

# Giraffe Necropsy Protocol

The following worksheet is designed as a tool to standardize all necropsies of giraffe and to help investigate peracute mortality and related conditions in captive giraffe. The investigators will try to make themselves available for examinations if feasible and may be able to accommodate histopathology if the worksheet is completed and submitted. Please contact (b)(6) at Busch Gardens, 813-987-(b)(6) Fax 813-987-5548 or e-mail at (b)(6) [anheuser-busch.com](mailto:anheuser-busch.com) if you anticipate the death of a giraffe.

## Gross Examination Worksheet

Institution/Owner Topera Zoological Park  
Address 635 SW Gage  
Country USA

Species Ret Id# 013892 ISIS# Studbook#  
Birth Date/Age / Sex F Weight (Kg) Height at withers Total  
height (Actual /Estimate

Death Date 8/13/10 Death Location outdoor yard  
Necropsy Date 8/13/10 Necropsy Location padock PM Interval

Captive Born  Wild Caught

History (include clinical signs, circumstances of death, clinical lab work, diet & housing, Medarks records are welcomed and encouraged)

### GROSS EXAMINATION

*(If no abnormalities are noted mark as normal or not examined (NE); use additional sheets if needed)*

*Photographs if possible of dorsal sacrum withers, lateral hips, shoulders, neck, and anterior and lateral neck. Photos of abdominal cavity, subcutaneous space, mesentery, and perirenal fat are also requested.*

*Please collect samples of each system in parenthesis.*

Blood: Ø attempt to collect blood for serum if possible. If death was witnessed then collect heparinized plasma and keep on ice until spun and frozen back. u

General Exam: (Physical and nutritional condition, skin, body orifices, superficial lymph nodes)

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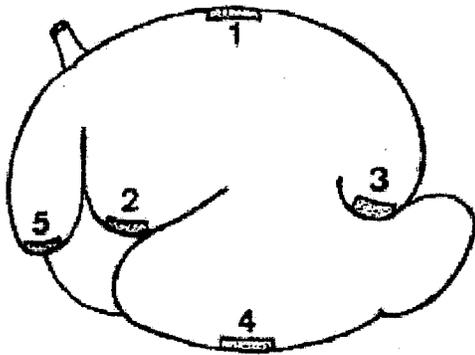


Fig. 1. Standardized sampling sites in the rumino-reticular tent regions, left side. 1. rumen dorsal wall; 2. strium ruminis; 3. sacculus caecus caudodorsalis; 4. rumen ventral wall; 5. fundus reticuli (after Hofmann *et al.*, 1962).

**Sampling sites from rumen.**

**Urinary System:** (kidneys, ureters, bladder, urethra). Freeze 20ml of urine for biochemical analysis. Any stones found should be saved for analysis.

**Reproductive System:** (testes/ovaries, uterus & cervix, penis/vagina, urogenital canal, prostate, mammary gland, placenta)

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

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

**Sensory Organs:** (~~eyes~~, ~~ears~~)

**Additional Comments or Observations:**

Prosector (b)(6) Date: 8/13/10

Summarize Preliminary Diagnoses:

Laboratory Studies:

cytology

fluid analysis

urinalysis

- serum chemistries
- bacteriology
- mycology
- virology
- parasitology
- radiographs
- photography
- other

TISSUE CHECK LIST

Where possible freeze 3-5 cm blocks of tissue from lesions and major organs (e.g., lung, liver, kidney, spleen) in small plastic bags, preferably in liquid nitrogen to be kept ultrafrozen at -70 degrees Celsius; freezing at conventional temperatures is acceptable if there is no access to an ultra-low freezer. Collect identical sets for histopathology in formalin.

- |   |  |   |   |
|---|--|---|---|
| Brain <input checked="" type="checkbox"/>       | Diaphragm <input checked="" type="checkbox"/>        | Hemal node <input type="checkbox"/>               | Urethra <input type="checkbox"/>                    |
| Nerve (sciatic) <input type="checkbox"/>        | Liver <input checked="" type="checkbox"/>            |   | Kidney <input checked="" type="checkbox"/>          |
| Spinal cord <input checked="" type="checkbox"/> | Mammary gland <input type="checkbox"/>               | Ovary/testis <input type="checkbox"/>             | Adrenal <input checked="" type="checkbox"/>         |
| Eye <input checked="" type="checkbox"/>         | Spleen <input checked="" type="checkbox"/>           | Epididymis <input type="checkbox"/>               | Thymus <input type="checkbox"/>                     |
| Tongue <input checked="" type="checkbox"/>      | Pancreas <input checked="" type="checkbox"/>         | Uterus/cervix <input checked="" type="checkbox"/> | Rumen sections 1-5<br>(see above diagram)           |
| Esophagus <input checked="" type="checkbox"/>   | Stomach <input checked="" type="checkbox"/>          | Vaginal/urogenital canal <input type="checkbox"/> | Section 1 <input type="checkbox"/>                  |
| Trachea <input checked="" type="checkbox"/>     | Small intestine <input checked="" type="checkbox"/>  | Penis <input type="checkbox"/>                    | Section 2 <input type="checkbox"/>                  |
| Thyroid <input type="checkbox"/>                | Large intestine <input checked="" type="checkbox"/>  | Prostate <input type="checkbox"/>                 | Section 3 <input type="checkbox"/>                  |
| Parathyroid <input type="checkbox"/>            | Cecum <input checked="" type="checkbox"/>            | Accessory sex organs <input type="checkbox"/>     | Section 4 <input type="checkbox"/>                  |
| Pituitary <input type="checkbox"/>              | Skin <input checked="" type="checkbox"/>             | Ureter <input type="checkbox"/>                   | Section 5 <input type="checkbox"/>                  |
| Heart/aorta <input type="checkbox"/>            | Bone with marrow <input checked="" type="checkbox"/> | Urinary bladder <input type="checkbox"/>          | Abdominal fat <input type="checkbox"/>              |
| Muscle <input checked="" type="checkbox"/>      | Salivary gland <input type="checkbox"/>              |   | Pericardial fat <input checked="" type="checkbox"/> |
| Lung <input checked="" type="checkbox"/>        | Lymph node <input checked="" type="checkbox"/>       |   |   |

*gall bladder*

Special Sampling:

Rumen Fluid collection:

The collection is the ventral sac of the rumen, but anywhere you can get fluid should be fine. Using a 14 - 16 gauge needle, 4- 6" long, pierce the abdomen and into the rumen. Use a sterile 10-20 ml syringe to aspirate the fluid. If the needle becomes clogged

101 withers  
82 Rear  
153 Foot to head

R-vent - .75"  
Chamber - 5" L x 3"  
~~mass~~ valve leaflets normal  
heart normal / valves  
D-A - 9 1/2" 24.0cm  
W - 7" 17.75cm  
Left ~~vent~~ wall - 2"

Lg smt peripheral edema

Sm/Lg Int normal / normal trachea w/ fluid  
Liver enlarged  
Kidney normal

calb<sup>3</sup>

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See attached body-scoring system and score the carcass. Attached photos as requested above.

**Musculoskeletal System:** (Bones, marrow, joints, muscles)

Whole feet can be submitted fresh for processing and evaluation. Foot angles will also be determined. The digit with P3 and/or P2 can be sent.

**Body Cavities:** (Fat stores, pleura, thymus, lymph nodes)

**Spleen:**

**Respiratory System:** (Nasal passages, pharynx, larynx, trachea, bronchi, lungs, regional lymph nodes)

**Cardiovascular System:** (heart, pericardial sac, great vessels, myocardium, valves, chambers). If blood is available freeze serum (100ml if possible) and plasma (30ml).

**Digestive System:** (mouth, teeth, tongue, oral papillae, salivary glands, rumen, reticulum, abomasums, omasum, esophagus, small intestine, cecum, large intestine, rectum, liver and gallbladder, pancreas (large section), mesenteric and ileocecal lymph nodes)

Liver 200g frozen

Rumen contents in sterile/clean urine cup(2), parafilm sealed

(See collection protocols)

See diagram for collection of rumen sections. 10cmX10cm square piece is adequate for counting of papillae and histopathology. A 3cm X 3cm section of oral mucosa should be collected for evaluation and measurements of length.

*Yellow pericardial fluid*

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with ingesta, you can just force a small amount of air through the needle to clear it. Be careful not to create a negative pressure within the syringe, since that will let off CO2 and increase the pH. Aim for collecting 10-15 ml with a minimum of 5 ml. If possible, have a pH meter there and test pH immediately. (pH can change quickly after O2 exposure) Seal remaining fluid in airtight containers and freeze immediately. Ship frozen. Opening the rumen is another option but unless it is done shortly after death may alter the results. Please estimate the time from death to collection and the collection method used.

