austria in 2016. This is a slight decrease on 2015 (177 new outbreaks). The course of the disease over recent years can be seen in Figure 23.

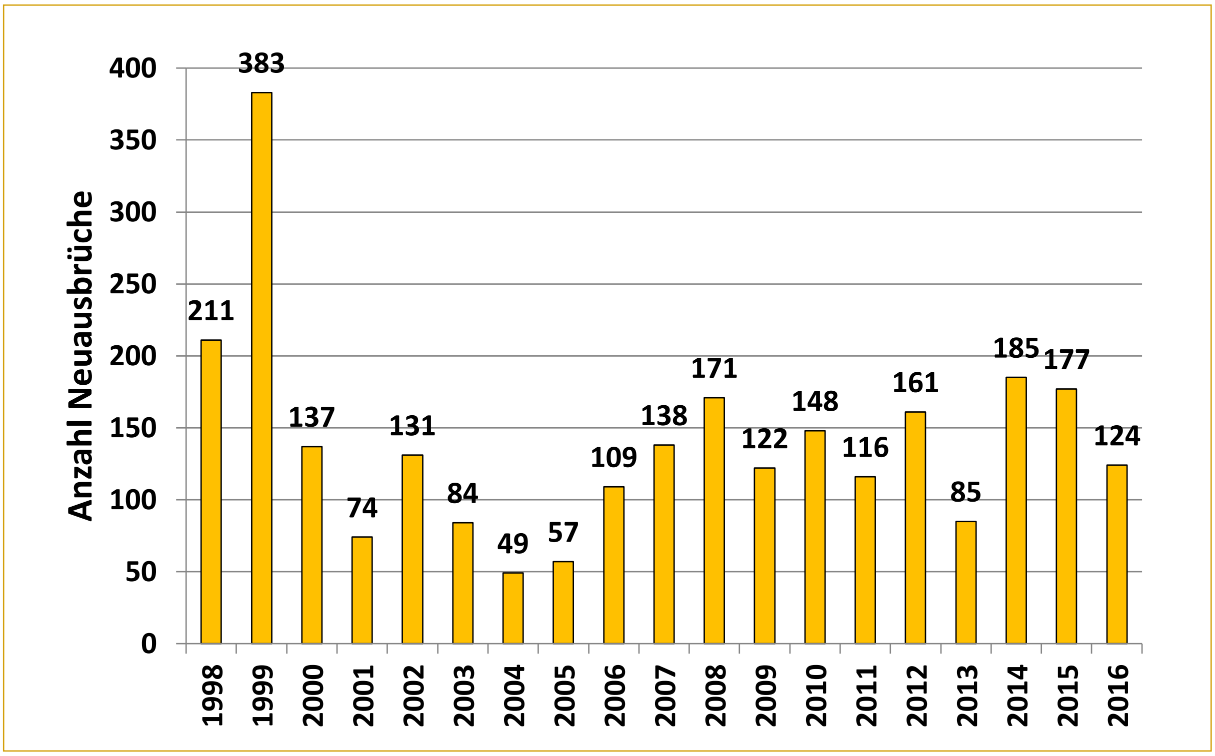

Figure 23:
Overview over several years of the outbreaks of American foulbrood in Austria (source: BMGF, official veterinary bulletin; AGES, Annual Veterinary Report)

SMALL HIVE BEETLE INFESTATION (*AETHINA TUMIDA* MURRAY)

Synonyms: SHB

Infestation of bee colonies with small hive beetle is notifiable under the Bee Diseases Act (BGBl. No. 290/1988, as amended).

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

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 based on clinical symptoms and the epidemiological setting whether to request a test to rule out or confirm the suspected disease. In the case of a test to rule out the disease, the entry in the VIS is made as „TKH-V uncertain". The transport 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/en/topics/pathogenic-organism/small-hive-beetle/

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

The adult beetles (Figure 24) 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 25). Brood, honey, pollen and even fruit serve as food sources for the beetles and their larvae (Figure 26). Eggs are laid in the hive and hatch into larvae, which constitute the stage that is harmful to the bee colony. Pupation takes place in the ground in front of the hives. 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. From its original distribution area of South Africa, where it does no damage, it has already spread to third countries (USA, Canada, Australia, Mexico, Central America, the Caribbean, Brazil, the Philippines, Hawaii) where major damage has been reported in some cases.

On 5 September 2014, small hive beetle was detected in Italy (Calabria). A massive infestation with larvae and adult beetles was found in three nucleus colonies near the port of Giauro Tauro. A restriction zone with a radius of 20 km and a monitoring zone with a radius of 100 km were set up and bee hives and colonies were checked both visually and using traps. By the end of December 2014, small hive beetle had been found in 60 cases (two in monitored nucleus colonies and one in a natural colony) within the 200 km zone in the Gioia Tauro region and in one apiary in Sicily. In 2015, 29 beetles were found in apiaries and four in monitored nucleus colonies within a 20 km zone around Gioia Tauro. No new finds were reported in Sicily in 2015. In the summer of 2016, a new infestation of the small hive beetle was discovered in the region of Cosenza approximately 100 km from the location of the first infestation. Initially, four apiaries of a beekeeper who illegally migrated with his bees outside the restriction zone around Gioia Tauro were infested. In autumn 2016, a fifth apiary from the same beekeeper was also infected. In 2016, the small hive beetle was detected in 41 apiaries (one of which was a natural colony) and in 10 monitored nucleus colonies in the Gioia Tauro region.

Since following the discovery of a single infected apiary in Sicily in 2014, which was explained by a bee migration from Calabria, the monitoring activity in Sicily has not revealed any further findings of the beetle, the outbreak area in Sicily was declared repealed (in accordance with the EU regulation: (EU) 2017/370 of 1 March 2017). However, the restriction and control measures remain in place for Calabria.

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

As an eradication measure, the colonies affected were killed with sulphur dioxide spray and burned together with the hives. The soil in the immediate vicinity was soaked twice with insecticide solution and ploughed over.

This is the second case of introduction into Europe. The first occurrence was in 2004 when a small hive beetle was imported in the form of larvae with imported queens from the USA. They were wiped out by immediate measures taken at the time.

In 2016, an official order was issued for the investigation of 17 samples for small hive beetle infestation. All the samples were negative.

As can be seen from current reports of the introduction and distribution in various countries, the beetles are 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. But other routes can equally well be considered (worldwide ship and container transport, earth, 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 not clear.

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 climatic 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.

Varroacides (Checkmite™) and soil insecticides are in use in the USA to combat small hive beetle.

Figure 24:
Adult Small hive beetle

Figure 25:
Size comparison, small hive beetles – bees

Figure 26:
Small hive beetle larvae

VARROATOSIS (PARASITOSIS BY *VARROA DESTRUCTOR*)

The symptoms of varroatosis are caused by a mass infestation of bee colonies by *Varroa destructor*. Varroatosis outbreaks are notifiable under the Austrian Bee Diseases Act (BGBl. No. 290/1988, as amended).

V. destructor is a horizontal oval shape and 1.1 x 1.6 mm in size (Figure 27). Laying, development and mating all take place in the sealed brood cell. When the bees hatch, the mother mite with several daughters leaves the cell and infests adult bees.

The mite parasitizes both adult bees and brood and sucks haemolymph. Pathogens may be transmitted at the same time, resulting in secondary diseases (e.g. viral diseases). Thus, for instance, deformed wing virus (DWV) cripples the bee brood or adult bees (wings are undeveloped or not fully developed, Figure 28). 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. The 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.

Successful combating of varroa infestation can only be achieved using a multi-stage design, which should be implemented comprehensively and simultaneously. This design 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 bottom boards 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 today it can be expected to occur in every apiary in the country.

With the amendment of the Austrian Medicinal Products Act, pharmacologically active substances used to combat varroa have to be authorised as veterinary medicines (Tierarzneimittel – TAM) from 01.01.2014 onwards. A number of TAMs that are not subject to veterinary prescription are currently available in Austria to combat the mites.

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).

It is essential to bear in mind when selecting a product and prior to purchase that, in certain areas, the varroa mite has acquired resistance to some active substances.

Figure 27:
Varroa mite (horizontal oval) in comparison with Tropilaelaps mite (longitudinal oval)

Figure 28:
Bee with the typical wing changes of varroa infestation

TROPILAELAPS MITE INFESTATION (PARASITOSIS 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 (BGBl. 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: http://www.ages.at/fileadmin/AGES2015/Themen/Bienen/Tropilaelaps_fuer_Imker_Feb_2013.pdf

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, after killing of the animals, to the test centres named 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 (= National Reference Laboratory).

Adult tropilaelaps mites (Figure 27) are 1 x 0.5 mm in size, reddish brown in colour and move quickly in the hive. Four species are known 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 and not on adult bees. Reproduction takes place in the bee brood cells as for the varroa mite. They can survive for a maximum of 9 days without brood. This means that 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 our bee colonies, the risk is very much present 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 screened bottom boards 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 of preventing tropilaelaps infestation is to avoid importing any bees from the natural distribution regions or from areas in which they have been introduced.

In 2016, official submissions ordered the testing of 17 samples for tropilaelaps mites. All the samples were negative.

SPORADICALLY OCCURRING ANIMAL DISEASES

Isolated cases of the following animal diseases were detected during the reporting year:

- 3 outbreaks of herpes in horses
- 40 outbreaks of blackleg
- 4 outbreaks of mange in sheep

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