

ELEPHANT NECROPSY PROTOCOL

EEP

(Based on the AAZV – SSP protocol)

INTRODUCTION

The purpose of this protocol is to provide a format for the systematic collection of information and samples that will add to our knowledge of elephants. All European zoos holding elephants registered in the EEP will receive a copy.

The protocol consists of 2 parts. Part one gives some guidelines for the necropsy procedure. Part two is the actual PM report. You are kindly asked to fill in part two on the computer and return it to the addresses indicated.

PART 1

EQUIPMENT CHECKLIST

1. Standard large animal necropsy instruments. Multiple scalpel handles, duplicates or triplicates of other instruments. Extra box of scalpel blades, knife sharpener, and a continual supply of sharp knives.
2. Retractors of various sizes and shapes. Self-retaining retractors with one or two movable arms mounted on a slide bar are most useful.
3. Sterile instruments for culture collection.
4. 10% neutral buffered formalin.
5. 4% buffered glutaraldehyde
6. Containers for sample collection.
7. Culture swabs, sterile urine cups, glass slides.
8. Serum tubes for blood and urine collection.
9. Aluminum foil and plastic bags for freezing tissues.
10. Labels and waterproof marking pens.
11. Scale for obtaining organ weights.
12. Tape measure, at least 2 meters long.
13. Chain saw, axe, or reciprocating saw to cut through the cranium. Hammers, chisels and handsaws.
14. Hoist/crane.
15. Carts on rollers to move heavy parts.
16. Coveralls, boots, gloves, caps, masks, protective eye and head gear.
17. Accessible water supply with hose.
18. Camera and film, extra batteries.
19. First aid kit.
20. Surgical masks approved for TB exposure.

LOGISTICS AND NECROPSY TIPS

Heavy equipment may be necessary to move a dead elephant. For an on site necropsy, chains and a tow truck may be sufficient to reposition the animal or to move it a short distance. If the animal must be transported to a remote site, a truck with a hoist will be needed. It may be easier to manipulate the animal onto a flatbed trailer. Vehicles must be able to handle these approximate weights: female Asian: 2,300 - 3,700 kg; male Asian: 3,700 - 4,500 kg; female African: 2,300 - 4,000 kg; male African: 4,100 - 5,000 kg. If transportation will be delayed, the carcass can be covered with ice.

If death is imminent or euthanasia is planned, completion of the measurement checklist ante mortem will save time at necropsy. Otherwise, measurements should be done as soon after death as possible.

Assigning specific tasks to team members will help the necropsy to proceed in an orderly manner. For example, a team may be assigned to each of these areas: head, forelegs, hind legs, abdominal region. One person should oversee the collection, labelling, and processing of research materials and any communication concerning research requests. It may be helpful to designate a media spokesperson.

Dissection of the head is best completed after separating it from the body. A good portion of the cranium must be damaged to remove the brain intact; a chain saw, large axe, and chisels are needed to penetrate the thick cranium. A battery operated reciprocating saw with a replaceable metal cutting blade may be safer and easier to handle. A posterior approach to brain removal can be made by 3 connecting deep cuts with a chain saw in the margins of the flattened triangle formed at the base of the elephant skull. Then remove the bony plate in chunks with a curved crow-bar. Use of a chain saw on bone can be hazardous and cause shrapnel-like fragments to be launched. Protective head and face gear should be worn by the chain saw operator and personnel in the immediate area.

Dissection of the thoracic cavity is best performed by at least two people. After the initial incision at the ventral midline is made, one person holds the retractor and the other cuts the tensed skin. Once the sternum is exposed, the ribs are separated at the cartilaginous attachment and adjustable retractors are applied to hold the cavity open. The heart, lungs, and associated structures may be removed "en bloc" with the diaphragm. Visceral and parietal pleura are normally adhered; there is little pleural space.

Laboratory Studies: Please include results of cytology, fluid analysis, urinalysis, serum chemistries, bacteriology, mycology, virology, parasitology, X-ray, photographs, or other data collected.

