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A Simple Technique for Weighing Birds at Feeders Without Recapture

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A number of studies have demonstrated daily and seasonal changes in the weights of wild birds (see review by Clark, *Condor* 81:193-202, 1979), usually by statistical anaylsis of large samples of captured birds and comparisons between and within sexes, age classes, etc. (e.g., Clench and Leberman, Bull. Carnegie Mus. Nat. Hist. 5, 1978). It would be desirable to obtain weights of individually-marked birds on a regular basis, but such a study would be limited by the number of recaptures and by the problems associated with repeated handling (Leberman and Stern, *N.A.B.B.* 2:50-54). Moore *(British Birds* 46:103-105, 1953) developed a technique for weighing birds without handling them as they came to a feeder suspended from a homemade scale. We have developed a similar technique to monitor the daily and seasonal changes in weight of marked birds (in our case, House Finches, *Carpodacus mexicanus)* without having to recapture them.

Our weighing apparatus is a dried citrus fruit rind, regularly supplied with sunflower seeds and suspended from a 100 g capacity Pesola spring scale calibrated in 1 g increments. The scale hangs within a three-sided, wooden enclosure (Fig. 1) which keeps swaying to a minimum and provides a dark background to facilitate readings. The entire apparatus is attached to the roof overhang just outside a large, south-facing window.

By continuously monitoring the weight of the feeder, we can obtain weights of birds visiting the feeder by recording the weight of the bird and the feeder and subtracting the immediately preceding weight of the feeder. The scale can be read from a distance of about 5 m using 7X or 8X binoculars, and weights determined to the nearest 0.5 g. Standard weights in the range of 1-50 g have been used to substantiate the reliability of these readings.

Our ultimate goal is to obtain frequent weights of individual birds without having to recapture them for each weighing. With data obtained in this way, we can look at both daily and seasonal variation in weights of individual birds; in particular, overnight weight losses and daily weight gains (Fig. 2) can be compared to environmental variables such as amount of snow cover and overnight low temperature. Rates of weight loss and food intake can also be compared on a seasonal basis. The unique aspect of the method is that data are collected on individually-marked, free-living birds.

There is no reason why a variety of other foods (e.g., suet, strings of peanuts, dried fruit) could not be used in a similar manner. Small spring scales are useful in that they are relatively inexpensive and sufficiently portable to suffice for short-term field projects. As Figure 2 shows, even weights obtained to the nearest .5 g can demonstrate recognizable patterns of weight gain and loss on a day-to-day basis. On the other hand, more refined techniques, including telemetric equipment, can certainly be devised, and we strongly urge other banders who operate feeding stations to explore the possibilities of weighing marked birds as they visit feeders.

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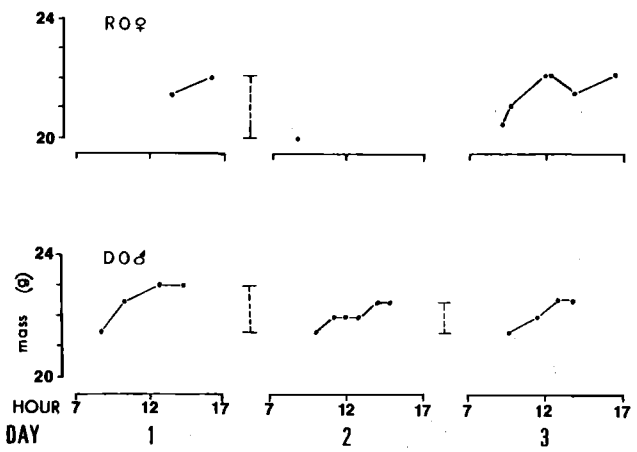

Fig. 2. Sample 3-day weight records for two House Finches (DO-male and RO-female) during two different 3-day periods. Dashed intervals between days are minimum estimates of overnight weight loss.

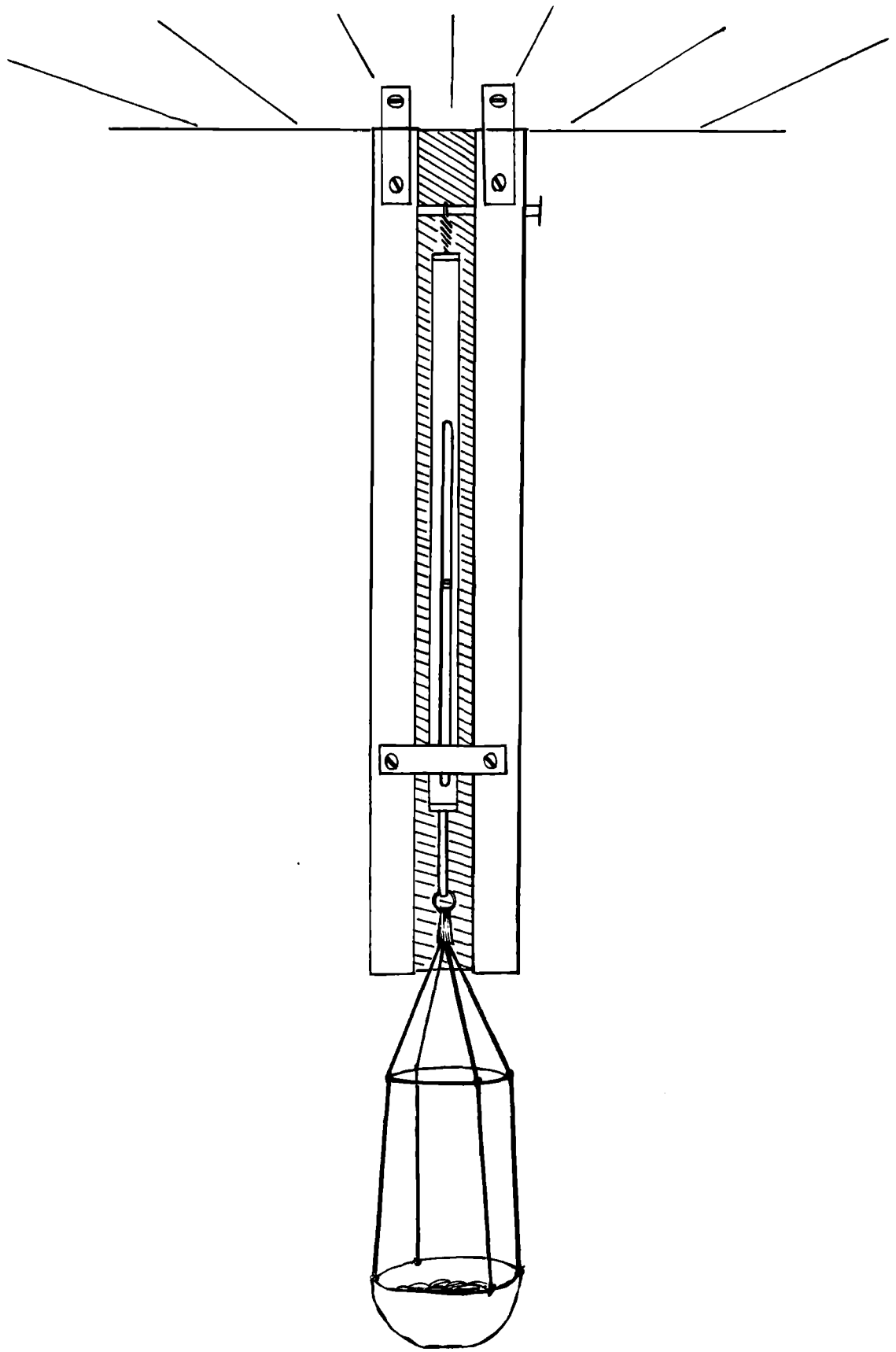

Fig. 1. Diagram of the weighing feeder