AVTCP Exotic Companion Animal Knowledge Lists

This list is both a guide for applicants to prepare for studying as well as to supply a list of acceptable species for case logs and reports. Any questions regarding species outside of this list, particularly for reptiles, amphibian, and fish which could encompass companion species not listed here, should be emailed to the ECA Member at Large Kathryn Torres: kgtorres@san.rr.com. Please note that crocodilian and venomous species will not be accepted.

Species List

Please note that logs, reports, and skills must be from exotic companion animals compiled from this list, not wildlife or zoo cases. For example, if writing about a case involving a falconiform, it must belong to a falconer who keeps them for sport/companionship and not to be released.

- Pet Birds
  - Psittacines (eg: parrots, lories)
  - Passerines (eg: canaries, finches)
  - Columbiformes (eg: doves, pigeons)
  - Ramphastidae (eg: toucan, toucanettes)
  - Falconiformes (eg: falcons, hawks, kestrels)
  - Galliformes (eg: chicken, quail)
  - Anseriformes (eg: ducks, geese)

- Pet Mammals:
  - Lagomorph (eg: rabbits)
  - Rodentia (eg:guinea pigs, chinchillas, rats, mice, hamsters, gerbils, prairie dogs, degus)
  - Diprotodontia (eg: sugar gliders)
  - Eulipotyphla (eg: hedgehogs)
  - Carnivora (eg: ferrets, skunks)
  - Artiodactila (eg: miniature pigs)

- Pet Reptiles: No venomous or crocodilians permitted
  - Squamates (eg: lizards, monitors, snakes)
  - Testudines (eg: tortoises, turtles)

- Pet Amphibians
  - Anura (eg: frogs, toads)
  - Urodela (eg: salmanders, newts, axolotls, sirens)

- Pet Fish
  - Cypriniformes (eg: koi, goldfish)

- Perciformes (eg: Oscars, cyclids, bettas)

Anatomy and Physiology

For each species on the "Species List", the following topics should be mastered. These parameters are meant to be for captive avian and exotic pets, which is very different from zoo exhibits and the differences should be clearly understood.

- Physiologic values
  - Life span
  - Average body weight
  - Body temperature
  - Heart rate
  - Respiratory rate
  - Sexual maturity
  - Type of estrous cycle
  - Ovulation
  - Gestation period
  - Litter/clutch size
  - Incubation period
  - Normal weight at birth
  - Eyes and ears open
  - Weaning age
- Integument
  - Fur
  - Feathers
  - Glands
  - Skin and dermal layers
  - Scales
  - Chromatophores
  - Osteoderms
  - Femoral pores
- Senses
  - Visual
    - Pupillary light response
    - Visual spectrum
    - Eye shape
    - Eye lids
    - Lens
    - Avascular retinas
    - Tapetum
    - Spectacle

        - Nasolacrimal duct system
        - Parietal eye
    - Auditory
        - Acoustical ability
        - Pinna
        - Ear canal
        - Tympanic membrane
        - Operculum
        - Sound frequency ranges
    - Olfactory
    - Tactile
- Metabolism
    - POTZ—preferred optimal temperature zone
    - Ectothermic
    - Behavioral thermoregulation
    - Hibernation, brumation
    - Osmoregulation
- Gastrointestinal System
    - Herbivores
    - Carnivores
    - Omnivores
    - Granivore
    - Insectivore
    - Frugivore
    - Nectarivore
    - Florivores
    - GI transit time
    - Dental formulas for the variety of species
        - Incisors
        - Canine teeth
        - Deciduous teeth
        - Permanent teeth
        - Premolars
        - Molars
        - Diphyodont dentition
        - Peg teeth
    - Tongue
    - Salivary glands
    - Beak
        - Rhamphotheca

