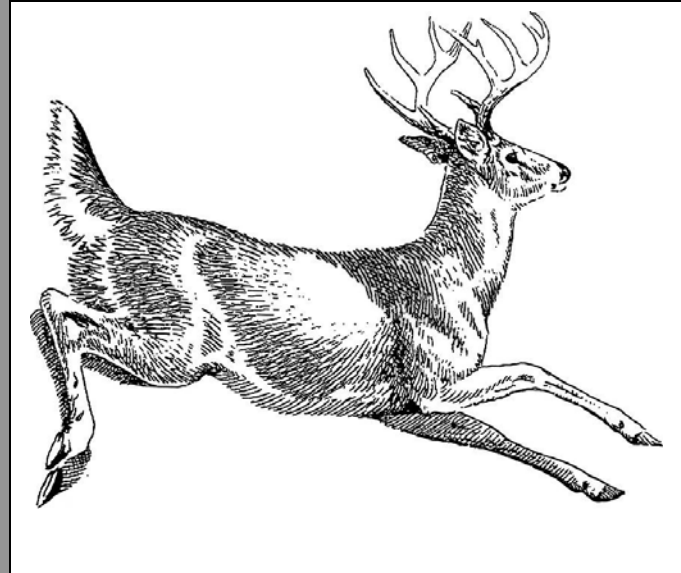

Assessment of the Multi-agency Approach to Managing Chronic Wasting Disease in Oneida County, New York: Perceptions of Incident Responders



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EXECUTIVE SUMMARY

The discovery in March-April 2005 of chronic wasting disease (CWD), first in captive and soon after in wild, free-ranging white-tailed deer (*Odocoileus virginianus*) in Oneida County, NY, set state and federal government agencies in motion to implement an emergency response plan. This was the first case of CWD in the Northeast. Subsequent to finding CWD in New York, it was discovered in West Virginia later in 2005.

Research on the effects of CWD in New York has included 4 external stakeholder groups. Brown et al. (2005) investigated the public awareness and concerns about CWD among hunters and the general public. An additional effort to be published later this year assesses the perceptions and reactions of landowners in the area of Oneida County where CWD was discovered. The study reported on herein is an internal assessment from the perspective of the multi-agency state and federal natural resources and other staff who (1) worked on the ground in Oneida County, (2) supervised those staff, and (3) provided technical support to the effort.

As a result of the discovery of CWD in captive deer in Oneida County in March 2005, the Department of Environmental Conservation (DEC) began an intensive effort to determine whether CWD was established in wild deer in the area. Field operations included a multi-agency response managed under the Incident Command System and a containment area that initially included 8 towns and 4 cities in Oneida County. Several additional towns in Oneida and Madison Counties were later added. A field laboratory was established within the containment area. Landowner access was sought and frequently obtained for purposes of shooting a sample of deer for diagnostic purposes. Proper disposal methods for deer carcasses were established. By April 30, 2005, 292 deer had been killed, sampled, and tested for CWD. Two cases of CWD were confirmed in wild deer, the first on April 27 in the Town of Verona, Oneida County.

The purpose of this study generally was to obtain evaluative information from participating agency staff of the multi-agency approach used in Oneida County following the discovery of CWD. The vast majority of these staff were DEC employees, but they were from several divisions of the agency—Fish, Wildlife, and Marine Resources; Law Enforcement; Operations; Forest Protection and Fire Management (Forest Rangers); Lands and Forests; Public Affairs and Education; Solid and Hazardous Materials; Air Resources; and Legal Affairs. Staff from the New York State Department of Agriculture and Markets, New York State Department of Health and USDA APHIS Wildlife Services and Veterinary Services also participated in this effort.

Information was sought from these incident responders about:

- (1) how well they understood their role,
- (2) how well they were trained or otherwise prepared and equipped for the tasks they were assigned,
- (3) their perceived appropriateness of the level of the multi-agency response to CWD, and
- (4) their perception of the quality of communication, both internal and external, during the incident response effort.

Methods

We obtained lists of incident responders from DEC staff. Those identified as incident responders included largely agency staff who worked on the ground in Oneida County, but also managers and administrators in Albany, and staff who provided various kinds of direct support to the effort, regardless of their location. A mail survey was used, with the initial mailing sent out on November 23, 2005. Soon after this mailing went out, it was determined that a small list of managers and administrators, primarily, had been omitted. The first mailing went out to this group on December 15, 2005. In total, 239 questionnaires were mailed out, and up to 3 reminder notices were sent, as is the standard practice used to maximize response rates to mail surveys.

Results

Of the 239 questionnaires mailed out, one was undeliverable and 169 were returned for a response rate of 71%.

The vast majority of respondents (93%) were DEC employees, with 36% being from the Division of Fish, Wildlife, and Marine Resources. The task involving the greatest number of respondents (31%) was shooting or spotting deer, followed by transporting, storing, or disposing of dead deer (20%). Providing policy leadership or support, contacting landowners, providing site security, and supervising field operations each involved from 12% to 20% of respondents.

Most respondents (81%) learned about the discovery of CWD through formal or informal agency channels. About 8% heard about CWD through the media. The remaining 11% had miscellaneous answers (e.g., couldn't remember, from a laboratory, from the state veterinarian).

