STATUS REPORT – FISCAL YEAR 2006
COOPERATIVE STATE-FEDERAL BRUCELLOSIS ERADICATION PROGRAM

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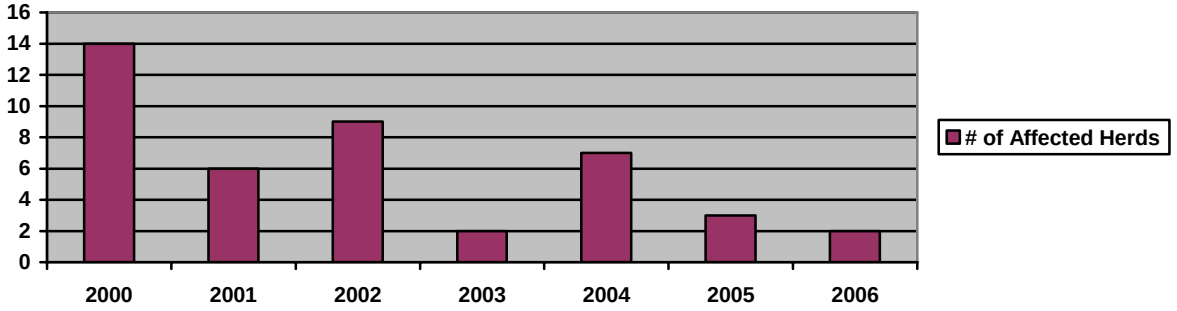
Fiscal Year (FY) 2006 was a year of aggressive efforts to attain final eradication of brucellosis while simultaneoulsy evaluating future Brucellosis program needs once eradication of brucellosis from the nation's domestic cattle herds is achieved. Of the three states classifed as Class A for brucellosis, one state regained Class Free state status and the other two states readied themselves to qualify for Class Free state status. Amending regulations, evaluating and formulating effective and efficient future surveillance plans, assessing ways to restructure the nation's Brucellosis laboratory system for greater efficiency, and contemplating the future of the use of vaccination in the Brucellosis program were all activities initiated in FY 2006. While additional brucellosis affected cattle herds were disclosed in FY 2006, significant strides toward final eradication were achieved.

A total of two new brucellosis affected cattle herds were disclosed in FY 2006. This compares to three new brucellosis affected cattle herds disclosed in FY 2005, seven new brucellosis affected cattle herds disclosed in FY 2004, two new affected cattle herds disclosed in FY 2003, nine new affected cattle herds in FY 2002, six in FY 2001, and fourteen in FY 2000. Both of the FY 2006 brucellosis affected cattle herds were disclosed in November 2005 in the state of Idaho, a state which had been classified as Brucellosis Class Free since February 1991. Both herds were depopulated with indemnity. The last reactor animal was removed the first week of December 2005. One FY 2005 brucellosis affected herd in Texas remained under hold order and test during FY 2006.



In mid-November 2005, Idaho identified the first of two brucellosis affected cattle herds. This herd was disclosed subsequent to a herd test as part of an MCI traceback investigation. There were ten high-titered animals (eight reactors and two suspects) found on the herd test. Milk samples were obtained from the high-titered brood cows. *Brucella abortus* biovar 1 was confirmed by NVSL from cultures submitted from three reactor cattle. The affected herd was a beef herd located in Swan Valley (Bonneville County) in eastern Idaho. The herd was depopulated with indemnity. The most probable source of infection for this herd is brucellosis infected elk which migrate through this valley. The second brucellosis affected herd, a trace-out herd from the index herd, was identified in late November 2005. Classification as a brucellosis affected herd was based on reactor classified titers. Brucellosis program regulations define a brucellosis affected herd as "any herd in which any animal has been classified as a brucellosis reactor and which has not been released from quarantine." With the disclosure of a second brucellosis affected herd, Idaho no longer met the requirements for Brucellosis Class Free state status. Of historical note - the last Brucellosis affected cattle herd disclosed in Idaho was in May of 2002. This herd was located approximately sixty miles north of the current index herd. *Brucella abortus* biovar 1 was

cultured from this herd which also had exposure to elk infected with the same biovar. Idaho originally attained Brucellosis Class Free state status in February 1991 and had maintained this status, having found only the single Brucellosis affected herd in 2002. Idaho is in the twelve-month qualifying period for Class Free state status. A pre-Class Free review was conducted in September 2006. Provided no additional brucellosis affected herds are found and all requirements are met, Idaho could qualify to regain Class Free state status in December 2006.

