

Lessons Learned Annex

September 2011, Zoo Animal Health Network

www.zooanimalhealthnetwork.org

This Annex is not intended to be a recommendation from or to the industry. It is a collection of individual observations and experiences of those who have been involved in ensuring business continuity after confronting vastly different circumstances. Each lesson learned refers to an Emergency Preparedness Annex for additional information. The source for each listing is footnoted.

	Category	Issue	Challenges	Solutions or Lessons Learned	Annex
1	<u>Administrative Issues</u>	Who is in charge during an emergency? ¹	Without a leader who has received leadership training, problems will occur and chances for personal injury, loss of animals and significant damage to property, equipment, and facilities will increase and compound quickly. During a disaster visitors as well as personnel without leadership can panic in unpredictable manners.	~ Designate and train an “emergency response coordinator” (Facility Incident Commander [FIC]) to be responsible for overseeing all emergency activities including the planning process, and selection and training of Emergency Response Team (ERT) members. Back-up leaders also should be designated and trained.	<ul style="list-style-type: none"> • Administrative • Training
2		Distractions at the Command Post ²	During a full-scale exercise, support staff distracted the commander by discussions concerning operational and support activities. The repeated discussions overwhelmed the commander and diverted the focus from core responsibilities.	~ Limit personnel at command post to mission-essential personnel. This reduces likelihood that a commander will be distracted from core command responsibilities.	<ul style="list-style-type: none"> • Administrative • Training
3		Personnel cannot enter the disaster zone to help with the animals ³	Police will often set up roadblocks and prevent EVERYONE from entering a disaster area. Key personnel may not be able to get to the facility or gain entry to the area.	~ Provide all personnel and volunteers with credentials or some type of badges to wear so they can be identified. ~Meet with local jurisdictions to clarify and agree on the best way to allow key personnel access through the roadblock when safe.	<ul style="list-style-type: none"> • Administration • MOU/MAA

¹ Geoff Underwood. 2007. “Crisis Management Planning in Zoological Institutions.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Sterling, South Australia Page 465.

² Volusia County Emergency Management. 2006. *Volusia County Terrorism Rail Exercise: After Action Report*. 09 Aug 2006.

https://hseep.dhs.gov/support/lessons/Incident%20Site%20Management_Establishing%20Procedures%20to%20Reduce%20Radio%20Noise%20in%20Command%20Post%20Facilities.pdf

³ Chuck Brinkman, IV. 2007. “Wildfire!: One Facility’s Response and Lessons Learned.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Page 527.

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4	<u>Animal Escape Issues</u>	Overgrown landscaping ⁴	Landscaping inside and outside an open grotto habitat caught the attention of a colobus who studied the distance between inside and outside limbs. As tree limbs grew, these distances became closer enabling an escape.	~ Keep trees trimmed. After trimming the animal stopped its obsession of distance between the trees. ~ Watch for fallen trees or limbs that can be used as ladders to escape a confinement.	<ul style="list-style-type: none"> • Facility Operations • Animal Incident
5		Secure habitats and containments ⁵	A tiger chewed through stainless steel cable netting and escaped.	~ The exhibit was modified so the tiger could no longer reach the cable netting.	<ul style="list-style-type: none"> • Facility Operations • Animal Incident
6		Relationship with local jurisdictions ⁶	There was always so much to do that meeting with and developing a relationship with local jurisdictions was not consistent. Important topics to discuss included fire power and who had the right equipment; who is on the weapons team; decide on a unified goal; and if an animal escaped, who would be in charge?	~ Develop relations with local jurisdiction. ~ Determined who will take the lead on facility grounds. ~ Several local officers are on the facility's weapons team. ~ Jurisdiction offered use of shooting range and important guidance on developing proficiency. (Eight practices a year were considered a minimum to maintain team status.) ~ Most importantly, practice the procedures; reading written procedures is not enough.	<ul style="list-style-type: none"> • Animal Incident • Administration • Training
7	<u>Business Recovery and Reimbursement Issues</u>	Facility closure ⁷	The facility lost its viability and closed. The board of directors did not provide good oversight nor looked for possible pitfalls ahead.	~Develop a strong board of directors that can provide technical expertise in professional areas (legal, accounting, communications, etc.), resources (funding, in-kind, access to persons or corporations that can provide resources), and experience in similar board operations.	<ul style="list-style-type: none"> • Business Recovery and Reimbursement • Administration
8		Facility closure ⁸	The board of governance is too involved with the day-to-day management. The organization warrants a paid manager so the board can govern.	~ The board needs to hire and then supervise a manager/executive director, approve the budgets, cultivate new resources and maintain fiscal responsibility for the organization.	<ul style="list-style-type: none"> • Business Recovery and Reimbursement • Administration

