

Working Group -- Disaster Management Plan

Afghan, Bhutan, Pakistan Draft Disaster Management Plan

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Disaster

An emergency event that occurs with little or no warning causing more destruction or disruption of operation

Disasters covered in this plan:

1. Terrorism
2. Flood
3. Visitor disturbance
4. Earthquake
5. Disease outbreak
6. Fire

A. Terrorism

1. Political terrorism– such as a bomb, mine, rockets, suicide bomber, poison for the food stores

Solutions for Suicide bomber –

- inform security agencies / intelligence then
 - try and evacuate the visitors;
 - share knowledge of whereabouts of animals with security; indicate areas and animals; then emergency gate
- Solutions for Bomb, mine - As above

Solutions for Rocket

- call police, hospitals, negotiator, rescue to help injured,
- destroyed building or area - if animal cage, get keepers to capture animals & put in safe place with appropriate equipments(nets, ropes, capture gun)
- if animals escape, keepers and other should treat them kindly and bring them safely to another enclosure in a skilled manner
- Turn on emergency lights

Solutions:

Development of a rescue team

- Zoo Overseer – in charge of animal escape & enclosure repair, moving of injured visitor,
- Garden Overseer – electrical poles, branches/trees or other hazards of roads or greenery.
- Security – safe evacuation & direction of visitors. Close doors (animal, visitor, fire control).

- Chief veterinarian – management of injured animals & people (staff & visitors)
- Use emergency no. of police station in every area of the zoo.
- Use of Security agencies; security cameras;
- Scanning tools at the gate
- Fire-fighting devices
- Meet and discuss with Security Agencies to get good suggestions and good relationship

2. Personal Terrorism

- Suicide -- call a negotiator; security people should move crowd which have gathered along
- poisoning an animal for personal gratification and attention
 - have a special area designated for visitors to leave their food items until they finish their visit
 - construct barrier to prevent foodstuff from being offered to the animal
 - check food
- Install more signs to warn visitors not to feed animals.
- Visitors can be fined for offering food to animals

Flood Prevention

- Stone wall in Kabul Zoo; good sewage system; platforms for animals (in enclosures which are particularly vulnerable to high water)
- Provide platforms so animals do not stand in water and shelters so they get away from rain.
- Keep supply of sandbags to use as buffer against rising water
- Strong water pumps for emptying enclosure; basic tools for draining water
- Ensure dry and clean storage area for essential food and water supply
- Contact national disaster management department and health volunteers

- Insure alternative electricity through generators
- Generator for filtering aquatic enclosures
- Designate a team who will handle the situation in case of any tree fall down.
- Have adequate system of gutters throughout the zoo and keep them clean and desilted
- Insure safety measures to avoid electrocution

Visitor disturbance

- Consult visitor records and know when maximum number of visitors are likely (EID holidays, other high number days)
- Directional signage and controlling of crowds
- Create services and facilities for visitors so they do not get frustrated and misbehave
- Get more coordinators to control the crowds.
- Maintain safe carrying capacity. Inform public in press about carrying capacity strategy.
- Cameras of different areas in control room to warn of pending problems with crowd.

Earthquake

Prevention / Preparation

- Light foundations to structures
- Standardize wall system/construction to earthquake risk
- Cut/trim dangerous trees
- Staff training for the safety measures of earthquake
- Budget for reconstruction
- Drills / practice
- Isolation cages & surplus stock of security fences to be used in escape / isolation of animals
- Maintain supply of light materials for construction

Response

- Establish good emergency communication system – medical services, emergency response teams

- Back-up generator for electrical outage
- Evacuation of buildings to designated safe places (visitors directed by staff)
- Record & evaluate response
- Turn off electricity for safety measures

Disease Outbreak

Prevention

- Biosecurity Program – implemented
- Animal vaccination – proper vaccination for at-risk species (for common diseases)
- Staff vaccination & disease monitoring program
- Food quality program – animal feed security
- Maintenance of vaccinations – ensure that vaccines are current (not expired)
- Maintain adequate equipment and supplies
- Training of staff in proper use of tools
- Establish good laboratory resources
- Footbaths
- Spray / disinfect vehicle wheels
- Avoid contact between feral/wild animals and collection animals

Response

- Respond immediately to address early
- Limit access of visitors as needed during disease outbreak situation
- Use/spray disinfectant
- Proper information for media
- Isolation & quarantine of sick animals/staff
- Cull & dispose of seriously ill animals
- Proper disposal of dead animals

Fire

Media control

- Designate a person with alternate to deal with media
- Control room with an area above the zoo

India Group - Draft Disaster Management Preparedness Plan

Group Members : J. Chauhan, A. Agnihotri, K.B. Markandaiah, Karuna Priya, R.K. Sahu, A. Anjankar (Presenter)