TISSUE CHECK LIST

Freeze 3-5 cm blocks of tissue from lesions and major organs (e.g., lung, liver, kidney, spleen) in small plastic bags. Freezing at -70 degrees Celsius in an ultra-low freezer is preferred. If this is unavailable, freezing at conventional temperatures is acceptable (use a freezer without an automatic defrost cycle if possible).

Any lesions noted in the lungs should be submitted for mycobacterial culture. Bronchial lymph nodes should be cultured for TB even if normal in appearance. Preserve as many

of the tissues listed below as possible in 10% buffered formalin at a ratio of approximately 1 part tissue to 10 parts solution. Tissues should be no thicker than 0.5 to 1.0 cm. Fix diced (1x1 mm) pieces of kidney, liver, spleen and lung in a suitable EM fixative if possible - glutaraldehyde base e.g., Trump-McDowell fixative. NOTE: There is generally no need to fix and label each tissue separately. Take 2 sets of fixed tissue. Bank one set. Also, freeze post mortem serum (from heart), urine and any abnormal fluid accumulations.

Checklist

Adrenal	Kidney	Penis	Thymus
Blood *	Large intestine	Pituitary	Tongue
Bone with marrow	Liver	Prostate	Trachea
Bulbo-urethral gland	Lung	Salivary gland	Trunk cross section
Brain	Lymph node	Seminal vesicles	Uterus/cervix
Coecum	Mammary gland	Skin	Ureter
Diaphragm	Muscle	Small intestine	Urinary bladder
Oesophagus	Nerve (sciatic)	Spinal cord	Vaginal/urogenital canal
Eye	Ovary/testis	Spleen	
Heart/aorta	Pancreas	Stomach	
Haemal node	Parathyroid	Temporal gland	

* Collect post mortem blood, separate serum and freeze for retrospective studies.

PART 2. GROSS EXAMINATION WORKSHEET

Institution/Owner	
Address	

Species	ISIS:	Studbook:
Name:		
Birth date/ age	Sex:	Captive born <input type="checkbox"/> Wild caught <input type="checkbox"/>

Death date	
Death location	
Necropsy date	
Necropsy location	
Post mortem Interval	
Weight (kg)	Actual <input type="checkbox"/> Estimate <input type="checkbox"/>
History (clinical signs, circumstances of death, clinical lab work, diet & housing)	

GROSS EXAMINATION

If no abnormalities are noted or if the organs were not examined, mark as "normal" or "NE" (not examined) respectively.

General examination (physical and nutritional condition, skin, body orifices, superficial lymph nodes):

Musculoskeletal System (bones, marrow, joints, muscles):

Body Cavities (fat stores, pleura, thymus, lymph nodes):

Spleen	
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Respiratory System (trunk passages, pharynx, larynx, trachea, bronchi, lungs, regional lymph nodes; submit lung lesions for TB culture; bronchial lymph nodes should be cultured for TB even if normal in appearance):

Cardiovascular System (heart, pericardial sac, great vessels, myocardium, valves, chambers):

Digestive System (mouth, teeth, tongue, oesophagus, stomach, small intestine, coecum, large intestine, rectum, liver, pancreas, mesenteric lymph nodes):

Urinary System (kidneys, ureters, bladder, urethra):

Reproductive System (testes/ovaries, uterus & cervix, penis/vagina, urogenital canal, prostate, seminal vesicles, bulbo-urethral gland, mammary gland, placenta):

Endocrine System (thyroids, parathyroids, adrenals, pituitary):

Central Nervous System (brain, meninges, spinal cord):

Sensory Organs (eyes, ears):

Additional Comments or Observations:

Final Pathology report including microbiology, immunology, histology and other test:

Primary Pathologist:

Name:

Lab:

Address:

Phone:

E-mail:

Please send this report by e-mail to: W.Schaftenaar@Rotterdamzoo.nl

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