⁴ Daniel Ruhter. 1999. "Houston Zoo Cat Facility Safety Review: a New Era in Animal Containment-design." *Resources for Crisis Management*. Page 224.

⁵ Julian J. Durval. 2007. "The Polar Bear is Out...Who do you Call?" 1999. *Resources for Crisis Management*. Page 226.

⁶ Julian J. Durval. 2007. "The Polar Bear is Out...Who do you Call?" 1999. *Resources for Crisis Management*. Page 226.

^{7, 8} Dennison, K et.al. USDA. Presentation at National Alliance of State Animal and Agricultural Emergency Programs (NASAAEP) Annual Conference December 2010 "Response on the Wild Side of Animal Welfare"

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				<p>~ The manager, or director, should supervise the staff, hire and fire staff as needed, propose a budget to the board, and manage day to day operations.</p> <p>~ The organization should hold periodic strategic planning meetings for the board and managers.</p>	
9		Facility closure ⁹	Accepting new animals without making arrangements for a <u>lifelong</u> care plan can lead to a financial drain on the entire organization.	<p>~ Do not accept new animals before determining the costs and commitment of lifelong care, and having the resources to make the commitment.</p> <p>~ A significant portion of funds should be placed in an investment tool to help fund the extended costs of lifetime animal care, rather than spending all funds on immediate operational costs.</p>	<ul style="list-style-type: none"> • Business Recovery and Reimbursement • Administration
10		Founders Syndrome ¹⁰	“Founder’s Syndrome,” where the founder is the paid manager or has overbearing influence over the Board of Directors. It can lead to a catastrophic upheaval within the organization leading to closure if the Board does not have appropriate governance capacities.	~ The Board should have open discussions on the eventual transition of the founder out of governance of the organization. Note that non-profit organizations are not owned by any individual and the governance of the organization is invested with the Board of Directors on behalf of the public good.	<ul style="list-style-type: none"> • Business Recovery and Reimbursement • Administration
11		Overly passionate management and over-committed facility ¹¹	In the non-profit sector, passionate beliefs sometimes become counterproductive. Over commitment, desperation in trying to address issues beyond organizational capacities, compassion fatigue, and conflict within the organization can all lead to failure.	<p>~ Commit to:</p> <ul style="list-style-type: none"> ○ A strategic plan ○ Sound business plan ○ Industry-standard business management ○ Utilization of external expertise ○ Organizational balance between governance and management. 	<ul style="list-style-type: none"> • Business Recovery and Reimbursement • Administration

⁹ Dennison, K Et.al. USDA. Presentation at National Alliance of State Animal and Agricultural Emergency Programs (NASAAEP) Annual Conference December 2010 “Response on the Wild Side of Animal Welfare”

¹⁰ National Resource Center E-newsletter “Surviving Founder’s Syndrome”; <http://www.ccfbest.org/management/survivingfounder.htm>

¹¹ Dennison, K Et.al. USDA. Presentation at National Alliance of State Animal and Agricultural Emergency Programs (NASAAEP) Annual Conference December 2010 “Response on the Wild Side of Animal Welfare”

