

# William Brewster Memorial Award, 2004: Russell P. Balda and Alan C. Kamil

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## Awards



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William Brewster Memorial Award, 2004:

Russell P. Balda and Alan C. Kamil



Russell P. Balda (right) and Alan C. Kamil: March, 2004. Photo by Judith Balda.

Russell P. Balda and Alan C. Kamil combined their training in animal behavior, ecology, evolution, and comparative psychology to pioneer the study of avian cognition and contribute significantly to our understanding of corvid biology. More than two decades ago, they saw the potential in the fact that seed-caching birds are self-motivated to return to inconspicuous points in the landscape to retrieve hidden food, and they began to employ the cache-recovery paradigm as a model system for studying learning, memory, and "spatial information processing." Their unusually fruitful collaboration has led to enormous advances in the understanding of spatial learning in birds and, in the previous decade, to the publication of approximately 50 scientific papers.

The Balda–Kamil partnership's careful consideration of the ecological context and evolutionary history of bird behavior was enhanced by their use of a wider battery of methodologies and perspectives than either an ecologist or a comparative psychologist working alone might employ. By asking their birds to cache in arrays of sand-filled cups, for example, they were able to control for spacing or site preferences of Awards

caches and thus assess the importance of fixed patterns of movement and mnemonic devices in enabling cache retrieval (Kamil and Balda 1990).

They demonstrated that spatial cognition of related corvid species is correlated with differences in natural history and the degree to which species depend on stored food for winter survival and breeding: Clark's Nutcrackers (Nucifraga columbiana) and Pinyon Jays (Gymnorhinus cyanocephalus) outperform the less challenged Western Scrub-Jays (Aphelocoma californica) and Mexican Jays (A. ultramarina) (Balda et al. 1996, Balda and Kamil 1998). They found that the exceptional spatial memory of Clark's Nutcracker is coupled with a disproportionately large hippocampal volume (Basil et al. 1996). They also developed an analog of the radial-arm maze, which allowed them to compare the memory of various seed-caching and non-seed-caching species (e.g. Kamil et al. 1994).

Balda and Kamil also found that spatial memory of cache sites in Clark's Nutcracker is highly resistant to interference from other spatial memory tasks (Bednekoff et al. 1997). Together with Peter Bednekoff, they linked corvid sociality to observational spatial memory, demonstrating that the highly social Pinyon Jay may be more adept at learning cache sites by observing other birds than the more solitary nutcracker and Western Scrub-Jay (Bednekoff and Balda. 1996a, b). Those studies not only demonstrated that the spatial memory of corvids is extraordinary in both capacity and duration, but they helped develop a general understanding of the adaptive nature of avian cognition.

In addition to their work together, Balda and Kamil have made many contributions independently and with other collaborators. For example, Alan Kamil has conducted important studies on the effects of visual predators (Blue Jays [Cyanocitta cristata]) on prey crypticity and how predator choice can function to maintain prey polymorphism (Bond and Kamil 1998, 2002). Russ Balda, on the other hand, has made important contributions to the ecology, breeding biology, and sociality of Pinyon Jays and other birds in a long series of studies in the field (e.g. Balda 2002). Their joint research has been funded by the National Science Foundation throughout the past two decades, and they continue today to make important new contributions to the study of avian behavior.

For their ground-breaking work on North American corvid biology, especially cognition, memory, learning, and seed-caching, and associated aspects of social behavior, The American Ornithologists' Union is pleased to present the 2004 Brewster Memorial Award to Russell P. Balda and Alan C. Kamil.

Award criteria.—The William Brewster Memorial Award consists of a medal and an honorarium provided through the endowed William Brewster Memorial Fund of the American Ornithologists' Union. It is given annually to the author or coauthors (not previously so honored) of the most meritorious body of work on birds of the Western Hemisphere published during the 10 calendar years preceding a given AOU meeting.

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January 2005]

Awards

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### Elliott Coues Award, 2004: Jared Verner



Jared Verner: September, 2004. Photo by Marlene Verner.

Jared Verner is perhaps best known for his pioneering theories on the evolution of avian polygyny. That early work was instrumental in launching the modern study of ultimate factors that influence avian mating systems. Verner's research on Marsh Wrens (*Cistothorus palustris*) demonstrated his unusually keen sense of observation and included hypotheses on the evolutionary significance of territory, selection for sex ratio, and functional aspects of vocal communication. Together with Mary Willson, he was first to note the relationship between avian mating systems and habitat type. His communication studies exposed surprisingly complex relationships among repertoire size, song type, song sequence, dialects, dispersal, and habitat stability—all accomplished before the advent of modern sound equipment. That work was among the most important early studies on the function of vocal communication among male birds.

361

Awards

More recently, Verner's work focused on both political and biological aspects of North American bird conservation. He was a member of the California Condor Recovery Team, and his population models were pivotal in convincing opponents that a captive breeding program held the only promise of averting that species' extinction. Today, the success of that program is exemplary.

With the publication in 1980 of *California Wildlife and Their Habitats: Western Sierra Nevada,* Verner and his co-editor, Allan Boss, helped pave the way for the widely accepted use of Wildlife Habitat Relationship (WHR) models. Those models have been instrumental in providing for continued communication among researchers and land managers on the state-ofthe-art in wildlife habitat modeling.

Verner's research also played an important role in the development of rigorous methods for monitoring bird populations. That work resulted in recommendations for coping with sources of variability in counts and suggested ways to improve the rigor with which birds are monitored. In the 1985 issue of *Current Ornithology*, he published a critical review of the primary methods used to monitor bird populations.

Verner also played a lead role in research on Spotted Owls (*Strix occidentalis*) and in the development of scientifically credible management and conservation strategies for both the northern and California subspecies. Guidelines for the California Spotted Owl (*S. o. occidentalis*) were based on a unique (at the time) spatially explicit approach to modeling owl territories. Some of the important conclusions from that work defined the relationship between owls and large old trees, large snags, and large downed logs—facts critical in the development of management recommendations for the California subspecies.

In addition, Verner and his students and colleagues made widespread contributions to understanding of bird-habitat relations in the Sierra Nevada of California. That work included studies of the possible significance of the expansion of Brown-headed Cowbird (*Molothrus ater*) into montane forests of the Sierra Nevada, the relationship between total crown volume and bird-species richness in Sierran conifer forests, investigation of life histories of oak woodland birds, studies of nest-site limitation of cavity-nesting birds, and examination of the effects of livestock grazing on bird communities.

For more than 40 years, Jared Verner has made widespread and highly innovative contributions to understanding the biology and conservation of the birds of North America. For his many valuable contributions to avian ecology and conservation, the American Ornithologists' Union is pleased to award Jared Verner the Elliott Coues Award for 2004.

Award criteria.-The Elliott Coues Award is given for meritorious contributions having an important influence on the study of birds in the Western Hemisphere, but which have not been recognized through a Brewster Award. Contributions to ornithology not eligible for recognition with a Brewster Award because of geographic limitations may be honored through a Coues Award, as may works including important innovative ideas but which, because of brevity or publication outside the primary ornithological literature, may not have been selected for a Brewster Award. However, the Coues Award is not necessarily limited to such works. The award consists of a medal and an honorarium provided though the endowed Ralph W. Schreiber Fund of the American Ornithologists' Union.

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362