

This Week's Citation Classic

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Orians G H. On the evolution of mating systems in birds and mammals. *Amer. Naturalist* 103:589-603, 1969.
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This paper analyzes mate and habitat selection in which females choose that combination of mate and habitat that maximizes their reproductive success. The polygyny threshold is the point at which the option of selecting an unmated male territory is equal to accepting a bigamous mating on a better territory. Seven predictions about the frequency with which the polygyny threshold should be reached are tested. [The SCJ® indicates that this paper has been cited over 215 times since 1969.]

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"The work leading to the writing of this paper was begun because my original goals were thwarted. I had planned to do a thesis on behavior of breeding jaegers in northern Alaska, but my arrival at the University of California at Berkeley was delayed by a year as a Fulbright Fellow at Oxford, England, and six months in the Transportation Corps of the US Army. When I finally arrived at Berkeley, my preferred project had already been undertaken by others. My search for an alternative led me to the American blackbirds (family Icteridae), a group that displays most of the breeding social systems known among birds. I was influenced by the fact that my undergraduate adviser at the University of Wisconsin, John T. Emlen, and my tutor at Oxford, David Lack, had both worked on blackbirds.

"My interest in ecological aspects of mating systems, begun during my four years at Berkeley, continued at the University of Washington in 1960. When I arrived in Seattle, one graduate student, Jared Verner, was already interested in behavioral ecology

and others soon arrived, creating a stimulating atmosphere for research into mating systems.

"Ironically, I actually discouraged Verner from working on marsh wrens, the project that led him to an understanding of the concept of the polygyny threshold, because I believed that the wrens would be too difficult to observe. To his credit, Verner persisted, proving my prediction false, and thereby contributed an idea that was central to my graphical model. He and Mary Willson also surveyed the existing literature on mating systems in North American songbirds, providing the kind of data that stimulate development of appropriate conceptual models.^{1,2} My paper formalized and extended the ideas Verner and Willson had already expressed in their papers.

"My graphical model, diagrammatically simple in design, provided an easy-to-interpret formalization of the bases of choice of mate and real estate. It also suggested more clearly than had been done before what field data were needed to test it. I devoted a considerable portion of the paper to exploring a wide range of predictions from the model, and tested them with existing data. The correspondence was good enough to encourage me and others to believe that the model had grasped a key part of the process we were trying to understand.

"The decade since the publication of the paper has seen a large number of tests of the basic model, some by me and my students and others by workers with other species of birds and mammals. In addition, the model has been subjected to further theoretical development and some of the points that were ambiguous in my original formulation have been clarified. These improvements have improved the focus of recent research on mating systems. Much of this work has been summarized by S.T. Emlen and Oring³ and Wittenberger.⁴

"For some time I have regarded this paper as my best. It had a clarity of logic and a good mix of theory and data for which I always strive but less often achieve. Its publication also coincided with a general revival of interest in behavioral ecology which also enhanced its impact."

1. Verner J. The evolution of polygamy in the long-billed marsh wren. *Evolution* 18:252-61, 1964.
2. Verner J & Willson M F. The influence of habitats on mating systems of North American passerine birds. *Ecology* 47:143-7, 1966.
3. Emlen S T & Oring L W. Ecology, sexual selection, and the evolution of mating systems. *Science* 197:215-23, 1977.
4. Wittenberger J F. *Animal social behaviour*. Boston: Duxbury Press, 1981. 722 p.