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SCWDS BRIEFS

A Quarterly Newsletter from the
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Number 1

New APHIS Funds for CWD Work

On April 15, 2003, USDA's Animal and Plant Health Inspection Service (APHIS) announced the availability of \$4 million to state wildlife management agencies for chronic wasting disease (CWD) surveillance and management. This funding is for work to be conducted during 2003-2004, and it should not be confused with payment by APHIS to USDA-approved laboratories for CWD testing in 2002-2003. Funding will be provided through APHIS Cooperative Agreements, and agencies that submit management and surveillance plans must detail how the money will be spent. Agencies should work with the APHIS Area Veterinarian in Charge (AVIC) in their state to develop and submit their plans. The target date for submission of plans is May 15, 2003, with an absolute deadline of July 1, 2003.

The amount of funding available to each state has been determined through a formula developed in conjunction with the International Association of Fish and Wildlife Agencies. Three categories were established: Tier 1 states are those with known occurrence of CWD in **free-ranging** deer or elk as of March 1, 2003 (CO, IL, NE, NM, SD, UT, WI, and WY); Tier 2 states are adjacent to Tier 1 states or are states with known CWD occurrences in **captive** cervids as of March 1, 2003 (AZ, IA, ID, IN, KS, KY, MI, MN, MO, MT, ND, NV, OK, and TX); and Tier 3 consists of the remaining 28 states.

According to the formula, the eight Tier 1 states will split \$1.75 million, with \$750,000 designated for surveillance (collection and processing of samples, testing fees, reporting results) and \$1 million for other management activities, including, but not limited to, advanced

planning, additional surveillance, population reductions, carcass disposal, fencing, and public education and information. Each state is eligible for \$93,750 for surveillance and \$125,000 for management, totaling \$218,750. The 14 Tier 2 states will divide \$1 million in surveillance funds, making them eligible for \$71,248 each. The Tier 3 states will split \$1,250,000, making them eligible for \$44,648 each.

Additional information regarding requirements for work plans and contacts within APHIS can be found at www.aphis.usda.gov/lpa/issues/cwd/cwd.html (Prepared by John Fischer)

New Info on Captive Cervids and CWD

Since early 2002, chronic wasting disease (CWD) has assumed a level of prominence in the wildlife profession far beyond any previous or current wildlife health issue. Detection of CWD in wild and/or captive cervids at multiple locations within the United States and Canada has triggered complex and multifaceted actions, reactions, and investigations within wildlife, animal health, and public health agencies. A common priority for state agencies has been reevaluation and, in many cases, modification of regulations governing captive cervid facilities. Similar regulatory reassessments have focused on interstate and intrastate movement of wild cervids. Based on inquiries to SCWDS and discussions with many of the agencies involved, it became clear that there was marked variation among states in the quantity and quality of information relating to these important policy decisions. The "information gap" relative to these policy issues is being closed as more effort has been focused on the CWD issue.

The CWD Alliance website (www.cwd-info.org) contains many documents of interest under its **Policy & Legislative** subsection, including the two recent (March 2003) additions summarized below.

One particularly useful document is the "Summary of a Statewide Audit and Inspection of Wisconsin's Captive White-tailed Deer Farms" prepared by the Wisconsin Department of Natural Resources. Excerpts from the **Executive Summary** of this report are provided below.

"The following report was prepared by the Wisconsin Department of Natural Resources (DNR) for the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). On January 1, 2003, as part of the state's new Captive Wildlife Law, regulatory authority over whitetail deer farms was transferred from DNR to DATCP. The authority change for the administration of deer farms occurred shortly after the discovery of CWD and resulted after more than 14 years of cooperative work between the DNR, DATCP, the Legislature and the captive wildlife industry. In order to provide a solid baseline of information to the new responsible agency, DNR attempted to conduct on-site inspections of deer farm fences and deer farm records (audits) for all 639 whitetail deer farm licenses. Each audit procedure included an inventory of captive deer, fence inspections, annual reports, receipts and records of sales, purchases and transfers of deer."

