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AWARDS

Katma Award Citation 2013, to Kenneth P. Dial, Brandon E. Jackson, and Paolo Segre

Published January 29, 2014

The Katma Award is intended to encourage the formulation of new ideas that could change the course of thinking about the biology of birds. Proposed and sponsored by Dr. Robert W. Storer, the award is given to the author(s) of an outstanding paper related to ornithology that offers unconventional ideas or innovative approaches, backed by a well-reasoned argument. Bob felt that science moves forward by the production and acceptance of new ideas, yet it has been increasingly difficult to air new ideas in both pure and applied sciences. Bob wrote:

> *Serious work that questions current dogma too often is stifled by those who are angered by seeing their own work questioned. . . . Establishing the Katma Award of the Cooper Ornithological Society is a positive effort to counter this trend by encouraging the publication and discussion of new ideas, especially those that run counter to established opinion.*

Originally designated for an outstanding paper appearing in publications of the Cooper Ornithological Society, the award was broadened to include papers published in any peer-reviewed publication. The award includes a cash prize accompanied by a certificate.

The 2013 Katma Award goes to Kenneth P. Dial, Brandon E. Jackson, and Paolo Segre for their 2008 paper "A fundamental avian wing-stroke provides a new perspective on the evolution of flight," which appeared in *Nature* 451:985–989. The origin of flight in birds has perplexed ornithologists for centuries. There are two competing ideas, namely that flapping flight arose (1) from cursorial ancestors, whose forelimbs were transformed into wings ("bottom up"), or (2) from arboreal ancestors that glided from tree to tree ("top down"). In recent years the paradigm has shifted from top down to bottom up, although not without significant angst. A conceptual problem for accepting either option has been deciphering the adaptive value of a proto-wing as it was gradually transformed from a stubby forelimb into a tool for propulsion. Fossil evidence has yet to yield much of relevance to the question of how flight arose.

In a series of papers that was summarized in *Nature*, Kenneth P. Dial, Brandon E. Jackson, and Paolo Segre have proposed an innovative solution, drawing data from a completely unanticipated source. Using kinematic studies of the mechanics of immature and flightless birds in more than 20 diverse species, they showed that the upstroke of flapping wings, even in newly hatched birds, is used to assist in climbing near-vertical structures by providing downward force. The upstroke is also used to control any

Ken Dial receiving the 2013 Katma Award from Cooper Society President Kim Sullivan. Photo credit: Laurie Haig

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subsequent descent, which is a precursor to flapping flight. Their idea provides new support to the ground-up theory of avian flight.

Dial et al. used careful and comparative observations to form the basis for their "ontogenetic-transitional wing hypothesis." It proposes that "incremental adaptive stages leading to the evolution of avian flight correspond behaviorally and morphologically to transitional stages observed in ontogenetic forms." Their hypothesis comes from recognizing a link between a behavior in an extant bird and the origins of flight in an utterly novel way. This idea resolves problems inherent in existing hypotheses. It is the first to show a plausible mechanism for how avian flight could have originated via an exaptation for climbing and then be modified into the mechanism seen today in modern birds. This idea represents a fundamental change in ornithological thinking that exemplifies the reason the Katma Award was created. The award was presented to Ken Dial at the annual meeting in Chicago in August 2013.

Katma Award Committee: Steve Beissinger (Chair), Joe Jehl, Bridget Stutchbury, and Robert Zink.

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