United States Department of Agriculture

Japanese Beetle Program Manual

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When using pesticides, read and follow all label instructions.

Fourth Edition Issued 2016

Japanese Beetle Manual

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Introduction

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APHIS Mission

The Animal and Plant Health Inspection Service (APHIS) is an Agency within the United States Department of Agriculture (USDA). The mission of APHIS is to protect the health and value of American agriculture and natural resources.

PPQ Mission

APHIS Plant Protection and Quarantine (PPQ), an operational program, safeguards agriculture and natural resources from the risks associated with the entry, establishment, or spread of animal and plant pests and noxious weeds. Because of the extensive damage it causes, the Japanese beetle (JB) *Popillia japonica* Newman, is a significant pest.

Japanese Beetle Policy

The primary objective of the JB program is to protect the agriculture of the western United States by preventing the artificial spread of the JB from the eastern United States. Artificial spread is the movement of an organism to a new area by other than natural means; in this case, artificial spread refers specifically to the movement of JBs on aircraft. This manual will help APHIS–PPQ personnel and cooperators prevent artificial spread of the JB.

Protected States

Nine western States requested protection from JB infestation. These states are known as the “protected states.”

They are:

- Arizona
- California
- Colorado
- Idaho
- Montana
- Nevada
- Oregon
- Utah
- Washington

Japanese Beetle Program Manual Tasks

Specifically, this manual will address the following tasks:

- Determining the risk at JB-infested airports
- Issuing and canceling Emergency Action Notifications (EANs)
- Monitoring airports in JB-free areas
- Monitoring airports in protected states
- Treating aircraft
- Treating grounds
- Using compliance agreements (CAs)

This manual is to be used with other manuals, directives, and the Code of Federal Regulations (7 CFR 301.48).

U.S. Domestic Japanese Beetle Harmonization Plan

On August 19, 1998, the National Plant Board initiated use of the first version of the U.S. Domestic Japanese Beetle Harmonization Plan. This plan established procedures for the free movement of JB host commodities, such as nursery stock. The plan is periodically revised in order to incorporate new technologies and new procedures.

The U.S. Domestic Japanese Beetle Harmonization Plan contains additional information on the movement of nursery stock. For more information on the Harmonization Plan, see the National Plant Board Web site.

Scope

The chapters in this manual are:

Users

The primary users of this manual may include the following:

- APHIS-PPQ field personnel who are:
  - Monitoring airports
  - Cooperating under Compliance Agreements (CAs)
  - Supervising PPQ Officers
- State and county personnel who are:
  - Monitoring airports
  - Cooperating under CAs
- Airport personnel who are:
  - Monitoring airports
  - Cooperating under CAs
  - Applying pesticides

Related Documents

The following documents may supplement this manual:

- Code of Federal Regulations: 7—Parts 300 to 309—published by the Office of the Federal Register (National Archives and Records

Administration) at the United States Government Printing Office, this CFR (Code of Federal Regulations) guide contains information on the JB in Subpart 301.48

- Plant Protection Act—the Plant Protection Act of June 20, 2000, which modernized and streamlined the plant quarantine laws, replaced the previous laws. Information is in 7 USC 7701-36, with sections 14, 15, 23, 24, and 31 addressing specific issues
- U. S. Domestic Japanese Beetle Harmonization Plan—the National Plant Board working with USDA–APHIS–PPQ and the American Nursery and Landscape Association developed the U. S. Domestic Japanese Beetle Harmonization Plan. This plan establishes procedures for the free movement of JB host commodities. This plan is available at the National Plant Board Web site.
- *Treatment Manual*, published by USDA–APHIS–PPQ, this manual contains accepted treatments for various commodities including aircraft (T409).
- Managing the Japanese Beetle: A Homeowner's Handbook—program Aid No. 81-25-003—published by USDA–APHIS designed for use by homeowners in the infested eastern states.

Revisions

The Manuals Unit of PPQ issues revisions using a USDA Stakeholder Registry announcement. Each announcement provides the following information:

- Transmittal number used to track revisions
- Purpose of the revision
- Page number(s) the revision is located

Questions on this Manual

Refer any questions concerning the use or content of this manual to the following office:

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Chapter

2

General Information

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Economic Importance

The JB is a highly destructive plant pest causing both plant damage and increased control costs. For many years, extremely high populations have sporadically occurred. Feeding on grass roots, the grubs damage lawns, golf courses, and pastures. Attacking foliage, flowers, or fruits, the adults feed on more than 300 different ornamental and agricultural plants.

JB control by insecticides or biological methods is often expensive due to the labor, equipment, and/or insecticides involved.

State plant pest and regulatory officials in uninfested areas are concerned about the introduction of JB. To protect uninfested areas, cooperative Federal/State regulatory programs have been operating for many years.

First Detection

The JB was first found in the United States in 1916 near Riverton, New Jersey. In 1918, the USDA and New Jersey authorities attempted to exterminate this pest. However, because: 1) the infestation was well established; 2) control measures then in use were marginally effective; and 3) funds were limited, eradication was not achieved.

Since its introduction in 1916, the JB has spread throughout most of the United States east of the Mississippi. Because of the possibility of artificial spread by aircraft, the JB is a major threat to the agriculture and flora of the Western United States.

Distribution

East of the Mississippi

At present, JB occurs throughout most of the United States east of the Mississippi River. For the current distribution, refer to the National Agricultural Pest Information System (NAPIS).

West of the Mississippi

Many States west of the Mississippi River are uninfested; however, several states immediately west of the Mississippi River are generally infested (Minnesota, Iowa, Missouri, Arkansas) and some are only partially infested (South Dakota, Nebraska, Kansas, Oklahoma, Texas).

Infestations in protected States and uninfested States are eradicated.

Distribution at the County Level

For the current distribution in each county, refer to the National Agricultural Pest Information System (NAPIS).

Distribution in Canada

Areas regulated for JB in Canada include:

1. Southwestern portion of Quebec Province south of Montreal
2. Southeastern Ontario Province along the shores of the St. Lawrence
3. Southwestern Ontario Province in the area bounded by Lake Huron, Lake St. Clair, and Lake Erie. This area includes the western shore of Lake Ontario.

A complete listing of infested regional municipalities and a map are located at the Canadian Food Inspection Agency Web site.

Distribution in Asia

A native of Asia, JB occurs in Japan (Hokkaido, Honshu, Shikoku, and Kyushu) and in at least one of the Kuril Islands (Kunashir), which are currently part of Russia.

Hosts and Nonhosts

Larvae feed on the roots and underground stems of plants, particularly grasses.

Adult are gregarious general feeders on leaves, flowers, and fruits. Hosts include small fruits, tree fruits, garden crops, ornamental shrubs, vines, and trees. Feeding studies show a host range in excess of 300 plants in 79 plant families.

Preferred Hosts

Refer to Table 2-1 for a list of preferred hosts.

Table 2-1 Preferred Japanese Beetle Hosts

Scientific Name	Common Name
Abutilon hybridum	Chinese-lantern
Acacia baileyana	Cootamundra wattle
Acer palmatum	Japanese maple
Acer plantoides	Norway maple
Aesculus hippocastanum	Horse chestnut
Alcea rosea	Hollyhock
Althaea sp.	Althaea
Arbutus unedo	Strawberry tree
Bauhinia variegata	Orchid tree
Betula populifolia	Gray birch
Castanea dentata	American chestnut
Ceanothus griseus	Carmel ceanothus
Citrus sinensis	Orange
Cydonia oblongas	Common quince
Eucalyptus sideroxylon	Red ironbark
Fremontodendron californicum	Common flannel bush
Glycine max	Soybean
Grewia caffra	Lavender starflower
Hibiscus syriacus	Rose-of-sharon
Juglans nigra	Black walnut
Lagerstroemia indica	Common crapemyrtle
Larix occidentalis	Western larch
Malus domestica	Apple

Table 2-1 Preferred Japanese Beetle Hosts (continued)

Scientific Name	Common Name
Nandina domestica	Heavenly bamboo
Parthenocissus quinquefolia	Virginia creeper
Platanus acerifolia	London planetree
Podocarpus macrophyllus	Yew pine
Polygonum spp.	Smartweed
Populus nigra	Italian poplar
Prunus spp.	Cherry
P. domestica	Plum
P. persica	Peach
Punica granatum	Flowering pomegranate
Quercus palustris	Pin oak
Rosa spp.	Rose
Rubus spp.	Raspberry
Sassafras albidum	Sassafras
Sorbus americana	American mountain-ash
Tilia spp.	Linden
Ulmus americana	American elm
U. procera	English elm
Vitis spp.	Grape
Zea mays[1]	Maize
Zinnia elegans	Zinnia

1 The adults seriously injure corn by eating the silk, which interferes with pollination and kernel formation.

Nonpreferred Hosts and Nonhosts

Although adult beetles feed on over 300 species of plants, it feeds sparingly or not at all on many cultivated plants. Some plants are rarely or never fed on; among these are the evergreens, common grains, most truck and field crops, and many of the common ornamental flowers. The pear is not a host of the beetle.

When beetles are abundant, plant damage may be avoided by using species that are immune or seldom attacked by the insect (Fleming, ARS Technical Bulletin No. 1545).

Refer to Table 2-2 for a list of nonpreferred hosts and nonhosts.

Table 2-2 Nonpreferred Hosts and Nonhosts for Japanese Beetle

Plant Group	Specific Plants
Small fruits	American cranberry, black huckleberry, European gooseberry, northern dewberry, northern gooseberry
Orchard fruits	Pear, persimmon
Truck and garden crops	Artichoke, brussel sprouts, cabbage, cantaloupe, cauliflower, celery, onion, cucumber, eggplant, endive, carrot, pea, radish, kale, leek, lettuce, muskmelon, parsley, parsnip, peanut, potato, pumpkin, red pepper, rutabaga, salsify, spinach, summer squash, sweet potato, tomato, turnip, watermelon
Field crops	Barley, buckwheat, hops, millet, oats, rye, timothy, tobacco, vetch, wheat
Ornamental herbs	Adam's needle yucca, ageratum, American columbine, American germander, American pennyroyal, American water lily, American wormseed, anise, baby's breath, balsam, bearded iris, begonia, blue flas-indigo, brown-eyed Susan, butterfly violet, caladium, carnation, catnip, Chile avens, Chinese lantern-lant, Christmas-rose, chufa, cockscomb, bamboo, cosmos, coneflower, coralbells, cornflower, dogtooth violet, dusty-miller, Easter lily, European columbine, evergreen candytuft, false-dragonhead, fern, flowering tobacco, forget-me-not, foxglove, fringed iris, gaillardia, goldenglow, ground-myrtle, gysophila, hardy larkspur, hyssop, Iceland poppy, Japanese iris, Japanese spurge, lance coreopsis, lily, lily-of-the-valley, mignonette, mountain-bluet, motherwort, mullein, nasturtium, New England aster, oriental poppy, oswego-tea, oxeye daisy, Pacific bleedingheart, pampas grass, pansy, perennial pea, petunia, phlox, portulaca, purple loosestrife, pyrethrum, sedum, skydrop aster, small white aster, snapdragon, southern maidenhair, spearmint, speedwell, spiderwort, strawflower, sweetpea, sweet scavbious, sweet violet, sweet-william, tawny daylily, tiger lily, verbena, Virginia dayflower, wandering-Jew, wave aster, white-top, white turtlehead, wild bergamot

Table 2-2 Nonpreferred Hosts and Nonhosts for Japanese Beetle (continued)

Plant Group	Specific Plants
Ornamental shrubs and vines	American bittersweet, American bladdernut, American elder, American holly, azalea, beautyberry, border forsythia, Canada yew, Carolina allspice, Catawba rhododendron, Chinese azalea, Chinese holly, Chinese redbud, climbing euonymus, climbing hydrangea, coralberry, English holly, English ivy, European cranberry bush, firethorn, gardenia, groundsel-bush, Japanese holly, Japanese honeysuckle, lantana, lilac, matrimonyvine, mockorange, mountain-laurel, panicle hydrangea, Persian lilac, pinxterbloom, privet, rosebay rhododendron, smooth hydrangea, snowberry, swamp azalea, sweet autumn clematis, torch azalea, tubeclematis, weeping forsythia, winged euonymus, winterberry, winter honeysuckle, witch hazel
Trees	Ailanthus, American arborvitae, American hazelnut, American sweetgum, Atlantic white-cedar, balsam fir, black locust, block oak, Bolleana poplar, boxelder, butternut, Canada yew, Chinese juniper, common juniper, common smoketree, cryptomeria, Douglas fir, English yew, flowering dogwood, hemlock, Hinoki-cypress, Japanese pagodatree, Japanese yew, laurel magnolia, Lawson white cedar, maidenhair tree, mimosa, northern red oak, Norway spruce, oriental arborvitae, post oak, red ash, red maple, red mulberry, saucer magnolia, Sawara-cypress, scarlet oak, Scotch pine, shagbark hickory, silver maple, southern magnolia, southern red oak, tuliptree, Virginia pine, western yew, white ash, white oak, white poplar

Life Cycle

There is usually one generation each year, but a percentage of the grubs may take two years to mature, especially in wet, cold soils. A diagram of a typical life cycle is shown in “Diagram of the Life Cycle of the Japanese Beetle” (Figure 2-3 on page 2-9). However, temperature and moisture affect the development of life stages. Therefore, in any locality, the life stages will appear at varying times from year to year; in addition, the life stages will appear at varying times from north to south.

Egg Stage

The female beetle burrows into the soil to a depth of about three inches to lay eggs. The eggs are deposited singly and only a few are laid at one time. Egg laying is intermittent and females usually deposit forty to sixty eggs.

Larval Stage

The eggs hatch in about two weeks and the grubs begin to feed on grass and other roots. During the summer, the grubs feed within the upper four inches of soil in the turf; in late fall, they work downward in the soil as deep as eight to ten inches to spend the winter. In the spring, the grubs move upward and resume feeding on grass roots.

The full-grown larvae are about one inch long and usually lie in the soil in a curled position. Refer to Figure 2-1 to view an example of a larva.

Figure 2-1 Japanese Beetle Larva

Description of First, Second, and Third Instar Larvae

A micrometer eyepiece can be used to measure the length of the instar and the width of the head capsule; the measurements in Table 2-3 serve as a guide for identifying the different larval stages.

Table 2-3 Size of First, Second, and Third Larval Instars

	First Instar	Second Instar	Third Instar
Length of instar	10.5 mm	18.5 mm	32 mm
Width of head	1.2 mm	1.9 mm	3.1 mm

Refer to Table 2-4 for detailed characteristics of the third larval instar.

Table 2-4 Description of Third Instar Larvae

Desription	Characteristic
Form	C-shaped
Surface of head	◆ Smooth, shining ◆ Epicranial stem a fine, dark, impressed line ◆ Epicranial arm not conspicuous ◆ Front with a short, vague, longitudinal, median impression in apical third. At each side of this is a row of five punctures diverging toward the middle bend of epicranial arm.
Color of head	Pale dull yellow

Table 2-4 Description of Third Instar Larvae (continued)

Desription	Characteristic
Raster	◆ Numerous coarse, rather long, scattered, brown, hooked spines ◆ Medially, two conspicuous, divergent rows of shorter, straight spines in V-form ◆ Six or seven spines in each row ◆ Numerous rather long, yellowish hairs located at the sides and end of tenth segment
Anal slit	Transverse, arcuate
Vestiture	◆ Entire grub with rather long scattered brown hairs ◆ Dorsal convexities of first six abdominal segments clothed with fine, short, brown spines
Habitat	In soil, primarily under turf

The distinct V-like arrangement of short dark spines of the raster is sufficient to identify this species. Two rows of six or seven conspicuous, short, straight spines are arranged in a V-shape on the underside of the last body segment.

Refer to Figure 2-2 for an example of the V-like arrangement of the spines on the raster.

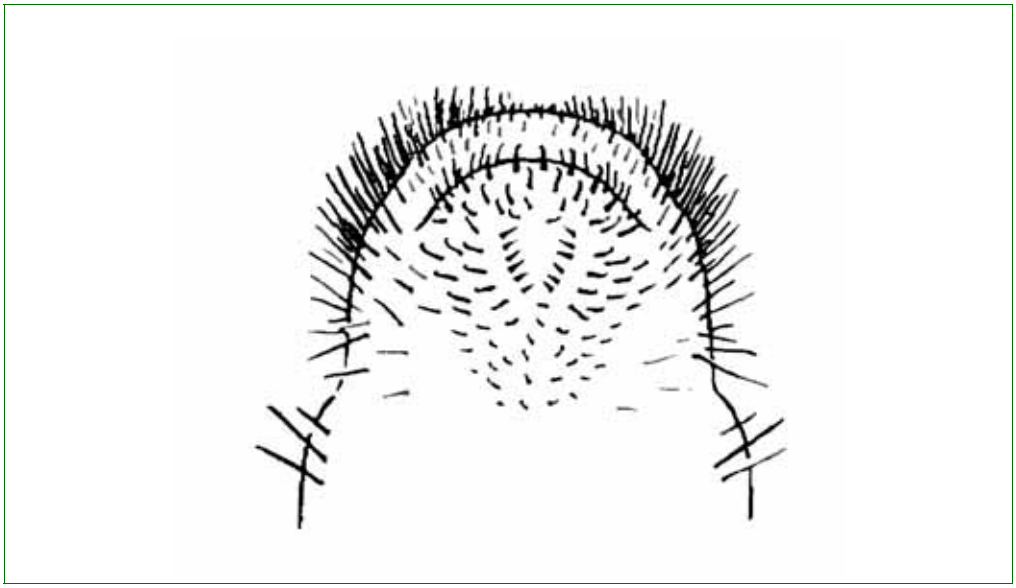


Figure 2-2 V-Like Arrangement of Spines on the Raster

Pupal Stage

When full-grown, the grubs go slightly deeper in the soil and form an earthen cell in which to pupate. A prepupal stage is followed by a pupal stage that lasts seven to seventeen days. Therefore, the grubs enter the pupal stage about two weeks before adult emergence. Note that the pupal stage can last from seven days to twenty days.

Adult Stage

Newly emerged adults may remain in the pupal cell for two to fourteen days before emerging from the soil. The adult is present during the warm summer months and lives above the ground.

In eastern North Carolina, the beetles begin to emerge from the soil in mid-May. In the vicinity of Philadelphia, the beetles begin to emerge about mid-June. In Tennessee, adult emergence begins in mid-June and continues until mid-August. Emergence is later in more northern locations, occurring in late June in southern New England and in early July in northern New England.

Peak adult activity occurs four to six weeks after first emergence.

In eastern North Carolina, most beetles are gone by mid-August, but in New England some may live until frost.

Beetles fly only during the day, and are especially active on warm, sunny, calm days. Often gregarious, the beetles feed mostly on the upper surfaces of leaves exposed to the sun. When feeding on the leaves, the beetles chew out the parts between the veins leaving only the veins. After this type of feeding, the leaves are described as being either “lace-like” or “skeletonized.”

Refer to Figure 2-3 for a diagram of the life cycle.

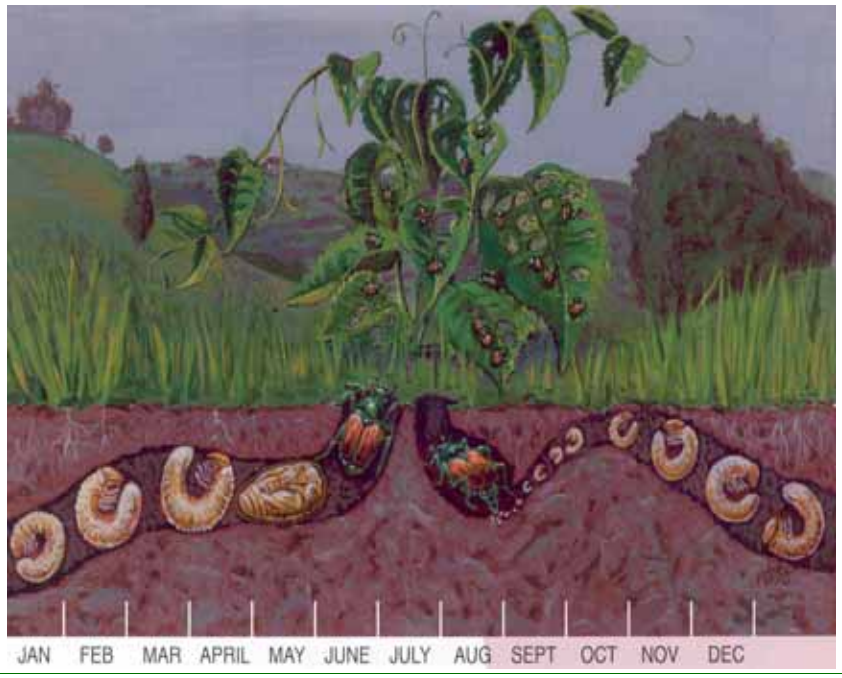


Figure 2-3 Diagram of the Life Cycle of the Japanese Beetle

Description of Adults

Adult beetles are 10 to 12 millimeters (mm) long; their color is shiny metallic green with coppery-brown elytra. The beetles can readily be recognized by the presence of six small patches of white along each side and the back of the abdomen, just under the edges of the elytra.

Figure 2-4 Single Adult Japanese Beetle

Characteristics of Male and Female Adults

A hand lens is helpful when determining the gender of beetles in the field; with practice, this can be done with the unaided eye.

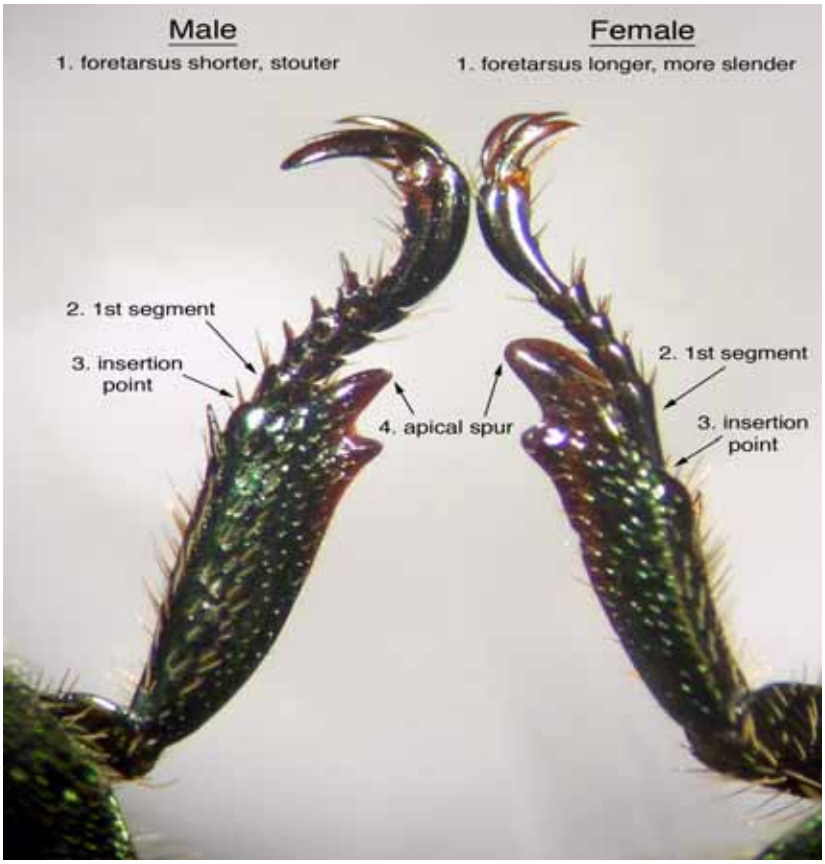
The gender of adults can easily be determined by the shape of the foretibia and tarsi. For males, the apical tibial spur terminates in a sharp point; for females, the apical tibial spur is elongated and more rounded. For males, the tarsus is shorter and stouter, with the first segment about as long as wide; for females, the tarsus is somewhat longer and more slender, with the first segment elongated and about equal in length to the next two or three segments combined. For males, the insertion of the tarsus is close to the apex of the tibia;

for females, the insertion of the tarsus is closer to the mid-point of the tibia. Refer to Table 2-5 for a summary of these characteristics.

Table 2-5 Characteristics of Male and Female Adult Japanese Beetles

Males	Females
◆ Foretarsus	◆ Foretarsus
Shorter and stouter	Longer and more slender
◆ Insertion of foretarsus	◆ Insertion of foretarsus
Close to apex of tibia	Closer to mid-point of tibia
◆ First tarsal segment	◆ First tarsal segment
About as long as wide	Two to three times as long as wide
◆ Apical spur of foretibia	◆ Apical spur of foretibia
Short and pointed	Elongated and rounded

The photograph in Figure 2-5 illustrates the differences between male and female adults.



Source: Bruce Gill, Centre for Plant Quarantine Pests, Canadian Food Inspection Agency, Ottowa, Canada

Figure 2-5 Photograph Showing the Foretibia of Males and Females with Distinctive Differences

Responsibilities of the Protected States

As part of fostering cooperation within the JB program, a protected State is encouraged to:

- Maintain a parallel intrastate quarantine for the beetle, if applicable
- Participate as frequently as possible in the biweekly conference calls during the beetle season in order to provide current update on program activities within the State
- Provide information on the current beetle distribution within the State based on current survey data

Monitoring and Reporting

The Japanese beetle (JB) Web site was developed for personnel involved in monitoring and reporting JP at airports located in infested areas of the eastern and western United States. The JB Web site provides weekly phenology maps displaying the initial emergence of adult JB using a degree day model. The phenology maps can serve as a guide for timing trap establishment and initiating monitoring activities. The JB Web site allows for easy data reporting and visualizing JB activity.

Chapter

3

Airport Monitoring and Classification

Contents

Goal of Airport Monitoring

The goal of airport monitoring is to assess the three major factors that will indicate the level of risk and the likelihood that JB will enter aircraft:

- Amount of JB activity near aircraft operating areas
- Level of the JB population
- Risk of JB entry into aircraft and transport to JB-free areas

Remember that aircraft operating areas include passenger boarding, luggage handling, and/or cargo loading areas.

The information gathered when monitoring will allow the subsequent classification of the entire airport or a part of the airport. Part of an airport may represent only one or two flights or airlines leaving daily from a high-risk area and arriving into a protected State.

Goal of Airport Classification

The goal of airport classification is to classify airports in the JB-infested area into either a regulated or nonregulated status. This classification into regulated and nonregulated airports is based on the threat the individual airports pose to the JB-free areas. In the JB-free area, nine western States have protected status, they are Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Washington.

Regulated airports in the JB-infested areas under quarantine should be those airports where the beetle is likely to enter aircraft and be transported to JB-free areas. APHIS will issue an Emergency Action Notification (EAN) to inform airport personnel when the airport is to be regulated. APHIS inspectors can cancel an EAN to return a regulated airport to nonregulated status.

Nonregulated airports in the JB-infested areas under quarantine should be those airports where the beetle is not likely to enter aircraft and be transported to JB-free areas.

Airport Monitoring in Infested Areas

The State Plant Health Director (SPHD), an APHIS employee, is responsible for arranging a monitoring survey to determine the risk status of an airport. A minimal level of monitoring requires visual surveys of aircraft-operating areas in airports that were regulated in any of the last three years.

In JB-infested areas, authorized inspectors (either PPQ officers or inspectors authorized by APHIS–PPQ) will survey under the direction of the SPHD to determine the potential risk at each airport. Monitoring surveys will determine the beetle population level and the threat of entry into aircraft.

Monitoring will use one or more of the following methods:

- Trapping Adult Beetles
- Larval Surveys
- Adult Visual Surveys

Trapping Adult Beetles

Trapping adults is a valuable monitoring method that gives a population estimate at the time when transport is most likely. Within a single season, trapping adults will determine when adult emergence begins, peaks, and ends. Over several seasons, trapping adults will detect population trends within the airport.

Number of Traps

For infested airports with flights to JB-free areas, a trapping rate of four to eight traps per airport is recommended. These traps will be placed to monitor adult emergence. Upon first JB capture, these traps will be removed and placed at least one-half mile from the airport environs.

Trap Types

Dual-lure traps, containing both food and pheromone lures, are most effective in attracting adults. The trap and lure procurement database can be used to request traps and lures. Contact your regional trap and lure program manager for details.

If only a food-type lure is used, it should be PEG which is a combination of phenyl ethyl propionate, eugenol, and geraniol in a ratio of 3:7:3. Using the food-type lure alone is not recommended.

Commercially prepared, sustained-release dispensers are available to disperse the pheromone lure for 75 to 100 days. Neither trap color nor size is a factor in trapping adults. Traps are usually yellow; however, white and green traps are equally effective.

Trap Placement

Trap placement is critical. Place traps to meet the following criteria:

- All-day sun (or at least midday sun)—traps placed in direct sunlight are twice as effective as those placed in the shade

- Close proximity to host plants (but not immediate proximity). Trap placement should be three to seven yards from favored trees, shrubs, and vines. Do not place traps immediately adjacent to tall, bushy plants or other objects that could interfere with dissemination of the lure. *See* Preferred Japanese Beetle Hosts on page 2-3 for a list of common names of host plants.
- Place about 22 inches above ground level—traps baited with a pheromone attractant and PEG were most effective at 22 inches above ground level.

NOTICE

When placing traps, **never** put traps closer than one mile to aircraft-operating areas. Above all, **never** put traps only near aircraft-operating areas. Traps near aircraft-operating areas will only attract beetles into the aircraft-operating areas, creating entry problems where none existed.

Trap Examination

Periodically examine traps to ascertain traps are completely operative. Remove contents of receptacles and clean the trap. Discard all insects other than the JB; save JB suspects for identification. Never reuse traps without inspecting for the presence of dead or live beetles. In areas of high populations, traps may need to be inspected more often, up to each day if necessary.

NOTICE

If the airport is in a State involved in invasive species surveys, consider examining the traps for nontarget exotic species. If an airport receives flights from around the world, an additional examination for exotic species may be a valuable part of an exotic species detection program.

At the end of the monitoring (or control) season, store traps in a dry location. They may be stored either assembled or disassembled. Thoroughly clean traps before storage.

Trap Removal

When a high-risk situation exists at an airport (when beetles are likely to enter aircraft in an aircraft-operating area), remove traps following the first detection.

When a low-risk situation exists at an airport (beetles are not likely to enter aircraft in an aircraft-operating area), traps can remain in place throughout the monitoring period. In this situation, traps can be checked less frequently depending on the weather.

Larval Surveys

Larval surveys are most often done to determine the most common life stage and the population level when traps for monitoring adults are not placed.

Because of the time and effort required, larval surveys are usually done:

- when a high-level population is likely and an insecticide treatment may be necessary; and/or
- when traps for monitoring adults are not placed

If turf damage indicates a large number of grubs in the soil, conduct a larval survey. During the spring and fall, grubs damage turf leaving the surface soft and spongy as the fibrous roots are consumed. Severely damaged turf, even though still green, can usually be rolled back like a rug. Other scarabaeid grubs produce damage similar to the damage caused by JB; therefore, identification of the damaging grubs is necessary.

The method of identification must be rapid and accurate in order to estimate population density and identify larvae that need control and those that do not. Refer to Table 3-1 for a sequential sampling plan. The required number of samples is determined by the cumulative total from the initial samples.

The sequential sampling plan in Table 3-1 is for 2nd instar populations. According to Vittum[1] (1986), a population will be almost completely 2nd instar around the last day of August in New England (about 1 month after the midpoint of the flight period). Sampling was done in August in New Jersey.[2]

Each sample consists of one square foot of turf collected and examined for larvae to a depth of 4 to 5 inches. The time required to examine one sample is brief, around 15 minutes.

Control of the 2nd instars is recommended when the average larval count is greater than three per square foot; control is **not** required when the count is less than one per square foot.

1 Vittum, PJ. 1986. Biology of the Japanese Beetle (Coleoptera: Scarabaeidae) in Eastern Massachusetts. Journal of Economic Entomology 79: 387-391.

2 Additional information can be found in the following publication: Ng, Y. S., Trout, J. R., and Ahmad, S. 1983. Sequential sampling plans for larval populations of the Japanese beetle (Coleoptera: Scarabaeidae) in turfgrass. J. Econ. Entomol. 76:251–53.

Using Table 3-1, discontinue sampling when the cumulative number of larvae falls within the category of "Treatment Not Required" or "Treatment Required."

Table 3-1 Sequential Sampling Table for Treatment Decisions on 2nd Instars in Turfgrass

CUMULATIVE NUMBER OF LARVAE				
	10% Error Rate		5% Error Rate	
No. of Samples	Treatment Not Required	Treatment Required	Treatment Not Required	Treatment Required
1	[1]	6	[1]	7
2	[1]	8	[1]	9
3	1	9	[1]	11
4	3	11	1	13
5	4	13	3	14
6	6	15	5	16
7	8	16	6	18
8	10	18	8	20
9	11	20	10	21
10	13	22	12	23
11	15	23	13	25
12	16	25	15	26
13	18	27	17	28
14	20	28	18	30
15	22	30	20	32
16	23	32	22	33
17	25	34	24	35
18	27	35	25	37
19	29	37	27	39
20	30	39	29	40

1 Decision cannot be reached.

Adult Visual Surveys

Adult visual surveys are commonly used to determine the level of the beetle population in aircraft-operating areas. A minimal level of monitoring requires visual surveys of aircraft-operating areas in airports that were regulated in any of the last three years.

To coordinate visual surveys with the most optimum periods, use traps to detect the start of the emergence and the peak emergence period. As an alternative, use surveys of various preferred hosts.

Peak Emergence Period

Adult beetles begin to emerge in May in southern localities, later in northern localities. Peak adult activity occurs four to six weeks after emergence starts.

Frequency of Visual Surveys

During the peak emergence period, perform visual surveys three to five times weekly, depending on the weather.

Duration of the Survey

Each visual survey at an aircraft operating area should last at least 15 minutes and should be conducted under conditions favorable for beetle activity.

Time, Humidity, and Temperature

Adults fly only in the daytime. Critical times to observe beetles associated with aircraft would be during daylight hours on warm, sunny, and calm days when beetles are active. When air temperatures reach the peak for the day, usually between 1:00 p.m. and 2:00 p.m., peak captures occur.

Trapping has shown that 45 percent of beetle activity occurs between 10:00 a.m. and 1:00 p.m. Although captures were spread out over most of the afternoon, peak captures occurred between 1:00 p.m. and 2:00 p.m., when air temperatures were at their peak for the day. Fewer than 5 percent of the beetles were captured after 5:00 p.m. or before 9:00 a.m.

Beetles fly on clear days when the temperature reaches about 70 °F and relative humidity is below 60%. Often, but not always, temperatures above 95 °F or relative humidity above 60% stop or reduce flights of the adults. (In Louisville, KY, flights did occur when the temperature was near 100 °F and the relative humidity was 70%.) When Japonilure was used alone, about 70% of the captures occurred between 10:00 a.m. and 1:00 p.m. and captures peaked at about noon.

Rain and the Visual Survey

Adult emergence can be especially heavy the day following a rainstorm. If possible, conduct visual surveys on the days following a rainstorm.

Detections on Aircraft

Airport monitoring using traps, larval surveys, and/or visual surveys may not detect a high-risk situation. A single interception at an airport in a JB-free area is an indication of a potentially high-risk situation at the originating airport. Therefore, when beetles are found on aircraft in the JB-infested area and those aircraft are scheduled to go to JB-free areas, a high-risk situation probably exists.

Reporting Monitoring Information

Instead of weekly reports during the monitoring period, enter monitoring information using the National Agricultural Pest Information System (NAPIS).

Reports from Infested Areas

Enter information from JB partially-infested States into the NAPIS.

When monitoring information indicates a threatening condition, weekly reports are necessary. Even if a threatening condition is not present, weekly reports are desirable for the exchange of information on emergence and population levels.

NOTICE

At the first find of a beetle infestation in a county or State, enter a New County Record or a New State Record into the NAPIS.

Reports at the End of the Season

After traps are removed for the season, information on New State Records (NSR) and New County Records (NCR) will be entered into NAPIS.

Determining Risk at Infested Airports

To determine the risk situation at a JB-infested airport, follow the steps below.

Step 1: Determine if the airport is at risk.

Use the following risk criteria to determine if the airport is at risk:

- Population level
- Aircraft operating areas
- Detections in protected states

JB population level

Is the beetle population at a high-risk level? In other words, is the population high enough to place aircraft or cargo at risk? Are host plants growing in close proximity to either the airport, terminal, or hangar? High-risk aircraft is defined as:

- Aircraft scheduled to fly to a protected State; and
- Aircraft is either exposed to infestation by JB or is carrying cargo exposed to infestation

The detection of beetles at an origin airport or in the immediate vicinity is not in itself sufficient reason to declare the airport under quarantine, nor is treated as a high-risk regulated airport.

Beetles must be closely associated with aircraft that are loading, unloading, or parking during critical times. In addition, the beetles must present a danger of gaining entry to the interior of aircraft, either by direct flight or by hitchhiking on passengers' clothing or cargo.

Aircraft Operating Areas

Consider the second criterion: are aircraft in aircraft operating areas or cargo likely to become infested? Generally, high-level beetle populations alone are not sufficient to cause an airport (or part of an airport) to be regulated. A high-level population may be isolated from the aircraft operating area.

NOTICE

A high-level population with a high probability of aircraft or cargo infestation will necessitate airport regulation.

When medium or high adult populations are present at or adjacent to aircraft operating areas, a high-risk situation is usually readily apparent. Light populations may be more difficult to evaluate. Regardless of beetle numbers, entry into an aircraft is likely if beetles fly near or rest on the aircraft's exterior surfaces, boarding ladders, or similar items. This situation should be considered high risk. If a 15-minute visual survey, done under optimal conditions around an aircraft-operating area, finds two or more live adults, aircraft infestation is highly likely.

Detections in Protected States

Consider the third criterion: are infested aircraft arriving in the protected States? A single beetle interception in any protected State (or in any JB-free area) indicates a potentially high-risk situation at the originating airport or at a previous stopover airport (or airports); therefore, regulation at a high-risk infested airport should be considered. *See* Monitoring and Managing Airports in the Protected States on page 3-14 for information on responding to a detection in the States.

Step 2: Determine Which Specific Areas, Carriers, Aircraft, and Containers are at Risk

Use the risk criteria in Step 1 to determine the risk from various factors:

- aircraft at high-risk times aircraft at low-risk times
- carriers
- containers stored outdoors
- containers stored indoors
- individual aircraft operating areas
- various other factors.

If a 15-minute visual survey done under optimal conditions around an aircraft-operating area finds two or more live adults, aircraft infestation is highly likely.

Step 3: Evaluate Mitigating Measures

If one or more high-risk factors have been identified, evaluate all mitigating measures that, either alone or in combination, would reduce each high-risk factor and produce a low-risk situation. Examples of mitigating measures are:

- Keeping all at-risk aircraft closed whenever possible
- Moving at-risk aircraft and cargo operations to a low-risk part of the airport
- Reducing JB populations in the airport and in surrounding areas
- Rescheduling aircraft loading and flight times to low-risk times
- Using excluders whenever an at-risk aircraft is opened

These examples and other mitigating measures are discussed in detail in Control Measures on page 4-1.

Prompt application of one or more mitigating measures may allow an airport to remain unregulated.

Step 4: Complete an Emergency Action Notification (EAN) if Necessary

If an airport or a carrier needs to be regulated to prevent the beetles being transported to the protected States, complete an EAN. *See* Using the Emergency Action Notification and Other Activities on page 3-11 for more information on the EAN and other required activities.

Using the Risk Criteria for Decision Making

Cooperating with State Department of Agriculture personnel, the State Plant Health Director (SPHD) will review the situation at the airport using an evaluation based on the three criteria. The SPHD can decide to regulate all or part of the airport.

Potential High-Risk Airports

PPQ officers should determine the flight numbers and airlines of high-risk aircraft at airports expected to become high risk. High-risk aircraft are aircraft that fly to the protected States; these aircraft may be exposed to infestation or may carry cargo exposed to infestation. High-risk aircraft may require safeguarding and/or treatment if a high-risk population of JB develops. High-risk aircraft depart to the JB-free areas during the hours of greatest beetle activity, usually between 7:00 a.m. and 8:00 p.m.

NOTICE

High-risk aircraft include any aircraft with a destination anywhere in the protected States; even if the aircraft has intermediate stops in other airports along the way to the destination in the protected States, the aircraft is still considered high risk.

Before control procedures are needed, train airline and airport personnel in control procedures. Coordinate all training with the state Plant Regulatory Official (SPRO). Know in advance how to apply all Federal and State pesticide regulations.

NOTICE

Obtain flight information for potential high-risk aircraft at beetle emergence.

Using the Emergency Action Notification and Other Activities

If aircraft going to the protected States are likely to be infested, the JB National Operations Manager (NOM), the SPHD or a designee, may designate any airport within a quarantined State as a regulated airport. The distinct possibility that JB-infested aircraft are likely to spread the beetle to the protected States justifies this regulation.

Issuing the Emergency Action Notification (EAN)

After determining that an airport is high risk and must be regulated, the SPHD (or a designee) will immediately complete and issue an Emergency Action Notification (EAN) (PPQ Form 523) to the following individuals:

- Official in charge of the airport
- Officials in charge of the airlines sending aircraft during daylight hours to the protected States

The NOM will inform the program staff through updates that list regulated and deregulated airports.

Regulated Airport Report

When an airport is regulated, the NOM of the program will inform all interested parties by circulating a report similar to the one in Table 3-2 by fax or email.

Table 3-2 Regulated Airport Report

Name of Airport:	
Date regulated/time:	Date—00:00 hours
Date deregulated/time:	Date—00:00 hours

SPHDs responsible for regulated airports will inform their Associate Executive Director through the NOM of all actions taken. If additional actions are necessary, the SPHDs will notify the NOM.

High-Risk Flights

When an airport is regulated, the SPHD (or a designee) must obtain schedules listing all high-risk flights. The high-risk flights are usually those departing during daylight hours (between 7:00 a.m. and 8:00 p.m.) for the protected States; however, high-risk flights may depart at other times. The SPHD (or a designee) will then distribute these schedules to APHIS personnel and SPROs in the protected States. The SPHD will also distribute schedules of these flights to APHIS personnel and SPROs in infested States, particularly if the flights originated in another infested State.

Unscheduled Flights

When flights are unscheduled, personnel at the originating airport will notify personnel at the destination airport at least one hour before departure of the flight. This procedure for unscheduled flights is for both commercial and military flights. The SPHD may omit the one-hour notification requirement on a case-by-case basis. For detailed information see CFR 301.48-4(d).

Arranging Control Measures

To protect JB-free areas, the SPHD must implement control measures at the regulated airports. These control measures may change the airport from regulated to nonregulated. Control measures may be:

- mitigation procedures, such as rescheduling aircraft loading and flight times to low-risk times, and loading aircraft in a part of the airport where the JB population is low, and
- treatments, such as treating host plants.

Once an airport is regulated, the SPHD will inform airline officials that control measures, which may or may not be treatments, must start as soon as possible.

The SPHD will inform the airline officials that PPQ personnel will train the airline personnel for aircraft treatments at the regulated airport, if needed.

When airport regulation is likely, the SPHD must contact airline personnel before the start of control measures to discuss the control procedures and possible training needs. More information on control measures is located in Control Measures on page 4-1.

Failure to Comply With Emergency Action Notification

An airport or airline that does not comply with the requirements of an EAN is subject to a violation notice (PPQ Form 518). The officer may choose to issue the PPQ 518 if the airport or airline does not take corrective action.

Military Cooperation

Authorization for military cooperation is contained in a Defense Transportation Regulation (DTR 4500.9-R, Part II, Chapter 208 (Packaging and Handling) and Armed Forces Pest Management Board Technical Guide 31, Guide for Agricultural and Public Health Preparation of Military Gear and Equipment.

If a SPHD has any difficulty in obtaining cooperation, the SPHD will call the Commanding Officer's attention to the provisions of these Department of Defense publications.

Canceling the Emergency Action Notification

APHIS personnel may cancel the regulated status of an airport; this cancellation returns the airport to nonregulated status.

Terminating the High-Risk Situation

Authorized inspectors, PPQ officers, and other personnel will keep the SPHD informed of beetle activity around the airport and in aircraft-operating areas. When the SPHD determines that a high-risk situation no longer exists, the SPHD can change the status of the regulated airport.

Revoke the Emergency Action Notification

When the high-risk situation no longer exists, the SPHD will complete Block 16 of the EAN, Action Taken. For example, the action taken may be application of treatments or monitoring to detect a fall in the threatening population. Copies of the updated EAN will go to affected airline and airport officials.

The SPHD responsible for the recently deregulated airport will inform the NOM of the EAN revocation. Using email, the NOM will notify the JB National Policy Manager (NPM).

Using email, the NOM will inform the program staff through updates that list regulated and deregulated airports. Updates will also be published on the JB Program web site.

Reporting the Deregulation of an Airport

When an airport is deregulated, the NOM (or a designee) will inform all interested parties by completing and distributing a report similar to the one in Table 3-3.

Table 3-3 Deregulation of an Airport Report

Name of Airport:	
Date regulated/time:	Date—00:00 hours
Date deregulated/time:	Date—00:00 hours

Monitoring and Managing Airports in the Protected States

To maintain a JB-free status, airports in the protected States are monitored. The following methods, alone or in combination, are often used to monitor airports in the protected States, particularly when the airports have repeated interceptions.

- Responding to Interceptions from Unregulated Airports or Carriers
- Responding to Interceptions from Regulated Airports
- Inspecting High-Risk Flights from Regulated Airports

Selecting the appropriate monitoring method or methods will be done by the SPHD or by the State Plant Regulatory Official (SPRO) (or by a cooperative decision). The resources available will determine the method or methods to be used.

Personnel at airports in the protected States will arrange surveys of aircraft originating in the JB-infested areas, particularly those aircraft originating from regulated airports.

Because of the use of treatments, interception of beetles, either dead or moribund, on aircraft from regulated airports are to be expected.

If two or more live beetles are intercepted on aircraft from either regulated or unregulated airports, immediate action is required.

Using the Japanese Beetle Aircraft Inspection Record (JBAIR)

When inspecting flights from infested airports, the Japanese Beetle Aircraft Inspection Record (JBAIR) is available to collect data. A completed JBAIR will specify the total number, condition, and specific locations of beetles found on the infested aircraft.

Reports will be available for PPQ, State, and industry personnel. The reports will enable PPQ, State, and industry personnel to evaluate:

- how effective exclusion procedures are; and
- how effective pesticide treatments are.

See Japanese Beetle Aircraft Inspection Record (JBAIR) on page A-8 for an example of a JBAIR.

Responding to Interceptions from Unregulated Airports or Carriers

Interceptions of beetles on aircraft from unregulated airports or carriers is an indication that a high-risk situation probably exists and that regulation in the JB-infested area is probably necessary.

Record results of inspections on the JBAIR and enter into the IPHIS database.

When beetles are intercepted at an airport in the protected States and the origin from an infested airport is verified, the SPHD, by sending a copy of the JBAIR, will immediately notify the following individuals:

- National Operations Manager (NOM)
- SPHD and SPRO responsible for the airport from which the flight originated
- SPRO of destination airport in the protected state

Within 24 hours, the SPHD at the originating airport will determine if a high-risk situation exists by following the steps in the section, Determining Risk at Infested Airports.

After completing the determination, the SPHD responsible for the originating airport will immediately inform the SPHD responsible for the receiving airport of the actions taken (monitoring results and/or mitigating measures implemented).

If the aircraft upon which the interception was made transited two or more airports within the JB-infested States, and the origin of the beetle cannot be verified, the SPHD at the receiving airport must notify the SPHDs responsible

for all the transited airports. The SPHDs responsible for the transited airports will follow the previously mentioned steps to determine which of the transited airports are high risk.

When live beetles are found, the SPHD (or a designee) responsible for the receiving airport may take appropriate action to safeguard the receiving airport. Appropriate action may include one or more of the following actions:

- Closing the infested aircraft and treating the aircraft and/or cargo at a later destination
- Issuing an EAN
- Monitoring unloading activities
- Terminating all unloading activities
- Treating the infested aircraft and/or cargo immediately

Generally, the SPHD responsible for the receiving airport (or a designee) will issue an EAN and the aircraft will be treated.

Responding to Interceptions from Regulated Airports

Interceptions of dead or moribund beetles on aircraft from regulated airports are to be expected. Finding live beetles in aircraft from regulated airports and carriers is an indication that safeguarding procedures were not correctly followed or were not completely effective.

Record results of inspections on the JBAIR and enter into the IPHIS database.

When beetles are intercepted at an airport in the JB-free area and the origin of the beetles from a regulated airport or carrier is verified, the SPHD, by sending a copy of the JBAIR, will immediately notify the following individuals:

- National Operations Manager
- SPHD and SPRO responsible for the regulated airport or carrier

Within 24 hours, the SPHD at the originating airport will determine the effectiveness of the safeguarding procedures. In the determination, the SPHD will consider the following and similar questions:

- Are all mitigating procedures being used correctly?
- Are treatments being applied correctly?
- Are treatments effective when used correctly?
- How effective are the mitigating procedures being used?

After completing the determination, the SPHD responsible for the originating airport under quarantine or the regulated carrier will immediately inform the

SPHD responsible for the receiving airport of the actions taken (determination results and/or mitigating measures implemented).

If the aircraft upon which the interception was made transited two or more airports within the JB-infested States, and the origin of the beetle cannot be verified, the SPHD must notify the SPHDs responsible for all the transited airports. The SPHDs of the transited airports will follow the previously mentioned steps to determine which of the transited airports are high risk.

When live beetles are found, the SPHD responsible for the receiving airport (or a designee) may take all appropriate action to safeguard the receiving airport; for example the SPHD responsible for the receiving airport (or a designee) may issue an EAN and the aircraft may be treated (or retreated). (For appropriate actions, refer to Responding to Interceptions from Unregulated Airports or Carriers.)

Inspecting High-Risk Flights from Regulated Airports

When an airport is regulated, the SPHD (or designee) responsible for a destination airport in a protected State should receive schedules listing all high-risk flights, those flights departing during daylight hours for the destination airport in the protected State and likely to be infested. The SPHD responsible for a destination airport will forward this information to the cooperating agency doing the aircraft inspections.

When flights are unscheduled, personnel at the originating airport will notify personnel at the destination airport at least one hour before departure of the flight. This procedure for unscheduled flights is for both commercial and military flights. The SPHD may omit the one-hour notification requirement on a case-by-case basis. For detailed information, see CFR 301.48-4(d).

Monitoring and Managing Airports in JB-Free Areas Outside of the Protected States

This section addresses monitoring protocols at airports outside of the protected States. Trapping at these airports is optional and dependent on available resources. When a beetle is intercepted at these airports, the SPHD (or designee) or the SPRO (or by a cooperative decision) determines how they should be monitored. The available resources will determine the method or methods used.

Available Methods

The following methods, alone or in combination, can be used to conduct additional monitoring at the airports.

- Conduct random inspections of high-risk flights from regulated airports such as cargo flights
- Conduct random inspections of high-risk flights from unregulated airports within the quarantine area
- Conduct a visual survey of the area where the beetle was initially trapped
- Increase the number of traps around the area where the beetle was initially trapped

Chapter

4

Control Measures

Contents

Control Measures

The ultimate goal of airport control measures is to prevent the JB from entering aircraft going to the protected western States.

Depending on the situation, use the following methods, alone or in combination, to control beetles at infested airports:

- Exclude beetles from high-risk aircraft
- Lower the beetle population to a nonthreatening level
- Treat infested aircraft

Exclude Beetles from High-Risk Aircraft

Beetles can be excluded using the following techniques:

- Change aircraft-operating areas to areas less attractive to the beetle.
- Position aircraft in ways less attractive to the beetle.
- Safeguard cargo and baggage (for example, keeping containers closed, storing containers in enclosed areas, covering cargo containers with plastic wrap).
- Schedule flights when the beetles are not flying (or flying in reduced numbers).
- Use aircraft excluder devices to prevent beetles from entering the aircraft
- Use physical barriers, such as enclosed walkways.

Beetles often rest overnight on cargo pallets, cans (enclosed containers), and other devices for cargo handling; as a result, cargo stored outside for lengthy periods can become high risk. Therefore, use the safeguarding measures discussed in this section to prevent infestation of cargo.

Lower the Population

The following methods will lower the beetle population:

- Apply fast-acting insecticides to host plants to control adults.
- Apply insecticides to the soil to control larvae.
- Destroy host plants.
- Introduce biocontrol agents (however, control may develop slowly, if at all).
- If airport is in an agricultural area, request that farmers treat host plants during beetle season.

The beetle population may be lowered throughout the infested airport or only in a portion of the infested airport.

Initiating Control

Ideally, control will begin before a beetle population reaches a high-risk level requiring regulation; therefore, control should be both long- and short range.

Long-range control will emphasize integrated pest management (IPM) practices that will keep the beetle population below the high-risk level. Examples of long-range controls include:

- Biocontrol agents (such as the bacterium that causes milky spore disease) keeps beetle populations below the hazardous level.
- Landscape planning at the airport prevents the planting of host plants near aircraft-operating areas.

Short-range control will emphasize the quick reduction of a population at the high-risk level; examples of short-range controls include:

- Foliar treatment of hosts reduces adult population levels.
- Quick-acting soil insecticide quickly reduces a high population of grubs to a nonthreatening level.
- Removing host plants reduces adult population levels.

When designing a control program for JB, it is wise to seek advice from IPM consultants, entomologists, cooperative extension personnel, and other professionals. Carriers have hired consultants who develop IPM programs that emphasize exclusion and are suitable for specific airports.

Monitoring Results

To monitor the effectiveness of the aircraft and grounds treatments, use one or more of the following:

- Adult visual surveys
- Detections on aircraft arriving in the JB-free area
- Detections on aircraft at the infested airport
- Larval surveys
- Trapping

See Airport Monitoring and Classification on page 3-1 for details on each of these monitoring results.

Safety Procedures

Ideally, training potential applicators should start before hazardous conditions exist. To protect the health of applicators' and anyone who could be exposed, all pesticide applications must follow the recommended Federal and State labels and procedures.

For additional information and advice on safety procedures, contact the Otis Plant Protection Center:

USDA APHIS PPQ
Otis Methods Laboratory
1398 West Truck Road
Buzzards Bay, MA 02542-1329
Tel: 508-563-9303
FAX: 508-563-0903

Safety Precautions for Aircraft

- After applying insecticides, wash hands before smoking or eating; never smoke or eat while applying insecticides.
- Always wear long sleeves and pants.
- Collect empty insecticide containers; follow label directions to dispose of containers.
- If treating the passenger compartment, always delay catering until after the treatment.
- Never apply any chemical treatment in the presence of passengers, crew, or animals.
- Take precautions when applying d-phenothrin aerosols; instruct applicators to seek fresh air immediately if they feel light-headed or dizzy when applying the aerosol.

Treating Infested Aircraft

Currently, the following insecticides are approved for use on infested aircraft:

- 10% d-phenothrin
- 2% d-phenothrin + 2% permethrin (1-Shot™)

NOTICE

Before using any insecticide, read the instructions on the label.

Authorized by the *Treatment Manual* (T409-b-1), d-phenothrin is registered for use as an aerosol on aircraft in the 10% formulation (EPA registration number 10308-21.) Callington 1-Shot™, 2% d-phenothrin + 2% permethrin (EPA number 83795-1) is authorized as T409-b-3. Usually, application of these insecticides is either to passenger-carrying aircraft (when unoccupied) or loaded cargo aircraft (when unoccupied).

⚠ WARNING

d-phenothrin is for use by or under the direction of Federal/State personnel. Only personnel trained by the USDA can apply this insecticide. If trained by the USDA, airline personnel can apply this insecticide.

These insecticides are also used if, upon inspection of arriving aircraft, two or more live JB are found in a protected State.

Refer to the *Treatment Manual* Chapter 2-12 Aerosols and Micronized Dusts, and T409-b-1 and T409-b-3 for application information.

Timing an Insecticide Application

Under the following conditions, adult beetles usually do not fly; therefore, the treatment of aircraft may not be necessary:

- Cool days below 73 °F (23 °C)
- Hot days above 104 °F (40 °C)
- Rainy days
- When arriving and leaving during the same night
- Windy days

However, because adult beetles sometimes fly when the temperature is high, when the temperature is low, or when the day is windy, treatment may be necessary. Similarly, on rainy days, beetles may occasionally infest cargo stored outside. Therefore, based on a case-by-case evaluation of the situation, the SPHD (or a designee) will decide whether to treat at-risk aircraft or cargo.

PPQ Form 250—Aircraft Clearance or Safeguard Order

If requested by personnel at the destination airport, issue a PPQ Form 250—Aircraft Clearance or Safeguard Order on page A-7 to the pilot after treating an aircraft. However, if personnel at the destination airport do not request an Aircraft Clearance or Safeguard Order, do not issue the document.

Exclusion Devices/Excluders

In certain situations, exclusion devices called “excluders” will prevent the entry of beetles into aircraft. Excluders are virtually enclosed compartments with an open side designed to fit snugly against the surface of an aircraft. Hatches may be opened within the excluder to permit loading and unloading.

Use exclusion devices whenever possible. Even if beetles enter the aircraft, the numbers entering will be greatly reduced.

Because beetles tend to closely follow the sunny side of a fuselage, they can often be excluded by the excluders. When the beetles encounter the excluders, they tend to drop below the open doors.

Do not use exclusion devices on aircraft parked at a regulated airport for cleaning or other purposes, which require exterior doors to remain open, until the aircraft are treated with an insecticide.

When exclusion devices are used, protect all openings in the aircraft from 7:00 a.m. to 8:00 p.m.

Passenger Compartments

Examples of exclusion devices used for passenger compartments are enclosed walkways and bus-type vehicles for passenger loading and unloading. These exclusion devices fit tightly against the aircraft.

When exclusion devices are used for passenger boarding, after the passengers have boarded, thoroughly inspect the passenger entrance to within 10 feet of the openings. Within the aircraft, pay special attention to the floor and window sills. Remove any beetles found from the aircraft.

Cargo Areas

Effective exclusion devices have been developed for cargo aircraft by carriers faced with a beetle entry problem. These excluders are now the standard for handling cargo aircraft at high-risk airports. Refer to Figure 4-1 for an example of a cargo exclusion device.

Figure 4-1 Example of a Cargo Exclusion Device

Selecting Aircraft Operating Areas

Certain aircraft-operating areas are much more likely to attract beetles than other areas. Avoid the following aircraft operating areas:

- Close to feeding hosts for the adult beetles
- Close to moist, grassy areas on light-textured soil favorable for egg-laying and larval development
- Possessing a favored sunny exposure

If areas attractive to beetles are used for aircraft operations, especially during the hours of greatest activity, aircraft entries are likely.

If possible, use loading areas less attractive to beetles. Characteristics of less attractive, aircraft operating areas are as follows:

- Devoid of hosts
- Isolated from areas favorable for egg laying and larval development

- Shaded rather than sunny

Positioning Aircraft

If possible, position aircraft so the aircraft, or at least its doors, are in the shade. Beetles prefer sunny locations and are more likely to enter if doors and hatches are exposed to the sun.

Stand-By Aircraft

The stand-by aircraft that replace aircraft on scheduled flights must be JB-free. “Tail-swapping” is the term for the replacement of one aircraft by another. When “tail-swapping” occurs, the stand-by aircraft may require treatment and safeguarding so it is beetle free.

Treatments for Airport Grounds

Airport grounds are treated for either larvae (grubs) or adults. Approved treatments include chemical and biological control, in addition to removal or reduction of host plants.

Treatment for Larvae

Chemical Control

The major advantage of treating larvae (grubs) in the soil by fast-acting chemicals is the destruction of the grubs before they become adult beetles. The major disadvantage is the considerable expense for materials and labor. Contact your local agricultural extension service for recommended chemicals.

Biological Control

The major advantage of biological control is the possibility of long-term reduction of the population to a nonthreatening level. The major disadvantages are: 1) long-term control may be slowly developed; and 2) significant long-term control may not develop.

Refer to Table 4-1 for a list of organisms used for biocontrol of the larvae. The success rate of control varies.

Table 4-1 Organisms Used for Biocontrol of JB

Scientific Name	Description
Bacillus popilliae	Bacterium-causing milky spore disease
B. thuringiensis tenebrionis (Btt)	Bt strain for the JB grub
Heterorhabditis bacteriophora	Nematode effective against JB grubs
Steinernema glaseri	Nematode effective against JB grubs
Tiphia vernalis	Small wasp parasitic on the JB grub
Isocheta aldrichi	Tachinid fly, an internal parasitoid of the adult JB

Biocontrol agents against the larvae can be used in conjunction with those used against the adults.

Treatment for Adults

Chemical Control

The major advantage of treating the adults by fast-acting chemicals is a quick reduction in the adult population. The major disadvantage is that often the adults destroyed are quickly replaced by adults emerging after the effective period of the treatment. Contact your local agricultural extension service for recommended chemicals.

Biological Control

The Tachinid fly, *Istocheta aldrichi*, is a solitary internal parasitoid of the adult beetle. The female flies deposit up to 100 eggs during a period of about 2 weeks. Usually laid upon the thorax of the female beetles, the eggs hatch into maggots which bore directly into the bodies of the hosts killing the beetles. In ideal situations, this fly can suppress beetle populations before the beetles can reproduce.

Removal/Reduction of Host Plants

The major advantages of removing host plants are: 1) a quick reduction in the population threatening aircraft; and 2) long-term control. The major disadvantages are the aesthetic loss and environmental damage.

Chapter

5

Compliance Agreements and Management

Contents

Definition of a Compliance Agreement

A Compliance Agreement (CA) is a written agreement between APHIS and an individual in a business engaged in growing, handling, or moving regulated articles. In a CA for the JB, an individual will agree to comply with the provisions in the Code of Federal Regulations that deal with the JB (7 CFR 301.48). Compliance with these provisions will reduce the risk of JB introduction into the Protected States.

The CA can be used for many purposes. For example, if aircraft are likely to be JB-infested, they can be considered regulated articles. As "regulated articles," aircraft likely to be infested are subject to regulation and, if needed, treatment. As another example, CAs can be used to monitor the JB status of airports receiving infested flights. These and other examples are discussed on the following pages.

NOTICE

Instructions for completing the CA (PPQ Form 519) can be found in the Manual for Agricultural Clearance (MAC).

Using the Compliance Agreement for Monitoring Receiving Airports

Airport monitoring at an airport receiving at-risk flights, possibly infested flights, will determine if a high-risk JB level exists at an airport or a portion of an airport. Under these circumstances, a CA is useful when establishing the goals and responsibilities of an airport monitoring program.

- How will the airport monitoring be done to determine if an infestation exists?
- Is the airport presently infested?
- When will the airport monitoring start?
- Who will do the work?

Using the Compliance Agreement for Monitoring Originating Airports

Airport monitoring at an airport from which at-risk flights originate will determine if a high-risk JB level exists at an airport or a portion of an airport. A CA is useful when establishing the goals and responsibilities of an airport-monitoring program.

- Are infested flights leaving the airport?
- How will the airport monitoring be done?
- When will airport monitoring start and stop?
- Who will do the work?

The following statements are example of stipulations that may be included on page two of the CA:

- Aircraft may be retreated in the protected state if two or more live beetles are discovered.
- All aircraft must be treated no more than one hour prior to loading.
- All areas around doors, hatches, and other openings must be inspected prior to removing exclusion devices; all doors and hatches must be closed immediately after the exclusion devices are removed.
- All cargo containers that have not been safeguarded in a protected area must be covered with plastic such as Saran Wrap™.
- All openings of the aircraft must be safeguarded by operative exclusion equipment or other devices during the daylight hours of 7:00 a.m. to 8:00 p.m.

- All personnel must inspect their clothing for JB prior to entering the aircraft.
- Prior to and during the loading process, these covered containers must be inspected for JB.

Using the Compliance Agreement at Regulated Airports

When a high-risk JB population exists at an airport or a portion of an airport, a CA is useful to establish the goals and responsibilities at the regulated airport.

- How will aircraft be handled and/or treated?
- Will the grounds need treatment?
- If the grounds need treatment, how will the grounds be treated? When will treatments start?
- Who will do the work?

Refer to the USDA APHIS Forms Library for a fillable PPQ Form 519.

Operating Under a Compliance Agreement

Authorized Inspectors

Authorized inspectors can be: 1) any employee of APHIS; or 2) an individual authorized by APHIS to enforce the JB quarantine.

Access for Authorized Inspectors

An individual who enters into a CA (and employees or agents of that person) must allow authorized inspectors access to all areas where regulated material are handled. These areas include the following:

- Aircraft-operating areas at airports in JB-free areas where unloading and servicing (and possibly treatment) occur
- Aircraft-operating areas at regulated airports where loading, unloading, servicing, and/or treatment of aircraft occur
- Secured areas of airports

To allow authorized inspectors access to secured areas, procedures should be in place as soon as possible.

NOTICE

Because gaining access to secured areas may take some time, preparation to obtain needed clearance should start as soon as possible; in fact, the State Plant Health Director (SPHD) should ensure that employees obtain clearance for potential inspections before the need arises.

Recordkeeping and the Compliance Agreement

Any individual who enters into a CA (and employees or agents of that person) must allow authorized inspectors access to all records regarding treatment.

Applicators treating aircraft or supervising aircraft treatments must keep their records for two years. If authorized inspectors request records for review, the records must be presented.

NOTICE

If a CA is not in place (because of a refusal to sign or any other cause), an Emergency Action Notice (EAN) will be used, when needed, for regulatory purposes.

Legal Recourse for Noncompliance

Title IV of the Agriculture Risk Protection Act of 2000, known as the Plant Protection Act (PPA), provides the authority to prohibit the interstate movement of plant pests (Section 411, Section 412). Also, the PPA provides the authority to increase the civil penalty to a maximum of $250,000 per violation for businesses (Section 424); in a single adjudication, there is a $500,000 cap for civil penalties (Section 424).

Canceling a Compliance Agreement

If authorized inspectors determine that compliance was not satisfactory, they may cancel CAs. The cancellation may be written or oral. If the cancellation is oral, within 20 days of cancellation the Authorized Inspector will write a letter that: 1) confirms the oral cancellation; and 2) states the reasons for the cancellation.

Appealing a Compliance Agreement

Within 10 days after receiving written notification of a cancellation, any person whose CA has been canceled may appeal the decision by writing to the APHIS Administrator. The appeal must state all facts and reasons showing the CA was wrongfully canceled. The APHIS Administrator will adopt rules of practice for a hearing to resolve the conflict.

As promptly as circumstances allow, an appeal will be granted or denied in writing. The reasons for the decision will be stated.

If canceled, the CA will remain canceled pending decision of the appeal.

Appendix

A

Appendix A

Forms

Contents

PPQ Form 519—Compliance Agreement

Refer to the USDA APHIS forms library for a fillable copy of the form. Refer to Figure A-1 for an example of a completed form. Examples of stipulations are in Figure A-2 and Figure A-3.

FORM APPROVED
OMB NUMBER 0579-0054

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

COMPLIANCE AGREEMENT

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0579-0054. The time required to complete this information collection is estimated to average 1.25 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

1. NAME AND MAILING ADDRESS OF PERSON OR FIRM
JB Airways, Inc. (John Beetle)
245 Airport Drive
Wilmington, Ohio 45177

2. LOCATION
Same, Clinton County
(937) 302-8245
jbeetle@jbairlines.com

3. REGULATED ARTICLE(S)
Japanese Beetle

4. APPLICABLE FEDERAL QUARANTINE(S) OR REGULATIONS
Title 7, Code of Federal Regulations, Part 301.48. (Domestic Quarantine Notices-Japanese Beetle) and under the Plant Protection Act (PPA (AHPA) 7 USC et. seq. and/or the Animal Health Protection Act 7 U.S. C 8301 et.seq.

5. *I/We agree to the following:*

See attached Stipulations

6. SIGNATURE

7. TITLE
Ramp Manager

8. DATE SIGNED
June 24, 2010

The affixing of the signatures below will validate this agreement which shall remain in effect until canceled, but may be revised as necessary or revoked for noncompliance.

9. AGREEMENT NO.
OH-Wilmington-JBA-5

10. DATE OF AGREEMENT
June 24, 2010

11. PPQ OFFICIAL *(Name and Title)*
David L. Renz, PHSS/PPQ Officer (937) 383-3106

12. ADDRESS
USDA/APHIS/PPQ
1435 Rombach Ave, STE 5
Wilmington, Ohio 45177

13. SIGNATURE

14. STATE AGENCY OFFICIAL *(Name and Title)*
Dan Kenny, Agriculture Inspection Manager (614) 728-6400

15. ADDRESS
Ohio Department of Agriculture
8995 E. Main Street, Bldg. 2
Reynoldsburg, Ohio 43068

16. SIGNATURE

PPQ FORM 519
(FEB 2002)

Figure A-1 Example of Completed PPQ Form 519—Compliance Agreement

UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE PLANT PROTECTION AND QUARNATINE **COMPLIANCE AGREEMENT FOR:** **JB AIRWAYS, INC.**	**STIPULATIONS** **FOR JAPANESE BEETLE (2 PAGES)**

STIPULATIONS

A. Keep all doors and cargo openings closed on regulated flights AT ALL TIMES when not in use. All doors and cargo openings on non-regulated flights should also remain closed when not actively being used.

B. Keep cockpit windows closed at all times when aircraft is on ground.

C. Daily procedures are that during the off-load, all personnel are to catch and destroy all beetles that enter the aircraft. After the off-load is complete all doors are shut. At this time the swatters lift all locks and look for any beetles that may be on board.

D. The next step is to treat the entire aircraft with an approved PPQ pesticide. All doors remain shut for a period of not less than 10 minutes after the spraying procedures are completed. All Ramp Representatives are required to verify that the flight has been sprayed and is ready to go before any on-load procedures can be started.

E. Excluders will be used on all regulated aircraft as directed by USDA-APHIS-PPQ.

F. All excluders will be inspected prior to docking to aircraft. Remove and destroy all beetles found.

Please see Attachment for EXCLUDER TEAM RESPONSIBILITIES

G. All empty cans must be inspected for beetles BEFORE being loaded with cargo; all beetles must be removed.

H. Ball-mat area must be kept clean and free of litter; either by vacuuming or removal by Excluder Team. Personnel are equipped with 3-cell flashlights to inspect this area for Beetles.

I. After the on-load is complete, the door is closed to the point of about 12 inches. During this closing process, the bottom door seal is monitored for any beetles that may have fallen into this area. The entire area around the

Figure A-2 Example of Completed PPQ Form 519—Compliance Agreement Stipulations

door is then sprayed with the insecticide d-phenothrin, for added protection. After this, the door is closed completely while monitoring the door for bugs.

J. As the main cargo door is being closed, two Excluder Team members must be as close as possible to the door to prevent beetles from entering---this is the highest risk time frame of the entire process. It is imperative that the cargo doors be closed AS QUICKLY AS POSSIBLE once unload is complete.

K. All non-protected cargo holds and door openings will be monitored by Exclusion Team personnel AT ALL TIMES that they are opened; from block time to take-off.

L. All cans and pallets must be covered with plastic as directed by USDA-APHIS-PPQ.

M. All cans must be inspected immediately BEFORE and AFTER entering the excluder.

N. All personnel boarding the aircraft must be inspected for beetles attached to clothing PRIOR to entering the aircraft. Remove and destroy all beetles.

O. Immediately before aircraft departure, thoroughly inspect cockpit and galley area. Remove and destroy all Japanese Beetles.

P. Complete "Japanese Beetle Activity Record".

Q. If regularly scheduled aircraft are replaced with an alternate aircraft, it must be inspected, and all Japanese beetles must be removed. Also, all treatment and safeguard requirements applicable to the regularly scheduled aircraft must be implemented.

R. Aircraft treatment records must be maintained for 2 years.

S. Failure to comply with the Japanese Beetle Regulations and/or provisions of this Compliance Agreement may result in cancellation of this Compliance Agreement and/or assessment of civil penalties.

T. For more information, contact your local USDA-APHIS-PPQ offices:

For updates to the Japanese Beetle Manual
http//www.aphis.usad.gov/ppq/manuals/domestic/JBChapters.htm

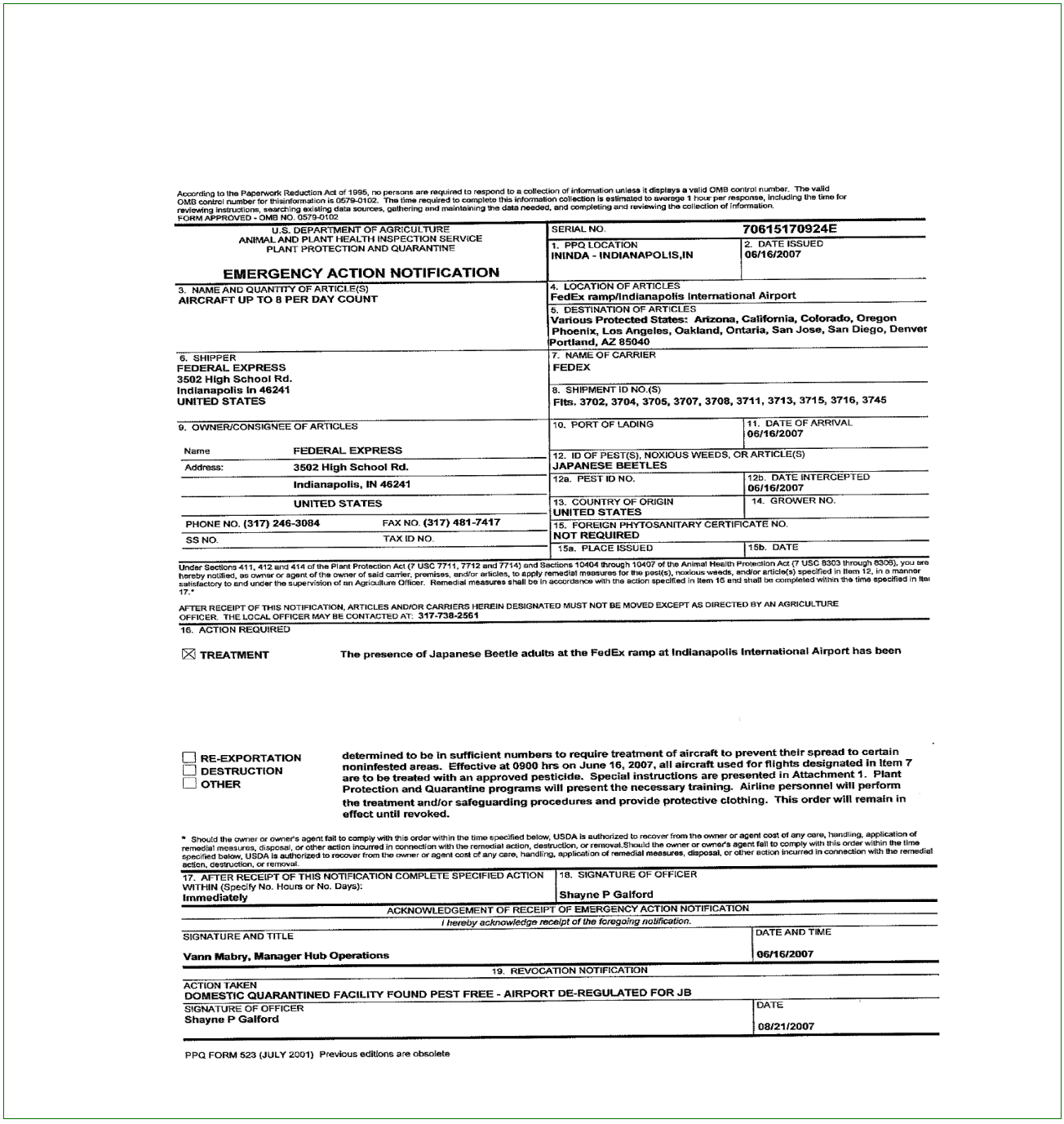
Figure A-3 Example of Completed PPQ Form 519—Compliance Agreement Stipulations

PPQ Form 523—Emergency Action Notification

Use PPQ Form 523 (EAN) when either of the following conditions occur:

- Condition 1: When a JB-infested aircraft is intercepted at an airport in the JB-free States; or
- Condition 2: When aircraft leaving an airport in the JB-infested area are likely to be JB infested

When the first condition occurs, use the EAN to obtain treatment of the infested aircraft. When the second condition occurs, use the EAN to regulate the airport. Refer to the USDA APHIS forms library for a fillable copy of the form. Refer to Figure A-4 for an example of a completed form.



According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for thisinformation is 0579-0102. The time required to complete this information collection is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.
FORM APPROVED - OMB NO. 0579-0102

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

EMERGENCY ACTION NOTIFICATION

SERIAL NO. **70615170924E**

1. PPQ LOCATION: **ININDA - INDIANAPOLIS,IN**
2. DATE ISSUED: **06/16/2007**

3. NAME AND QUANTITY OF ARTICLE(S): **AIRCRAFT UP TO 8 PER DAY COUNT**

4. LOCATION OF ARTICLES: **FedEx ramp/Indianapolis International Airport**

5. DESTINATION OF ARTICLES: **Various Protected States: Arizona, California, Colorado, Oregon Phoenix, Los Angeles, Oakland, Ontaria, San Jose, San Diego, Denver Portland, AZ 85040**

6. SHIPPER
FEDERAL EXPRESS
3502 High School Rd.
Indianapolis In 46241
UNITED STATES

7. NAME OF CARRIER: **FEDEX**

8. SHIPMENT ID NO.(S): **Flts. 3702, 3704, 3705, 3707, 3708, 3711, 3713, 3715, 3716, 3745**

9. OWNER/CONSIGNEE OF ARTICLES

Name: **FEDERAL EXPRESS**
Address: **3502 High School Rd.**
Indianapolis, IN 46241
UNITED STATES
PHONE NO. **(317) 246-3084** FAX NO. **(317) 481-7417**
SS NO. TAX ID NO.

10. PORT OF LADING
11. DATE OF ARRIVAL: **06/16/2007**

12. ID OF PEST(S), NOXIOUS WEEDS, OR ARTICLE(S): **JAPANESE BEETLES**

12a. PEST ID NO.
12b. DATE INTERCEPTED: **06/16/2007**

13. COUNTRY OF ORIGIN: **UNITED STATES**
14. GROWER NO.

15. FOREIGN PHYTOSANITARY CERTIFICATE NO.: **NOT REQUIRED**

15a. PLACE ISSUED
15b. DATE

Under Sections 411, 412 and 414 of the Plant Protection Act (7 USC 7711, 7712 and 7714) and Sections 10404 through 10407 of the Animal Health Protection Act (7 USC 8303 through 8306), you are hereby notified, as owner or agent of the owner of said carrier, premises, and/or articles, to apply remedial measures for the pest(s), noxious weeds, and/or article(s) specified in Item 12, in a manner satisfactory to and under the supervision of an Agriculture Officer. Remedial measures shall be in accordance with the action specified in Item 16 and shall be completed within the time specified in Ite 17.*

AFTER RECEIPT OF THIS NOTIFICATION, ARTICLES AND/OR CARRIERS HEREIN DESIGNATED MUST NOT BE MOVED EXCEPT AS DIRECTED BY AN AGRICULTURE OFFICER. THE LOCAL OFFICER MAY BE CONTACTED AT: **317-738-2561**

16. ACTION REQUIRED

☒ **TREATMENT** — **The presence of Japanese Beetle adults at the FedEx ramp at Indianapolis International Airport has been determined to be in sufficient numbers to require treatment of aircraft to prevent their spread to certain noninfested areas. Effective at 0900 hrs on June 16, 2007, all aircraft used for flights designated in Item 7 are to be treated with an approved pesticide. Special instructions are presented in Attachment 1. Plant Protection and Quarantine programs will present the necessary training. Airline personnel will perform the treatment and/or safeguarding procedures and provide protective clothing. This order will remain in effect until revoked.**

☐ **RE-EXPORTATION**
☐ **DESTRUCTION**
☐ **OTHER**

* Should the owner or owner's agent fail to comply with this order within the time specified below, USDA is authorized to recover from the owner or agent cost of any care, handling, application of remedial measures, disposal, or other action incurred in connection with the remedial action, destruction, or removal.Should the owner or owner's agent fail to comply with this order within the time specified below, USDA is authorized to recover from the owner or agent cost of any care, handling, application of remedial measures, disposal, or other action incurred in connection with the remedial action, destruction, or removal.

17. AFTER RECEIPT OF THIS NOTIFICATION COMPLETE SPECIFIED ACTION WITHIN (Specify No. Hours or No. Days): **Immediately**

18. SIGNATURE OF OFFICER: **Shayne P Galford**

ACKNOWLEDGEMENT OF RECEIPT OF EMERGENCY ACTION NOTIFICATION

I hereby acknowledge receipt of the foregoing notification.

