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EXECUTIVE SUMMARY

The “Flu at the Zoo” table-top exercise was developed to test the preparedness and communication among zoological personnel in Illinois, Indiana, and Missouri to respond to an outbreak of highly pathogenic avian influenza (HPAI) in a captive wildlife population that also impacted zoo personnel. It also fulfilled an all-hazards approach to response to any infectious disease outbreak involving humans and/or animals associated with a zoological facility. The exercise planning team was composed of numerous and diverse agencies, including state and federal animal health, public health, emergency management, and wildlife representatives.

The capabilities listed here were selected by the “Flu at the Zoo” Exercise Planning Team. These capabilities provided the foundation for development of the exercise design objectives and the scenario. The purpose of this exercise was to measure and validate performance of these capabilities and their associated critical tasks. The selected target capabilities were:

- Epidemiological Surveillance & Investigation
- Food and Agriculture Safety and Defense
- Animal Disease Emergency Support

Exercise design objectives focused on improving understanding of a response concept, identifying opportunities or problems, and achieving a change in attitude. This exercise focused on the following design objectives which were selected by the Exercise Planning Team:

1. Participants discussed the ability of local, State, and Federal agencies to establish control of an HPAI outbreak in each institution as it moves toward each zoo, until the virus affects collection specimens, and potentially employees. (Note: While it is highly unlikely that this scenario would play out in every zoo simultaneously, for each individual institution this could have been a highly likely scenario).

2. Participants discussed the ability of local, State, and Federal agencies to establish control of zoo animals and animal products to restrict movement of people, animals, supplies and products, and equipment in and out of control areas including zoological parks.

3. Participants discussed the ability of local, State, and Federal agencies to establish and coordinate a cleaning and disinfection program targeting zoological parks in the affected areas including personnel, equipment, and supplies according to current USDA Animal Plant Health Inspection Service (APHIS) protocols.

4. Participants discussed applicable references to the Association of Zoos and Aquariums (AZA) Outbreak Management Plan.
The purpose of this report is to analyze exercise results, identify strengths to be maintained and built upon, identify potential areas for further improvement, and support development of possible suggested corrective actions.

**Major Strengths**

The major strengths identified during this exercise are as follows:

**EPIDEMIOLOGICAL SURVEILLANCE & INVESTIGATION**

- Zoological institutions have some type of emergency response plans “on the books”.
- Most zoos have a good working relationship with USDA staff.
- Zoos recognize their need to be prepared for an emergency is paramount.
- Zoos & aquariums recognize they have the potential to be critical (and beneficial) players during a disease outbreak.

**FOOD & AGRICULTURE, SAFETY & DEFENSE**

- There was generally a fairly good understanding by exercise participants of the basic science of HPAI.
- Most zoos recognize the need to appropriately scale up biosecurity during a disease outbreak.
- There is a strong desire expressed during the exercise to be part of the decision making process at the local Emergency Operations Center (EOC) during an outbreak.

**ANIMAL DISEASE EMERGENCY SUPPORT**

- The right people, organizations, and agencies were present to discuss the multifaceted response required for a potential HPAI outbreak.
- Abundant resources exist from the federal and state governments to assist zoos in a response as well as expertise.
- The dialog during the exercise provided an outstanding beginning for creating a standardized response protocol that can be adopted by zoos of any size.

**Primary Areas for Improvement**

Throughout the exercise, several opportunities for improvement in the participating zoo’s ability to respond to the incident were identified. The primary areas for improvement, including recommendations, are as follows:

**EPIDEMIOLOGICAL SURVEILLANCE & INVESTIGATION**

- The need for zoological institutions to develop pre-outbreak communications strategies with the media.
- The need for zoological institutions to develop pre-outbreak communications strategies with State and local responders.
- Critical need for a flowchart and decision tree for zoos and aquariums which explains how surveillance tests will be conducted, by whom and how results will be communicated.

**FOOD & AGRICULTURE, SAFETY & DEFENSE**

- Communications was recognized by zoos as key to a successful response but a number of concerns were raised as well as methods to address these concerns.
• There is a need for identification of who would be responsible for increased surveillance/testing during an outbreak.
• There is a need for most zoos to do more specific & detailed emergency planning.