Accepting the Role of Incident Responder and Support from Supervisors

Most staff (81%) indicated they were at least moderately positive about accepting their role, 13% were between somewhat and moderately positive, and 6% were not positive. The vast majority (85%) indicated their supervisors provided strong support throughout the process, while 9% indicated the level of support varied through the process, and 6% indicated little if any support from their supervisor.

Training and Preparation for Assignment

Most staff (81% to 95%) gave positive ratings of the extent to which their task was sufficiently explained and adequate funding, personnel, and equipment were provided. The topic of most frequent unfavorable rating (13%) concerned having the right equipment to carry out the assignment. Half of the 22 people providing an unfavorable rating were deer shooters or spotters (this amounted to 22% of all shooters/spotters). Respondents were given the opportunity to write in specific improvements in staffing, training, or equipment that would have been helpful. The leading topic for additional training (23 comments) was in planning and use of the Incident Command System and multi-agency coordination team. Better access to tax maps, air photos, and GIS systems was mentioned by 14 respondents.

Evaluation of Multi-agency Incident Command System

Nearly half (45%) of respondents indicated they were generally well aware of the multi-agency incident command system prior to their field experience in Oneida County, and an additional 32% indicated some awareness of the system. Awareness of prior CWD surveillance efforts were similar—48% were generally well aware, 34% had some awareness, and 18% were not at all aware.

We asked staff how they would rate this system in theory and also as it was actually implemented. Although the system was rated slightly higher in theory than as implemented, both assessments were quite positive. On a 7-point scale, where 1=not positive, 3=somewhat positive, 5=moderately positive and 7=very positive, the mean score for the system in theory was 5.51, and in practice, 5.29. Over three-fourths rated the multi-agency control system moderately positive to very positive in theory, and about the same number, as implemented (79% and 78%, respectively).

We also asked whether staff believed the level of the multi-agency response as implemented was too little, appropriate, or beyond the level of response needed. About two-thirds (65%) indicated the level of the response was appropriate, but 31% indicated that the level was beyond what was needed. Only 4% thought an even greater response was called for. Greater proportions of DEC Fish, Wildlife, and Marine Resources staff (45%) and Law Enforcement staff (50%) indicated the level was beyond what was needed.

Should a future outbreak of CWD occur in New York, involving wild deer only, a plurality (45%) indicated that a modified incident command system (MICS) would be the best administrative response, while 38% chose the full multi-agency command system used in Oneida County. A smaller group (17%) preferred a smaller structural response limited to the Division of Fish, Wildlife, and Marine Resources. The most frequent suggestions for modification, for those preferring a MICS, were for less involvement from agencies other than DEC, and a more primary role for Fish and Wildlife staff. Slightly over half (50 to 55%) of DEC staff in each division indicated a preference for the MICS.

Perceptions of the Effects of the Multi-agency Response on the Public

There was widespread agreement (81%) that the multi-agency response demonstrated to the public that government was responsive to their concerns about CWD, and also that CWD represents a significant risk to the wild deer population (86% agreed). Strong concurrence also existed for the view that the multi-agency response did not signal to the public that deer are more of a pest than a valued resource. There was not concurrence as to whether the multi-agency response gave the impression that CWD represented a significant health risk—54% agreed that the response did give that impression, but 46% either disagreed or were unsure.

An additional set of statements probed staff perceptions of how the multi-agency response affected them personally in their work assignments, or affected the agency. There was strong agreement (79%) that the multi-agency response empowered staff to participate in a project of highest priority for their agency, that the assignment was enjoyable because staff had

the opportunity to work on an important assignment that was different from their normal job responsibilities (73% agreed), and that adequate attention was paid to the health and safety of participants (82% agreed). Few (16%) agreed that the assignment was frustrating because it kept them from meeting their normal job responsibilities. While 60% disagreed that they were frustrated because the operational guidelines limited how they could do their job, 27% agreed with this statement. Also, while 57% disagreed that the multi-agency response spent funds that could have been used for higher priority tasks in their agency, 20% agreed with this statement, and 23% indicated they were unsure.

Communication Efforts

Staff ratings of both internal communication within the multi-agency staff and external communication to stakeholders were good to excellent for most respondents. At least 75% of respondents gave good to excellent ratings to (a) communication from managers as to what was expected of staff participants, (b) availability of results from tested deer, (c) having a designated spokesman to ensure accurate, consistent public information, (d) coordination among DEC divisions, (e) coordination between DEC and other state and federal agencies, and (f) the ability to learn from other participants. Fewer respondents gave good to excellent ratings for encouraging fair and accurate media coverage of the event (66%), providing timely and accurate communications to local stakeholders (63%), and providing opportunities for direct interaction between stakeholders and agency personnel (58%).

There were 4 topics for which over 20% of respondents gave only poor to fair ratings: (a) communicating what equipment and supplies to bring (29%), (b) opportunity for participants to provide input for improvement and changes (27%), (c) orientation to applicable standard operating procedures, and (d) communication of test results from sampled deer to participants. While these topics received good-to-excellent ratings from 64 to 76% of respondents, the number of poor to fair ratings suggests there is some room for improvement in several areas:

- Communicating what equipment or supplies to bring was a concern primarily to DEC Fish, Wildlife, and Marine Resources and Law Enforcement staff (41% and 37% respectively rated this item poor or fair). By role, 52% of staff working with landowner contacts and 40% of deer shooters/spotters rated this item poor or fair.
- The opportunity to provide input for improvement and changes received a poor or fair rating from 50% of Law Enforcement and 38% of Fish, Wildlife, and Marine Resources staff. By role, 52% of those working in site security, 42% of those working with landowner contacts, and 39% of deer shooters and spotters rated this item poor or fair.
- Orientation to applicable standard operating procedures received a poor or fair rating from 67% of Law Enforcement respondents and 39% of those working in site security.
- Inadequate communication of test results from deer received a fair or poor rating from 52% of respondents working in site security and 40% of Law Enforcement staff.

Responding staff were invited to write in comments related to communication and a total of 56 were received, 44 of which could be grouped into comments by more than one person. Improvement needs were noted particularly in radio communication, which appeared to include staff use of radios as well as the functioning of radios. As suggested by responses to previous

questions, there were also some comments indicating a need for better communication and understanding between Central Office staff and field staff.

Following the previous set of questions, we attempted to gauge the seriousness of any shortcomings in communication and coordination: “In terms of coordination and communication, did any area fall short to the extent that it kept you from doing a good job, or it caused you to be embarrassed for your agency?” One-third (33%) of respondents provided comments. The comment made most frequently, by 11 respondents, concerned the need for better communication between local ECOs and landowners.

Despite the number of comments indicating problem areas that need improvement in the event of a future wildlife disease outbreak, most staff saw many positive aspects of the multi-agency activity in Oneida County. In addition to positive comments reported above, 86% of respondents indicated that if a similar incident response need arose in the future, they would willingly volunteer to serve in that effort. Of the remaining staff, 6% indicated they would not willingly volunteer, and 9% were unsure.

Summary and Implications

The discovery of CWD in Oneida County, New York resulted in a major multi-agency effort by state and federal agencies in an attempt to determine the prevalence of CWD in the wild deer herd, isolate the disease, and communicate with the media, stakeholders, and the general public. Substantial planning for this eventuality had occurred during the previous 2 years. Nevertheless, it is very difficult for any amount of planning to adequately simulate a real event when many of the specifics of the event are not known in advance. This study was designed to assess the effort from the perspective of the staff who participated as first responders, their supervisors, and others who provided technical support.

Overall, the assessment of staff who participated in this effort as incident responders was largely positive as to their preparation, instructions, coordination among the various agencies and tasks, and communication. The fact that 86% would willingly volunteer to participate in a similar future event speaks well for the implementation of this effort. The high response rate to the survey, conducted at less than an ideal time over the end-of-year holidays, the high level of completion of individual questions, and the numerous write-in suggestions all provide indication that respondents provided thoughtful, candid answers. Specific areas covered by the survey where notable numbers of respondents provided less than positive ratings have been identified. The results, combined with follow-up discussions with key staff connected with areas identified for possible improvement, should provide sufficient information for DEC and other agency leaders to make the necessary modifications to bring about those improvements in the event another situation occurs requiring a response such as that mounted for CWD.

ACKNOWLEDGMENTS

Conducting the overall assessment related to the CWD outbreak in Oneida County was a cooperative undertaking of the Human Dimensions Research Unit (HDRU), Cornell Cooperative Extension, the Cornell University Agricultural Experiment Station (CUAES), and the New York State Department of Environmental Conservation's Division of Fish, Wildlife, and Marine Resources (DEC). Funding for this portion of the study was provided by DEC.

In addition to the authors, DEC staff Gerald Barnhart, John O'Pezio, Edward Kautz, Chuck Dente, Randall Stumvoll, Louis Berchielli, Mark Lowery, and Laurel Remus attended a planning meeting for the overall effort. Primary input for this portion of the study came from Bill Gordon and John Major of DEC.

This survey was conducted through the HDRU survey laboratory under the supervision of Nancy Connelly. Karlene Smith, Mark Dettling, and Heather Irvine handled the mailings, data entry, and prepared summary tables of the data. Margie Peech provided formatting assistance for the final report.

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INTRODUCTION

The discovery in March-April 2005 of chronic wasting disease (CWD), first in captive and soon after in wild, free-ranging white-tailed deer (*Odocoileus virginianus*) in Oneida County, NY (Figure 1) set state and federal agencies in motion to implement an emergency response plan. This was the first case of CWD in the Northeast. CWD was discovered in 2002 in white-tailed deer in Wisconsin, and earlier in several other midwestern and Rocky Mountain states in mule deer (*Odocoileus hemionus*) and Rocky Mountain elk (*Cervus elaphus nelsoni*), as well as white-tailed deer (Needham et al., 2004). Subsequent to finding CWD in New York, it was discovered in West Virginia in 2005.

