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CHAPTER 10

RAPID EVOLUTION IN LEKKING GROUSE: IMPLICATIONS FOR TAXONOMIC DEFINITIONS

Sara J. Oyler-McCance,[1,2,3] Judy St. John,[2] and Thomas W. Quinn[2]

[1]*U.S. Geological Survey, Fort Collins Science Center, 2150 Centre Avenue, Building C, Fort Collins, Colorado 80526, USA; and*
[2]*Rocky Mountain Center for Conservation Genetics and Systematics, Department of Biological Sciences, University of Denver, Denver, Colorado 80208, USA*

Abstract.—Species and subspecies delineations were traditionally defined by morphological and behavioral traits, as well as by plumage characteristics. Molecular genetic data have more recently been used to assess these classifications and, in many cases, to redefine them. The recent practice of utilizing molecular genetic data to examine taxonomic questions has led some to suggest that molecular genetic methods are more appropriate than traditional methods for addressing taxonomic uncertainty and management units. We compared the North American Tetraoninae—which have been defined using plumage, morphology, and behavior—and considered the effects of redefinition using only neutral molecular genetic data (mitochondrial control region and cytochrome oxidase subunit 1). Using the criterion of reciprocal monophyly, we failed to recognize the five species whose mating system is highly polygynous, with males displaying on leks. In lek-breeding species, sexual selection can act to influence morphological and behavioral traits at a rate much faster than can be tracked genetically. Thus, we suggest that at least for lek-breeding species, it is important to recognize the possibility that morphological and behavioral changes may occur at an accelerated rate compared with the processes that led to reciprocal monophyly of putatively neutral genetic markers. Therefore, it is particularly important to consider the possible disconnect between such lines of evidence when making taxonomic revisions and definitions of management units.

Key words: grouse, sexual selection, speciation, species concepts.

Evolución Rápida en los Tetraoninae con Asambleas de Cortejo: Implicaciones para las Definiciones Taxonómicas

Resumen.—Las delimitaciones de especies y subespecies han sido tradicionalmente definidas con base en caracteres morfológicos y de comportamiento, como también por características del plumaje. Recientemente también se han usado datos moleculares genéticos para evaluar estas clasificaciones, y en muchos casos, para redefinirlas. La práctica reciente de usar datos moleculares genéticos para responder preguntas taxonómicas ha llevado a algunos a sugerir que estos métodos son más apropiados que los métodos tradicionales para abordar la incertidumbre taxonómica y definir unidades de manejo. Comparamos las especies norteamericanas de Tetraoninae—las cuales han sido definidas utilizando caracteres del plumaje, morfológicos y de comportamiento–y consideramos los efectos de redefinir estas especies usando sólo datos moleculares genéticos neutrales (región control mitocondrial y subunidad 1 de la citocromo oxidasa). Usando el criterio de monofilia recíproca, no fuimos capaces de reconocer las cinco especies que tienen un sistema de apareamiento altamente poligínico, con machos que se exhiben en asambleas de cortejo. En las especies que se reproducen en asambleas de cortejo, la acción de la selección sexual puede

[3]E-mail: sara_oyler-mccance@usgs.gov

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