A brucellosis affected cattle herd disclosed in Hardin County, Texas in August 2005, remained under hold order and test throughout FY 2006. The herd plan stipulated herd depopulation if any additional reactor animals were found on subsequent whole herd serology testing. Brucellosis program standards (the UM&R) stipulate "three consecutive negative herd blood tests are required for release from quarantine (hold order), with the first negative herd blood test occurring 30-60 days after all reactors have been removed from the herd and slaughtered. The second of these tests must occur 180-210 days after all reactors have been removed and slaughtered. The third test (releasing test) must occur 365 days or more after all reactors have been removed and slaughtered." The final negative and releasing herd test was conducted in September 2006. Texas has completed a twelve-consecutive month period of finding no additional brucellosis affected herds and is currently conducting additional epidemiological evaluations in high-risk areas before applying for Class Free state status.

Wyoming officially regained Brucellosis Class Free state status on September 12, 2006. Throughout FY 2006, Wyoming worked to complete the required activities and implement the actions and recommendations made during the pre-class free review conducted in July 2005. Wyoming lost its Brucellosis Class Free state status in February 2004. Four brucellosis affected cattle herds were subsequently disclosed within a year's time; all were depopulated with indemnity. Wyoming initially obtained Brucellosis Class Free state status in October 1983. Brucellosis affected elk were identified as the most likely source of infection for the outbreak in 2004-2005.

Training continues to be a priority annual activity in the Brucellosis program. Two brucellosis specific training courses were offered in FY 2006 – the Basic Brucellosis Epidemiology course and the Designated Brucellosis Epidemiologist (DBE) Refresher training course. The Basic Brucellosis Epidemiology course, attended by forty-three state and federal veterinary medical officers and animal health technicians, was taught in April 2006. The Basic Brucellosis Epidemiology course is a three-day training event, with instructor-led lectures, facilitated discussions, practical exercises, and laboratory demonstrations. The purpose of the course is to provide training in the principles of the brucellosis eradication program, including the organism, the disease as it occurs in various species of animals, and detailed epidemiological considerations necessary to effect the efficient and rapid eradication of Brucellosis. The Designated Brucellosis Epidemiologist Refresher training, conducted in August 2006 in conjunction with the Designated Tuberculosis Epidemiology training course, was attended by eighty-seven DBEs and DTEs. All DBEs are required to attend DBE Refresher training once every two years to maintain their expertise in brucellosis epidemiology and be reapproved for an additional two-year period.

Brucellosis in the Greater Yellowstone Area (GYA):

A Greater Yellowstone Interagency Brucellosis Committee (GYIBC) Memorandum of Understanding (MOU) draft was updated (July 2006) to reflect Idaho's loss of brucellosis Class Free classification. It was signed by Secretary Johanns (2006) and is proceeding through the clearance process at the U.S. Department of Interior (DOI). After DOI concurs, the draft will be resubmitted to the Governors of the Greater Yellowstone Area states (Idaho, Montana, and Wyoming) for their review and concurrence.

The Grand Teton National Park (GTNP)/National Elk Refuge (NER) Bison and Elk Management Plan and Environmental Impact Statement (EIS) final report is being drafted at this time. Publication of the final report is expected by early 2007. The cooperating agencies will have an opportunity to review the final report before it is published.

The Interagency Bison Management Plan (IBMP) cooperating agencies have been meeting to determine if changes in the IBMP are necessary to facilitate plan management operations. Adaptive management changes for operations can be made with the concurrence of all of the cooperating agencies. Montana initiated a bison hunt last year as part of the IBMP. The bison hunt was deemed a success (46 of 50 permits were filled) last year and the number of hunt permits has been increased to 140 permits for this year's hunt season.

