2-3 Johne's disease (cattle)

What is Johne's disease?

Johne's disease is a disease caused by infection with *Mycobacterium avium subsp. Paratuberculosis (MAP).* The disease is designated as a Domestic animal infectious disease of cattle, sheep and goats. The main clinical signs are chronic, persistent diarrhea, weight loss, and decreased milk production. The disease has a long incubation period and persists for several months to years without apparent symptoms until the onset of the disease. *MAPs* are excreted in the feces of infected animals and spread the disease in the herd. There is no vaccine or treatment available.

The disease is present in Japan, and efforts to prevent the spread of the disease are made following the guidelines on measures against bovine Johne's disease.

Objectives and methods of surveillance

Johne's disease is a contagious disease characterized by a long incubation period, and the main measures taken are to detect and cull infected cattle through periodic inspections. The target of the periodic inspections is breeding cattle that have been kept for a long period. For the farms where infection has been confirmed, follow-up tests to assess disease status and pre-transfer inspection are conducted on cattle before shipment from the farm.

(1) Periodic inspection

At least once every five years, periodic inspections are conducted on cows used for breeding and/or milking.

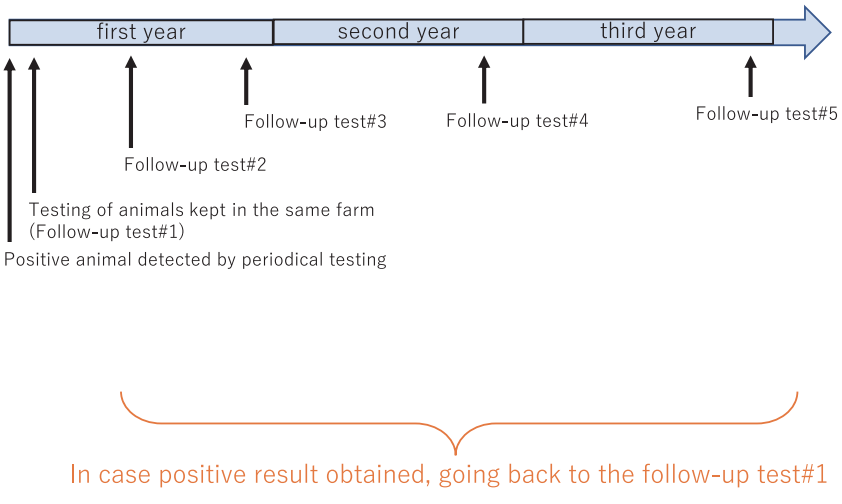
(2) Follow-up tests on infected farms

For farms where infection has been confirmed, follow-up tests are conducted at least three times a year for the first year, and then once a year for the following two years, that counts at least five times in three years.

(3) Pre-transfer inspection on infected farms

Tests are conducted before shipment when cattle are shipped from the infected farms.

Fig. 2-3-1 Time schedule for periodic inspection and follow-up tests



Surveillance results

Johne's disease surveillance is conducted through a combination of ELISA testing using serum, skin test, real-time PCR of fecal samples, and fecal culture. The number of cases of Johne's disease in recent years and the status of surveillance in 2021 are as follows.

Figure2-3-2 Cattle with Johne's disease showing weight loss
lower right: Cross-section of the intestinal tract of the cattle with Johne's disease (left) and healthy cattle (right)

Photo: NIAH, NARO

Table2-3-1 Number of Johne's disease cases

	2017	2018	2019	2020	2021
(farms)	374	321	380	399	446
(animals)	817	831	1,066	809	957

Table2-3-2 Johne's disease surveillance for cattle conducted in 2021

test type	total number of animals tested*
ELISA (serum)	519,013
Johnin reaction	2,026
Fecal PCR	29,045
Fecal culture	83,193
total	633,277

* Surveillance includes periodic inspection, follow-up tests and pre-transfer inspection on infected farms. Multiple tests may be conducted on the same individual.

2-4 Bovine spongiform encephalopathy (BSE)

What is BSE?

Bovine Spongiform Encephalopathy (BSE) is a prion disease of cattle that was first identified in the United Kingdom in 1986, and the disease was first confirmed in Japan in September 2001. Cattle infected with abnormal prion protein develop the disease after a long incubation period of several years and show behavioral abnormalities and incoordination, leading to death after a lapse of two weeks to six months. The disease is transmitted to cattle via feed contaminated with abnormal prion protein. Thus feed ban is implemented in order to prevent the feeding of potentially contaminated feed to ruminants. In Japan, no new outbreaks have been reported since January 2009, and in May 2013, Japan was officially recognized by WOAH as a country with "negligible risk".

Objectives and methods of surveillance

MAFF conducts BSE surveillance on cattle that have died on farms or other cattle exhibit clinical signs in terms of preparedness for a re-occurrence of BSE and to maintain international recognition as BSE-free.

The cattle to be tested are as follows

(1) Cattle that died at 96 months of age or older

(2) Cattle 48 months of age or older that exhibited incoordination and difficulty in rising before death (downer cattle)

(3) Cattle exhibit progressive behavioral changes or unexplained neurological symptoms prior to death, regardless of age in months (cattle with specific clinical signs)

At slaughterhouses, BSE screening tests are conducted on cattle aged 24 months or older that exhibit neurological symptoms and other relevant clinical signs. The results are published by the Ministry of Health, Labor and Welfare on its website.

https://www.mhlw.go.jp/houdou/0110/h1018-6.html

Surveillance results

In FY2021, testing was conducted on 21,428 dead cattle, with all results negative.

Fig.2-4-1 Number of BSE cases by year

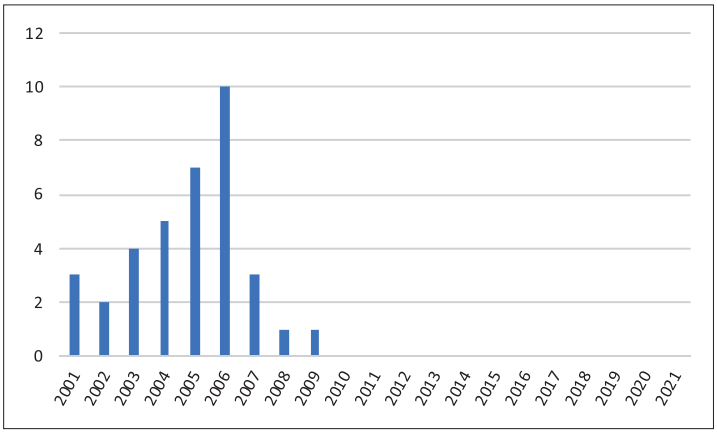


Table2-4-1 BSE surveillance conducted in FY2021

	# of tested
Ordinal dead cattle	13,718
Downer cattle	7,684
Cattle with specific clinical signs	26

2-5 Transmissible spongiform encephalopathy (scrapie)

What is transmissible spongiform encephalopathy?

Scrapie of sheep and goats, like BSE and chronic wasting disease of deer, is a prion disease caused by an abnormal prion protein. They are collectively called transmissible spongiform encephalopathy (TSE) in livestock and designated as a Domestic animal infectious disease. Scrapie in sheep and goats has been known for more than 250 years, and sporadic outbreaks have been reported in Japan. Unlike BSE, which is transmitted through feed contaminated with abnormal prion protein, the route of transmission of scrapie is unknown.

Objectives and methods of surveillance

In order to detect infected sheep and goats on farms, TSE tests are conducted on dead or culled goats at 12 months of age and older.

Surveillance results

In FY2021, testing was conducted on 237 sheep and 436 goats, with all results negative.

2-6 Classical swine fever

What is classical swine fever?

Classical swine fever (CSF) is a contagious viral disease of pigs and wild boars caused by the classical swine fever virus. The disease is highly contagious and has no treatment, and designated as a Domestic animal infectious disease. The disease is transmitted through direct or indirect contact with infected animals, including nasal secretion and feces of infected animals. Infected animals develop a variety of clinical signs ranging from acute cases with fever, leukopenia, anorexia, cyanosis of the auricle and death in a short period, to those with a long-term course. The strain currently prevalent in Japan is considered to be moderately virulent and less likely to show severe symptoms.

