Annual Report of Vector-borne Diseases Pathogens and Vector Surveillance 2024

September / 2025

Policy Planning and Quarantine Division
Department of Infectious Disease Prevention and Control
Public Health Bureau
MINISTRY OF HEALTH, LABOUR AND WELFARE

Officer for Analysis on Sanitation Control
YOKOHAMA QUARANTINE STATION

Preface

Based on the Tourism Nation Promotion Basic Law, which came into force on January 1, 2007, the Government of Japan has positioned tourism as one of the key strategies for economic growth. However, the global outbreak of Coronavirus disease (COVID-19), which emerged at the end of 2019, caused significant damage to economies and international exchanges around the world, including Japan, resulting in a drastic decrease in the number of foreign tourists visiting Japan.

Under such circumstances, as a key initiative for revitalizing the Japanese economy following the COVID-19 pandemic, the Tourism Nation Promotion Basic Plan was approved by the Cabinet in 2023. In accordance with this plan, Japan set specific numerical targets, including the number of inbound foreign tourists. With the resumption of international exchanges, such as the return of large cruise ships from overseas, the number of foreign visitors to Japan in 2024 reached 36,869,900, representing a 47.1% increase compared to 2023. This figure exceeded the previous record high in 2019 by approximately five million visitors, marking an all-time record.[1]

Meanwhile, according to the World Health Organization (WHO), vector-borne diseases account for more than 17% of all infectious diseases and are responsible for over 700,000 deaths each year.[2] Notably, dengue fever, a mosquito-borne disease, continues to pose a major global health threat. As of June 23, 2025, WHO reported 14,402,788 cases (including 7,679,971 confirmed cases and 11,070 deaths) in 2024. By the end of April 2024, the number of cases had already exceeded 7.6 million, surpassing the previous record of 4.6 million in 2023, indicating that the threat of infectious diseases remains significant.[3-4]

With the resurgence of global trade and increasing numbers of international travelers entering Japan, the number of dengue fever cases reported as having been infected overseas but diagnosed domestically in Japan reached 231 in 2024, approximately 1.3 times higher than the 175 cases reported in the previous year. These data indicate an increasing risk of the introduction and establishment in Japan of quarantinable infectious diseases and similar infectious diseases not endemic to Japan, which are equivalent to quarantinable infectious diseases (quarantinable infectious diseases, etc.).[5-6]

In fact, quarantine stations have confirmed the presence of mosquito and rodent species that, although native, are capable of transmitting quarantinable infectious diseases and other related conditions through port sanitation surveys. Moreover, invasive rodent species capable of transmitting plague or hantavirus infection have been captured from international cargo or containers based on notifications from relevant authorities. Additionally, invasive mosquito species such as *Aedes aegypti*, which transmit dengue fever and other mosquito-borne diseases, have been collected at Narita International Airport, Tokyo International Airport, and Chubu Centrair International Airport.

Accordingly, the surveillance, monitoring, and pathogen examination of mosquito and rodent populations that serve as vectors of quarantinable infectious diseases, etc. at points of entry, including quarantine ports and quarantine airports, as well as the prompt implementation of control measures to prevent their introduction and establishment based on the obtained results, have become increasingly important. Furthermore, continuous surveillance activities during normal times are essential to enable a rapid response to emerging infectious diseases, as experienced during the COVID-19 pandemic.

This report fulfills Japan’s obligation as a member state of the United Nations under the International Health

Regulations (2005) established by the WHO and presents the results of port sanitation surveys conducted by quarantine stations nationwide in 2024.

September 2025

Contents

1 Vector-borne quarantinable infectious diseases reported in Japan, 2024

1.1 Mosquito-borne diseases

The domestic occurrence of mosquito-borne diseases classified as quarantinable infectious diseases, etc. in 2024 was examined with reference to the National Epidemiological Surveillance of Infectious Diseases conducted under the Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases (Surveillance).

In 2024, there were 231 reported cases of dengue fever, all of which were infections acquired overseas. This represents an approximately 1.3-times increase compared with the 175 cases reported in 2023.[5,6] The estimated regions of infection were 15 countries in Asia (including Indonesia, the Philippines, India, and Thailand), four countries in the Americas (including Brazil, Paraguay, and Mexico), one country in the Middle East (the United Arab Emirates), and one country in Africa (Mauritius).[5]

In 2024, there were 45 reported cases of malaria, all of which were infections acquired overseas, representing an approximately 1.3-times increase compared with 35 cases in 2023.[5] The estimated regions of infection were 12 countries in Africa (including Uganda, Ghana, Guinea, and Nigeria), five countries in Asia (including India, Pakistan, the Korea, Nepal, and Indonesia), two countries in the Pacific region (the Solomon Islands and Papua New Guinea), and one country in the Middle East (Afghanistan).[5]

In 2024, there were 10 reported cases of Chikungunya fever, all of which were infections acquired overseas, representing a 1.4-times increase compared with the seven cases reported in 2023.[5] The estimated regions of infection were four countries in Asia: India, the Philippines, Indonesia, and Bangladesh.[5]

In 2024, there were four reported cases of Zika virus infection, all of which were infections acquired overseas, representing a twofold increase compared with two cases reported in 2023.[5] The estimated regions of infection were three countries: India, Indonesia, and Nigeria.[5]

In 2024, there were nine reported cases of Japanese encephalitis, all of which were domestically acquired infections.[5] This represents a 1.5-times increase compared with six cases reported in 2023.[5] The cases occurred in Gunma Prefecture (2 cases), Ibaraki Prefecture (1), Kumamoto Prefecture (1), Gifu Prefecture (1), Shizuoka Prefecture (1), and Chiba Prefecture (1), with two cases in which the infection place was unknown. No deaths were reported.[5]

In Japan, surveillance of *Japanese encephalitis virus* trends is conducted through measurement of hemagglutination inhibition (HI) antibody titers in the sera of pigs, which serve as amplifying hosts for the virus, under the Infectious Disease Epidemic Forecasting Project. During the period from June to September 2024, antibodies against *Japanese encephalitis virus* were detected in pigs in 23 of 26 prefectures surveyed (Ibaraki, Gunma, Chiba, Tokyo, Kanagawa, Niigata, Ishikawa, Shizuoka, Aichi, Mie, Hyogo, Shimane, Hiroshima, Tokushima, Kagawa, Ehime, Kochi, Fukuoka, Saga, Nagasaki, Kumamoto, Oita, and Miyazaki Prefectures), compared with 21 prefectures out of 26 in 2023.[7] In the 1960s, when numerous Japanese encephalitis cases occurred in humans, increases in HI antibody titers against *Japanese encephalitis virus* in pigs were observed prior to human cases. However, due to widespread Japanese encephalitis vaccination and changes in living environments, the patterns of infection in pigs and human incidence are no longer necessarily correlated. In recent years, the number of reported Japanese encephalitis cases has remained around 10 per year.[7]

No West Nile fever cases were reported in 2024.[5]

1.2 Rodent-borne diseases

Surveillance in 2024 identified no reported cases of plague (transmitted by rodents and insects such as fleas) or of Lassa fever, South American hemorrhagic fevers, hemorrhagic fever with renal syndrome (HFRS), or hantavirus pulmonary syndrome (HPS) (transmitted directly by infected rodents). The absence of any reported cases suggests that none of these diseases occurred in Japan during the survey period.[5]

2 Vector-borne quarantinable infectious diseases reported in the world, 2024

2.1 Mosquito-borne diseases

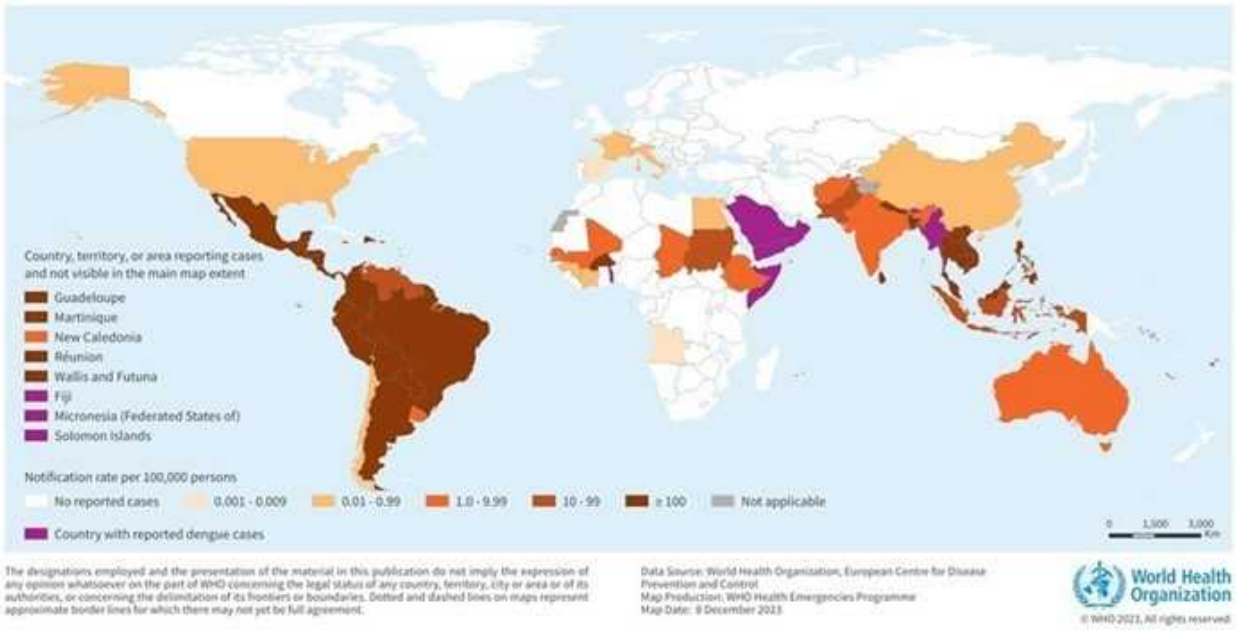
○ Dengue fever

In the Region of the Americas, a total of 13,070,675 cases of dengue fever were reported in 2024, including 8,404 deaths. The number of cases was the highest recorded since 2019, representing approximately a 2.8-times increase compared with 4,595,358 cases reported in 2023.[8] The largest number of cases was reported in Brazil, with 10,272,999 cases (including 6,297 deaths), followed by Argentina with 581,559 cases (including 408 deaths), Mexico with 558,846 cases (including 478 deaths), Colombia with 320,982 cases (including 229 deaths), and Paraguay with 295,785 cases (including 129 deaths).[8]

In the Region of Asia, a total of 7,059,138 cases were reported in 2024, including 40,840 deaths, representing approximately a sixfold increase compared with 1,160,000 cases reported in 2023.[9,10] The highest number of cases was reported in Indonesia (257,271 cases, including 1,461 deaths), followed by India (232,425 cases, including 233 deaths), Thailand (104,681 cases, including 87 deaths), and Bangladesh (101,214 cases, including 557 deaths).[10]

In the European Region, domestically acquired cases of dengue fever were reported in France, Italy, and Spain. In France, a total of 83 cases were reported between mid-June and October 2024, including cases from Alpes-Maritimes (17 cases), Drôme (2 cases), Hérault (3 cases), Pyrénées-Orientales or Lozère (2 cases), Vaucluse (18 cases), and Var (41 cases). In Italy, 213 cases (including one with an unknown place of infection) were reported between August and October 2024, from Abruzzo (15 cases), Emilia-Romagna (36 cases), Lombardy (12 cases), Marches (146 cases), Tuscany (2 cases), and Veneto (1 case).[11] In Spain, eight cases were reported between August and September 2024 in Tarragona Province, Catalonia Region.[11]

Countries/territories/areas reporting autochthonous dengue cases
（November 2022- November 2023） *



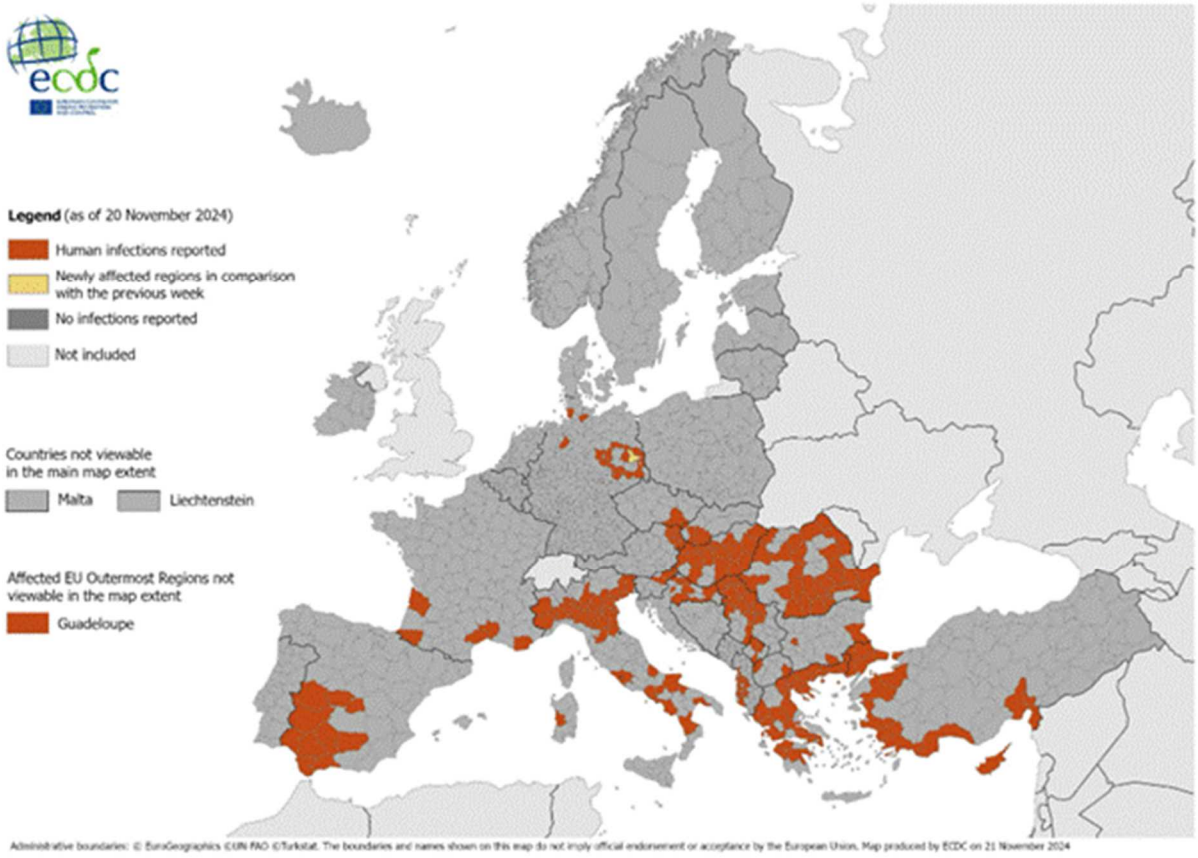
* Based on most recent available data (the data should be interpreted considering the differences in reporting rates and case definitions between the regions).
Source: WHO, Disease Outbreak News, Dengue - Global situation

○ West Nile fever

【Europe】

During the 2024 transmission season, a total of 1,436 domestically acquired cases of West Nile fever were reported from 19 countries within the European Union (EU) and European Economic Area (EEA). This represents the second highest number of locally acquired cases since 2018, when a peak of 1,549 cases was reported. Domestically acquired cases in 2024 were reported as follows: Italy (455 cases), Greece (217 cases), Spain (138 cases), Hungary (111 cases), Albania (106 cases), Romania (99 cases), Türkiye (90 cases), Serbia (63 cases), France (39 cases), Austria (34 cases), Germany (27 cases), Croatia (20 cases), Bulgaria (16 cases), Slovakia (6 cases), Slovenia (5 cases), Kosovo (4 cases), Cyprus (2 cases), Czech Republic (2 cases), and North Macedonia (2 cases). A total of 125 deaths were reported in the region, distributed as follows: Greece (34 deaths), Italy (21), Romania (20), Spain (15), Albania (13), Türkiye (7), Hungary (5), Serbia (5), Bulgaria (3), France (1), and North Macedonia (1).[12]

Distribution of locally acquired human West Nile virus infections in 2024
(till 20 November 2024)



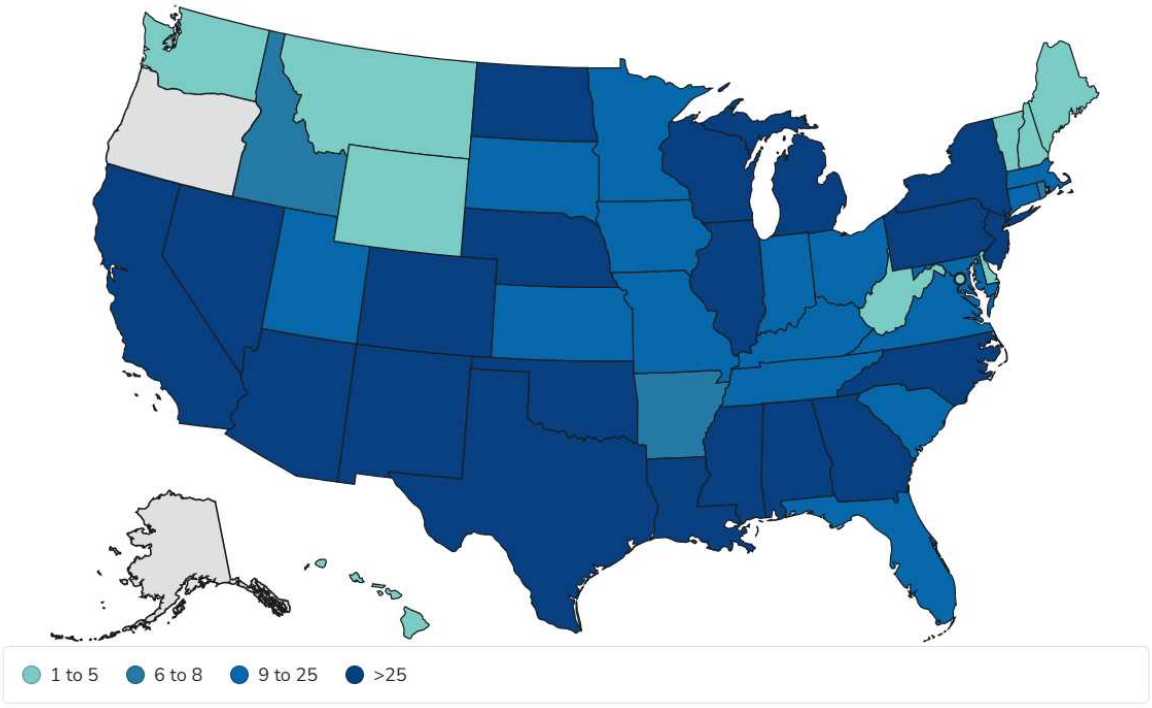
Source: ECDC, Surveillance of West Nile Virus Infection in human, weekly reports, weekly 47, 2024

【United States of America】

During the 2024 transmission season, a total of 1,791 cases of West Nile fever were reported from 49 states in the United States of America, representing an approximate 32% decrease compared with 2,628 cases reported in 2023.

The largest number of cases was reported in the State of Texas (456 cases), followed by the State of California (131 cases).[13]

West Nile virus human disease cases reported by state of residence, 2024



Source: West Nile Virus, Current Year Data (2024)

○ Malaria

In 2023, malaria occurred in an estimated 263 million cases across 83 countries worldwide, resulting in approximately 597,000 deaths.[14]

A review of the past decade shows an upward trend in global malaria incidence, increasing from 247 million cases in 2020 to a record high of over 260 million cases in 2023, the first time since 2000 that global cases have exceeded 260 million. In contrast, the number of deaths showed a declining trend, with 597,000 deaths in 2023, lower than in 2022.[14]

In the WHO African Region, there were 246 million cases and 569,000 deaths in 2023, accounting for 94% of global malaria cases and 95% of global malaria deaths. The highest number of cases was reported in Nigeria with 68,136,000 cases, representing 25.9% of the global total.[15]

In the WHO Region of the Americas, 548,000 cases and 342 deaths were reported in 2023. Over the past decade, the region had shown a general declining trend since peaking at 946,000 cases in 2017, but the 2023 figure exceeded that of 2022.[15] The highest number of cases was reported in Brazil (163,000 cases), accounting for 29.7% of cases in the Region of the Americas.[14] Four countries, namely Paraguay (2018), Argentina (2019), El Salvador (2021), and Belize (2023), have been certified by the WHO as having eliminated malaria.[15]

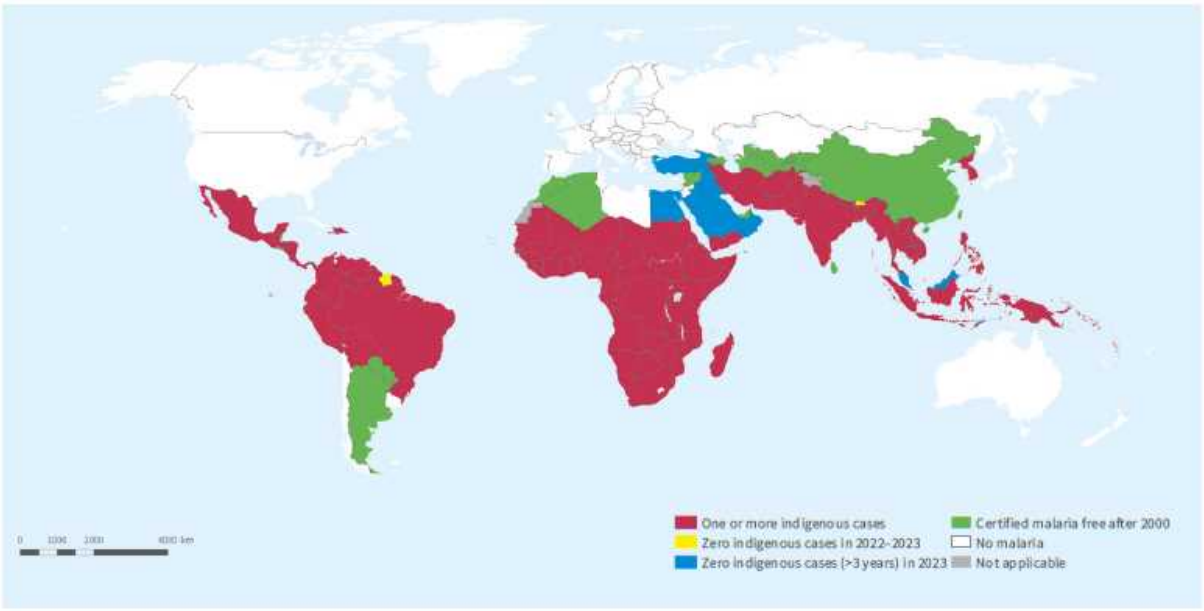
In the WHO South-East Asia Region, 4 million cases and 6,000 deaths were reported in 2023. Over the past decade, both cases and deaths have shown declining trends. Since 2020, the number of cases has remained around 4 million, with annual deaths fluctuating between 6,000 and 8,000. The highest number of cases was reported in India (2,038,000 cases), accounting for 51.0% of the total cases in the South-East Asia Region.[15]

In the WHO Western Pacific Region, 1,747,000 cases and 3,400 deaths were reported in 2023. Over the

past decade, both cases and deaths have remained relatively stable since 2014, although increases were observed in 2022 and 2023. The highest number of cases was reported in Papua New Guinea (1,529,400 cases), accounting for 87.5% of the total cases in the Western Pacific Region.[15]

In the WHO Eastern Mediterranean Region, 10.2 million cases and 18,300 deaths were reported in 2023. During the past decade, the number of cases increased approximately 2.6-fold and deaths 2.4-fold compared with 2014, the year with the lowest incidence. The highest numbers of cases were reported in Pakistan (4,285,000 cases) and Sudan (3,406,000 cases), together accounting for 75.4% of all cases in the Eastern Mediterranean Region.[15]

Countries with indigenous cases in 2000 and their status by 2023



WHO: World Health Organization.
* Malaysia has a significant number of indigenous malaria cases caused by *Plasmodium knowlesi* infection.
† Countries and areas with zero indigenous cases for at least 3 consecutive years are considered to have eliminated malaria. In 2023, Malaysia reported zero indigenous cases caused by human *Plasmodium* species† for the sixth consecutive year, and Saudi Arabia and Timor-Leste reported zero indigenous cases for the third consecutive year, ending the malaria epidemic. Cabo Verde and Belize were certified malaria free in 2023, following 4 years of zero malaria cases. Egypt has since been certified malaria free in 2024.

Source: WHO, World Malaria Report 2024

○ Chikungunya fever

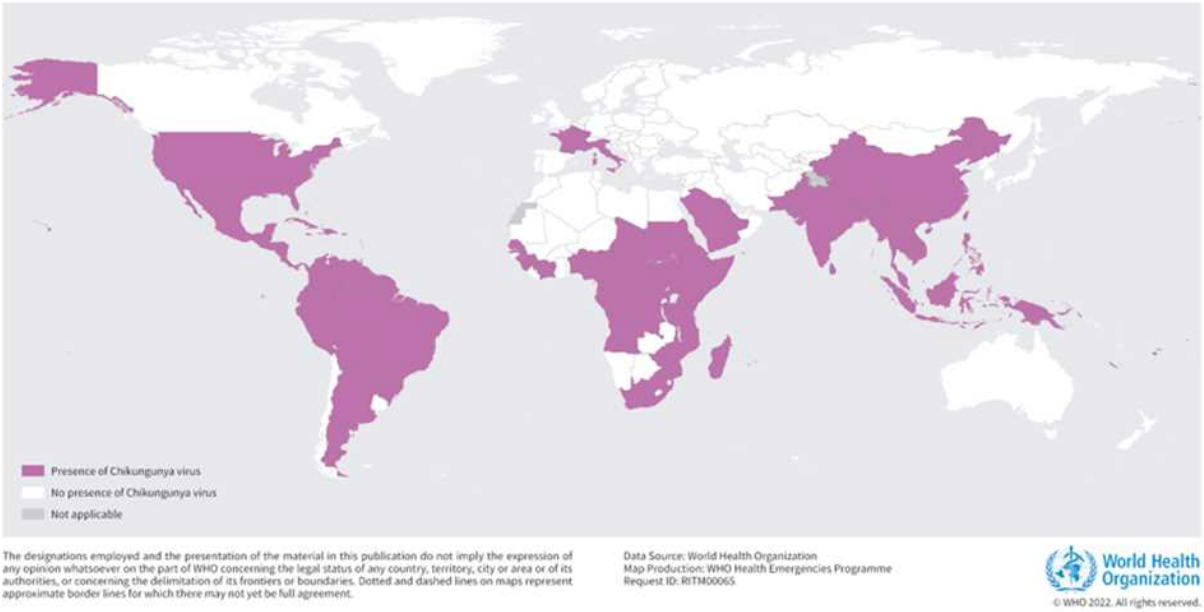
Chikungunya fever was first reported in 1952 in the United Republic of Tanzania. Since then, cases have been documented in other countries within the African Region and the Asian Region. The first urban outbreak was recorded in Thailand in 1967, followed by the first reports in India during the 1970s. At present, Chikungunya fever has been reported in more than 110 countries across the Asian, African, European, and American Regions.[16]

As of 30 November 2024, approximately 480,000 cases and more than 200 deaths of Chikungunya fever had been reported from 15 countries in the Region of the Americas, 6 countries in the Region of Asia, 1 country in the Region of Africa, and 1 country in the Region of Europe.[17]

In particular, by the end of 2024, 431,409 cases (including 232,578 confirmed cases) and 245 deaths had been reported from the Region of the Americas, mainly in Central and South America.[17] Among countries in the Region of the Americas, the three countries with the highest number of reported cases were Brazil

(425,773 cases), Paraguay (3,134 cases), and Argentina (1,388 cases). Cases in Brazil accounted for 98.7% of the total Chikungunya fever cases reported in the Region of the Americas.[18]

Global distribution of Chikungunya virus



Source：WHO Global distribution of Chikungunya virus

○ Zika virus infection

The WHO declared a Public Health Emergency of International Concern (PHEIC) between February and November 2016 due to the outbreak of Zika virus infection.[19] Since 2017, however, the number of reported cases has declined globally. Nevertheless, Zika virus infection continues to be reported in several countries and territories in the Region of the Americas, and, to date, a total of 89 countries and territories have reported cases of Zika virus infection.[19]

In the Region of the Americas, 44,445 cases (no deaths) were reported in 2024, representing approximately a 1.2-times increase compared with 37,659 cases (including 4 deaths) reported in 2023.[20] The five countries with the highest number of reported cases were Brazil (43,189 cases), Argentina (564 cases), Bolivia (267 cases), Colombia (117 cases), and El Salvador (92 cases).[20] Cases in Brazil accounted for 96.7% of the total Zika virus infection cases reported in the Region of the Americas.[20]

Countries and territories current or previous Zika virus transmission
(as of 27/05/2024)

Source：WHO, Overview, Zika epidemiology update -May 2024

Countries and territories with current or previous
Zika virus transmission, by WHO regional office

WHO Regional Office	Country / territory	Total
AFRO	Angola; Burkina Faso; Burundi; Cabo Verde; Cameroon; Central African Republic; Côte d'Ivoire; Ethiopia; Gabon; Guinea; Guinea-Bissau; Kenya; Mali; Nigeria; Senegal; Uganda	16
AMRO/PAHO	Anguilla; Antigua and Barbuda; Argentina; Aruba; Bahamas; Barbados; Belize; Bolivia (Plurinational State of); Bonaire, Sint Eustatius and Saba; Brazil; British Virgin Islands; Cayman Islands; Colombia; Costa Rica; Cuba; Curaçao; Dominica; Dominican Republic; Ecuador; El Salvador; French Guiana; Grenada; Guadeloupe; Guatemala; Guyana; Haiti; Honduras; Easter Island– Chile; Jamaica; Martinique; Mexico; Montserrat; Nicaragua; Panama; Paraguay; Peru; Puerto Rico; Saint Barthélemy; Saint Kitts and Nevis; Saint Lucia; Saint Martin; Saint Vincent and the Grenadines; Saint Maarten; Suriname; Trinidad and Tobago; Turks and Caicos; United States of America; United States Virgin Islands; Venezuela (Bolivarian Republic of)	49
SEARO	Bangladesh; India; Indonesia; Maldives; Myanmar; Sri Lanka; Thailand	7
WPRO	American Samoa; Cambodia; Cook Islands; Fiji; French Polynesia; Lao People's Democratic Republic; Marshall Islands; Malaysia; Micronesia (Federated States of); New Caledonia; Palau; Papua New Guinea; Philippines; Samoa; Singapore; Solomon Islands; Tonga; Vanuatu; Viet Nam	19
EURO	France (Var department)	1
Total		92

Source：WHO Countries and territories with current or previous Zika virus transmission
（Data as of May 2024 ）

AFRO: Regional Office for Africa. AMRO/PAHO: Regional Office for the Americas / Pan American Health Organization. EMRO: Regional Office for the Eastern Mediterranean. EURO: Regional Office for Europe.

