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This is a statement on the issue of herpes B virus and the rhesus macaques in Silver Springs, Florida. The authors of a recent study ("Macacine Herpesvirus 1 Antibody Prevalence and DNA Shedding among Invasive Rhesus Macaques, Silver Springs State Park, Florida, USA" (4)) have made the claim that these monkeys pose a risk to human beings with respect to infection by the herpes B virus. This is disturbing given that the authors acknowledge that there has never been transmission of herpes B virus from any free-living macaque to people worldwide, let alone in Florida, despite numerous human-macaque interactions.

I have worked with non-human primates, particularly rhesus and other macaques, for many years in laboratory and sanctuary settings. In addition, I have had some limited exposure to free-living ('wild') macaques in their native habitat. Although I agree that herpes B virus is an important pathogen, I do not agree that the Silver Springs rhesus macaques pose a serious threat to human health and safety. People are at infinitely greater risk of infection and death from other *people*, for example through the viruses that cause acquired immune deficiency syndrome (AIDS) or hepatitis. There was no need to alarm the public about the rhesus macaque situation and calls to eradicate the monkeys are misguided and irresponsible in my view.

The study in question examined blood, fecal and salivary samples taken from some of the rhesus macaques. The findings, however, are several years old and there is no proof that they reflect the current situation. Of 317 blood samples, taken during 2000-2012, 84 individuals were considered positive for herpes B virus *antibodies*. This means that these individuals were exposed to the virus at some time in their life. It does not mean that these animals were necessarily infected or that they could transmit the disease to anyone else, whether monkey or human being.

Of 121 salivary samples, taken during 2015-2016, only *three individuals (2.5%)* demonstrated the presence of virus DNA in the saliva. This means that those individuals *could* infect someone *if they bit them and there was a sufficient amount of viral particles injected into the wound*. Because rhesus macaques who are free-living and who have been discouraged from approaching human beings are extremely unlikely to get close enough to bite or otherwise injure a person, this mode of transmission, particularly in the light of such a small percentage of potentially infectious individuals, is highly unlikely. Furthermore, the study found the presence of viral DNA only during the breeding season of 2015. It is known that stress can cause a release of latent viral particles (2) and the breeding season is associated with an increase in stress due to competition.

Of the 21 fecal samples collected in 2016, none showed any evidence of the virus. It cannot be determined from how many individuals the samples came or whether they came from any individuals who were positive for virus in the saliva. As a result, the significance of this negative finding is unclear. It certainly does not support the notion that infection through contact with feces is a realistic threat in this situation.

As noted in the article and throughout the scientific literature, infection of people by herpes B virus is extremely rare and not inevitably fatal. Since 1932, there have been only 50 documented cases of people infected *worldwide* (1). Almost all have been the result of close contact with infected macaques in a laboratory setting, never involving free-living monkeys. This extremely low prevalence is surprising when one considers that there are hundreds of thousands of macaques in laboratories and breeding

facilities, with literally hundreds of thousands of contacts of various types with people annually. This should put the Florida rhesus issue in proper perspective.

The biggest problem with the rhesus macaque situation revolves around human behavior. Because macaques normally have great fear of people, human behavior that diminishes this fear leads to the potential for aggression. Feeding the monkeys, whether intentionally, secondarily through feeding other wildlife or through careless food waste disposal practices, leads to habituation and loss of fear. Treating the monkeys as if they were there for the entertainment of people also results in diminished fear.

Killing the monkeys is almost certainly what the Florida bureaucracy will attempt to do or claim is necessary to protect the public (3). It is, however, highly unlikely that those monkeys who *might* pose a risk will be killed unless *all* the monkeys were killed, something that is probably not feasible. In the meantime, the stress of being hunted is likely to be counterproductive in that monkeys with latent infections may become infectious due to stress. This leaves the situation no better off, possibly even worse, than is the case currently.

Rather than use lethal means, there needs to be a combination of public education and preventative measures put into place to discourage the monkeys from 'socializing' with people. If a reduction in the number of monkeys is desirable, it should be done through a concerted sterilization program to humanely reduce the population over time. The most effective means is to surgically sterilize the females.



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3. Dearen, Jason. 2018. "[Florida wants to remove virus-excreting wild monkeys](#)." *Houston Chronicle*.
4. Wisely, Samantha M.; Saylor, Katherine A.; Anderson, C. Jane; Boyce, Carisa L.; Klegarth, Amy R. and Johnson, Steve A. 2018. "[Macacine Herpesvirus 1 antibody prevalence and DNA shedding among invasive rhesus macaques, Silver Springs State Park, Florida, USA](#)." *Emerging Infectious Diseases* 24(2).