In Japan, an outbreak was confirmed in September 2018 for the first time in 26 years at a domestic pig farm, and later infection in wild boars was also confirmed. Currently, reflecting the spread of infection in wild boars, vaccination of domestic pigs in the designated area and distribution of oral vaccine to wild boars are being conducted (see Special Feature 1).

Methods and results of surveillance

Surveillance on domestic pigs and wild boars is conducted for early detection of CSF.

<Domestic pigs>

(1) Surveillance Methods

①Periodic on-site inspections of farms

In principle, the livestock hygiene service center (LHSC) in each prefecture conducts on-site inspections at the swine farm once a year to check the clinical condition. If abnormalities such as cyanosis or fever are observed, CSF testing are conducted.

②Antibody test

Antibody tests targeting pigs in non-vaccinated farms are conducted to detect infection.

③Testing of swine samples submitted for pathological appraisal

When swine samples were submitted to LHSC for the pathological appraisal upon request from producers, samples are also tested for CSF.

(2) Surveillance results

①Periodic on-site inspections of farms

In FY2021, on-site inspections were conducted on 4,009 farms and no abnormalities were found.

②Antibody test

In FY2021, 15,005 pigs from 500 non-vaccinated farms were tested and all results were negative.

③Testing of swine samples submitted for pathological appraisal

In FY2021, tests were conducted on swine samples collected from 3,354 pigs in 563 farms, with all results negative for CSF.

<Wild boars>

(1) Surveillance Methods

Wild boars that were dead and those captured are tested for CSF.

(2) Surveillance results

The number of wild boars tested for CSF has been increasing, reflecting the spread of the disease in wild boar; in FY2021, 647 dead boars and 20,760 captured boars were tested, with 334 (51.6%) and 1,055 (5.1%) being PCR positive, respectively. Infected wild boars were detected in 24 prefectures until FY2020, and in FY2021, infected boars were newly confirmed in 3

more prefectures, bringing the total to 27 prefectures.

A map showing the latest status of CSF in wild boar and a detailed survey analysis are available on the MAFF website.
https://www.maff.go.jp/j/syouan/douei/csf/

The MAFF website showing the latest status of swine fever in wild boars

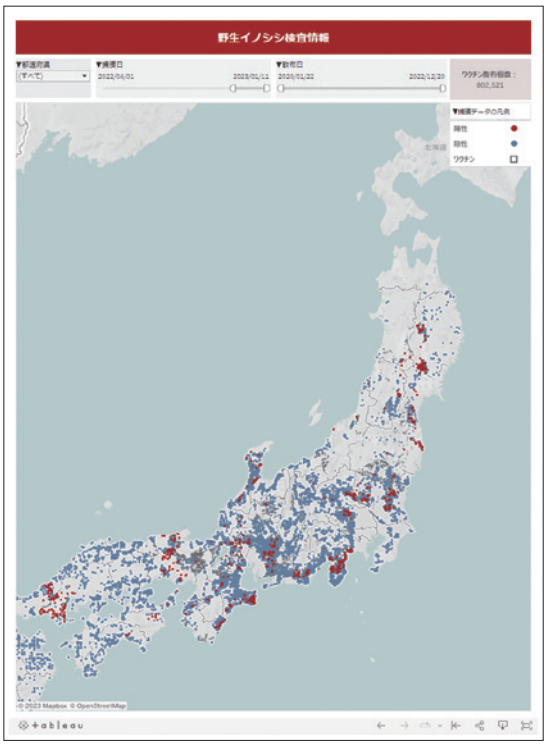


Table 2-6-1 Number of CSF outbreaks

	2019	2020	2021
# of cases	45	10	15

Table2-6-2 Surveillance (antibody testing) in domestic pigs in FY2021

# of farms	# of animal tested		# of positive by antibody tests*	# of confirmed CSF
	sows	feeders		
500	5,436	9,569	2	0

*CSFV infection of two anti-body positive animals were denied after the confirmatory tests

Fig.2-6-1 Surveillance on wild boars (PCR) in FY2021

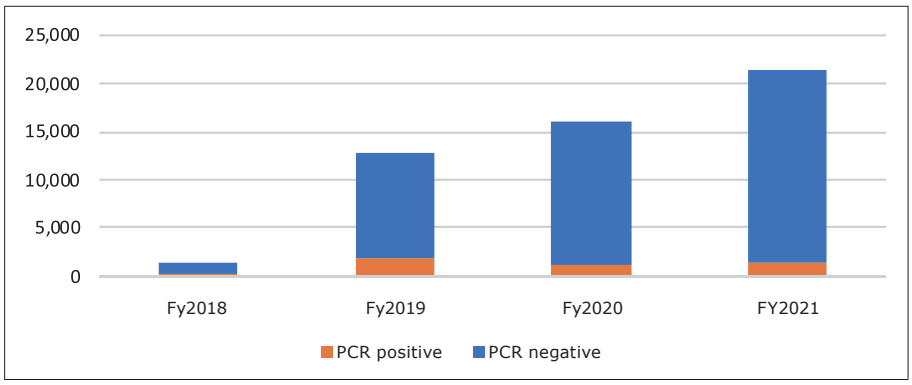
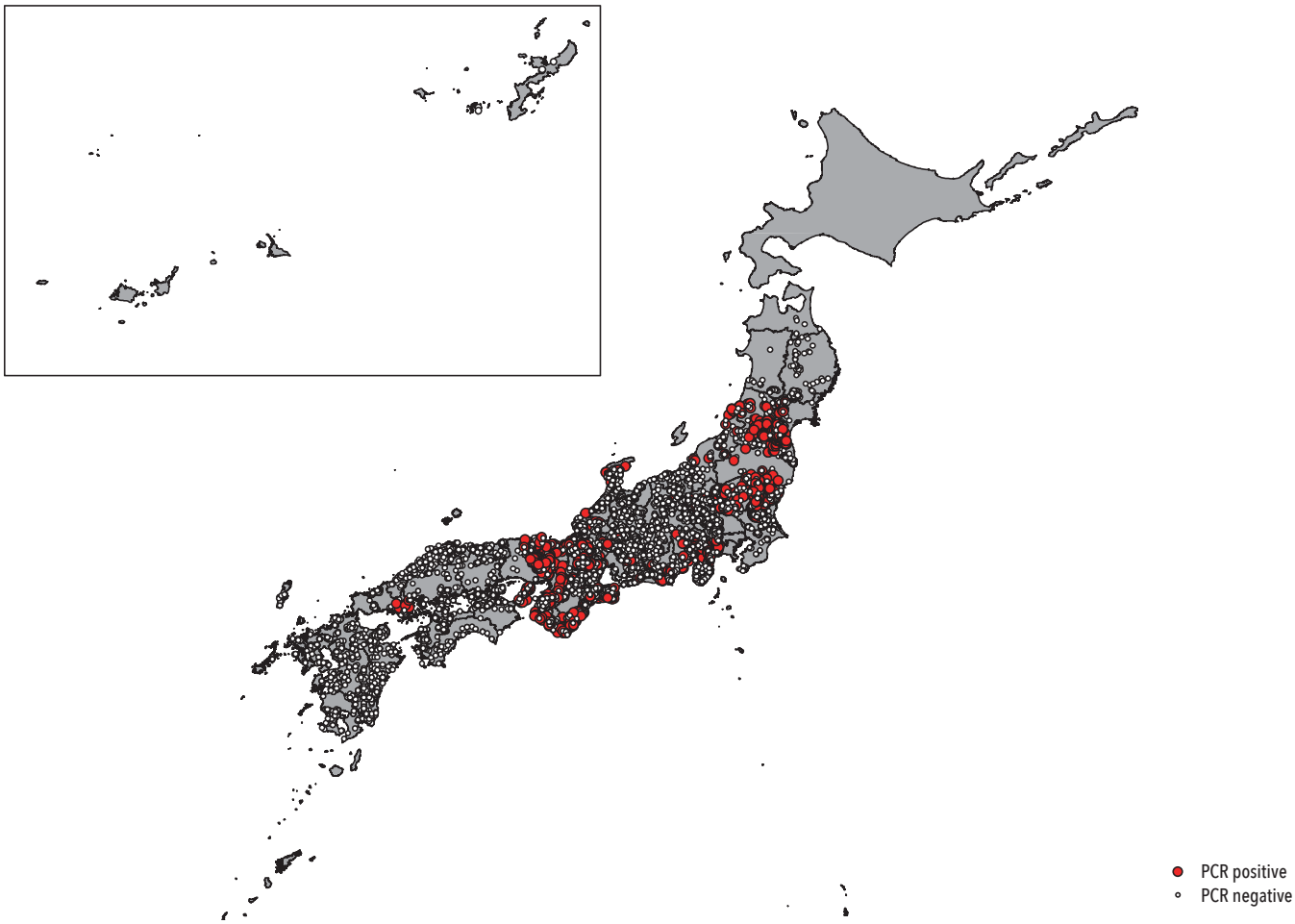


Fig. 2-6-2 Distribution of wild boars tested for CSF in FY2021



2-7 African swine fever

What is African swine fever?