APHIS VS personnel assisted IBMP bison management operations. Hazing operations (55) of 1317 bison were performed. All but 100 bison were successfully hazed back into Yellowstone National Park. Capture operations resulted in the capture of 995 bison. Nine bison tested brucellosis negative and were released. Eighty-six brucellosis seronegative calves were placed in the brucellosis quarantine feasibility study facility. Fifty brucellosis seropositive bison and 850 untested bison were shipped to slaughter. Under the IBMP protocol, bison may be shipped to slaughter if the Yellowstone National Park bison herd population is greater than 3000. Seven bison were lethally removed.

The GYA states (Idaho, Montana, and Wyoming) are proceeding, in consultation with APHIS VS, with development and implementation of individual livestock herd and individual elk herd unit plans to mitigate potential transmission of brucellosis from elk or bison to cattle. Idaho has completed its 2006 herd plans; implementation is planned for this year. Montana has completed its survey of livestock herds in the GYA and is performing a risk analysis of the individual livestock herds to determine management actions for inclusion in the individual livestock herd plans. Montana is reviewing its elk herd unit plans. Wyoming has a larger number of livestock herds and elk units affected by brucellosis. Wyoming is currently surveying livestock herd owners and development of individual livestock herd plans is ongoing. Wyoming has completed individual elk herd plans for four of the seven elk herd units of concern. Wyoming is also continuing statewide elk herd brucellosis surveillance using hunter collected blood samples. The northeast quadrant of Wyoming was surveyed in 2004. The southwest quadrant of Wyoming was surveyed in 2005 and the northwest quadrant is being surveyed in 2006.

Wyoming initiated a five year elk brucellosis test and removal of brucellosis seropositive elk pilot project at its Muddy Creek feedground in 2006. Data gathered from this project will be evaluated to determine if test and removal will significantly reduce brucellosis seroprevalence in those elk herds.

The study to determine the suitability of the Fluorescent Polarization Assay (FPA) and BAPA tests for brucellosis testing of elk sera is ongoing. Three state laboratories are working with NVSL to determine repeatability of test results. The study is expected to be completed in 2007.

APHIS VS personnel attended Wyoming Brucellosis Coordination Team, GYIBC, IBMP, and USAHA regional and national meetings, providing technical assistance and making presentations when requested.

Veterinary Services continued activities and involvement in several projects aimed at assessing potential effective brucella control strategies for affected wildlife populations. These on-going developmental projects include the following studies:

- Engineered RB51 in elk: A study this year jointly conducted by Veterinary Services (VS) and Agricultural Research Services (ARS) examined the efficacy of engineered RB51 vaccine in elk. Although sample sizes were small, vaccinated elk had reduced incidence of abortion, uterine and mammary infection or maternal infection as compared to controls. Preliminary results of the study suggest the vaccine provides some level of protection against *Brucella abortus* abortion and infection in elk.
- Behavior studies in bison and cattle on exposure to bison and elk fetuses: These studies demonstrated mild to marked contact of bison and cattle with dead bison and elk fetuses placed in the environment. Analysis of the data is in progress.

- Test and treat strategy development:
  - Contraceptive studies: Two studies have shown at least three years infertility in bison following one injection of a GnRH immunocontraceptive vaccine.
  - Sustained release antibiotic treatment: In a limited pilot study, two weeks of therapeutic blood levels were obtained following a single injection.
- Serologic differentiation of *Brucella* and *Yersinia* infections: VS, with collaborators at LSU, ARS, and CFIA, is initiating a series of studies to examine serologic differentiation of *Brucella* and *Yersinia* infections in elk.

Brucellosis Program Surveillance Activities:

[The following surveillance statistics for the cattle brucellosis eradication program is based on data available as of September 15, 2006. Normal reporting time allowances for states to gather and submit monthly data preclude ascertainment of all data for FY 2006.]

Fiscal Year (FY) 2006 began and ended with 48 States and three Territories classified at Brucellosis Class Free state status, and two states classified at Brucellosis Class A state status. The two states classified as Class A at the beginning of FY 2006 were Texas and Wyoming. The two states classified as Class A at the end of FY 2006 were Texas and Idaho. From February 2006 to September 2006, three states, Idaho, Texas, and Wyoming, were classified as Class A. Idaho lost its brucellosis Class Free state status pursuant to the disclosure of two brucellosis affected herds in November 2005, and Wyoming met all requirements and officially regained Class Free state status in September 2006. Texas released its last know brucellosis affected herd from quarantine in September 2006, completing a twelve-consecutive month period without disclosing any additional brucellosis affected herds. Thus at the end of FY 2006, 48 States and three Territories remain classified at Brucellosis Class Free state status.

Cattle inventories in the U.S. for FY 2006 were distributed as follows: 17.97% of all cattle and 16.82% of all cattle herds were located in the three Brucellosis Class A states; 53.34% of all cattle and 46.52% of all cattle herds were located in states that have held Brucellosis Class Free status for at least ten years (16.90% of all cattle and 17.17% of all cattle herds were located in states that have held Brucellosis Class Free status for five years or less; 36.44% of all cattle and 29.35% of all cattle herds were located in states that have held Brucellosis Class Free status for six to ten years). Approximately 28.69% of all cattle and 36.66% of all cattle herds were located in states that have held Brucellosis Class Free status for at least eleven years or more (with 15.25% of all cattle and 18.72% of all cattle herds residing in states that have held Brucellosis Class Free status for greater than 20 years).

Two brucellosis affected cattle herds, both in Idaho, were disclosed in FY 2006. The first affected herd was identified via Market Cattle Identification (MCI) surveillance testing, and the second affected herd was identified as an epidemiologic trace-out herd. The national herd prevalence rate for bovine brucellosis was 0.00021% in FY 2006. Per the Brucellosis Emergency Action Plan (BEAP) recommendation, both brucellosis affected herds were depopulated with indemnity and thorough epidemiologic investigations were completed disclosing no additional brucellosis affected herds. In addition, trace exposed test negative cattle were depopulated and indemnified as well.

Maintaining Brucellosis state status focuses on continual surveillance activities. Two primary surveillance activities are conducted for bovine brucellosis, Market Cattle Identification (MCI) testing and Brucellosis Milk Surveillance Testing (BMST). During FY 2006, APHIS tested approximately 7.921 million head of cattle under the MCI surveillance program. Brucellosis program standards require testing of a minimum of 95% of all test-eligible slaughter cattle. In FY 2006, approximately 96.04% of all test-eligible slaughter cattle were tested. First-point testing at livestock markets is required in Brucellosis Class A states. Twelve Brucellosis Class Free states continue to conduct first-point testing at markets to enhance their surveillance activities. Brucellosis program standards require a minimum of 90% successful traceback of all MCI reactor cattle and a minimum of 95% successful case closure. In FY 2006, approximately 97.2% of all MCI reactors were successfully traced and investigated resulting in successful case closures.

Approximately 868,500 additional head of cattle were tested on farms or ranches during FY 2006, bringing the total cattle tested for brucellosis in FY 2006 to approximately 8.790 million head. BMST surveillance is conducted in all commercial dairies – a minimum of two times per year in Class Free states and a minimum of four times per year in Class A States. Suspicious BMSTs are followed up with an epidemiologic investigation. 2005 National Agricultural Statistics indicate there were 78,295 dairy operations in the U.S. There were approximately 164,000 BMST conducted in FY 2006; approximately 186 of those BMSTs yielded suspicious results after repeated screening (repetitive BRT and/or HIRT). All suspicious BMSTs in FY 2006 were confirmed negative by subsequent epidemiologic investigations and additional herd testing.

There were approximately 4.423 million calves vaccinated for brucellosis in FY 2006. The national calfhood vaccination policy recommends proper calfhood vaccination in high risk herds and areas and whole herd adult vaccination when appropriate in high risk herds and areas. Elimination of mandatory vaccination in all states is also recommended.

Brucellosis program activities throughout FY 2006 clearly demonstrate the continued commitment of the state-federal cooperative brucellosis eradication program to achieve final eradication of brucellosis from the United States domestic cattle, bison, and swine herds. Aggressive actions and the resolve to address difficult issues have set the stage for all states to be classifed at Brucellosis Class Free state status by the end of FY 2007. As eradication nears, focused, efficient, and effective surveillance becomes paramount to the integrity of a national brucellosis-free classification for the United States.

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