

Symposium 09 Photoperiodism: mechanisms and adaptations

Introduction

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Seasonal reproductive cycles in birds result from interactions between endogenous cycles and exogenous factors, in particular photoperiod. This symposium examined photoperiodic phenomena as they affect biological cycles in birds. In the first oral paper, the late Eberhard Gwinner focused on the role of endogenous circannual rhythmicity and its modification by photoperiodic response to ensure that seasonal biological cycles are matched optimally to environmental conditions. Notwithstanding differences from mammals, it seems likely that pineal secretions of the hormone melatonin mediate photoperiodic information for the basic circannual control system. In a second oral paper, Michaela Hau reviewed the growing evidence for photoperiodic influence in circannual cycles in low latitudes where day-length undergoes little seasonal change. Interaction is complex and varied by species-specific thresholds to photoperiodic response, as well as environmental (food availability) and social cues. Information about how neuroendocrine systems mediate interactions between non-photoperiodic factors and day-length is needed. The third

oral paper from Alistair Dawson addressed the role of day-length in the physiological control of molt. He detailed the influence of long and decreasing photoperiods in initiating and hastening the molt processes, and concluded that secretion of prolactin, thyroid hormones and testosterone were implicated in complex but as yet unexplainable ways. Abstracts of these papers are published in the Abstract Volume of the Congress.

Only the last two papers were submitted as full papers for publication and these are now presented here. Ongoing research in all fields covered by this symposium will continue to resolve questions for understanding the bases of photoperiodism and the physiological and life history consequences of photoperiodic responses. This understanding, in turn, has wider application in such issues as the conservation and management of threatened/endangered species, problems related to captive breeding of individuals taken from wild populations, and adaptations to global warming.