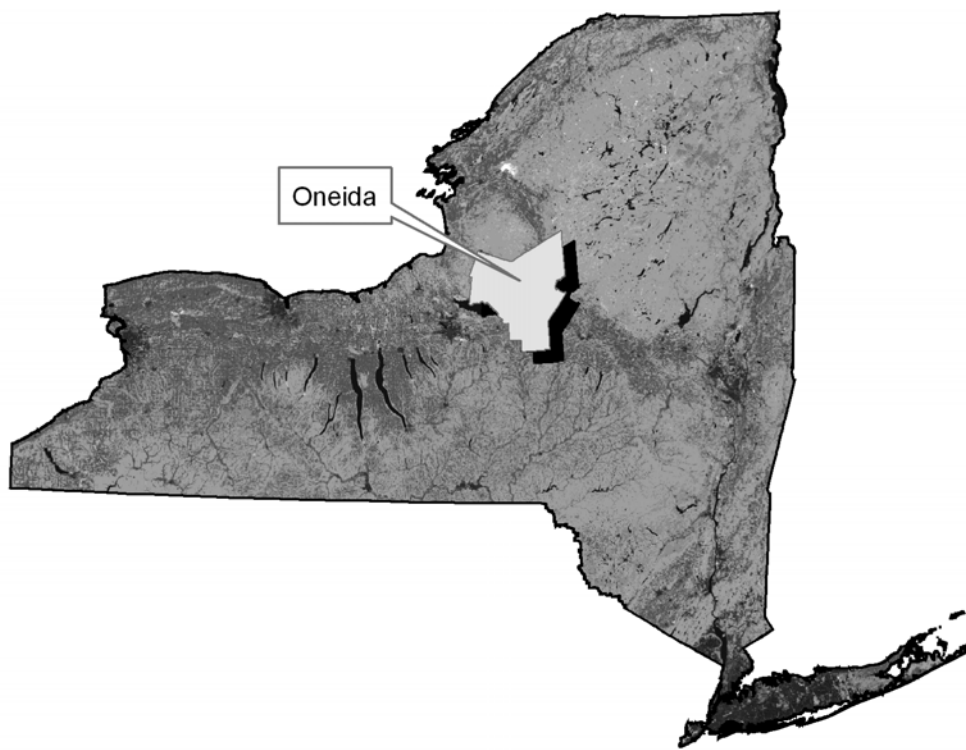


Figure 1. Location of Oneida County in New York State

Research-related assessments of CWD have occurred in several states. Studies examining attitudes, perceptions, and likely future behavior of hunters have been conducted in New York (Brown et al. 2005), South Dakota (Gigliotti 2004), Illinois (Miller 2004), and Wisconsin (Vaske et al. 2004). Needham et al. (2004) also conducted a study of the effects of hypothetical CWD-related situations on hunters in 8 western states. Little human dimensions research has been done beyond examining hunters' perspectives. Heberlein (2004) criticized the state wildlife agency's handling of CWD in Wisconsin in terms of cost (see Bishop 2004 for a further economic impact analysis), the decline in the number of hunters the following year, the failure to substantially reduce the deer herd in the area of the CWD outbreak, and the failure to end the feeding of wild deer. No additional stakeholders were surveyed, however.

Research on the effects of CWD in New York has included 4 external stakeholder groups. Brown et al. (2005) investigated the public awareness and concerns about CWD among hunters and the general public. An additional effort to be published later this year assesses the perceptions and reactions of landowners in the area of Oneida County where CWD was discovered. The study reported on herein is an internal assessment from the perspective of the multi-agency state and federal natural resources and other staff who (1) worked on the ground in Oneida County, (2) supervised those staff, and (3) provided technical support to the effort.

CWD was detected in Oneida County during routine testing of a captive white-tailed deer herd in Oneida County. Such testing of captive deer is done by the NYS Department of Agriculture and Markets. CWD was then found in a second deer that had been kept in a herd that had received animals from the first herd. In early April 2005, CWD was detected in three additional captive deer in the first herd after the remaining 19 members of the two herds were destroyed and tested. In late April, as part of an intensive monitoring effort, CWD was detected in 2 wild deer from Oneida County.

From the fall of 2002 to the discovery of CWD in 2005, the New York State Department of Environmental Conservation (DEC) had tested over 3,400 deer statewide and approximately 40 from Oneida County for CWD as part of a surveillance effort. Further background on DEC's prior planning efforts related to the possible discovery of CWD in New York, including public meetings and other communications with stakeholder groups, and the role of Cornell Cooperative Extension in educating stakeholder groups about CWD, can be found in Brown et al. (2005).

Many state and federal agencies involving agriculture, food safety, and health, as well as natural resources, collaborated to address the discovery of CWD in New York. The size of the government response, unlike anything witnessed previously in natural resource management in the state, was attributable in part to the finding of CWD in both captive deer, which were largely under jurisdiction of state and federal agricultural agencies, and wild deer, where the lead agency is DEC's Division of Fish, Wildlife and Marine Resources. Other agencies and organizations who participated in this large multi-multi-agency effort included the New York State Department of Agriculture and Markets (NYSDAM), New York State Department of Health (NYSDOH), NYS Emergency Management Office, USDA Veterinary Services, USDA APHIS Wildlife Services and Veterinary Services, and the Cornell University College of Veterinary Medicine.

The multi-agency response to CWD was implemented under the NYS Incident Command System (ICS), which for New York parallels the National Incident Management System established under the Federal Emergency Management Agency. Established in 1996, the ICS is the New York standard command and control system that is used during emergency operations. The ICS sets forth standardized procedures for managing personnel, communications, facilities, and resources. The overall coordination of the ICS is through the NYS Emergency Management Office.

As a result of the discovery of CWD in captive deer in Oneida County in March 2005, DEC began an intensive effort to determine whether CWD was present in wild deer in the area. Field operations included a containment area that initially included 8 towns and 4 cities in Oneida County. Several additional towns in Oneida and Madison Counties were later added. A field laboratory was established within the containment area. Landowner access was sought and

frequently obtained for purposes of shooting a sample of deer for diagnostic purposes. Proper disposal methods for deer carcasses were established. By April 30, 2005, 292 deer had been killed and tested for CWD, and two cases of CWD in wild deer were confirmed, the first on April 27 in the Town of Verona, Oneida County.

STUDY PURPOSE

The purpose of this study was to obtain evaluative information from participating agency staff of the multi-agency approach used in Oneida County following the discovery of CWD. The vast majority of these staff were from DEC, but they were from several divisions of the agency—Fish, Wildlife, and Marine Resources; Law Enforcement; Operations; Forest Protection and Fire Management (Forest Rangers); Lands and Forests; Public Affairs and Education; Solid and Hazardous Materials; Air Resources; and Legal Affairs. Staff from NYSDAM, NYSDOH, and USDA APHIS Wildlife Services and Veterinary Services also participated in this effort and were included in this study.

Information was sought regarding from these incident responders about:

- (1) how well they understood their role,
- (2) how well they were trained or otherwise prepared and equipped for the tasks they were assigned,
- (3) perceptions of the appropriateness of the level of the multi-agency response to CWD, and
- (4) their perception of the quality of communications, both internal and external, during the incident response effort.

METHODS

We obtained lists of incident responders from DEC staff. Those identified as incident responders included largely agency staff who worked on the ground in Oneida County, but also managers and administrators in Albany, as well as staff who provided various kinds of direct support to the effort, regardless of their location. A mail survey was used, with the initial mailing sent out on November 23, 2005. Soon after this mailing went out, it was determined that a small list of managers and administrators, primarily, had been omitted. The first mailing went out to this group on December 15, 2005. In total, 239 questionnaires were mailed out, and up to 3 reminder notices were sent, as is the standard practice used to maximize response rates to mail surveys (Dillman 2000).

Because the survey went to a census rather than a sample of agency staff defined to have sufficient involvement in this effort, the use of statistical tests to determine significant differences between subgroups is not appropriate and will not be used.

RESULTS

Of the 239 questionnaires mailed out, one was undeliverable and 169 were returned for a response rate of 71%.

Respondent characteristics and roles

The vast majority of respondents (93%) were DEC employees, with 36% being from the Division of Fish, Wildlife, and Marine Resources (Table 1). The remaining 64% of incident responders were from several DEC divisions, and about 7% were from non-DEC agencies.

Table 1. Employers of CWD incident responders.

Employer	Percent
DEC Division of Fish, Wildlife, and Marine Resources	36
DEC Division of Law Enforcement	14
DEC Division of Operations	14
DEC Forest Rangers	13
Other DEC (not listed)	9
Non-DEC employees	7
DEC Division of Lands and Forests	5
DEC Division of Public Affairs and Education	2

The task involving the greatest number of respondents (31%) was shooting or spotting deer, followed by transporting, storing, or disposing of dead deer (20%) (Table 2). Providing policy leadership or support, contacting landowners, providing site security, and supervising field operations each involved from 12% to 20% of respondents.

Table 2. Roles that survey respondents were involved in beyond an incidental assignment.

Roles	Percent ¹
Deer shooter or spotter	31%
Transporting, storing, or disposing of dead deer	20
Providing policy leadership or support	19
Landowner contacts	16
Site security	14
Field operations supervision	12
Support in fiscal or technical aspects such as GIS or data management	7
Logistical operations	7
Communications	6
Health and safety	5
Preparing samples for testing (laboratory operations)	5
Public education and outreach	4
Construction crew for temporary laboratory facility	4
Fiscal accountability (on-site)	3
News media relations	2
Geographic information system support (on-site)	2
Daily operations supervision/direction at the command center	1

¹ Percents add to more than 100 because some responders participated in multiple roles.

The vast majority of respondents (81%) learned about the discovery of CWD through formal or informal agency channels. About 8% learned about the discovery of CWD through the media. The remaining 11% had a variety of answers such as they couldn't remember, from a laboratory, or from the state veterinarian.

Accepting the Role of Incident Responder and Support from Supervisors

The specifics of the roles DEC and other staff played as incident responders differed at least somewhat for everyone from their normal duties. On a 7-point scale, where 5=moderately positive and 7=very positive, the mean attitudinal rating about accepting the assigned duty was 5.6. Most staff (81%) indicated they were at least moderately positive about accepting their role, 13% were between somewhat and moderately positive, and 6% were not positive about accepting their new role. The level of support from staff supervisors was generally quite high—85% indicated their supervisors provided strong support throughout the process, while 9% indicated the level of support varied through the process, and 6% indicated little if any support or lack of support from their supervisor.

Training and Preparation for Assignment

Staff generally offered positive ratings of the extent to which their task was sufficiently explained and adequate funding, personnel, and equipment provided (Table 3). Between 81% and 95% of respondents agreed or strongly agreed with each statement. The largest amount of disagreement (13%) concerned having the right equipment to carry out the assignment. Half of the 22 people who disagreed with this statement were deer shooters or spotters (22% of all shooters/spotters disagreed).