"The following report provides a glimpse into the findings of these audits and inspections. It is important to note the examples provided are not representative of the industry as a whole. Rather they demonstrate the practices, strengths and problems encountered that are of concern in the management and control of disease in the captive and wild herds. Specific examples drawn from warden reports have been included to aid in understanding some of the more serious problems uncovered.

The goals of these audits were to:

Provide DATCP with a clear picture of the condition of Wisconsin deer farms as

regulated under state laws prior to the transfer of regulatory authority on January 1, 2003.

Inventory and define the status of the captive whitetail deer industry in Wisconsin.

Protect Wisconsin's wild deer herd by inspecting all exterior fences on deer farms. Identify fencing that did not meet the state's minimum standards and work with farmers to make the required repairs.

Identify minimum fence standards that would prevent captive deer escaping from pens or wild deer entering pens.

Determine the origin of the CWD-positive captive deer in an effort to identify other farms that may have come into contact with it and had been exposed to the disease.

Identify other deer that may have come into contact with infected deer and determine their current location.

In brief, the audits revealed:

The majority of whitetail deer farm fences were in compliance with state laws; however, 77 farms were found to be in violation of fence specifications. As with any other problem, violations were handled on a case by case basis taking into account all of the circumstances.

Deer farms contained at least 16,070 deer.

Most deer farmers reported they have not experienced problems with escapes; however, 182 deer farmers reported escapes or intentional releases into the wild.

Deer farmers reported at least 436 escaped deer that had not been recovered or returned to farms.

Twenty-four deer farms were unlicensed.

Records maintained by deer farm operators ranged from meticulous documentation to relying on memory.

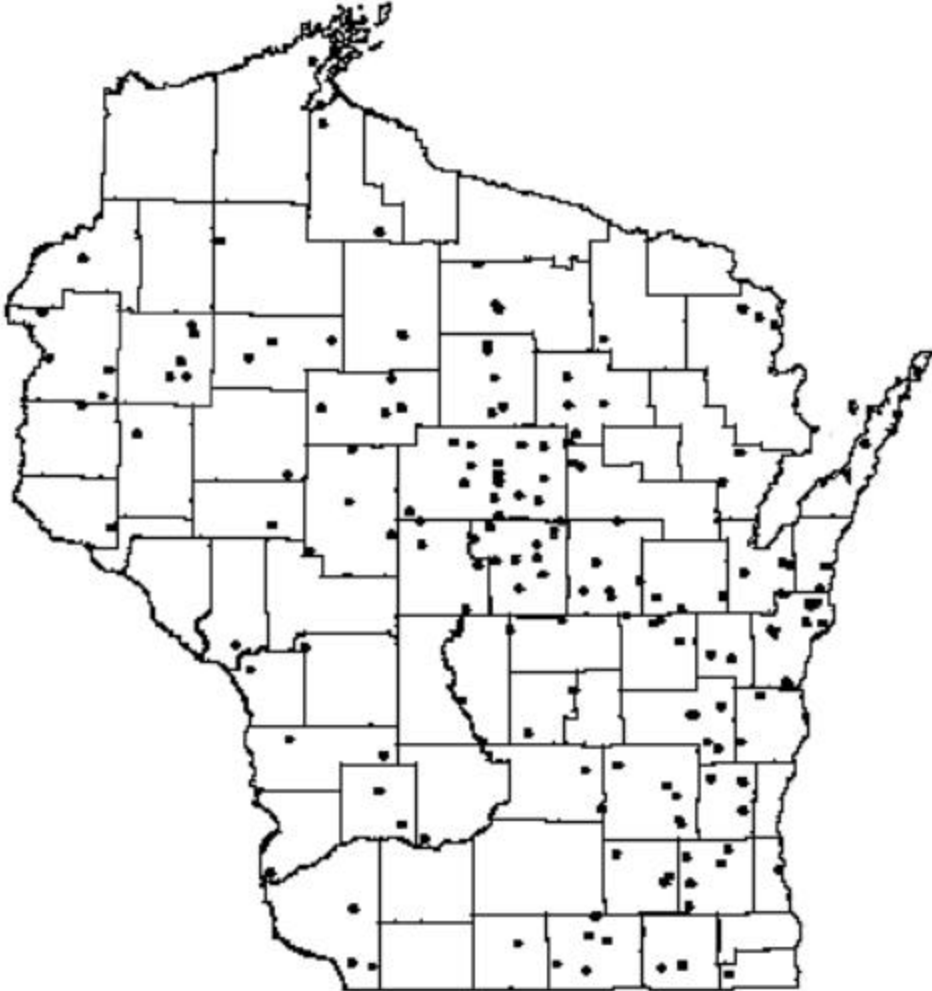
Wardens discovered a variety of law violations during the course of the audit and inspection process, some of which they did not have jurisdiction to pursue.

