

CORRESPONDENCE

PRESENTATION OF NESTING DATA: FURTHER DISCUSSION

20th July, 1942

EDITOR OF 'THE AUK':—

I have just been able to see Mr. F. A. Pitelka's interesting letter on "Presentation of nesting data" in *Auk*, 58: 608-612, 1942. His points needed making.

The question of the time-unit to be used is not easily solved: even within my own experience of swallows and swifts I have found that the numbers of visits with food between dawn and dusk can in one species be as high as 328, in another as low as 5.

Mr. Pitelka writes that a 200-minute unit "may be satisfactory for such species as swallows, which feed their young comparatively frequently; but for slower feeders, a longer period is needed. It seems more generally practicable to retain the hour unit for expressing feeding rate, but observations should extend over at least 5-8 hours." Now I am still in doubt about the best unit myself and I should welcome standardization, but what exactly is Mr. Pitelka's recommendation? Does "the hour unit" mean "a unit of one hour"? Hardly, for that would be shorter than the 200-minute unit, not longer. Does it mean a "unit of a multiple of an hour"? If so, it is necessary to decide on the multiple. Since Mr. Pitelka feels that "observations should extend over at least 5-8 hours"—with which I agree and would strengthen into "on any one day observation should be continuous for at least 5 hours"—should we take the time unit as 5 hours, i.e. 300 minutes? (It would certainly be unsound to make our time-unit longer than our minimum acceptable observation period.)

Actually I chose a 200-minute period as being the shortest "round-number" period that would give a rate greater than 1 for the slowest-feeding species: and I preferred a unit quoted in minutes because I hoped to lessen the risk of confusion with the familiar "per hour," that tends to be in the back of everyone's mind. In this I have not succeeded: in *Ibis*, 1942, 198, the reviewer of my study on the Wire-tailed Swallow (*Proc. Zool. Soc. London*, (A) 109: 109-125) overlooked the fact that the rates I quoted were on a 200-minute unit, translated my data into 150-200 visits *per hour*. and quite understandably insinuated that the Africans employed as watchers had to be preternaturally good observers to note the particulars prescribed for them.

Now that Mr. Pitelka has raised the question of the time unit I hope others will join in the discussion. We do need an agreed standard.

R. E. MOREAU

*East African Agricultural Research Station
Amani, Tanganyika Territory*

November 8, 1942

EDITOR OF 'THE AUK':—

In the discussion of time units to which Mr. R. E. Moreau refers (Auk, 58: 611, 1941), two separate issues are involved: first, the basic unit to be used in expressing rates of feeding and, second, the minimum acceptable observation period. In my allusion to Mr. Moreau's use of the 200-minute unit, I did not differentiate clearly between them. Mr. Moreau used 200 minutes as a basic unit to express feeding rate. My reference to a "longer period" concerned the length of the observation period, not the basic unit; and I incorrectly imply that Mr. Moreau's observation periods lasted 200 minutes, when actually each period within any one day lasted five hours or more. The basic unit and the minimum observation period may now be discussed separately.

(1) By "hour unit" I mean actually a *unit of one hour*. This is apparent in the suggested tabulation of feeding data on page 610, where I mention "number of visits per hour." A unit of one hour has been used and is being used by many students of breeding behavior to express feeding rate. Moreover, by using the hour unit (*vs.* a larger unit as 200 minutes or $3 \frac{1}{3}$ hours), one can detect directly changes from hour to hour and speak of diurnal variation in terms of that same unit.

Mr. Moreau points out that in selecting a 200-minute period as a unit, he would be able to express rates for slowest-feeding species as greater than 1. I see no objection to expressing feeding rate for a slow-feeding species as a decimal figure using the unit of one hour. I would rather read, e.g., .5 feedings per hour than 1.7 feedings per 200 minutes. This, I think, is based on more than personal preference. In addition to convenience and the fact that "per hour" . . . tends to be in back of everyone's mind," there are other reasons for using the hour unit: Two have been mentioned above; and we may agree, finally, that the hour unit is the simpler and the least likely to cause any confusion.

(2) With regard to the minimum acceptable observation period, my earlier statement was that "observations should extend over at least 5-8 hours." This, as Mr. Moreau emphasizes above, is a *continuous* period of observation within any one day. The recommendation on this point may be stated as follows: *When the observer seeks numerical data on feeding and attentiveness, his minimum period of continuous observation within any one day should be five hours.* But exceptions may be made occasionally; thus, if the species in question is a rapid feeder, the observer may prefer to sample feeding rates for two- or three-hour periods at different times of day.

FRANK A. PITELKA

*Museum of Vertebrate Zoology
Berkeley, California*

CORRIGENDA

In Vol. 59, No. 4, October, 1942:

P. 568, l. 26: For "any," read "many".

P. 568, l. 41: For "ship," read "ships".

P. 570: delete line 16 and insert: "him and Abbot himself was in the habit of retouching the work that".

P. 592, l. 22: For "nineteenth," read "fourteenth".