parasitized experimental clutches are decidedly within the size range of common hosts. Rejector species (Rothstein, 1975) and poor hosts have eggs differing from the size-marking range most often victimized by cowbirds. Brown-headed Cowbird eggs are themselves partly outside this range which may aid in preventing egg ejection by other female cowbirds (but see Elliott, Auk 94:590–594, 1977). Similarities of eggs of good and poor hosts are not always as close as suggested in Fig. 2. For example, Eastern Kingbird (*Tyrannus tyrannus*, a rejector) and Red-winged Blackbird (a fairly good host) eggs are similar in spotting density (my subjective opinion) and size, but are obviously different in background color and shape of markings. (This shows a real deficiency of my 2-dimensional representation of egg variation.)

Little attention was given to variation in nest structure. This deficiency, however, may not be critical. King (pers. comm.) found that nest variation is of minor importance in comparison to egg appearance, especially egg size. In my experiments, nest dimensions covaried with egg size across species: smaller eggs were in nests of smaller nest dimensions, larger eggs in larger nests. Any search image that cowbirds may use in selecting host nests could still include aspects of nest construction independent of egg appearance.

My interpretation can be questioned on several grounds. Most noteworthy is that neither were cowbirds observed nest searching nor were experimental nests watched for cowbird visits. Cowbirds are known to lay eggs in deserted nests, but events at these parasitized nests argue against non-deliberate egg-laying. Accurate knowledge of which nests were actually exposed to cowbirds would greatly aid in proper interpretation of my experiment.

Acknowledgments.—Stephen I. Rothstein, Robert B. Payne, Andrew P. King, Richard F. Johnston, Calvin L. Cink, and Karen S. Harris were most generous in their critical readings of the manuscript. Assistance on the design and operation of the experiment was provided by K. S. Harris, J. Gulbis, C. J. Terry, J. T. Paul, and C. T. Stahmann. M. A. Jenkinson allowed use of data-less eggs from the collections in the Museum of Natural History, University of Kansas.—PETER E. LOWTHER, *Museum of Natural History and Dept. of Systematics and Ecology, Univ. of Kansas, Lawrence, KS 66045.* *Accepted 31 Dec. 1977.*

Wilson Bull., 91(1), 1979, pp. 122–123

Cowbird parasitism on Common Bushtit nest.—While studying nest helping in Common Bushtits (*Psaltriparus minimus*) we observed an instance of Brown-headed Cowbird (*Molothrus ater*) parasitism on a bushtit nest. Previously, Bent (U.S. Natl. Mus. Bull. 191, 1946), Friedmann (U.S. Natl. Mus. Bull. 233, 1963; U.S. Natl. Mus. Bull. 149, 1966), and Friedmann et al. (Smithson. Contrib. Zool. 233, 1977) have reported a total of 8 cases of parasitism of this species in California and British Columbia. Among the reports from California were 1 cowbird egg in a nest with 8 eggs and 2 parasitized clutches that were partially buried under new nest linings. We believe clutch burying to be a sign of abandonment and not a part of normal incubation behavior.

The nest we observed was discovered on 30 April 1977, in a woodland portion of the University of Washington campus in Seattle. The nest was attached to a solitary arch of a blackberry vine (*Rubus* sp.) 1.5 m from the ground. On 1 May the female bushtit was captured in a mist net as she left the nest, and another bird, presumably her mate, was noted in the vicinity. The female was banded and weighed and no brood patch was evi-

dent. Her weight (7.7 g) indicated that she was laying. The nest contained 5 unincubated eggs. On 17 May the female was recaptured and weighed 6.3 g. This time she had a definite brood patch and continuously gave distress calls. The nest contained 6 warm eggs. A 20 min observation period on 18 May showed no activity at the nest, and we assumed that the female was incubating. On 24 May a tear was noted near the top of the nest. The nest contained 4 newly hatched, but dead nestlings, 2 unhatched eggs containing nearly fully developed embryos, and 1 cowbird egg showing no sign of development. We saw no adult birds in the vicinity and concluded that the nest had been abandoned. Freshness of the young suggested to us that the nest had been deserted within the past 2 days. It seems likely that the damage to the nest was caused by the cowbird when the egg was deposited, as has been reported for Verdins (*Auriparus flaviceps*) (Friedmann, op. cit., 1963) and for 1 of the cases of parasitism described from British Columbia (Friedmann et al., op. cit., 1977). Desertion may have occurred either in response to the damaged nest or to the presence of the cowbird egg.

Of 54 bushtit nests studied in 1977, this was the only case of cowbird parasitism. That the cowbird egg was deposited so late in the incubation period might off-hand suggest egg-dumping. However, since it was not late in the reproductive period of the species and since this event is not comparable to the well-documented dump-nests of Shining (*Molothrus bonariensis*), and Bronzed (*M. aenus*) cowbirds, it is perhaps better to regard it as a case of faulty timing by the parasite (Friedmann et al., op. cit., 1977). Since cowbirds lay clutches of eggs (Payne, Condor 78:337–342, 1976), a cowbird might resort to an inappropriate nest when not enough host nests are available.

We wish to acknowledge the help of Keith Bergman, Cynthia McCarthy, and Russ Ray with the field work and to thank Cynthia McCarthy, Donald S. Farner, Sievert A. Rohwer, and John C. Wingfield for their comments on this note.—JAN PETER SMITH, *Dept. of Zoology, Univ. of Washington, Seattle, WA 98195, and* RILEY J. ATKINS, *206 N. 41st St., Seattle, WA 98103.* *Accepted 30 Nov. 1977.*

Wilson Bull., 91(1), 1979, pp. 123–126

Effect of food availability on leaf-scratching by the Rufous-sided Towhee: test of a model.—Many emberizine species scratch in leaves with a 2-footed kick to the rear under their bodies (e.g., Hailman, Wilson Bull. 85:348–359, 1973). The number of successive scratches given without a distinct pause (a "bout") was modeled quantitatively, and the model successfully predicted scratching behavior of White-throated Sparrows (*Zonotrichia albicollis*) and Dark-eyed Juncos (*Junco hyemalis*) (Hailman, Wilson Bull. 86:296–298, 1974). Later Hailman (Wilson Bull. 88:354–356, 1976) found that scratching of the White-crowned Sparrow (*Z. leucophrys*) and Fox Sparrow (*Passerella iliaca*) also conformed to prediction. These comparative data suggest that scratching obeys the same rules for all emberizines, although Hailman (1976:356) noted that "a check on the rather different towhees (*Pipilo*) would be desirable." We report our combined data for scratching by Rufous-sided Towhees (*P. erythrophthalmus*) in Tennessee, which include an experimental test by E.H.B. of the model.

The model states simply that the bird scratches until uncovering a potential food item, and that the probability of finding such an item is constant (independent of the number of scratches given previously in the bout). The model predicts that:

$$\log f_s = \log p(s-1) + \log B, \qquad (1)$$