**ANIMAL DISEASE EMERGENCY SUPPORT**
• Training on the Incident Command System (ICS) & the National Incident Management System (NIMS) is generally lacking in the zoological community.
• Zoos need to work with local emergency response agencies in their planning & preparedness in the “all-hazards” planning arena.
• Zoos should identify additional resources likely to be made available from state and federal sources and determine their usefulness as an added capability in response planning.

In addition to zoo participants, this exercise was attended by essentially all of the important agencies/individuals that would be responsible for handling an outbreak of HPAI should it occur in one or more of the zoos represented in the region (Indiana, Illinois, and Missouri) covered by the exercise. Exercise attendees covered the following entities important for an HPAI response: State Bureau of Animal Health (BAHs) USDA, State and Federal Wildlife officials, State and local Public Health, Federal public health, and other emergency management authorities. The Exercise Planning Team was fortunate that the correct stakeholders were appropriately represented at the exercise. Exercise participants were actively engaged in discussion throughout the course of the exercise.
SECTION 1: EXERCISE OVERVIEW

Exercise Details

Exercise Name
“Flu at the Zoo”

Type of Exercise
Table-top Exercise

Exercise Date
06/06/2012

Duration
6 Hour

Location
Illinois Farm Bureau, Bloomington, Illinois

Sponsor
USDA, APHIS, Animal Care

Program
Avian Influenza/ Avian Health

Mission
Prevention

Capabilities
- Staff Health and Safety Considerations
- Disease Response
- Emergency Public Information and Warning
- Coordination with Government Officials
- Continuity of Operations

Scenario Type
Zoological Disease Outbreak (H5N1/HPAI)
Exercise Planning Team Leadership

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Participating Organizations

- University of Illinois, College of Veterinary Medicine
- Illinois Department of Agriculture
- USDA, APHIS
- AZA
- National Institutes of Health
- State of Indiana
- State of Missouri
- AZA Institutions (IL, IN & MO)
Number of Participants

- Players: 68
- Controllers/Facilitators: 6
- Evaluators: 3
- Observers: 4
- Victim Role Players: 0
SECTION 2: EXERCISE DESIGN SUMMARY

Exercise Purpose and Design

The purpose of the project was to enhance the preparedness and communication among zoological personnel in Illinois, Indiana, and Missouri to respond to an outbreak of avian influenza in a captive wildlife population that also impacted zoo personnel. It also fulfilled an all-hazards approach to response to any infectious disease outbreak involving humans and/or animals associated with a zoological facility.

Scope

This exercise brought together academics, regulatory officials and zoological personnel from Illinois, Indiana and Missouri for a one-day table-top exercise that emphasized their role in a response to a HPAI outbreak. There are 16 zoos and aquariums located in the 3 participating states for this table top exercise. However the scope of the exercise extended beyond this region. Representatives from 7 additional states and Washington, DC also attended Flu at the Zoo on June 6, 2012 (see Figure A.1). The exercise was designed to evaluate AZA institutional capacity to respond to an outbreak of HPAI within a zoological facility. The materials developed had the potential to enhance preparedness efforts of zoos and aquariums across the country.

Exercise Objectives, Capabilities, and Activities

The National Planning Scenarios and establishment of the National Preparedness Priorities have steered the focus of homeland security toward a capabilities-based planning approach. Capabilities-based planning focuses on planning under uncertainty because the next danger or disaster can never be forecast with complete accuracy. Therefore, capabilities-based planning takes an all-hazards approach to planning and preparation that builds capabilities that can be applied to a wide variety of incidents. States and urban areas use capabilities-based planning to identify a baseline assessment of their homeland security efforts by comparing their current capabilities against the Target Capabilities List (TCL) and the critical tasks of the Universal Task List (UTL). This approach identifies gaps in current capabilities and focuses efforts on identifying and developing priority capabilities and tasks for the jurisdiction. These priority capabilities are articulated in the jurisdiction’s homeland security strategy and Multiyear Training and Exercise Plan, of which this exercise is a component.

The capabilities listed here have been selected by the “Flu at the Zoo” Exercise Planning Team. These capabilities provide the foundation for development of the exercise design objectives and scenario. The purpose of this exercise is to measure and validate performance of these capabilities and their associated critical tasks. The selected target capabilities are:

- Epidemiological Surveillance & Investigation
- Food and Agriculture Safety and Defense
- Animal Disease Emergency Support
Capabilities-based planning allows for exercise planning teams to develop exercise objectives and observe exercise outcomes through a framework of specific action items that were derived from the Target Capabilities List (TCL). The capabilities listed below form the foundation for the organization of all objectives and observations in this exercise. Additionally, each capability is linked to several corresponding activities and tasks to provide additional detail.