SEARO: Regional Office for South-East Asia. WPRO: Regional Office for Western Pacific
(Source: WHO Countries and territories with current or previous Zika virus transmission (Data as of May 2024))

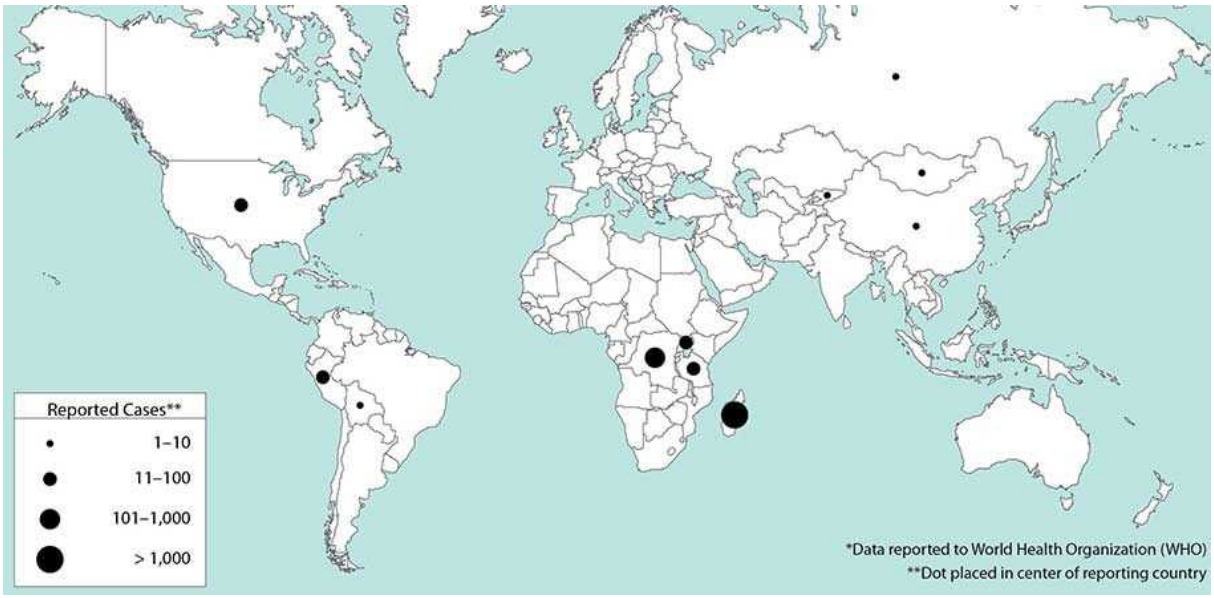
2.2 Rodent-borne diseases

○ Plague

Plague occurs on all continents except Oceania, but since the 1990s, the majority of cases have been reported in the African Region, with the Democratic Republic of the Congo, Madagascar, and Peru being the three most endemic countries. In Madagascar, in particular, cases of bubonic plague are reported almost every year during the epidemic season from September to April.[21] Between 2010 and 2015, 250 to 680 cases were reported annually in Madagascar. From 1 August to 26 November 2017, a total of 2,417 cases, including 209 deaths (case fatality rate: 9%), were reported from 57 of 114 districts in the country.[22]

In the United States of America, plague cases are reported every year, with an average of seven cases annually. Between 1970 and 2023, a total of 502 cases (including cases with unknown exposure sites) were reported from 18 states.[23] The highest number of cases was reported in the State of New Mexico (254 cases), followed by the State of Colorado (69 cases).[23]

Plague Cases by Country, 2013-2018

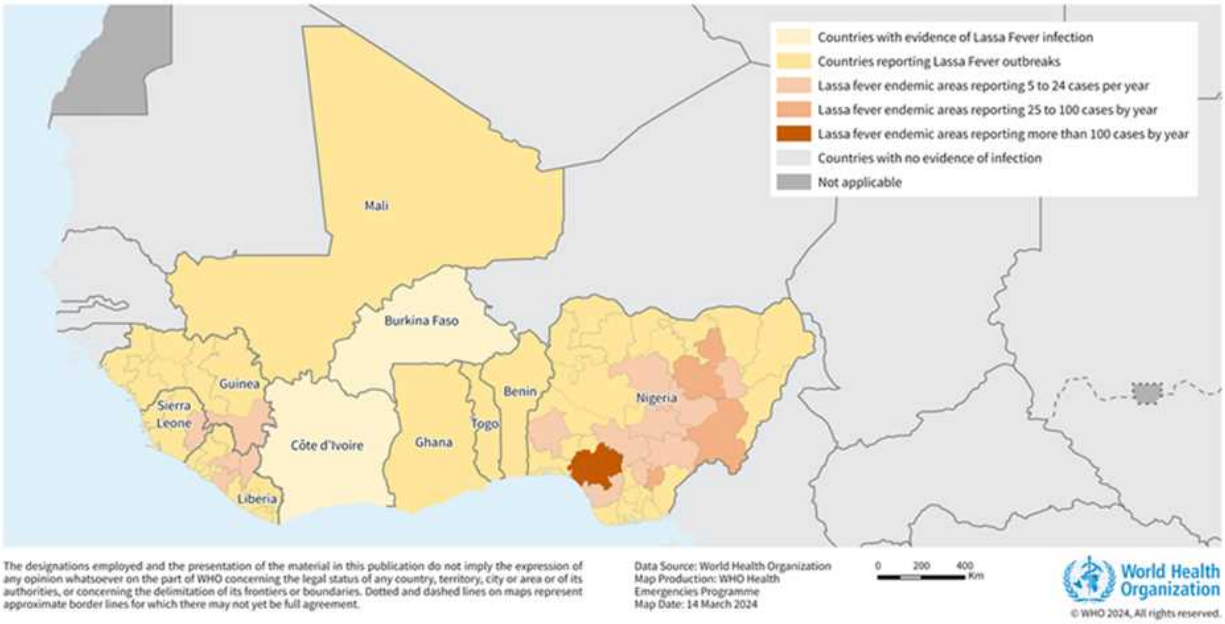


Source: CDC, plague, Maps and Statistics

○ Lassa fever

In the African Region, from epidemiological week 1 to week 49 of 2024, a total of 10,747 cases of Lassa fever (including 9,590 suspected cases) and 197 deaths were reported.[24] The highest number of cases was reported in Nigeria (10,450 cases, including 184 deaths), followed by Liberia (270 cases, including 11 deaths) and Guinea (27 cases, including 2 deaths).[24]

Geographic distribution of Lassa fever in West African affected countries (1969-2023)

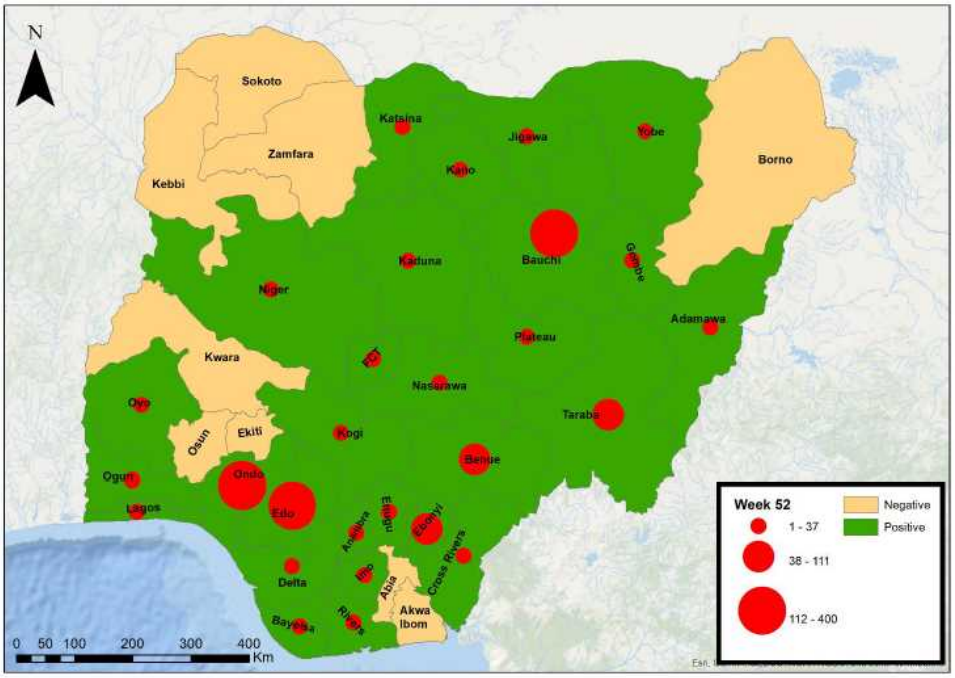


Source: WHO, Lassa fever

【Nigeria】

In Nigeria, from epidemiological week 1 to week 52 of 2024, a total of 1,309 confirmed cases of Lassa fever, including 214 deaths, were reported, corresponding to a case fatality rate of 16.3%.[25] Of the confirmed cases, 72% occurred in three states: Ondo State (31%), Edo State (22%), and Bauchi State (19%).[25]

Confirmed Lassa fever cases by States in Nigeria, week 52, 2024



Source: NCDC, Lassa fever Situation Report Epi Week 52 : 23rd – 29th December 2024

○ Hantavirus infection

【Europe】

In 2023, a total of 1,885 cases of Hantavirus infection were reported from 19 of the 28 EU/EEA member countries. Among these, one death was reported each from Estonia, Hungary, and Slovakia .[26] Germany and Finland together accounted for 60.5% of the total reported cases. Compared with 2022, the number of reported cases in 2023 decreased by 13.7% .[26]

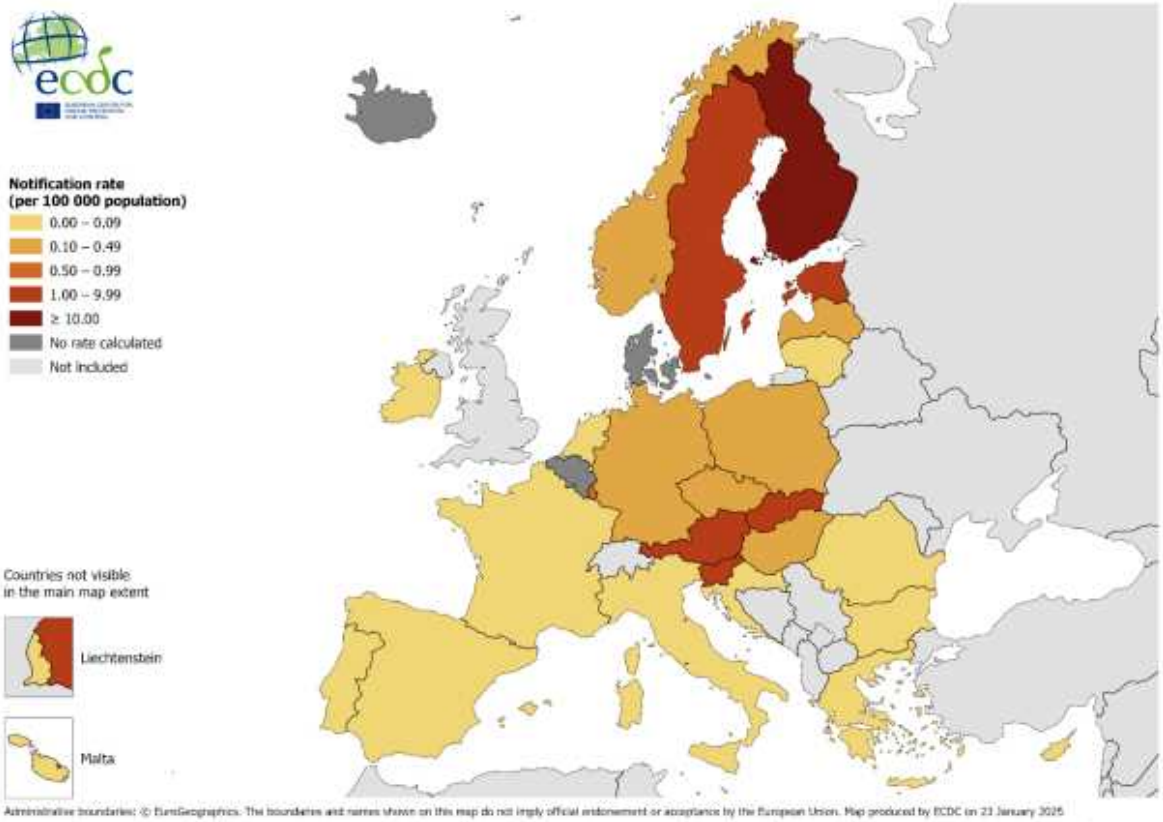
The Puumala virus was the most commonly identified pathogen, accounting for 1,132 (95.6%) of 1,184 cases for which information on the causative agent was available. The Hantaan virus was identified in 32 cases, and The Dobrava-Belgrade virus in 20 cases.[26]

【United States of America】

In the State of New Mexico, as of 14 December 2024, a total of six cases of hantavirus pulmonary syndrome (HPS) were reported.[27] From 1975 to 2024, 135 cases were reported in New Mexico, with the highest number of cases recorded in McKinley County (60 cases).[28]

In the State of California, 79 cases of HPS were reported between 1980 and 2024.[29]

Distribution of hantavirus infection rates per 100000 population by country, EU/EEA, 2023



The notification rate for Belgium was not calculated as the surveillance system changed so that it was no longer comprehensive.

Source: ECDC, Hantavirus infection, Annual Epidemiological Report for 2023

2.3 Tick-borne diseases

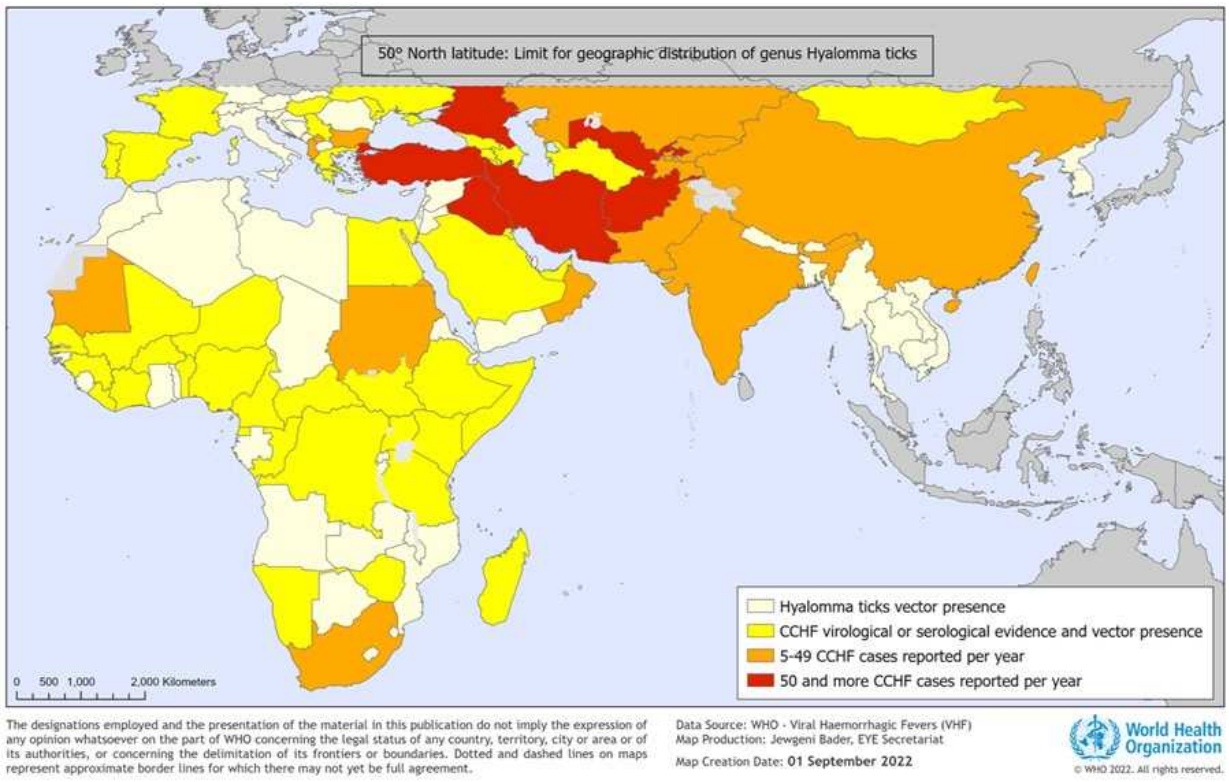
○ Crimean-Congo haemorrhagic fever

Each year, Crimean-Congo haemorrhagic fever (CCHF) is reported in more than 30 countries across the African, Asian, and European Regions, with an estimated 10,000–15,000 cases and approximately 500 deaths annually. It is estimated that more than 3 billion people worldwide are at risk of infection. Hospital-acquired infections of CCHF have been reported in several countries, and the disease is known to have a high case fatality rate.[30]

In 2022, two cases of CCHF were reported in Bulgaria (Haskovo and Kardzhali provinces) and two cases in Spain (León province). Between 2018 and 2022, a total of 21 cases were reported in Europe, of which 11 cases were from Bulgaria and 9 cases from Spain, together accounting for 95.2% of all European cases.[31]

In Afghanistan, from epidemiological week 1 to week 52 of 2024, a total of 1,221 suspected cases, including 95 deaths, were reported. Laboratory examination confirmed 271 positive (confirmed) cases out of 844 samples examined. Confirmed cases were reported from 14 provinces, with the highest number reported from Kabul Province (170 cases).[32]

Geographic distribution of Crimean-Congo Haemorrhagic Fever（2022）



Source: WHO, Crimean Congo Haemorrhagic Fever

3 Outline of investigation of vector invasion and habitat in 2024

3.1 A list of quarantine ports and quarantine airports of investigation in 2024

Of the seaports and airports specified in Article 1-2 of the Quarantine Act Enforcement Regulations

(Cabinet Order No. 377, December 14, 1951), the quarantine seaports and quarantine airports reported to the Yokohama Quarantine Station Officer for Analysis on Sanitation Control in accordance with the "Guide to Port Area Sanitation Control" (March 24, 2014; hereinafter called "Guide to Sanitation Control") were covered by the surveillance (the survey data on the radio quarantine ports were excluded from the surveillance).

Quarantine Port（Seaport）: 92
Otaru Port, Ishikariwan Port, Wakkanai Port, Rumoi Port, Monbetsu Port, Abashiri Port, Tomakomai Port, Muroran Port, Hanasaki Port, Kushiro Port, Hakodate Port, Aomori Port, Hachinohe Port, Ofunato Port, Ishinomaki Port, Sendaishiogama Port, Akitafunakawa Port, Miyako Port, Kamaishi Port, Kesennuma Port, Sakata Port, Onahama Port, Hitachi Port, Kashima Port, Kisarazu Port, Chiba Port, Futami Port, Keihin Port(Tokyo), Keihin Port(Kawasaki), Keihin Port(Yokohama), Yokosuka Port, Misaki Port, Naoetsu Port, Niigata Port, Fushikitoyama Port, Kanazawa Port, Nanao Port, Uchiura Port, Tsuruga Port, Shimizu Port, Yaizu Port, Mikawa Port, Kinuura Port, Nagoya Port, Yokkaichi Port, Owase Port, Fukue Port, Maizuru Port, Katsuura Port, Wakayamashimotsu Port, Hanshin Port（Osaka）, Hannan Port, Hanshin Port（Kobe）, Mizushima Port, Sakai Port, Hamada Port, Fukuyama Port, Hiroshima Port, Iwakuni Port, Kure Port, Tokuyamakudamatsu Port, Ube Port, Tokushimakomatsushima Port, Sakaide Port, Matsuyama Port, Niihama Port, Mishimakawanoe Port, Kochi Port, Kanmon Port, Hakata Port, Karatsu Port, Imari Port, Sasebo Port, Nagasaki Port, Hitakatsu Port, Izuhara Port, Oita Port, Saganoseki Port, Saiki Port, Minamata Port, Yatsushiro Port, Hososhima Port, Shibushi Port, Kagoshima Port, Kiire Port, Miike Port, Kushikino Port, Misumi Port, Kinnakagusuku Port, Naha Port, Hirara Port, Ishigaki Port

Quarantine airport（Airport）: 31
New Chitose Airport, Asahikawa Airport, Hakodate Airport, Aomori Airport, Hanamaki, Sendai Airport, Akita Airport, Fukushima Airport, Narita International Airport, Hyakuri Airport(Ibaraki Airport), Tokyo International Airport, Niigata Airport, Toyama Airport, Komatsu Airport, Shizuoka Airport, Chubu Centrair International Airport, Kansai International Airport, Okayama Airport, Miho Airport (Yonago Airport), Hiroshima Airport, Matsuyama Airport, Takamatsu Airport, Fukuoka Airport, Kitakyushu Airport, Oita Airport, Saga Airport, Nagasaki Airport, Kumamoto Airport, Miyazaki Airport, Kagoshima Airport, Naha Airport

Total : 123 quarantine ports / airports（Table1, Fig.1-1 and 1-2）

3.2 Infectious diseases investigated and investigation methods in 2024

The infectious diseases covered by this surveillance included dengue fever, malaria, Chikungunya fever, Zika virus infection, Japanese encephalitis, West Nile fever, rodent- or flea-borne South American hemorrhagic fevers, plague, Lassa fever, HFRS, and HPS.

The surveillance was conducted in accordance with the "Rodent Surveillance Manual" (Appendix 2) and the "Mosquito Surveillance Manual" (Appendix 3) of the "Guide to Sanitation Control."

3.3 Period of investigation

January 1 through December 31, 2024

3.4 Collecting methods of investigation data

In accordance with the notice "Handling of Surveillance Results in Connection with the 'Guide to Port Area Sanitation Control' (Food Sanitation Inspection Notification No. 0324-4, dated March 24, 2014)", the Yokohama Quarantine Station Officer for Analysis on Sanitation Control compiled the data submitted electronically from the quarantine ports and airports.

4 Results of vector investigations targeting for invasive species and native species in 2024

4.1 Investigation of mosquitoes

To assess the extent of the spread of mosquito-borne diseases and to estimate their prevalence in Japan, investigation of the mosquito invasion/colonization status and a check of pathogens carried by mosquitoes were conducted in aircraft arriving from overseas and in the areas defined in Separate Table 3 of the Quarantine Act Enforcement Regulations (hereinafter called "the areas specified by the Cabinet Order").

4.1.1 Aircraft survey

The aircraft survey was conducted by visual inspection and net collection on 696 aircraft (2023: 652 aircraft) arriving from overseas at 31 quarantine airports (2023: 25 quarantine airports), covering 20 countries and regions and 46 flight routes (2023: 18 countries and regions, 33 routes). The countries and regions of departure for the surveyed aircraft were as follows: Taiwan (134 aircraft), Philippines (106), Republic of Korea (83), Thailand (71), China (excluding Hong Kong and Macao) (56), Bangladesh (56), Viet Nam (52), India (48), Indonesia (31), Singapore (19), China (Hong Kong) (12), United States of America (excluding Guam) (10), Malaysia (7), French Polynesia (3), Nepal (2), Guam (2), Lao People's Democratic Republic (1), Mexico (1), France (1), and Sri Lanka (1).

By region, South-East Asia (287 aircraft, 41.2%) and East Asia (285 aircraft, 40.9%) together accounted for 572 aircraft (82.2%). This was followed by South Asia (107 aircraft, 15.4%), North America (10 aircraft, 1.4%), South Pacific (5 aircraft, 0.7%), Europe (1 aircraft, 0.1%), and Central America (1 aircraft, 0.1%). Of the aircraft surveyed, mosquitoes were collected from 25 aircraft (3.6%) on four routes from four countries (2023: 6 aircraft (0.9%) on 3 routes from 3 countries/regions), totaling 62 specimens (2023: 7 specimens) (Table 3, Tables 4-1 and 4-2).

The highest collection rate was observed for aircraft departing from Hazrat Shahjalal International Airport, Bangladesh, where mosquitoes were collected from 19 of 56 aircraft (33.9%), followed by Mactan–Cebu International Airport, Philippines (1 of 10; 10.0%), Indira Gandhi International Airport, India (4 of 46; 8.7%), and Noi Bai International Airport, Viet Nam (1 of 33; 3.0%) (Table 3, Tables 4-1 and 4-2, Fig. 2).

Among the mosquitoes collected, 61 specimens from 24 aircraft (2023: 5 specimens from 4 aircraft) were identified as belonging to the *Culex pipiens* complex, and 1 specimen from 1 aircraft (2023: none) was identified as belonging to the subfamily Culicinae.

All 60 vector mosquitoes collected were examined for flavivirus, and all examination results were negative (Table 3, Tables 4-1 and 4-2, Fig. 2).

4.1.2 Survey of adult mosquitoes and mosquito larvae

In accordance with the "Port Sanitation Control Guidelines" (Appendix 1 of the Guide to Sanitation Control), survey areas were designated using the standard regional mesh established by the Statistics Bureau of the Ministry of Internal Affairs and Communications. To monitor the invasion and occurrence of invasive mosquito species, mosquito traps (light traps) with dry ice were installed within each survey area (adult mosquito survey).

In addition, to assess the invasion of invasive mosquito species and the establishment of vector species, larval traps (such as ovitraps) were installed within the survey areas, and the presence of mosquito larvae was examined in water bodies such as ditches and catch basins (larval mosquito survey).

Survey of adult mosquitoes

Surveys of adult mosquitoes were conducted at 92 seaports and 31 airports, totaling 123 seaports and airports (2023: 92 seaports and 30 airports, total 122 seaports and airports). A total of 1,491 survey areas were inspected (2023: 1,424 survey areas). As a result, mosquitoes were collected at 88 seaports (95.7%) (2023: 84 seaports, 91.3%) and 27 airports (87.1%) (2023: 26 airports, 86.7%), totaling 115 seaports and airports (93.5%) (2023: 110 seaports and airports, 90.2%). A total of 140,040 mosquito specimens were collected, belonging to seven genera, 31 species groups, two subgenera, and several unidentified species (2023: seven genera and 29 species groups; 18,857 specimens). The major mosquito species collected were the *Culex pipiens* complex (6,215 specimens), *Culex tritaeniorhynchus* (2,945 specimens), and *Aedes albopictus* (2,168 specimens). Of all mosquitoes collected, 13,580 specimens (2023: 18,482 specimens) belonging to four genera and 18 species groups (2023: four genera and 18 species groups) were identified as vector species of infectious diseases (primary vectors, secondary vectors, and possible vectors), accounting for 96.7% of all mosquitoes collected. No invasive mosquito species were collected. (Tables 5-1-3).

Survey of mosquito larvae

Surveys of mosquito larvae were conducted at 91 seaports and 31 airports, totaling 122 seaports and airports (2023: 91 seaports and 30 airports, total 121 seaports and airports), a lot of 1,447 survey areas were inspected (2023: 1,467 survey areas). As a result, mosquito larvae were collected at 78 seaports (85.7%) (2023: 80 seaports, 87.9%) and 26 airports (83.9%) (2023: 25 airports, 83.3%), totaling 104 seaports and airports (85.2%) (2023: 105 seaports and airports, 86.8%).

The collected mosquito larvae belonged to six genera, 21 species groups, and several unidentified species (2023: seven genera and 24 species groups). Among these, vector species of infectious diseases (primary vectors, secondary vectors, and possible vectors) were identified as three genera and 11 species groups (2023: four genera and 14 species groups). No invasive mosquito species were collected (Tables 6-1-3).

Collection status of vector species of each mosquito-borne disease and result of pathogen

examination

○ Dengue fever

Adult or larval mosquitoes of four species, the *Aedes albopictus* (a primary vector), *Culex tritaeniorhynchus*, *Aedes dorsalis*, and *Aedes flavopictus* (all possible vectors), were collected at 100 seaports and airports (81.3%) (2023: 96 seaports and airports, 78.7%) (Tables 5-1-3, Tables 6-1-3, Fig. 4).

A total of 2,168 adult *Aedes albopictus* were collected, accounting for 15.4% of all mosquitoes collected (2023: 2,481 specimens, 13.2%). The presence of adult or larval *Aedes albopictus* was confirmed as far north as Aomori Prefecture, representing the northern limit of its distribution in Japan.

○ Japanese encephalitis

Adult or larval mosquitoes of six species, the *Culex tritaeniorhynchus* and *Culex pseudovishnui* (both primary vectors), and the *Aedes albopictus*, *Culex pipiens quinquefasciatus*, *Culex bitaeniorhynchus*, and *Culex sitiens* (all possible vectors), were collected at 107 seaports and airports (87.0%) (2023: 60 seaports and airports, 49.2%) (Tables 5-1-3, Tables 6-1-3, Fig. 7).

○ West Nile fever

Adult or larval mosquitoes of 11 species, including *Culex pipiens* complex and *Culex pipiens quinquefasciatus* (primary vectors); *Anopheles sinensis*, *Aedes albopictus*, *Armigeres subalbatus*, and *Culex tritaeniorhynchus* (secondary vectors); as well as *Culex sitiens* (a possible vector), were collected at 119 seaports and airports (96.7%) (2023: 100 seaports and airports, 82.0%).

Most of the primary and secondary vector species of West Nile fever are native mosquito species in Japan and were found to be widely distributed from Hokkaido to Okinawa Prefecture (Tables 5-1-3, Tables 6-1-3, Fig. 6).

○ Malaria

Adult and larval mosquitoes of *Anopheles sinensis* (a primary vector), as well as adults of *Anopheles sineroides* and *Anopheles lesteri* (secondary vectors), and *Anopheles koreicus* (a possible vector), were collected at 14 seaports and airports (11.4%) (2023: 9 seaports and airports, 7.3%) (Tables 5-1-3, Fig. 5).

○ Chikungunya fever and Zika virus infection

Adult or larval mosquitoes of *Aedes albopictus* (a primary vector) were collected at 94 seaports and airports (76.4%) (2023: 91 seaports and airports, 74.6%) (Tables 5-1-3, Tables 6-1-3, Fig. 3).

○ Result of pathogen examination for quarantinable infectious diseases

Among the collected vector species capable of transmitting quarantinable infectious diseases, a total of 13,580 specimens were examined for the presence of pathogens. The examinations included flaviviruses (1,380 pools), Chikungunya virus (271 pools), and malaria parasite (31 pools). All examination results were negative (Tables 5-1-3).

4.2 Investigation of rodents

To assess the level of infestation of rodent-borne diseases and estimate potential outbreaks, surveys were conducted to monitor the invasion and habitation status of rodents and parasitic fleas, as well as to perform pathogen examinations within areas specified by Cabinet Order. Similar to mosquito surveillance, survey areas were established within these designated zones. Rodent traps, including cage traps and Sherman traps, were installed at a total of 123 seaports and airports (comprising 92 seaports and 31 airports), compared with 122 seaports and airports (92 seaports and 30 airports) in 2023. The survey was

conducted across 927 survey areas (compared with 891 survey areas in 2023) (Tables 7-1-3).

Capture status of rodents

Rodent surveillance was conducted at 63 seaports and 24 airports, totaling 87 seaports and airports (70.7%) (2023: 61 seaports and 21 airports, total 82 seaports and airports (67.2%)). A total of 468 rodents were captured (2023: 507 rodents), belonging to five genera, eight species, and several unidentified species (2023: six genera, nine species, and unidentified species). The captured rodents included 183 *Rattus norvegicus*, 145 *Mus musculus*, 74 *Rattus rattus*, 52 *Apodemus speciosus*, 4 *Microtus montebelli*, 3 *Clethrionomys rufocanus bedfordiae*, 3 *Apodemus argenteus*, 2 *Apodemus speciosus ainu*, and 2 unidentified individuals. Excluding unidentified specimens, no invasive rodent species were captured.

The average capture rate per survey area was 0.50 rodents (2023: 0.57 rodents). The highest capture rate per survey area was recorded at Futami Port (5.00 rodents), followed by Keihin Port (Yokohama Port) (4.38 rodents). The largest total number of rodents captured was also recorded at Keihin Port (Yokohama Port), with 70 individuals (Tables 7-1-3).

