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Asian gypsy moth (AGM) specified risk periods in Japan, Russia, Republic of Korea, and China

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Virtual approval of NAPPO Products

Given the current travel restrictions brought about by the COVID-19 pandemic, the NAPPO Management Team unanimously endorsed a temporary process for virtual approval of its products.

Beginning in January 2021 and until further notice, this statement will be included with each approved NAPPO product in lieu of the Executive Committee original signature page.

The NAPPO Position Document 07 – ***Asian gypsy moth (AGM) specified risk periods in Japan, Russia, Republic of Korea, and China*** - was approved by the North American Plant Protection Organization (NAPPO) Executive Committee – see approval dates below and is effective from December 2, 2021.

Approved by:

The NAPPO Position Document 07 "***Asian gypsy moth (AGM) specified risk periods in Japan, Russia, Republic of Korea, and China"*** was electronically approved by the NAPPO Executive Committee members for Canada (Greg Wolff, CFIA) on November 23, 2021, the United States (Osama El-Lissy, APHIS PPQ) on November 15, 2021, and Mexico (Francisco Ramírez y Ramírez, SENASICA-DGSV) on December 2, 2021. Electronic copies of approval emails from each Executive Committee member have been archived by the NAPPO Secretariat.

Stephanie Bloem

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Executive Summary

The specified risk period (SRP) is the time in each of the Asian gypsy moth (AGM) -regulated areas when there is a high risk of AGM flight and egg-mass deposition on marine vessels. The SRP in a regulated area is a critical component of pre-departure vessel inspection and certification programs that are designed to mitigate the risk of AGM introduction to North America and other countries that regulate AGM. There was a need to re-evaluate the SRPs for all AGM-regulated countries as several years have elapsed since the time when these SRPs were originally adopted, additional flight data has become available, and flight periods for AGM may have changed due to such factors as climate change. Reported sightings of moths flying outside or very near the beginning and end of the current SRPs also indicated that a review was needed. It is important to validate the SRP in AGM-regulated areas to ensure that risk continues to be effectively managed.

The AGM Expert Group (EG) of the North American Plant Protection Organization (NAPPO) has reviewed the SRPs for the AGM species complex in all AGM-regulated countries (China, Japan, Republic of Korea, and Russia). The available AGM data was analyzed to determine if the current SRPs for AGM-regulated areas are adequate to include moth flight and the risk of egg-mass deposition or if modifications should be considered.

The data reviewed included, where available, primarily trapping data, results of AGM vessel inspections in regulated countries, records of adult moth occurrences in the literature and climate data. The evaluations of each source of data were then considered together and summarized to develop the new SRP proposal. The AGM EG requested, but did not receive, permission to share data belonging to foreign NPPOs such as trapping data and results of AGM vessel inspections in regulated countries.

In addition to analyzing available data, the analysis considered the feasibility and practicality for National Plant Protection Organizations (NPPOs) and stakeholders, such as AGM inspection bodies and the marine shipping industry, to implement revisions to the AGM SRPs. Taking all of this into account, revisions were made for Japan and Russia which include:

- Adjustments to the SRP regions and extending the SRP start and end dates for some regions in Japan.
- Extending the SRP start and end date in Russia.
- A reduction in the total number of SRPs from six to four.

Based on available data, there are no changes to the SRPs for the Republic of Korea or China at this time. Implementation of changes to the SRPs is planned for 2022 and will occur only after consultation and necessary policy and program updates. NPPOs in Japan and Russia were consulted during the development of the revised SRPs. NPPOs in China and the Republic of Korea were informed of the impending changes. Outreach material was provided to each of the regulated countries to share with their inspection and certification bodies. The marine shipping industry was also consulted. The SRPs for all areas will continue to be reviewed periodically, should additional data become available.

The implementation of the revised AGM SRPs is anticipated to decrease the risk of AGM spreading into North American through marine vessels from regulated areas and to make it simpler for stakeholders to comply with AGM program requirements.

Background

Asian gypsy moth (AGM) (for regulatory purposes, a complex of closely related *Lymantria* species including *Lymantria dispar asiatica*, *L. d. japonica*, *L. albescens, L. umbrosa, and L. postalba*) is a serious threat to North American forests and biodiversity. The larval stage feeds on over 500 known host plants including many deciduous and coniferous trees. Introduction and establishment of AGM in North America could cause significant damage to the North American agriculture, forestry, and environmental sectors, to commerce that relies on those sectors, and to market access. One of the risk mitigation objectives for North America is to manage AGM risk at origin through vessel pre-departure inspection and certification. The vessel pre-departure inspection program for AGM was established in 1992 to mitigate the risk of AGM introduction and spread to North America while minimizing impacts to trade with the Asia-Pacific region.