Tracking of individual deer without individual identification was almost impossible.

Over the past three years at least 1,222 deer died on deer farms due to various reasons. Disease testing was not performed nor required on the majority of deer."

The second useful document is a tabular list of "Chronic Wasting Disease and Cervidae Regulations by State, in the United States" that was prepared by the Michigan Department of Natural Resources. For each state, a brief summary description is provided on: (1) status of current CWD regulations; (2) regulatory changes planned or in progress; (3) testing requirements for captive cervids;

(4) status of testing programs for wild cervids; and (5) status of regulations on supplemental feeding, baiting, and movement of cervid carcass parts. This document is an excellent current overview of CWD-related regulations currently in effect or being contemplated. (Prepared by Randy Davidson)



Wisconsin deer farms from which white-tailed deer have escaped.

More CWD Items in the News

News concerning chronic wasting disease (CWD) continues to demand a lot of attention from wildlife managers, animal health officials, hunters, politicians, and the general public. Several new developments have occurred since the last CWD update in the January 2003 issue of the SCWDS BRIEFS.

- Tens of thousands of wild deer and elk across the United States were tested for CWD during the last several months. Additional positive wild cervids were found within or adjacent to areas previously recognized to contain infected wild deer and/or elk. However, no new foci of CWD infection were found among free-ranging cervids.
- The Utah Division of Wildlife announced on February 18, 2003, that a mule deer buck taken by a hunter on Diamond Mountain near Vernal tested positive for CWD. This was the only positive animal among nearly 1,400 deer and elk tested from the autumn 2002 hunting season in Utah. Surveillance in northeastern Utah was intensified after the discovery of infected deer in northwestern Colorado in early 2002. The location of the positive deer was approximately 15 miles from the Colorado border.
- Testing of 39,012 free-ranging deer across Wisconsin has been completed. A total of 190 positive deer have been found to date: 198 of 12,099 deer (1.6%) within the Eradication Zone and 6 of 5,961 (0.1%) deer in the CWD Management Zone.
- The Wisconsin Natural Resources Board, which sets policy for the DNR, recently approved a permanent ban on baiting and feeding deer statewide. The Board also approved an expansion of the CWD management area, including the disease eradication zone, which will grow from 411 square miles to 874 square miles in response to the discovery of infected deer outside the original CWD Eradication Zone.
- The Wisconsin Department of Agriculture, Trade and Consumer Protection announced on March 25, 2003, that an elk on a Manitowoc County farm tested positive for CWD. The 6-year-old female was among 20 elk imported in December 2000/January 2001 from a Minnesota elk farm that later was found to be infected. The 180 remaining elk on the

Wisconsin farm are under quarantine while officials arrange depopulation.

- On February 21, 2003, the Centers for Disease Control and Prevention (CDC) published the results of an epidemiological investigation of fatal neurologic illnesses in three men who participated in wild game feasts in Wisconsin dating back to 1976. The report indicated that only one of the men actually had Creutzfeldt-Jakob Disease (CJD), a transmissible spongiform encephalopathy similar to, but distinctly different from, CWD. This man participated in the game feast only once, and it was determined that venison and other game from outside Wisconsin that was served did not originate from known CWD-endemic areas. The CDC report stated, "Thus, no association could be made between case participation in the game feasts and the development of CJD." (Prepared by John Fischer)

Michigan TB Developments

Bovine tuberculosis (TB) continues to be a problem in wildlife and cattle in the northern part of Michigan's Lower Peninsula and is being addressed by the state's multi-agency Bovine TB Eradication Project. The annual cost of surveillance and management of the disease to the state's livestock producers, wildlife managers, public health and agriculture agencies, and others is estimated at more than \$48 million. In addition, USDA's Animal and Plant Health Inspection Service has devoted significant resources to the Michigan situation. Intensified surveillance of Michigan's free-ranging deer and other wildlife for bovine TB has occurred since 1994, when a single positive deer was found (see SCWDS BRIEFS Vol. 17, No. 1). Since then, nearly 106,000 wild deer have been examined for TB lesions, and 449 deer in 12 counties tested positive for *Mycobacterium bovis*, the causative bacterium. In 2002, results indicate that bovine TB was found in 51 deer, compared to 60 positive deer in 2001. All of the 2002 cases were in six counties within or adjacent to the endemic area, and the prevalence of positive deer has remained relatively constant since 1998.

Surveillance of Michigan's free-ranging elk herd has detected 2 positive animals among 1,185

examined since 1996. The first case was found in 2000, and one additional infected elk was detected in 2001; both were hunter-killed animals from Montmorency County in the endemic area. Of 129 elk tested in 2002, none were found to be positive for bovine TB on culture.

Approximately 1,500 wild animals other than deer and elk have been tested, and 16 coyotes, 8 black bears, 8 raccoons, 4 bobcats, 3 red foxes, and 2 opossums have cultured positive for bovine TB. Affected animals have been found only in counties with positive deer. All *M. bovis* isolates from Michigan's deer, elk, and other wildlife are genetically indistinguishable, indicating that a single strain of the bacterium is circulating among these animals.

With the goal of eliminating bovine TB in free-ranging deer by 2010, the Michigan Department of Natural Resources has liberalized deer harvests and imposed restrictions on baiting and supplemental feeding, which are widely believed to be major factors in the maintenance of bovine TB in Michigan's wild deer. All baiting and feeding are prohibited in a seven-county area in northeast Michigan. In other areas, baiting is allowed provided the volume of bait is 2 gallons or less at any one site. Recreational feeding and supplemental feeding also have specific guidelines, dependent on location.

Bovine TB has been found in 2 beef cattle herds and 2 dairy cattle herds in 2003, bringing the total number of recognized cases among privately owned animals to 29 cattle herds and 1 captive deer herd. Most cases are clustered in the core endemic area, all have been detected in counties with positive deer, and the bacterial strain in cattle is genetically indistinguishable from the wildlife strain. To date, nearly 900,000 cattle, goats, bison, and privately owned cervids have been tested by the Michigan Department of Agriculture.

The discovery of bovine TB in cattle in the late 1990s prompted a series of restrictions on Michigan livestock. In 2000, the USDA removed Michigan's "bovine TB accredited-free" status, resulting in stringent movement restrictions for all domestic livestock. Currently, Michigan is divided into Infected, Surveillance,

and Disease Free zones, based on the proximity to bovine TB-positive cattle and white-tailed deer. Livestock testing, identification, and movement requirements vary with the zone in which the livestock reside.

On April 7, 2003, USDA published a proposed rule in the Federal Register to allow "split state" status in which Michigan would be divided into two separate bovine TB classification zones. The proposed rule establishes a "modified accredited zone," consisting of part or all of 11 counties in which rigorous livestock testing and movement restrictions will continue. The remainder of the state will be a "modified accredited advanced zone," and herds in this area will continue to be tested under a random selection protocol for 6 years.

Technology has improved the quality and speed of both wild and domestic animal testing procedures. For example, most of the white-tailed deer and elk surveillance is possible because hunters voluntarily submit samples from their animals. In the past, hunters waited for results to arrive via U.S. mail. Now, within 10 days of submittal, hunters can access a website using their deer tag number to check the results for their animal. In a new program established in November 2001, most domestic animals in northeastern Michigan are implanted with an electronic identification tag that is linked to a database with the animal's TB test history. Agricultural officials should now be able to trace an animal's test and movement history in a matter of minutes rather than days. (Prepared by Britta Hanson)

