

The Cooper's Hawk: Breeding Ecology and Natural History of a Winged Huntsman.

Author: Millsap, Brian A.

Source: Journal of Raptor Research, 54(1) : 86-87

Published By: Raptor Research Foundation

URL: <https://doi.org/10.3356/0892-1016-54.1.86>

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BOOK REVIEW

J. Raptor Res. 54(1):86–87

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The Cooper's Hawk: Breeding Ecology and Natural History of a Winged Huntsman. By Robert N. Rosenfield. 2018. Hancock House Publishers, Surrey BC, CA, and Blaine, WA, USA. 163 pp., 70 color photographs, 3 maps, 1 table, 3 line drawings, and index. ISBN 978-0-88839-082-0 (softcover) \$34.95 USD; ISBN 978-0-88839-116-2 (hardcover) \$49.95 USD.

The Cooper's Hawk (*Accipiter cooperii*) is a medium-sized (280–580 g), highly sexually size-dimorphic hawk endemic to North America—but this dry description belies an intriguingly complex life history and important conservation story. Fortunately, Robert (Bob) Rosenfield does an admirable job bringing that story to life in this richly illustrated book. Rosenfield has studied this species across the northwestern quarter of its range for nearly 40 years, and he draws heavily on his first-hand experience and the volumes of data he and his collaborators have collected to tell that story.

The story is particularly intriguing to me, as I was one of those who began working with raptors back in the early 1970s when populations of this hawk, like those of the Peregrine Falcon (*Falco peregrinus*) and Bald Eagle (*Haliaeetus leucocephalus*), were at the depths of their decline from the effects of DDT and related pesticides. Cooper's Hawks were somewhat of a holy grail back then to those of us who searched for hawk nests each spring in northern Virginia, where nearly every woodlot was known to have held a nesting pair in the past according to the “old timers.” We never found them, and though we knew why, it seemed unfathomable and terribly unfair that a hawk that was so abundant in the recent past was all but lost to us. One of the greatest contributions of Rosenfield's book is that it indirectly chronicles the recovery of the Cooper's Hawk across North America, a story even more impressive than that of the Peregrine Falcon and Bald Eagle because it occurred under the radar, without the aid of human reintroduction or other direct management assistance.

Rosenfield tells his story of this hawk in six wide-ranging chapters: (1) an introduction to the species; (2) food habits and related ecological factors; (3) courtship and nesting biology; (4) breeding populations and habitat; (5) individual variation and natural selection; and (6) the meaning of natural history variation. I found the chapter on courtship and nesting behavior particularly noteworthy because this is where Rosenfield has focused much of his research. The descriptions of nest building and courtship behavior offer

an in-depth look into an aspect of life history that is not well studied nor understood in most raptors. Yet, it is a particularly interesting time in the annual life cycle of the Cooper's Hawk due to the unusually high rate of extra-pair paternity found in at least some populations of this species, another area of focused research by Rosenfield and his colleagues.

The chapters covering breeding populations and habitat and individual variation and natural selection were the most interesting parts of the book to me. Rosenfield's treatment of the importance of individual variation is well worth reading. I do not doubt the overall message of this chapter (and indeed, of the book in general)—that variation in the intrinsic qualities of individuals can strongly influence success. But I did find myself questioning several of Rosenfield's specific conclusions because I am not convinced the cited data and analyses are appropriate for those purposes. In particular, many of the studies Rosenfield cites in these chapters, both his own work and the work of others, do not account for imperfect detection of occupied nests, survival, or dispersal, and thus represent uncalibrated underestimates of true values. This fact renders meaningful comparison of results across studies and among researchers difficult. Additionally, this can lead to an underestimation of the effects of covariates on the parameter of interest (Kéry 2010). Given this, I am not sure what to make of Rosenfield's conclusions regarding, for example, finding no difference in adult male survival between urban and rural habitats (page 109), finding higher naive survival rate for female Cooper's Hawks that undertook breeding dispersal compared to those that did not (page 115), or finding no relationship between body mass and longevity in male or female Cooper's Hawks (page 129).

Throughout the book, Rosenfield incorporates references to Cooper's Hawk studies by others to complement and compare with the results of his own work. As I argue above, the degree to which valid comparisons can be made among studies needs to be considered in each case. There is no question, however, that incorporating this work broadens the overall contribution of Rosenfield's book. This is particularly apparent in the chapter on food habits, where he enriches the findings from his and his colleagues' work in Wisconsin, North Dakota, and British Columbia by incorporating results of studies conducted by others elsewhere across the species' range. As is the case with any book like this, I would encourage those who may wish to cite information from it to read the original papers, because secondary sources are prone to errors or oversimplification. Rosenfield's book, though for the most part well done in my opinion, is not error free. For example, in

the food habits section, Rosenfield reports that Northern Bobwhite (*Colinus virginianus*) made up 34–57% of the Cooper's Hawk's diet in Florida, citing a monograph by my colleagues and me; bobwhite actually made up only 2% of male and 6% of female diets in this study, and while bobwhite are an important prey species (as we defined important), Cooper's Hawk predation on this species was relatively insignificant overall (Millsap et al. 2013).

The strength of Rosenfield's book is, as the title suggests, in its coverage of breeding ecology. Other aspects of life history—nonbreeding ecology, foraging ecology, migration, dispersal, population dynamics, and individual fitness—are either not covered or are covered only superficially. Importantly, we are also learning that there are important ecological and demographic differences between the Cooper's Hawk sexes, and although Rosenfield's book touches on some of these (e.g., size, diet, roles during breeding, natal dispersal distances), I think there is much more to learn about this aspect of Cooper's Hawk ecology. I do not see these omissions as flaws given the stated purpose and scope of Rosenfield's book, but they are important topics for future research and thus bear mentioning.

In conclusion, I found *The Cooper's Hawk* a worthwhile and thought-provoking read; I highly recommend it to anyone interested in this species or raptors in general. It is a

treat to have someone so knowledgeable about a species take the time and effort to put on paper what he has learned over decades of hard work; that is certainly the case here. Although I don't agree with Rosenfield's conclusions or methods in some cases, I have great respect for his understanding of Cooper's Hawks and their natural history, and that is what makes this book such an important contribution to the raptor literature.—**Brian A. Millsap (email address: brian_a_millsap@fws.gov), US Fish and Wildlife Service, 2105 Osuna Rd NE, Albuquerque, NM 87113, USA.**

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Book Review Editor: Allen M. Fish