Disasters likely to occur within zoos

1) Man-made disorders



- a. Fire-caused due to smoking, lightning, short circuit; b. Electric & water supply failure; c. Food shortage; d. Wall collapse; e. Stampede; f. Local conflicts; g. Vehicle accidents; h. Suicide attempts; i. Poisoning; j. Poaching; k. Illicit cutting

2) Escape of Zoo Animals

3) Animal Diseases

4) Natural Disaster:

- a. Flood, b. Mud slides, c. Earthquake, d. Tree fall, e. Tsunami

5) Civil disturbances etc :

- a. War, b. Terrorism, c. Nuclear attack, d. chemical attack

6) Extreme visitors behaviours:

- a. lost & found, b. vandalism, c. visitor injury

7) Miscellaneous:

- a. Snake bite, b. staff injury, c. disturbances due to stray dogs, rats, cats, crows, etc.

Measures to tackle these activities

1) Man-made disorders

- a. fire: Fire-fighting equipments, installation of ban smoking, Timely removal of dry leaf litters, [Security task]
- b. Electric & water supply failure: Generator backup, Non-conventional sources, use of: Wells & above wells network, Storage facilities, Tankers utilization, Electric & water supply staff to take this [Administrative task]
- c. Strikes: either declare zoos under E.S.M.A. (Essential Security Maintenance Act) or seek help of zoo volunteers (Proper training should be given, list of them to be maintained, administration to take this)
- d. Food shortage – advance storage to be made kitchen staff to take this
- e. Wall Collapse – either outer boundary wall or enclosure wall. Regular check-up and maintenance [Security staff as well as civil staff to take this]
- f. stampede: Visitor circulation path, Barriers, Entry gates, Emergency gates
- g. Local conflicts: Curfew etc, Closure of zoo, Consult with local police Administration to take this
- h. Vehicle accidents: Roads of proper width, Proper marking on roads, Speed limit restriction inside zoo premises, Speed breakers, Different routes for vehicle circulation & visitors, Alternate gates for other vehicles (for developmental works) [Civil as well as security staff to tackle this.]
- i. Suicide attempts: refuse admission visitors under liquor influences, Proper barriers, Enclosure should be so design that it is not possible to enter inside. from visitor side, Deployment of security guards [Civil as well as security staff task]
- j. Poisoning : Thorough screening of visitors; curtail any feeding of animals by visitors; Deployment of security guards. [Security staff to tackle this.]
- k. Poaching and Illicit cutting: same as above and Regular patrolling of zoo premises [Security staff to tackle this]

2) Escape of Zoo Animals

- a. Proper enclosure designing as per standards (Ht. width of enclosure). Special care with respect to enclosures for jackal, foxes, langurs, panthers etc., b. Trimming of inside and outside trees, c. Staff should be vigilant (Proper closing/locking of the gates), d. To keep tranquilizing equipment and trapping cages always ready; e. Form rescue team; f. All required materials should be kept ready (Prepare check lists). [Civil as well as Vet. Staff task].

3) Animal Disease Protocol

- a. If there is any disease outbreak, we have to identify the disease & accordingly we have to take preventive and curative measures
- b. If disease is notifiable, we have to inform the concerned and authority to avoid further outbreak in other livestock.
- c. The affected animals should be treated for curative measures while non-affected animals should be given preventive measures.
- d. Disinfection may play an important role to prevent further spread of diseases.
- e. Animal husbandry department and Veterinary Colleges should be involved in controlling the diseases.

f. If required with the permission of authority and looking to the severity and the outbreaks, we can cull the animals. [Vet. Staff task.]

4) Natural Disaster

- a. remove trees which are likely to fall during storm, or rains to avoid damages to enclosures, animals escape, loss to man and animal life.
- b. To erect proper boundary wall to prevent flood water or excess mud to enter enclosure area. [Horticulture staff and Civil staff task]

5) Civil Disturbances

- a. Install metal detector at main entry gates
- b. Thorough screening of visitors
- c. Install close circuit TV cameras at strategic location
- d. To educate the visitors about informing the Zoo Authority about finding of unclaimed baggages, suspicious behavior of visitors etc. [Security staff task]

6) Extreme visitors behavior

- a. Create a separate cell to deal with lot of found items
- b. Proper announcement
- c. To strictly watch visitors movement inside zoo premises
- d. Proper signage about Do's and Don'ts inside the zoo premises
- e. This will prevent injuries to visitors [Security staff as well as Education officer task]

7) Miscellaneous

- a. Keep first aid box and Anti snake Venom vaccination
- b. Proper display about this
- c. To catch or trap periodically all the stray dogs, rats, cats, etc. from zoo premises.
- d. It is always better to take timely actions before to prevent all man-made disasters as well as natural disasters, instead of taking actions after the disasters take place.
- e. Time actions taken before can reduce the intensity of natural disasters, if we are well prepared to tackle this.
- f. Some of such time actions to take before includes
 1. Giving sufficient administration and financial powers to Director as well as Veterinary Officer
 2. To make available the budget in time
 3. To fill all the vacant post of the staff like security, electric and civil using plumber, welder, carpenter etc.

