

## **Keynote Presentation**

### **Hidden forces in bird evolution.**

*Christopher C. Witt, Director and Curator of Birds, Museum of Southwestern Biology, University of New Mexico*

New bird species form when populations become geographically isolated, a process known as allopatric speciation. But an outstanding evolutionary mystery is why species diversity, once formed, persists, causing bird communities to vary dramatically from place to place. The forces of homogenization — climate change, population declines, competition, hybridization, range expansions, and others — occur much faster than allopatric speciation. Great thinkers of the past 160 years of evolutionary biology and ornithology have postulated mechanisms that maintain species diversity. Recent advances in comparative ornithology and genomics are uncovering these mechanisms and elaborating their details. I review five types of 'hidden forces' that maintain bird diversity, with examples from recent research at UNM and elsewhere, each of which supports or refutes specific hypotheses. Recognition of these mechanisms obliges us to reconsider our species concepts and the practical methods by which we define and delimit bird species.