SIGNATURE AND TITLE: **Vann Mabry, Manager Hub Operations**
DATE AND TIME: **06/16/2007**

19. REVOCATION NOTIFICATION

ACTION TAKEN: **DOMESTIC QUARANTINED FACILITY FOUND PEST FREE - AIRPORT DE-REGULATED FOR JB**

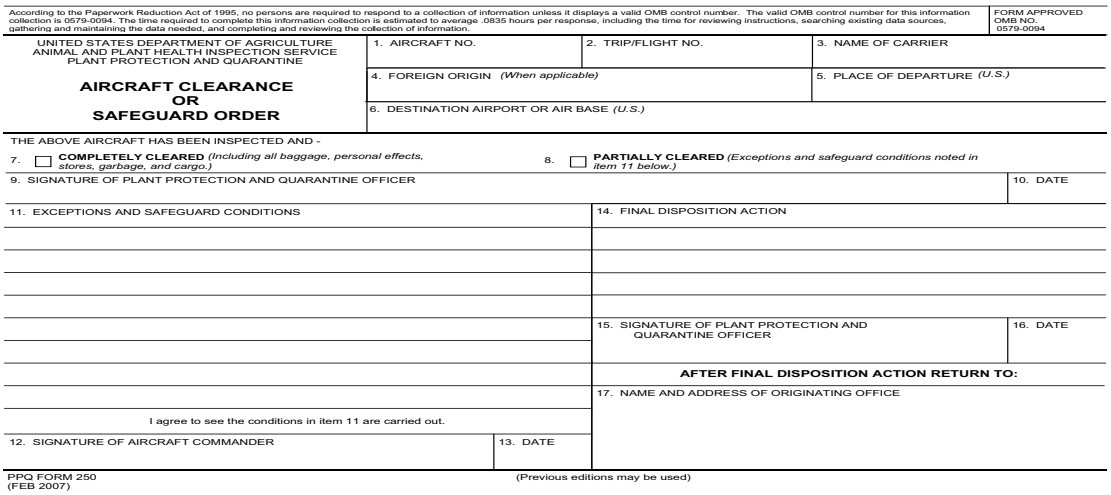
SIGNATURE OF OFFICER: **Shayne P Galford**
DATE: **08/21/2007**

PPQ FORM 523 (JULY 2001) Previous editions are obsolete

Figure A-4 Example of Completed PPQ Form 523—Emergency Action Notification

PPQ Form 250—Aircraft Clearance or Safeguard Order

If requested by personnel at a destination airport, issue PPQ Form 250 to the pilot after treating an aircraft. However, if personnel do not request PPQ Form 250, do not issue this document. Refer to the USDA APHIS forms library for a fillable copy of the form. Refer to Figure A-5 for an example of the form.



According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0579-0094. The time required to complete this information collection is estimated to average .0835 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

FORM APPROVED OMB NO. 0579-0094

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

AIRCRAFT CLEARANCE OR SAFEGUARD ORDER

1. AIRCRAFT NO.
2. TRIP/FLIGHT NO.
3. NAME OF CARRIER
4. FOREIGN ORIGIN *(When applicable)*
5. PLACE OF DEPARTURE *(U.S.)*
6. DESTINATION AIRPORT OR AIR BASE *(U.S.)*

THE ABOVE AIRCRAFT HAS BEEN INSPECTED AND -

7. ☐ **COMPLETELY CLEARED** *(Including all baggage, personal effects, stores, garbage, and cargo.)*
8. ☐ **PARTIALLY CLEARED** *(Exceptions and safeguard conditions noted in item 11 below.)*

9. SIGNATURE OF PLANT PROTECTION AND QUARANTINE OFFICER
10. DATE

11. EXCEPTIONS AND SAFEGUARD CONDITIONS

14. FINAL DISPOSITION ACTION

15. SIGNATURE OF PLANT PROTECTION AND QUARANTINE OFFICER
16. DATE

AFTER FINAL DISPOSITION ACTION RETURN TO:

17. NAME AND ADDRESS OF ORIGINATING OFFICE

I agree to see the conditions in item 11 are carried out.

12. SIGNATURE OF AIRCRAFT COMMANDER
13. DATE

PPQ FORM 250
(FEB 2007)

(Previous editions may be used)

Figure A-5 Example of PPQ Form 250—Airport Clearance or Safeguard Order

Japanese Beetle Aircraft Inspection Record (JBAIR)

The JBAIR is a record used at receiving airports in the protected States to document the interception of JBs on arriving flights. Refer to Figure A-6 for an example of a completed record.

Japanese Beetle Aircraft Inspection Record

Date: 7/29/09
Airport: OAK
Carrier: UPS
Flight No.: 2946
Origin: SDF
Route: direct
Regulated at origin? ☐ Yes ☑ No
Tail No.: N 280UP
Aircraft Type: MD 11

Arrival Time: 1725
Time of Inspection: From: 1730 To: 1911
Inspectors: Jenny McVernon
PDR/309#: 1512006
Treated at destination? ☐ Yes ☑ No
EAN issued? (attach copy) ☐ Yes ☑ No
Notice of violation issued? ☐ Yes ☑ No
Applicators:

Indicate location and condition of beetles found and total for each category:

	Cockpit	Cabin, Galley or Toilet (circle one)	Main Cargo Door Sill	Ball Mat or Vicinity	Main Cargo Area	Belly Hold (front)	Belly Hold (rear)	Other (specify)	Other (specify)	TOTAL:	No. Morb. Held:
DEAD (Dried):						1				1	
DEAD (Fresh):										0	
MORIBUND:										0	0
ALIVE:										0	
TOTAL:	0	0	0	0	0	1	0	0	0	1	

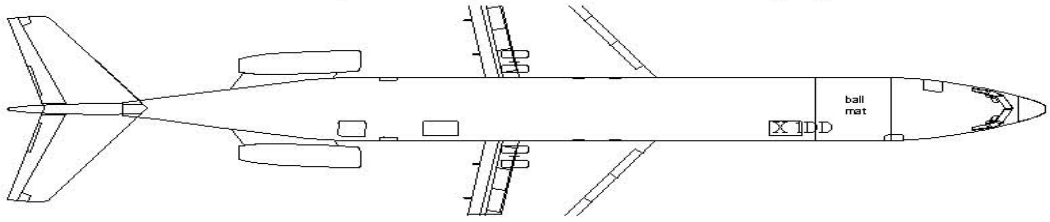
DEAD-dried (DD): No independent movement or response when stimulated. Dried out, appendages brittle. Beetle may be whole, broken or fragmented.

DEAD-fresh (DF): Same as above except appendages flexible, not brittle. Note: beetles may just be "playing" dead or cold. If motionless, allow beetles to warm up in hand or place in a vial in pocket for 20-30 seconds before evaluating.

MORIBUND (M): In advanced stages of dying. Capable of only minimal uncoordinated movement of appendages e.g. legs or antennae twitching, often on back and unable to right themselves. Incapable of coordinated movement (e.g. walking more than one body length) when warm. Incapable of feeding if held for observation.

ALIVE (A): Alert and active. Capable of coordinated movement when warm e.g. righting themselves if on back, walking at least one body length, responding to stimuli, struggling to escape, capable of feeding if allowed etc. Antennae out and open.

Indicate number, location and condition (DD, DF, M, A) of beetles found on the following diagram:



Please note specific locations of beetles found, additional comments, notes etc. (use back if necessary). Observation Results:

One dead dried beetle found in front ball mat.

Hours	Alive	Dead	Morb.
12			
24			

Figure A-6 Example JB Aircraft Inspection Record (JBAIR)

Japanese Beetle Program

Glossary

Use this Glossary to find the meaning of specialized words, abbreviations, acronyms, and terms used in the Japanese Beetle Program. To locate where in the manual a given definition, term, or abbreviated is mentioned, refer to the Index on page Index-1.

Definitions, Terms, and Abbreviations

adult stage. fourth and final life stage of the JB

aircraft clearance or safeguard order PPQ Form 250. the document issued to the pilot after inspection and, possibly, treatment of an aircraft. Usually, this document is issued when requested by a destination airport in the Japanese beetle-free zone. If personnel at the destination airport do not request a PPQ Form 250, the document is not issued. PPQ Form 250, Aircraft Clearance or Safeguard Order shows a sample PPQ Form 250.

aircraft operating areas. areas of an airport in which one or more of the following activities occur:

- aircraft maintenance
- cargo handling
- luggage handling
- passenger boarding

APHIS. Animal Plant Health Inspection Service. An agency within the United States Department of Agriculture (USDA). The APHIS mission is to protect the animal and plant resources of the United States.

authorized inspector. any employee of APHIS or any individual authorized by the APHIS Administrator to enforce the JB quarantine

compliance agreement (CA) PPQ Form 519. a written agreement between APHIS and an individual in a business engaged in growing, handling, or moving regulated articles. In regard to transport of the JB by aircraft, CAs are issued: 1) to monitor airports in the JB-free areas receiving at risk flights; and 2) to determine the risk at airports with an established JB population.

egg stage. first life stage of the JB

emergency action notification (EAN) PPQ Form 523. the official Federal authorization of hold

exclusion devices (excluders). designed to prevent or reduce the entry of Japanese beetles (JBs) into aircraft during loading, unloading, and maintenance, exclusion devices, often called excluders, are a critical component of any JB management program. They will vary in size based on local environmental factors and facilities, and may be simple, such as netting (cloth or screen) covering the opening of an aircraft, or complex, such as a framed or covered structure.

high-risk aircraft. those aircraft scheduled to fly to the protected States after probable exposure to infestation by the JB or carrying cargo probably exposed to infestation. Because high-risk aircraft may be infested, they are regarded as regulated articles.

infested State. those States in which surveys have found JB is established throughout the State or in a portion of the State.

Japanese Beetle Aircraft Inspection Record (JBAIR). the form used by receiving airports to document the interception of JB on arriving flights.

Japanese beetle-free area. an area in which the Japanese beetle is not established. All of the protected States are JB free. (Note there are JB-free areas not located in the protected States.)

Japanese beetle interception database. APHIS database providing information on interceptions of JB on aircraft arriving in a JB-free area.

larval stage. second life stage of the JB

National Agricultural Pest Information System (NAPIS). the information-handling system developed to handle data on endemic and exotic pests from regulatory officials and scientists in the State departments of agriculture, scientists from land-grant universities, and regulatory officials in APHIS. Located at Purdue University (West Lafayette, IN), the NAPIS database contains information on the JB, one of many introduced pests tracked by the database. Selected information in the NAPIS database can be used to produce current distribution maps for the JB.

nonregulated airports. airports in the JB-regulated area where JB is not likely to enter aircraft and be transported to the protected States (and other JB-free areas).

peak flight period. the time in which the JB adults are most likely to be flying.

Plant Protection and Quarantine (PPQ). the operational program within APHIS responsible for preventing the spread of significant plant pests.

protected States. the western States free of the JB: Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Washington. In cooperation with APHIS and using the authorization in the Code of Federal Regulations (7 CFR 301.48), these nine protected States are taking action so they can remain free of the JB.

pupal stage. third life stage of the JB

regulated airport. those airports, in the JB-infested area under quarantine, where the Japanese beetle is likely to enter aircraft and be transported to JB-free areas; because of the threat to JB-free areas, these airports are "regulated" in that they must adopt certain practices to protect the JB-free areas.

regulated articles. aircraft that are at or from regulated airports.

State Plant Health Director (SPHD). the APHIS–PPQ employee who has overall responsibility for Federal programs that deal with exotic and endemic pests. The SPHD will work closely with personnel in the State department of Agriculture.

State Plant Regulatory Official (SPRO). the authorized State official responsible for the operation of the State plant regulatory program.

United States Department of Agriculture (USDA). the Federal agency that provides leadership on food, agriculture, natural resources, and related issues.

United States Environmental Protection Agency (EPA). the federal agency that leads the nation's environmental, science, research, education, and assessment efforts.

Japanese Beetle Manual

Index