Exercise design objectives focused on improving understanding of a response concept, identifying opportunities or problems, and achieving a change in attitude. Based upon the identified exercise objectives below, the exercise planning team decided to demonstrate the following capabilities during this exercise:

1. Participants will discuss the ability of local, State, and Federal agencies to establish control of a HPAI outbreak in each institution as it moves toward each zoo, until the virus affects collection specimens, and potentially employees. (Note: While it is highly unlikely that this scenario would play out in every zoo simultaneously, for each individual institution this could be a highly likely scenario).
2. Participants will discuss the ability of local, State, and Federal agencies to establish control of zoo animals and animal products to restrict movement of people, animals, supplies and products, and equipment in and out of control areas including zoological parks.
3. Participants will discuss the ability of local, State, and Federal agencies to establish and coordinate a cleaning and disinfection program targeting zoological parks in the affected areas including personnel, equipment, and supplies according to current USDA APHIS protocols.
4. Participants will discuss applicable references to the AZA Outbreak Management Plan.

Scenario Summary

The Flu at the Zoo participants were divided into three groups to simultaneously work through a scripted scenario where a cascading outbreak of HPAI affected their zoo avian collections to different degrees over a fifteen day period. This tabletop exercise (TTX) was a multimedia, facilitated exercise. Players reacted to the outbreak of HPAI that originated in waterfowl.

Players were presented the following three modules:
- Module 1: Response to HPAI in the Region
- Module 2: Response to HPAI in Free-Living Birds Near Your Facility
- Module 3: Response to HPAI Within Your Collection & Personnel
Section 3: Analysis of Capabilities

This section of the report reviews the performance of the exercised capabilities, activities, and tasks. In this section, observations are organized by capability and associated activities. The capabilities linked to the exercise objectives of Flu at the Zoo are listed below, followed by corresponding activities. Each activity is followed by related observations, which include references, analysis, and recommendations.

Capability 1: Epidemiological Surveillance and Investigation

Capability Summary: The Epidemiological Surveillance and Investigation capability is the capacity to rapidly conduct epidemiological investigations. It includes exposure and disease detection, rapid implementation of active surveillance, maintenance of ongoing surveillance activities, epidemiological investigation, analysis and communication with the public and providers about case definitions, disease risk and mitigation, and recommendation for the implementation of control measures.

Activity 1.1: Develop and Maintain Plans, Procedures, Programs, and Systems.

Observation 1.1: The major strengths identified during this exercise are as follows:

**EPIDEMIOLOGICAL SURVEILLANCE & INVESTIGATION**
- Zoological institutions have some type of emergency response plans “on the books.”
- Most zoos have a good working relationship with USDA staff.
- Zoos recognize their need to be prepared for an emergency is paramount.
- Zoos & aquariums recognize they have the potential to be critical (and beneficial) players during a disease outbreak.

References: USDA AZA Outbreak Management Plan

Analysis: Zoo personnel in attendance at the exercise had a good understanding of their ability to use the AZA Outbreak Management Plan to implement a response to HPAI in collaboration with state and federal regulators to establish control of an AI outbreak in each institution as it moves toward each zoo, until the virus affects collection specimens, and potentially zoo employees.

Recommendations: Recommendations were made to suggest the following:

**EPIDEMIOLOGICAL SURVEILLANCE & INVESTIGATION**
- Zoological institutions should consider development of pre-outbreak communications strategies with the media.
- Zoological institutions should consider development of pre-outbreak communications strategies with State and local responders.
- There appears to be a critical need for a flowchart and decision tree that zoos and aquariums could use which explains how surveillance tests will be conducted, by
whom and how results will be communicated.

**Capability 2: Food & Agriculture, Safety & Defense**

**Capability Summary:** Food and Agriculture Safety and Defense is the capability to prevent, protect against, respond to, and recover from chemical, biological and radiological contaminants, and other hazards that affect the safety of food and agricultural products. This includes the timely eradication of outbreaks of crop diseases/pests, assessments of the integrity of the food producing industry, the removal and disposal of potentially compromised materials from the U.S. food supply, and decontamination of affected food manufacturing facilities or retail points of purchase or service. This also includes appropriate laboratory surveillance to detect human foodborne illness or food product contamination. It is accomplished concurrent to protecting public health and maintaining domestic and international confidence in the U.S. commercial food supply. Additionally, the public is provided with accurate and timely notification and instructions related to an event and appropriate steps to follow with regard to disposal of affected food or agricultural products and appropriate decontamination procedures.

**Activity 2.1: Develop and Maintain Plans, Procedures, Programs, and Systems.**

**Observation 2.1:** The major strengths identified during this exercise are as follows:

**FOOD & AGRICULTURE, SAFETY & DEFENSE**
- There was generally a fairly good understanding by exercise participants of the basic science of HPAI and the need for planning.
- Most zoos recognize the need to appropriately scale up biosecurity procedures during a disease outbreak.
- There is a strong desire expressed during the exercise to be part of the decision-making process at the local Emergency Operations Center (EOC) during an outbreak.

**References:** USDA AZA Outbreak Management Plan

**Analysis:** Exercise attendees covered the following entities important for an HPAI response: State BAHs, USDA, State and Federal Wildlife officials, State and local Public Health, Federal public health and other emergency management authorities. Animal Disease Emergency Support can only operate effectively if the right stakeholders are working effectively together. The correct stakeholders were appropriately represented for the exercise. Exercise participants were actively engaged and working throughout the day.

**Recommendations:** Recommendations were made to suggest the following:

**FOOD & AGRICULTURE, SAFETY & DEFENSE**
- Communications was recognized by zoos as key to a successful response but a number of concerns were raised as well as methods to address these concerns.
- There is a need for identification of who would be responsible for increased surveillance/testing during an outbreak.
• There exists the need for most zoos to do more specific & detailed emergency planning.

**Capability 3: Animal Disease Emergency Support**

**Capability Summary:** Animal Disease Emergency Support is the capability to protect, prevent, detect, respond to, and recover from threats and incidents that would result in the disruption of industries related to U.S. livestock, other domestic animals (including companion animals) and wildlife and/or endanger the food supply, public health, and domestic and international trade. It includes the ability to respond to large-scale national and regional emergencies as well as to smaller-scale incidents through rapid determination of the nature of the event, initiation of the appropriate response, containment of the disrupting effects, and facilitation of recovery.

**Activity 3.1: Develop and Maintain Plans, Procedures, Programs, and Systems.**

**Observation 3.1:** The major strengths identified during this exercise are as follows:

**ANIMAL DISEASE EMERGENCY SUPPORT**

• The right people, organizations, and agencies were present to discuss the multifaceted response required for a potential HPAI outbreak.
• Abundant resources exist from the federal and state governments to assist zoos in a response as well as expertise.
• The dialog which existed during the exercise provided an outstanding beginning for creating a standardized response protocol which can be adopted by zoos of any size.

**References:** USDA AZA Outbreak Management Plan

**Analysis:** The Flu at the Zoo participants were divided into three groups and all groups simultaneously worked through a scripted scenario where a cascading event of HPAI affected their zoo animal population to different degrees during a simulated fifteen-day period. Traditionally a Table Top exercise will test a specific set of responses to a specific threat. Flu at the Zoo involved multiple zoos, multiple states and a variety of federal and state agencies. Consequently, no one plan existed as different zoos in different states would have different plans based on their unique characteristics. Rather, this Table Top exercise was designed to have each group work through a series of questions at each phase of the cascading event comparing and contrasting their plans, their state plan, and the federal response.

**Recommendations:** Recommendations were made to suggest the following:

**ANIMAL DISEASE EMERGENCY SUPPORT**

• Training on the Incident Command System (ICS) & the National Incident Management System (NIMS) is generally lacking in the zoological community.
• Zoos need to work with local emergency response agencies in their planning & preparedness in the “all-hazard” planning arena.
• Zoos should identify additional resources likely to be made available from state and federal sources and determine their usefulness as an added capability in response planning.
SECTION 4: CONCLUSION

On Wednesday June 6, 2012, the United States Department of Agriculture sponsored a regional Table Top exercise held in Bloomington, Illinois. The exercise, Flu at the Zoo, brought together representatives from zoos, state and federal agencies, and members of the private sector who have a relationship to zoos or zoo operations.

These attendees would be responsible for handling an outbreak of HPAI should it occur in one or more of the zoos represented in the region (three states including Indiana, Illinois, and Missouri) covered by the Exercise. The dialog during this exercise provided an outstanding foundation for fostering mutual understanding between zoo personnel and other responding agencies on roles and responsibilities and capabilities during a disease outbreak. Lessons learned at the exercise will enable revision to the USDA AZA Outbreak Management Plan to ensure its visibility as a resource for zoos of any size to develop their protocols for disease preparedness and response.

Fifty percent (22/44) of the participants who completed the feedback form indicated that the area they most felt was in need of improvement was an understanding of communication channels and chain of command in a foreign animal disease (FAD) emergency. This was also the most often cited area in need of improvement during the exercise discussion sessions. Several participants specifically stated that they believed zoo personnel needed ICS and or NIMS training.

The participant feedback forms and exercise evaluators indicated that zoo personnel varied widely in their awareness of incident command structure and operation and that communications challenges and insufficient coordination of response activities across agencies and institutions may serve as potential barriers to a timely and effective FAD outbreak response involving zoos or aquariums.

Recommendations in the After Action Report included the need for increased training opportunities for zoological community personnel on the Incident Command System and National Incident Management System. In addition, it was recommended that communications be enhanced between zoos and aquariums and the local, state, and federal agency personnel that would serve as first responders in an FAD event.
## APPENDIX A: IMPROVEMENT PLAN

This IP has been developed specifically for consideration as a result of “Flu at the Zoo” conducted on June 6, 2012. These recommendations draw on both the After Action Report and the After Action Conference.

<table>
<thead>
<tr>
<th>Capability</th>
<th>Observation Title</th>
<th>Recommendation</th>
<th>Corrective Action Description</th>
<th>Capability Element</th>
<th>Primary Responsible Agency</th>
<th>Agency POC</th>
<th>Start Date</th>
<th>Completion Date</th>
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<tbody>
<tr>
<td>1. Epidemiological Surveillance And Response</td>
<td>1. Zoological institutions should consider development of pre-outbreak communications strategies with the media, state and local responders</td>
<td>1. 1. Develop AZA Foreign Animal Disease Working Group to address communication strategies for AZA and partner agencies (among other objectives)</td>
<td>1.1.1 Develop or identify basic, customizable templates for all necessary stakeholders</td>
<td>Planning</td>
<td>USDA X ZAHN X AZA</td>
<td>Jeleen Briscoe, Steve Olson, Yvonne Nadler</td>
<td>Aug 1, 2012</td>
<td>Aug 1, 2013</td>
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<td></td>
<td>2. Need for a flowchart and decision tree that zoos and aquariums could use, explaining general use of AI surveillance testing and how results are communicated</td>
<td>1.2 Develop a flowchart to provide information to zoos on surveillance testing and communication of results</td>
<td>1.2.1 Review the existing Diagnostic Communication Tree v202 (part of USDA AZA Avian Influenza Surveillance Plan and update</td>
<td>Planning</td>
<td>USDA X ZAHN</td>
<td>Yvonne Nadler, Jeleen Briscoe, Tyler McAlpin</td>
<td>Oct 2012</td>
<td>Oct 2013</td>
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<td>3. Animal Disease Emergency Support</td>
<td>There is a lack of training in ICS and NIMS in the zoological community</td>
<td>1. Provide training opportunities for zoological professionals in appropriate ICS and NIMS</td>
<td>Training</td>
<td>University of Ill. X USDA</td>
<td>Y. Johnson-Walker, Jeleen Briscoe</td>
<td>October 2012, October 2013</td>
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<td>3.1 Workshop development for ICS 100 training</td>
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<td>3.1.1 Workshop development for NIMS 700a training</td>
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<td>3.2 Provide an opportunity to work with agencies in an internet based simulation</td>
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<td>3.2.1 Develop and conduct an internet based exercise to engage zoos and emergency response agencies</td>
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<td>3.3 See 1.1 above. The AZA FAD Working Group can identify, consolidate, and identify gaps in resources available to zoos for FAD preparedness and response</td>
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<td>3.3.1. Create and make available comprehensive resource list for zoos on FAD preparedness and response</td>
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<td>3.3.2. Identify gaps in resources for zoos regarding FAD preparedness and response and a plan to address them.</td>
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Table A.1: Improvement Plan Matrix
APPENDIX B: LESSONS LEARNED

While the After Action Report/Improvement Plan includes recommendations which support development of specific post-exercise corrective actions, exercises may also reveal lessons learned which can be shared with the broader homeland security audience. The Department of Homeland Security (DHS) maintains the Lessons Learned Information Sharing (LLIS.gov) system as a means of sharing post-exercise lessons learned with the emergency response community. This appendix provides jurisdictions and organizations with an opportunity to nominate lessons learned from exercises for sharing on LLIS.gov.

For reference, the following are the categories and definitions used in LLIS.gov:

- **Lesson Learned**: Knowledge and experience, positive or negative, derived from actual incidents, such as the 9/11 attacks and Hurricane Katrina, as well as those derived from observations and historical study of operations, training, and exercises.

- **Best Practices**: Exemplary, peer-validated techniques, procedures, good ideas, or solutions that work and are solidly grounded in actual operations, training, and exercise experience.

- **Good Stories**: Exemplary, but non-peer-validated, initiatives (implemented by various jurisdictions) that have shown success in their specific environments and that may provide useful information to other communities and organizations.

- **Practice Note**: A brief description of innovative practices, procedures, methods, programs, or tactics that an organization uses to adapt to changing conditions or to overcome an obstacle or challenge.

**Exercise Lessons Learned**

- The zoological community in general is just beginning to understand the concept of “all hazards” preparedness. A foreign animal disease outbreak is only one type of hazard that could be managed with a comprehensive preparedness strategy.

- Most zoological institutions did not appear to know all the critical local response agencies that they would be working with in a response. Greater communication and relationship-building at a local level, during plan development and prior to an incident is critical.

- Zoological facilities may need to establish a stronger working relationship with their state veterinarians. USDA may regulate zoos, but in a disease outbreak, the state veterinarian is the lead official to ensure the health of animals in that state.

- Zoos want a ‘seat at the table’ to represent their interests in foreign animal disease preparedness at state and national levels.

- A general unawareness exists in governmental emergency management authorities of the important potential role captive wildlife and domestic livestock housed at zoos can play in perpetuation of a foreign animal disease. Addressing this gap in knowledge will
require proactive approaches from zoos and governmental officials and incorporation of zoos into any state and national preparedness, response, and recovery efforts.

- This exercise focused on zoos accredited by the Association of Zoos and Aquariums (AZA). These represent less than 10% of the zoos and other exhibitors of animals regulated by the USDA. True all-hazards preparedness and response for zoos that protects captive wildlife housed therein and mitigates spread of disease should ideally encompass those not accredited by AZA as well. The question of who should take the lead in incorporating those non-AZA exhibitors of animals into this planning and response effort remains unanswered but should be addressed in future exercises.
APPENDIX C: PARTICIPANT FEEDBACK SUMMARY

There were 82 attendees at the Flu at the Zoo Tabletop Exercise held in Bloomington, Illinois on June 6, 2012. This included 75 participants from zoos, state and federal regulatory agencies, universities, and representatives of agricultural industries that may be affected by an outbreak of avian influenza. In addition to the exercise participants there were 3 student note takers and 4 journalists present. A total of 41 participants (54.5%) completed and submitted the participant feedback form.

The feedback form consisted of 7 open response questions and 8 Likert scale questions with response categories ranging from 1-5, with 1 indicating strong disagreement and 5 indicating strong agreement.

Results

1. The exercise was well structured and organized (median= 5, mode=5)
When participants were grouped by affiliation (zoo personnel vs. non-zoo personnel), there was no significant difference in responses to this question (Fisher’s Exact 2 sided p=0.869).

2. The exercise scenario was plausible and realistic (median = 5, mode = 5).
When participants were grouped by affiliation (zoo personnel vs. non-zoo personnel), there was no significant difference in responses to this question (Fisher’s Exact 2 sided p=0.752).

3. The facilitator/controller(s) was knowledgeable about the area of play and kept the exercise on target (median = 4, mode = 5).
When participants were grouped by affiliation (zoo personnel vs. non-zoo personnel), there was a significant difference in responses to this question (Fisher’s Exact 2 sided p=0.048), with non-zoo personnel responding with higher scores than zoo personnel.