Collected status of fleas and ticks

A total of nine specimens of *Nosopsyllus fasciatus*, a secondary vector of plague, were collected at four quarantine ports. In addition, one specimen of *Ctenophthalmus kolenati*, which is not a vector species of quarantinable infectious diseases, was collected.

A total of 900 ticks specimens, including unidentified species, were collected, of which 620 specimens were identified as *Laelaps nuttalli*, the most frequently collected species (Tables 7-1-3).

Capture status of rodent vector species of each rodent-borne disease and result of pathogen examination

○ Plague

At 87 seaports and airports (70.7%), a total of 468 rodents, belonging to five genera and eight species, including two unidentified individuals, were captured. These rodents, classified as secondary vector species, were found to be widely distributed within domestic port areas. In addition, at Muroran Port, Hitachi Port, Hanshin Port (Kobe Port), and Hakata Port, a total of nine specimens of *Nosopsyllus fasciatus*, a secondary vector of plague, were collected (Tables 7-1-3, Fig. 8).

○ HFRS

At 86 seaports and airports (69.9%), a total of 457 rodents were captured, including *Rattus norvegicus*) and *Rattus rattus*, both classified as secondary vector species, as well as *Mus musculus*, *Apodemus speciosus*, and *Clethrionomys rufocanus bedfordiae*, which have been reported in the literature as reservoir hosts (Tables 7-1-3, Fig. 9).

○ South American hemorrhagic fevers, Lassa fever and HPS

No vector or host species associated with South American hemorrhagic fevers, Lassa fever, or HPS were captured (Tables 7-1–3).

○ Result of pathogen examination for quarantinable infectious diseases

Among the rodent vector species collected, 453 specimens underwent examination for pathogens of quarantinable infectious diseases. The examinations included plague antibody analysis (453 samples) and

hantavirus examination for HFRS (452 samples). All examination results were negative (Tables 7-1-3).

Capture of rodents reported by related agencies

The following table summarizes 19 cases of rodent detections presumed to involve introductions from overseas, based on reports received from relevant agencies and subsequent investigations conducted by the quarantine stations.

In addition, three rodents identified as invasive species were captured among the cases reported by relevant agencies.

Cases of capturing invasive rodents suspected from overseas in 2024 (Reports from related agencies)

Cases of capturing invasive rodents suspected from overseas in 2024 (Reports from related agencies)

Seaport / Airport	Place of captured	Species of captured	No of specimens (condition)	Estimated invade place	Type of cargo
Kattuta port (Not quarantine port)	Storage facility	*Mus musculus*	1 (Live)	Manila (Philippines)	Motor vehicle parts
Hakata port	Ocean-going ship container	*Rattus rattus*	1 (Dead)	Haiphong (Viet Nam)	Electronic parts
Hanshin port (Kobe port)	Ocean-going ship container	Unknown	1 (Dead)	Pahang Kuantan (Malaysia)	—
Tomakomai port	Ocean-going ship container	*Mus musculus*	1 (Dead)	Victoria State, Melbourne (Australia)	Hay
Hakata port	Ocean-going ship container	Unknown	1 (Dead)	Washington State, Tacoma (U.S.A)	Hay
Tomakomai port	Ocean-going ship container	*Mus musculus*	1 (Dead)	Western Australia State, Fremantle (Australia)	Hay
Tomakomai port	Ocean-going ship container	*Mus musculus*	12 (Dead)	Dublin (Ireland)	Feeds
Kanmon port	Ocean-going ship container	*Mus musculus*	1 (Dead)	Qingdao (China)	Fishing gear
Nagoya port	Ocean-going ship container	*Rattus norvegicus*	1 (Dead)	Huizhou (China)	Furniture
Hanshin port (Kobe port)	Ocean-going ship container	*Bandicota bengalensis*※	1 (Dead)	Nhava Sheva (India)	Defatted soybeans
Keihin Port (Tokyo port)	Ocean-going ship container	*Mus musculus*	1 (Dead)	California State, El Centro (U.S.A)	Hay
Nagoya port	Ocean-going ship container	*Microtus canicaudus*	1 (Dead)	Oregon Marion (U.S.A)	Hay
Tomakomai port	Ocean-going ship container	*Peromyscus leucopus*※	1 (Dead)	Washington State, Ellensburg (U.S.A)	Hay
Nagoya port	Ocean-going ship container	*Mus musculus*	1 (Dead)	Queensland State, Dalby (Australia)	Feeds
Shibushi port	Ocean-going ship container	Unknown	1 (Dead)	Dalian (China)	Rice straw
Narita international airport	Aircraft cargo compartment	*Rattus exulans*	1 (Live)	Hochiminh (Viet Nam)	General baggages
Hanshin port (Kobe port)	Ocean-going ship container	Unknown	1 (Dead)	Washington State, Tacoma (U.S.A)	Hay
Narita international airport	Storage facility	*Rattus rattus*	2 (Live), 1 (Dead)	Danang (Viet Nam)	Frozen foods
Keihin Port (Tokyo port)	Ocean-going ship container	*Mus musculus*	1 (Dead)	Oregon State (U.S.A)	Hay

※ Invasive species

5 Risk assessment of vector-borne diseases in 2024

5.1 Mosquito-borne diseases

For each quarantine seaports and airports, the risk of outbreaks of quarantinable infectious diseases, etc., was rated from A to D based on the survey results in accordance with the " Guide to Sanitation Control". The risk was assessed in each month of the survey, and the highest risk was regarded as the risk of the year (Table 8).

A (very low) : No vector mosquitoes (primary, secondary, or possible vector) transmitting mosquito-borne infectious diseases, etc. or no mosquito is collected during permanent surveillance, etc. in the areas specified by Cabinet Order.

B (low) : Vector mosquitoes (primary, secondary, or possible vector) transmitting mosquito-borne infectious diseases, etc. are collected during permanent surveillance, etc. in the areas specified by Cabinet Order. The mosquitoes collected do not possess any pathogen or gene of pathogen for quarantinable infectious disease or the like.

C (moderate)) : Adults or larvae of invasive vector mosquitoes (primary vector) transmitting mosquito-borne infectious diseases, etc. are collected during permanent surveillance, etc. in the areas specified by Cabinet Order. The mosquitoes collected do not possess any pathogen or gene of pathogen for quarantinable infectious disease or the like.

D (high) : Adults of vector mosquitoes (primary, secondary, or possible vector) transmitting mosquito-borne infectious diseases, etc. are collected during permanent surveillance, etc. in the areas specified by Cabinet Order. The mosquitoes collected possess the pathogen or gene of pathogen for quarantinable infectious disease or the like.

○ Dengue fever

At 23 seaports and airports (18.7%), the risk of vector invasion was rated as "A" (very low risk), while at 100 seaports and airports (81.3%), the risk was rated as "B" (low risk).

○ Japanese encephalitis

At 16 seaports and airports (13.0%), the risk of vector invasion was rated as "A" (very low risk), while at 107 seaports and airports (87.0%), the risk was rated as "B" (low risk).

○ West Nile fever

At 4 seaports and airports (3.3%), the risk of vector invasion was rated as "A" (very low risk), while at 119 seaports and airports (96.7%), the risk was rated as "B" (low risk).

○ Malaria

At 109 seaports and airports (88.6%), the risk of vector invasion was rated as "A" (very low risk), while at 14 seaports and airports (11.4%), the risk was rated as "B" (low risk).

○ Chikungunya fever

At 29 seaports and airports (23.6%), the risk of vector invasion was rated as "A" (very low risk), while at 94 seaports and airports (76.4%), the risk was rated as "B" (low risk).

○ Zika virus infection

At 29 seaports and airports (23.6%), the risk of vector invasion was rated as “A” (very low risk), while at 94 seaports and airports (76.4%), the risk was rated as “B” (low risk).

5.2 Rodent-borne diseases

As with the mosquito to investigation, the risk of outbreaks of quarantinable infectious diseases, etc., was rated from A to D based on the survey results”. The risk was assessed in each month of the survey, and the highest risk was regarded as the risk of the year (Table 8).

A（very low） : No rodents is captured during permanent surveillance, etc. in the areas specified by Cabinet Order (This also includes cases in which vector rodents were not captured).

B（low） : Indigenous rodents (primary or secondary vector) or fleas/ticks (primary or secondary vector) known to transmit quarantinable infectious diseases or the like are captured during permanent surveillance, etc. in the areas specified by Cabinet Order. None of them possesses any antibody, pathogen, or gene suggestive of pathogen for quarantinable infectious diseases or the like.

C（moderate） : Invasive rodents (primary or secondary vector) or fleas/ticks (primary or secondary vector) known to transmit quarantinable infectious diseases or the like are captured during permanent surveillance, etc. in the areas specified by Cabinet Order. None of them possesses any antibody, pathogen, or gene suggestive of pathogen for quarantinable infectious diseases or the like.

D（high） : An antibody, pathogen, or gene suggestive of pathogen for quarantinable infectious disease or the like is detected in the rodents (primary or secondary vector) or fleas/ticks known to transmit quarantinable infectious diseases or the like (primary or secondary vector) captured during the permanent surveillance, etc. in the areas specified by Cabinet Order.

○ Plague

At 36 seaports and airports (29.3%), the risk of vector invasion was rated as “A” (very low risk), while at 87 seaports and airports (70.7%), the risk was rated as “B” (low risk).

○ HFRS

At 37 seaports and airports (30.1%), the risk of vector invasion was rated as “A” (very low risk), while at 86 seaports and airports (69.9%), the risk was rated as “B” (low risk).

○ South America haemorrhagic fever, Lassa fever and HPS

At 123 seaports and airports, the risk of vector invasion was rated as “A” (very low risk).

5.3 Discussion

Status of implementation of vector surveillance

In 2024, the aircraft survey was conducted at 31 quarantine airports, covering 20 countries and regions and 46 flight routes (2023: 25 quarantine airports, 18 countries and regions, 33 flight routes), representing an increase compared with 2023.

Regarding mosquito surveys, the adult mosquito survey was conducted at 123 seaports and airports

(2023: 122 seaports and airports), and the mosquito larvae survey at 122 seaports and airports (2023: 121 seaports and airports), both remaining at approximately the same level as in 2023. The number of survey areas conducted increased for adult mosquitoes, totaling 1,491 survey areas (2023: 1,424), while for mosquito larvae, 1,447 survey areas were surveyed (2023: 1,467), showing a slight decrease compared with 2023.

For rodent surveillance, investigations were conducted at 123 seaports and airports (2023: 122 seaports and airports), indicating a level comparable to that in 2023. The total number of survey areas was 927 (2023: 891), showing an increase compared with the previous year.

The port sanitation surveys in 2024 were conducted in accordance with the Port Sanitation Survey Plans formulated by each quarantine station. Since the planned number of survey areas for each type of investigation and the number of aircraft inspected were largely achieved, it is considered that these surveys successfully clarified the risk of introduction of quarantinable infectious diseases based on the Port Sanitation control Guidelines.

The aircraft survey targeted aircraft arriving from South-East Asia and other parts of Asia, during which 62 mosquito specimens were collected from 25 aircraft. Compared with 2023, the number of aircraft from which mosquitoes were collected increased 4.1-times, and the total number of specimens increased 8.9-times, showing a marked rise. Although no invasive mosquito species were collected, a notably high collection rate was recorded for aircraft from Hazrat Shahjalal International Airport (Bangladesh), where 51 specimens (including one male) of the *Culex pipiens* complex were collected from 19 of 56 aircraft (33.9%). While these *Culex pipiens* complex specimens were not species known to transmit dengue fever, which is currently prevalent in South-East Asia, the presence of mosquitoes inside aircraft highlights the potential risk of invasion by *Aedes aegypti*, a known vector of dengue fever and other mosquito-borne diseases.

All pathogen examinations on the collected mosquitoes were negative. However, since the collected specimens belonged to the *Culex pipiens* complex, which serves as a vector of West Nile fever, it remains necessary to continue implementing guidance for airlines on preventive measures to keep mosquitoes from entering aircraft, and to conduct ongoing aircraft surveillance that reflects the current global situation of mosquito-borne diseases.

In the adult mosquito survey, a total of 140,040 specimens belonging to seven genera, 31 species groups, two subgenera, and several unidentified species were collected. Although no invasive mosquito species were collected, 96.7% of the collected mosquitoes were identified as vector species of quarantinable infectious diseases. All pathogen examinations yielded negative results. However, in 2023, Japanese encephalitis virus genotype I was detected in the *Culex tritaeniorhynchus*, a primary vector of Japanese encephalitis, at both Narita International Airport and Saga Airport. Therefore, it remains necessary to continue regular and permanent surveillance.

In the mosquito larvae survey, mosquitoes belonging to six genera, 21 species groups, and several unidentified species were collected. Among these, vector species of quarantinable infectious diseases accounted for three genera and 11 species groups (2023: four genera and 14 species groups), showing no major change compared with 2023. Although no invasive mosquito species were detected in 2024, *Aedes aegypti*, an invasive mosquito species, had been collected at Tokyo International Airport during mosquito larvae surveys conducted in July and October 2023. Hence, it is essential to continue implementing strict

preventive measures to prevent mosquito entry into aircraft and ships, as well as environmental control measures at seaports and airports to prevent the establishment of invasive species.

In the rodent survey, a total of 468 rodents belonging to five genera and eight species, as well as unidentified species, were captured (2023: 507 rodents, belonging to six genera and nine species, including unidentified species). The captured rodents included *Mus musculus*, *Rattus norvegicus*, *Rattus rattus*, *Apodemus speciosus*, and *Microtus montebelli*. No invasive rodent species were captured. Compared with 2023, the total number of captured rodents decreased by approximately 7.7%, and the average capture rate per survey area also decreased to 0.50 rodents (2023: 0.57 rodents). All pathogen examination results were negative. However, in the ectoparasite survey, although *Xenopsylla cheopis*, the primary vector of plague, was not detected, *Nosopsyllus fasciatus*, a secondary vector of plague, was collected (nine specimens). Therefore, it remains necessary to continue regular and permanent surveillance at seaports and airports to monitor both the potential introduction of invasive species and the prevalence of pathogen-carrying rodents.

In 2024, a total of 19 cases (2023: 16 cases) of suspected rodent introductions from overseas were reported by related agencies. Among these, three cases involved the capture of invasive rodent species: *Peromyscus maniculatus*, *Microtus canicaudus*, and *Bandicota bengalensis*. All three were found dead upon discovery, and thus examination for pathogens could not be performed. Nevertheless, to prevent the introduction and establishment of invasive species, it is essential to strengthen close coordination with relevant organizations and ensure prompt response measures to such reported incidents.

Regarding future vector surveillance, the number of dengue fever cases and related deaths in 2023 reached record highs, indicating that the threat posed by infectious diseases still remains. In addition, although no pathogens were detected from vector species and no invasive species were confirmed in the 2024 port sanitation investigation, considering that *Aedes aegypti* larvae had been collected in the past and that invasive species were confirmed in reported cases from relevant organizations, it is necessary for quarantine ports and quarantine airports to continue implementing effective vector surveillance based on risk assessment, in order to prevent the domestic introduction and establishment of vector-borne diseases occurring overseas, as well as to enable early detection of emerging infectious diseases such as COVID-19.

6 Informing activities

The data from the surveillance conducted by quarantine stations across Japan have been summarized for each quarter of the year, and the sanitation activities taken at each quarantine station have been listed in the "Vector Surveillance Information Correspondence" delivered to all quarantine stations once a quarter (No. 84 through 87).

7 Appendix

Notification No. 0324-3 (MHLW Department of Food Safety, March 24, 2014) "Guide to Port Area Sanitation Control" (Finally Amended December 26, 2022) (Issued from Section Chief of Quarantine Affairs division to Chief of Each Quarantine Station)

(Excerpts from main text)

Appendix 1 “Port Sanitation Control Guidelines”

Appendix 2 “Rodent Surveillance Manual”

Appendix 3 “Mosquito Surveillance Manual”

Appendix 4 “Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc.”

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9 Tables and Figures

Table 1. A list of code number, name and location of quarantine ports and quarantine airports investigated in 2024

Code number and Name	Prefecture	Code number and Name	Prefecture	Code number and Name	Prefecture
001 Otaru	Hokkaido	050 Owase	Mie	193 New Chitose AP	Hokkaido
002 Ishikariwan	Hokkaido	051 Maizuru	kyoto	194 Asahikawa AP	Hokkaido
003 Wakkanai	Hokkaido	053 Katsuura	Wakayama	195 Hakodate AP	Hokkaido
004 Rumoi	Hokkaido	054 Wakayamashimotsu	Wakayama	196 Aomori AP	Aomori
005 Monbetsu	Hokkaido	055 Hanshin(Osaka)	Osaka	197 Sendai AP	Miyagi
006 Abashiri	Hokkaido	056 Hannan	Osaka	198 Akita AP	Akita
007 Hanasaki	Hokkaido	057 Hanshin(Kobe)	Hyogo	199 Fukushima AP	Fukushima
008 Kushiro	Hokkaido	058 Mizushima	Okayama	200 Narita International AP	Chiba
009 Tomakomai	Hokkaido	059 Sakai	Tottori/Shimane	201 Tokyo International AP	Tokyo
010 Muroran	Hokkaido	060 Hamada	Shimane	202 Niigata AP	Niigata
011 Hakodate	Hokkaido	061 Fukuyama	Hiroshima	203 Toyama AP	Toyama
012 Aomori	Aomori	062 Kure	Hiroshima	204 Komatsu AP	Ishikawa
013 Hachinohe	Aomori	063 Hiroshima	Hiroshima	205 Chubu Centrair International AP	Aichi
014 Miyako	Iwate	064 Iwakuni	Yamaguchi	206 Kansai International AP	Osaka
015 Kamaishi	Iwate	065 Tokuyamakudamatsu	Yamaguchi	207 Okayama AP	Okayama
016 Ofunato	Iwate	066 Ube	Yamaguchi	208 Miho AP	Tottori
017 Kesennuma	Miyagi	067 Tokushimakomatsushima	Tokushima	209 Hiroshima AP	Hiroshima
018 Ishinomaki	Miyagi	068 Sakaide	Kagawa	211 Matsuyama AP	Ehime
019 Sendaishiogama	Miyagi	069 Matsuyama	Ehime	212 Fukuoka AP	Fukuoka
020 Akitafunakawa	Akita	070 Niihama	Ehime	213 Kitakyushu AP	Fukuoka
021 Sakata	Yamagata	071 Mishimakawanoe	Ehime	214 Oita AP	Oita
022 Onahama	Fukushima	072 Kochi	Kochi	215 Nagasaki AP	Nagasaki
023 Hitachi	Ibaraki	073 Kanmon	Yamaguchi/Fukuo	216 Kumamoto AP	Kumamoto
024 Kashima	Ibaraki	074 Hakata	Fukuoka	217 Miyazaki AP	Miyazaki
025 Kisarazu	Chiba	075 Miike	Fukuoka	218 Kagoshima AP	Kagoshima
026 Chiba	Chiba	076 Karatsu	Saga	219 Naha AP	Okinawa
027 Futami	Tokyo	077 Imari	Saga/Nagasaki	222 Shizuoka AP	Shizuoka
028 Keihin(Tokyo)	Tokyo	078 Sasebo	Nagasaki	223 Hyakuri AP	Ibaraki
029 Keihin(Kawasaki)	Kanagawa	079 Nagasaki	Nagasaki	225 Saga AP	Saga
030 Keihin(Yokohama)	Kanagawa	080 Hitakatsu	Nagasaki	226 Takamatsu AP	Kagawa
031 Yokosuka	Kanagawa	081 Izuhara	Nagasaki	227 Hanamaki AP	Iwate
032 Misaki	Kanagawa	082 Oita	Oita		
033 Naoetsu	Niigata	083 Saganoseki	Oita		
034 Niigata	Niigata	084 Saiki	Oita		
035 Fushikitoyama	Toyama	085 Minamata	Kumamoto		
036 Kanazawa	Ishikawa	086 Yatsushiro	Kumamoto		
037 Nanao	Ishikawa	087 Misumi	Kumamoto		
038 Uchiura	Fukui	088 Hososhima	Miyazaki		
039 Tsuruga	Fukui	089 Shibushi	Kagoshima		
041 Shimizu	Shizuoka	090 Kagoshima	Kagoshima		
042 Yaizu	Shizuoka	091 Kiire	Kagoshima		
044 Fukue	Aichi	092 Kushikino	Kagoshima		
045 Mikawa	Aichi	093 Kinnakagusuku	Okinawa		
047 Kinuura	Aichi	094 Naha	Okinawa		
048 Nagoya	Aichi	095 Hirara	Okinawa		
049 Yokkaichi	Mie	096 Ishigaki	Okinawa		

Table 2. Monthly investigation for vector surveillance at quarantine ports and quarantine airports in 2024

Seaport（1）

Month/ Quarantine port	Otaru Quarantine Station																			
	001 Otaru				002 Ishikariwan				003 Wakkanai				004 Rumoi				005 Monbetsu			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr																				
May								2												
Jun												2		1	1	1				
Jul		4	2	4						4	2							1	1	
Aug		1	4	1		3	4	1		4	4									
Sep												2		1	1	1				1
Oct						2	2	2												1
Nov																				
Dec																				
Total		5	6	5		5	6	5		8	6	4		2	2	2		1	1	2

Month/ Quarantine port	Otaru Quarantine Station																			
	006 Abashiri				007 Hanasaki				008 Kushiro				009 Tomakomai				010 Muroran			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr																				
May																				
Jun						1	1	1		2	2	2		2	2	2				
Jul		1	1	1																
Aug						1	1	1		2	2	2						1	1	1
Sep																				
Oct																				
Nov																				
Dec																				
Total		1	1	1		2	2	2		4	4	4		2	2	2		1	1	1

Month/ Quarantine port	Otaru Quarantine Station				Sendai Quarantine Station															
	011 Hakodate				012 Aomori				013 Hachinohe				014 Miyako				015 Kamaishi			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr																				
May				2																
Jun		1	1			1	1	1		1	1	1								
Jul		1	1			1	1	1		1	1	1		1		1		1		1
Aug		1	1			1	1	1		1	1	1			1				1	
Sep		1	1			1	1	1		1	1	1		1		1		1		1
Oct		1	1	2		1	1	1		1	1	1			1				1	
Nov																				
Dec																				
Total		5	5	4		5	5	5		5	5	5		2	2	2		2	2	2

Month/ Quarantine port	Sendai Quarantine Station																			
	016 Ofunato				017 Kesennuma				018 Ishinomaki				019 Sendaishiogama				020 Akitafunakawa			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr																				
May														2		2				
Jun		1		1						2		2			2			1	1	1
Jul		1	1	1		1	1	1		2	2	2		2		2		2	2	2
Aug		1	1	1							2			2	2	2		2	2	2
Sep		1	1	1								2		2	4	2		2	2	2
Oct		1	2	1						2	2			2	2	2		2		
Nov																			2	
Dec																				2
Total		5	5	5		1	1	1		6	6	6		10	10	10		9	9	9

(1)：No. of aircrafts survey, (2)：No. of survey areas for adult mosquitoes, (3)：No. of survey areas for mosquito larvae, (4)：No. of survey areas for rodents

Seaport（2）

Month/ Quarantine port	Sendai Quarantine Station								Tokyo Quarantine Station											
	021 Sakata				022 Onahama				023 Hitachi				024 Kashima				025 Kisarazu			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				3
Mar																				
Apr																				
May										3	3	3						3	3	
Jun						2	2	2		3	3	3								3
Jul		3	3	3		2	2	2						3	3	3		3	3	
Aug						2	2	2						3	3	3				3
Sep		3	3	3										3	3	3		3	3	
Oct														3	3	3		3	3	
Nov																				3
Dec																				
Total		6	6	6		6	6	6		6	6	6		12	12	12		12	12	12

Month/ Quarantine port	Tokyo Quarantine Station																Yokohama Quarantine Station			
	026 Chiba				027 Futami				028 Keihin(Tokyo)				029 Keihin(Kawasaki)				030 Keihin(Yokohama)			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan				3																
Feb												1								
Mar												2								1
Apr		3	3							3	3	2								2
May				3						3	3	2				3		2		2
Jun		3	3							4	4	2		3	3	4		3	2	3
Jul				3						3	3	2		3	6			3	6	
Aug		3	3							3	3	1		3	3			3	6	
Sep		3	3							3	3	2		3	3			3	6	1
Oct				3		2	2	2		2	2	2				1		3	6	3
Nov										3	3	2				3		2		2
Dec																3				2
Total		12	12	12		2	2	2		24	24	18		12	15	14		19	26	16

Month/ Quarantine port	Yokohama Quarantine Station								Niigata Quarantine Station											
	031 Yokosuka				032 Misaki				033 Naoetsu				034 Niigata				035 Fushikitoyama			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr				1																
May		1		1						2	2	2						3	3	3
Jun		1	1	1		1	1	1						4	4	5				
Jul		1	2			1	1			2	2	2						3	3	3
Aug		1	2											4	4					
Sep		1	2	1										4	4	5		3	3	3
Oct		1	2	1				1		2	2	2						1	1	1
Nov				1				1												
Dec																				
Total		6	9	6		2	2	3		6	6	6		12	12	10		10	10	10

Month/ Quarantine port	Niigata Quarantine Station								Nagoya Quarantine Station											
	036 Kanazawa				037 Nanao				041 Shimizu				042 Yaizu				044 Fukue			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb												3								
Mar																				
Apr												3								
May		2	2	2						2	2			2	2	2				
Jun						2	2	2		2	2	3								
Jul		2	2	2		2	2	2		2	2			2	2	2				
Aug										2	2	3								
Sep		2	2	2						2	2			2	2	2		2	1	2
Oct						2	2	2												
Nov																				
Dec																				
Total		6	6	6		6	6	6		10	10	12		6	6	6		2	1	2

(1)：No. of aircrafts survey, (2)：No. of survey areas for adult mosquitoes, (3)：No. of survey areas for mosquito larvae, (4)：No. of survey areas for rodents

Seaport（3）

Month/ Quarantine port	Nagoya Quarantine Station																			
	045 Mikawa				047 Kinuura				048 Nagoya				049 Yokkaichi				050 Owase			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr										1	1	1								
May						4	4	4		3	3	3		3	3	3				
Jun		2	2	2						3	3	3								
Jul						4	4	4		3	3	2		3	3	3				
Aug		4	4	4						2	2	2								
Sep										1	1	1		3	3	3				
Oct						2	2	2		2	2	1						1	1	1
Nov		4	4	4						3	3	3		3	3	3				
Dec																				
Total		10	10	10		10	10	10		18	18	16		12	12	12		1	1	1

Month/ Quarantine port	Nagoya Quarantine Station				Osaka Quarantine Station															
	053 Katsuura				038 Uchiura				039 Tsuruga				051 Maizuru				054 Wakayamashimotsu			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				2
Mar																				
Apr																				
May																				
Jun						1	1	1		2	2	2		2	2	2		2	2	2
Jul																				
Aug																		2	2	
Sep						1		1		2		2		2		2		2	2	
Oct		1		1		1	2	1		2	4	2		2	4	2				
Nov																				
Dec																				2
Total		1		1		3	3	3		6	6	6		6	6	6		6	6	6

Month/ Quarantine port	Osaka Quarantine Station								Kobe Quarantine Station				Hiroshima Quarantine Station							
	055 Hanshin(Osaka)				056 Hannan				057 Hanshin(Kobe)				058 Mizushima				059 Sakai			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan												3								
Feb				1				1				4								
Mar												3								
Apr				4				1				3								1
May		5	5			1	1			6	6	3		1	1	1		1	1	1
Jun				1		1	1	1		7	7	3		2	2	2		1	1	1
Jul		5	10	4		1	1			6	6	3		2	2	2		1	1	
Aug						1	1			6	6			1	1					
Sep		5	10			1	1			7	7	7		4	2	4		1	1	
Oct				1				1		6	6	3			2			1	1	1
Nov				5								3				1				1
Dec								1				3								
Total		15	25	16		5	5	5		38	38	38		10	10	10		5	5	5

Month/ Quarantine port	Hiroshima Quarantine Station																			
	060 Hamada				061 Fukuyama				062 Kure				063 Hiroshima				064 Iwakuni			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr								2						2	2					1
May				2		2	2	2						2	2	2				
Jun		2	2	2		2	2	2						3	3	3		1	1	1
Jul						1	1	1		3	3									
Aug						2	2													
Sep		2	2			2	2	2						3	3	3				
Oct		2	2	2		1	1	1		2	2	3						1	1	1
Nov												2				2				
Dec																				
Total		6	6	6		10	10	10		5	5	5		10	10	10		2	2	3

(1)：No. of aircrafts survey, (2)：No. of survey areas for adult mosquitoes, (3)：No. of survey areas for mosquito larvae, (4)：No. of survey areas for rodents

Seaport（4）

Month/ Quarantine port	Hiroshima Quarantine Station																			
	065 Tokuyamakudamatsu				066 Ube				067 Tokushimakomatsushima				068 Sakaide				069 Matsuyama			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar								1												2
Apr				1																
May		1	1	1		2	2	1		1	1	1		2	2	2		2	2	2
Jun		1	1	1														2	2	
Jul		1	1	1		2	2	1		2	2	2		2	2	2		2	2	
Aug		2	2	2						2	2	2								
Sep																				
Oct						2	2	1						2	2	2				
Nov																				1
Dec																				
Total		5	5	6		6	6	4		5	5	5		6	6	6		6	6	5

Month/ Quarantine port	Hiroshima Quarantine Station												Fukuoka Quarantine Station							
	070 Niihama				071 Mishimakawanoe				072 Kochi				073 Kanmon				074 Hakata			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb								2												
Mar				2																
Apr										2	2	2								5
May		2	2											2	2	2		5	5	
Jun						2	2	2		2	2	2		2	2	2				
Jul		2	2					2						2	3	2				5
Aug		2	2	2																
Sep				2		2	2			2	2	2		2	2	2		2	2	
Oct						2	2							3	3	3		3	3	
Nov																				
Dec																				
Total		6	6	6		6	6	6		6	6	6		11	12	11		10	10	10

Month/ Quarantine port	Fukuoka Quarantine Station																			
	075 Miike				076 Karatsu				077 Imari				078 Sasebo				079 Nagasaki			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr																				
May						2	2	2		2	2	2		1	1	1		2	2	2
Jun						2	2	2		4	4	4		1	1	1		2	2	2
Jul										2	2	2		1	2			2	2	2
Aug		2	2	2		1	1	1						1	1			2	2	
Sep		1	1	1						2	2	2		1	1	1		2	2	
Oct		2	2	2												1				2
Nov																1				2
Dec																				
Total	0	5	5	5	0	5	5	5	0	10	10	10	0	5	6	5	0	10	10	10

Month/ Quarantine port	Fukuoka Quarantine Station																			
	080 Hitakatsu				081 Izuhara				082 Oita				083 Saganoseki				084 Saiki			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr																				
May		1	1	1							3	3		1	1	1		1	1	1
Jun		2	2	2		2	2	2		3	3	3								
Jul		2	2	2		2	2	2						1	1	1		1	1	1
Aug		2	2	2		2	2	2												
Sep		2	2	2						3	3	3								
Oct		1	1	1										1	1	1		1	1	1
Nov																				
Dec										3										
Total		10	10	10		6	6	6		9	9	9		3	3	3		3	3	3

(1)：No. of aircrafts survey, (2)：No. of survey areas for adult mosquitoes, (3)：No. of survey areas for mosquito larvae, (4)：No. of survey areas for rodents