An important consideration to the success of the pre-departure inspection and certification program in managing the risk is understanding when there is a high risk of moth flight and egg-mass deposition on marine vessels. This period is known as the specified risk period (SRP). There are currently seven SRPs for AGM. Vessels that visit regulated ports during their SRPs are required to be inspected and certificated free of AGM prior to calling on North American ports. Japan has four (previously five) SRPs while each of the other countries that is regulated for AGM has a single SRP. The number of SRPs established for a region is based primarily on trapping data. The reasons for Japan having more than one SRP are that AGM in Japan includes one subspecies (*L. dispar japonica*) and three different species within the AGM complex. As such, they may have different biology, such as flight periods, than the single subspecies (*L. dispar asiatica)* present sin the other regulated areas. Furthermore, Japan is an island nation and areas where AGM occurs span more than 20 latitude degrees and, as such, may have different climates.

The original SRPs were determined based on flight data available at that time and a buffer period of two weeks was included at the beginning and end of each SRP to account for annual variations in moth flight. The same buffer period duration was applied to the revised SRPs.

The AGM pre-departure inspection and certification program has been in place for many years, including almost 30 years in Russia. With access to additional flight data, there is now a recognition that flight periods for AGM may change over time, due to such factors as climate change. As part of ongoing, regular program evaluation and review to ensure that risks continue to be effectively managed, a validation of SRPs in AGM-regulated areas was warranted.

In AGM vessel inspection reports from some regulated countries, inspectors have recorded evidence of moth flight outside of the current SRPs or very close to the start or end dates of the current SRPs. Further examination of the available AGM trapping data indicated that AGM male adults were captured in traps outside of, or close to the current beginning or end of the SRP in some regulated areas. There were also photos of AGM adults taken on dates close to the current beginning or end of the SRPs and posted on public websites. This information indicated that some AGM flight may be occurring outside of the current SRPs, which then needed to be revised to reflect the reality of adult flight and thereby minimize the risk of introducing AGM into North America. These revisions also need to be mindful of facilitating trade and ensure that requirements are as simple as possible for marine shipping industry compliance.

Data Analysis and Approach

Several sources of data were evaluated. The primary data included available trapping data provided by National Plant Protection Organizations (NPPOs) in AGM-regulated areas and inspection reports provided by recognized AGM vessel inspection bodies. These data were supplemented with reports of occurrences of live adults from public websites, and climate data. The evaluations of each source of data were then considered together and summarized to develop revised SRPs, as warranted.

The maximum differences between the first date of AGM male capture versus the current beginning of the SRP for the region, and the last date of capture versus the ending of the current SRP for that region were calculated. As was done when the dates for the current SRPs were established, a two-week buffer period was applied to the beginning and the end of the observed flight periods. This two-week buffer period helps account for uncertainty associated with changes to observed adult flight times due to factors such as annual climate abnormalities and trap efficacy.

The analysis of AGM vessel inspection reports focused on the detection of adults, especially confirmed live AGM female adults, observed during vessel inspection by inspection companies in regulated countries. Egg-masses and dead adults were not considered as they did not indicate when female moths might be laying eggs.

The web site jpmoth.org has photographs of some *Lymantria* adults with information about the location and dates when the photographs were taken. It includes all species and subspecies of AGM from Japan, although not necessarily at the actual beginning date and ending date of moth flight.

The development rate of an insect depends primarily on climatic conditions, especially temperature. Climate data from the Japan Meteorological Agency (JMA) were considered as part of the analysis of SRPs. Similar climatic regions of Japan and corresponding adult moth flight times were grouped and considered. When locations of reported AGM occurrence were in inland prefectures, and therefore not included in a current AGM SRP region, the locations were compared to that of current AGM SRP regions for similarities in climate zones, as well as to monthly average temperatures.

Results

Review of Specified Risk Periods and modifications to AGM regions for Japan.

The grouping of different locations into AGM SRP regions is based on scientific evidence, especially trapping and inspection data. In some ports, the data revealed earlier and later flight times than are reflected in the current SRP's. After combining all results, the SRP's would be as follows: June 18 – October 17 for the Northern region, June 11 - September 30 for the Western region, June 1 – September 30 for the Eastern region, May 19 - August 31 for the Southern region, and May 25 - June 30 for the Far Southern region.

To simplify the requirements, increase compliance, and facilitate trade, the 15th day of a month was used when the SRP dates were in the middle of the month. However, in the case of the Japan Western SRP where the new start date fell close to the middle of the month, but is earlier than

the 15th, the start of the period was moved to the beginning of the month to capture the entire risk period.