Seasonal measures to prevent animal illness, suffering, injury

Winter

- a. avoid or restrict wind flow in feeding or resting enclosures
- b. provide heating arrangements like heaters, safe fire, Earth Tube Heat Exchangers (ETHE)
- c. Provide paddy husk, wooden platforms, sawdust, bark pieces, etc.
- d. animals should not be released into the enclosures to avoid harsh exposure.
- e. Provide hot water through coil system using solar heaters.
- f. Provide earth pots with electric bulbs, or heating arrangement in reptile enclosures & in case of bird enclosures provide brooders.
- g. Provide blankets, woolens to Primates, Apes & other supplies.
- h. Food enrichment

Summer

- a. Provide proper ventilation with exhaust fans
- b. Provide coolers, mats, sprinklers, water holes, wallowing grounds, etc.
- c. Provide ice blocks
- d. Food enrichment
- e. Provide ETHE
- f. Paint roof tops with white colour or thatched with grass

- g. All water holes inside the enclosures should be suitably covered to avoid heating of water
- h. Provide tree cover as well as shelters to avoid sun strokes.
- i. Insure adequate water supply.

Monsoon

- a. Provide proper water proofing.
 - Provide proper drainage.
 - Undertake all pre-monsoon works effectively.
- b. -provide shelter places
- c. -provide raised platforms to escape from flood
- d. -emergency arrangements to shift animals in case of high floods
- e. -food enrichment
- f. -avoid food and water contamination
- g. -to take all preventive measures to prevent outbreak of diseases

Preparedness Plan for Terrorism

- a. thorough screening of visitors
- b. install metal detectors
- c. install CCTV cameras
- d. deployment of security staff
- e. set up police check post with bomb squad
- f. educate staff and visitors about informing the zoo authority findings of unclaimed baggage, suspicious behaviour of visitors
- g. in case of incidences immediately inform fire brigade, police, anti-terrorism squads, local administration
- h. evacuation of visitors to safe places, if required call for ambulances.
- i. for further safety, screening of entire zoo premise; if everything is correct, zoo may be opened to visitors again.

Nepal Group

Disaster management in Nepal

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List of common probable disasters:

Collapse of walls, Poaching, Animal escape, Injuries to visitors or keepers, Disease outbreak, Fire, Quantity and quality of water, Waste disposal, Staff strike, Feeding of animals by visitors, Power failure, Poisoning, Adverse climate, Flooding, Snake bite, Casualty to animals by visitors, Waste management, Natural calamities: earthquake, Nepal *bandh*

Prioritized disasters:

1. Disease outbreak
2. Earthquake
3. Fire
4. Animal escape
5. Injuries to visitors and keepers

Step 1. Building the emergency team

- Overall supervisor: Project Manager
- Emergency coordinator: Vet. Officer
- Members: Administrative officer, Field supervisor, Asst. Curator

Unit coordinators:

- Disease outbreaks: Vet officer and vet assistants
- Medical coordinator (Animal escaping and casualties): Vet officer
- Communication coordinator: Project Manager and responsible unit coordinators
- Maintenance works: Overseer

- Supply of food: Administrative officer
- Visitor's management: Administrative officer
- Security: Security in charge

Step 2 : Assessment of disaster hazard preparedness
Purpose:

- To conduct the assessment of the capacity to handle the disasters.
- Identify resources (human resources, equipments)

Conducting the hazard analysis

Capacity to handle the hazard

Identify the resources (finances, equipments, labs, trained manpower)

Performing the simulation exercise to tackle the disasters

Components of animal disease emergency preparedness planning

1. Strict provision of the quarantine of the animals

2. Surveillance of disease

• Lab facility with equipments (coordinate with Central Veterinary Lab and human lab)

• Strengthening the existing lab

• Active surveillance with regular health check up: physicals, lab test, and diagnostic kits

• Passive surveillance

3. Disease outbreak

4. Assessment of disease with the vet team in Zoo, CVL, DLS & IAAS for scientific assessment of disease. Sharing of information in international community.

5. Communication with stakeholders: within central team, unit coordinators, DNPWC, Police as and when necessary

6. Identify the disease outbreak area as risk zone

7. Collect dead animals; perform post-mortem, collection of sample and submission of sample for diagnosis.

8. If disease is diagnosed by symptoms and PM, report it and start curative treatment.

9. Segregate diseased animals and keep out of contact from visitors and other animals.

10. All people in working in such condition should follow biosecurity code of conduct like wearing PPE, maintaining sanitation and hygiene.

11. Start treatment

What are disasters?