West Nile Virus Conference Held

The 4th National Conference on West Nile Virus (WNV) in the United States was held in New Orleans, Louisiana, in February 2003. The conference was sponsored by the Centers for Disease Control and Prevention (CDC) and was conducted to share surveillance and research data and to explore lessons learned since WNV was first found in the United States in 1999. The following is a brief summary of the surveillance data presented at the meeting. For a comprehensive and concise review of the virus and disease see SCWDS BRIEFS, Vol. 15, No. 3, or the visit the CDC website on WNV

at www.cdc.gov/ncidod/dvbid/westnile/index.htm

Last year represented the largest arbovirus epidemic ever reported in the Western Hemisphere and the largest WNV epidemic ever reported worldwide. During 2002, 4,161 people in the United States were infected with WNV, and there were 277 deaths. Human cases occurred in 39 states and Washington, D.C. Onset ranged from May to December.

In addition to the human cases, WNV was found in 157 avian species between 1999 and 2002. During nationwide surveillance in 2002, 124,854 dead birds were reported (up from 69,102 reported during 2001). Of these, 31,514 were tested, and 50% were positive for WNV. The positive birds were from 42 states and Washington, D.C., and the majority were crows (53%).

Over 1.5 million mosquitoes were tested for WNV during 2002. Mosquitoes were not tested individually but were combined into "pools" to make laboratory work more practical. The number of mosquitoes in a pool may vary considerably, depending on circumstances and the investigator. WNV was detected in 6,033 mosquito pools from 29 states and Washington, D.C. The virus has been found in 36 species of mosquitos in the United States since 1999.

During 2002, WNV was discovered in 14,901 equines nationwide. The case fatality rate, including animals that were euthanized, was 30%. Although WNV-infected equines were diagnosed in 39 states, cases were more prevalent in the central plains states.

As in previous years, CDC suggests that the risk for human and domestic animal infection with WNV may be minimized by increased surveillance geared toward early viral detection, mosquito-control and avoidance, and activities that interrupt amplification cycles. Prevention activities delineated by CDC continue to include: (1) public education programs urging reduction of mosquito breeding sites around residential areas and personal protective measures to reduce mosquito exposure; (2) development of sustained, community-level integrated mosquito surveillance and

management programs; and (3) high-priority emphasis on the control of urban *Culex* mosquitoes. (Prepared by Danny Mead)

2002-2003 AVM Update

The apparent impact of avian vacuolar myelinopathy (AVM) on wild birds in the Southeast during the migratory and wintering season of 2002-2003 has not been as severe as in previous years. During the past fall and winter, three bald eagles from Lake Thurmond on the Georgia/South Carolina border were either confirmed (2) or suspected (1) of having AVM. This is a considerable reduction from the fall and winter of 2000-2001 and 2001-2002, when AVM was confirmed or suspected in 16 and 7 bald eagles, respectively. Furthermore, clinical disease was not observed in other avian species such as American coots, Canada geese, or great-horned owls as it had been during 2000-2002.

AVM is a neurologic disease that has killed at least 93 bald eagles in Arkansas, Georgia, North Carolina, and South Carolina since 1994. AVM also is responsible for the deaths of hundreds of American coots and has been detected in very low numbers in other avian species, including several species of ducks, Canada geese, great-horned owls, and a killdeer. The cause of AVM remains undetermined despite extensive diagnostic and research efforts; however, a man-made or natural neurotoxicant is suspected because the lesions are consistent with toxicosis and there has been no evidence of viruses, bacteria, prions, or other infectious agents.

From October 2002-April 2003, SCWDS conducted field investigations at nine sites in the Southeast. American coots from sites in Arkansas (DeGray Lake and Lake Ouachita), Georgia (Lake Juliette and Lake Seminole), South Carolina (Lake Thurmond, Lake Murray, and Par Pond and L-Lake at the U.S. Department of Energy's Savannah River Site), and Texas (Rayburn Reservoir) were collected and examined for AVM lesions. Only three sites were AVM positive this year: Lake Thurmond on the Georgia/South Carolina border, Lake Ouachita, Arkansas, and Lake Murray, South Carolina. The apparent

prevalence of AVM lesions in the brains of coots at the positive sites this past year was less than in the past few years, and there were no reports of sick eagles or waterfowl other than the three eagles found at Lake Thurmond.

