

Section I
Surveys of Invasive and Emerging Pests

**JAPANESE BEETLE SURVEY AND CONTROL
VIA TRANSPORTATION VECTORS 2008**

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According to an analysis that our Department's Diana Kimberling put together recently the annual impact on Oregon industry, primarily nursery, were Japanese beetle to become established in Oregon would be 34 million dollars.

Japanese beetle adults feed on the foliage and fruits of several hundred species of host plants, including rose blossoms, stone fruits, berries, including Himalayan blackberry, of great abundance in the Northwest, and many other plants. Grubs develop in the soil and feed on grass roots and prefer well-manicured grass to wild grasses, like those found at golf courses.

Like Gypsy moth and other pests homeowners do introduce Japanese beetles in vehicles traveling in the summer from back east, or as eggs and grubs in soil brought with plant stock from infested regions.

Utah and Colorado have fought significant populations of Japanese beetle in recent years, Cherry Hills Golf Course in Colorado trapped more than 56,000 Japanese Beetles in 2008.

For many years we have been aware of, and participated in, the national Japanese beetle program (U.S. Domestic Japanese Beetle Harmonization Plan) where quarantined states in the northeastern and Midwestern parts of the United States engage in efforts to exclude Japanese beetle from transportation via air cargo to protected states in the West, which includes Washington, Oregon, and Idaho, among many others. Due to positive catches in the immediate vicinity of the area where air cargo planes arrive and exchange cargo pallets since the early 1990s the ODA has focused its energy on surveying for and eradicating Japanese beetle coming in to Portland International Airport on aircraft.

In 2008 the Oregon Department of Agriculture threatened to fine air cargo carriers under the Oregon Quarantine Against Japanese Beetle Act (603-052-0127) in the amount of \$10,000.

Due to our aggressive eradication program, which typically includes one treatment of soil pesticide (Merit, or more recently Arena) to attack Japanese beetle grubs and three foliar treatments (Tempo) to kill adult Japanese beetles, we assume that we have reintroductions of Japanese beetle via air cargo on an annual basis. During the season Japanese beetle are active in upper-midwest/Northeastern region, which runs roughly from mid-June to the end of August. Analysis of trap catches of Japanese beetle, interceptions of dead, moribund, and live Japanese beetle on air cargo plane inspections, and seasonal wind patterns gives us a fairly clear picture of introduction and population spread characteristics in our particular micro-region. You can access the windrose graph for the nearest large city to your area at <http://www.wcc.nrcs.usda.gov/climate/windrose.html>.

Oregon Department of Agriculture insect survey technicians or entomologists attempt to thoroughly inspect every air cargo flight coming to Portland International Airport from regulated airports in the east (as well as high risk flights from non-regulated airports like Louisville, Kentucky).

Japanese beetle's peak diurnal flight period is at peak temperature of the day. In the east this occurs between 11 am and 1 pm, the precise time when air cargo planes bound for western states are being loaded. In the West peak diurnal temperature occurs between 4 and 6 pm, the precise time that air cargo planes from quarantined states arrive in Portland and off-load their cargo. The typical tarmac conditions at off-load time is a constant 10 to 15 mile per hour wind coming out of the west.

At Portland International Airport Japanese beetles are impeded from establishing a population by many non-irrigated, sandy areas inhospitable to Japanese beetles. Japanese beetles are not, according to our trap catch data, attracted to the tall, non-irrigated grasses immediately surrounding the tarmac at the airport. Unfortunately east of the cargo area of Portland International Airport, beyond the Air National Guard air base, which has little or no irrigated areas, is Colwood golf course, which has hosted burgeoning populations of Japanese beetles at least twice in recent years. Japanese beetles are particularly attracted to frequently mowed, daily-irrigated grounds of golf courses.

Portland International Airport and the Port of Portland have been very cooperative in supporting our eradication efforts. Mitigation of habitat in coordination with spray projects can help reduce the likelihood of future introductions of Japanese beetles taking hold around airports.

While we have been diligent about the Japanese beetle s coming in at Portland International Airport, we have probably not paid enough attention to the dangers of introduction via ground transport of cargo. Though we have made attempts to place detection traps at and around sorting facilities, we probably have not been diligent enough to guarantee that Japanese beetles are not coming in at those facilities. In 2006 28 Japanese beetles (20 male and 8 female) were detected in a single trap in a small, irrigated bio-swale at the FedEx ground sorting facility on Swan Island. This is the primary FedEx Ground hub for the Pacific North-West and Alaska. There is little or no connection with FedEx air cargo except for express packages/containers. The facility receives trucks directly from 24 major metropolitan centers across the United States. Trailers with open doors and Indiana plates were found parked adjacent to positive trap site. Soil treatment of Arena was applied in September of that year. In 2007 10 Japanese beetles (3 female, 7 male) were detected in four traps surrounding the bio-swale. In 2008, during our second complete round of pesticide applications we caught only a single Japanese beetle just outside the spray boundary. Next season we shall take a wait-and-see posture before applying any further pesticide there to see if the population has been eradicated or moved beyond our application area.

Though there is only tenuous relationship between FedEx air cargo at Portland International Airport and FedEx ground operations on Swan Island, we were at least aware of the potential for introductions at the ground satellite facility. In Troutdale we caught a single Japanese beetle in 2006, but did not have sufficient evidence to surmise what the introduction vector was. In 2007 we caught another single Japanese beetle in Troutdale near the previous catch, but this time at the back of a hotel directly between two very busy commercial truck stops. We guess that Jbs are being introduced either with cargo, or in the cabs of trucks with the drivers. Regardless, truck traffic should be a focus of any regional Japanese beetle survey program. In September 2007 we applied Arena to a one-acre area surrounding the hotel and restaurants where the 2007 single was caught. In 2008 we conducted the full compliment of eradication measures of Arena and three applications of Tempo, including mowing down about an acre of 12-foot high blackberry bushes to mitigate food material for adult beetle and provide access to spray applicators to make contact with more of the plant material in the area.

Under continuing financial pressures, we are running out of avenues for funds to survey for and eradicate Japanese beetles as they come into the state from these transportation vectors. Since the nursery industry is the first most directly effected stakeholder to be impacted by Japanese

beetle establishing itself here, an 800 million dollar industry, we continue to seek coordinated efforts with all stakeholders to intercept and eradicate Japanese Beetles as they arrive.