The meaning of the word disaster differs according to person, culture and time. The following definition of natural disaster is from the "International agreed glossary of basic terms related to disaster management (1992), UN-DHA, IDNAR, Geneva: "Situation or event, which overwhelms local capacity, necessitating a request to national or international level or external assistance"

It is an emergency event that occurs with little or no warning, causing more destruction or disruption of operations that the museum can correct by application of its own ordinary resource. It means a catastrophe, mishap, calamity or grave occurrence affecting any area, arising from natural or manmade causes, or negligence which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, degradation of environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area.

Disaster preparedness is the process of possessing in advance the capability of taking the immediate action or actions necessary to cope with a disaster in order to prevent its occurrence or to minimize its impact.

Disaster management means a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary pr expedient for:

- Prevention of danger or threat of any disaster.

- Mitigation or reduction of risk of any disaster or its severity or consequences.

- Capacity-building

- Preparedness to deal with any disaster

- Prompt response to any threatening disaster situation or disaster

- Assessing the severity or magnitude of effects of any disaster

-Evacuation, rescue and relief

-Rehabilitation and reconstruction

-Preparedness

List of common probable disasters:

Natural and Man-made disasters

• Floods

• Earthquake

• Staff strike

• Nepal *bandh*

• Fire

• Power failure

• Water supply (quality and quantity)

• Snake bite to visitors and keepers

• Waste management

• Poaching

Escape of Zoo animals

Animal Diseases

Civil Disturbances

• Staff strike

• Curfew and Nepal *bandh*

Extreme Visitor Behaviour

• Casualty to visitors by animals

• Casualty to animals by visitors

• Suicide attempts by visitors

• Feeding of animals by visitors

Prioritized Individual Disasters

- Disease outbreak

- Earthquake

- Fire

- Animal escape

STEP 1 : Building emergency management team or central control room

• Overall supervisor: Project Manager

• Emergency coordinator: Vet. Officer

• Members: Administrative officer, Field supervisor, Asst. Curator

STEP 2: Assessment of Disaster Hazard Preparedness

Purpose: To conduct the assessment of the capacity to handle the disasters and to identify resources (human resources, equipments)

• Conducting the hazard analysis

• Capacity to handle the hazard

• Identify the resources (finances, equipments, labs, trained manpower)

• Performing the simulation exercise to tackle the disasters

Disease Outbreak: List of the common diseases

TB, Bird flu, FMD, HS, Anthrax, Rabies, Food poisoning, SARS, Fowl pox, External parasites, Round worms and tape worms, Influenza and Pneumonia, Feline distemper.

Components of animal disease emergency preparedness planning

• Strict provision of the quarantine of the animals

• Surveillance of disease

o Lab facility with equipments (coordinate with Central Veterinary Lab and human lab)

o Strengthening the existing the lab

- Active surveillance with regular health check up: physicals, labs test, and diagnostic kits
- Passive surveillance
- Disease outbreak
- Assessment of disease with the vet team in Zoo, CVL, DLS & IAAS for scientific assessment of disease. Sharing of information in international community.
- Communication with stakeholders: within central team, unit coordinators, DNPWC, Police as and when necessary
- Identify the disease outbreak area as risk zone
- Collect dead animals; perform post-mortem, collection of sample, submission of sample for diagnosis and proper disposal
- If diseases is diagnosed by symptoms and PM, report it and start curative treatment.
- Segregate diseased animals and keep out of contact from visitors and other animals.
- All people in working in such condition should follow biosecurity code of conduct like wearing PPE, maintaining sanitation and hygiene.
- Start treatment
- Proper disinfection of the enclosure and surrounding areas
- If the diseases are of the chronic types like TB then without consultation with ministry and DNPWC consider culling of the affected herd.

Animal Escape

1. Big Carnivores like Tiger and Leopard
2. Small Carnivores like leopard cat, civets
3. Herbivores
4. Birds

Large Carnivores, Tiger and Leopard

Communication:

- Keepers or security people should inform veterinary officer
- Veterinary officer should inform team leader and all concerned supporting staff

Working strategy

In day time, the team should assess the situation and decide whether the capture procedure will take short or long time.

- If it takes short time, do not inform the visitors and cautiously perform the procedure
- If the situation seems to take long time, inform the visitors and security persons. Isolate the escape zone as a risk area and secure it. Create the area peaceful.
- If authorities are outside (in night time), security people should watch the situation and perform the capture procedure with feasibility.

Collection of drugs and equipments

- The drugs should be ready with labelled dose requirement for individual species.
- The necessary equipments like transport cages, net, stretcher, ropes, medicines should be collected.
- The animal should be darted.
- The physical and medical examination of the animal should be done and the animal should be placed in the enclosure.

Earthquake

The emergency shell for the earthquake consisting the center emergency preparedness team should be formed. The emergency preparedness team should be aware of the situation and should have the prior communication with all the concerned authorities beforehand. The contact address and phone number of the all the stakeholders maintained systematically beforehand.

The drill exercise should be performed on regular basis to update. The checklist of the necessary equipments should be ready. The first aid kit with clear direction should be ready.

The safe area should be selected for all the staff to come at that place during earthquake outbreak. In the case of animal casualties, the specific area should be selected to keep such animals. Exit gates should be opened. The staff and public outside the zoo should be educated and informed about the possible situations.

District police office, hospitals, red cross, head office, DAO, DNPWC, municipality should be contacted. The name and phone number of the personnel in these offices to be contacted should be taken and contacted asap. People safety should be considered. The animals should be observed from the safe distance. The animals should be captured or managed depending on their biology.

Injuries to visitors and staff from animals

- The appropriate signage should be placed in vulnerable enclosures indicating not to feed and tease animals.
- The keepers should be trained and educated on proper handling of animals.
- The emergency first aid kit should be ready with all drugs and accessories with clear instructions of use.
- Once the incident happens, it should be communicated to the emergency team and rescue of affected visitor and keeper should be taken simultaneously.
- The hospital should be contacted in advance. The ambulance should be called or the zoo vehicle should be ready. The injured people should be taken to hospital as soon as possible.
- If the animal had escaped and injured the visitor, such animal should be captured.
- If there are loopholes in the enclosure, such loopholes should be repaired immediately.
- The appropriate distance between enclosure and visitors should be maintained.

Disaster Management Plan for Sri Lanka

Group members: Dammika Malsinghe (Presenter), Chamila Denagama, Ganga Wijesinghe (Recorder), Prasad De Zoysa, Sanjay Molur (Facilitator)



Animal Escape

- Keeper informs the Duty Officer and Veterinary Surgeon
- Duty Officer: Keepers, Curators, Security Veterinary Surgeon: Veterinary Assistants, Emergency equipments

- Try to Capture within a short period. If not
- Inform public using public addressing system
 - Prevent admission of new visitors
 - Direct visitors to safe areas
 - Open emergency gates
 - Try to locate and capture the animal

Need to improve

Keeper's duties – Maintenance of locks etc
 Supervisors –Head Keepers, Assistants, Curator
 Keeper training
 Maintenance of disaster management plan and regular testing
 Maintaining a control room

Appointing an emergency team

Officer in charge/Emergency Coordinator- Duty Officer
 Unit Coordinator – All the staff Officers (DD, AD, Accountant, VS) Mock drills
 Warning/Information Coordinator-Education Officer, Education and Research Assistants
 Assessment Coordinator – Assistant Director
 Maintenance Coordinator – Maintenance Supervisor
 Medical Coordinator – Senior Veterinary Surgeon
 Security Coordinator – Chief Security Officer

Enclosure Designing

- Double doors-in night dens

Keeper Strikes

Preventive Measures
 Monthly meetings with representatives of all sections

- Animal Section
- Garden Section
- Maintenance Section etc

Discuss their problems and find out remedies

Train keepers

Team work, capacity building, morale
 In case of a strike . . .
 If the strike occurs uninformed the Duty Officer gets to know about it in the morning
 Duty Officer informs the Director and other Staff Officers

Staff Discussion

Negotiate with the leaders of the strike to settle the issue
 If it is not successful
 Inform the Ministry and take actions
 Request the service of a professional negotiator

Surplus padlocks and keys

Back up team

- the other staff members and YZA members
- Military forces

Negotiate and settle
 Follow the Establishment Code for disciplinary action

Fire

Fire Extinguishers –Sufficient equipments, regular maintenance
 Routine Fire drills
 All the staff members should have the access for the emergency no.s of Fire Brigade
 Evacuation of visitors-Open emergency exits
 Prevent fire spreading animal enclosures-with assistance of whole staff

Disease Outbreak

Preventive Measures
 Practice Biosecurity measures
 In case of a sudden outbreak

- Diagnose the disease

- Inform the Staff and the relevant authorities
- Follow the Disease Act
- Quarantine sick and exposed animals
- Purchase necessary drugs and PPE
- Treatments for infected animals and prophylactic treatments for other susceptible animals
- Strict Biosecurity measures will be practiced to prevent further spreading of the disease.

Disaster Management Plan (Draft) for Dhaka Zoo, Bangladesh

Group Members: *Abdur Razzaque (Facilitator), Shakif-Ul-Azam (Presenter), A. B. M. Shahid Ullah, Ananda Mohan Dhar, Zillur Rahman, Ashim Kumar Das.*



Disasters are defined by an occurrence such as hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, earthquake, drought, blizzard, pestilence, famine, fire, explosion, volcanic eruption, building collapse, transportation wreck, or other situation that causes human and animal suffering or creates human/animal needs that the victims cannot alleviate without external assistance"

Disaster Management definitions:

- Preparedness means being ready to handle disasters and emergencies. Risk assessments, disaster planning, adequate supplies, trained staff, and community partnerships all contribute to disaster preparedness.
- Mitigation is the process of preventing or minimizing the losses and damages that emergencies can cause.
- Response involves actions taken to deal with a disaster or emergency. Response is about the emergency itself, as well as the problems it creates.
- Recovery means restoring services, facilities, programs, collections, and infrastructure.
- Basic Emergency Planning Concepts
 - There has to be a overall in-charge in the zoo for giving direction and getting the plan prepared and implemented
 - The members of the team are to be identified meticulously
 - Control room and media centers will help in coordinated approach to the disaster and in the dissemination of information
 - Establish adequate communication and warning capabilities
 - Establish adequate evacuation procedures
 - Establish damage assessment capabilities

Some of the emergency situations that the Dhaka Zoo faces are:

- Natural/ Manmade Disorders like Fire, Escape of Zoo animals, Animal diseases, Natural disaster like floods, mud slides, earthquakes, Civil disturbances etc., Extreme visitor behaviour. Staff strike/Problem, Drought, Wall collapse, Tree fall, Snake bite, Electricity disturbance, Extreme cold stress, Food poisoning, Procurement Hazard, Animal Fighting. The Emergency Team-The members of the team -
- (A) In-charge/ Director/Curator of the Zoo
 - (B) Emergency Coordinator-Deputy Curator.
 - (C) Unit Coordinator(s)-All Zoo Officer's.
 - (D) Information Coordinator-Information Officer.
 - (E) Assessment Coordinator: Deputy Curator (Animal Survey).
 - (F) Maintenance Coordinator: Nutrition Officer.
 - (G) Medical Coordinator- Veterinary Surgeon.
 - (H) Security Coordinator- Security Officer

Upon prioritizing the possible impacts, the major threats to the Zoo are in the following order :

Hazards	Possibility	Employee Impact	Property Impact	Economic Impact	Total Impact
Natural/ Manmade Disorders like Fire	2	1	3	3	09
Escape of Zoo animals	3	3	2	2	10
Animal diseases	3	3	3	3	12
Natural disaster like floods, mud slides, earthquakes	2	3	3	3	11
Civil disturbances etc	2	2	1	1	06
Extreme visitor behaviour	2	3	2	2	09
Staff strike/ Problem	1	1	3	3	08
Drought	1	1	1	1	04
Wall collapse	1	1	1	1	04
Tree fall	1	1	1	1	04
Snake bite	1	1	1	1	04
Electricity disturbance	1	1	2	2	06
Extreme cold stress.	2	1	2	3	08
Food poisoning	2	2	2	2	08
Feed Procurement Hazard	3	1	1	3	08
Animal Fighting	3	3	2	2	10

Animal diseases	12 points
Natural disaster like floods, mud slides, earthquakes	11 Points
Animal Fighting	10 points
Escape of Zoo animals	10 Points
Extreme visitor behaviour	09 Points
Natural/ Manmade Disorders like Fire	09 Points
Extreme cold stress	08 Points
Food poisoning	08 Points
Feed Procurement Hazard	08 Points
Staff strike/Problem	08 Points
Civil disturbances etc	06 Points
Electricity disturbance	06 Points
Drought	04 Points
Wall collapse	04 Points
Tree fall	04 Points
Snake bite	04 Points

Equipments:

The Curator/Zoo director/has to prepare the basic equipment needed by the zoo for dealing with different kinds of

emergencies. It will be much useful if different lists are prepared for different emergency situations.

Captive animals	Minimal requirement
Large carnivores	Nets, pole, syringes, snare, Projectile guns, equipment, crates, and darts, blow dart, squeeze cages etc.
Small carnivores	Nets, gloves, pole, snare, Projectile guns, equipment, crates, and darts, blow dart, squeeze cages etc.
Hoofed stock	Projectile guns and darts, blow dart, equipment, crates etc.
Elephants	Elephant hook, projectile guns and darts, chins, Incenerator
Small mammals (e.g. primates).	Nets, gloves, pole, snare, Projectile guns, equipment, crates, and darts, blow dart, squeeze cages etc.
Large Primates like Chimps	Nets, gloves, pole, Projectile guns, equipment, crates, and darts, blow dart
Birds	Nets, gloves, pole, syringe, towels
Reptiles	Nets, gloves, snare, plastic shield, bags, plastic tubes, snake tong, snake hock, submersible pump etc

Part 2 – Bangladesh Group

Disater Management plan (Draft) for Dhaka Zoo, Bangladesh

Group Members: MD Abdur Razzaque (Facilitator), MD. Shakif-Ul-Azam (Presenter), A. B. M. Shahid Ullah, Ananda Mohan Dhar, Mr. Zillur Rahman, Ashim Kumar Das.



Shakif presents the Disaster Management Plan of Bangladesh group to all participants.