In a pilot study, SCWDS researchers recently reproduced AVM in domestic chickens. Five chickens were fed a mixture of AVM-affected coot tissues (brain, fat, intestinal tract, kidney, liver, muscle) for 28 days. A control chicken was fed the same coot tissue mixture from AVM-negative coots collected from Lake Seminole, Georgia, a historically negative site. All exposed chickens displayed neurological abnormalities as early as 10 to 12 days and most had moderate AVM lesions. The control chicken had neither AVM clinical signs or lesions. These findings demonstrate that chickens are susceptible to AVM, adding another species and a new order, Galliformes, to the susceptible list. This also strengthens theories that AVM probably affects a wider range of wild avian species than has been documented in field studies. Chickens are excellent animal models for future AVM research because reference physiologic parameters are known and because they are easily obtained, economical, easy to work with, and will readily consume various materials under experimental conditions.

Dr. William Bowerman and Ms. Anna Birrenkott, researchers at Clemson University in South Carolina, recently reproduced AVM in pen-reared ducks by feeding them aquatic plant material (*Hydrilla verticillata* and associated materials) collected from Lake Thurmond during fall-winter 2002-2003. This project was part of a collaborative effort involving Clemson University, SCWDS, the South Carolina Department of Natural Resources, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration. Although this study demonstrated acquisition of AVM through consumption of aquatic vegetation, the exact etiologic agent has yet to be identified. Future studies will include attempts to isolate the causative agent from the aquatic vegetation.

Additional laboratory trials currently are underway at SCWDS and Clemson University,

and further field research is planned for the fall and winter of 2003-2004 in an effort to determine the cause of AVM, its source, and the range of susceptible species. (Prepared by Lynn Lewis-Weis)

Exotic Newcastle Disease Found in Texas

The current outbreak of Exotic Newcastle Disease (END) was first detected when END was confirmed in backyard fowl in California on October 1, 2002. On January 16, 2003, END was confirmed in a backyard flock in Nevada, and on February 4, 2003, an infected backyard flock was found in Arizona. On April 9, 2003, in what apparently is a separate incident, END was confirmed in backyard fowl south of El Paso, Texas. Extraordinary Emergencies have been declared in California, Nevada, Arizona, Texas, and New Mexico by the United States Department of Agriculture (USDA), and USDA and state agriculture agencies are operating Task Forces in the affected areas in order to eliminate the disease.

Most of the END activity to date has been in California. As of April 28, 2003, 912 positive premises had been found in California; over 17,000 premises had been quarantined; and 2,429 premises had been depopulated. Included among the positive premises are 21 commercial poultry operations. Altogether, 3,491,154 California birds have been euthanized in the effort to eliminate the disease.

The outbreaks in Nevada and Arizona have been smaller. In Nevada, 10 premises were confirmed infected, and 138 premises were depopulated. A total of 2,746 birds were euthanized, and the last infected premises in Nevada was depopulated January 29, 2003. In Arizona, only 1 premises was confirmed positive; 4 premises with a total of 269 birds were depopulated, and the last infected premises was depopulated February 7, 2003.

Gene sequencing of the END virus from Texas indicates that it differs from the viruses from California, Arizona, and Nevada. This suggests that the Texas outbreak was caused by a separate introduction of virus and not by movement of virus from affected areas in the

other three states. At present, only one infected premises has been found in Texas. Forty premises with a total of 2,006 birds have been depopulated.

Wildlife implications in these outbreaks have been limited. The viral agent of END will infect wild birds; however, surveillance conducted during the 1971-73 outbreak in California resulted in the determination that wild birds were of no significance in that outbreak (see SCWDS BRIEFS Vol. 18, No. 4). The END Task Force in California is requesting that wild birds found showing signs of END or wild birds found that have been dead for less than 24 hours be reported to the Task Force. Wildlife-related activities including hunting also are affected by the quarantine and biosecurity requirements in the affected areas. Restrictions on movement of birds and bird products, such as fresh carcasses, apply to hunter-killed game birds as well as backyard birds, pet birds, and commercial poultry.

Information on this outbreak, and on restrictions in quarantined areas, is available through the following web site:
www.aphis.usda.gov/lpa/issues/enc/exoticnc.html (Prepared by Joe Corn)

New Book on Wild Bird Diseases

Drs. Donald J. Forrester and Marilyn G. Spalding have recently completed an excellent new book entitled *Parasites and Diseases of Wild Birds in Florida* published by the University Press of Florida. It is a truly comprehensive treatise of all known pathologic conditions reported from all species of wild birds present in Florida. The book represents an outstanding resource for anyone interested in the biology of birds in Florida and nearby states and is an exceptional work that will be used for decades.

This distinctive reference is the first to present all available information on the various parasites, diseases, and other factors that cause sickness and death in Florida's wild birds, and there is an emphasis on distribution, prevalence, and significance of each. Organized by the host species of bird rather than by disease agent, each chapter is preceded by an introduction discussing the

population and survival status of the bird or bird group. Appropriate reviews and bibliographies are noted, along with references to hematology, serum chemistry, nutrition, and physiological topics. Each introduction is followed by sections on the various morbidity and mortality factors, disease agents, and conditions: starvation, human-related trauma, predation, electrocution, brood parasitism, inclement weather, chemical contaminants, neoplasia, anomalies, biotoxins, viruses, bacteria, fungi, protozoans, helminths, and arthropods. The distribution, prevalence, and intensity of each disease are given, followed by the significance of the disease to bird populations as well as to public health.

In addition to providing a database needed for the management and conservation of Florida's unique avian community, this book will be an exceptional resource for wildlife biologists and ecologists, veterinary practitioners, animal health researchers, state and federal public health officials, and naturalists who by vocation or avocation are interested in wild birds.

Dr. Forrester is Professor of Pathobiology at the University of Florida. He is the author of the companion book *Parasites and Diseases of Wild Mammals in Florida*, published in 1992, as well as 196 scientific publications, mainly on wildlife diseases. Dr. Spalding is Associate Scientist in pathobiology at the University of Florida. She is the author of 53 scientific publications on animal pathobiology.

The clothcover book is 1,024 pages and contains 256 figures, 494 tables, 59 drawings, and complete bibliographies and an index. Cost is \$125, and it may be ordered online from University Press of Florida at www.upf.com/Spring2003/Forrester.htm (Prepared by Randy Davidson)

SCWDS Employee Honored

We just learned the good news that SCWDS Technician Clay George is this year's winner of the coveted Stoddard-Burleigh-Sutton Award from the University of Georgia (UGA). The award was established in 1955 and consists of a plaque and \$1,000 cash and is given annually to the UGA graduate student who has made the most outstanding contribution to wildlife

conservation or ornithology. It is funded with royalties from sales of the classic book *Georgia Birds* and is named for naturalist Herbert L. Stoddard, author Thomas D. Burleigh, and artist George M. Sutton. Recipients may be from any school or college on the UGA campus.

Clay earned his BS degree from the University of North Carolina at Chapel Hill in 1997 and received his MS degree in Forest Resources (Wildlife) from UGA's Warnell School of Forest Resources in August 2002. His major professor was Dr. Sara Schweitzer, and his prize-winning MS thesis is entitled "Reproductive Ecology of the American Oystercatcher in Georgia."

In 2001, Clay won the J. Branch Howe, Jr., Award from the Georgia Ornithological Society, which provided a \$1,500 cash stipend for his graduate research work. Clay came to work at SCWDS in May 2002. He and his wife Jennifer reside in nearby Watkinsville, Georgia.

Clay joins a prestigious list of former SCWDS employees who received the Stoddard-Burleigh-Sutton Award: Forest Kellogg, 1969; Pete Swiderek, 1986; Emily Jo (EJ) Williams, 1987; and Kevin Keel, 1994. Congratulations, Clay! (Prepared by Gary Doster)

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Information on SCWDS and recent back issues of SCWDS BRIEFS can be accessed on the internet at WWW.SCWDS.org