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12	Communication Issues	Wireless and cell phone outages ¹²	During a disaster the facility telephones as well as cell phones would not function.	~ The older non-electric, hard-wired telephones still functioned when everything else failed. ~ Maintain or install dedicated backup older-style hard-wired land lines/telephones that don't rely on external electric power.	<ul style="list-style-type: none"> • Communications • Communications Modality Chart
13		Cell vs. smart phone ¹³	Cell phones had limited functionality for communicating.	~Text messaging worked even when cell phones did not function. ~twitter accounts can be utilized for team communication ¹⁴ ~Out-of-state numbers worked better than in-state; however, there were limited places for recharging batteries. ~ Purchase "smart" phones for team leaders ~ Add text messaging capabilities to work cell phones of emergency staff. ~ Maintain an out-of-state phone number and phone with text features.	<ul style="list-style-type: none"> • Communications • Communications Modality Chart • Administration
14		Media and publicizing bad news ¹⁵	Before appropriate media materials could be prepared, a facility employee leaked news about an incident to a local TV station. The story was sensationalized by media and inaccurate information was publicized that led to demonstrations and a threatening boycott of the facility for two months.	~ Just because there is a good working relationship with the media, does not mean the media will protect you or verify a lead. It covers what it considers to be news. Do not assume fairness. ~ Be proactive and prepared: have the same spokesperson and contacts so the media knows who to call. ~ Senior staff received intensive spokesperson training. ~ Developed a crisis communication plan that includes drafting templates for different situations as a starting point.	<ul style="list-style-type: none"> • Administration • Communications • Training

¹² Elizabeth Hammond, DVM and Daniel Maloney. 2007. "Hurricane Preparedness: Lessons learned from Hurricane Katrina." *Animal Keepers' Forum*, Vol. 34 Nos. 11/12. Page 557.

¹³ Elizabeth Hammond, DVM and Daniel Maloney. 2007. "Hurricane Preparedness: Lessons learned from Hurricane Katrina." *Animal Keepers' Forum*, Vol. 34 Nos. 11/12. Page 557.

¹⁴ Mace, M. San Diego Zoo Global, Pers.comm. Alternative communication strategies for coping with Southern California blackouts, summer 2011.

¹⁵ Laura Pedriani. 1999. "A lota Due about Nothing." *Resources for Crisis Management*. Milwaukee County Zoo. Page 179.

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15		Public image after an animal attack ¹⁶	Additional issues resulting from an animal attack that was caused by human error include: (1) 911 call picked up by enthusiastic journalists, (2) need for an immediate press release (3) and too many people releasing information about the incident	<p>~ Be prepared to send bulk press releases to all local media immediately to diffuse over-enthusiastic journalists.</p> <p>~ Stick to the 'who, what, where, and when' and leave the how until later. Time is needed to sort through the facts.</p> <p>~ Give the media new information and as much information as possible each time meeting with them.</p> <p>~ Withhold names of injured people until family can be contacted.</p> <p>~ Inform all staff members, volunteers, donors, board members, etc.</p> <p>~ Develop a rapport with each of the news agencies <i>before</i> an emergency.</p> <p>~ Have a single spokesperson in charge of information flow.</p>	<ul style="list-style-type: none"> • Communications • Administration
16		Visiting children separated from group ¹⁷	Daycare groups were visiting when a disaster struck: there was no way to communicate with families or get information about families, particularly if the group leader is missing.	~ School, daycare and other children's organizations should provide contact data to the institution upon arrival that includes child's full name, parent's full name and contact information.	<ul style="list-style-type: none"> • Administration • Communications
17		No communications expert to help during an emergency. ¹⁸	During a full-scale exercise, the absence of an emergency communications expert prevented the commander's staff from using the available systems to their full capacity.	~ Facility Communications experts should be included in exercises to familiarize themselves with the commander's activities and personnel and provide expertise.	<ul style="list-style-type: none"> • Administrative • Communications • Training

¹⁶ Caroline Meek. 1999. "Lucky to Be Alive: Analysis of an Animal Attack In A Small Zoo And Coping With the Aftermath." *Resources for Crisis Management*. Page 322.

¹⁷ U.S. Department of Health & Human Services. Save the Children. 2010. "The Disaster Decade: Lessons Unlearned for the United States."

¹⁸ State of Iowa, Department of Homeland Security and Emergency Management. 2005. *Iowa District 5 Multi-County Functional Exercise After-Action Report*. 22 Sep 2005. FEMA Lessons Learned.