For warning people about the emergencies

- Minimal requirement
- Alarm systems
- Public address system
- Radio communication and electronic media

Facilities

The zoos must have the basis facilities like control room, media centre and evacuation assembly areas.

Resource List

A resource list provides a single point of reference for available public and private sector resources within, as well as outside of the Zoo community.

Key official contact list

Name/Title of Official	Telephone Numbers		
	Office	Home	Cell
Secretary MoF			
Secretary MoHomes			
Secretary Forest & Environment			
Secretary Food & Disaster Mgt.			
Secretary Agriculture			
Inspector General of Police			
MD DESCO			
MD WASA			
CEO WTB			
MD Telecommunication			
Director General DLS			
Director General Fire Service			
Director General BLRI			
Director's DLS			
Deputy Commissioner (Dhaka)			
Police Super			
Director Botanical Garden			
DD Poultry Farm			
Curator Dhaka Zoo			
Officer in Charge, Shaha Ali Thana			

List of Zoo experts of Dhaka Zoo

Name/Title of Official	Telephone Numbers		
	Office	Home	Cell
Zoo Consultant			
MD. ABDUR RAZZAQUE, EX. DG			
DR. KAZI ABDUL FATTAH, EX. DG			
DR. SALEHUDDIN KHAN, EX. DG			
Veterinary doctor's			
1.			
2.			
Sections Officer's			
1.			
2.			
Zoo Experts from Universities			
1.			
2.			

Transporters list

Name of the Transporter	Telephone Numbers		
	Office	Home	Cell
1. Director General livestock			
2. Curator Dhaka Zoo			

Supplier's (Food & Machine)

Supply	Address	Contact Person	Telephone Number

Natural Disaster: - Floods & Storms

Floods

- Dhaka Zoo is situated in a flood prone areas of Bangladesh.
- Zoo's areas not in floodplains but vulnerable to the changing pattern of rainfall.

Challenges:

- Dhaka Zoo should have a full proof contingency planning process for effectively dealing with flood situation.

Points need to be considered:

- Historical information of the area.
- Information on the drainage systems and geographical advantage.
- Rainfall record of past 10 (Ten) years.

Management Plan for the Zoo During Floods

- Quality and quantity of water should be ensured.

- Protect contamination of surface source water or otherwise.
- Protect contamination of ground water with sewer water.
- The water suspected to be contaminated should not be used for animals/birds consumptions.
- Food items should be stored above ground in water proof container.
- Contaminated and decaying food materials should not be given to animals.
- During transportation, ensure protection of food from any flood contamination.
- Ensure thorough sanitation of food store.
- The various aspects of food safety management in a flood situation should encompass all processes related to storage, processing, preparation, handling and distribution of food.
- In case of Flood it is important to ensure proper water quality to prevent the spread of diseases, which include diarrhoeal diseases, parasitic infestation as well as epidemic cholera.
- Floods often provide condition for proliferation of species of flies and mosquitoes, which causes threat to vector borne diseases.
- Vectors of significant: Mosquito, Flies. Ticks, snakes, fleas, mites and Cockroaches etc.
- Increase risk of transmission vector borne diseases, needs to be dealt seriously during floods and need a good surveillance which helps save the life's of animals/birds of the Zoo.
- A zoo has a rapid response team equipped with required equipment. The rapid response team will be formed and worked under the leadership of the Curator of the Zoo.

(A) Civil Disturbance:

Disturbance like demonstration, hartal, strike, work stoppage by the employees and other form of disturbances. Which can threaten supply of food and other emergency materials for Zoo animals. The Zoo is susceptible to following disturbances.

Actions:

- The Zoo managements should have a site emergency team to develop and alternative set of response procedures including provision for maintaining essentials operation and services in action.
- The emergency response will assess the situation and determine the actions needed to protect the Zoo, visitors & Zoo personnel.

Animal disease emergencies and preparedness of the Zoo

Dhaka Zoo is vulnerable to a number of diseases of like FMD, Foot-Rot, TB, Avian-Flu and Colibacillosis.

Components of Animal disease emergency preparedness planning

The two very important components of the planning are: early warning and early reaction to the disease.

1. Early warning

Advance warning becomes imperative to zoo, considering the fact that most of the zoos get their food requirements met from outside sources. These can be very important sources for transmitting diseases from outside areas into the zoo.

Step-A

Diseases Surveillance

- Passive Diseases Surveillance: It is essential that passive surveillance be supplemented by a strong system of active disease surveillance, particularly for emergency animal diseases. Periodical inspections of the food sources

(slaughter houses, areas where the grasses are grown) must be given top priority.

- Active Diseases Surveillance: The zoo vet as a part of the disease surveillance in Zoos must follow the practice of performing complete necropsies on every animal that dies within the Zoo and should maintain a record of it. Daily observation by animal care staff of each animal for clinical signs of disease and method of reporting abnormalities helps in early veterinary investigation.