Table 3. Adequacy of training, funding, personnel and equipment for executing roles.

Aspect of ability rated	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
	Percent				
I adequately understood the tasks expected of me.	54	41	2	1	1
I was adequately trained for the tasks expected of me.	37	51	5	5	1
There was adequate funding for my particular tasks.	43	39	13	2	2
There were adequate personnel assigned for my particular tasks.	32	49	10	8	1
I had the right kind of equipment to carry out the tasks assigned to me.	28	54	5	13	0
I had enough equipment to carry out the tasks assigned to me.	29	54	7	10	0

Respondents were given the opportunity to write in specific improvements in staffing, training, or equipment that would have been helpful. The 169 respondents made a total of 135 comments which are summarized in Table 4. The leading topic for additional training (23

comments) was in planning and use of the incident command system and multi-agency coordination system. Better access to tax maps, air photos, and GIS systems was mentioned by 14 respondents.

Table 4. Summary of write-in responses to desired improvements in staffing, training or equipment.

Improvement Suggested	Frequency
Staffing	
Increase night shooters/staff. Allow DEC to shoot at night	9
Less redundancy in ICS & decision making, trust the field staff	4
Less redundancy in landowner contact and land use, change sites	4
Provisions for night staff, more adequate food, water, relief	2
Allow both members of shooting teams to carry a rifle from start	2
Other staffing improvements	14
Training	
ICS & MAC, more advance training, planning in these systems	23
Training in night use of rifle and use of night shooting equipment	7
Pathology, CWD, deer appraisal, bagging deer, risk assessment	7
Firearm training, access to firing range, familiarity with the rifle	4
Wildlife staff better trained in incident response from the start	3
Fiscal procedures	2
Communication	2
Other training improvements	11
Equipment	
More or better air photos, tax maps, GIS hardware and software	14
Night lighting or night vision and night shooting equipment	5
Radios communication was poor, teams had to share radios	5
Meeting room, improve shelter, lighting, heat, comfort	4
Computers & telephone, greater and quicker access, laptops, cells	3
Site list, list by landowner rather than acreage, cover more sites	2
Disposal equipment, better deer disposal equipment	2
Other equipment improvements	6

Evaluation of Multi-agency Incident Command System

DEC had planned for use of a multi-agency Incident Command System (ICS) in the event of discovery of CWD and a number of staff had background and training in the structure. Nearly half (45%) of respondents indicated they were generally well aware of the multi-agency ICS prior to their field experience in Oneida County, and an additional 32% indicated some awareness of the system. Awareness of prior CWD surveillance efforts were similar—48% were generally well aware, 34% had some awareness, and 18% were not at all aware.

Given the experience gained by actually being a part of a multi-agency ICS, we asked staff how they would rate this system in theory and also as it was actually implemented. Although the system was rated slightly higher in theory than as implemented, both assessments were quite positive (Table 5). On a 7-point scale, where 1=not positive, 3=somewhat positive, 5=moderately positive and 7=very positive, the mean score for the system in theory was 5.51, and in practice, 5.29. Over three-fourths rated the multi-agency incident command system moderately positive to very positive in theory and as implemented (79% and 78%, respectively).

Table 5. Respondents' rating of Incident Command System for CWD in theory and as implemented in Oneida County in 2005.

Rating	In Theory	As Implemented
1 (not positive)	3%	4%
2	2	5
3 (somewhat positive)	8	7
4	8	7
5 (moderately positive)	19	25
6	26	29
7 (very positive)	34	25

We also asked whether staff believed the level of the multi-agency response as implemented was too little, appropriate, or beyond the level of response needed. About two-thirds of staff (65%) indicated the level of the response was appropriate, but 31% indicated that the level was beyond what was needed. Only 4% thought an even greater response was called for. Greater proportions of DEC Fish, Wildlife, and Marine Resources staff (45%) and Law Enforcement staff (50%) indicated the level was beyond what was needed.

Should a future outbreak of CWD occur in New York, involving wild deer only, a plurality (45%) indicated that a modified incident command system (MICS) would be the best administrative response, while 38% chose the full multi-agency command system used in Oneida County. A smaller group (17%) preferred a smaller structural response limited to the Division of Fish, Wildlife, and Marine Resources. The most frequent suggestions for modification, for those preferring a MICS, were for less involvement from agencies other than DEC, and a more primary role for Fish and Wildlife staff (Table 6). Staff choosing the MICS apparently did see a role for other agencies, however, because they chose the MICS rather than a system limited to DEC Division of Fish, Wildlife, and Marine Resources staff. Slightly over half (50 to 55%) of DEC staff in each division indicated a preference for the MICS.

Table 6. Suggestions for modifying the Incident Command System for those who suggested this option as the best administrative solution in the event of a new outbreak of CWD in wild deer (n=72).

Primary modifications to the Incident Command System	Number
A more primary role for Fish and Wildlife staff	16
Reduce number of agencies or staff from some agencies	16
Concentrate resources on night shooting for greater efficiency	9
Flexibility, adaptation, size and structure depends on situation	6
Oversight less top heavy and controlling; more power to field staff	5
Primary decisions/effort by region with other agencies as support	4
Less frequent, rigid reporting to Albany/task force meetings/ briefings. Require supervisor attendance only, brief crew in field	4
Focus monitoring on hunting season, use hunters for sampling	4
DEC as liaison with technical advisors from other agencies	2
Other (None reported by more than one respondent)	4

Perceptions of the Effects of the Multi-agency Response on the Public

A large governmental response to a wildlife disease can be perceived in various ways by the public, depending on how the response is implemented and how it is communicated. Staff were asked to respond to 4 Likert-type statements (with strongly agree to strongly disagree response options) to measure perceptions in this regard.

There was widespread agreement (81%) that the multi-agency response demonstrated to the public that government was responsive to their concerns about CWD, and also that CWD represents a significant risk to the wild deer population (86% agreed) (Table 7). Strong concurrence also existed for the view that the multi-agency response did not signal to the public that deer are more of a pest than a valued resource. There was not concurrence as to whether the multi-agency response gave the impression that CWD represented a significant health risk—54% agreed that the response did give that impression, but 46% either disagreed or were unsure.

Table 7. Staff perceptions of effects of the multi-agency response on the public.

The multi-agency response...	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
	Percent				
Showed the public that government was responsive to their concerns about CWD.	36	46	14	4	1
Gave the impression that CWD represents a significant human health risk.	20	34	12	28	6
Gave the impression that CWD represents a significant risk to New York's wild deer population.	39	47	9	4	0
Gave the impression that deer are more of a pest to humans than a valued natural resource.	2	3	9	53	33

An additional set of Likert-type statements probed staff perceptions of how the multi-agency response affected them personally in their work assignments, or affected the agency. There was strong agreement (79%) that the multi-agency response empowered staff to participate in a project of highest priority for their agency, that the assignment was enjoyable because staff had the opportunity to work on an important assignment that was different from their normal job responsibilities (73% agreed), and that adequate attention was paid to the health and safety of participants (82% agreed) (Table 8). Few (16%) agreed that the assignment was frustrating because it kept them from meeting their normal job responsibilities. While 60% disagreed that they were frustrated because the operational guidelines limited how they could do their job, 27% agreed with this statement. Also, while 57% disagreed that the multi-agency response spent funds that could have been used for higher priority tasks in their agency, 20% agreed with this statement, and 23% indicated they were unsure.

Table 8. Staff perceptions of effects of the multi-agency response on them.

The multi-agency response...	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
	Percent				
Empowered me to participate in a project of highest priority for my agency.	29	50	13	5	4
Was enjoyable because of the different staff I had the opportunity to work with.	38	46	8	7	1
Was frustrating because it prevented me from meeting my normal job responsibilities.	2	14	7	58	19
Was enjoyable because I had an opportunity to work on an important project that was not related to my normal job responsibilities.	29	44	10	14	2
Was frustrating because of how the Operational Guidelines limited the way I could do my job.	11	16	13	44	16
Assured me that adequate attention was being paid to participants' health and safety.	31	51	11	5	2
Spent funds that could have been better spent on other higher-priority tasks in my agency.	7	13	23	42	15

Communication Efforts

Staff ratings of both internal communications among the multi-agency staff and external communication to stakeholders were good to excellent for most respondents (Table 9). At least 75% of respondents gave good to excellent ratings to (a) communication from managers as to what was expected of staff participants, (b) availability of results from tested deer, (c) having a designated spokesman to ensure accurate, consistent public information, (d) coordination among DEC divisions, (e) coordination between DEC and other state and federal agencies, and (f) the

ability to learn from other participants. Fewer respondents gave good to excellent ratings for encouraging fair and accurate media coverage of the event (66%), providing timely and accurate communications to local stakeholders (63%), and providing opportunities for direct interaction between stakeholders and agency personnel (58%). For each of these 3 categories of communication, at least 20% of respondents checked don't know—the percent giving poor to fair responses was similar to topics noted above that received more positive and fewer don't know responses.

Table 9. Staff ratings of the quality of communications related to the CWD event.

	Poor	Fair	Good	Excel- lent	Don't Know
Aspect of communication	Percent				
Communication of what managers (supervisors) expected of me as a participant.	4	11	41	43	1
Communication of what equipment and/or supplies to bring.	10	19	40	29	2
Communication of test results of sampled deer to staff participants.	7	14	31	45	3
Designation of a single Department spokesperson to ensure accurate, consistent public information.	3	11	42	34	10
Coordination among various DEC divisions.	6	11	36	42	5
Coordination between DEC and various state and federal agencies.	4	7	41	37	11
Encouraging fair and accurate media coverage of the event.	2	11	39	27	20
Providing timely and accurate communication information with local stakeholders.	4	11	36	27	21
Providing opportunities for direct interactions and communication between stakeholders and agency personnel.	4	15	41	17	23
Orientation to applicable Standard Operating Procedures.	3	21	39	26	10
Opportunity for participants to provide suggestions for improvement and changes.	10	17	38	26	8
Ability to learn from other participants.	7	13	38	37	5

There were 4 topics for which over 20% of respondents gave only poor to fair ratings: (a) communicating what equipment and supplies to bring (29%), (b) opportunity for participants to provide input for improvement and changes (27%), (c) orientation to applicable standard operating procedures, and (d) communication of test results from sampled deer to participants. While these topics received good-to-excellent ratings from 64 to 76% of respondents, the number of poor to fair ratings suggests there is some room for improvement in several areas:

- Communicating what equipment or supplies to bring was a concern primarily to DEC Fish, Wildlife, and Marine Resources and Law Enforcement staff (41% and 37%, respectively, rated this item poor or fair). By role, 52% of staff working with landowner contacts and 40% of deer shooters/spotters rated this item poor or fair.

- The opportunity to provide input for improvement and changes received a poor or fair rating from 50% of Law Enforcement and 38% of Fish, Wildlife, and Marine Resources staff. By role, 52% of those working in site security, 42% of those working with landowner contacts, and 39% of deer shooters and spotters rated this item poor or fair.
- Orientation to applicable standard operating procedures received a poor or fair rating from 67% of Law Enforcement respondents and 39% of those working in site security.
- Inadequate communication of test results from deer received a fair or poor rating from 52% of respondents working in site security and 40% of Law Enforcement staff.

Responding staff were invited to write in comments related to communication and a total of 56 were received, 44 of which could be grouped into comments by more than one person (Table 10). Improvement needs were noted particularly in radio communication, which appeared to include staff use of radios as well as the functioning of radios. As suggested by responses to previous questions, there were also some comments indicating a need for better communication and understanding between Central Office staff and field staff.

Table 10. Write-in comments about communication topics.

Comment about communication issues:	Number
Radios. Communication by radios needs to be improved. Did not work well in some areas. Staff not consistent in reporting location.	9
Directors/ Central Office Supervisors too controlling without understanding field operations. Not supportive enough.	9
Improve communication between agencies and field personnel.	8
Meetings too frequent, too long, not everyone needed to attend.	5
Public information was released too slow, especially by the DEC	3
Too many unnecessary upper management people on site in field.	2
Rotation of crews was confusing, prolonged learning curve.	2
Landowner contact and follow up should be amended and improved.	2
Sampling, need a consistent protocol for sampling/handling roadkill.	2
Ranger and field crew communication was great. Rangers listened.	2
Other (None reported by more than one respondent)	12

Following the previous set of questions, we attempted to gauge the seriousness of any shortcomings in communication and coordination by asking: “In terms of coordination and communication, did any area fall short to the extent that it kept you from doing a good job, or it caused you to be embarrassed for your agency?” One-third (33%) of respondents provided comments. The comment made most frequently, by 11 respondents, concerned the need for better communication between local ECOs and landowners. Comments made by 2 or more people are summarized in Table 11. Other comments made by just one person were tabulated and sent to DEC staff separately.

Despite the number of comments indicating problem areas that need improvement in the event of a future wildlife disease outbreak, most staff saw many positive aspects of the multi-

agency activity in Oneida County. In addition to positive comments reported in previous text and tables, 86% of respondents indicated that if a similar incident response need arose in the future, they would willingly volunteer to serve in that effort. Of the remaining staff, 6% indicated they would not willingly volunteer, and 9% were unsure.

Table 11. Summary of write-in responses concerning coordination and communication that fell short to the extent that it prevented staff from doing a good job or caused the respondent to be embarrassed for his/her agency.

Comments	Number
Landowner -- local ECO communication was not as good as it could have been. Landowner contact not documented well. Landowners not updated on results. Local ECO's were not used to gain trust, were not informed	11
There were too many people on scene and people were not used effectively	6
Directors too controlling without understanding, not supportive enough	5
A better plan should have been prepared for the initial week or two of the response	3
Decision making was unnecessarily and disappointingly slow, hindered response	3
Decision makers did not have understanding of field activities, missed meetings	3
More night shooting; it's more efficient	3
Internal communication was lacking; responders first learned results from news	2
Incident command system should have been more appropriately adapted	2
Radio communication was difficult, not enough, frequency not available on all	2
Other (each reported by just one respondent)	20

SUMMARY AND IMPLICATIONS

The discovery of CWD in Oneida County, New York resulted in a major multi-agency effort by state and federal agencies in an attempt to determine the prevalence of CWD in the wild deer herd, isolate the disease, and communicate with the media, stakeholders, and the general public. Substantial planning for this eventuality had occurred during the previous 2 years. Nevertheless, it is very difficult for any amount of planning to adequately simulate a real event when many of the specifics of the event are not known in advance. This study was designed to assess the effort from the perspective of the staff who participated as first responders, their supervisors, and others who provided technical support.

Overall, the assessment of staff who participated in this effort as incident responders was largely positive as to their preparation, instructions, coordination among the various agencies and tasks, and communication. The fact that 86% would willingly volunteer to participate in a similar future event speaks well for the implementation of this effort. The high response rate to the survey, conducted at less than an ideal time over the end-of-year holidays, the high level of completion of individual questions, and the numerous write-in suggestions all provide indication that respondents provided thoughtful, candid answers. Specific areas covered by the survey

where notable numbers of respondents provided less than positive ratings have been identified. The results, combined with follow-up discussions with key staff connected with areas identified for possible improvement, should provide sufficient information for DEC and other agency leaders to make the necessary modifications to bring about those improvements in the event another situation occurs requiring a response such as that mounted for CWD.

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