        - Rhinotheca
    - Oropharynx
    - Choanal slit
    - Palatal ostium
    - Diastema mastication
    - Esophagus
    - Crop
    - Stomach
    - Pylorus
        - Ability to vomit
    - Liver—number of lobes
    - Intestines
    - Gallbladder (which species have one)
    - Pancreas
    - Spleen
    - Splenopancreas
    - Adrenal glands
    - Hind gut fermenters
    - Cecum
    - Colon
    - Fusus coli
    - Chloaca
        - Coprodeum
        - Urodeum
        - Proctodeum
    - Vent
- Respiratory System
    - Nares
    - Cere
    - Obligate nasal breathers
    - Operculum
    - Infraorbital sinus
    - Larynx
    - Glottis
    - Trachea
        - Cartilaginous tracheal rings
    - Bronchi
    - Parabronchi
    - Syrinx
    - Lungs
        - Anatomy
        - Quantity
        - Function

    - Diaphragm
    - Air sacs
    - Vascularity
    - Gas exchange
    - Breathing cycles
- Cardiovascular System
    - Heart
    - Hepatic and renal portal systems
    - Cardiac shunting
    - Venous circulation
    - Arterial circulation
    - Lymphatic system
- Nervous System
    - Circadian Pacemaker
    - Brain
    - Spinal cord
    - Cranial nerves
    - Peripheral nerves
    - Autonomic nervous system
    - Parasympathetic nervous system
    - Vasovagal reflex
    - Melatonin
    - Pineal gland
- Musculoskeletal system
    - Pneumatic bones
    - Medullary bones
    - Skull
    - Vertebral Column
    - Vertebrae number
    - Occipital condyle
    - Synsacral
    - Coccygeal
    - Pygostyle
    - Tail autotomy and regeneration
    - Shell—modifications between species
    - Carapace
    - Plastron
    - Scutes
    - Musculature anatomy
    - Skeletal anatomy
    - Forms of locomotion
    - Digit anatomy
- Reproductive Systems
    - Sex chromosomes

    - Sex determination
    - Anogenital distance
    - Sexual dimorphism
        - Testes
        - Baculum
        - Hemipenes
        - Prostate
        - Penis vs. Phallus
        - Os penis
        - Colors
    - Female Reproductive System
        - Ovulation
        - Ovary
        - Oviduct
        - Fertilization
        - Egg formation
        - Oviparous
        - Viviparous
        - Egg anatomy
        - Incubation
        - Gestation
        - Postovulatory follicle
        - Uterus
        - Cervix
        - Ossification of pelvic symphysis
        - Mammary glands
        - Egg anatomy
    - Copulation techniques
    - Seasonal variances in habits
- Urinary System
    - Kidneys
    - Osmoregulation
    - Urates
    - Renal Portal System
    - Salt Gland
    - Uricotelic
    - Bladder
    - Urine consistency and color
    - Urates
- Endocrine System
    - Pituitary gland
    - Growth hormones
    - Thyroid

    - Parathyroid
    - Thymus
    - Adrenal glands
    - Corticosterone
    - Nasal salt glands
    - Pancreas
    - Insulin
    - Glucoregulation
    - Glucose
    - Glycogen
    - Somatostatin
- Circulatory System
    - Heart
    - Purkinje fibers
    - Aorta
    - Cerebral arterial Circle of Willis
    - Hepatic and renal portal systems
    - Arteriovenous networks
    - Blood
    - Extrinsic and intrinsic pathways
- Lymphatic and immune system
    - Thymus
    - Spleen
    - Specific immunity
    - Bursa of Fabricius
    - IgG
    - IgE
    - IgA
    - IgM

Anesthesia

Candidate must have a complete understanding of the theoretical and technical use, application, and relevance of these anesthetic issues for each individual species on the "species list".