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18	Data Storage Issues	Host server company lost data ¹⁹	By mistake, the web hosting vendor deleted the main Web domain and every byte of data and information was deleted, and then expunged – never recoverable and the last backup was four-months old.	~ Do not assume records are backed up. Master discs, and irreplaceable data, should be stored off-site in the event of a disaster. All records should be backed-up often.	<ul style="list-style-type: none"> • Data
19		External memory storage stolen ²⁰	Personal data was put at risk after the theft of a hard drive containing records that was improperly removed from a hospital and left in an employee’s car. More than 15,000 people had to be contacted, and the employee lost her position.	~ Require permission to remove sensitive data from premises with rules for safekeeping. ~ Establish protocols for all data. Lock up any memory devices so they cannot be stolen.	<ul style="list-style-type: none"> • Data • Administration • Training
20		USB Flash drive missing and records compromised. ²¹	A hospital learned all its data had been compromised. It had to notify over 24,000 contacts that their personal information was missing because of a “lost” USB memory stick that had been used to store information. More than 800,000 data-sensitive memory devices, such as USB drives, hard drives, and laptops are either lost or stolen each year. ²²	~ Lock down the USB storage devices. Store flash drives, or other mobile devices, in secure locations. ~ Lock down portable PCs.	<ul style="list-style-type: none"> • Data • Administration • Training

¹⁹ Todd R. Weiss. 2010. Lesson learned: Is your growing business ready for an IT disaster?

²⁰ Larry Barrett. 2010. Hard Drive Theft Nets Health Data of Thousands. Internetnews.com. January 15, 2010.

²¹ Larry Barrett. 2010. Hospital Data Breach in Kentucky Affects Thousands. eSecurity Planet.com. May 5, 2010.

²² Ponemon Institute, a security research group, cites this information. <http://www.internetnews.com/security/article.php/3858946/Hard-Drive-Theft-Nets-Health-Data-of-Thousands.htm>

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21	<u>Emergency Animal Care Issues</u>	Euthanasia ²³	In a research facility, the flooding aftermath of Hurricane Katrina caused loss of power, plumbing, and potable water, roads were impassable and all communication lost. Fuel was in short supply and civil unrest was growing. On the second day after the flooding, emergency generator power and communications were lost. Euthanasia for some animals was necessary by the key personnel who remained on site. They were able to evacuate some remaining animals and then humanely euthanized the rest after 7-8 days.	<ul style="list-style-type: none"> ~ Plan for animal holding space at remote locations. ~ Plan logistics for evacuation, transport and security. ~ Prepare for special needs and equipment to transport animals. ~ Plan for backup power to last longer than a few days. 	<ul style="list-style-type: none"> • Emergency Animal Care • Facility Operations • Transportation / Evacuation • Administration
22		Knowing how to care for animals in crisis. ²⁴	During a crisis, regular animal keepers may not be available and reserve keepers, without personal knowledge of the animals, may be in charge AND have no access to electronic information. Data and records had been sporadically completed for evacuated animals. There was confusion and inconsistencies in animal diets. It took months after the event to clarify transfers and health care needs.	<ul style="list-style-type: none"> ~ Maintain a log of all animals including species, ID, special needs, medicines, food etc. Having this information is critical. ~ Keep records with the animal, in local database, and also off grounds. ~ Update hardcopies regularly. ~ Assign a record keeper at the onset of a crisis. ~ Keep up-to-date photos of each animal electronically – also stored off site. 	<ul style="list-style-type: none"> • Emergency Animal Care • Data • Administration • Transportation / Evacuation
23		Darkness and birds not eating ²⁵	Birds were moved to safe space in preparation for the storm. Without electricity the windowless room was dark 24 hrs. a day. The birds were not eating while in darkness.	<ul style="list-style-type: none"> ~ Move the birds to an outdoor pen – the appetites returned. 	<ul style="list-style-type: none"> • Emergency Animal Care

²³ Laura Levy, PhD. 2005. Tulane University Department of Vivaral Science & Research. Hurricane Katrina.