Based on the review of the SRP and climate data, the current Western and Eastern regions were combined into a single region, now referred to as “Central.” The earliest and latest incidences of moth flight are similar for the Western and Eastern regions and the SRPs are essentially the same. When the dates were simplified to correspond to the beginning, middle or end of the month, the proposed SRPs for the Western and Eastern regions became the same. This new Central region now corresponds to the established SRPs for both China and the Republic of Korea. Climate is also similar for the Western and Eastern AGM SRP regions as they fall into the Eastern Japan climate district as defined by the JMA.

Akita and Yamagata prefectures are currently placed in the Western AGM SRP region. However, the monthly mean temperature of the two AGM Western ports, Akita (in Akita prefecture) and Sakata (in Yamagata prefecture) are almost identical to that of the current AGM Northern SRP port of Onahama in Fukushima prefecture). The JMA groups these two prefectures into the same climate region as the prefectures in the AGM Northern SRP. Based on this, both Akita and Yamagata prefectures have been placed in the AGM Northern SRP region.

Review of Specified Risk Period for Russia

The review was based on male moth trapping data from 2014 to 2020 provided by the All-Russia Plant Quarantine (FGBU “VNIIKR”) Center. The earliest moth capture was on July 4 (Korsakov, 2014) and the latest was on September 25 (Vanino, 2014) and September 21 (Vladivostok, 2016). With two-week buffers added to both ends, the SRP for the Russian Far East ports would begin on June 19, 2020, and end on October 8, 2020. Considering the practicality and synchronization with the SRP for Northern Japan, the SRP for Russia Far East was revised from the current July 1 - September 30 to June 15 - October 15.

Review of SRPs for Republic of Korea and China

No revisions to current SRPs were made based on the available data. The SRPs for these areas will be reviewed again, should additional data become available.

Summary and Conclusion

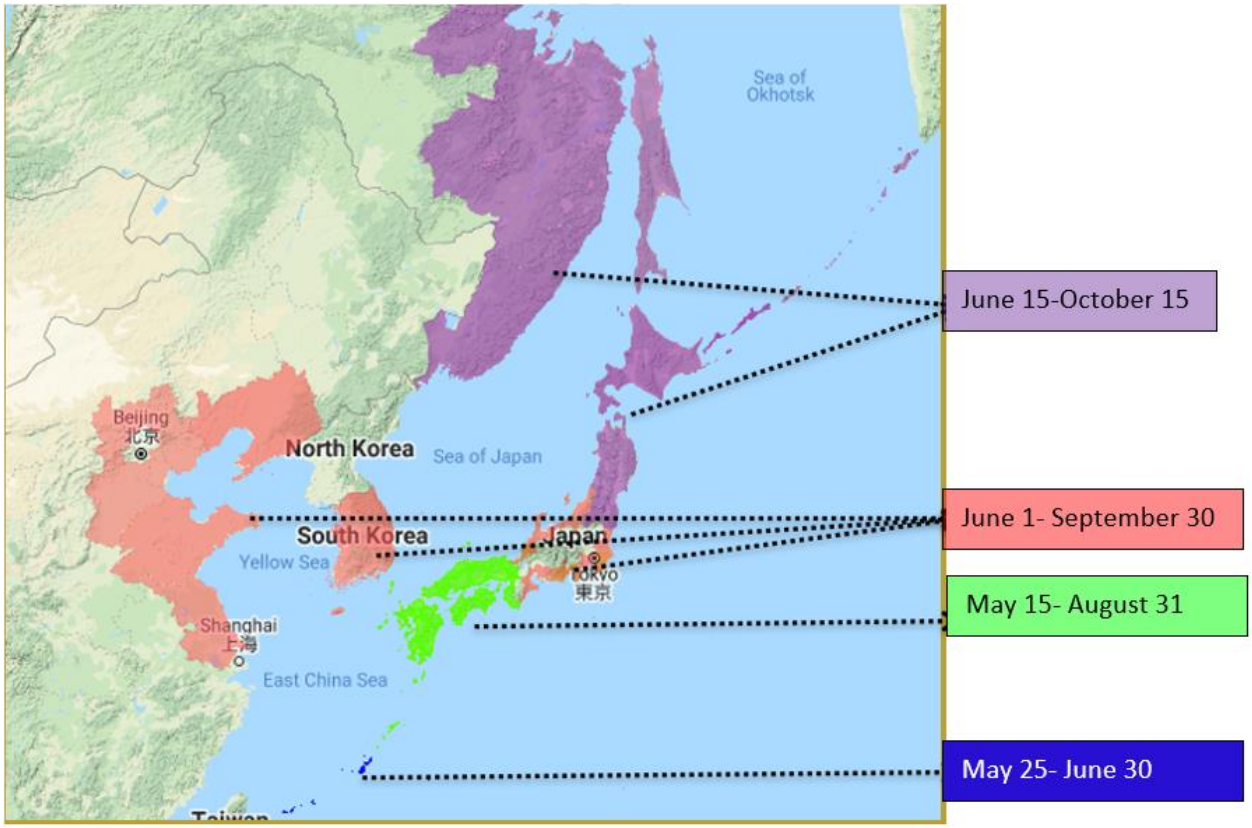
The available data and information indicate that revisions to the SRPs in Japan and Russia were warranted to better reflect the AGM flight periods and climate factors. The summary of revised SRP dates and regions is shown in Table 1 and illustrated in Figure 1. For Japan, the number of SRP regions has been reduced from five to four. Within the Northern, Central and Southern regions, the SRPs have been extended. For example, in the Northern and Southern regions, the SRP begins 15 days earlier than the current SRP. In the Northern region, the SRP ends 15 days later and in the Southern region the SRP ends 20 days later. The SRP in the Central region begins about three weeks earlier and ends two to four weeks later than the former Western and Eastern regions. The new Central region SRP of June 1 - September 30 also aligns with the current SRP for China and Korea. No modifications are proposed for the far Southern region.