- Anesthetic equipment
    - $ETCO_2$
    - Doppler
    - EKG
    - Indirect blood pressure
    - Direct blood pressure

    - Blood gas analysis
    - SPO_2
    - Ventilation options
    - Core body temperature measurement
    - Respiratory monitoring
    - IV/IO infusion options
- Proper thermal support
- Analgesics
- Pre-anesthetic agents
- Induction agents
    - Inhalents
    - Injectables
- Administration sites
- CRI options
- Normal physiologic reference ranges
    - Heart Rate
    - Respiratory Rate
    - Core body temperature
- Anesthetic techniques
    - Intubation
    - Induction
    - IV/IO/air sac catheter placement sites and sizes
- Intra-operative fluid therapy options
- Blood transfusions
    - Blood typing
    - Rates and administration methods
    - Recognize blood transfusion reactions
- Troubleshooting anesthetic reactions
- Emergency interventions and CPR (see Knowledge list)
- Post-anesthetic complications

Diseases and Conditions

Candidates are expected to recognize which of these diseases are species specific, and how certain diseases can and do manifest differently between varying species.

Candidates must have a complete knowledge of each of these diseases for every species on the "species list" including:

Causes
Symptoms
Modes of transmission
Proper testing
Treatment options
Prognosis

- Abscesses
- Antibiotic toxicities
- Adrenal disease
- Alleutian's disease
- Amyloidosis
- Anaphylaxis
- Anemia
- Atrial thrombosis
- Aural Abscess
- Autoimmune diseases
- Avian Borna Virus
- Barbering
- Behavioral Disorders
    - Feather Destructive
    - Skin mutilation
    - Screaming/Biting
- Biliary cysts/adenocarcinoma
- Blood parasites
- Cardiac Disease
- Cecal impaction
- Cheek pouch impaction
- Cherry eye
- Chlamydiosis
- Chordoma
- Clostridium piliforme (Tyzzer's disease)
- Crop diseases
    - Stasis
    - Infection (bacterial/fungal)
    - Impaction

    - Burn
- Cryptorchidism
- Cryptosporidiosis
- Cystitis
- Dental disease
    - Malocclusion
    - Abscess
    - Gingivitis
    - Gingival hyperplasia
- Dermatitis
- Dermatophytosis
- Dirofilariasis
- Distemper virus
- Diabetes Mellitus/Insipidus
- Dystocia
- Dysecdysis
- ECE (Epizootic catarrhal enteritis)
- Edema (Dropsy)
- Egg binding/dystocia
- Egg peritonitis
- Encephalitozoon cuniculi
- Endometrial hyperplasia
- Eosinophilic enteritis
- Estrogen toxicity
- Estrus associated aplastic anemia
- Fatty liver disease
- Fecal impactions
- Fibroma
- Foreign body
    - Crop
    - Proventricular/Ventricular
    - Gastro-Intestinal
    - Tracheal
- Fungal infections
    - Aspergillosis
    - Candida
    - Ornithogaster

    - Others
- Fur slip
- Gastro-Intestinal obstruction or torsion
- Gastrointestinal stasis/Ilius
- Granulomatosis
- Helicobacter pylori
- Hemipene impaction/infection
- Hepatic lipidosis
- Herpes Virus
    - Pacheco's Disease
    - Papillomavirus/Papillomatosis
    - Marek's Disease
- Hydronephrosis
- Hypercalciuria
- Hypersplenism
- Hyper/hypothermia
- Hyper/hypocalcemia
- Hyper/hypovitaminosis
- Illius
- Inclusion Body Disease (IBD)
- Inflammatory bowel disease
- Influenza
- Inhalent Toxins
    - PTFE
    - Air fresheners
    - Incense
    - Gas
- Insulinoma
- Intussusception
- Iron Storage Disease
- Lawsonia intracellularis infection
- Limb constriction- foreign object
- Liver disease
    - Infectious
    - Nutritional
    - Neoplastic
    - Hepatic Lipidosis

- Lymphoma
- Lymphadenitis
- Lymphocytic choriomeningitis virus
- Mammary neoplasia
- Mast cell tumor
- Megaesophagus
- Mucoid enteritis
- Mycobacterium
- Neoplasia varieties
- Nidovirus
- Nutritional secondary hyperparathyroidism (Metabolic Bone Disease)
- Obesity
- Ophthalmologic disease
- Osteoarthritis
- Osteomyelitis
- Otitis
- Ovarian cysts
- Paramyxovirus
- Parasitism
    - Skin
    - Gastro-Intestinal
    - Ears
    - Tracheal/air-sacs
    - Myiasis
- Parvovirus