Seaport（5）

Month/ Quarantine port	Fukuoka Quarantine Station																			
	085 Minamata				086 Yatsushiro				087 Misumi				088 Hososhima				089 Shibushi			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb				1																
Mar								1												
Apr																				
May		1	1	1		1	1							1	1	1				
Jun		1	1			1		1						1	1	1		3	3	3
Jul		1	1	1		2	2	1						1	1	1		1	1	1
Aug		1	1	1			1											3	3	3
Sep						1	1			1	1	1						3	3	3
Oct		1	1					1						1	1	1				
Nov				1				1						1	1	1				
Dec																				
Total		5	5	5		5	5	5		1	1	1		5	5	5		10	10	10

Month/ Quarantine port	Fukuoka Quarantine Station												Naha Quarantine Station							
	090 Kagoshima				091 Kiire				092 Kushikino				093 Kinnakagusuku				094 Naha			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar																				
Apr																				
May						1	1	1						2	2	2		2	2	2
Jun		2	2	2		1	1	1						2	2	2		2	2	2
Jul						1	1	1						1	1	1		2	2	2
Aug		2	2	2		1	1	1								1		2	2	2
Sep										1	1	1		2	2	2		2		2
Oct		1	1	1		1	1	1						2	2	2			2	
Nov																				
Dec														1	1	1		2	2	2
Total		5	5	5		5	5	5		1	1	1		10	10	11		12	12	12

Month/ Quarantine port	Naha Quarantine Station							
	095 Hirara				096 Ishigaki			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan								
Feb						2	2	
Mar						2	2	
Apr						1	1	
May		2	2	2		2	2	1
Jun		2	2	2		2	2	2
Jul						1		
Aug						1	2	1
Sep						1	1	
Oct		2	2	2		1	1	
Nov						1	1	1
Dec						2	2	1
Total		6	6	6		16	16	6

(1)：No. of aircrafts survey, (2)：No. of survey areas for adult mosquitoes, (3)：No. of survey areas for mosquito larvae, (4)：No. of survey areas for rodents

Airport（1）

Month/ Quarantine port	Otaru Quarantine Station												Sendai Quarantine Station							
	193 New Chitose AP				194 Asahikawa AP				195 Hakodate AP				196 Aomori AP				197 Sendai AP			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan		1															2			1
Feb		1															3			1
Mar		1															3			1
Apr		1															5			1
May		1		3								2					8	3	6	1
Jun	6	5	4	3					2	2	2		1	1	1	1	9	3	6	2
Jul	7	5	4	3	2	2	2		2	2	2		1	1	1	1	9	3	6	3
Aug	6	5	4	3	2	1	1		2	2	2		1	1	1	1	9	3	6	2
Sep	5	5	4	3	1	2	2	1	2	2	2		1	1	1	1	8	3	6	3
Oct	1	1						1	2	2	2	2	1	1	1	1	3	3	6	3
Nov		1															3			2
Dec		1															3			1
Total	25	28	16	15	5	5	5	2	10	10	10	4	5	5	5	5	65	18	36	21

Month/ Quarantine port	Sendai Quarantine Station												Narita Airport Quarantine Station				Tokyo Quarantine Station			
	198 Akita AP				199 Fukushima AP				227 Hanamaki AP				200 Narita International AP				201 Tokyo International AP			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan													21	8	2					
Feb													28	8	2					
Mar													22	15	2	5	1	2	4	2
Apr													28	31	2		5	4	12	3
May					1								28	32	39	2	9	5	8	4
Jun		1	1	1	1								21	47	39	5	6	8	8	3
Jul					1					2	2	2	18	51	47		11	3	12	2
Aug	1	1	1	1	1					2	2	2	19	51	39		2	4	12	3
Sep	1				1	1	1			2	2	2	19	51	47		10	3	12	2
Oct		1	1	1				2					21	43	39	5		4	8	4
Nov	1												18	44	23	4	2	3	8	2
Dec									3				17	16	2	5	7	1		
Total	3	3	3	3	5	1	1	2	3	6	6	6	260	397	283	26	53	37	84	25

Month/ Quarantine port	Tokyo Quarantine Station				Niigata Quarantine Station												Nagoya Quarantine Station			
	223 Hyakuri AP				202 Niigata AP				203 Toyama AP				204 Komatsu AP				205 Chubu Centrair International AP			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																	1			
Feb																	3			
Mar																	3			1
Apr						2	2	2									3			1
May									2					2	2	2	2	5	5	2
Jun	1	1	1	1	1	2	2	2		2	2	3	2	2	2	2	2	4	5	3
Jul	1	1	1	1	1					2	2	3	2	2	2	2	3	6	5	2
Aug	1	1	1	1	1				2				2				3	4	5	2
Sep		1	1	1	1					2	2		2	2	2	4	3	4	5	2
Oct	2	1	1	1	1	2	2	2					2	2	2		3	5	5	2
Nov									1								2	2		1
Dec																	1			
Total	5	5	5	5	5	6	6	6	5	6	6	6	10	10	10	10	29	30	30	16

Month/ Quarantine port	Nagoya Quarantine Station				Kansai Airport Quarantine Station				Hiroshima Quarantine Station											
	222 Shizuoka AP				206 Kansai International AP				207 Okayama AP				208 Miho AP				209 Hiroshima AP			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan																				
Feb																				
Mar					2															
Apr					2	1		4								1				
May		1	1	1	2	14	14	3	2	2	2	2	1	1	1	1				2
Jun		1	1	1	6	20	14	4	2	2	2	2	1	1	1	1	2	2	2	2
Jul	2	1	1	1	6	17	21		2	2	2	2	1	1	1		3	2	2	2
Aug	2	1	1	1	6	14	28						1	1	1		1	2	2	
Sep	1	1	1	1	6	14	14		2	2	2	2	1	1	1		2	2	2	2
Oct					6	10	14	3	2	2	2	2				1	2	2	2	2
Nov					3	7	7	4								1				
Dec					1			3												
Total	5	5	5	5	40	97	112	21	10	10	10	10	5	5	5	5	10	10	10	10

(1)：No. of aircrafts survey, (2)：No. of survey areas for adult mosquitoes, (3)：No. of survey areas for mosquito larvae, (4)：No. of survey areas for rodents

Airport（2）

Month/ Quarantine port	Hiroshima Quarantine Station								Fukuoka Quarantine Station											
	211 Matsuyama AP				226 Takamatsu AP				212 Fukuoka AP				213 Kitakyushu AP				214 Oita AP			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan									5			2								
Feb									5	1		4								
Mar									5			2								
Apr				2					5	5	4	2						1	1	1
May	2	1	1		1	1	1	1	5	9	7	2	2	2	2	2				
Jun	1	2	1		1	2	2	2	5	17	7	2	2	2	2	2				
Jul	2	1	1		2	2	2	1	5	12	3		2	2	2	2	1			
Aug		2	1	2	2	2	2	1	5	5	8						1			
Sep	1	1	1		4	2	2	1	4	7	8		2	2	2	2	2			
Oct		2	1			1	1	2	5	5	5	2	2	2	2	2				
Nov				1				2	6	1		2								
Dec									5	2		2					1	1	1	1
Total	6	9	6	5	10	10	10	10	60	64	42	20	10	10	10	10	5	2	2	2

Month/ Quarantine port	Fukuoka Quarantine Station																			
	215 Nagasaki AP				216 Kumamoto AP				217 Miyazaki AP				218 Kagoshima AP				225 Saga AP			
Investigation	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Jan								1												
Feb								1												
Mar								1												
Apr								1												2
May	1					2	2	1		2	2	2		2	2	2	1			
Jun	1				2	2	2	1	1	2	2	2					1			
Jul	1	1	1	1	3	2	2		1	2	2	2		2	2	2				
Aug	1	1	1		3	2	2	1	1				4					2	2	
Sep	1	1	1		2	2	2	1	1				3	2	2	2	1	4	4	
Oct				1				1	1	2	2	2					2	6	6	
Nov				1				1		2	2	2								2
Dec																				
Total	5	3	3	3	10	10	10	10	5	10	10	10	7	6	6	6	5	12	12	4

Month/ Quarantine port	Naha Quarantine Station			
	219 Naha AP			
Investigation	(1)	(2)	(3)	(4)
Jan	1	1		2
Feb	1	2	1	2
Mar	1	1	3	1
Apr	1	2	2	1
May	1	1	1	2
Jun	1	1	1	1
Jul	1	1	1	1
Aug	2	1	1	2
Sep	1	1	1	2
Oct	2	2	2	2
Nov	2	1	2	1
Dec	1	1	1	1
Total	15	15	16	18

(1)：No. of aircrafts survey, (2)：No. of survey areas for adult mosquitoes, (3)：No. of survey areas for mosquito larvae, (4)：No. of survey areas for rodents

Table 3. Results of mosquitoes survey on international aircraft at quarantine airports in 2024

Quarantine airport			No. of aircraft survey (No. of aircrafts with mosquitoes collected)												Pathogen examinations (Flavivirus, Chikungunya virus, Malaria parasite)				
Name of quarantine airport	IATA code	Quarantine code	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Positive	Pools	Samples	Last airport (No. of aircraft)
New Chitose AP	CTS	193	( )	( )	( )	( )	( )	6 (0)	7 (0)	6 (0)	5 (0)	1 (0)	0 (0)	0 (0)	25 (0)				
Asahikawa AP	AKJ	194	( )	( )	( )	( )	( )	( )	2 (0)	2 (0)	1 (0)	( )	( )	( )	5 (0)				
Hakodate AP	HKD	195	( )	( )	( )	( )	( )	2 (0)	2 (0)	2 (0)	2 (0)	2 (0)	( )	( )	10 (0)				
Aomori AP	AOJ	196	( )	( )	( )	( )	( )	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	( )	( )	5 (0)				
Sendai AP	SDJ	197	2 (0)	3 (0)	3 (0)	5 (0)	8 (0)	9 (0)	9 (0)	9 (0)	8 (0)	3 (0)	3 (0)	3 (0)	65 (0)				
Akita AP	AXT	198	( )	( )	( )	( )	( )	( )	( )	1 (0)	1 (0)	( )	1 (0)	( )	3 (0)				
Fukushima AP	FKS	199	( )	( )	( )	( )	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	( )	( )	( )	5 (0)				
Narita International AP	NRT	200	21 (2)	28 (4)	22 (6)	28 (8)	28 (1)	21 (1)	18 (0)	19 (0)	19 (0)	21 (0)	18 (0)	17 (0)	260 (22)	0	25	57	DAC(19), DEL(2), CEB(1)
Tokyo International AP	HND	201	( )	( )	1 (0)	5 (0)	9 (0)	6 (0)	11 (0)	2 (0)	10 (0)	( )	2 (2)	7 (0)	53 (2)	0	2	3	DEL(2)
Niigata Ap	KIJ	202	( )	( )	( )	( )	( )	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	( )	( )	5 (0)				
Toyama AP	TOY	203	( )	( )	( )	( )	2 (0)	( )	( )	2 (0)	( )	( )	1 (0)	( )	5 (0)				
Komatsu AP	KMQ	204	( )	( )	( )	( )	( )	2 (0)	2 (0)	2 (0)	2 (0)	2 (0)	( )	( )	10 (0)				
Chubu Centrair International AP	NGO	205	1 (0)	3 (0)	3 (0)	3 (0)	2 (0)	2 (0)	3 (0)	3 (0)	3 (0)	3 (0)	2 (0)	1 (0)	29 (0)				
Kansai International AP	KIX	206	( )	( )	2 (0)	2 (0)	2 (0)	6 (0)	6 (0)	6 (0)	6 (0)	6 (0)	3 (0)	1 (0)	40 (0)				
Okayama AP	OKJ	207	( )	( )	( )	( )	2 (0)	2 (0)	2 (0)	( )	2 (0)	2 (0)	( )	( )	10 (0)				
Miho AP	YGJ	208	( )	( )	( )	( )	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	( )	( )	( )	5 (0)				
HiroshimaAP	HIJ	209	( )	( )	( )	( )	( )	2 (0)	3 (0)	1 (0)	2 (0)	2 (0)	( )	( )	10 (0)				
Matsuyama AP	MYJ	211	( )	( )	( )	( )	2 (0)	1 (0)	2 (0)	( )	1 (0)	( )	( )	( )	6 (0)				
Fukuoka AP	FUK	212	5 (0)	5 (1)	5 (0)	5 (0)	5 (0)	5 (0)	5 (0)	5 (0)	4 (0)	5 (0)	6 (0)	5 (0)	60 (1)				IIAN(1) ※1
Kitakyushu AP	KKJ	213	( )	( )	( )	( )	2 (0)	2 (0)	2 (0)	( )	2 (0)	2 (0)	( )	( )	10 (0)				
Oita AP	OIT	214	( )	( )	( )	( )	( )	( )	1 (0)	1 (0)	2 (0)	( )	( )	1 (0)	5 (0)				
Nagasaki AP	NGS	215	( )	( )	( )	( )	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	( )	( )	( )	5 (0)				
Kumamoto AP	KMJ	216	( )	( )	( )	( )	( )	2 (0)	3 (0)	3 (0)	2 (0)	( )	( )	( )	10 (0)				
Miyazaki AP	KMI	217	( )	( )	( )	( )	( )	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	( )	( )	5 (0)				
Kagoshima AP	KOJ	218	( )	( )	( )	( )	( )	( )	( )	4 (0)	3 (0)	( )	( )	( )	7 (0)				
Naha AP	OKA	219	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	2 (0)	1 (0)	2 (0)	2 (0)	1 (0)	15 (0)				
Shizuoka AP	FSZ	222	( )	( )	( )	( )	( )	( )	2 (0)	2 (0)	1 (0)	( )	( )	( )	5 (0)				
Hyakuri AP	IBR	223	( )	( )	( )	( )	( )	1 (0)	1 (0)	1 (0)	( )	2 (0)	( )	( )	5 (0)				
Saga AP	HSG	225	( )	( )	( )	( )	1 (0)	1 (0)	( )	( )	1 (0)	2 (0)	( )	( )	5 (0)				
Takamatsu AP	TAK	226	( )	( )	( )	( )	1 (0)	1 (0)	2 (0)	2 (0)	4 (0)	( )	( )	( )	10 (0)				
Hanamaki AP	HNA	227	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	3 (0)	3 (0)				
Total			30 (2)	40 (5)	37 (6)	49 (8)	68 (1)	78 (1)	90 (0)	81 (0)	88 (0)	58 (0)	38 (2)	39 (0)	696 (25)	0	27	60	

※1 Pathogen examination was not performed

Table 4－1. Results of mosquitoes survey on international aircraft in 2024

Last airport of departure				No. of aircraft survey													No. of collected mosquitoes			
																	No. of collected mosquitoes / No. of aircrafts with mosquitoes collected			
Country /Area	Name of airport	IATA code IATA		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	*Aedes aegypti*	*Culex pipiens* complex	Culicinae	Total
			Invasive species Primary vector Secondary vector Possible vector														● C,D,Z W	W		
Indonesia	I Gusti Ngurah Rai International Airport	DPS					1	1		1	1		1		1	6				
Indonesia	Sam Ratulangi Airport	MDC						1	1	2	2	2	1			9				
Indonesia	Jakarta Soekarno-Hatta International Airport	CGK				1	3	4	3	2	1		2			16				
Singapore	Singapore Changi International Airport	SIN			1	2	1	2	2	2	3	1	3	1	1	19				
Thailand	Suvarnabhumi Airport	BKK		3	4	1	5	5	6	7	6	6	2	4	4	53				
Thailand	Don Mueang International Airport	DMK		1	1		1			1		2	4	5	3	18				
Philippines	Ninoy Aquino International Airport	MNL		6	4	6	10	7	6	12	6	8	5	5	5	80				
Philippines	Mactan-Cebu International Airport	CEB			2	1	1	1	1	1	1		2			10		1 / 1		1 / 1
Philippines	Clark International Airport	CRK					2	2	1		4	1	2	2	2	16				
Viet Nam	Tan Son Nhat International Airport	SGN			2			1	3	1	2	3	1	3	1	17				
Viet Nam	Noi Bai International Airport	HAN		4	3	2	5	1	1	4	3	1	4	2	3	33			1 / 1	1 / 1 ※1
Viet Nam	Da Nang International Airport	DAD								1					1	2				
Malaysia	Kuala Lumpur International Airport	KUL			2				2			2		1		7				
Lao P.D.R.	Wattay International Airport	VTE											1			1				
Korea	Incheon Airport	ICN						6	11	16	14	16	7		1	71				
Korea	Gimhae International Airport	PUS						2	1	1	2					6				
Korea	Muan International Airport	MWX						2	2			2				6				
Taiwan	Taiwan Taoyuan International Airport	TPE		3	4	5	4	8	15	15	17	21	13	7	6	118				
Taiwan	Kaohsiung International Airport	KHH		1	1	3	1	3	1		1		1		1	13				
Taiwan	Cingcyuangang Airport	RMQ									1					1				
Taiwan	Taipei Songshan Airport	TSA						1					1			2				
China	Shanghai Pudong International Airport	PVG					1	5	5	7	7	4	2			31				
China	Nanjing Lukou International Airport	NKG				1					1					2				
China	Shenzhen Baoan International Airport	SZX								1				1		2				
China	Beijing Capital International Airport	PEK					1		1	2	1	3				8				
China	Hangzhou International Airport	HGH							1							1				
China	Ningbo Lishe International Airport	NGB							1							1				
China	Fuzhou Changle International Airport	FOC											1			1				
China	Harbin Taiping International Airport	HRB								1		1				2				
China	Dalian Zhoushuizi International Airport	DLC									2			1		3				
China	Zhengzhou Xinzheng International Airport	CGO								1		1				2				
China	Tianjin Binhai International Airport	TSN								1						1				
China	Guangzhou Baiyun International Airport	CAN							1				1			2				
Hong Kong	Hong Kong International Airport	HKG					1		2	4	2	2	1			12				
India	Indira Gandhi International Airport	DEL		5	8	6	2	1	1	2	1	7		4	9	46		9 / 4		9 / 4
India	Kempegowda International Airport	BLR						1	1							2				
Sri Lanka	Bandaranaike International Airport	CMB								1						1				
Nepal	Tribhuvan International Airport	KTM			1			1								2				
Bangladesh	Hazrat Shahjalal International Airport	DAC		6	6	7	9	9	5	4	3	4	2	1		56		51 / 19		51 / 19 ※2
U.S.A	Daniel K. Inouye International Airport	HNL		1				1								2				

U.S.A	Dallas/Fort Worth International Airport	DFW								3	4										7					
U.S.A	Ted Stevens Anchorage International Airport	ANC																		1	1					
Guam	Antonio B Won Pat International Airport	GUM			1												1				2					
French Polynesia	Tahiti Faa'a International Airport	PPT					2												1		3					
France	Paris-Charles de Gaulle Airport	CDG							1												1					
Mexico	Mexico City International Airport	MEX													1						1					
Total				30	40	37	49	68	78	90	81	88	58	38	39	696	0 / 0	61 / 24	1 / 1	62 / 25						

Vector-borne diseases：C；Chikungunya fever, D；Dengue fever, J；Japanese encephalitis, M；Malaria , W；West Nile fever, Z；Zika virus infection

※1 Pathogen examination was not performed ※2 Including one male mosquito

Table 4—2. Results of mosquitoes survey on international aircraft by the origin of the flights in 2024

Area	Country / Area	Last airport of departure	IATA code		No. of aircraft survey	No. of aircrafts with mosquitoes collected	No. of collected mosquitoes / No. of aircrafts with mosquitoes collected			Total	Pathogen examinations No. of positive sample pools / No. of sample pools		
							Aedes	*Culex*					
				Aedes aegypti				*Culex pipiens* complex	Culicinae		Flavivirus	Chikungunya virus	Malaria parasite
				Invasive species Primary vector Secondary vector Possible vector			● C,D,Z W	W					
East Asia	Korea	Incheon Airport	ICN		71								
East Asia	Korea	Gimhae International Airport	PUS		6								
East Asia	Korea	Muan International Airport	MWX		6								
East Asia	Taiwan	Taiwan Taoyuan International Airport	TPE		118								
East Asia	Taiwan	Kaohsiung International Airport	KHH		13								
East Asia	Taiwan	Cingcyuangang Airport	RMQ		1								
East Asia	Taiwan	Taipei Songshan Airport	TSA		2								
East Asia	China	Shanghai Pudong International Airport	PVG		31								
East Asia	China	Nanjing Lukou International Airport	NKG		2								
East Asia	China	Shenzhen Baoan International Airport	SZX		2								
East Asia	China	Beijing Capital International Airport	PEK		8								
East Asia	China	Hangzhou International Airport	HGH		1								
East Asia	China	Ningbo Lishe International Airport	NGB		1								
East Asia	China	Fuzhou Changle International Airport	FOC		1								
East Asia	China	Harbin Taiping International Airport	HRB		2								
East Asia	China	Dalian Zhoushuizi International Airport	DLC		3								
East Asia	China	Zhengzhou Xinzheng International Airport	CGO		2								
East Asia	China	Tianjin Binhai International Airport	TSN		1								
East Asia	China	Guangzhou Baiyun International Airport	CAN		2								
East Asia	Hong Kong	Hong Kong International Airport	HKG		12								
Southeast Asia	Indonesia	I Gusti Ngurah Rai International Airport	DPS		6								
Southeast Asia	Indonesia	Sam Ratulangi Airport	MDC		9								
Southeast Asia	Indonesia	Jakarta Soekarno-Hatta International Airport	CGK		16								
Southeast Asia	Singapore	Singapore Changi International Airport	SIN		19								
Southeast Asia	Thailand	Suvarnabhumi Airport	BKK		53								
Southeast Asia	Thailand	Don Mueang International Airport	DMK		18								
Southeast Asia	Philippines	Ninoy Aquino International Airport	MNL		80								
Southeast Asia	Philippines	Mactan-Cebu International Airport	CEB		10	1		1 / 1		1 /1	0 /1		
Southeast Asia	Philippines	Clark International Airport	CRK		16								

Southeast Asia	Viet Nam	Tan Son Nhat International Airport	SGN		17								
Southeast Asia	Viet Nam	Noi Bai International Airport	HAN		33	1				1 / 1	1 /1		※1
Southeast Asia	Viet Nam	Da Nang International Airport	DAD		2								
Southeast Asia	Malaysia	Kuala Lumpur International Airport	KUL		7								
Southeast Asia	Malaysia	Wattay International Airport	VTE		1								
South Asia	India	Indira Gandhi International Airport	DEL		46	4		9 / 4			9 /4	0 /4	
South Asia	India	Kempegowda International Airport	BLR		2								
South Asia	Sri Lanka	Bandaranaike International Airport	CMB		1								
South Asia	Nepal	Tribhuvan International Airport	KTM		2								
South Asia	Bangladesh	Hazrat Shahjalal International Airport	DAC		56	19		51 / 19			51 /19	0 /22	※2
North America	U.S.A	Daniel K. Inouye International Airport	HNL		2								
North America	U.S.A	Dallas/Fort Worth International Airport	DFW		7								
North America	U.S.A	Ted Stevens Anchorage International Airport	ANC		1								
South Pacific	Guam	Antonio B Won Pat International Airport	GUM		2								
South Pacific	French Polynesia	Tahiti Faa'a International Airport	PPT		3								
Europe	France	Paris-Charles de Gaulle Airport	CDG		1								
Central America	Mexico	Mexico City International Airport	MEX		1								
Total					696	25	0 / 0	61 / 24		1 / 1	62 /25	0 /27	0 / 0	0 / 0	

Vector-borne diseases：C；Chikungunya fever, D；Dengue fever, J；Japanese encephalitis, M；Malaria , W；West Nile fever, Z；Zika virus infection

※1 Pathogen testing was not performed ※2 Including one male mosquito

Table 5－1. Results of adult mosquitoes survey at quarantine ports in 2024

Quarantine port	UN-LOCODE	Quarantine code		No. of survey areas (1km mesh)	Mosquito taxa: *Anopheles*					*Aedes*									*Armigeres*	*Culex*															*Tripteroides*	*Lutzia*	*Coquillettidia*		Total	No. of samples	Pathogen examinations No. of positive samples pool / No. of samples pool		
					Anopheles sinensis	*Anopheles koreicus*	*Anopheles sineroides*	*Anopheles lesteri*	*Anopheles*	*Aedes albopictus*	*Aedes vexans nipponii*	*Aedes japonicus*	*Aedes dorsalis*	*Aedes esoensis*	*Aedes togoi*	*Aedes bekkui*	*Aedes nipponicus*	*Aedes excrucians*	*Armigeres subalbatus*	*Culex pipiens quinquefasciatus*	*Culex pipiens* complex	*Culex tritaeniorhynchus*	*Culex pseudovishnui*	*Culex orientalis*	*Culex sitiens*	*Culex bitaeniorhynchus*	*Culex inatomii*	*Culex rubithoracis*	*Culex infantulus*	*Culex kyotoensis*	*Culex nipponica*	*Culex (Culiciomyia) sasai*	*Culex pallidothorax*	*Culiciomyia*	*Tripteroides bambusa*	*Lutzia vorax*	*Coquillettidia ochracea*	Unidentified species			Flavivirus	Chikungunya virus	Malaria parasite
			Invasive species																																								
			Primary vector		M					C,D,Z										W	W	J	J																				
			Secondary vector		W		M	M		W	W	W	W		W			W	W			W					W																
			Possible vector			M				J		J	D		J					J		D			J,W	J																	
Otaru	OTR	1		5											1						6																		7	7	0 / 3		
Ishikariwan	ISW	2		5																	3			2															5	3	0 / 1		
Wakkanai	WKJ	3		8																	11																		11	11	0 / 3		
Rumoi	RMI	4		2																	1																		1	1	0 / 1		
Monbetsu	MBE	5		1																																			0	0			
Abashiri	ABA	6		1									1																										1	1	0 / 1		
Hanasaki	HNK	7		2									39								6																		45	45	0 / 2		
Kushiro	KUH	8		4							1		1	3							5																		10	7	0 / 4		
Tomakomai	TMK	9		2								2									2																		4	4	0 / 2		
Muroran	MUR	10		1								1																											1	1	0 / 1		
Hakodate	HKP	11		5																	29																		29	29	0 / 5		
Aomori	AOJ	12		5						2											25																		27	27	0 / 4	0 / 1	
Hachinohe	HHE	13		5																	5																		5	5	0 / 3		
Miyako	MYK	14		2																	1																		1	1	0 / 1		
Kamaishi	KIS	15		2																																			0	0			
Ofunato	OFT	16		5																	1																		1	1	0 / 1		
Kesennuma	KSN	17		1																	1																		1	1	0 / 1		
Ishinomaki	ISM	18		6																	36	6				4	1												47	47	0 / 9		
Sendaishiogama	SGM	19		10						11											40																		51	51	0 / 9	0 / 4	
Akitafunakawa	AXT	20		9						42											67	2																	111	104	0 / 11	0 / 4	
Sakata	SKT	21		6																	4	3																	7	7	0 / 3		
Onahama	ONA	22		6																	32																		32	32	0 / 4		
Hitachi	HTC	23		6																																			0	0			
Kashima	KSM	24		12						5	2										5	144				3													159	159	0 / 16	0 / 3	
Kisarazu	KZU	25		12						42									1		70	6				1			1										121	120	0 / 18	0 / 4	
Chiba	CHB	26		12						123											633	82				1													839	828	0 / 31	0 / 6	
Futami	HTM	27		2						11																													11	11	0 / 1	0 / 1	
Keihin(Tokyo)	TYO	28		24						45											11																		56	41	0 / 12	0 / 7	
keihin(Kawasaki)	KWS	29		12						37											277	3				1													318	311	0 / 23	0 / 6	
Keihin(Yokohama)	YOK	30		19						48											413													1					462	458	0 / 32	0 / 11	
Yokosuka	YOS	31		6																	10																		10	8	0 / 4		
Misaki	MIK	32		2																	33																		33	33	0 / 2		
Naoetsu	NAO	33		6						59											3	3																	65	65	0 / 8	0 / 5	
Niigata	NIH	34		12						53											9																		62	62	0 / 10	0 / 4	
Fushikitoyama	FSK	35		10						7											40	3																	50	50	0 / 11	0 / 4	
Kanazawa	KNZ	36		6																	8	3																	11	11	0 / 3		
Nanao	NNO	37		6	1																6	16																	23	23	0 / 8		0 / 1
Uchiura	UCU	38		3																	7																		7	7	0 / 2		
Tsuruga	TRG	39		6						31											32																		63	56	0 / 10	0 / 4	

Shimizu	SMZ	41		10						32									1		51	3																	87	87	0 / 17	0 / 7	
Yaizu	YZU	42		6						13											40																		53	53	0 / 11	0 / 6	
Fukue	FKE	44		2						124	8					43			2		2	20																	199	153	0 / 9	0 / 4	
Mikawa	MKW	45		10	1					21	1,495					118					106	83																	1,824	1,705	0 / 47	0 / 2	0 / 1
Kinuura	KNU	47		10						60											104	10				3													177	166	0 / 17	0 / 4	
Nagoya	NGO	48		18						63											448	54				1													566	557	0 / 40	0 / 10	
Yokkaichi	YKK	49		12						7											106	2				6													121	121	0 / 15	0 / 2	
Owase	OWA	50		1																	8																		8	8	0 / 1		
Maizuru	MAI	51		6						17											13																		30	27	0 / 6	0 / 3	
Katsuura	KAT	53		1																	5																		5	5	0 / 1		
Wakayamashimotsu	WAK	54		6						45											154																		199	198	0 / 15	0 / 5	
Hanshin(Osak)	OSA	55		15						67											52																		119	104	0 / 20	0 / 6	
Hannan	HAN	56		5						73											34	1																	108	105	0 / 9	0 / 4	
Hanshin(Kobe)	UKB	57		38						11											195																		206	206	0 / 31	0 / 7	
Mizushima	MIZ	58		10						2											180	4						1											187	186	0 / 13	0 / 2	
Sakai	SMN	59		5						1											17																		18	18	0 / 4	0 / 1	
Hamada	HMD	60		6						23					5				2		23	1																	54	51	0 / 11	0 / 4	
Fukuyama	FKY	61		10																	48	2																1	51	50	0 / 9		
Kure	KRE	62		5						4											37	12																	53	53	0 / 7	0 / 2	
Hiroshima	HIJ	63		10						114											45											1							160	157	0 / 14	0 / 5	
Iwakuni	IWK	64		2																	26	1																	27	27	0 / 3		
Tokuyamakudamatsu	TXD	65		5						119											159	3																	281	253	0 / 14	0 / 5	
Ube	UBJ	66		6						4											58	1																	63	63	0 / 6	0 / 2	
Tokushimakomatsushima	TKX	67		5						5											56	1												3					65	62	0 / 6	0 / 2	
Sakaide	SKD	68		6																	42																		42	42	0 / 2		
Matsuyama	MYJ	69		6						2											49	1																	52	52	0 / 6	0 / 1	
Niihama	IHA	70		6						1									18		685																		704	693	0 / 18	0 / 1	
Mishimakawanoe	MKX	71		6																	15																		15	15	0 / 3		
Kochi	KCZ	72		6						10											50																		60	60	0 / 7	0 / 2	
Kanmon	MOJ	73		11							8										75	3																	86	86	0 / 5		
Hakata	HKT	74		10						387											156																		543	522	0 / 21	0 / 11	
Miike	MII	75		5						14											1	10																	25	25	0 / 9	0 / 5	
Karatsu	KAR	76		5						21									3		28	39																	91	91	0 / 12	0 / 4	
Imari	IMI	77		10						12									1		32	13																	58	58	0 / 20	0 / 5	
Sasebo	SSB	78		5						1											8	1																	10	10	0 / 4	0 / 1	
Nagasaki	NMX	79		10						12											9	2																	23	23	0 / 9	0 / 3	
Hitakatsu	HTK	80		10																																			0	0			
Izuhara	IZH	81		6						5									2		1	1																	9	9	0 / 4	0 / 1	
Oita	OIP	82		9						10									3		18																		31	31	0 / 7	0 / 2	
Saganoseki	SAG	83		3																	4																		4	4	0 / 2		
Saiki	SAE	84		3															1		4																		5	5	0 / 3		
Minamata	MIN	85		5						7											29	6																	42	41	0 / 10	0 / 2	
Yatsushiro	YAT	86		5						6											74	9				1													90	89	0 / 10	0 / 4	
Misumi	MIS	87		1						1									4		3	3												1					12	11	0 / 4	0 / 1	
Hososhima	HSM	88		5						6									1		21	1																	29	29	0 / 9	0 / 3	
Shibushi	SBS	89		10	1					2											82	10																	95	94	0 / 10	0 / 2	0 / 1
Kagoshima	KOJ	90		5						10	1										14																		25	25	0 / 5	0 / 2	
Kiire	KII	91		5																		3																	3	3	0 / 2		
Kushikino	KSO	92		1						1																													1	1	0 / 1	0 / 1	
Kinnakagusuku	KNX	93		10						32									4	13					52														101	100	0 / 17	0 / 7	
Naha	NAH	94		12						32										122																			154	151	0 / 13	0 / 4	
Hirara	HRR	95		6						66										12																			78	73	0 / 8	0 / 5	
Ishigaki	ISG	96		16						86										181		3				1													271	236	0 / 27	0 / 12	
Total				651	3	0	0	0	0	2,045	1,515	3	41	3	6	161	0	0	43	328	5,199	574	0	2	52	22	1	1	1	0	0	1	0	5	0	0	0	1	10,007	9,622	0 / 834	0 / 226	0 / 3