²⁴ Elizabeth Hammond, DVM and Daniel Maloney. 2007. "Hurricane Preparedness: Lessons learned from Hurricane Katrina." *Animal Keepers' Forum*, Vol. 34 Nos. 11/12. Page 557.

²⁵ Elizabeth Hammond, DVM and Daniel Maloney. 2007. "Hurricane Preparedness: Lessons learned from Hurricane Katrina." *Animal Keepers' Forum*, Vol. 34 Nos. 11/12. Page 551.

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24		Crate training ²⁶	During an emergency, animals may be less cooperative about entering crates; however, many that are never trained to do so can become injured and overly-stressed by being forced into containment.	<ul style="list-style-type: none"> ~ Animals should practice entering crates regularly. ~ Train animals to receive injections, which may be necessary to sedate them in a stressful emergency situation. 	<ul style="list-style-type: none"> • Emergency Animal Care • Transportation / Evacuation
25		Evacuation of animals ²⁷	The evacuation plan was activated for highly-valued animals to be transported to an out-of-state facility, but roads were impassable, communication lost, fuel in short supply, and civil unrest. Most of the remaining animals were euthanized. It was nearly five months before repopulation could take place.	<ul style="list-style-type: none"> ~ Make preparations for evacuation of high-value animals for each severe storm warning. ~ Plan for animal holding space at remote locations. ~ Plan logistics for evacuation, transport and security. ~ Prepare for transport of special supplies. ~ Keep a high limit credit card without restrictions available to key personnel. ~ Keep cash on hand in a secure location. ~ Plan for sheltering employees evacuated with the animals. 	<ul style="list-style-type: none"> • Transportation / Evacuation • MOU/MAA • Administration
26		Prioritize highly-valued animals. ²⁸	Assessing which animals to protect during the crisis was extremely traumatic for their caretakers responsible for day-to-day care and welfare of those animals.	<ul style="list-style-type: none"> ~ Prioritize animals through a crisis management planning process before an event occurs. 	<ul style="list-style-type: none"> • Emergency Animal Care
27		Relocating highly-valued animals. ²⁹	When disaster struck, all high-priority animals that could be captured were relocated to a “safe facility” prior to the fires, but were lost when the “safe haven” also was burnt to the ground.	<ul style="list-style-type: none"> ~ Ensure that highly-valued animals are relocated to a facility that is unlikely to be affected by the same emergency. 	<ul style="list-style-type: none"> • Emergency Animal Care • MOU/MAA • Transportation / Evacuation

²⁶ Chuck Brinkman IV. 2007. “Wildfire!: One Facility’s Response and Lessons Learned.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Page 527.

²⁷ Laura Levy, PhD. 2005. Tulane University Department of Vivarium Science & Research. Lessons Learned from Katrina.

²⁸ Geoff Underwood. 2007. “Crisis Management Planning in Zoological Institutions.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Sterling, South Australia (Page 463).

²⁹ Geoff Underwood. 2007. “Crisis Management Planning in Zoological Institutions.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Sterling, South Australia (Page 463).

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28		Updated contact lists of experts to consult during emergencies. ³⁰	During a functional exercise, (agro-terrorism and foot-and-mouth disease) the on-staff veterinarian could not be contacted.	~ Prior to an incident, emergency managers should develop a contact list of experts to consult during emergencies. The contact lists should be updated regularly and included in the procedures manual.	<ul style="list-style-type: none"> • Administrative • Communications • Training
29	<u>Facility (physical structure) Issues</u>	Potential escape during severe weather ³¹	During a blizzard, drifting snow and a high level of snow halted traffic, personnel, and deliveries, and altered landscape, moats, fencing, and rooftops. Snow drifts can build up against walls or fill in moats creating new avenues for escape.	~ During blowing snowstorms, keep a close watch on habitats. Remove snow build up especially next to habitat walls and moats. ~ Establish an emergency plan for severe winter storms.	<ul style="list-style-type: none"> • Facility Operations • Emergency Animal Care
30		Loss of power and generator power. ³²	On day 3 in the aftermath of Katrina, emergency generator power and communications were lost. Power was finally restored a month later.	~Ensure that critical functions/buildings are supported by natural gas/diesel generators. ~Have adequate fuel storage facilities to support your facility for several weeks if possible. ~Establish relationships with fuel suppliers out of your region.	<ul style="list-style-type: none"> • Facility Operations • Emergency Animal Care • MOU/MAA
31		Ambulance access to rescue injured person ³³	Additional issues resulting from an animal attack caused by human error include poor ambulance access and being re-routed to reach a critically injured staff person.	~ Establish plans with <i>both</i> the fire department and ambulance services for access to all areas of the facility. ~ When designing new exhibits, consider easy access for emergency equipment. ~ Determine what gates and pathways can handle bulky or hard-to-maneuver vehicles onto the grounds.	<ul style="list-style-type: none"> • Facility Operations • Administration

³⁰ State of Iowa, Department of Homeland Security and Emergency Management. 2005. *Iowa District 5 Multi-County Functional Exercise After-Action Report*. 22 Sep 2005. FEMA Lessons Learned.

³¹ Mark de Denus, Zoo Keeper II. 1999. "Blizzard Response at Assiniboine Park Zoo." *Resources for Crisis Management in Zoos and Other Animal Care Facilities*.

³² Laura Levy, PhD. Tulane University Department of Vivarial Science & Research. Lessons Learned from Katrina. 2005.

³³ Caroline Meek. "Lucky to Be Alive: Analysis of an Animal Attack In A Small Zoo And Coping With the Aftermath." 1999. *Resources for Crisis Management*. Page 322.

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32		Trees and landscaping in fire-prone areas ³⁴	Lightning ignited an area adjacent to a wildlife refuge. Gustly, erratic winds from a thunderstorm pushed the fire toward building. Prior hot, dry weather made the fire situation even more dangerous. Because “fuel breaks” had been created by clearing vegetation that fuels a wildfire, firefighters stopped the flames from overtaking the nearby homes and refuge.	<p>~ Reducing flammable vegetation in advance can slow or stop fire from moving in a given direction, and reduce the fire intensity. This safety measure limits firefighter exposure to heat and flames, and allows for more direct attack on the fire.</p> <p>~ A cycle of clearance and annual maintenance for the area, removal of highly-flammable trees, and plowing disk lines along the border each year all provide additional protection.</p>	<ul style="list-style-type: none"> • Facility Operations
33	<u>Training Issues</u>	Cross-training personnel ³⁵	During a severe illness outbreak or an emergency where personnel cannot reach the facility, important roles and responsibilities may not function. This is particularly critical in small operations.	<p>~ Table-top training participants said that a continuity-of-operations plan can be used to identify positions for cross-training employees.</p> <p>~ Cross-training builds the redundancy that is necessary in case someone in a vital position becomes ill.</p> <p>~ Departments can conduct internal assessments to determine capabilities and to identify programs that need additional trained backup employees to maintain operations during an emergency.</p>	<ul style="list-style-type: none"> • Training • Administration

³⁴ U.S. Fish & Wildlife Service. Inside Fire Management – New from 2008.

³⁵ DHS 2006. *Lessons Learned Information Sharing. Best Practice: State and Local Government Continuity of Operations Planning: Developing a Continuity of Operations Plan.* 06 Dec.

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34		Human error animal attack: Forgetting protocols and rules ³⁶	Two staff members became involved in conversation while feeding big cats and overlooked bringing in one animal for the night. The next morning while cleaning the habitat, the animal appeared and critically attacked a staff person. Additional issues included: radioing for help without giving important information; ambulance access, 911 call picked up by over-enthusiastic journalists, effect on other personnel, releasing press release prior to thorough review.	~ Review all policies with the <u>entire</u> staff every six months. ~ Appropriate staff should participate in training exercises for what is expected during an emergency. ~ Train all personnel how to report an accident by passing on appropriate and accurate information. ~ The additional issues will be addressed in other categories of lessons learned.	<ul style="list-style-type: none"> • Training • Administration
35		Inadequate training for safety and responding to emergencies ³⁷	Very few safety plans are actually opened and exercised. Too many topics are addressed without sufficient discussion on a single topic.	~ By drilling on a short, simple tabletop exercise focused only on one part of the plan, participants became more familiar with the plan. They were able to focus on whether or not the plan had all the important information needed and if the information was easy to find. ~ The exercise exposed gaps and numerous recommendations for improvements were made.	<ul style="list-style-type: none"> • Training • Disaster Training
36	<u>Transportation and Evacuation Issues</u>	Safe food storage ³⁸	Along with securing necessary transportation and supplies for evacuated animals, a refrigerated/freezer truck had to be located to store a large shipment of perishables that had recently been delivered to the facility.	~ Determine a source for refrigerated/freezer truck or trailer that can be located at the evacuation site.	<ul style="list-style-type: none"> • Transportation/Evacuation Annex • MOU/MAA Annex

³⁶ Caroline Meek. 1999. "Lucky to Be Alive: Analysis of an Animal Attack In A Small Zoo And Coping With the Aftermath." *Resources for Crisis Management*. Page 322.

³⁷ U.S. National Response Team (NRT). Lessons learned from Incidents and Exercises. 1999.

³⁸ Olson, A. Pers. Communication, Upper Midwest Flooding Summer 2011

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37	<u>Shelter-in-place Issues</u>	Water: insufficient reserve, contamination, and inability to move the water to where it was needed ³⁹	A 3-day supply of water was stored, but large animals quickly exhausted the supply. It was 6 days before an emergency water truck arrived through blocked checkpoints. Open containers attracted bugs, particularly mosquitoes, and could become contaminated. Automatic waterers failed without power. Two 800-pound water bladders had been filled and stored on the ground. They were too heavy to lift making it very difficult to transport water where it was needed.	~ Calculate daily water intake of larger species and store water to meet those needs for at least 12 to 14 days. ~ Pre-arrange for water suppliers. ~ Place bladder on back of truck before filling with water. ~ Use 350-gallon closed tanks with taps that can be moved with forklift for transport.	<ul style="list-style-type: none"> • Facility Operations • Emergency Animal Care • Administration • MOU/MAA
38		Civil Unrest ^{40 41}	Police will be needed elsewhere to address human issues. An animal facility will not be a priority. Emergency team members (untrained to use firearms) had to take turns guarding the facility from looters, vandals, and other dangers.	~ Properly train and equip security personnel (tactical training, body armor, carbines/shotguns, tactical flashlights, etc.). ~ Include security personnel on the emergency response team. ~ Establish a “buddy-system” for team members. ~ Understand that local law enforcement’s ability to respond is likely to be severely compromised. ~ Require and provide security escort to personnel entering unsecured facility. ~ Sign MOU with security company.	<ul style="list-style-type: none"> • Administration • Training • Facility Operations • MOU/MAA • Animal Incident •
39		Evacuated/displaced personnel and their families ⁴²	Families of those personnel sheltering-in-place had nowhere to stay. To keep personnel on site to help with the animals, the facility also had to care for the families.	~ Maintain provisions for food preparation and a supply of long shelf-life items such as MREs. ~ Designate areas where employees and family members can sleep. ~ Provide high-limit credit cards without restrictions available to key personnel.	<ul style="list-style-type: none"> • Administration • Facility Operations

³⁹ Elizabeth Hammond, DVM and Daniel Maloney. 2007. “Hurricane Preparedness: Lessons learned from Hurricane Katrina.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Page 550.

⁴⁰ Laura Levy, PhD. 2005. Tulane University Department of Vivarial Science & Research. Lessons Learned from Katrina.

⁴¹ Elizabeth Hammond, DVM and Daniel Maloney. 2007. “Hurricane Preparedness: Lessons learned from Hurricane Katrina.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Page 552.

⁴² Laura Levy, PhD. 2005. Tulane University Department of Vivarial Science & Research. Lessons Learned from Katrina.

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40		Cash is king ⁴³	Cash was the only viable commodity in a world without power for ATMs and credit card readers.	~Maintain ample cash on-hand in a secure location such as with dangerous animals (venomous herp. room). ~Several days prior to a predicted disaster, withdraw a substantial amount of cash. ~ Consider nothing smaller than \$10 bills. ~ Keep an official ledger and receipt book.	<ul style="list-style-type: none"> • Administration
41	<u>Personnel Issues</u>	Loss of valuable personnel ⁴⁴	The crisis situation was so stressful and caused such fatigue that after the event over half of those closely involved left the facility, and some also left the city.	~ Provide post-crisis counseling, which should be mandatory for all involved personnel.	<ul style="list-style-type: none"> • Administration
42		Emotional stability after an animal attack incident ^{45, 46}	Guilt, anxiety, frustration, anger, grief, suffering and fear resulting from an animal attack, which affects everyone.	~ Provide professional “defusing” for all personnel with follow-up sessions so that staff can continue to do their jobs effectively in the future. ~Provide one-on-one professional help for those personally involved with the incident. ~ Provide opportunities for group discussion about the incident.	<ul style="list-style-type: none"> • Administration
43		Payroll ⁴⁷	Unable to pay personnel.	~Plan for relocating payroll functions immediately after a disaster. ~Require all employees to utilize direct deposit. ~Plan for communication with employees during evacuation.	<ul style="list-style-type: none"> • Administration • Communications • Data Management

⁴³ Elizabeth Hammond, DVM and Daniel Maloney. 2007. “Hurricane Preparedness: Lessons learned from Hurricane Katrina.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Page 555.

⁴⁴ Elizabeth Hammond, DVM and Daniel Maloney. 2007. “Hurricane Preparedness: Lessons learned from Hurricane Katrina.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Page 553.

⁴⁵ Caroline Meek. 1999. “Lucky to Be Alive: Analysis of an Animal Attack In A Small Zoo And Coping With the Aftermath.” *Resources for Crisis Management*. Page 322.

⁴⁶ Brenda Stringer. 1999. “When A Keeper Dies.” *Resources for Crisis Management*. Page 325.

⁴⁷ Laura Levy, PhD. 2005. Tulane University Department of Vivarial Science & Research. Lessons Learned from Katrina.

Lessons Learned Annex

	Category	Issue	Challenges	Solutions or Lessons Learned	Annex
44		Personal care and medications for the emergency team ⁴⁸	Due to the extended shelter-in-place situation, personal medications for the emergency team began to run-out. There also were incidences of fatigue and stress-related injuries increased. Toilet sanitation was minimal.	<ul style="list-style-type: none"> ~ Emergency team-members should fill out confidential medical forms, and 30-day supply of their prescription medications should be secured. ~ Store basic medications such as cough suppressants, anti-inflammatories, and antibiotics for minor medical problems. ~ Have a trained EMT on the team. ~ Consider a gravity-flush commode. ~ Provide post-disaster counseling. 	<ul style="list-style-type: none"> • Administration • Facility Operations
45	<u>MOU / MAA Issues</u>	Counterproductive “pecking-order” issues. ^{49,50}	Lack of clarity related to who was in charge. Special teams from different jurisdictions may not agree on how to approach complex tasks such as a technical rescue or who is in charge a specific task.	<ul style="list-style-type: none"> ~ MOUs and MAAs can resolve any conflict over will be in charge of certain areas, tasks, and operations. It is best to have decisions made prior to an incident. ~ Increased training, interaction, and standardization can help increase interoperability, and ensure a seamless response to an emergency. ~ A higher level of jurisdiction may be necessary to reach consensus. 	<ul style="list-style-type: none"> • MOU/MAA • Administrative • Training

⁴⁸ Elizabeth Hammond, DVM and Daniel Maloney. 2007. “Hurricane Preparedness: Lessons learned from Hurricane Katrina.” *Animal Keepers’ Forum*, Vol. 34 Nos. 11/12. Page 556

⁴⁹ DHS Lessons Learned. 2003. Mutual Aid Box Alarm System. *TOPOFF II Supplemental Report*. May 15, 2003.

⁵⁰ U.S. National Response Team (NRT). 1999. Lessons learned from Incidents and Exercises.