Table 1. Current and New Asian gypsy moth Specified Risk Periods (SRP) in Russia, Japan, China, and Republic of Korea

Country	SRP Region		Area/Prefecture	Current SRP (2021)	Revised SRP beginning in (2022)
Japan	Northern		Hokkaido, Aomori, Iwate, Miyagi, Akita*, Yamagata*, Fukushima	July 1 – September 30	June 15 – October 15
	Central	Western	Niigata, Toyama, Ishikawa	June 25 – September 15	June 1 – September 30
		Eastern	Fukui, Ibaraki, Chiba, Tokyo, Kanagawa, Shizuoka, Aichi, Mie	June 20 - August 20	
	Southern		Wakayama, Osaka, Kyoto, Hyogo, Tottori, Shimane, Okayama, Hiroshima, Yamaguchi, Kagawa, Tokushima, Ehime, Kochi, Fukuoka, Oita, Saga, Nagasaki, Miyazaki, Kumamoto, Kagoshima	June 1 – August 10	May 15 – August 31
	Far southern		Okinawa	May 25 – June 30	May 25 – June 30 (no change)
Russia	Far east			July 1 – September 30	June 15 – October 15
China	On or North of latitude 31º 15'N			June 1 – September 30	June 1 – September 30 (no change)
Republic of Korea	All areas			June 1 – September 30	June 1 – September 30 (no change)

* Akita, Yamagata are currently (2021) in Western SRP Region of Japan

Figure 1. New Asian gypsy moth Specified Risk Periods (SRP) for regions in regulated countries (regions with the same background color have the same dates)



Overall, the new SRPs for Japan and Russia, as well as adjustments to regions for Japan, provide greater confidence that the risk of AGM on vessels will be mitigated through the inspection and certification process. The reduction in SRP regions and alignment of dates is also expected to further assist the marine shipping industry, inspection and certification companies, and NPPOs in continuing to achieve high rates of compliance for obtaining vessel certification and for vessels arriving in North America AGM-free.

Revision of the SRP dates in AGM-regulated countries could have an impact on AGM programs in other regulating countries such as Argentina, Chile, and New Zealand. Discussions with other regulating countries have taken place and will continue to ensure that current program alignment is maintained to the highest degree possible. This will ensure ongoing predictability and facilitate compliance with the programs by the marine shipping industry.

Along with the NAPPO country consultation process, NPPOs, the marine shipping industry and other stakeholders have been informed of the new SRPs through the World Trade Organization notification process, as well as through bulletins and other outreach material at national and regional levels. Policy and program changes in AGM-regulating countries will need to be made to reflect the new SRPs and these changes will also be communicated through regional, national, and international mechanisms. It is recognized that NPPOs, and inspection and certification bodies will require time to adjust to the new SRPs so they can develop procedures and communication materials, train staff and determine resource needs. For the first year of implementation (2022), a transition between the old and new SRPs will be in place. For example, a vessel that received its certificate while the old SRPs were in place (2021) would not be

penalized if it had not returned to a regulated area in the year that the new SRPs came into force (2022).

NAPPO encourages NPPOs with existing AGM programs or those considering designing a program to align program components where feasible, including using the same suite of SRPs. As with any phytosanitary program, program review will continue to occur, and requirements will be re-assessed as new information becomes available.