

Attachment 3
Updated Recommendations

01 September 2011
Dave Hankla
United States Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, Florida 32256-7517

Subject: Manatee Papillomavirus Quarantine

Dear Mr. Hankla,

The Captive Manatee Veterinary Group would like to propose a revision to the manatee papillomavirus (TmPV) protocol. This letter follows up on our letter to the United States Fish and Wildlife Service dated 26 November 2008, in which TmPV history and literature were discussed. Further studies (Dona et al., 2011) demonstrated that TmPV1 antibodies are prevalent in wild manatees throughout Florida. There is no evidence that manatee papillomaviruses have had an impact on the health of the population. Moreover, lifting the quarantine of entire facilities and the ability to move animals between facilities has contributed to a more efficient use of available critical care space.

The following information and recommendations were provided in an email by Dr. James Wellehan with the University of Florida's College of Veterinary Medicine on 5 April 2011.

"There are at least 125 known human papillomavirus types, and only a small handful of them cause significant clinical disease. It took very little investigation of bottlenose dolphins for us to find over 25 types. It is probable that dozens of manatee papillomaviruses remain to be described. Papillomaviruses are commonly found in skin of normal animals. They are generally widely dispersed in their endemic hosts.

My opinion is that I see no reason to restrict manatee movement based on the presence of TmPV1 or TmPV2. The behavior of papillomaviruses is generally benign and I am aware of no papillomaviruses that have had significant impacts on wild populations of any species. If this were an RNA virus which would be expected to behave more explosively, such as a paramyxovirus, rhabdovirus, or picornavirus, I would advise greater caution."

My recommendations for an actionable TmPV case definition include fulfillment of all of the following three criteria:

- 1.) A lesion that is considered clinically significant by a veterinarian.*
- 2.) Histology consistent with a papillomavirus lesion.*
- 3.) Sequence of papillomavirus DNA from the lesion.*

The first criterion is important. If the associated lesions are not clinically significant, there's really no point holding things up. If there are squamous cell carcinomas popping up, that's a different story. The second criterion is a key part of the current criteria and should stay. The third criterion is important, since there are likely diverse papillomaviruses present in the species, and only a small subset are likely

to be clinically relevant. Immunohistochemistry is likely to cross react with different, as of yet unknown related papillomaviruses, with differing clinical relevance. If clinically significant lesions are seen, sequence-based identification of viruses is critical for understanding.”

Based on the aforementioned information, the Captive Manatee Veterinary Group recommends reducing the quarantine period to three months instead of six months and a revised protocol for the testing of suspected papilloma lesions:

1. Case definition- if a lesion is suspected to be a papillomavirus infection, it should be considered positive for TmPV if:
 - a. Histological consistent with TmPV **and**
 - b. Positive for TmPV on Polymerase Chain Reaction testing
2. Before considering a manatee for release back into the wild the following criteria must be met:
 - a. Meet current release criteria for ages and release classifications
 - b. Have no active TmPV lesions for 3 months
 - c. Have no direct contact with manatees with active TmPV lesions for 3 months prior to release.
3. Continued TmPV disease surveillance within manatee populations will include:
 - a. Antemortem rehabilitation surveillance for TmPV
 - b. Postmortem carcass salvage surveillance for TmPV

Sincerely,

The Captive Manatee Veterinary Group: Drs. Ray Ball, Christopher Bonar, Mark Campbell, LaraCroft, Luis Figueroa-Oliver, Deirdre Fontenot, Scott Gearhart, Gwen Myers, Natalie Mylniczenko, David Murphy, Donald Neiffer, Elizabeth Nolan, Maya Rodriguez, Andrew Stamper, Scott Terrell, Michael Walsh, Martine de Wit
cc: Nicole Adimey, Drs. James Wellehan, Gregory Bossart, Bennett Jenson

Reference:

Dona, M.G., Rehtanz, M., Adimey, N.M., Bossart, G.D., Jenson, A.B., Bonde, R.K., Shin-je G. 2011. Seroepidemiology of TmPV1 infection in captive and wild Florida manatees (*Trichechus manatus latirostris*). J. Wildlife Dis. 47(3): 673-684.