

# KNOWLEDGE BASE



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## DNA Technologies

In my last column I described how new DNA technologies are opening a new world of possibilities in wildlife research and management. Always at the forefront in wildlife conservation,

the Boone and Crockett Club is supporting DNA projects to fill important information needs in deer management and trophy records-keeping. The Club is making these investments through the William I. Spencer Conservation Grants Program, named after former B&C President and Sagamore Hill Award recipient Bill Spencer.

One such study, *Defining Practical Units of Conservation and Record Keeping Through Analysis of Genetic Differentiation in Mule And Black-Tailed Deer*, is nearing completion. Grant recipient Jim Heffelfinger leveraged his initial B&C grant to fund an ambitious project aimed at solving a variety of problems concerning the genetic relationships of mule deer and black-tailed deer. The objectives range from clearing up the geographic distribution of these deer, to revising subspecies designations, to assessing populations for evidence of negative genetic effects, to providing knowledge needed to protect lawful hunting and assist law enforcement. The results will also offer real help to the Club's Records Program by providing accurate categories for trophy records keeping.

With the work on mule deer and black-tailed deer wrapping up, the Club is turning its attention to two other problems involving the genetics of deer. Both reflect important needs and priorities of the B&C Records Program. The first is the need for a diagnostic test to differentiate F1 and F2 hybrids of white-tailed deer and mule deer crosses from pure individuals of either species. A 2007 conservation grant is being provided to Dr. Irv Kornfield to partner with the Club in addressing this problem. Dr. Kornfield is a professor of

in the wildlife management community.

The second problem is the need for a diagnostic test to differentiate Coues' white-tailed deer from other white-tailed deer. This test would allow the Records Program to determine whether or not a white-tailed deer from an unknown location is a Coues' whitetail. As well, this work will fulfill important needs in deer conservation and management by clarifying genetic relationships that show true relatedness and differentiation among subspecies, thus helping to define useful

and science-based conservation units. Laboratory work on this problem must wait until additional samples are collected, primarily in Mexico, to fill gaps in the collection for Coues' and white-tailed deer. Supported by a 2007 grant from our partner organization, the Camp Fire Conservation Fund, Inc., Dr. Carlos Alcalá-Galván will work with hunters and authorities in Mexico to fill those gaps. A researcher at INIFAP-Mexico, and adjunct professor at the University

of Arizona, Dr. Alcalá-Galván brings to this task a solid understanding of sampling protocols; excellent contacts in Mexico; knowledge of U.S. requirements for the importation of biological materials; and, a record of experience and success in similar endeavors.

Together with its partners, the Boone and Crockett Club, through the Conservation Grants Program, is poised to make substantial contributions to deer conservation and records-keeping through innovative projects in diagnostic DNA research. ■

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zoology at the University of Maine, Orono. In 1997 he established the Molecular Forensics Laboratory to process casework for the Maine Warden Service and wildlife agencies in other states. Drawing from his forensics expertise and the collections and resources of the Lab, Dr. Kornfield will strive to develop genetic markers for the two deer species that, if successful, will allow detection of F1 hybrids with 100 percent accuracy and F2 hybrids with about 98 percent accuracy. In addition to filling important needs in the Records Program, this tool will find wide interest and application



**DR. IRV KORNFIELD**

- Professor of Zoology
- University of Maine, Orono

*Developing a diagnostic test to differentiate F1 and F2 hybrids of white-tailed deer and mule deer crosses from pure individuals of either species.*



**DR. CARLOS ALCALÁ-GALVÁN**

- Adjunct Professor
- University of Arizona

*Developing a diagnostic test to differentiate Coues' white-tailed deer from other white-tailed deer.*