  Pasteurellosis
- Penal hair ring
- Pheochromocytoma
- Pineconing scales
- Pneumonia
- Pododermatitis

  Polymyositis

  Polyoma Virus
- Porphyrinuria/pigmented urine
- Pre-ovulatory egg binding
- Pregnancy toxemia

- Proliferative colitis
  Prostate disease
  Proventricular Dilitation Disease (PDD)
- Prolapse
  - Cloaca
  - Vent
  - Intestinal
  - Hemipene/penis
  - Oviduct/uterus
  - Bladder
- Psittacine Beak and Feather Disease (PBFD)
  Pseudopregnancy
- Pulmonary mycoses
- Pyometra/metritis
- Rabies
- Renal disease
- Infectious
- Nutritional
- Neoplastic
- Gout
- Respiratory diseases of the small rodent
  - Murine Respiratory Mycoplasmosis (MRM)
  - Cilia-associated Respiratory (CAR) Bacillus
  - Streptococcus pneumoniae
  - Corynebacterium kutscheri (Pseudotuberculosis)
  - Pasteurella pneumotropica
  - Sendai Virus
  - Pneumonia Virus of Mice (PVM)
  - Rat Respiratory Virus (RRV)
  - Pneumonia carinii
- Rotavirus
- Rupture of the eye
- Scurvy
- Salmonellosis
- Self-mutilation
- Sepsis
- Sinusitis/air sacculitis/pneumonia

- Splay-Leg Spondylosis
- Stomatitis
- Testicular/ovarian neoplasia Thymoma
- Toxicosis
    - Lead
    - Zinc
    - Copper
    - Plant
- Tracheal mites
- Trauma
    - Dermal wounds/burns
    - Orthopedic
    - Soft tissue
    - Occular
    - Crushing/shell wounds
    - Prey bites
- Treponema
- Trichobezoars
- Uric acid impaction
- Urolythiasis
- Uropygial gland disease
    - Impaction
    - Infection
    - Neoplasia
- Vaccine reaction
- Xanthomatosis

Emergency and Critical Care

Candidates must demonstrate a complete knowledge of all of these categories and parameters for each species on the "species list". They must be able to recognize and understand how each situation differs among species and how to troubleshoot between them.

- Triage the emergency patient

    - Common emergency presentations and causes
    - Follow proper steps once emergency has been determined
- Perform complete physical exam
    - Proper capture and restraint techniques
    - Physiologic normal reference ranges
    - Auscult heart and lungs
    - Hydration status
    - When to perform exam in steps to minimize stress-related deaths
- Recognize the need to receive supplemental oxygen and methods of administration
- Temperatures and humidity requirements
- Fluid therapy regimens
    - Shock fluid therapy rates
    - Maintenance fluid therapy rates
    - Correcting hydration deficits
- Types of fluids used and when to use them
- Catheter placement sites
    - Intravenous sites
    - Intraosseous sites
    - Urinary catheters
- Equipment for fluid therapy delivery
- Analgesics
    - NSAIDS
    - Opioids
    - Local/topical
- Injection routes
- Tube/syringe feeding
    - Equipment/supplies
    - Calculate metabolic caloric requirements
    - Common hand feeding formulas
- Venipuncture
    - Use of lab supplies and packaging supplies
    - Venipuncture sites
    - Blood volume limitations
- Radiology
    - Proper positioning
    - When to sedate
    - Use of positioning board
- Critical care wound management
    - Hemostasis
    - Bandaging techniques
    - Splinting
- Blood transfusion medicine
    - Blood typing

    - Rates and administration methods
    - Recognize blood transfusion reactions
- CPR
    - Common emergency drugs used and routes
    - Intubation techniques in the emergency patient
    - Prep and assist with air sac cannulation
- Equipment knowledge and set up
    - Doppler placement and indirect blood pressure measurement
    - ECG placement
    - Ambu-bag/ventilator
    - Oxygen tanks/cages/Incubators/nebulizers
    - Pulse Oximeters

Hematology

Candidates must have a complete understanding of each of these topics for each individual species on the "species list".