Vector-borne diseases：C；Chikungunya fever, D；Dengue fever, J；Japanese encephalitis, M；Malaria , W；West Nile fever, Z；Zika virus infection

Table 5－2. Results of adult mosquitoes survey at quarantine airports in 2024

Quarantine airport	UN-LOCODE	Quarantine code		No. of survey areas（1km mesh）	Mosquito taxa: *Anopheles*					*Aedes*									*Armigeres*	*Culex*															*Tripteroides*	*Lutzia*	*Coquillettidia*		Total	No. of samples	Examination of pathogen No. of positive sample pools / No. of sample pools		
					Anopheles sinensis	*Anopheles koreicus*	*Anopheles sineroides*	*Anopheles lesteri*	*Anopheles*	*Aedes albopictus*	*Aedes vexans nipponii*	*Aedes japonicus*	*Aedes dorsalis*	*Aedes esoensis*	*Aedes togoi*	*Aedes bekkui*	*Aedes nipponicus*	*Aedes excrucians*	*Armigeres subalbatus*	*Culex pipiens quinquefasciatus*	*Culex pipiens complex*	*Culex tritaeniorhynchus*	*Culex pseudovishnui*	*Culex orientalis*	*Culex sitiens*	*Culex bitaeniorhynchus*	*Culex inatomii*	*Culex rubithoracis*	*Culex infantulus*	*Culex kyotoensis*	*Culex nipponica*	*Culex (Culiciomyia) sasai*	*Culex pallidothorax*	*Culiciomyia*	*Tripteroides bambusa*	*Lutzia vorax*	*Coquillettidia ochracea*	Unidentified species			Flavivirus	Chikungunya virus	Malaria parasite
			Invasive species																																								
			Primary vector		M					C,D,Z										W	W	J	J																				
			Secondary vector		W		M	M		W	W	W	W		W			W	W			W					W																
			Possible vector			M				J		J	D		J					J		D			J,W	J																	
New Chitose AP	CTS	193		28			2	4			80	3		10			3	1			19			4							2								128	109	0 / 15		0 / 5
Asahikawa AP	AKJ	194		5			1				26													2															29	27	0 / 3		0 / 1
Hakodate AP	HKD	195		10											1						29	1																	31	31	0 / 7		
Aomori AP	AOJ	196		5						1	11										3			6															21	15	0 / 4	0 / 1	
Sendai AP	SDJ	197		18			2			7											83	25				43	103												263	263	0 / 33	0 / 5	0 / 2
Akita AP	AXT	198		3																																			0	0			
Fukushima AP	FKS	199		1																																			0	0			
Narita International AP	NRT	200		397	1					41	68								2		133	531				16									2				794	787	0 / 160	0 / 10	0 / 1
Tokyo International AP	HND	201		37						1											58	2																	61	61	0 / 20	0 / 1	
Niigata AP	KIJ	202		6																	8						1												9	9	0 / 5		
Toyama AP	TOY	203		6						13											17																		30	30	0 / 9	0 / 5	
Komatsu AP	KMQ	204		10						1	1	1									13	10		1		2								3		1			33	28	0 / 10	0 / 1	
Chubu Centrair International AP	NGO	205		30	1																42	19																	62	62	0 / 27		0 / 1
Kansai International AP	KIX	206		97		1				25									2		356	2																	386	377	0 / 67	0 / 11	0 / 1
Okayama AP	OKJ	207		10	3	5			1		1										15	176											3	3					207	200	0 / 13		0 / 6
Miho AP	YGJ	208		5						2											4	2																	8	8	0 / 3	0 / 1	
Hiroshima AP	HIJ	209		10							1											365								1									367	366	0 / 15		
Matsuyama AP	MYJ	211		9																	103	1		1															105	104	0 / 8		
Fukuoka AP	FUK	212		59						13											78	5																1	97	95	0 / 61	0 / 7	
Kitakyushu AP	KKJ	213		10																	1																		1	1	0 / 1		
Oita AP	OIT	214		2																																			0	0			
Nagasaki AP	NGS	215		3																																			0	0			
Kumamoto AP	KMJ	216		10																	6		1																7	7	0 / 4		
Miyazaki AP	KMI	217		10																	2	6	1			3													12	12	0 / 8		
Kagoshima AP	KOJ	218		6																	15																		15	15	0 / 1		
Naha AP	OKA	219		15							2									21					9											1			33	31	0 / 12		
Shizuoka AP	FSZ	222		5						2											2	9																	13	13	0 / 7	0 / 1	
Hyakuri AP	IBR	223		5	3						2										19	180				2											1		207	206	0 / 12		0 / 3
Saga AP	HSG	225		12	31																2	972																	1,005	1,005	0 / 27		0 / 6
Takamatsu AP	TAK	226		10	1																8	59												11					79	68	0 / 7		0 / 1
Hanamaki AP	HNA	227		6	1					17	2	2							2			6																	30	28	0 / 7	0 / 2	0 / 1
Total				840	41	6	5	4	1	123	194	6	0	10	1	0	3	1	6	21	1,016	2,371	2	14	9	66	104	0	0	1	2	0	3	17	2	2	1	1	4,033	3,958	0 / 546	0 / 45	0 / 28

Vector-borne diseases：C；Chikungunya fever, D；Dengue fever, J；Japanese encephalitis, M；Malaria , W；West Nile fever, Z；Zika virus infection

Table 5－3. Results of adult mosquitoes survey at quarantine ports and quarantine airports in 2024

	No. of survey areas (1km mesh)	Mosquito taxa																																		Total	No. of samples	Examination of pathogen No. of positive sample pools / No. of sample pools		
		Anopheles					*Aedes*									*Armigeres*	*Culex*															*Tripteroides*	*Lutzia*	*Coquillettidia*						
		Anopheles sinensis	*Anopheles koreicus*	*Anopheles sineroides*	*Anopheles lesteri*	*Anopheles*	*Aedes albopictus*	*Aedes vexans nipponii*	*Aedes japonicus*	*Aedes dorsalis*	*Aedes esoensis*	*Aedes togoi*	*Aedes bekkui*	*Aedes nipponicus*	*Aedes excrucians*	*Armigeres subalbatus*	*Culex pipiens quinquefasciatus*	*Culex pipiens* complex	*Culex tritaeniorhynchus*	*Culex pseudovishnui*	*Culex orientalis*	*Culex sitiens*	*Culex bitaeniorhynchus*	*Culex inatomi*	*Culex rubithoracis*	*Culex infantulus*	*Culex kyotoensis*	*Culex nipponica*	*Culex (Culiciomyia) sasai*	*Culex pallidothorax*	*Culiciomyia*	*Tripteroides bambusa*	*Lutzia vorax*	*Coquillettidia ochracea*	Unidentified species			Flavivirus	Chikungunya virus	Malaria parasite
Invasive species																																								
Primary vector		M					C,D,Z										W	W	J	J																				
Secondary vector		W		M	M		W	W	W	W		W			W	W			W					W																
Possible vector			M				J		J	D		J					J		D			J,W	J																	
Total	1,491	44	6	5	4	1	2,168	1,709	9	41	13	7	161	3	1	49	349	6,215	2,945	2	16	61	88	105	1	1	1	2	1	3	22	2	2	1	2	14,040	13,580	0 / 1,380	0 / 271	0 / 31

Vector-borne diseases：C；Chikungunya fever, D；Dengue fever, J；Japanese encephalitis, M；Malaria , W；West Nile fever, Z；Zika virus infection

Table 6－1. Results of mosquitoes larvae survey at quarantine ports in 2024

Quarantine port	UN-LOCODE	Quarantine code		No. of survey areas (1km mesh)	Mosquito taxa																							
					Anopheles	*Aedes*						*Culex*													*Tripteroides*	*Lutzia*		*Uranotaenia*	Unidentified species
					Anopheles sinensis	*Aedes albopictus*	*Aedes vexans nipponi*	*Aedes japonicus*	*Aedes flavopictus*	*Aedes togoi*	*Aedes esoensis*	*Culex pipiens quinquefasciatus*	*Culex pipiens* complex	*Culex tritaeniorhynchus*	*Culex bitaeniorhynchus*	*Culex orientalis*	*Culex sitiens*	*Culex (Culiciomyia) sasai*	*Culex pallidothorax*	*Culex infantulus*	*Culex kyotoensis*	*Tripteroides bambusa*	*Lutzia vorax*	*Lutzia fuscana*	*Lutzia*	*Uranotaenia novobscura*	
			Invasive species																									
			Primary vector		M	C,D,Z						W	W	J														
			Secondary vector		W	W	W	W	W	W				W														
			Possible vector			J		J	D	J		J		D	J		J,W											
Otaru	OTR	1		6				2																				
Ishikariwan	ISW	2		6				3					1															
Wakkanai	WKJ	3		6				1		1																		
Rumoi	RMI	4		2																								
Monbetsu	MBE	5		1																								
Abashiri	ABA	6		1				1																				
Hanasaki	HNK	7		2				1																				
Kushiro	KUH	8		4																								
Tomakomai	TMK	9		2				1																				
Muroran	MUR	10		1				1																				
Hakodate	HKP	11		5																								
Aomori	AOJ	12		5		3																						
Hachinohe	HHE	13		5		1																						
Miyako	MYK	14		2				1	1																			
Kamaishi	KIS	15		2				2																				
Ofunato	OFT	16		5		1		2															1					
Kesennuma	KSN	17		1				1																				
Ishinomaki	ISM	18		6		4																						
Sendaishiogama	SGM	19		10		6																						
Akitafunakawa	AXT	20		7		4																						
Sakata	SKT	21		6		1																						
Onahama	ONA	22		6																								
Hitachi	HTC	23		6		2							1															
Kashima	KSM	24		12		4																						
Kisarazu	KZU	25		12		7		1														1						
Chiba	CHB	26		12		7																						

Futami	HTM	27			2		2																					
Keihin(Tokyo)	TYO	28			24		12							1									1					
Keihin(Kawasaki)	KWS	29			15		18							2	1													
Keihin(Yokohama)	YOK	30			26		21							3														
Yokosuka	YOS	31			9																							
Misaki	MIK	32			2		2																1					
Naoetsu	NAO	33			6		3																					
Niigata	NIH	34			12		6																					
Fushikitoyama	FSK	35			10		7							1														
Kanazawa	KNZ	36			6		3		1																			
Nanao	NNO	37			6		6		5					1								2	3					
Uchiura	UCU	38			3																			1				
Tsuruga	TRG	39			6		2																	2				
Shimizu	SMZ	41			10		7																					
Yaizu	YZU	42			6		5																					
Fukue	FKE	44			1																							
Mikawa	MKW	45			10		2																					
Kinuura	KNU	47			10		3							1														
Nagoya	NGO	48			18		6							1										1				
Yokkaichi	YKK	49			12		1																					
Owase	OWA	50			1																							
Maizuru	MAI	51			6		1							2														
Wakayamashimotsu	WAK	54			6																							
Hanshin(Osaka)	OSA	55			25		10							2														
Hannan	HAN	56			5		1							2														
Hanshin(Kobe)	UKB	57			38		8							4														
Mizushima	MIZ	58			10		3																	1				
Sakai	SMN	59			5																							
Hamada	HMD	60			6		5		3										1	3			3	1				
Fukuyama	FKY	61			10		1																					
Kure	KRE	62			5		4																1					
Hiroshima	HIJ	63			10		8							3					1					1				
Iwakuni	IWK	64			2		1																					
Tokuyamakudamatsu	TXD	65			5		3		1																			
Ube	UBJ	66			6		3																					
Tokushimakomatsushima	TKX	67			5		3			1																		
Sakaide	SKD	68			6		3																					
Matsuyama	MYJ	69			6		4							2														
Niihama	IHA	70			6		6																					
Mishimakawanoe	MKX	71			6		2																					
Kochi	KCZ	72			6		7				2			2					1									
Kanmon	MOJ	73			12		1																					

Hakata	HKT	74		10		4						1																
Miike	MII	75		5		4		1																				
Karatsu	KAR	76		5		4																1						
Imari	IMI	77		10		7		5	3				1									2						
Sasebo	SSB	78		6		4			1			1																
Nagasaki	NMX	79		10		8																1	1					
Hitakatsu	HTK	80		10		1		2																				
Izuhara	IZH	81		6		2		1																				
Oita	OIP	82		9		1																						
Saganoseki	SAG	83		3																								
Saiki	SAE	84		3																								
Minamta	MIN	85		5				2				3											1					
Yatsushiro	YAT	86		5		4																						
Misumi	MIS	87		1																								
Hososhima	HSM	88		5		2		1														1						1
Shibushi	SBS	89		10		3		1																				
Kagoshima	KOJ	90		5		4						3											1					
Kiire	KII	91		5		4		5																				
Kushikino	KSO	92		1		1																						
Kinnakagusuku	KNX	93		10		7													1									
Naha	NAH	94		12		5					2													1				
Hirara	HRR	95		6		6						2																
Ishigaki	ISG	96		16		10						2																
Total				672	0	301	0	45	6	3	0	2	41	2	0	0	0	3	4	0	2	15	11	1	0	0	1

Vector-borne diseases：C；Chikungunya fever, D；Dengue fever, J；Japanese encephalitis, M；Malaria , W；West Nile fever, Z；Zika virus infection

Table 6－2 Results of mosquitoes larvae survey at quarantine airports in 2024

Quarantine airport	UN-LOCODE	Quarantine code		No. of survey areas (1km mesh)	Mosquito taxa																							
					Anopheles	*Aedes*						*Culex*											*Tripteroides*	*Lutzia*			*Uranotaenia*	Unidentified species
					Anopheles sinensis	*Aedes albopictus*	*Aedes vexans nipponii*	*Aedes japonicus*	*Aedes flavopictus*	*Aedes togoi*	*Aedes esoensis*	*Culex pipiens quinquefasciatus*	*Culex pipiens* complex	*Culex tritaeniorhynchus*	*Culex bitaeniorhynchus*	*Culex orientalis*	*Culex sitiens*	*Culex (Culiciomyia) sasai*	*Culex pallidothorax*	*Culex infantulus*	*Culex kyotoensis*	*Tripteroides bambusa*	*Lutzia vorax*	*Lutzia fuscana*	*Lutzia*	*Uranotaenia novobscura*	
			Invasive species																								
			Primary vector		M	C,D,Z						W	W	J													
			Secondary vector		W	W	W	W	W	W				W													
			Possible vector			J		J	D	J		J		D	J		J,W										
New Chitose AP	CTS	193		16				15	2				3			1						2					
Asahikawa AP	AKJ	194		5				1					1														
Hakodate AP	HKD	195		10				4	1													1					
Aomori AP	AOJ	196		5				2																			
Sendai AP	SDJ	197		36		22							12									1					
Akita AP	AXT	198		3		1																					
Fukushima AP	FKS	199		1																							
Narita International AP	NRT	200		283	3	67		5			1		8	4				2		2		11	8			1	1
Tokyo International AP	HND	201		84		5																					
Niigata AP	KIJ	202		6		1																					
Toyama AP	TOY	203		6		6																					
Komatsu AP	KMQ	204		10		4															2						
Chubu Centrair International AP	NGO	205		30		1								3													
Kansai International AP	KIX	206		112		19							11					2					1				
Okayama AP	OKJ	207		10		8		5	4										1			2					
Miho AP	YGJ	208		5									1														
Hiroshima AP	HIJ	209		10		8	1	4												1		1	1			1	
Matsuyama AP	MYJ	211		6		4							1														
Fukuoka AP	FUK	212		42		2							1														
Kitakyushu AP	KKJ	213		10																							
Oita AP	OIT	214		2																							
Nagasaki AP	NGS	215		3																							
Kumamoto AP	KMJ	216		10		3		6											2			2	1				
Miyazaki AP	KMI	217		10		1																					1
Kagoshima AP	KOJ	218		6																							
Naha AP	OKA	219		16		4									1		1							1			

Shizuoka AP	FSZ	222		5		1		1	1																					
Hyakuri AP	IBR	223		5		2																								
Saga AP	IISG	225		12		4																								
Takamatsu AP	TAK	226		10		6		3	1															2	1					
Hanamaki AP	HNA	227		6		3		1																						
Total				775	3	172	1	47	9	0	1	0	38	7	1	1	1	4	3	3	2	22	12	0	1	2	2

Vector-borne diseases：C；Chikungunya fever, D；Dengue fever, J；Japanese encephalitis, M；Malaria , W；West Nile fever, Z；Zika virus infection

Table 6－3. Results of mosquitoes larvae survey at quarantine ports and quarantine airports in 2024

	No. of survey areas (1km mesh)	Mosquito taxa																							
		Anopheles	*Aedes*						*Culex*											*Tripteroides*	*Lutzia*			*Uranotaenia*	Unidentified species
		Anopheles sinensis	*Aedes albopictus*	*Aedes vexans nipponii*	*Aedes japonicus*	*Aedes flavopictus*	*Aedes togoi*	*Aedes esoensis*	*Culex pipiens quinquefasciatus*	*Culex pipiens* complex	*Culex tritaeniorhynchus*	*Culex bitaeniorhynchus*	*Culex orientalis*	*Culex sitiens*	*Culex (Culiciomyia) sasai*	*Culex pallidothorax*	*Culex infantulus*	*Culex kyotoensis*	*Tripteroides bambusa*	*Lutzia vorax*	*Lutzia fuscana*	*Lutzia*	*Uranotaenia novobscura*	
Invasive species																									
Primary vector		M	C,D,Z						W	W	J														
Secondary vector		W	W	W	W	W	W				W														
Possible vector			J		J	D	J		J		D	J		J,W											
Total	1,447	3	473	1	92	15	3	1	2	79	9	1	1	1	7	7	3	4	37	23	1	1	2	3

Vector-borne diseases：C；Chikungunya fever, D；Dengue fever, J；Japanese encephalitis, M；Malaria , W；West Nile fever, Z；Zika virus infection

Table 7－1 Results of rodents (including fleas and ticks) survey at quarantine ports in 2024

Quarantine port	UN/LOCODE	Quarantine code	No. of survey areas (1km mesh)	No. of traps		Rodents (including fleas and ticks) taxa																												Examination of pathogen (Antibody, RT-PCR, PCR) No.of positive samples / No.of samples		
						Fleas (No. of samples collected)				Ticks (No. of samples collected)																			Rodents (No. of samples captured)											
						Xenopsylla cheopis	*Nosopsyllus fasciatus*	*Ctenophthalmus Kolenati*	Total	*Laelaps nuttalli*	*Laelaps algericus*	*Laelaps echidninus*	*Laelaps jettmari*	*Laelaps microti*	*Haemaphysalis hystricis*	*Ixodes granulatus*	*Androlaelaps fahrenholzi*	*Hirstionyssus japonicus*	*Ornithonyssus bacoti*	*Macrocheles muscaedomesticae*	*Ixodes*	*Laelaptidae*	Unidentified species	Total	*Rattus rattus*	*Rattus norvegicus*	*Mus musculus*	*Apodemus speciosus*	*Apodemus argenteus*	*Microtus montebelli*	*Clethrionomys rufocanus bedfordiae*	*Apodemus speciosus ainu*	Unidentified species	Total			
Invasive species																																				
Primary vector						P																														
Secondary vector							P																													
																									P,HF	P,HF	P,HF	P,HF	P	P	P,HF	P			Yersinia pestis	Hantavirus (HF)	Hantavirus (HP)
Otaru	OTR	1	5	400					0														0		1	4							5	0 / 5	0 / 5	
Ishikariwan	ISW	2	5	400					0														0			7							7	0 / 7	0 / 7	
Wakkanai	WKJ	3	4	200					0														0			2					1		3	0 / 3	0 / 3	
Rumoi	RMI	4	2	60					0														0			2							2	0 / 2	0 / 2	
Monbetsu	MBE	5	2	40					0														0			3							3	0 / 3	0 / 3	
Abashiri	ABA	6	1	20					0														0										0			
Hanasaki	HNK	7	2	40					0														0										0			
Kushiro	KUH	8	4	80					0														0										0			
Tomakomai	TMK	9	2	160					0														0										0			
Muroran	MUR	10	1	80			2		2														0			2							2	0 / 2	0 / 2	
Hakodate	HKP	11	4	160					0														0			4							4	0 / 4	0 / 4	
Aomori	AOJ	12	5	400					0	2		1		3			22						28	3	1				2				6	0 / 6	0 / 6	
Hachinohe	HHE	13	5	100					0														0	2	3	2							7	0 / 7	0 / 7	
Miyako	MYK	14	2	40					0														0										0			
Kamaishi	KIS	15	2	40					0														0			1							1	0 / 1	0 / 1	
Ofunato	OFT	16	5	100					0														0										0			
Kesennuma	KSN	17	1	80					0														0										0			
Ishinomaki	ISM	18	6	480				1	1														0			1	1			1			3	0 / 3	0 / 3	
Sendaishiogama	SGM	19	10	800					0					1									1				1			1			2	0 / 2	0 / 2	
Akitafunakawa	AXT	20	7	560					0														0										0			
Sakata	SKT	21	6	240					0														0										0			
Onahama	ONA	22	6	120					0														0										0			
Hitachi	HTC	23	6	480			2		2														0			2							2	0 / 2	0 / 2	
Kashima	KSM	24	12	960					0				7										7					5					5	0 / 5	0 / 5	
Kisarazu	KZU	25	12	900					0														0	1			1	1					3	0 / 3	0 / 3	
Chiba	CHB	26	12	960					0														0			1	1						2	0 / 2	0 / 2	
Futami	HTM	27	2	160					0	4													4	7			3							10	0 / 10	0 / 10	
Keihin(Tokyo)	TYO	28	18	1,400					0	20								9			9		38			6							6	0 / 6	0 / 6	
Keihin(Kawasaki)	KWS	29	14	960					0	34	7	10							46				97	8	4	2							14	0 / 14	0 / 14	
Keihin(Yokohama)	YOK	30	16	1,280					0	12													12	6	63	1							70	0 / 68	0 / 68	
Yokosuka	YOS	31	6	240					0														0		1								1	0 / 1	0 / 1	
Misaki	MIK	32	3	120					0	18													18	1	5								6	0 / 6	0 / 6	
Naoetsu	NAO	33	6	480					0														0		2								2	0 / 2	0 / 2	
Niigata	NIH	34	10	800					0														0		9								9	0 / 9	0 / 9	
Fushikitoyama	FSK	35	10	800					0														0		2	1							3	0 / 3	0 / 3	
Kanazawa	KNZ	36	6	480					0														0		1			2					3	0 / 3	0 / 3	
Nanao	NNO	37	6	480					0														0			2							2	0 / 2	0 / 2	

Uchiura	UCU	38	3	120		0						0				1	1		2	0 / 2	0 / 1	
Tsuruga	TRG	39	6	156		0						0							0			
Shimizu	SMZ	41	12	960		0						0	2	8					10	0 / 10	0 / 10	
Yaizu	YZU	42	6	480		0						0							0			
Fukue	FKE	44	2	60		0						0							0			
Mikawa	MKW	45	10	330		0						0			3				3	0 / 3	0 / 3	
kinuura	KNU	47	10	450		0	10					10		1	10				11	0 / 11	0 / 11	
Nagoya	NGO	48	16	1,280		0						0			2				2	0 / 2	0 / 2	
Yokkaichi	YKK	49	12	960		0						0		2					2	0 / 2	0 / 2	
Owase	OWA	50	1	40		0						0							0			
Maizuru	MAI	51	6	192		0						0							0			
Katsuura	KAT	53	1	40		0						0							0			
Wakayamashimotsu	WAK	54	6	480		0						0			4				4	0 / 4	0 / 4	
Hanshin(Osaka)	OSA	55	16	1,368		0						0							0			
Hannan	HAN	56	5	400		0						0			1				1	0 / 1	0 / 1	
Hanshin(Kobe)	UKB	57	38	3,040	2	2						0		1	2				3	0 / 3	0 / 3	
Mizushima	MIZ	58	10	800		0		1				1			2				2	0 / 2	0 / 2	
Sakai	SMN	59	5	400		0						0		1	3				4	0 / 4	0 / 4	
Hamada	HMD	60	6	240		0						0				1		1	2			※1
Fukuyama	FKY	61	10	800		0	5					5	4	1	1				6	0 / 6	0 / 6	
Kure	KRE	62	5	400		0						0							0			
Hiroshima	HIJ	63	10	700		0		1				1			3				3	0 / 3	0 / 3	
Iwakuni	IWK	64	3	120		0						0							0			
Tokuyamakudamatsu	TXD	65	6	240		0						0							0			
Ube	UBJ	66	4	160		0						0			1				1	0 / 1	0 / 1	
Tokushimakomatsushima	TKX	67	5	200		0						0							0			
Sakaide	SKD	68	6	480		0						0			1				1	0 / 1	0 / 1	
Matsushima	MYJ	69	5	400		0						0							0			
Niihama	IHA	70	6	240		0		9				9	1		13				14	0 / 12	0 / 12	
Mishimakawanoe	MKX	71	6	240		0		14				14			2				2	0 / 2	0 / 2	
Kochi	KCZ	72	6	240		0						0							0			
Kanmon	MOJ	73	11	880		0						0	1	3	9				13	0 / 13	0 / 13	
Hakata	HKT	74	10	800	3	3		2				2	1		1				2	0 / 2	0 / 2	
Miike	MII	75	5	400		0						0			1				1	0 / 1	0 / 1	
Karatsu	KAR	76	5	380		0	2			2		4		1					1	0 / 1	0 / 1	
Imari	IMI	77	10	800		0	326					326		12					12	0 / 12	0 / 12	
Sasebo	SSB	78	5	400		0						0			1				1	0 / 1	0 / 1	
Nagasaki	NMX	79	10	800		0						0							0			
Hitakatsu	HTK	80	10	820		0						0		1					1	0 / 1	0 / 1	
Izuhara	IZH	81	6	480		0	2		16			18		2		10	1		13	0 / 13	0 / 13	
Oita	OIP	82	9	330		0		9				9			2				2	0 / 2	0 / 2	
Saganoseki	SAG	83	3	72		0	29					29		1					1	0 / 1	0 / 1	
Saiki	SAE	84	3	120		0						0							0			
Minamata	MIN	85	5	360		0						0				1			1	0 / 1	0 / 1	
Yatsushiro	YAT	86	5	400		0						0							0			
Misumi	MIS	87	1	80		0						0							0			
Hososhima	HSM	88	5	400		0						0		1	2				3	0 / 3	0 / 3	
Shibushi	SBS	89	10	980		0						0		1					1			※1
Kagoshima	KOJ	90	5	400		0						0		2	3				5	0 / 4	0 / 4	
Kiire	KII	91	5	400		0						0							0			
Kushikino	KSO	92	1	80		0						0							0			
Kinnakagusuku	KNX	93	11	820		0					1	1	3	1					4	0 / 4	0 / 4	

Naha	NAH	94	12	960					0															0	2	6								8	0 / 8	0 / 8	
Hirara	HRR	95	6	480					0			1				8					1	5		15	11									11	0 / 11	0 / 11	
Ishigaki	ISG	96	6	480					0															0	2	2								4	0 / 4	0 / 4	
Total			628	43,238		0	9	1	10	464	43	12	23	4	2	9	22	9	46	9	1	5	0	649	56	173	82	21	2	4	1	0	1	340	0 / 332	0 / 331	0 / 0

Vector-borne diseases：C；Crimean-Congo hemorrhagic fever, HF；Hemorrhagic fever with renal syndrome（HFRS）, HP；Hantavirus pulmonary syndrome（HPS）, L；Lassa fever, P；Plague, S；South American hemorrhagic fevers

※1 Pathogen examination was not performed because the sample was dead.

Table 7－2. Results of rodents（including fleas and ticks）survey at quarantine airports in 2024

Quarantine airport	UN-LOCODE	Quarantine code	No. of survey areas（1km mesh）	No. of traps		Rodents (including fleas and ticks) taxa																										Pathogen examinations (Antibody, RT-PCR, PCR) No. of positive samples / No. of samples		
						Fleas (No. of samples collected)				Ticks (No. of samples collected)																		Rodents (No. of samples captured)												
						Xenopsylla cheopis	*Nosopsyllus fasciatus*	*Ctenophthalmus Kolenati*	Total	*Laelaps nuttalli*	*Laelaps sigericus*	*Laelaps echidninus*	*Laelaps jettmari*	*Laelaps mcroti*	*Haemaphysalis hystricis*	*Ixodes granulatus*	*Androlaelaps fahrenholzi*	*Hirstionyssus japonicus*	*Ornithonyssus bacoti*	*Macrocheles muscaedomesticae*	*Ixodes*	*Laelapidae*	Unidentified species	Total	*Rattus rattus*	*Rattus norvegicus*	*Mus musculus*	*Apodemus speciosus*	*Apodemus argenteus*	*Microtus montebelli*	*Clethrionomys rufocanus bedfordiae*	*Apodemus speciosus ainu*	Unidentified species	Total			
					Invasive species																															
					Primary vector	P																														
					Secondary vector		P																														
																									P,HF	P,HF	P,HF	P,HF	P	P	P,HF	P			Yersinia pestis	Hantavirus (HF)	Hantavirus (HP)
New Chitose AP	CTS	193	15	1,200					0														0							1	2		3	0 / 3	0 / 3	
Asahikawa AP	AKJ	194	2	40					0														0							1			1	0 / 1	0 / 1	
Hakodate AP	HKD	195	4	160					0														0		1								1	0 / 1	0 / 1	
Aomori AP	AOJ	196	5	400					0														0					1					1	0 / 1	0 / 1	
Sendai AP	SDJ	197	21	1,680					0				2									2	4		1		8						9	0 / 9	0 / 9	
Akita AP	AXT	198	2	60					0														0										0			
Fukushima AP	FKS	199	2	160					0														0										0			
Narita International AP	NRT	200	26	2,004					0														0	1			7	5					13	0 / 13	0 / 13	
Tokyo International AP	HND	201	24	1,850					0	153													153		3	3							6	0 / 5	0 / 5	
Niigata AP	KIJ	202	6	480					0														0			8							8	0 / 8	0 / 8	
Toyama AP	TOY	203	6	480					0														0										0			
Komatsu AP	KMQ	204	10	800					0														0			9	3						12	0 / 12	0 / 12	
Chubu Centrair International AP	NGO	205	16	1,196					0														0			1							1			※1
Kansai International AP	KIX	206	21	1,664					0		1												1			4							4	0 / 3	0 / 3	
Okayama AP	OKJ	207	10	800					0														0										0			
Miho AP	YGJ	208	5	400					0														0			2	3						5	0 / 5	0 / 5	
Hioroshima AP	HIJ	209	10	800					0		1		12										13			2	4						6	0 / 6	0 / 6	
Matsuyama AP	MYJ	211	5	360					0		1												1			4							4	0 / 2	0 / 2	
Fukuoka AP	FUK	212	20	1,600					0														0										0			
Kitakyushu AP	KKJ	213	10	800					0														0	1									1	0 / 1	0 / 1	
Oita AP	OIT	214	2	80					0														0										0			
Nagasaki AP	NGS	215	3	240					0	1													1		5	8							13	0 / 13	0 / 13	
Kumatomo AP	KMJ	216	10	800					0														0			4							4	0 / 4	0 / 4	
Miyazaki AP	KMI	217	10	800					0		8		18		1								27			3	4						7	0 / 7	0 / 7	
Kagoshima AP	KOJ	218	6	480					0														0			1							1			※1
Naha AP	OKA	219	18	1,280					0	2		18				1							21	15		6							21	0 / 21	0 / 21	
Shizuoka AP	FSZ	222	5	360					0														0	1									1	0 / 1	0 / 1	
Hyakuri AP	IBR	223	5	400					0														0										0			
Saga AP	HSG	225	4	320					0		3												3			1							1	0 / 1	0 / 1	
Takamatsu AP	TAK	226	10	800					0				5										5				2						2	0 / 2	0 / 2	
Hanamaki AP	HNA	227	6	480					0				22										22				2					1	3	0 / 2	0 / 2	
Total			299	22,974		0	0	0	0	156	14	18	59	0	1	1	0	0	0	0	0	0	2	251	18	10	63	31	1	0	2	2	1	128	0 / 121	0 / 121	0 / 0

Vector-borne diseases：C；Crimean-Congo hemorrhagic fever, HF；Hemorrhagic fever with renal syndrome（HFRS）, HP；Hantavirus pulmonary syndrome（HPS）, L；Lassa fever, P；Plague, S；South American hemorrhagic fevers

※1 Pathogen examination was not performed because the sample was dead.

Table 7－3. Results of rodents （including fleas and ticks)）survey at quarantine ports and quarantine airports in 2024

	No. of survey areas（1km mesh)	No. of traps		Rodents（including fleas and ticks）taxa																														Examination of pathogen (Antibody, RT-PCR, PCR) No. of positive samples / No. of samples		
				Fleas (No. of samples collected)				Ticks（No. of samples collected）																Rodents（No. of samples captured）														
				Xenopsylla cheopis	*Nosopsyllus fasciatus*	*Ctenophthalmus kodenati*	Total	*Laelaps nuttalli*	*Laelaps algericus*	*Laelaps echidninus*	*Laelaps jettmari*	*Laelaps microti*	*Haemaphysalis hystricis*	*Ixodes granulatus*	*Androlaelaps fahrenholzi*	*Hirstionyssus japonicus*	*Ornithonyssus bacoti*	*Macrocheles muscaedomesticae*	*Ixodes*	*Laelapidae*	Unidentified species	Total	*Rattus rattus*	*Rattus norvegicus*	*Mus musculus*	*Apodemus speciosus*	*Apodemus argenteus*	*Microtus montebelli*	*Clethrionomys rufocanus bedfordiae*	*Apodemus speciosus ainu*	Unidentified species	Total			
			Invasive species																															Yersinia pestis	Hantavirus (HF)	Hantavirus (HP)
			Primary vector	P																																
			Secondary vector		P																															
Total	927	66,212		0	9	1	10	620	57	30	82	4	3	10	22	9	46	9	1	5	2	900	74	183	145	52	3	4	3	2	2	468	0 / 453	0 / 452	0 / 0

Vector-borne diseases：C；Crimean-Congo hemorrhagic fever, HF；Hemorrhagic fever with renal syndrome（HFRS）, HP；Hantavirus pulmonary syndrome（HPS）, L；Lassa fever, P；Plague, S；South American hemorrhagic fevers

Table 8. Summary of risk assessment of vector - borne diseases（Primary species・Secondary species・Possible species） at quarantine ports and quarantine airports in 2024

		Dengue fever	Japanese encephalitis	West Nile fever	Malaria	Chikungunya fever	Zika virus infection	Plague	Hemorrhagic fever with renal syndrome (HFRS)	Hantavirus pulmonary syndrome (HPS)	Lassa fever	South American hemorrhagic fevers
		Seaports and airports										
No. of seaports and airports with identified vectors		100	107	119	14	94	94	87	86	0	0	0
Risk level	A	23	16	4	109	29	29	36	37	123	123	123
	B	100	107	119	14	94	94	87	86	0	0	0
	C	0	0	0	0	0	0	0	0	0	0	0
	D	0	0	0	0	0	0	0	0	0	0	0
Total		123	123	123	123	123	123	123	123	123	123	123

【Reference】Each quarantinable infectious diseases of permanent surveillance results of for occurrence risk level

Occurrence risk level of quarantinable infectious diseases	Result of permanent surveillance	
	Investigation of mosquitoes	Investigation of rodents
A ：Very low	No vector mosquitoes collected during permanent surveillance, etc. in Cabinet Order-specified areas is known as a vector (primary, secondary, or possible vector), or no mosquito is captured.	No rodent has been captured during permanent surveillance, etc. in the areas specified by Cabinet Order.
B ：Low	Vector mosquitoes (primary, secondary, or possible vector) known as vectors for quarantinable infectious diseases or the like have been collected during permanent surveillance, etc. in the areas specified by Cabinet Order. Pathogen or gene of pathogen for quarantinable infectious diseases or the like has not been detected.	Indigenous rodents (primary or secondary vector) or fleas/ticks (primary or secondary vector) known as vectors for quarantinable infectious diseases or the like have been captured during permanent surveillance, etc. in the areas specified by Cabinet Order. Antibody, pathogen, or gene suggestive of pathogen for quarantinable infectious diseases or the like has not been detected.
C ：Moderate	Adult or larval vector mosquitoes of invasive species known as vectors for quarantinable infectious diseases or the like (primary vector) have been detected during permanent surveillance, etc. in the areas specified by Cabinet Order. Possession of pathogen or gene of pathogen for quarantinable infectious diseases or the like has not been detected.	Invasive rodents (primary vector)or fleas/ticks (primary vector)known as vectors for quarantinable infectious diseases or the like have been captured during permanent surveillance, etc. in the areas specified by Cabinet Order. Antibody, pathogen, or gene suggestive of pathogen for quarantinable infectious diseases or the like has not been detected.
D ：High	Adult vector mosquitoes of species known as vectors for quarantinable infectious diseases or the like (primary, secondary, or possible vector)have been detected during permanent surveillance, etc. in the areas specified by Cabinet Order. Possession of pathogen or gene of pathogen for quarantinable infectious diseases or the like has been detected.	Antibody, pathogen, or gene suggestive of pathogen for quarantinable infectious diseases or the like has been detected from rodents (primary or secondary vector) or vector fleas/mites (primary or secondary vector)captured during permanent surveillance, etc. in the areas specified by Cabinet Order.

※ When mosquitoes or rodents were captured on board a ship or aircraft, they are not subject to risk assessment because they did not constitute an intrusion into a specified area of cabinet order .

Figure 1-1　Quarantine seaports and airports investigated in 2024 (Quarantine CODE)

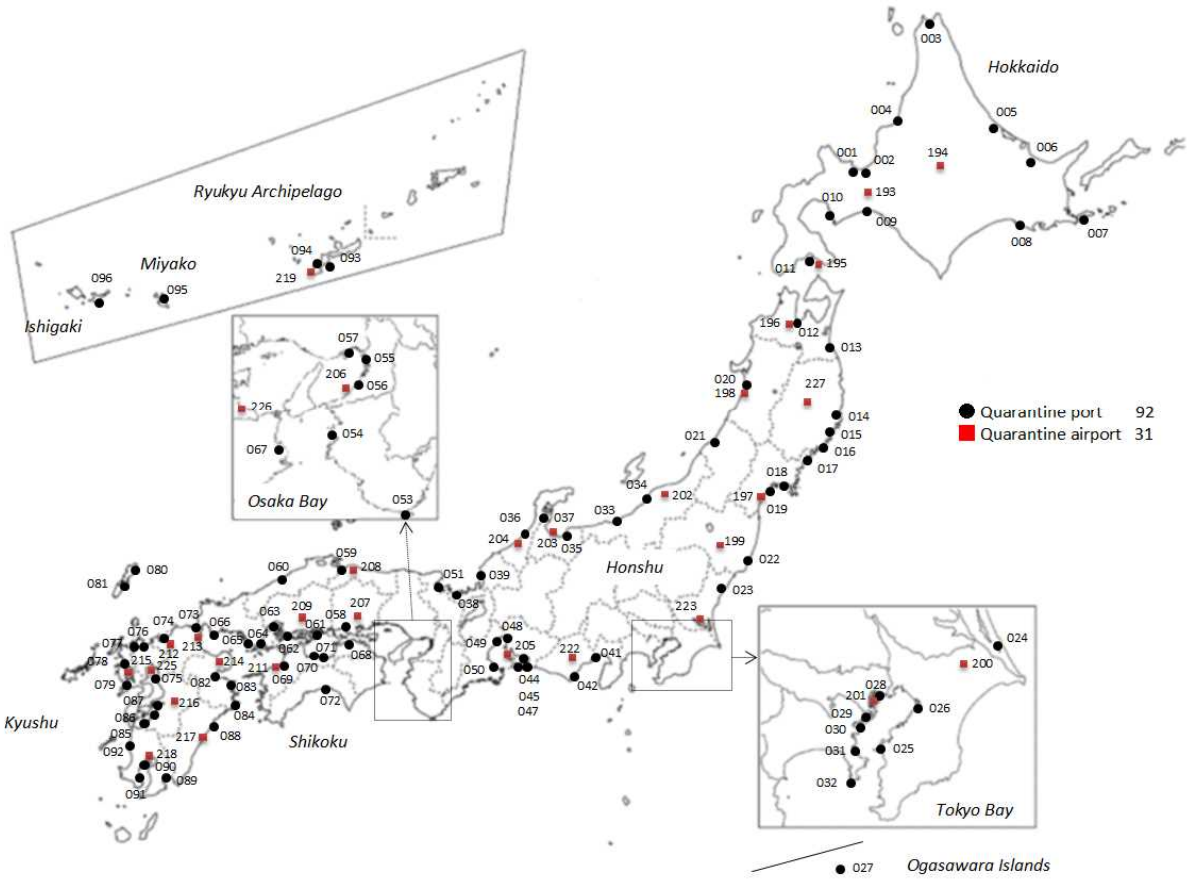


Figure 1-2 Quarantine seaports and airports investigated in 2024 (UN/LOCODE, IATA CODE)

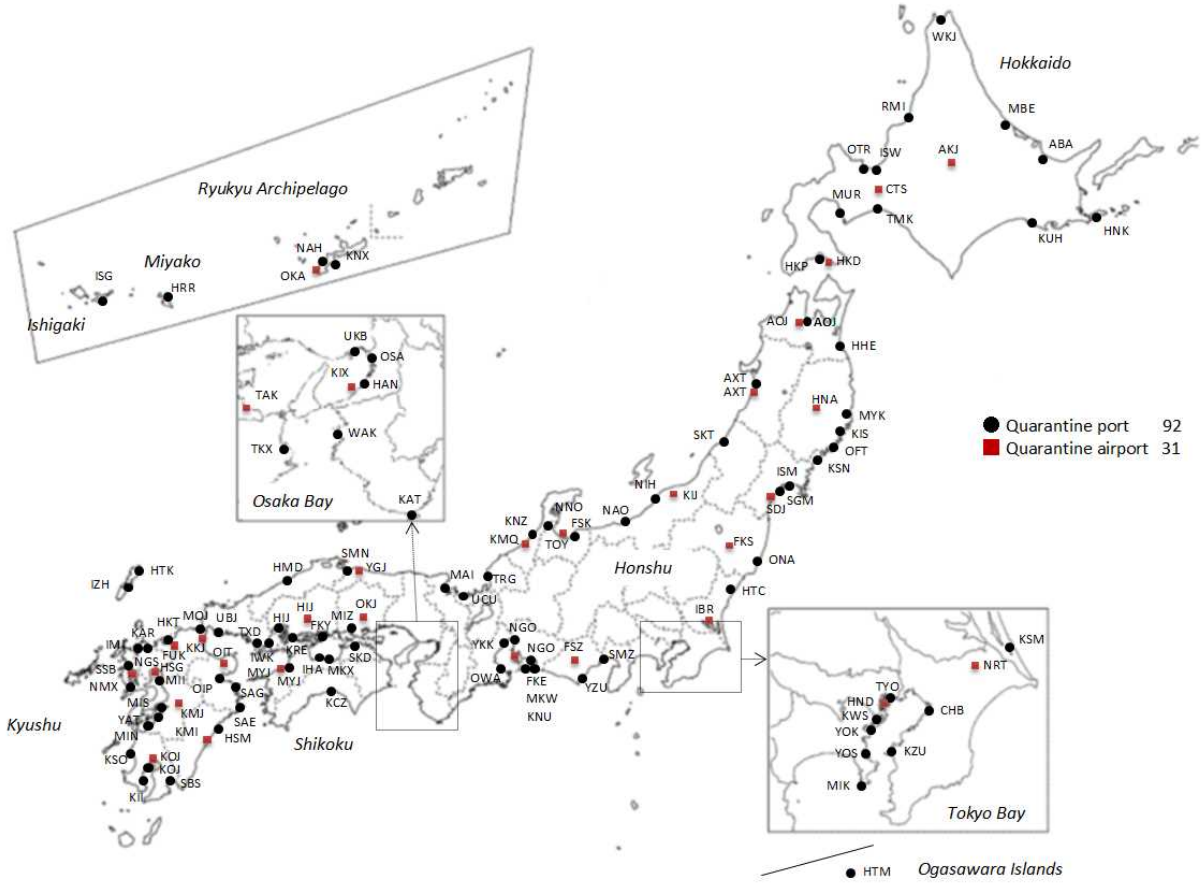


Figure 2　Invasive mosquitoes found in international aircraft and the origin of the flights in 2024

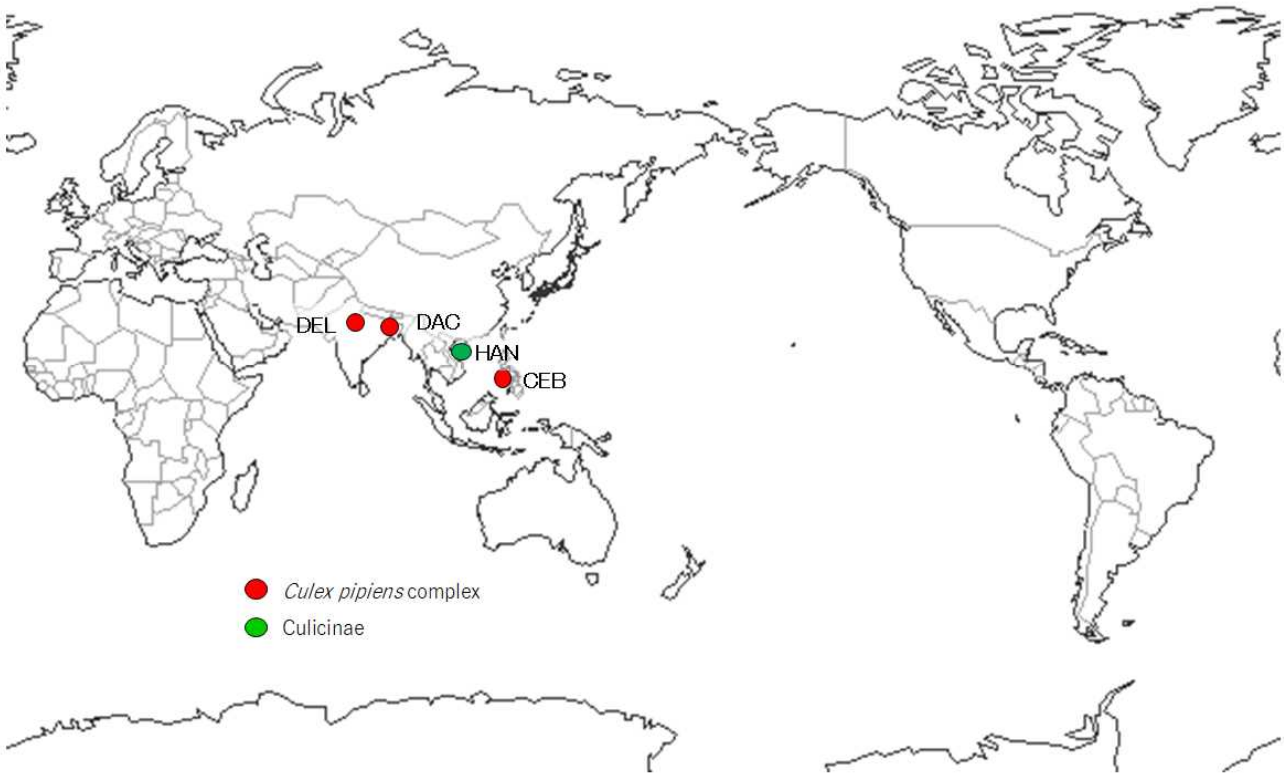


Figure 3　Vector situations of chikungunya fever and Zika virus infection at quarantine ports and airports, Japan in 2024

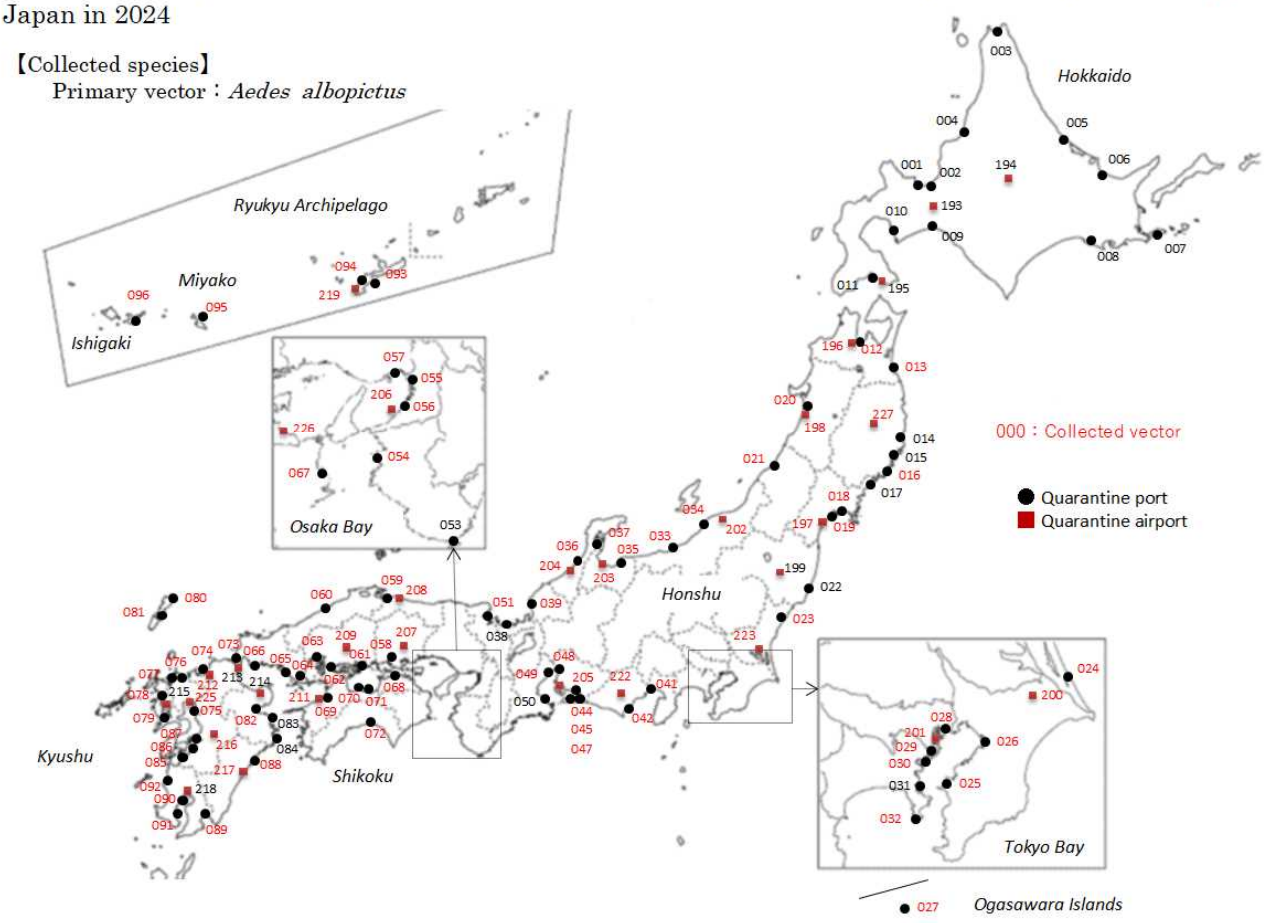


Figure 4 Vector situations of dengue fever at quarantine ports and airports, Japan in 2024

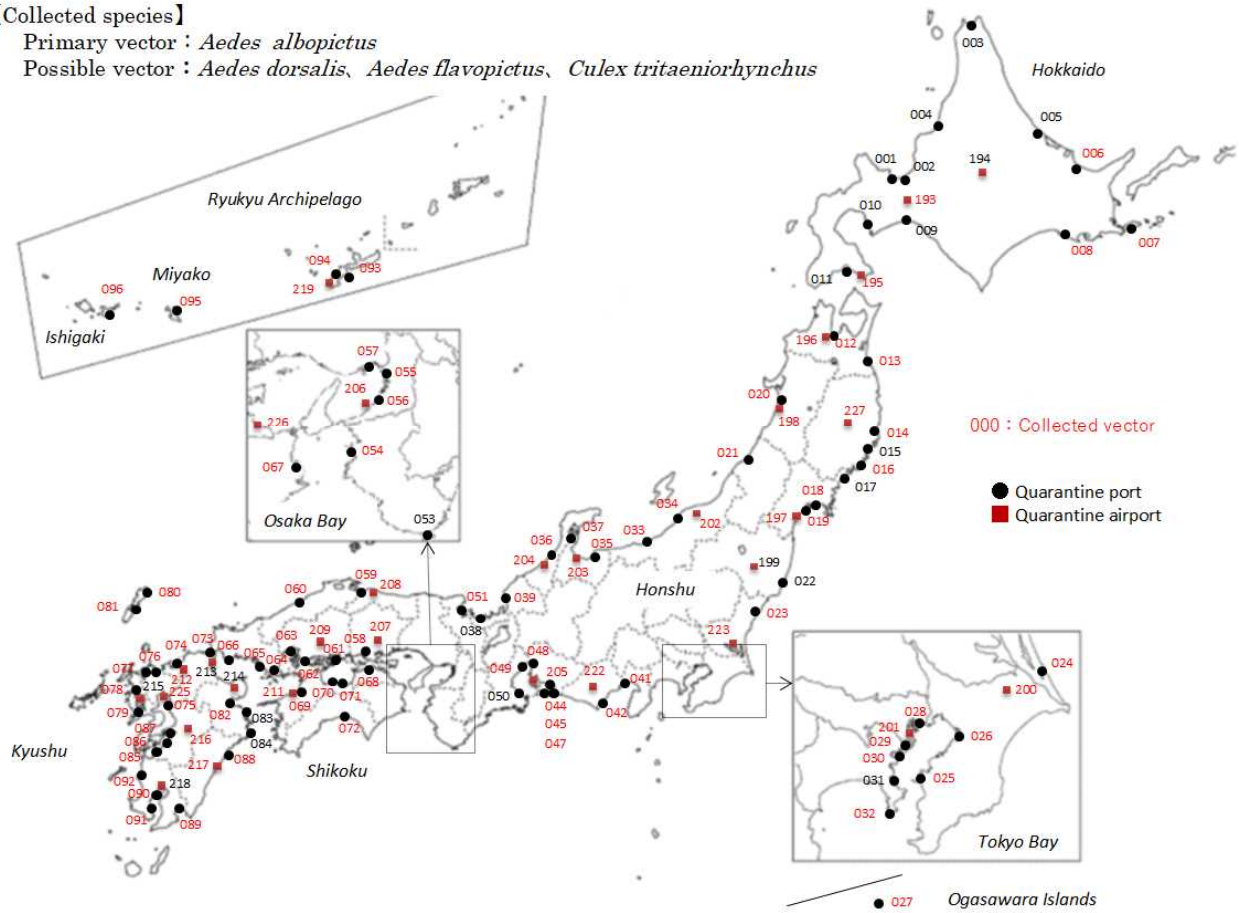


Figure 5 Vector situations of malaria at quarantine ports and airports, Japan in 2024

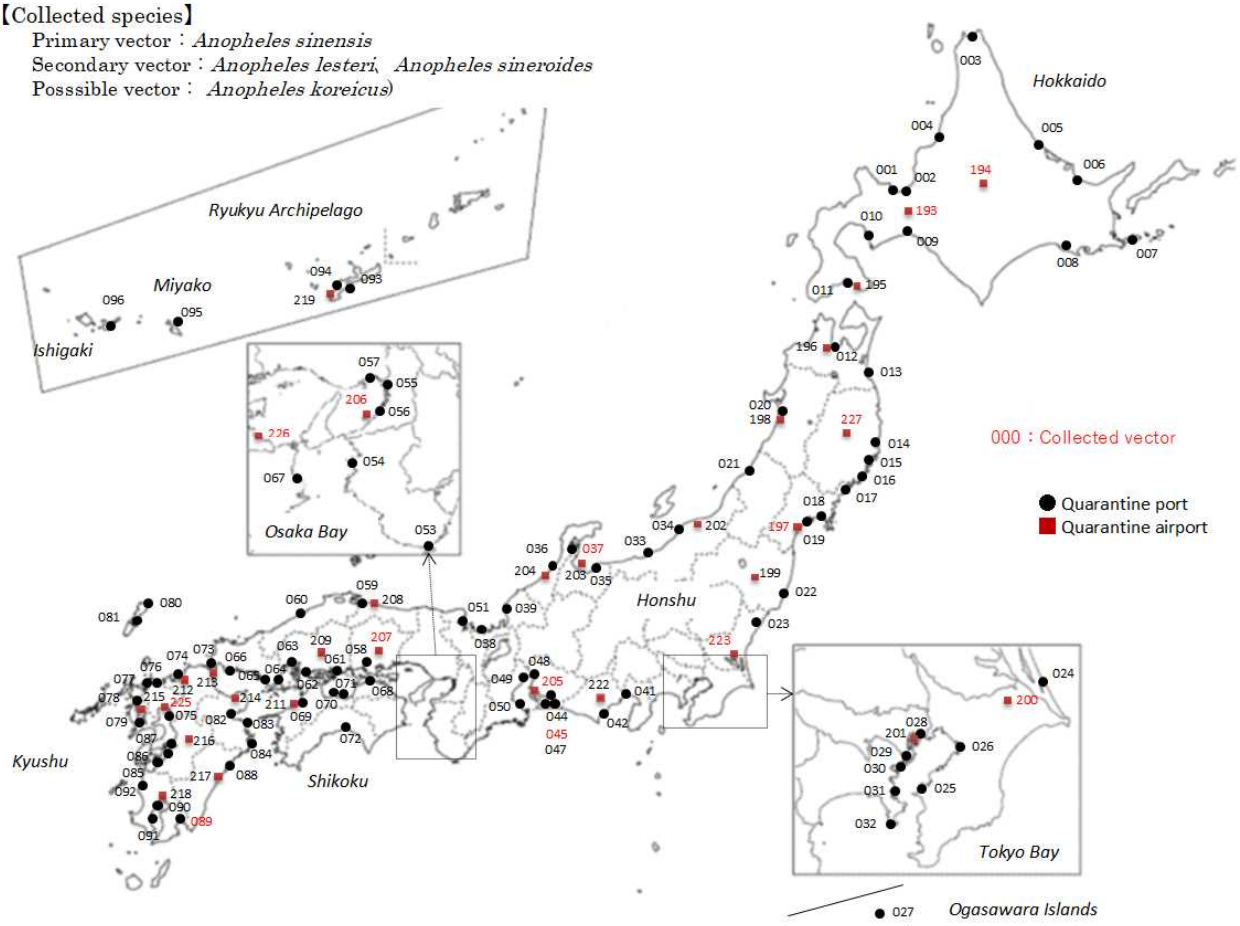


Figure 6 Vector situations of West Nile fever at quarantine ports and airports, Japan in 2024

【Collected species】

Primary vector : *Culex pipiens quinquefasciatus* 、 *Culex pipiens* complex
Secondary vector : *Anopheles sinensis* 、 *Aedes albopictus* 、 *Culex inatomii* 、 *Aedes togoi* 、 *Aedes excrucians*、 *Aedes dorsalis*、 *Aedes vexans nipponii* 、 *Aedes japonicuse* 、 *Aedes flavopictus* 、 *Armigeres subalbatus* 、 *Culex tritaeniorhynchus*
Possible vector : *Culex sitiens*

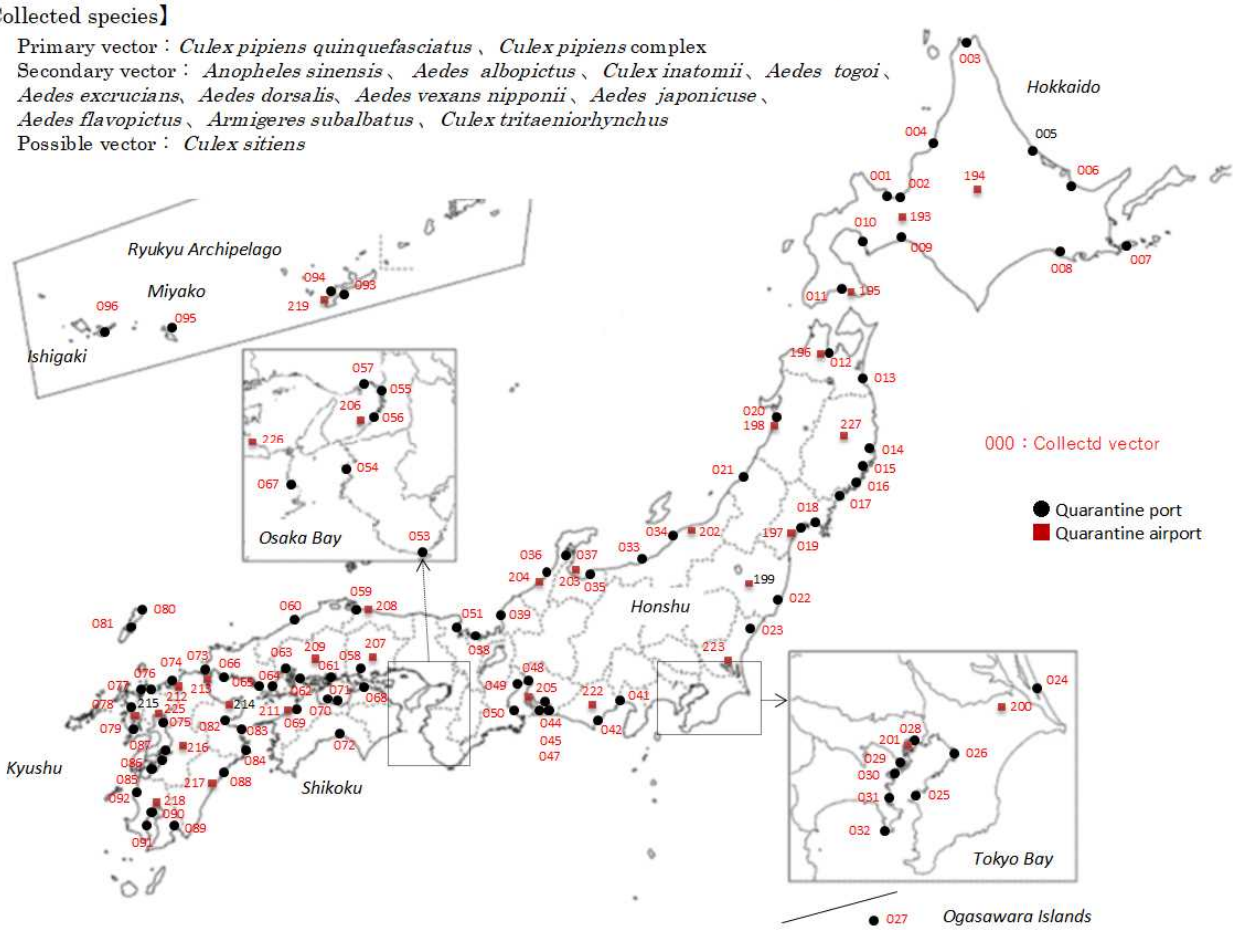


Figure 7 Vector situations of Japanese encephalitis at quarantine ports and airports, Japan in 2024

【Collected species】

Primary vector : *Culex pseudovishnui*、 *Culex tritaeniorhynchus*
Possible vector : *Aedes albopictus*、 *Culex sitiens* 、 *Aedes japonicus* 、 *Culex bitaeniorhynchus* 、 *Culex pipiens quinquefasciatus*、 *Aedes togoi*

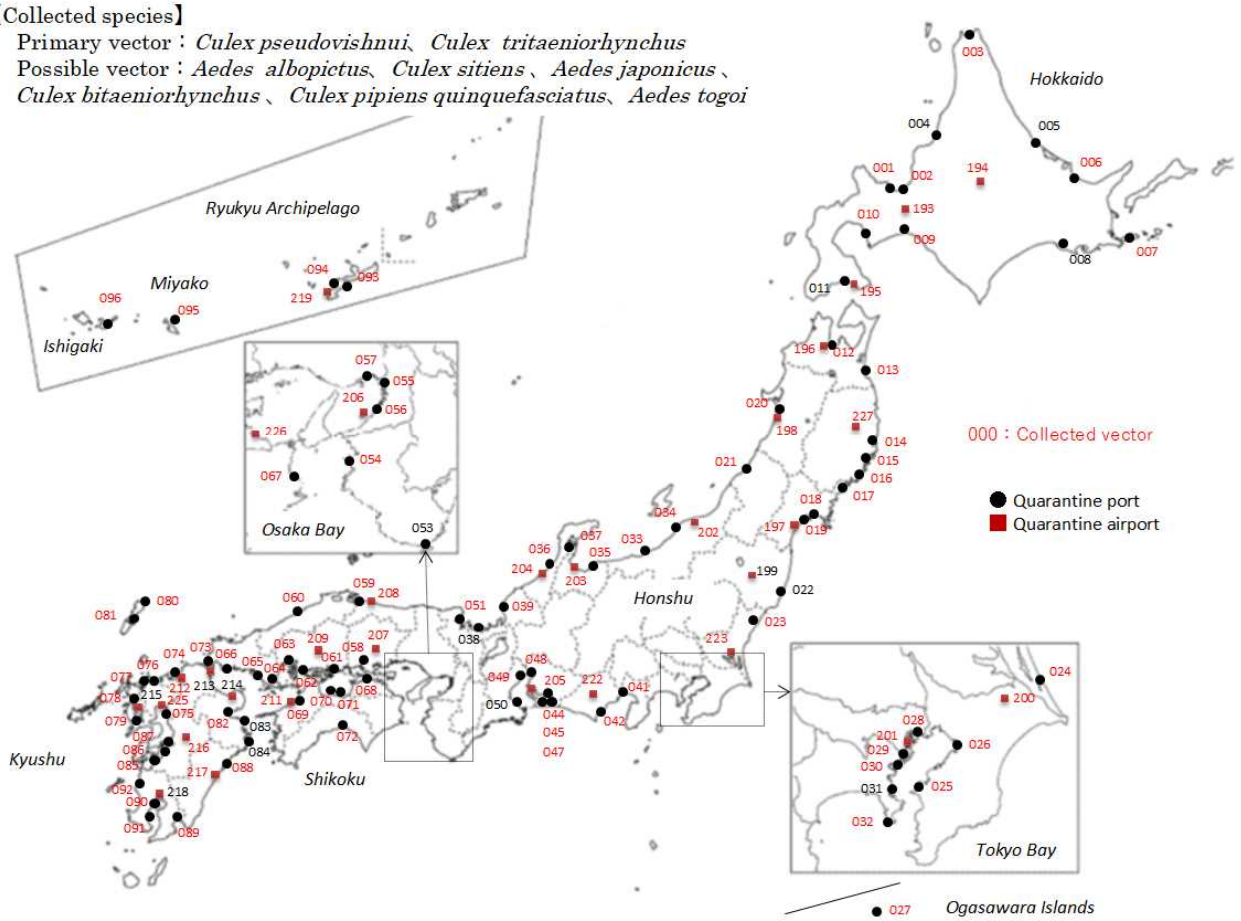


Figure 8　Vector and host situations of plague at quarantine ports and airports, Japan in 2024

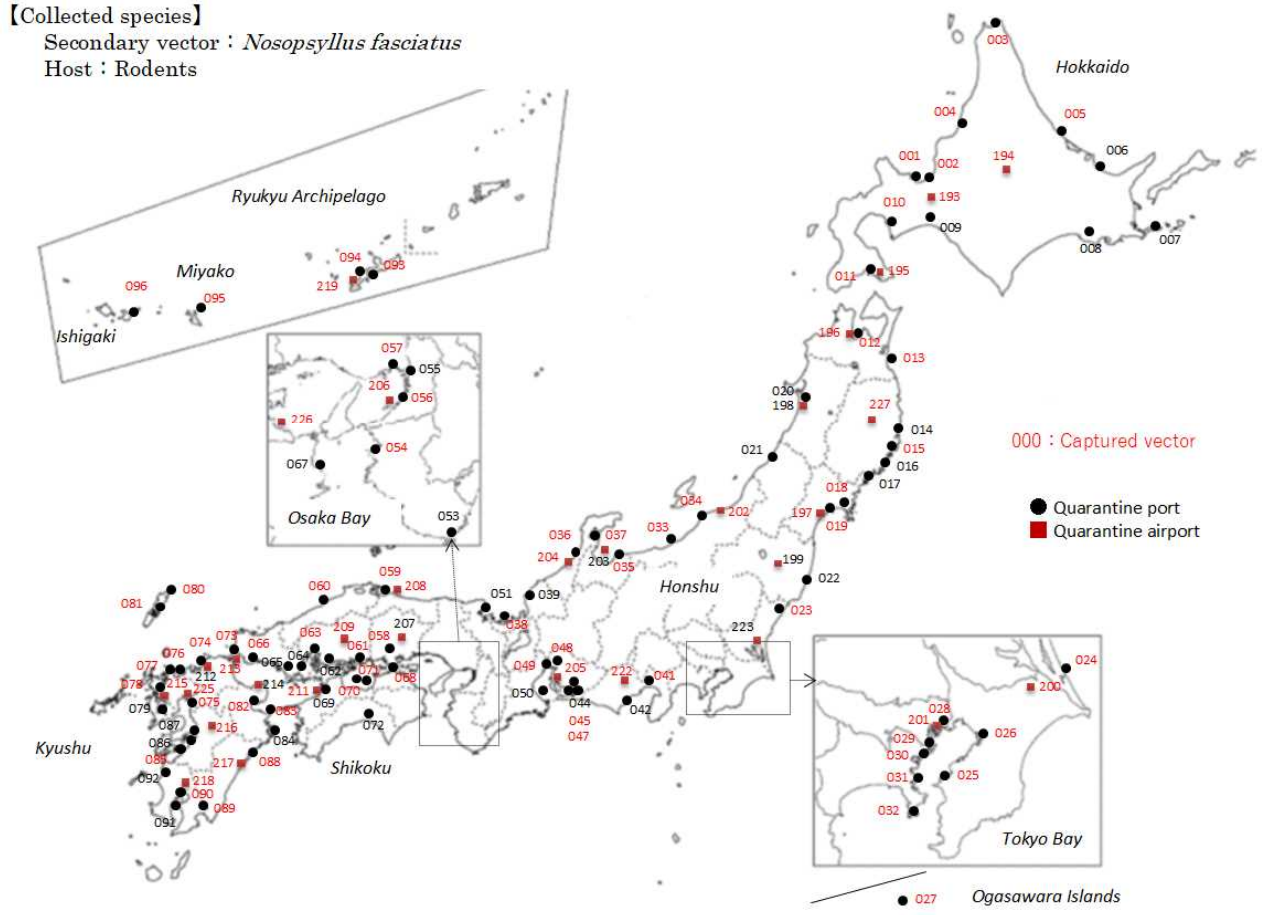


Figure 9　Vector situations of hemorrhagic fever with renal syndrome at quarantine ports and airports, Japan in 2024

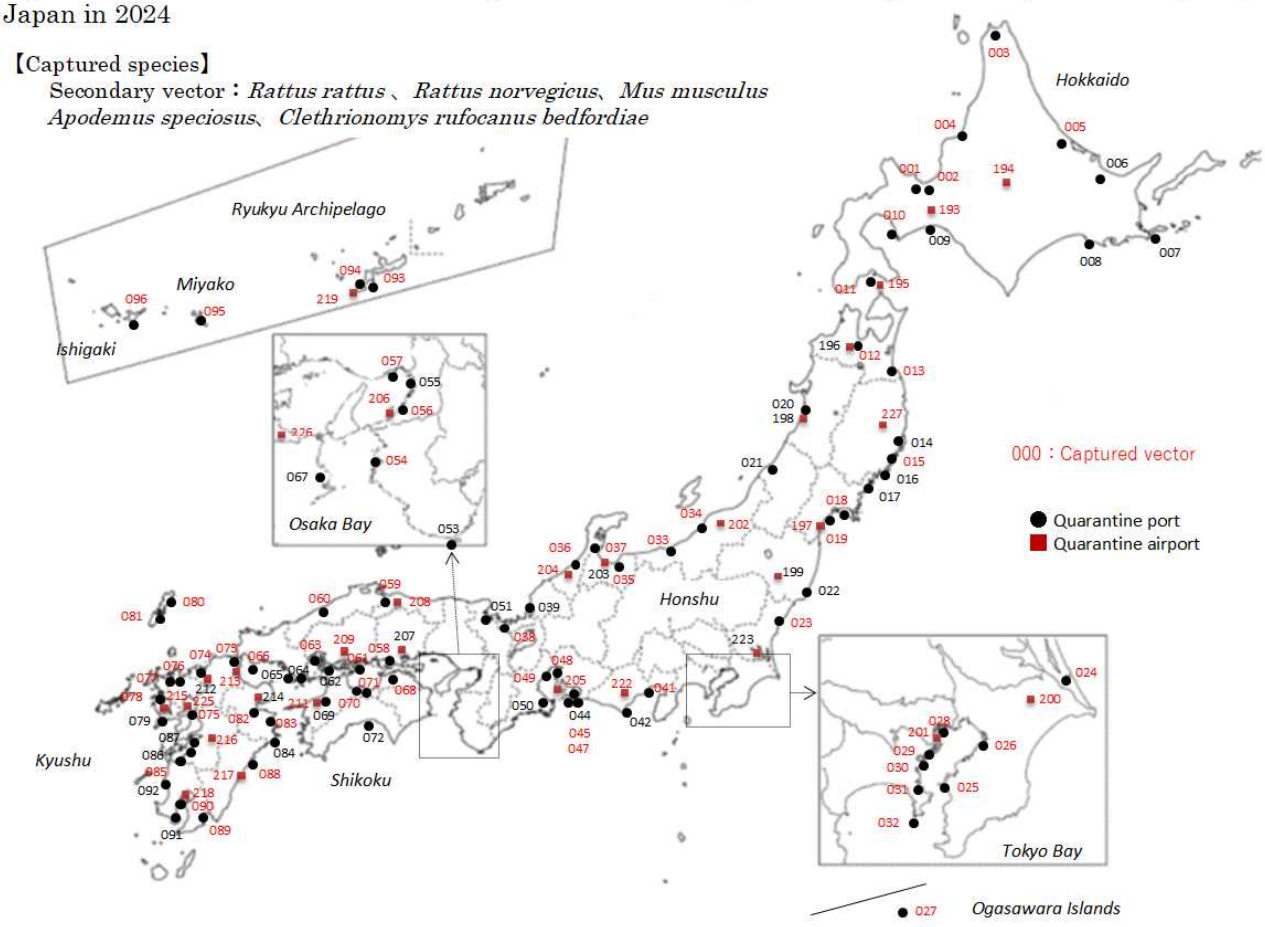


Figure 10　Invasive mosquitoes and pathogens detected at points of entry in 2006 - 2024

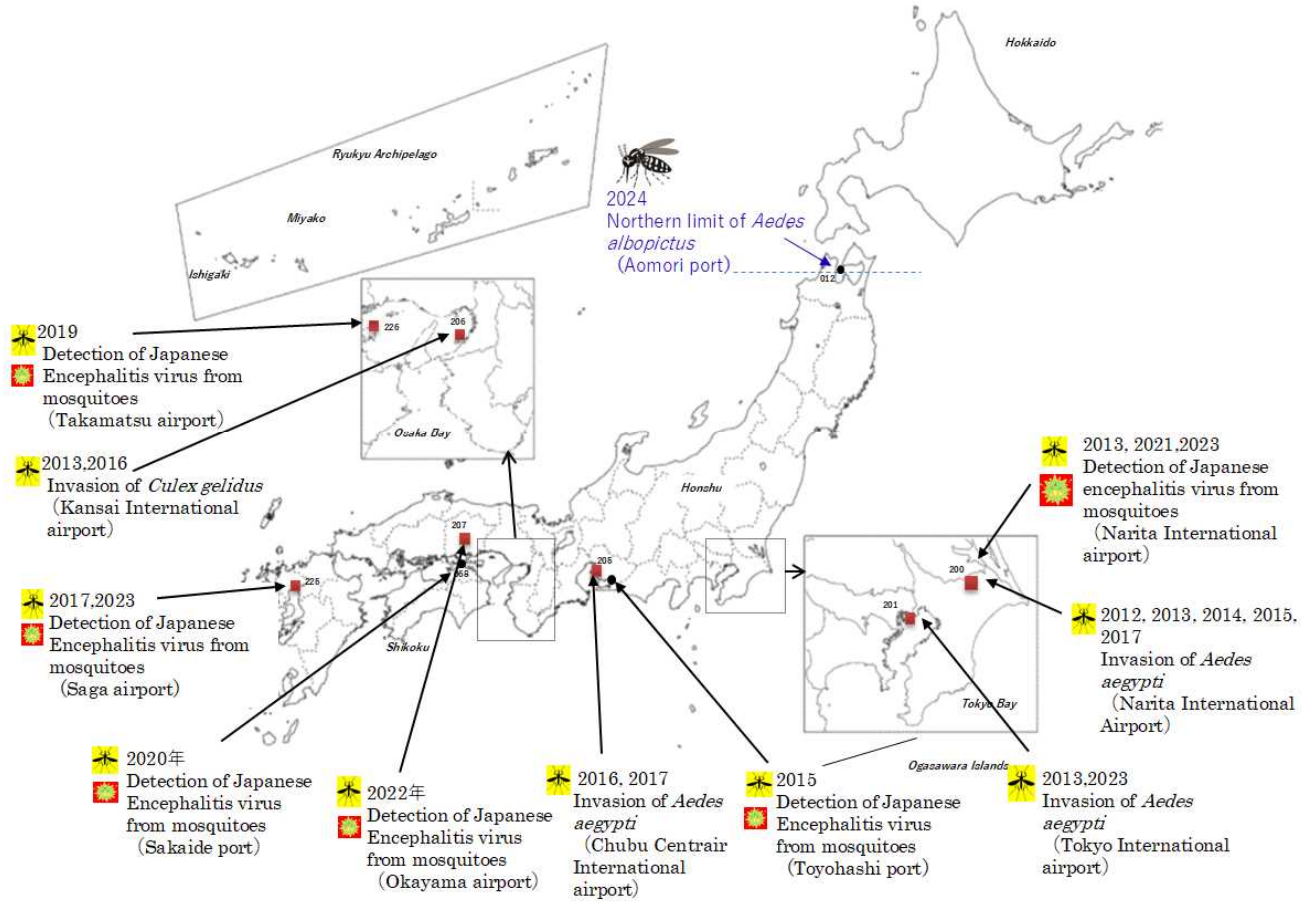
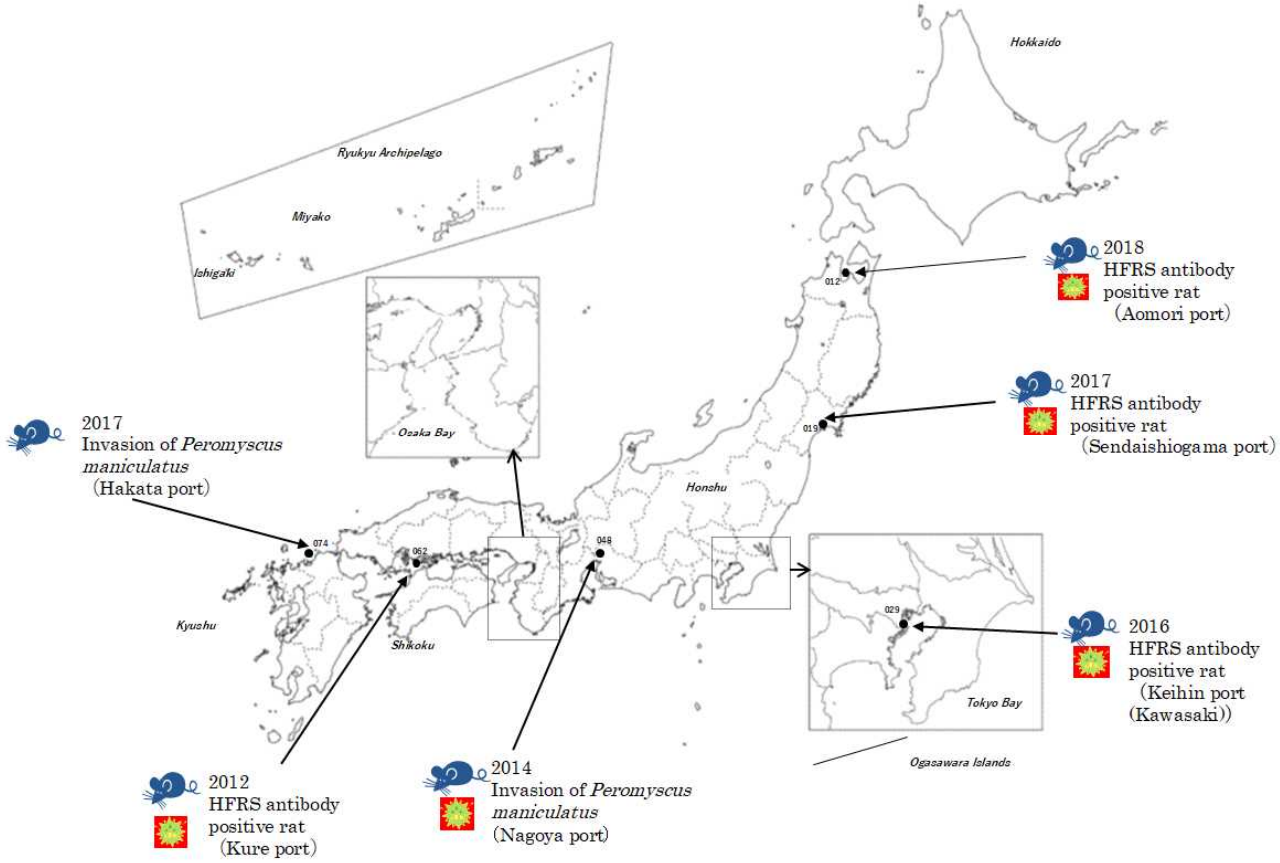


Figure 11　Invasive rodents and pathogens detected at points of entry in 2006 - 2024



○ Quarantine Act (excerpts) (Finally amended: Act No.96 December 9, 2022)

Chapter I General Provisions
(Purpose)
Article 1 The purpose of this Act is to prevent pathogens of infectious diseases that are not endemic in Japan from entering the country via vessels or aircraft, as well as to take other necessary measures concerning vessels or aircraft to prevent infectious diseases.

(Quarantinable Infectious Disease)
Article 2 The term "Quarantinable Infectious Diseases" as used in this Act means the following infectious diseases:
i Class I infectious diseases specified in the Act on Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases (Act No. 114 of 1998);
ii Infectious diseases such as novel influenza A specified in the Act on Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases; or
iii Beyond the diseases listed in the previous two items, diseases specified by Cabinet Order as those which require inspection in order to prevent pathogens of infectious diseases not endemic to Japan from entering the country.

(Application of this Act to Suspected Carriers and Asymptomatic Carriers)
Article 2-2 In this Act, suspected carriers for infectious diseases listed in item 1 of the preceding Article are deemed patients with infectious diseases listed in the same item; therefore this Act applies to them.
2 In this Act, suspected carriers for infectious diseases listed in item (ii) of the preceding Article that may be infected with pathogens of the infectious disease are deemed to be patients with infectious diseases listed in the same item; therefore this Act applies to them.
3 Individuals possessing the pathogen for any of the infectious diseases listed in Item 1 or 2 of the preceding article but presenting with no symptom of the disease concerned shall be deemed as patients with the infectious diseases listed therein; therefore this Act applies to them.

(Quarantine Ports)
Article 3 The term "Quarantine Port" or "Quarantine Airport" as used in this Act means ports or airports specified by Cabinet Order respectively.

Chapter III Other Public Health Operations conducted by Quarantine Station Chiefs (Investigation and Sanitation Measures to be carried out by the Quarantine Station Chief)
Article 27 A quarantine station chief may investigate food, drinking water, waste material, wastewater, rodents and insects in vessels or aircraft within areas of Quarantine Ports or Quarantine Airports provided the area is specified by Cabinet Order, or investigate sea water, waste material, wastewater, rodents and insects in facilities, buildings and other places located in the areas, in order to determine the existence of insects that are a vector of pathogens of a Quarantinable Infectious Disease or similar infectious diseases specified by Cabinet Order, and to clarify sanitation measures with respect to these diseases in a Quarantine Port or Quarantine Airport, or have a quarantine officer do it.
2 If a quarantine station chief deems an infectious disease provided for in the preceding paragraph to be prevalent or finds there to be a risk of this, the quarantine station chief may, within the areas specified by Cabinet Order pursuant to the provisions of the preceding paragraph, exterminate rodents or insects, or clean or sterilize vessels or aircraft in the areas, or facilities, buildings and other places located in the areas, or may perform health checks or exterminate insects with regard to persons engaging in work in the areas, or have a quarantine officer or other person deemed as appropriate do it.
3 If measures are taken as set forth in the preceding paragraph, the quarantine station chief must give notification of this promptly to the chief of the relevant administrative body.

○ Quarantine Act Enforcement Order (excerpts) (Finally amended: Cabinet Order No.357, December 4, 2024)

(Quarantinable infectious diseases specified by the Cabinet Order)

Article 1 The Cabinet Order-specified infectious diseases mentioned in Article 2 Item 3 of the Quarantine Act (hereinafter simply called "the Act") include Zika virus infection, Chikungunya fever, Middle East respiratory syndrome (confined to the syndrome caused by MERS coronavirus of the genus Beta coronavirus; hereinafter called "MERS" in Separate Table 2), dengue fever, avian influenza (confined to the influenza caused by serotype H5N1 or H7N9 influenza A virus of genus Influenza virus A; hereinafter called "avian influenza H5N1/H7N9" in the same table), and malaria.

(Infectious diseases equivalent to quarantinable infectious diseases)

Article 3 The Cabinet Order-specified infectious diseases mentioned in Article 27 Paragraph 1 of the Act include West Nile fever, hemorrhagic fever with renal syndrome, Japanese encephalitis, and hantavirus pulmonary syndrome.

○ Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases (excerpts) (Finally amended: Act No.96, December 9, 2022)

Article 6 The term "Infectious Disease" as used in this Act means a Class I Infectious Disease, a Class II Infectious Disease, a Class III Infectious Disease, a Class IV Infectious Disease, a Class V Infectious Disease, a Novel Influenza Infection, etc., a Designated Infectious Disease, or a New Infectious Disease.

2 The term "Class I Infectious Disease" as used in this Act means any of the following

Infectious Diseases:

i Ebola hemorrhagic fever.
ii Crimean-Congo hemorrhagic fever;
iii Smallpox;
iv South American hemorrhagic fever;
v Plague;
vi Marburg virus disease;
vii Lassa fever.

○ Notification No. 0324-3 (MHLW Department of Food Safety, March 24, 2014) " 'Guide to Port Area Sanitation Control" (Finally Amended December 26, 2022) (Issued from Section Chief of Affairs Division to Chief of Each Quarantine Station)

The surveillance and sanitation measures to be conducted by the quarantine station chief pursuant to Article 27 of the Quarantine Act have been implemented in accordance with "Sanitation Measures in Seaport and Airport Areas" (Notification No. Seiei-1415 (Director of Environmental Health Bureau, September 30, 1999). We have recently revised the methods for sending specimens in Appendix 2, "Rodent Surveillance Manual," and Appendix 3, "Mosquito Surveillance Manual," to conform to current practices. We ask that you follow this when carrying out port area sanitation control.

Appendix 1 "Port Sanitation Control Guidelines"
Appendix 2 "Rodent Surveillance Manual"
Appendix 3 "Mosquito Surveillance Manual"
Appendix 4 "Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc."

Appendix 1 Port Sanitation Control Guidelines (excerpts)

1. Objectives

It has been reported that epidemics of emerging/remerging infections have broken out frequently in foreign countries, expanding rapidly to extensive areas under the trend of increasing speed, scale, etc. of the means of transportation. Under such a trend of globalization of infections, there is now a concern over the invasion and establishment of infectious diseases previously not indigenous in Japan.

Under such circumstances, it is critical to prevent the invasion and spread in Japan of quarantinable infectious diseases and infectious diseases equivalent to quarantinable infectious diseases (hereinafter collectively called “quarantinable infectious diseases or the like”) as well as the animals, etc. potentially serving as vectors for quarantinable infectious diseases or the like (“vector animals, etc.”).

This set of guidelines is aimed at facilitating rational and efficient surveillance of vector animals, etc. invading our country via the ships/aircraft arriving from countries with epidemics of quarantinable infectious diseases or the like and at ensuring appropriate port sanitation measures on the basis of the data from surveys of the status of colonization of vector animals, etc. in the seaport/airport areas defined in Separate Table 3 of the Quarantine Act Enforcement Regulations set forth pursuant to Article 27 Paragraph 1 of the Quarantine Act (Law No. 201, 1951). This objective will contribute to the securing of the sanitation and control of vector animals, etc. at the points of cross-border entry required under the International Health Regulations (IHR2005).

Port sanitation measures include: (1) risk assessment on the basis of the results of surveillance conducted at each quarantine station using the nationwide uniform procedure; (2) implementation of surveillance of vector animals, etc. invading our country via ships/aircraft on the basis of the risk assessment findings; and (3) implementation of surveys on the status of colonization of vector animals, etc. in port areas, etc. When these measures are taken, each quarantine station is required to ensure the efficiency and preciseness of the measures taken in a manner corresponding to the assessment level. The surveillance of drinking water, meals provided within aircraft, seawater, and waste water should be implemented as needed, for example, upon the outbreak of an infection cluster attributable to any of these factors.

2. Infections covered by investigation

The infections covered by port sanitation control include the quarantinable infectious diseases transmitted by rodents and insects (Crimean-Congo hemorrhagic fever, South American hemorrhagic fever, plague, Lassa fever, Zika virus infection, Chikungunya fever, dengue fever, and malaria) and infectious diseases equivalent to quarantinable infectious diseases (West Nile fever, hemorrhagic fever with renal syndrome), Japanese encephalitis, and hantavirus pulmonary syndrome.

The vector animals or the like covered by the surveillance of these infectious diseases are listed below. A surveillance manual needs to be prepared for each of these surveillance targets.

(1) Rodents, etc.

- Rodents: South American hemorrhagic fever, plague, Lassa fever, hemorrhagic fever with renal syndrome, and hantavirus pulmonary syndrome
- Fleas: Plague
- Ticks: Crimean-Congo hemorrhagic fever

*Surveillance of ticks serving as vectors for Crimean-Congo hemorrhagic fever is implemented under instruction of the Office of Quarantine Station Administration on the basis of the overseas epidemic status.

(2) Mosquitoes

Zika virus infection, Chikungunya fever, Dengue fever, malaria, West Nile fever, and Japanese encephalitis

3. Implementation of port sanitation control

If invasion or colonization of vector animals, etc. for quarantinable infectious diseases or the like occurs, the nation’s health may be affected seriously. For this reason, vector surveillance is quite imortant as a port sanitation measure.

Each quarantine station is therefore required to conduct the surveillance of vector animals, etc.invading Japan from overseas in a well-planned manner throughout each year, corresponding to the risk of invasion, and to implement periodical surveys of the type, distribution, etc. of each species for assessment of the status of domestic colonization of invasive species.

For this kind of surveillance, the permanent survey points and the survey areas need to be set in accordance with Appendix 1-1 “Setup of Survey Areas for Surveillance” and the surveillance should be implemented on the basis of a preset annual plan. The frequency of survey needs to be set in accordance with “Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc.” (Appendix 4).

The head office of each quarantine station is required to check the permanent survey points and the survey areas set by each branch/satellite office as well as the surveillance plan, method, evaluation, etc., and to

provide supervision and advice objectively. At the same time, the information from the permanent survey points of each quarantine station needs to be submitted to the Officer for Analysis on Sanitation Control, to enable summarization and objective evaluation, supervision, and advice.

4. Utilization of surveillance data and provision of information

Summarization and analysis of results are necessary to enable effective utilization of the results of port sanitation surveillance. It is also important to summarize the thus obtained information as port area permanent survey point information.

(1) At each quarantine station, the status of colonization of vector animals, etc. needs to be assessed and analyzed on the basis of the results of port sanitation surveillance conducted. The results need to be registered with the Officer for Analysis on Sanitation Control.

(2) The Officer for Analysis on Sanitation Control is required to analyze the summarized data from nationwide quarantine stations and to submit a report to the Office of Quarantine Station Administration.
The same officer is additionally required to provide the obtained information to each quarantine station periodically with an appropriate method.

(3) At each quarantine station, a surveillance plan for the next year needs to be devised in accordance with the "Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc."(Appendix 4), reflecting the results from the surveillance in a given year, and to implement the thus planned surveillance in the next year.

(4) The Office of Quarantine Station Administration is required to disseminate the required survey frequency and measures to each quarantine station and to provide the information related to the port sanitation surveillance results to the nation in an appropriate way.

5. Linkage to domestic infection control organizations, etc.

The port sanitation control is aimed at inspecting the invasion of quarantinable infectious diseases or the like into Japan via vector animals, etc. and to prevent epidemics of such diseases in Japan.

To this end, linkage to the domestic infection control organizations (local government departments/bureaus in charge of infection control, local health stations, etc.: hereinafter called "related administrative organs") as well as airport administration companies, warehouse/port administration companies, airlines, shipping companies, shipping agents, etc. ("enterprises") is indispensable. Under cooperation with these administrative organs and enterprises, the inspection needs to be reinforced and infection control measures, such as pest control, should be taken.

To ensure such linkage, it is essential for each quarantine station to provide the information about surveillance results to the related administrative organs and enterprises and to reinforce linkage to these parties.

6. Infection-preventive measures during port sanitation control

(1) Preventive measures at the time of port sanitation surveillance
The surveyors are required to use an insect repellent and to wear appropriate clothing, gloves, safety shoes, etc. when conducting surveys so that they may not sustain health hazards.

(2) Preventive measures upon emergency
Upon emergency (e.g., upon detection of any vector animal, etc. possessing the pathogen for the infectious disease being surveyed), measures for prevention of exposure to the pathogen (e.g., wearing a mask, anti-dust goggles, boots, etc.) need to be taken, in addition to the ordinary preventive measures. If contact with the vector animal, etc. has occurred, the surveyor should receive prophylactic oral doses of antibiotics and follow-up of health condition as needed.

7. Utilization of a cooperative support system, etc.

The information about specific cases and the reference data, etc. collected at each quarantine station will be entered into the cooperative support system, etc. to facilitate the accumulation of relevant information.

The categories of information to be entered into the cooperative support system and the frequency of entry are specified below.

(1) Reports on focused surveys and measures taken upon emergency and reports on specific cases arisen within aircraft

(2) Table of the species of vectors for quarantinable infectious diseases or the like: To be updated by the

Officer for Analysis on Sanitation Control, and each update to be entered into the cooperative support system by the Office of Quarantine Station Administration.

(3) Reference information such as identification/search table, papers and other documents: Gathered from each quarantine station and entered upon acquisition into the system by the Office of Quarantine Station Administration.

Appendix 2 Rodent Surveillance Manual (excerpts)

1. Introduction

Rodent investigation is aimed at assessing the colonization of rodents and other species (including parasitic fleas serving as plague vectors) and detecting the presence of rodents and other species not indigenous in our country ("invasive vectors") in a well-planned manner in the port areas set for each quarantine seaport and airport ("quarantine ports") for the purpose of the prevention of invasion and epidemic of rodent-borne South American hemorrhagic fever, plague, Lassa fever, hemorrhagic fever with renal syndrome, and hantavirus pulmonary syndrome ("rodent-borne infectious diseases") among all quarantinable infectious diseases or the like.

The term "rodents" in this manual indicates primarily animals of the family Muridae.

2. Rodent investigation

To check for the invasion of rodent-borne infectious diseases, permanent survey points are preferentially set at the following locations having a high risk for invasion in accordance with "Setup of permanent survey points and trap installment points for rodent surveillance" (Appendix 2-1): (1) around the piers and inside the buildings/warehouses/container yards, etc. accommodating international cargoes at ports visited by ocean-going ships; and (2) around the terminal buildings and inside the cargo unloading areas, international cargo-accommodating buildings, etc. at airports. Surveillance is conducted at these points/locations with a certain frequency and method.

Under normal circumstances, the permanent surveillance and, as needed, "questionnaire survey" (Appendix 2-4) are conducted. Under unusual circumstances (e.g., cases where invasion by invasive vectors is likely), a focused survey is conducted. Upon detection of the pathogen for any rodent-borne infectious disease or the antibody to its pathogen, sanitation measures need to be taken with reference to the "Rodent-related Emergency Measures Manual" (Appendix 2-5) and "Collection of Examples Related to Rodent Surveillance Reinforcement, Pest Control, etc." (Clerical Communication issued by the Office of Quarantine Station Administration).

(1) Survey by capture

Rodents are to be captured alive, as a rule, to enable assessment of the invasion of rodent-borne infectious diseases and the colonization/distribution of rodents, parasitic fleas, and ticks. To enable the survey efficiency, permanent survey points are set and rodents are captured with a certain frequency and method. In view of the possibility that birds, unintended animals, etc. are captured by the traps, the traps need to be used appropriately in compliance with the "Act on Welfare and Management of Animals" (Law No. 105, October 1, 1973) and "Act on Ensuring Appropriate Protection and Hunting of Birds and Other Animals" (Law No. 88, July 12, 2002).

A. Survey frequency, permanent survey points, etc.

The survey frequency needs to be set in accordance with the "Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc."(Appendix 4). The permanent survey points need to be set in accordance with "Setup of permanent survey points and trap installment points for rodent surveillance" (Appendix 2-1). The information about the thus set permanent survey points needs to be entered into the "Rodent/Mosquito Surveillance Survey Point Recording Sheet" (Form 1-1) and stored in this form.

B. Survey method

The survey in each survey area is conducted in accordance with the "Method for Rodent Surveillance by Capture" (Appendix 2-2).

C. Recording

The information about the survey is entered into the "Rodent Surveillance Results Recording Table and Test Request Sheet" (Form 1-2) and stored in this form.

(2) Questionnaire survey

The questionnaire survey is conducted of warehouse companies, container handling offices, administrators of piers for ocean-going ships, and so on, to check the presence/absence of damage to the

stored cargos, etc. and to collect information about the measures being taken, with the ultimate goal of efficiently assessing the distribution and colonization of rodents.

This survey is conducted in accordance with the "Questionnaire Surveys" (Appendix 2-).

(3) Measures taken upon the detection of signs of rodents during rodent surveillance in aircraft

If any sign of rodent colonization, etc. (e.g., feces) is confirmed in an aircraft, the airline concerned will be guided to take invasion-preventive measures, etc.

(4) Focused survey

If any invasive vector species has been confirmed during the permanent surveillance of the areas specified by Cabinet Order, a focused survey will be carried out. This survey is accompanied by an extraordinary questionnaire survey of the enterprises concerned, as needed. If the vector detected in aircraft, ship, container, etc. is judged as a case of transient invasion, this does not require a focused survey in the areas specified by Cabinet Order. However, if multiple cases of similar detection have been reported, a focused survey needs to be conducted in the Cabinet Order-specified areas. The samples collected during such a survey need to be immediately subjected to the pathogen examination.

(5) Measures taken upon emergency

If any vector species possessing the pathogen or antibody of rodent-borne infectious diseases or any patient with rodent-borne infectious disease having no history of overseas trip has been confirmed in the port area during permanent surveillance or a focused survey, posing a threat of disease transmission by the rodents having colonized in a given area, sanitation measures need to be taken in accordance with the "Rodent-related Emergency Measures Manual" (Appendix 2-5) after discussion with the Office of Quarantine Station Administration. When sanitation measures are taken, reference should be made to the "Collection of Examples Related to Rodent Surveillance Reinforcement, Pest Control, etc." (Clerical Communication issued by the Office of Quarantine Station Administration). As needed, an emergency survey, health survey, pest control, environmental arrangement, or the like is carried out in linkage to the related organizations.

3. Species identification and rodent-borne infectious disease pathogen examination

Identification of the species of captured rodents and plague-transmitting parasitic fleas and their pathogen examination are carried out with reference to the "Methods for Species Identification, Pathogen Possession Check and Sample Dispatch during Rodent Surveillance" (Appendix 2-3). The pathogen check is carried out in accordance with the "Categories of Examination, etc. Based on the Quarantine Act" (Notification from Manager of the Office of Quarantine Station Administration), thereby issuing a test request using the filled-in "Rodent Surveillance Results Recording and Examination Request Sheet" (Form 1-2) after the collection of testing materials and parasitic fleas by each Examination Section and Laboratory. If species identification is difficult at the Examination Section or the Laboratory, a request of species identification is issued in the same way.

4. Reporting

Regarding the survey results, the necessary information for each month is entered into the database file and then reported to the head office of each quarantine station. The head office of each quarantine station combines the data from the head office and all branch/satellite offices into a single reporting form and stores it. The data in this form need to be registered with the Officer for Analysis on Sanitation Control by the 10th day of the month following each quarter of the year (by the end of the month following the fourth quarter). If a focused survey or any emergency measure has been conducted, the relevant information needs to be shared with the Office of the Quarantine Station Administration and the Officer for Analysis on Sanitation Control.

5. Evaluation and countermeasures

The survey results need to be re-evaluated each year at each quarantine station in accordance with the "Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc." (Appendix 4), and sanitation measures are taken as needed.

6. Others

(1) Dealing with reports of rodent detection (information supply) and rodent capture by related organizations or enterprises

If a report (information supply) has been received about rodent detection (including the detection of a

dead rodent) or the like from any of the related organizations or enterprises within the port area, the quarantine station is required to conduct a hearing and check of the site status, followed by capture of the animals if possible. If capture is judged to be difficult, advice about subsequent actions needs to be given to the related organizations and enterprises. If a dead rodent is confirmed, the rodent is collected, followed by implementation (or instruction) of disinfection or other measures. After returning of the quarantine staff member to the quarantine station, the captured or collected rodent needs to be subjected to species identification and a check for parasitic fleas. If the rodent is identified as a vector, the pathogen examination needs to be carried out, as a rule.

Appendix 3 Mosquito Surveillance Manual (excerpts)

1. Introduction

Mosquito surveillance is aimed at assessing the presence of mosquitoes serving as the vectors for mosquito-borne infectious diseases and detecting the presence of mosquito species not indigenous in our country ("invasive vectors") in a well-planned manner in the port areas set for each quarantine seaport and airport ("quarantine ports") for the purpose of the prevention of invasion and epidemic of mosquito-borne Zika virus infection, Chikungunya fever, dengue fever, malaria, West Nile fever, and Japanese encephalitis ("mosquito-borne infectious diseases") among all quarantinable infectious diseases or the like.

The term "mosquitoes" in this manual indicates primarily the insects of family Culicidae.

2. Mosquito investigation

Mosquito investigation is carried out for the purpose of inspecting invasion by vector species. Mosquito surveillance at airports consists of aircraft investigation (investigation of the aircraft, etc. having a high potential of mosquito invasion) and investigation of the species of mosquitoes having colonized in the port area and the status of their emergence.

Mosquito surveillance at ports assumes the form of mosquito colonization investigation aimed at examining the species of mosquitoes having colonized around the piers for ocean-going ships and the status of emergence of mosquitoes serving as vectors.

Under normal circumstances, the permanent surveillance and, as needed, "questionnaire survey" (Appendix 3-5) are conducted. Under unusual circumstances (e.g., cases where invasion by invasive vectors is likely), a focused survey is conducted. Upon detection of the pathogen for any mosquito-borne infectious disease from vector species, measures need to be taken in accordance with the "Mosquito-related Emergency Measures Manual" (Appendix 3-6). In addition, sanitation measures need to be taken with reference to the "Collection of Examples Related to Mosquito Surveillance Reinforcement, Pest Control, etc." (Clerical Communication issued by the Office of Quarantine Station Administration).

(1) Colonization survey (permanent surveillance)

Colonization surveys need to be carried out by setting the survey areas and points preferentially at the areas/points at elevated risk for invasion by mosquitoes, including the aprons, surrounding roads, boarding bridges, passenger flight arriving terminals, cargo flight arriving areas, and air cargo handling areas of airports accepting aircraft from foreign countries as well as the piers and container unloading areas of seaports accepting ocean-going ships. In addition, adult and larval mosquitoes need to be collected with a certain frequency and method to check for the invasion/colonization of invasive vector species of mosquito.

A. Survey frequency and points

The quarantine ports covered by the survey and the frequency and other details of the survey are decided in accordance with the "Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc." (Appendix 4). Survey points are set in accordance with "Setup of survey points for mosquito surveillance" (Appendix 3-1). The necessary information about each survey point is entered into the "Rodent/Mosquito Survey Point Recording Sheet" (Form 2-1) and saved in this form.

B. Survey method

① Adult mosquito survey

The survey in each survey area is conducted in accordance with 2. Carbon Dioxide/Light Trap Method described in "Mosquito Collection Methods" (Appendix 3-2).

② Larval mosquito survey

The survey in each survey area is conducted in accordance with 3. Dipper/Pipette Method and 4. Ovitrap Method described in "Mosquito Collection Methods" (Appendix 3-3).

C. Recording

The necessary information about survey and test results is entered into the "Adult Mosquito Survey Results Sheet" (Form 2-3) and "Larval Mosquito Survey Results Sheet" (Form 2-4) and saved in these forms.

(2) Questionnaire survey

The status of mosquito colonization, etc. in port areas is investigated by the expert agent or the like assigned by each enterprise, followed by the implementation of pest control measures as needed. It is known that the status of mosquito colonization is affected by changes in physical factors and meteorological conditions. With these borne in mind, a questionnaire survey of port area enterprises, etc. is conducted, as needed, using the "Questionnaire for Mosquito Surveillance" (Form 2-6). The information thus collected will be utilized to facilitate the implementation of an efficient and valid survey within the framework of periodical mosquito surveillance, planning measures against sources of mosquito emergence, and conducting a focused survey and so on.

If mosquitoes collected at the time of unloading of cargo or the like from a foreign country have been provided by an enterprise or the like, the species needs to be identified. If they are identified as female mosquitoes of vector species, the pathogen test is conducted, as a rule. In addition, as needed, countermeasures against the origin of mosquito emergence are taken and the enterprise or the like is advised about pest control, etc.

(3) Aircraft survey

In view of the possibility that rodents invade our country via aircraft arriving from mosquito-borne infection epidemic territories, the survey of mosquito colonization in aircraft and the check of pathogens are conducted in accordance with "Aircraft Surveys" (Appendix 3-2) to examine the status of mosquito invasion into aircraft, presence/absence of vector species, and the status of pathogen possession. This survey is conducted in a well-planned manner by devising a survey plan taking into consideration the status of mosquito-borne infection outbreak and meteorological conditions (temperature, rainfall, etc.) in the aircraft departing place, the flight schedule (starting time zone, etc.) and past survey results.

Survey items and results are entered into the "Aircraft Mosquito Survey Sheet & Test Results Sheet" (Form 2-2) and saved in this form.

(4) Focused survey

If any invasive vector species has been confirmed during the colonization survey (permanent surveillance) of areas specified by Cabinet Order, a focused survey will be carried out. This survey is accompanied by an extraordinary questionnaire survey of the enterprises concerned, as needed. If the vector detected in aircraft, ship, container, etc. is judged as a case of transient invasion, this does not require a focused survey in the areas specified by Cabinet Order. However, if multiple cases of similar detection have been reported, a focused survey needs to be conducted in the areas specified by Cabinet Order. The samples collected during such a survey need to be immediately subjected to the pathogen examination. The survey items and results are entered into the "Aircraft Mosquito Survey & Survey Results Sheet" (Form 2-2) or "Ship Mosquito Survey & Survey Results Sheet" (Form 2-8) and saved in these forms.

(5) Measures taken upon emergency

If any vector species possessing the pathogen for mosquito-borne infectious diseases or any patient with rodent-borne infectious disease having no history of overseas trip has been confirmed in the port area during a colonization survey (permanent surveillance) or a focused survey, posing a threat of disease transmission by the mosquitoes having colonized in a given area, sanitation measures need to be taken in accordance with the "Mosquito-related Emergency Measures Manual" (Appendix 3-6) after discussion with the Office of Quarantine Station Administration. When sanitation measures are taken, reference should be made to the "Collection of Examples Related to Mosquito Surveillance Reinforcement, Pest Control, etc." (Clerical Communication issued by the Office of Quarantine Station Administration). As needed, an emergency survey, health survey, pest control, environmental arrangement, or the like is carried out in linkage to the related organizations.

3. Species identification and mosquito-borne infectious disease pathogen examination

Identification of the species of captured mosquitoes and their pathogen are carried out at each examination

section and laboratory with reference to “Methods for Species Identification, Pathogen Possession Check and Sample Dispatch during Mosquito Surveillance” (Appendix 3-4). If the identification of species (invasive vector species, etc.) is difficult, identification and pathogen examination are requested to the Testing Center using a filled-in “Mosquito Examination Request Form” (Form 2-5).

4. Reporting

Regarding the survey results, the necessary information for each month is entered into the database file and then reported to the head office of each quarantine station. The head office of each quarantine station combines the data from the head office and all branch/satellite offices into a single reporting form and manages it. The data in this form need to be registered with the Officer for Analysis on Sanitation Control by the 10th day of the month following each quarter of the year (by the end of the month following the fourth quarter). If a focused survey or any emergency measure has been conducted, the relevant information needs to be shared with Office of Quarantine Station Administration and the Officer for Analysis on Sanitation Control.

5. Evaluation and countermeasures

The survey results need to be re-evaluated each year at each quarantine station in accordance with the “Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc.” (Appendix 4), and sanitation measures are taken as needed. These data are referred to when the survey plan for the next year is devised.

6. Others

- Dealing with mosquitoes captured by related organizations or enterprises

  If information has been received about mosquito detection or the like from any of the related organizations, etc. within the port area or from aircraft, etc., the site needs to be checked and the mosquitoes need to be recollected, followed by species identification. If any vector species has been identified, the pathogen examination needs to be conducted, as a rule.

Appendix 4 Manual for Risk Assessment of Quarantinable Infectious Diseases or the Like Transmitted by Vector Animals, etc. (excerpts)

1. Introduction

Quarantine stations have been conducting the surveillance of vector animals, etc. in port areas to prevent the invasion and spread of quarantinable infectious diseases or the like via vector animals, etc. Following the recent diversification of international traffic flow of humans and commodities, the number of routes for entry from overseas to local ports/airports in Japan has increased, resulting in elevation of the risk for invasion of quarantinable infectious diseases or the like into Japan. Furthermore, following complete enforcement of the International Health Regulations (IHR2005), there is now a greater need than before to ensure the sanitary status at the points of cross-border entry such as international ports and airports. Under such circumstances, quarantine stations are now required to conduct efficient and valid surveillance. In this connection, it became more desirable to modify the Port Sanitation Control Guidelines issued in 2005, and the research and investigation conducted by quarantine stations in 2018 and 2019 included discussion over the creation of basic data/information for risk assessment about quarantinable infectious diseases or the like (invading Japan via the vector animals, etc. carried by ships/aircraft from foreign countries) at quarantine seaports/airports (hereinafter called “quarantine ports”) and over the method for calculation of such risk.

Calculation of the risk for invasion of quarantinable infectious diseases or the like requires extraction of risk factors with diverse methods for subsequent analysis of individual risks at quarantine ports. Furthermore, from the viewpoint of preventing the invasion of quarantinable infectious diseases or the like, it is desirable to establish a method allowing simple calculation of the risk so that the risk calculated may be reflected rapidly into the surveillance plan, etc. for the next year.

If the risk of invasion is calculated through the numerical analysis of two risk factors (one related to the invasion of vector animals, etc. and the other related to the carry-in of pathogens by humans) using the past data of ship/aircraft arrival from foreign countries and if efficient and valid port sanitation surveillance is attempted with the thus-calculated risk, we may expect that the sanitary status of areas specified by Cabinet Order can be assessed satisfactorily. If any event possibly posing a threat to public health is predicted from the information collected during such surveillance (permanent surveillance), it is essential to conduct active surveillance, sanitation measures, etc. such as focused surveys and countermeasures against emergency to

prevent the invasion and spread of quarantinable infectious diseases or the like in Japan.

2. Permanent surveillance

With reference to the opinions of experts, study reports, etc. in the field of mosquito-borne infections, the pathogens carried by vector animals invading Japan via foreign ships/aircraft were considered as a risk factor to be addressed in the permanent surveillance, there by dividing the risk factor into risk factor A (past data on ship/aircraft arrival) and risk factor B (invasion of pathogens via humans).

3. Numerical analysis of risk factor

So that the details of the permanent surveillance might be designed in a manner corresponding to the risks involved, the risk factors were expressed numerically. The scores for each risk factor were defined by means of logarithm (a common technique adopted to this procedure).

4. Results of risk analysis for permanent surveillance

The scores for numerically expressed risk factors A and B were totaled, and their sum total was used in deciding the frequency of surveys conducted within the framework of permanent surveillance.

5. Permanent surveillance

The survey to be conducted routinely (permanent surveillance) is conducted, as a rule, at an annual frequency calculated by application of the value (calculated from risk factors A and B) to Table 2. This frequency is presented as a basic frequency of survey during a given year within the framework of permanent surveillance. It is acceptable to conduct the survey at a frequency higher than the presented level or in a number of survey areas larger than the planned one depending on the actual circumstances.

6. Risk assessment and sanitation measures based on permanent surveillance

The measures to be taken on the basis of permanent surveillance, etc. are listed in Table 3-1 and 3-2.

If any invasive species not indigenous in Japan but involved in the epidemic of any quarantinable infectious disease or the like has been confirmed, sanitation measures need to be conducted, taking into consideration the local circumstances, etc. and referring to the “Collection of Examples Related to Rodent/Mosquito Surveillance Reinforcement, Pest Control, etc.” and so on.

As needed, additional sanitation measures are taken, such as continuing the surveillance at a higher frequency and including neighboring survey areas into surveillance.

It is quite important to conduct a focused survey or measures against emergency in addition to permanent surveillance for closer assessment of the sanitation status throughout the areas specified by Cabinet Order and to reduce the risk level to below a certain level through the implementation of sanitation measures (environmental arrangement, countermeasures against the origin of emergence, etc.) by the quarantine station chief pursuant to Article 27 of the Quarantine Act for the purpose of reducing the density of vector animal colonization.

The results of the aircraft survey, which pertains to the status before invasion into the areas specified by Cabinet Order, are not covered by risk assessment. Instead, the aircraft administrator or the like is advised about the prevention of invasion by vector animals (mosquitoes and rodents). Similar actions are taken also against the invasive vector species detected within containers. If quarantinable infectious diseases or the like are anticipated to be spread by the vector species, sanitation measures (e.g., pest control with insecticides, rodenticides, etc. and disinfection for prevention of expanded infection) are instructed or implemented.

7. Preparation of assessment maps

Assessment is conducted separately for ports and airports. Assessment maps prepared with different colors of mesh are advantageous in that the points having the risk in a given port can be readily identified.

Table 3-1 Countermeasures and assessment related to rodent survey results

Results of permanent surveillance, etc.	Risk assessment	Sanitation measures	Color of assessment map
Antibody, pathogen, or gene suggestive of pathogen for quarantine infectious diseases or the like has been detected from rodents (primary or secondary vector)[1] or vector fleas/ticks (primary or secondary vector)[1] captured during permanent surveillance, etc. in the areas specified by Cabinet Order.	D High risk for invasion of quarantine infectious diseases or the like	① Take measures against emergency, set separately[2]. Resume ordinary surveillance upon the disappearance of the pathogen-possessed animals. ② Continue surveillance at a higher frequency next year, accompanied as needed by sanitation measures to reduce the vector animal colonization density (environmental arrangement, measures against origin of emergence, etc.; in cooperation with related organizations as needed) ③ Instruct the administrator or the like about the prevention of rodent invasion. Perform disinfection as needed.	Red
Invasive rodents (primary vector)[1]or fleas/ticks (primary vector)[1] known as vectors for quarantine infectious diseases or the like have been captured during permanent surveillance, etc. in the areas specified by Cabinet Order. Antibody, pathogen, or gene suggestive of pathogen for quarantine infectious diseases or the like has not been detected.	C Moderate risk for invasion of quarantine infectious diseases or the like	① Implement a focused survey (active survey) set forth separately. Resume ordinary surveillance upon ceasing of the capture of invasive rodents or fleas. ② Perform permanent surveillance in the next year, as a rule, but continue surveillance of the survey area concerned at a higher frequency and a larger number of survey points than usual, accompanied by sanitation measures to reduce the density of vector animal colonization (environmental arrangement, measures against origin of emergence, etc.; in cooperation with related organizations as needed) as needed. Survey also the area neighboring the area concerned. ③ Instruct the administrator or the like about prevention of rodent invasion. Perform disinfection as needed.	Yellow

Indigenous rodents (primary or secondary vector)[1] or fleas/ticks (primary or secondary vector)[1] known as vectors for quarantine infectious diseases or the like have been captured during permanent surveillance, etc. in the areas specified by Cabinet Order. Antibody, pathogen, or gene suggestive of pathogen for quarantine infectious diseases or the like has not been detected.	B Low risk for invasion of quarantine infectious diseases or the like	① Continue permanent surveillance in the next year, accompanied by sanitation measures to reduce the density of vector animal colonization (environmental arrangement, measures against origin of emergence, etc.; in cooperation with related organizations as needed) as needed. ② Continue permanent surveillance in the next year, as a rule, but if the number of animals captured or the number of sites captured is larger than usual, increase the frequency of survey or the number of survey points in a given survey area as needed, accompanied by the effort to take sanitation measures for reducing the colonization density. ③ Instruct the administrator or the like about the prevention of rodent invasion.	Green
No rodent has been captured during permanent surveillance, etc. in the areas specified by Cabinet Order.	A Very low risk for invasion of quarantine infectious diseases or the like	① Continue permanent surveillance, monitor the species, and density of colonized animals and endeavor to maintain the sanitation level within the survey area in cooperation with related organizations and enterprises. ② Perform permanent surveillance in the next year.	Blue
If captured within aircraft, ships, etc.	Not included in the risk assessment	Continue permanent surveillance, monitor the species and density of colonized animals, and endeavor to maintain the sanitation level within the survey area in cooperation with related organizations and enterprises. Perform permanent surveillance in the next year. Reinforce the survey of the area concerned as needed. If possession of pathogen, etc. has been found, take emergency measures (set forth separately)[2], as needed.	Not included in the risk assessment. The information about detection should be supplied to the Officer for Analysis on Sanitation Control immediately.

[1] Primary vector, secondary vector, etc. are defined in Attachment 2 “Vector species of rodents, etc. covered by data entry on each infectious disease (major rodents, fleas, and ticks known as vectors for quarantine infectious diseases and other equivalent infectious diseases).” If a new species has been detected, the reference document is revised (if needed, the new species is added urgently).

[2] Implemented with reference to the “Collection of Examples Related to Rodent Surveillance Reinforcement, Pest Control, etc.” issued by the Office of Quarantine Station Administration.

Permanent surveillance, etc. encompasses the cases detected within the Cabinet Order-specified areas by means of notification/reporting, etc. However, detection inside aircraft, ships, etc., which does not reflect invasion into the Cabinet Order-specified areas, is not included in the risk assessment, and only the

outcome is reported about such detection.

Primary vector means the species involved in past epidemic of quarantine infectious diseases or the like.

Secondary vector means the species involved in past outbreak of quarantine infectious diseases or the like.

Table 3-2 Countermeasures and assessment related to mosquito survey results

Results of permanent surveillance, etc.	Risk assessment	Sanitation measures	Color of assessment map
Adult mosquitoes of species known as vectors for quarantine infectious diseases or the like (primary, secondary, or possible vector)[1] have been detected during permanent surveillance, etc. in the areas specified by Cabinet Order. Possession of pathogen or gene of pathogen for quarantine infectious diseases or the like has been detected.	D High risk for invasion of quarantine infectious diseases or the like	① Take measures against emergency, set separately[2]. Resume ordinary surveillance upon disappearance of the pathogen-possessed animals. ② Continue surveillance at a higher frequency next year, accompanied as needed by sanitation measures to reduce vector animal colonization density (environmental arrangement, measures against origin of emergence, etc.; in cooperation with the related organizations as needed) ③ Instruct the administrator or the like about the prevention of rodent invasion. Use insecticides as needed.	Red
Adult or larval mosquitoes of invasive species known as vectors for quarantine infectious diseases or the like (primary vector)[1] have been detected during permanent surveillance, etc. in the areas specified by Cabinet Order. Possession of pathogen or gene of pathogen for quarantine infectious diseases or the like has not been detected.	C Moderate risk for invasion of quarantine infectious diseases or the like	① Implement a focused survey (active survey) set forth separately. Resume ordinary surveillance upon ceasing of the capture of invasive rodents or fleas. ② Perform permanent surveillance in the next year, as a rule, but continue surveillance of the survey area concerned at a higher frequency and a larger number of survey points than usual, accompanied by sanitation measures to reduce the density of vector animal colonization (environmental arrangement, measures against origin of emergence, etc.; in cooperation with related organizations as needed) as needed. ③ Instruct the administrator or the like about the prevention of rodent invasion. Use insecticides as needed.	Yellow

Mosquitoes (primary, secondary, or possible vector)[1] known as vectors for quarantine infectious diseases or the like have been collected during permanent surveillance, etc. in the areas specified by Cabinet Order. Pathogen or gene of pathogen for quarantine infectious diseases or the like has not been detected.	B Low risk for invasion of quarantine infectious diseases or the like	① Continue permanent surveillance in the next year, accompanied by sanitation measures to reduce the density of vector animal colonization (environmental arrangement, measures against origin of emergence, etc.; in cooperation with related organizations as needed) as needed. Continue permanent surveillance in the next year, as a rule, while increasing the frequency of survey or the number of survey points in the survey area concerned, accompanied by the effort to take sanitation measures for reducing the colonization density, as needed.	Green
None of the mosquitoes collected during permanent surveillance, etc. in Cabinet Order-specified areas is known as a vector (primary, secondary, or possible vector)[1], or no mosquito is captured.	A Very low risk for invasion of quarantine infectious diseases or the like	① Continue permanent surveillance, monitor the species and density of colonized animals and endeavor to maintain the sanitation level within the survey area in cooperation with related organizations and enterprises. ② Perform permanent surveillance in the next year.	Blue
If captured within aircraft, ships, etc.	Not included in risk assessment	Continue permanent surveillance, monitor the species and density of colonies, and endeavor to maintain the sanitation level within the survey area in cooperation with the related organizations and enterprises. Perform permanent surveillance in the next year. Reinforce the survey of the area concerned as needed. If possession of pathogen, etc. has been found, take emergency measures (set forth separately)[2], as needed.	Not included in risk assessment. The information about detection should be supplied to the Officer for Analysis on Sanitation Control immediately.

[1] Primary vector, secondary vector, etc. are defined in Attachment 3 “Vector species of mosquitoes covered by data entry on each infectious disease (major mosquitoes known as vectors for quarantine infectious diseases and other equivalent infectious diseases).” If a new species has been detected, the reference document is revised (if needed, the new species is added urgently).

[2] Implemented with reference to the “Collection of Examples Related to Mosquito Surveillance Reinforcement, Pest Control, etc.” issued by the Office of Quarantine Station Administration.

Permanent surveillance, etc. encompasses the cases detected within the Cabinet Order-specified areas by means of notification/reporting, etc. However,

detection inside aircraft, ships, etc., which does not reflect invasion into the Cabinet Order-specified areas, is not included in the risk assessment, and only the outcome is reported about such detection.
Primary vector means the species involved in a past epidemic of quarantine infectious diseases or the like.
Secondary vector means the species involved in a past outbreak of quarantine infectious diseases or the like.