4. The exercise documentation provided to assist in preparing for and participating in the exercise was useful (median = 4, mode = 4).
When participants were grouped by affiliation (zoo personnel vs. non-zoo personnel), there was a significant difference in responses to this question (Fisher’s Exact 2 sided p=0.048), with non-zoo personnel responding with higher scores than zoo personnel.

5. Participation in the exercise was appropriate for someone in my position (median =5, mode = 5).
When participants were grouped by affiliation (zoo personnel vs. non-zoo personnel), there was no significant difference in responses to this question (Fisher’s Exact 2 sided p=0.156).

![Bar chart showing responses to participant feedback survey]  

6. The participants included the right people in terms of level and mix of disciplines (median = 4, mode = 5).
When participants were grouped by affiliation (zoo personnel vs. non-zoo personnel), there was no significant difference in responses to this question (Fisher’s Exact 2 sided p=0.438).

7. This exercise allowed my agency/jurisdiction to practice and improve priority capabilities (median = 4, mode = 4).
When participants were grouped by affiliation (zoo personnel vs. non-zoo personnel), there was no significant difference in responses to this question (Fisher’s Exact 2 sided p=0.917).

8. After this exercise, I believe my agency/jurisdiction is better prepared to deal successfully with the scenario that was exercised (median = 4, mode = 4).
When participants were grouped by affiliation (zoo personnel vs. non-zoo personnel), there was no significant difference in responses to this question (Fisher’s Exact 2 sided p=0.767).

![Bar chart showing frequency of responses to questionnaire items]

**Summary**

The exercise received high scores from participants on: structure and organization of the exercise; plausibility of the scenario; appropriateness of the exercise for someone in their position; and having the right mix of disciplines represented at the exercise. Positive scores were received for the other questionnaire items however they were somewhat lower for the facilitator and controllers’ knowledge of the area of play and ability to keep the exercise on target and usefulness of the documentation provided. These questions were scored significantly lower by zoo personnel than by non-zoo personnel. Participants also agreed less strongly that their capabilities had been improved by the exercise and that they now felt better prepared to respond to an outbreak of avian influenza. This may be in part due to the discussions-based format of the exercise. Participants were able to identify deficiencies in their response plans however corrective actions in the form of additional training and response planning and functional exercises to test the effectiveness of the plans and training will be needed to achieve the long-term goals of improved outbreak response resources and capabilities and enhanced outbreak preparedness within the zoological community.
## APPENDIX D: ACRONYMS

### Table D.1: Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Animal Care</td>
</tr>
<tr>
<td>AI</td>
<td>Avian Influenza</td>
</tr>
<tr>
<td>AAR</td>
<td>After Action Report</td>
</tr>
<tr>
<td>APHIS</td>
<td>Animal and Plant Health Inspection Service</td>
</tr>
<tr>
<td>AZA</td>
<td>Association of Zoos and Aquariums</td>
</tr>
<tr>
<td>DHS</td>
<td>U.S. Department of Homeland Security</td>
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<tr>
<td>EAD</td>
<td>Emergency Animal Disease</td>
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<tr>
<td>EEG</td>
<td>Exercise Evaluation Guide</td>
</tr>
<tr>
<td>EMA</td>
<td>Emergency Management Agency</td>
</tr>
<tr>
<td>FAD</td>
<td>Foreign Animal Disease</td>
</tr>
<tr>
<td>FADD</td>
<td>Foreign Animal Disease Diagnostician</td>
</tr>
<tr>
<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
</tr>
<tr>
<td>FMD</td>
<td>Foot-and-Mouth Disease</td>
</tr>
<tr>
<td>HSEEP</td>
<td>Homeland Security Exercise and Evaluation Program</td>
</tr>
<tr>
<td>IDOA</td>
<td>Illinois Department of Agriculture</td>
</tr>
<tr>
<td>POC</td>
<td>Point of Contact</td>
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<td>RESP</td>
<td>Regional Exercise Support Program</td>
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<td>SEOC</td>
<td>State Emergency Operations Center</td>
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<td>SitMan</td>
<td>Situation Manual</td>
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<tr>
<td>TTX</td>
<td>Tabletop Exercise</td>
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<td>USDA</td>
<td>U.S. Department of Agriculture</td>
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<td>VS</td>
<td>Veterinary Services</td>
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<tr>
<td>WS</td>
<td>Wildlife Services</td>
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