

FEATURE ARTICLES

**THE FIRST BASIC PROBLEM: A REVIEW OF MOLT AND PLUMAGE
HOMOLOGIES**

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Abstract. All birds have fundamentally similar patterns of plumage succession. Thus Humphrey and Parkes (1959) proposed a system of nomenclature (the H-P system), based on homologies, that has become standard for molt studies in North America. However, presumably analogous similarities in pattern between first basic and definitive basic plumages have obscured homologies. Many plumages conventionally known as "first basic" are better considered as novel first-cycle plumages that lack homologous counterparts in subsequent cycles.

Consequently, current nomenclature does not consistently reflect between-species homologies. Howell and Corben (2000b) proposed that traditional juvenal plumage can be considered an unambiguous starting point for a terminology that better reflects presumed homologies in basic plumages; alternate and other nonbasic plumages may not necessarily be homologous between species. Four underlying strategies of increasing complexity incorporate all known patterns of plumage succession: the Simple Basic Strategy, the Complex Basic Strategy, the Simple Alternate Strategy, and the Complex Alternate Strategy. We review inconsistency in the H-P system; explain the four underlying strategies; and discuss how one can identify homologies (if any) between plumages in first and subsequent cycles and among taxa. Many species have novel plumages added into their first plumage cycle; we argue that existing terminology for these plumages is unsuitable and we term them *formative plumages* attained by *preformative molts*. Finally, we provide examples of how this modified H-P system can be applied to diverse taxa of birds while reflecting the homology underlying all basic plumage cycles. Our revision validates the flexibility and utility of the H-P system.

Key words: Complex Alternate Strategy, Complex Basic Strategy, formative plumages, molt terminology, plumage succession, Simple Alternate Strategy, Simple Basic Strategy.