**Radiographic evaluation of the mandible:**

A lateral, left and right oblique view of the mandible and a disarticulated dorso-ventral view of the jaw are requested to evaluate for the presence of bony resorption thought to be secondary to primary causes of hypocalcemia. Bony sectioning from the mandible is also a beneficial adjunct to bone sampling from the ribs with marrow.

**Fat Evaluation:**

✓ Pericardial and abdominal fat should be sectioned for routine histopathology and 50-100g frozen for essential fatty acid evaluation. Fat must be harvested and frozen quickly to prevent oxidation, and frozen at -86C. Photographs of heart and abdomen are useful for fat evaluation. Contact:

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- B. G. Giraffe - Additional Necropsy Report Notes -

8-18-2010

- Cytology of peritoneal fluid reveals large amount of bacteria confirming acute peritonitis although no perforation of abdominal organs or source of infection can be found.

Chemistry done on post mortem Blood - CBC not performed due to clotted blood -

Results confirm worsening renal function

- Bacteriology confirms bacterial isolated from lung tissue confirming pneumonia.

- Histopathology Report pending

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8-18-10

NOV 10 2010

enlargement of Liver

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# TOPEKA ZOOLOGICAL PARK NECROPSY REPORT

|   |              |                |                |                    |
|---|--------------|----------------|----------------|--------------------|
| Name & Species <b>B.G.</b>  |              | Date of Death  | Date of Report | Number             |
| <b>Reticulated</b>  |              | <b>8-13-10</b> | <b>8-13-10</b> | <b>013892</b>      |
| Sex   | Age at death | ID             | In Zoo since   | Origin of specimen |
| <b>0.1</b>  | <b>24</b>    |                | <b>1992</b>    |                    |
| History: <b>BG was in last stage of pregnancy close to labor. She had peripheral edema, tachypnea, wet rales ventral thorax, and fluid from nose.</b>   |              |                |                |                    |
| Weights & Measurements: <b>Front legs to withers - 101". Rear legs to secum - 82"</b><br><b>Front foot to top of head - 153"</b>  |              |                |                |                    |
| External Appearance - Skin - Appendages - Wounds<br><b>Swollen thighs with pitting edema, ventral abdomen has generalized pitting edema.</b>  |              |                |                |                    |
| Respiratory System - Nasal Passage - Lungs - Trachea:<br><b>Foamy froth in nasal and oral cavity, foamy frothy fluid in trachea, severe thickening of ventral lungs, fluid accumulation in lungs.</b>   |              |                |                |                    |
| Cardiovascular System: <b>Heart size 24cm long from base to apex. 17cm wide at base. R ventricular wall thickness 2cm, R ventricular chamber size 12.75cm x 7.6cm. R side valve <sup>leaflets</sup> normal, Left ventricular wall thickness 5cm, pericardial fat edematous -</b>    |              |                |                |                    |
| Digestive System - Mouth - Esophagus - Stomach - Intestines - Rectum: <b>Oral cavity normal, teeth normal, frothy fluid in pharyngeal region, Esophagus normal, Rumen normal, small &amp; large intestines normal, Rectum normal, large volume of yellowish fluid in peritoneum</b> |              |                |                |                    |
| Liver - Pancreas - Spleen, Glands: <b>Liver had mild enlargement with rounding of the edges. Pancreas appears normal. Adrenal glands normal</b>   |              |                |                |                    |
| Urogenital System: <b>External vulva normal, uterus normal with full term pregnancy - fetus in breech presentation and "up side down", urinary bladder normal, kidneys appear normal external and internal.</b>   |              |                |                |                    |
| Muscular & Skeletal: <b>No sign of abnormalities except for deformity of front right foot claw.</b>   |              |                |                |                    |
| Brain, Spinal Cord - Nervous System - Sense Organ:<br><b>Nervous tissue appears normal, brain appears normal, eyes normal</b>   |              |                |                |                    |
| Lymphatic System: <b>No enlarged lymph nodes seen, mesenteric lymph nodes appear normal size.</b>   |              |                |                |                    |
| X-ray - Sections - Cultures - Blood: <b>Culture of peritoneal fluid performed</b><br><b>- Blood for chemistry taken</b><br><b>- Cultures taken of deep lung tissues, and of tracheal fluid from mid trachea.</b>  |              |                |                |                    |
| Misc. & Diagnosis: <b>pulmonary edema, ascites, peripheral edema, secondary to <del>pregnancy</del> pregnancy.</b><br><b>Cow had not gone into labor, cervix was at 4cm</b>   |              |                |                |                    |
| General Curator/Date  |              |                |                | <b>8/13/10</b>     |

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- Holton, KS Assisted with Necropsy

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