African swine fever (ASF) is a contagious disease of pigs and wild boars characterized by fever and systemic hemorrhagic lesions caused by African swine fever virus infection. Due to its high mortality without any treatment or available vaccine, the anticipated impact on the livestock industry is enormous once it occurs, so the disease is designated as a Domestic animal infectious disease in Japan.

ASF had been enzootic in the African region, but since after the infection spread to Europe in 2007, the infected area has been expanding. Concering the Asian region, the first outbreak was reported in China in August 2018 and since then the infection still keep spreading in the region. To date, there have been no outbreaks in Japan, and Japan is increasing vigilance against the introduction of the disease from overseas.

Surveillance methods and results

Surveillance of domestic pigs and wild boars is conducted to monitor the invasion and occurrence of ASF in Japan.

<Domestic pigs>

(1) Surveillance Methods

① Periodic on-site inspections of farms

LHSC in each prefecture conducts on-site inspections at swine farm once a year in principle to check the clinical condition. If abnormalities such as cyanosis or fever are observed, ASF testing are conducted in addition to CSF testing.

②Testing of swine samples submitted for pathological appraisal

When swine samples were submitted to LHSC for the pathological appraisal upon request from producers, samples are also tested for ASF in addition to CSF.

(2) Surveillance results

(1) Periodic on-site inspections of farms

In FY2021, on-site inspections were conducted on 4,009 farms and no abnormalities were found.

(2) Testing of swine samples submitted for pathological appraisal

In FY2021, tests were conducted on swine samples collected from 2,195 animals in 531 farms, with all results negative for ASF.

<Wild boars>

(1) Surveillance Methods

Tests for ASF were conducted on wild boars found dead and part of those captured, which were collected for testing for CSF (see p. 33).

(2) Surveillance implementation status

In FY2021, 647 dead boars and 12,526 captured boars were tested, with all results negative for ASF.

2-8 Highly pathogenic and low pathogenic avian influenza

What is Avian Influenza?

Avian influenza is a disease of avian species caused by influenza A viruses. According to the Act on Domestic Animal Infectious Disease Control, the disease is classified into three types depending on virulence and probability of mutation. "Highly pathogenic avian influenza (HPAI)" is defined as the highly virulent type with a high fatality rate and "Low pathogenic avian influenza (LPAI)" is infection H5 and H7 subtype viruses but low virulent type. Other avian influenza subtypes are classified as "avian influenza."

HPAI outbreaks (subtype H5) occur worldwide, and in Japan, a number of HPAI outbreaks are observed from late fall to early spring (see Special Feature 2).

On the other hand, in case of LPAI, although the disease itself is highly contagious, infected poultry rarely shows clinical signs that lead to a delay in detection. In other countries, mutations from LPAI into HPAI have been reported.

There is no treatment for infected birds, and stamping-out policy is applied once infection is confirmed on farm. Early detection and notification of infected poultry are essential to prevent the spread of infection.

Surveillance Methods

In addition to passive surveillance, in which diagnostic testing is conducted in response to the reporting of unusual conditions such as increased mortality, two types of active surveillance are conducted to detect infection.

(1) Fixed-point surveillance

Farms with a relatively high risk of infection, such as those located near stopover sites of migratory birds, are selected for continuous monitoring. Selected farms are tested for avian influenza (virus isolation and serum antibody test) once a month.

(2) Enhanced surveillance

Serum antibody tests are conducted on selected farms from October to May of the following year, the migration season for wild birds. Farms are selected based on the number of households in each prefecture.

Surveillance results

All samples collected either in fixed-point monitoring or enhanced monitoring in 2021 (January-December 2021) were negative for avian influenza.

In addition, for early detection of avian influenza, the Ministry of the Environment is conducting a wild bird surveillance for avian influenza by testing feces and carcasses of wild birds, especially waterfowl in winter.

Table 2-8-1 Number of HPAI outbreaks in poultry

	2019	2020	2021
HPAI*	0	33	29
LPAI	0	0	0

*If winter to following spring is defined as a "season", number of outbreaks during the season is as follows.
2019-2020 season: No outbreaks
2020-2021 season: 52 cases
2021-2022 season: 25 cases

Table2-8-2 Avian influenza surveillance in 2021

		# of farms	# of birds
Fixed point surveillance	Virus isolation	5,536	55,370
	Antibody test	5,579	55,260
Enhanced surveillance	Antibody test	1,720	17,542

2-9 Arbovirus infection in cattle

What is arbovirus infection in cattle?

Arbovirus infection is a general term to describe viral infections transmitted to humans and livestock by infected arthropods such as mosquitoes, ticks, and biting midges. Most arbovirus infections in cattle are transmitted by tiny blood-sucking insects called *Cullicoides* biting midges. Major arbovirus infection in cattle in Japan are Akabane disease, Aino virus infection, Chuzan disease, Ibaraki disease, bovine ephemeral fever, and bluetongue. Akabane disease, Aino virus infection, and Chuzan disease are associated with abortions, miscarriages, premature births, stillbirths, and births with congenital abnormalities, when pregnant cows are infected with the viruses. In addition, some strains of the virus that cause Akabane disease infect calves and develop neurological clinical signs such as paralysis associated with encephalomyelitis, which is called postnatal infection. Both Ibaraki disease and bovine ephemeral fever cause a variety of clinical signs associated with fever when infected. In particular, Ibaraki disease is characterized by difficulty in swallowing , while bovine ephemeral fever is characterized by inability to stand and decreased milk production. Cattle affected with bluetongue develop erosions and ulcers on the tongue, lips, nasal cavity, and oral mucosa. In cattle, the infection is often a subclinical. It is more likely to develop clinical signs in sheep. These arbovirus infections are most likely to occur during summer and fall, when blood-sucking insects are more active.

Table 2-9-1 Number of cattle infected with arbovirus

		2019	2020	2021
Akabane disease (prenatal infection)	(farms)	0	1	0
	(animals)	0	1	0
Akanabe disease (postnatal infection)	(farms)	0	0	0
	(animals)	0	0	0
Aino virus infection	(farms)	1	0	0
	(animals)	1	0	0
Chuzan disease	(farms)	0	0	0
	(animals)	0	0	0
Ibaraki disease	(farms)	0	0	0
	(animals)	0	0	0
Bovine ephemeral fever	(farms)	4	0	0
	(animals)	7	0	0
Bluetongue (cattle)	(farms)	1	0	0
	(animals)	1	0	0
Bluetongue (sheep)	(farms)	2	2	2
	(animals)	9	6	5

Fig. 2-9-1 Blood-sucking insect (*Culicoides* biting midge) which transmits arboviruses

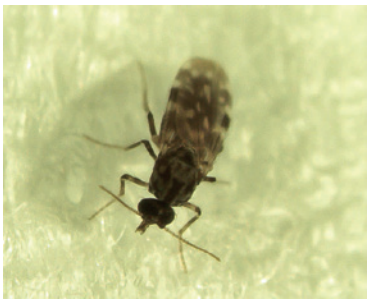


Photo: NIAH, NARO

Objectives and methods of surveillance

Arboviruses are considered to be introduced into Japan each season by vectors carrying virus traveling on wind currents from the East and Southeast Asian region. Thus, surveillance is intended to detect the entry of the virus into Japan at an early point, thereby enabling increasing awareness, facilitating vaccination, supporting proper diagnosis for abortions, and taking other countermeasures. Surveillance is conducted in the following two ways

(1) Sero-surveillance

Arbovirus infections are more likely to occur from summer to fall when blood-sucking insects are more active. Thus, a total of four consecutive antibody tests are conducted from June to November in order to assess the entry of the disease by looking at seroconversion. The target diseases are Akabane disease, Aino virus infection, and Chuzan disease. Based on the disease situation to date, surveillance will be conducted throughout Japan for Akabane disease, and in western Japan for Aino virus infection and Chuzan disease.

(2) Virus antigen surveillance

Virus antigen surveillance using PCR is conducted for Kyushu and Okinawa regions, where arboviruses are more likely to enter, to detect virus invasion earlier than by sero-surveillance. The target diseases are Akabane disease, Aino virus infection, Chuzan disease, Ibaraki disease, and bluetongue. In the target prefectures, a total of four consecutive PCR tests are conducted from June to November.

Surveillance results

(1) Sero-surveillance

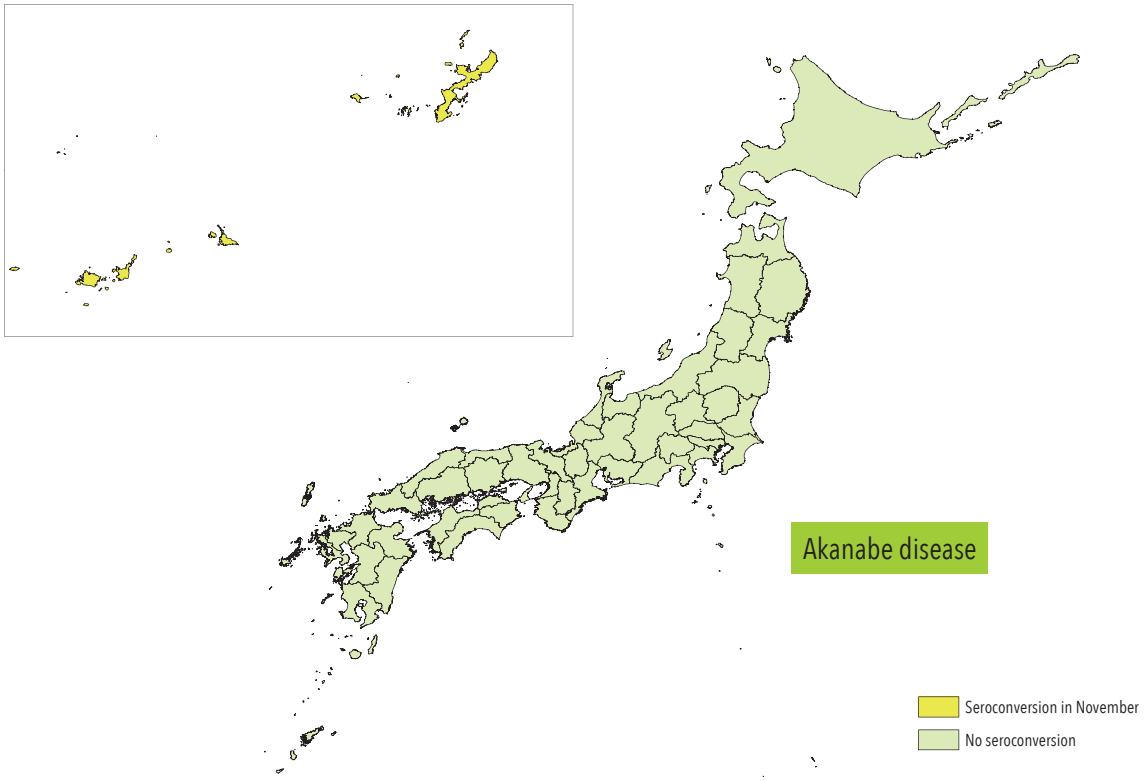
In FY2021, 2,627 cattle from 847 farms were tested, and positive antibody results were confirmed in Okinawa Prefecture in November for Akabane and Chuuzan diseases (Fig. 2-9-2). No positive antibody results were confirmed for Aino virus infection.

(2) Virus antigen surveillance

In FY2021, 150 cattle from 61 farms were tested, and a positive result was confirmed for bluetongue virus in Okinawa Prefecture in November (Figure 2-9-3). All were negative for Akabane disease, Aino virus infection, Chuzan disease, and Ibaraki disease.

The bovine arbovirus infection surveillance results conducted in previous years can be found below.
https://www.naro.go.jp/laboratory/niah/arbo/index.html

Fig.2-9-2 Results of sero-surveillance for Akabane disease and Chuzhan disease in FY2021



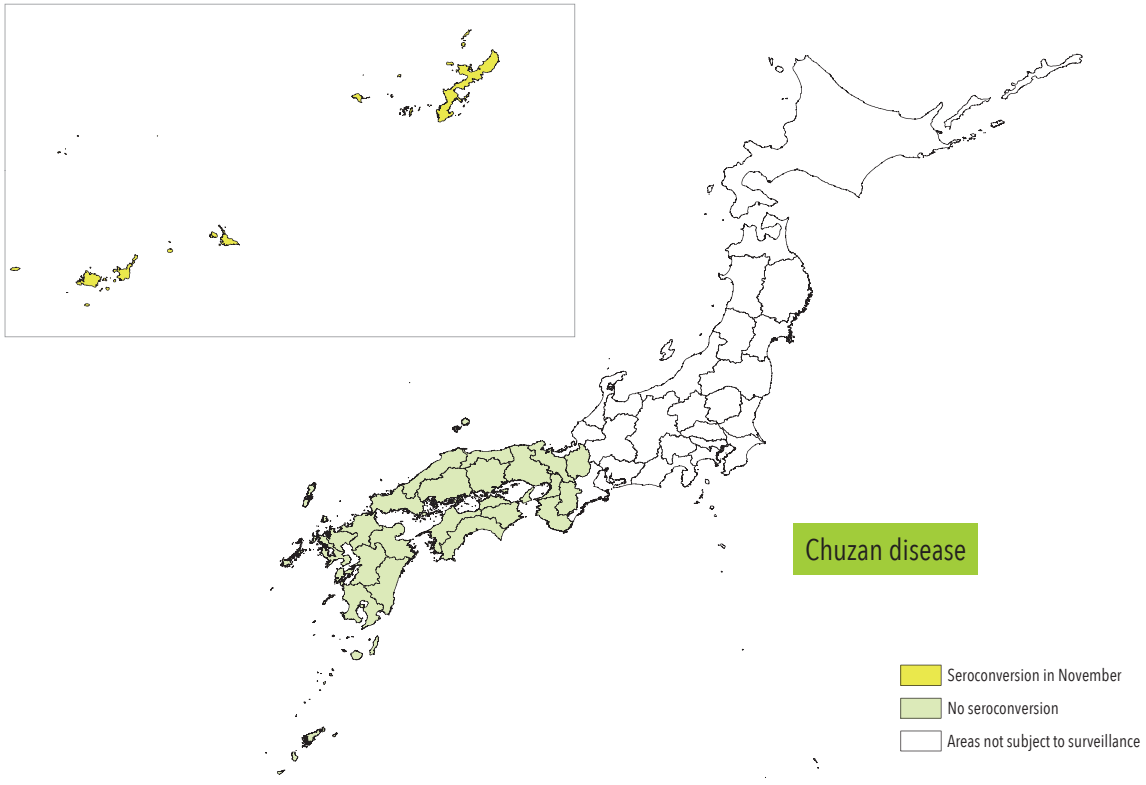


Fig.2-9-3 Results of virus antigen surveillance for bluetongue in FY2021

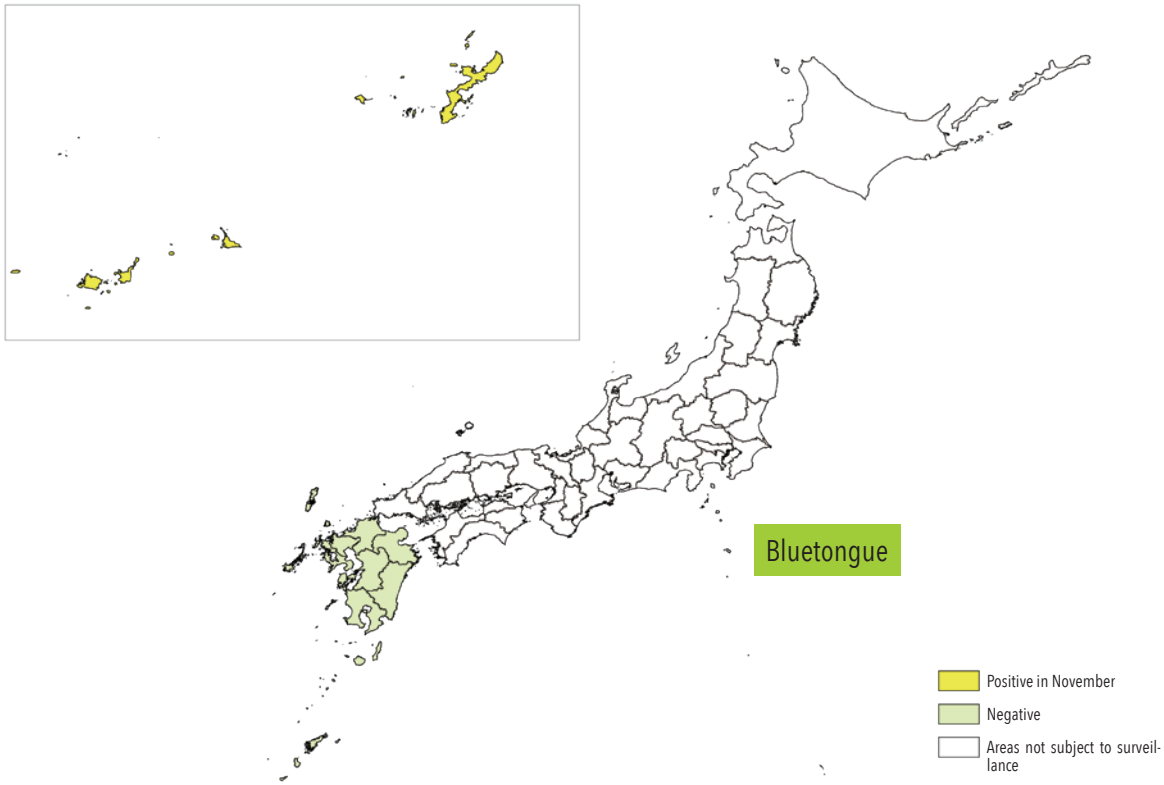


Figure 2-9-4 Blood sampling for arbovirus infection surveillance.

Photo courtesy of NIAH, NARO

2-10 Other Surveillance

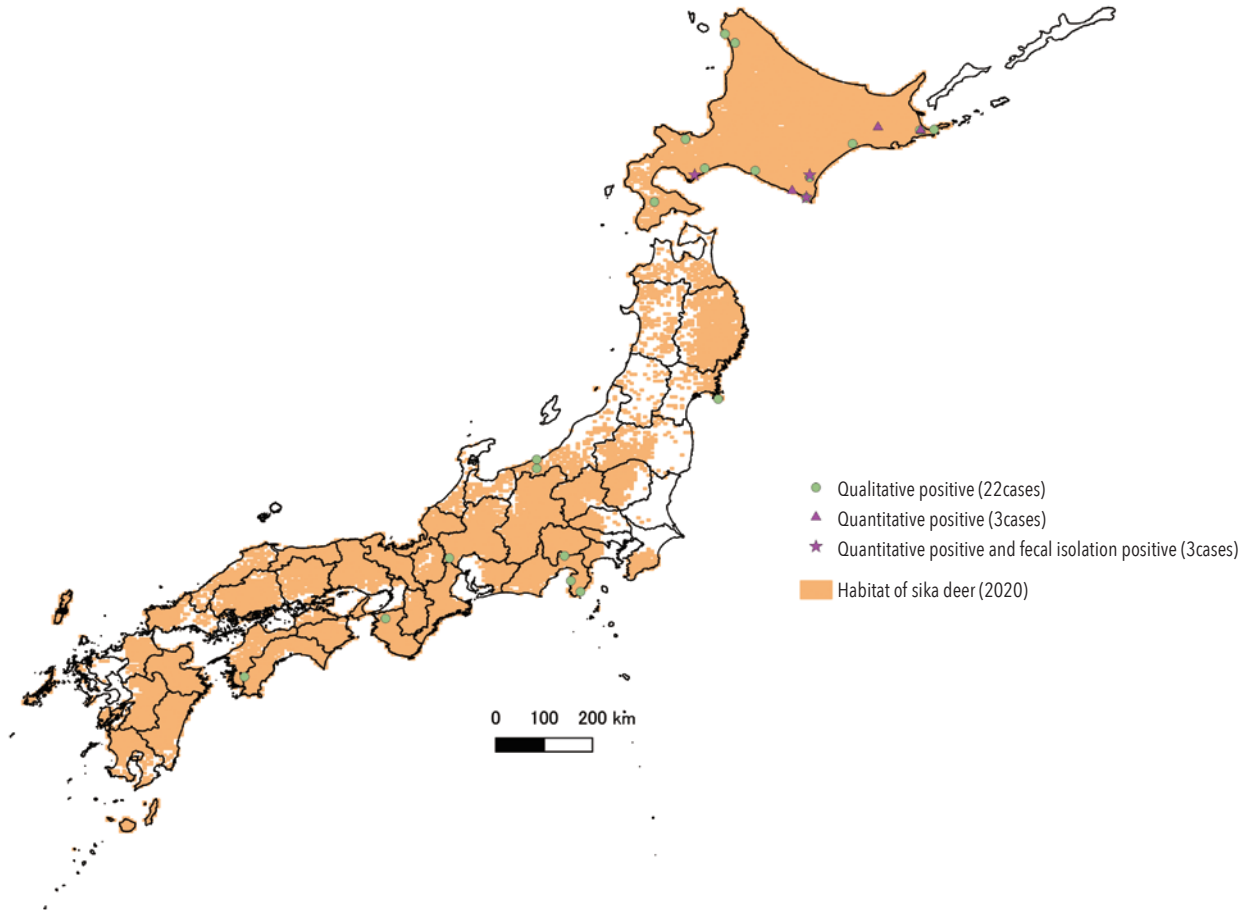
Wildlife Surveillance

Wild animals have been considered one of the sources of infection for livestock. Even for the disease eradicated among livestock, the disease may be maintained among wild animals. For this reason, it is necessary to study the status of animal infectious diseases in wild animal population. MAFF is conducting surveillance in wild animal species for the infectious diseases relevant in livestock sector.

(1) Johne's disease surveillance targeting wild sika deer

From FY 2016 to FY 2021, 1,531 fecal matter samples of wild sika deer were tested for Johne's disease, and 6 samples were determined to be quantitative positive (i.e. *MAP* genes detected above the reference value) by PCR testing, while 22 samples were qualitative positive (i.e. *MAP* genes detected but low concentration). Of the samples that tested positive in the quantitative test, 3 were also confirmed positive in fecal culture.

Fig. 2-10-1 Johne's disease surveillance in wild sika deer (FY2016-2020)



(Note: Habitat of sika deer is based on data published by the Ministry of the Environment (https://www.env.go.jp/press/109239.html).

(2)Ibaraki disease surveillance targeting wild sika deer

From FY2017 to FY2021, 904 serum samples of wild sika deer were tested for Ibaraki disease, with 16 positive in FY2017, 2 in FY2019, and 5 in FY2020.

(3) Chronic Wasting Disease (CWD) test for wild sika deer

Of the samples collected in FY2021, 100 samples (medulla oblongata) were tested for CWD and all tested negative.

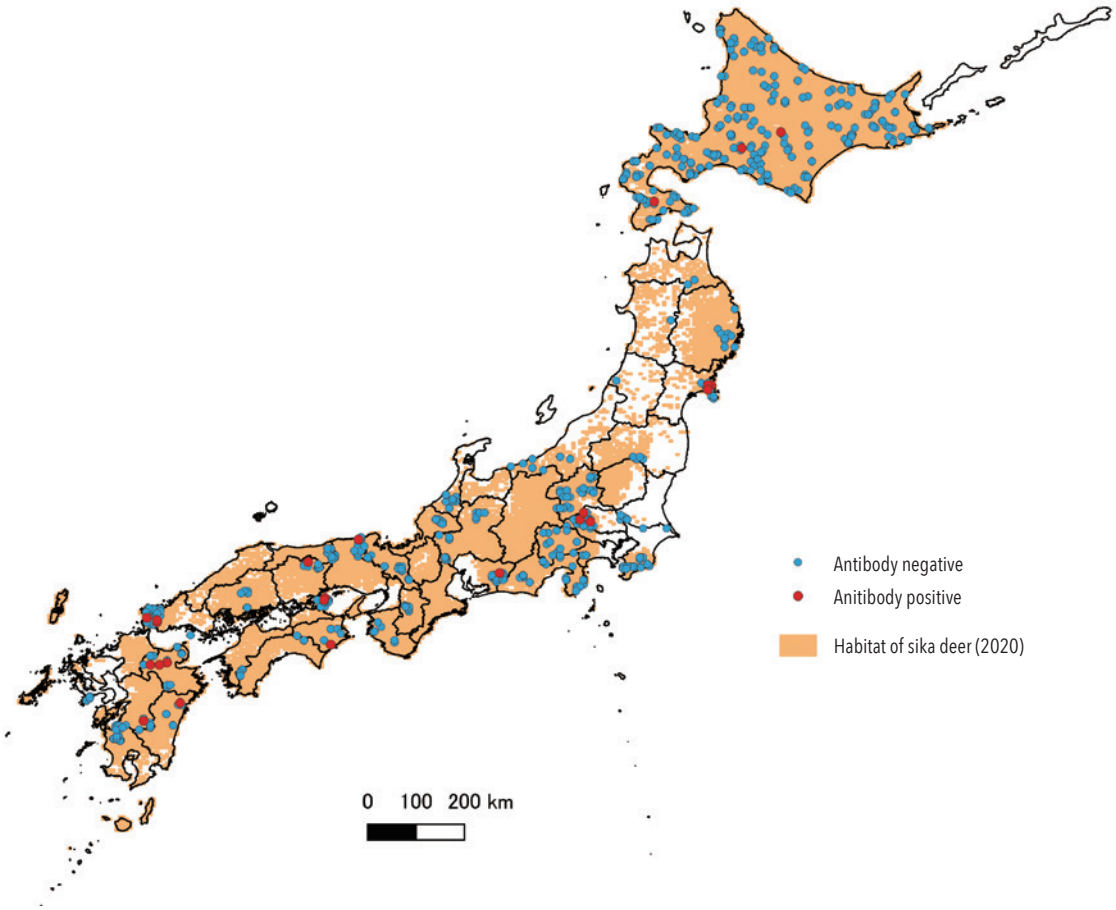
(4) Aujeszky's disease surveillance targeting wild boars

Aujeszky's disease is a swine disease designated as a Notifiable infectious disease. Major clinical signs are abortions in pregnant sows, neurological symptoms and high mortality in young piglets. Japan has been pursuing eradication based on disease control guidelines, and as a result, no outbreaks have been reported in domestic pigs since 2017. With regard to wild boars, testing was conducted mainly in areas where positive results were confirmed in previous surveillance, and 11 samples were confirmed antibody positive in FY2018 and 5 samples in FY2019. In FY2020, samples were collected in the areas where no antibodies have been detected before, and the result was all negative. Tests are ongoing as of the end of FY2021.

More information on wildlife surveillance can be found at;

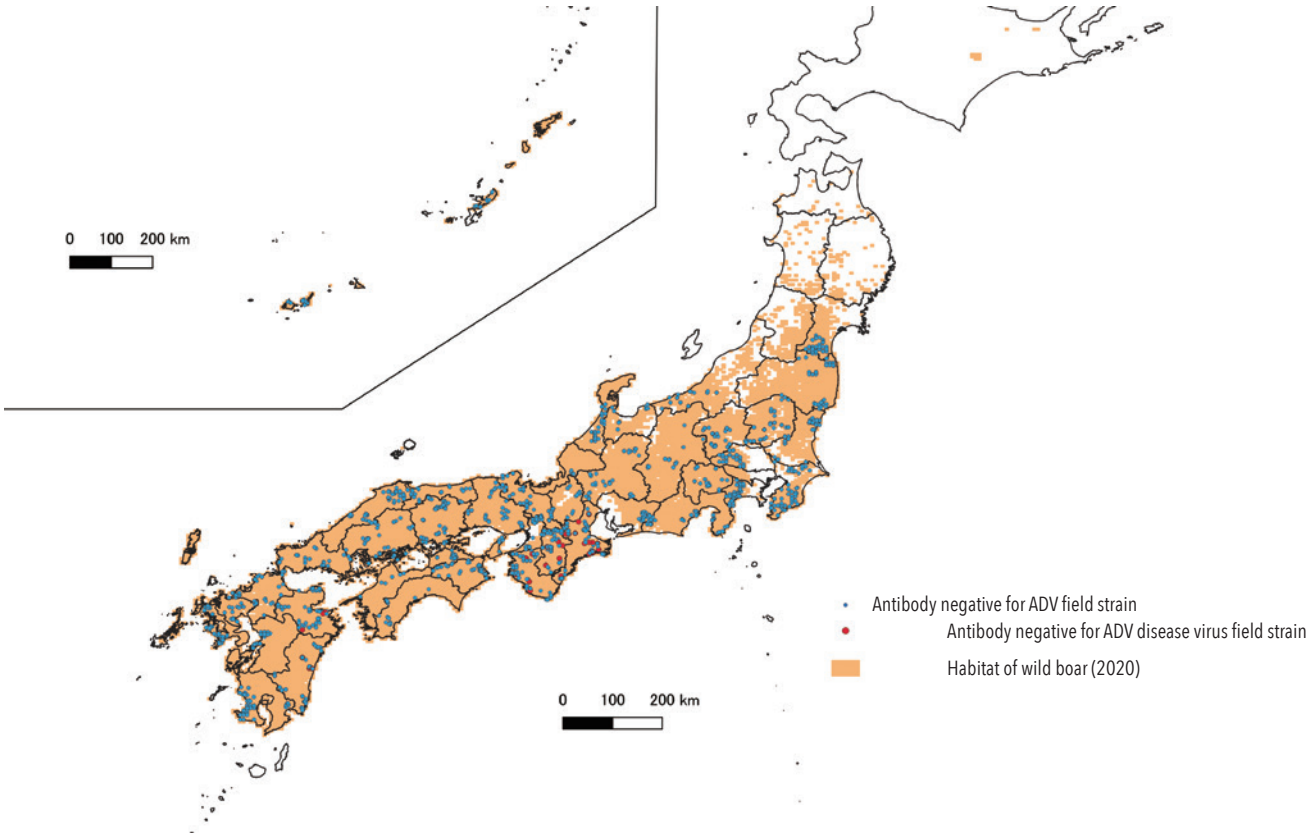
https://www.maff.go.jp/j/syouan/douei/katiku_yobo/wildlife_surveillance.html

Fig. 2-10-2 Ibaraki disease surveillance in wild deer (FY 2017-2021)



(Note: Habitat of sika deer is based on data published by the Ministry of the Environment (https://www.env.go.jp/press/109239.html).

Fig. 2-10-3 Aujeszky's disease surveillance in wild boars (FY 2018-2020)



(Note: Habitat of wild boar is based on data published by the Ministry of the Environment (https://www.env.go.jp/press/109239.html). Although the map indicates wild boar habitat includes Hokkaido, according to Hokkaido, they are originated from captive boar-pig hybrid and no wild boars in their natural state have been confirmed in Hokkaido.

