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This Week's Citation Classic

Ward P & Zahavi A. The importance of certain assemblages of birds as "information-centres" for food-finding. *Ibis* 115:517-34, 1973.
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The paper presents the hypothesis that communal roosts, breeding colonies, and certain other bird assemblages have been evolved primarily for the efficient exploitation of unevenly distributed food sources by serving as information centers. Predation pressure is regarded as being the most important factor 'shaping' the assemblages. The shaping involves the choice of inaccessible or otherwise safe sites, and serves to minimize the vulnerability to predation which would otherwise result when birds mass together in predictable centers. [The *SCI*® indicates that this paper has been cited in over 125 publications since 1973, making it the 3rd most-cited paper ever published in this journal.]

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"Both Peter Ward and myself had been watching birds since childhood and had often observed the daily congregation of birds into communal roosts and nesting colonies. Unfortunately, Peter is dead now. I never asked him how he conceived the hypothesis that *Quelea* congregate into their roosts in order to gather information about potential feeding sites. I have applied his hypothesis to *Motacilla* roosts and to communal roosts in general. Both of us were students of David Lack and therefore we had the temptation to understand adaptations on the basis of individual selection. Hence, when we first met in 1970, at an ornithological congress, and discussed congregations of birds with which we had experience, we realized the possibility that all congregations may have resulted from the need to gather information on feeding sites. If I were writing the paper today, I would have added sexual selection as an additional primary selecting factor for colonial nesting and other gatherings. At that time, I was not yet aware of the major role sexual selection has on social behaviour.[1]

"Our paper is a comparative study in the tradition of Lack. The paper has been of interest to the many ornithologists studying roosts and nesting colonies. A special point of interest in the paper may have been the suggestion that a complex set of social adaptations is the result of the information it generates. Since then, I have further developed the idea that the search for information selects for diverse complex social adaptations.[2]

"As much as we were trying to explain the adaptations on the basis of individual selection, we fell also into the easy trap of using a group selection explanation, hinting that birds advertise the roosts because the larger the roost is the larger their numbers and the greater the information available to the advertiser. Such a statement does not explain why an individual may not benefit more by letting others advertise, saving at the same time its own efforts.

"My hypothesis at present is[3] that the advertiser may assess, by advertising, its own potential to act, in relation to that of other individuals in the congregation. The hypothesis is not yet fully established. Some observations failed to find evidence for it. I suggest that since birds do not require daily information concerning potential feeding sites, it is important to test the hypothesis at the time feeding sites get scarcer. Some observations support this argument."[3]

1. **Zahavi A.** Natural selection, sexual selection and the selection of signals. (Scudder G G E & Reveal J L, eds.) *Evolution today: proceedings of the Second International Congress of Systematic and Evolutionary Biology.* Pittsburgh, PA: Hunt Institute for Botanical Documentation, Carnegie-Mellon University, 1981. p. 133-8.
2. ----------. The testing of a bond. *Anim. Behav.* 25:246-7, 1977.
3. ----------. Some further comments on the gatherings of birds. *Proceedings of the 18th Ornithology Congress. Moscow.* In press, 1983.