Could those Japanese beetles really be arriving anew, over and over, in only our area of the state?

The California Department of Food and Agriculture (CDFA) has been spraying pesticides for Japanese beetles in the same area of Sacramento for more than 30 years, and most recently nearly every year for the past 5 years. CDFA insists that each time the pesticide treatments successfully "eradicate" the beetles, and that the beetles that continue to reappear in these same areas are new introductions that are, each time, brought in from somewhere else.

Given that these neighborhoods in Sacramento are the only place where the beetles keep reappearing in the state, is CDFA's logic plausible? A common-sense look at the statistical likelihood of repeat new introductions in the same area reveals that the probability of repeat re-introductions is so small as to be unrealistic.

Every day there are thousands of opportunities (pathways) for the Japanese beetle to be brought into cities in California, for example via any of the cars, trucks, trains, buses, and airplanes coming from the East Coast where the beetle is well established. For simplicity, let's say there are 500 different regions in the state to which the beetle could be introduced (which is roughly equal to the number of cities in California), that each region has the same chance of a beetle being introduced, and that one Japanese beetle outbreak occurs in the state each year.

Mathematically, that means that there is 1-in-500 chance for any given region (city) to experience an outbreak in any given year. For an outbreak to occur in the same city 2 years in a row because of a beetle arriving from somewhere else would be: (1/500) squared = 1-in-250,000 chance. For outbreaks 3 years in a row, the math is: (1/500) cubed = 1-in 125,000,000 or 1 in 125 million. A few more years in a row and, based on this simplified model, the chance becomes one in an indeterminately large number.

The Sacramento area has apparently won the 1-in-125 million lottery because Japanese beetles, supposedly eradicated by CDFA in each prior year, have recently reappeared in Fair Oaks in 2010, 2011, 2012, and 2014 and in Carmichael in 2014 and 2015. The corridor of Orangevale, Fair Oaks, and Carmichael is the only area outside airports where the beetle has been found in the state to our knowledge other than rarely in Capitol Park and San Diego.

For the Sacramento region to win the Japanese beetle lottery year after year is not unlike one person winning the California lottery year after year.

Although the example above is simplified, and some regions are naturally more favorable to or at risk of beetle introduction others, the fact that the Sacramento area is experiencing outbreaks every few years if not year after year strongly argues that the beetles are not being eradicated and re-introduced but are a low-level established population. This means that CDFA's pesticide treatments are, at best, containing the beetle population to the area where the insects are repeatedly being trapped. Safer alternative treatments recommended by the U.S. Department of Agriculture could accomplish the same result.

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