

The Herring Gull and its Egg, Part II: The Responsiveness to Egg-features. Edited by G. P. BAERENDS & R. H. DRENT. Leiden, The Netherlands : E. J. Brill (1982). Pp. xiii+416+17 plates. Price 76 guilders.

The first part of this monograph, published in 1970, dealt with the herring gull's incubation behaviour. This second, somewhat delayed part deals with its egg recognition or more accurately, with its preferences for egg-like objects. An impressive mass of information is presented in a series of chapters, all by members of the Groningen group. The first section provides a detailed description of a large sample of herring gull eggs, noting the reduced within-clutch variability, but also the frequent aberrancy of the last-laid egg of a clutch. Next, the methods used for assessing the preference ranking of gulls for their natural eggs and a variety of artificial dummies, mostly in terms of the egg-retrieving response are described. The authors argue cogently why a sequential testing procedure they developed, and which they characterize as 'playing chess with the gulls', is better than more conventional mass-screening methods but they do not manage to convey the rules of the 'game' that

would allow an easy replication. Test protocols given in the text suggest a good deal of arbitrariness. Nevertheless good ethologists are usually better than standard methods. The retrieval chances of egg models, varying between half and twice the linear size of normal eggs, increase with size, though superimposed on this gradient there is a weaker tendency for gulls to prefer the medium, normal size. Based on behavioural observations the authors attribute the latter to fear elicited by the larger dummies. Dummies broader or longer were slightly less effective than normally proportioned models, provided that large size did not boost responsiveness. More extreme variations of shape, such as cylindrical or prismatic egg models, were also inferior to dummies of an egg-like shape but perhaps not as much as one might expect, as the gulls were still prepared to retrieve and incubate them. Varying the background colour of models yielded the preference sequence green, brown, yellow, blue and red even though brown was similar to the most frequent natural egg-background colour and blue corresponded to the hue of occasionally occurring cyanotic real eggs. The worst colours also caused herring gulls to abort incubation. Unfortunately the paints used are not referred back to the colour scales used for the initial description of real eggs. Furthermore, the lighter the background, the darker the speckling and the more and the smaller the speckles, the better the dummies were retrieved.

Tests with dummies that varied simultaneously in size, shape, colour and speckling suggested that each of these characteristics contributes additively to their retrieval eliciting value. A densely, darkly speckled dummy, larger by half but of normal proportions and on a green background, pleasingly turned out to be clearly supernormal as compared with real eggs. Why the standard dummies intended to mimic the natural eggs were not as effective as these is not adequately explained. The gulls learned about peculiar dummies on which they were made to incubate, subsequently preferring to retrieve these, as long as no strong spontaneous, presumably innate, preferences were contravened.

The motivation analysis offered is sophisticated and difficult to follow (a mirror-printed table doesn't make the task easier) but does not seem particularly to support the fairly simple and not very revealing model that the authors finally propose. A comparison with the stimulus responsiveness of herring gulls in a number of other behavioural contexts derived from the authors' work and also from the literature, establishes that the egg feature constellation most preferred for retrieval and brooding is largely specific to the incubation situation. It is remarkable that this constellation does not match that of their own eggs, but then herring gulls, different from some other species, are obviously not under selective pressure promoting the development of a very precise egg recognition mechanism. That being so, it is surprising that the rather arbitrary preferences are as definite as they are. The authors consider and reject a variety of mechanisms including the innate releasing mechanism, and simple sensory filters that have been proposed to account for the eliciting/orienting effect of stimulus complexes and end up by suggesting one of their own that, while somewhat plain, certainly must come closer to reality than any of the earlier conceptions. All in all, a very informative monograph reflecting a major field study effort, though not an easy one to read, spiked as it is with a multitude of complex tables that require close study. One wonders if feeding the wealth of data into a modern scaling program would not have yielded a more succinct description of the preferences. But that could still be done.

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