Step-B

Risk Analysis

Risk analysis is a tool that can also be used to good advantage for animal disease emergency preparedness planning. Under risk analysis we mostly follow: risk assessment, risk management and risk communication.

Step-C

Laboratory Diagnostic Capabilities

Accurate diagnosis of diseases can only be assured in fully equipped laboratories that have a range of standardized diagnostic reagents, experienced staff. Some of the diseases like FMD, Foot-Rot, TB, Avian-Flu and Colibacillosis can be diagnosed only in microbiologically high-security laboratories.

Maintaining hygiene of the zoo through proper waste disposal system

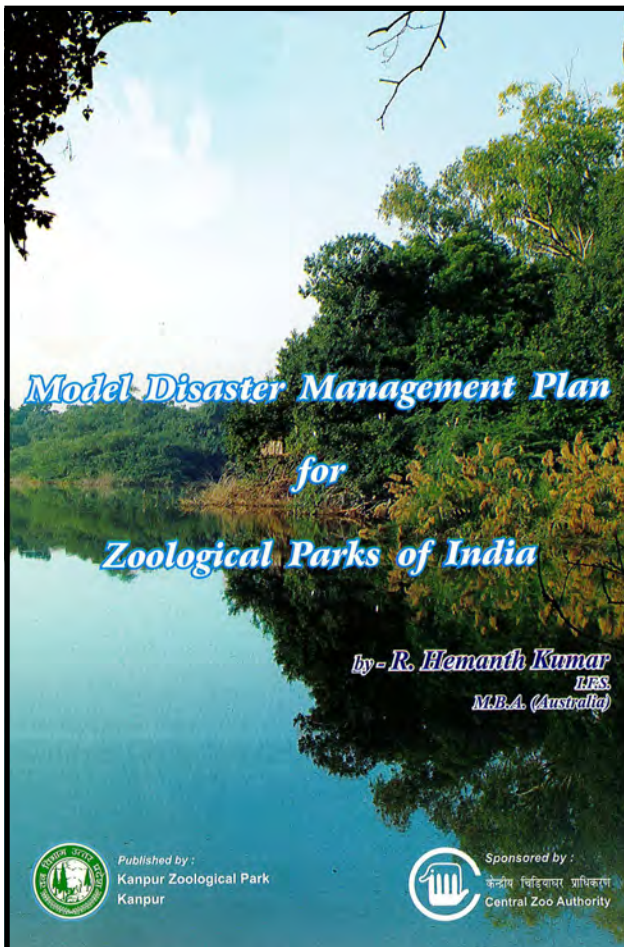
Disposal of waste should be completed as soon as possible after destruction to minimize opportunities for infectious material to disperse. Some of the measures that can be adopted by the zoo managers are listed as below :

- A) Burial
- B) Incinerators
- C) Composting

Vaccination

Well-planned vaccination programmes supplemented by other disease control measures help in eliminating disease at Dhaka Zoo. The issues related to vaccines are :

- Time- tested vaccines only should be used.
- It is important to select the correct antigenic type and subtype vaccine in order to achieve good levels of immunity.
- It's been documented that poor quality vaccines have actually caused the diseases that they were meant to prevent. Hence, procure vaccines from reputed firms only.
- Vaccines must be stored at the correct temperature by refrigeration at all times and used before expiry dates. Heat-stable, live vaccines, if available, reduce cold storage problems.
- Depending upon the necessity the veterinarian can go for ring vaccination and/or blanket vaccination.



Manual on Crisis Management and Emergency Response in Zoological gardens.

Until recently there was no official position on crisis management in zoos in India. Previous to that, in 1985 Zoo Outreach Organisation had published an issue of ZOO ZEN which compiled articles on zoo safety and crisis response, primarily from the Animal Keepers Forum AKF. Over the years ZOO brought out several compendiums of new material in this important topic. In 2008 ZOO wrote to the Regional Association Chairs throughout the world and asked what role, if any, emergency response played in their management. Most of the western zoos had extensive arrangements but it was found that other parts of the world did not have anything in place.

It was also around 2008 that the Central Zoo Authority added the requirement of emergency preparedness to their extensive requirements for zoo Master Plans. CZA contracted Dr. Hemant Kumar, I.F.S., former Director of the Kanpur Zoo to assemble a Manual for on the topic for the use of Indian zoos. Thus the Model Disaster Management Plan For the Zoos of India came to be written.

About the same time, SAZARC put up a theme for its 10th Annual Conference on 21st Century Crises, e.g. Climate Change, Emerging Diseases and Terrorism, all crises for which zoos anywhere had not yet begun to plan. When we heard about CZA's Manual we put it all together for our conference. CZA was very kind to donate hard copies of the plan for our use in SAZARC training. Participants found it very useful to refer. We also gave every participant a CD with many articles from different sources on this important topic. We hope CZA will add 21st Century Crises to subsequent revisions of the book.