Appendixes

1 List of the Domestic Animal Infectious Disease

Disease	Animal species*	
	Art.2 of the Act	Art.1 of the Government Ordinance
Rinderpest	Cattle, sheep, goat, pig	Water buffalo, deer, wild boar
Contagious bovine pleuropneumonia	Cattle	Water buffalo, deer
Foot and mouth disease	Cattle, sheep, goat, pig	Water buffalo, deer, wild boar
Infectious encephalitis	Cattle, horse, sheep, goat, pig	Water buffalo, deer, wild boar
Rabies	Cattle, horse, sheep, goat, pig	Water buffalo, deer, wild boar
Vesicular stomatitis	Cattle, horse, pig	Water buffalo, deer, wild boar
Rift valley fever	Cattle, sheep, goat	Water buffalo, deer
Anthrax	Cattle, horse, sheep, goat, pig	Water buffalo, deer, wild boar
Hemorrhagic septicemia	Cattle, sheep, goat, pig	Water buffalo, deer, wild boar
Brucellosis	Cattle, sheep, goat, pig	Water buffalo, deer, wild boar
Tuberculosis	Cattle, goat	Water buffalo, deer
Johne's disease	Cattle, sheep, goat	Water buffalo, deer
Piroplasmosis* (limited to that caused by pathogens prescribed by the Ministrial Ordinance)	Cattle, horse	Water buffalo, deer
Anaplasmosis* (limited to that caused by pathogens prescribed by the Ministrial Ordinance)	Cattle	Water buffalo, deer
Transmissible spongiform encephalopathy	Cattle, sheep, goat	Water buffalo, deer
Glanders	Horse	
Equine infectious anemia	Horse	
African horse sickness	Horse	
Peste des petits ruminants	Sheep, goat	Deer
Classical swine fever	Pig	Wild boar
African swine fever	Pig	Wild boar
Swine vesicular disease	Pig	Wild boar
Fowl cholera	Chicken, duck, quail	Turkey
Highly pathogenic avian influenza	Chicken, duck, quail	Pheasant, ostrich, guinea fowl, turkey
Low pathogenic avian influenza	Chicken, duck, quail	Pheasant, ostrich, guinea fowl, turkey
Newcastle disease (limited to that designated as highly pathogenic by the Ordinance)	Chicken, duck, quail	Turkey
Avian Salmonelosis* (limited to that caused by pathogens prescribed by the Ministrial Ordinance)	Chicken, duck, quail	Turkey
Foul brood	Honey bee	

*The following diseases are deemed as the Infectious Diseases when they are caused by the causative agents designated by the Ministrial Ordinance.

Ministrial Ordinance.	
Piroplasmosis	The disease caused by Babesia bigemina, B. bovis, B. equi, B. caballi, Theilaria parva and T. annulata
Anaplasmosis	The disease caused by Anaplasma marginale.
Avian Salmonelosis	The disease caused by *Salmonella enterica serovar Gallinarum biovar Pullorum or Gallinarum*

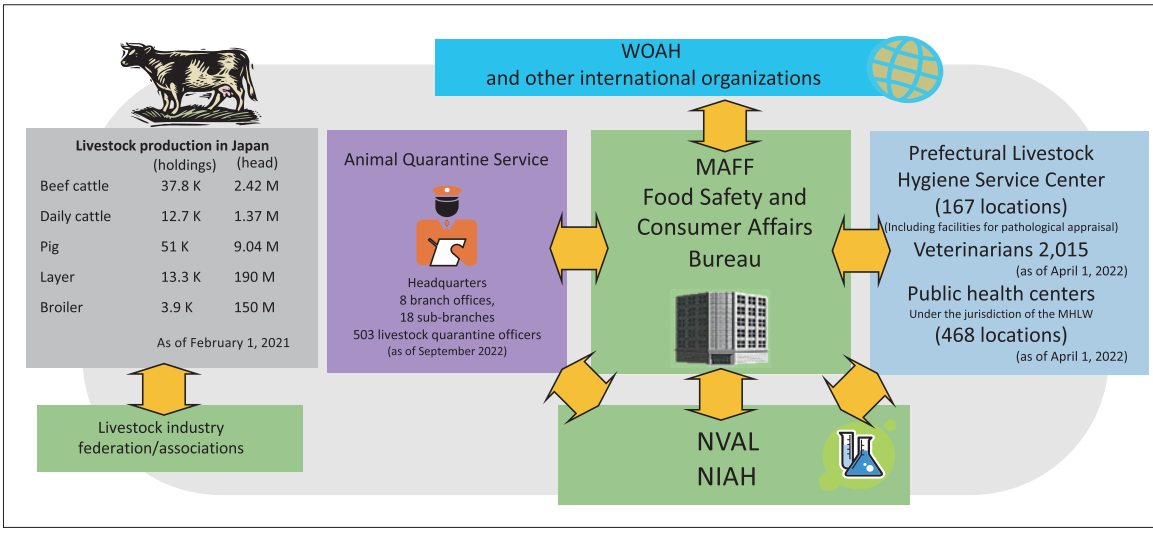
2 List of the Notifiable Infectisous Disease

Disease	Animal species*
Bluetongue	Cattle, water buffalo, sheep, goat, deer
Akabane disease	Cattle, water buffalo, sheep, goat
Malignant catarrhal fever	Cattle, water buffalo, deer, sheep
Chuzan disease	Cattle, water buffalo, goat
Lumpy skin disease	Cattle, water buffalo
Bovine viral diarrhea/ mucosal disease	Cattle, water buffalo
Infectious bovine rhinotracheitis	Cattle, water buffalo
Bovine leukosis	Cattle, water buffalo
Aino virus infection	Cattle, water buffalo
Ibaraki disease	Cattle, water buffalo
Bovine papular stomatitis	Cattle, water buffalo
Bsheep ephemeral fever	Cattle, water buffalo
Melioidosis	Cattle, water buffalo, deer, horse, sheep, goat, pig, wild boar
Tetanus	Cattle, water buffalo, deer, horse
Blackleg	Cattle, water buffalo, deer, sheep, goat, pig, wild boar
Leptospirosis	Cattle, water buffalo, deer, pig, wild boar, dog
Salmonellosis	Cattle, water buffalo, deer, pig, wild boar, chicken, duck, turkey, quail
Bovine campylobacteriosis	Cattle, water buffalo
Trypanosomiasis	Cattle, water buffalo, horse
Tricomoniasis	Cattle, water buffalo
Neosporosis	Cattle, water buffalo
Cattle grub	Cattle, water buffalo
Nipah virus infection	Horse, pig, wild boar
Equine influenza	Horse
Equine viral arteritis	Horse
Equine rhinopneumonitis	Horse
Equine morbilli virus pneumonia	Horse
Horse pox	Horse
Tularemia	Horse, sheep, pig, wild boar, rabbit
Contagious equine metritis	Horse
Equine paratyphoid	Horse
Epizootic lymphangitis	Horse
Contagious ecthyma	Sheep, goat, deer
Nairobi sheep disease	Sheep, goat
Sheep pox	Sheep
Maedi visna	Sheep

Contagious agalactia	Sheep, goat
Enzootic abortion of ewes	Sheep
Toxoplasmosis	Sheep, goat, pig, wild boar
Mange	Sheep
Goat pox	Goat
Caprine arthritis/encephalomyelitis	Goat
Contagious caprine pleuropneumonia	Goat
Aujeszky's disease	Pig, wild boar
Transmissible gastroenteritis	Pig, wild boar
Swine enteroviral encephalomyelitis	Pig, wild boar
Porcine reproductive and respiratory syndrome	Pig, wild boar
Swine vesicular exanthema	Pig, wild boar
Porcine epidemic diarrhea	Pig, wild boar
Atrophic rhinitis	Pig, wild boar
Swine erysipelas	Pig, wild boar
Swine dysentery	Pig, wild boar
Avian influenza	Chicken, duck, turkey, quail
Low pathogenic Newcastle disease	Chicken, duck, turkey, quail
Avian pox	Chicken, quail
Marek's disease	Chicken, quail
Infectious bronchitis	Chicken
Infectious laryngotracheitis	Chicken
Infectious bursal disease	Chicken
Avian leukosis	Chicken
Avian tuberculosis	Chicken, duck, turkey, quail
Avian mycoplasmosis	Chicken, turkey
Leucocytozoonosis	Chicken
Duck hepatitis	Duck
Duck viral enteritis	Duck
Rabbit haemorrhagic disease	Rabbit
Myxomatosis	Rabbit
Varroosis	Honey bee
Chalkbrood	Honey bee
Acariosis	Honey bee
Nosemmosis	Honey bee

*Animal species are the ones designated in the Article 2 of the Ministrial Ordinance for Enforcement of the Act on Domestic Animal Infectious Diseases Control

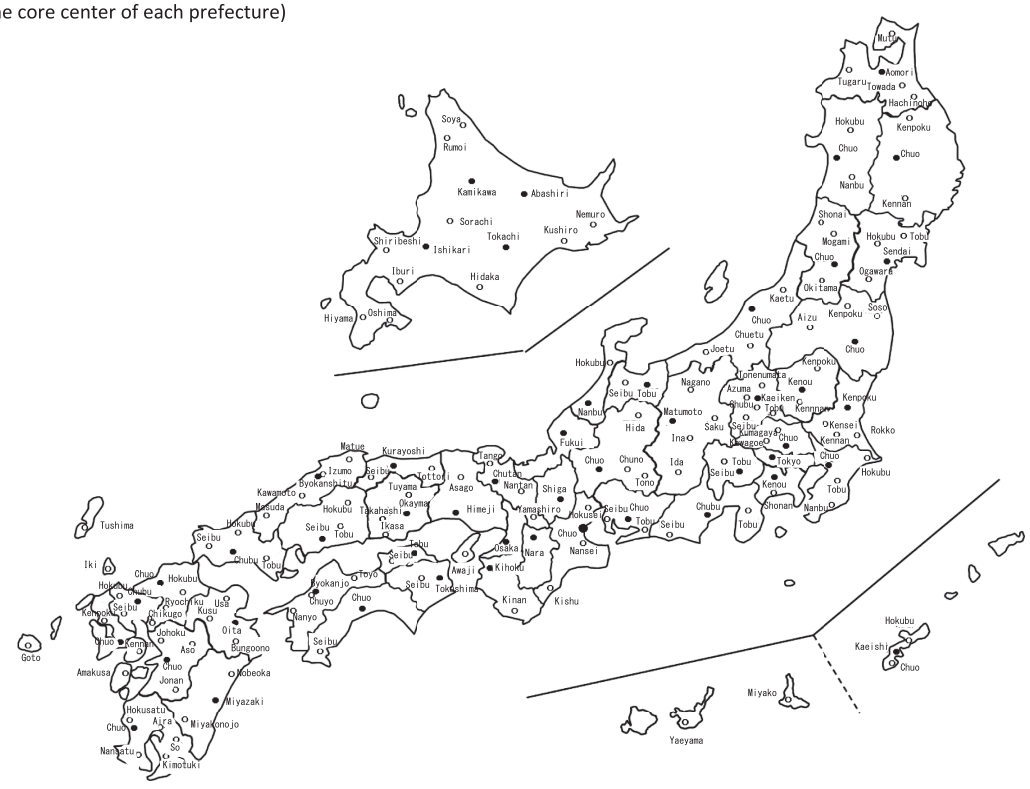
3 Animal health systems in Japan



Location of livestock hygiene service centers (LHSCs) in Japan

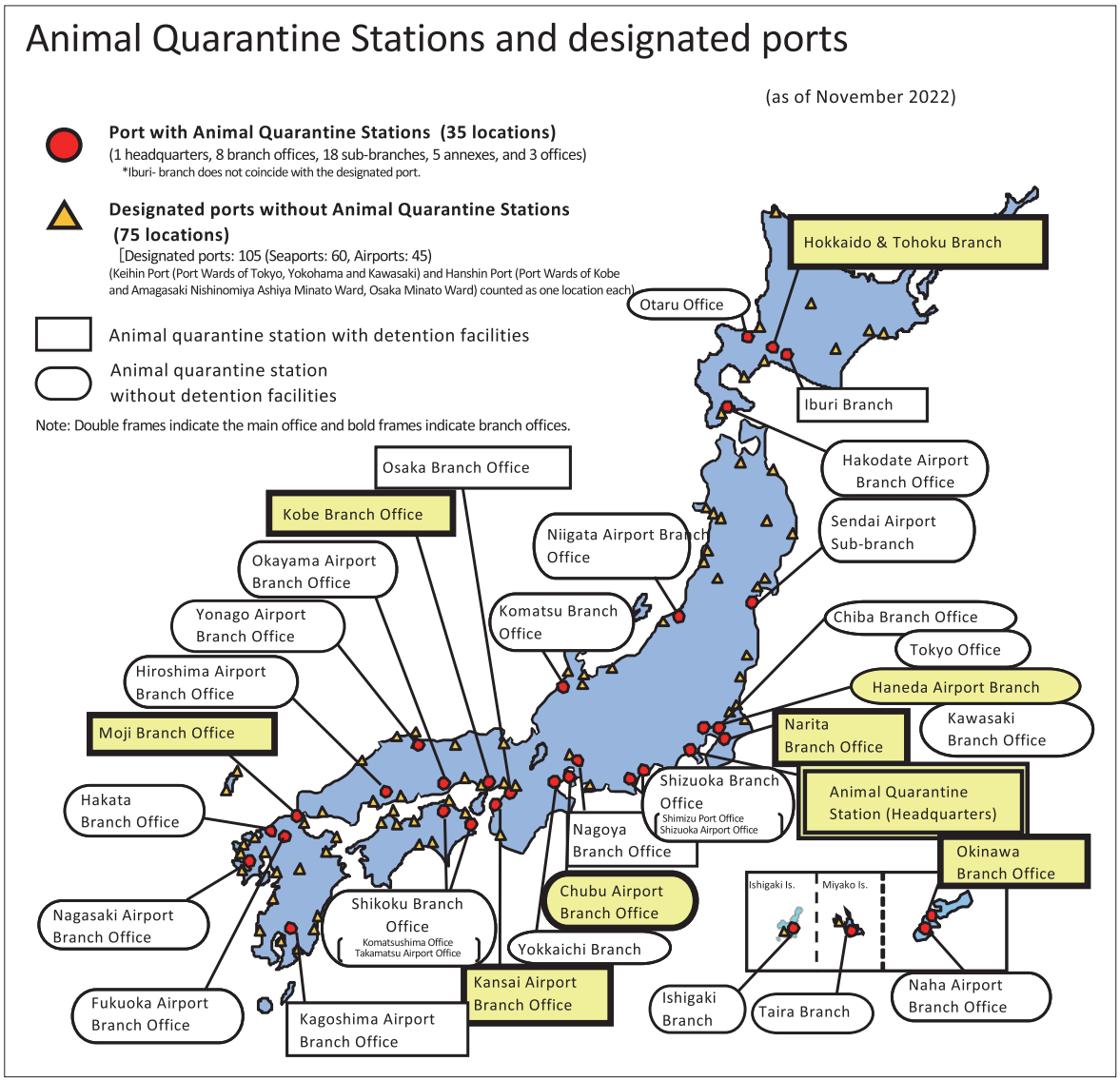
○ Livestock Hygiene Service Center : 117 locations

● Livestock Hygiene Service Center for diagnosis : 50 locations
(only the core center of each prefecture)



Animal Quarantine Stations and designated Ports

Animal Quarantine Stations (8 branches and 18 sub-branches nationwide, in addition to the main office in Yokohama) inspect imported and exported animals and livestock products at designated ports and airports, and implement quarantine measures.



National Institute of Animal Health of National Agriculture and Food Research Organization

The National Institute of Animal Health (NIAH) covers a wide range of research from basics to development on the prevention, diagnosis, and treatment of animal diseases. As the only dedicated research institute for animal diseases in Japan, NIAH also conducts confirmatory tests for infectious diseases of domestic animals and produces and distributes diagnostic reagents and other biological products for veterinary use.

【Locations of the National Institute of Animal Health】

Reference websites

Information on animal health; Food Safety and Consumer Affairs Bureau, MAFF
https://www.maff.go.jp/j/syouan/douei/katiku_yobo/index.html

Animal Quarantine Service, MAFF
https://www.maff.go.jp/aqs/index.html

National Veterinary Assay Laboratory, MAFF
https://www.maff.go.jp/nval/

National Institute of Animal Health, National Agriculture and Food Research Organization
https://www.naro.go.jp/english/laboratory/niah/index.html

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