- Venipuncture
    - Correct site/restraint
    - How much total blood can be pulled safely
- Packed Cell Volume
    - Preparation and reading
    - Serum color/quality
- Slide Preparation
    - Correct method of making a smear
    - Staining technique
- Lab supplies
    - Microtainers
    - Special swabs
    - Knowledge of which tests require what sort of sample (ie: plasma vs. serum vs. whole blood)
- Machines and lab devices
    - Proper microscope use and maintenance
    - Centrifuges
    - Hemocytometers
    - Refractometers
    - In-house chemistry/hematology analyzers pros and cons
- Manual count
    - Hemocytometer
    - Solutions used

    - Equation
- Cell Identification
    - Erythrocytes
    - Leukocytes
        - Granulocytes/Heterophils
        - Agranulocytes
    - Thrombocytes/Platelets
- Regeneration
    - Reticulocytes-Calculate mean
    - Grading with Plus System/percentage mean
    - Poikilocytosis/Anisocytosis/Polychromasia
- Toxic/Reactive Changes
    - Identify changes to cells
    - Grading changes
- Hemoparasites
    - Identify
    - Knowledge of different species

Behavior

Candidates are expected to master all of these parameters for each species specified on the "Species list".

- Normal reproductive behaviors
    - Cycles
    - Oviparous, Viviparous, Ovoviviparous
    - Mating/courtship rituals
    - Sexual maturity
    - Gestation
    - Common physical displays
- Abnormal reproductive behavior
    - How to recognize dystocia
    - Irregular displays
- Age related behaviors
    - Common baby bird behaviors (eg: begging, regurgitating, rolling, sleeping, learning/practicing to fly)
    - Differences between age related blindness/lack of vision and acute blindness
    - Difference between normal age-related decrease in activity level vs. illness
- Signs of illness: Differentiate between normal behaviors and illness such as:
    - Vomiting vs. Regurgitating
    - Periods of inappetence

    - Brood patch feather removal/molting vs. feather destructive behavior
    - Mouth gaping vs. respiratory distress
    - Resting vs. lethargy
    - Egg laying vs. dystocia
    - Limping vs. playing/displaying
- Physical displays/body language for each species
    - Territorial displays
    - Affection displays
    - Aggressive/menacing displays
    - Feeding/nurturing displays
    - Mating/sexual
- Seasonal changes and associated behavior changes
    - Hibernation/brumation/estivation
    - Molting/Shedding
    - Appetite variance
    - Dietary requirements based on seasons
    - Reproductive habits
- Candidates should be prepared to advise pet owners of all species on a variety of topics and how to deal with these issues in their captive pets:
    - Biting
    - Excessive screaming
    - Boredom
    - Fighting with cage mates
    - Feather mutilation
    - Skin mutilation
    - Enrichment options
    - Foraging options
    - Basic training techniques:
        - How to medicate
        - How to restrain
        - How to teach birds to step up on a hand
        - How to safely get pets into appropriate transport carriers

Husbandry

For each species of pet, the following topics should be mastered. These parameters are meant to be for captive avian and exotic pets, which is very different from zoo exhibits and the differences should be clear in these recommendations.

- Nutrition
    - Herbivore, omnivore, carnivore, insectivore, frugivore
    - Ideal diets as per native habitat

    - Proper commercially available diets
    - Dangerous/toxic foods
    - Supplements
    - Gut loading
    - Proper food presentation
    - Frequency and quantity of feeding
- Enclosures
    - Type (cage vs. aquarium vs. free roam)
    - Natural habitat (Arboreal vs. ground dwelling vs. swamp vs. forest vs. desert vs. rain forest vs. arid)
    - Substrate
    - Important furniture
    - Feeding devices
    - Enrichment devices
- Lighting/sleep cycles
    - Proper spectrum requirements
    - How to provide appropriately for pets in captivity
    - