Reviewer's report

Title: Cyclical changes in seroprevalence of leptospirosis in California sea lions: endemic and epidemic disease in one host species?

Version: 2 Date: 28 March 2007

Reviewer: Larry Glickman

Reviewer's report:

General: The authors utilized a unique and difficult to obtain set of data to address important questions regarding the epidemiology of leptospirosis in California sea lions. They conclude from their study that the findings suggest that sea lions may serve as both a reservoir and incidental host for leptospirosis. This analysis was based however on results using only the serovar pomona, without mention of what titers were obtained for the five other serovars tested. They offer as an explanation that leptospirosis in sea lions is only caused by serovar pomona (Refs. 15, 18, 25). If titers >100 were obtained in their study to any of the five other serovars tested, then these other serovars must be evaluated in their study as well. Therefore, it is imperative that the authors report all titers for all six of the serovars they tested and then proceed accordingly based on the titers.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached: See comment above under General as well as the following points:

1. In the logistic model each outbreak year was compared with all other years. Does this mean the reference group changes depending on the outbreak year or does it remain constant for each epidemic year.
2. The authors state that "Blood chemistry (but not serology, gross necropsy and histopathology were used to classify sea lions that stranded because of leptospirosis". Rather than just giving a reference, the authors should explain the specific criteria used for a diagnosis of leptospirosis and whether they consider this to be indicative of a definite or probable diagnosis. It is unclear why serology would not be used to make a definitive diagnosis of leptospirosis if it was available, since this is the standard diagnostic procedure in veterinary and human medicine. Even using serology, a single titer >100 should not be considered to be diagnostic. Only a fourfold rise in paired titers, PCR, or isolation of the organism is definitive.
3. I am not aware that any MAT test is 100% sensitive and 100% specific for leptospirosis in any species of animal. Please explain how this was established in addition to citing a reference. Also, what criteria were used to define a single MAT titer of >1:100 as diagnostic? A significantly higher titer is usually used for the diagnosis of leptospirosis in people and dogs.
4. What were the causes of of stranding for the the 200 sea lions in the study with positive titers and how do you know that the stranding was not due to leptospirosis in these seropositive animals?
5. The Discussion starts with a sentence indicating that sea lions "do not fit into a clear dichotomous classification of maintenance and accidental hosts for particular serovars of L. interogans". This indicates to me that more than one serovar affects sea lions. Yet, the rationale given for only evaluating pomona in the study is that it is the ONLY serovar that causes leptospirosis in seal lions. Which is it?
6. Serovar autumnalis is now one of the predominant serovars diagnosed in dogs in the U.S. Why therefore wasn't autumnalis included in the battery of serovars tested by MAT, especially since cross reactivity between pomona and autumnalis is common?

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests.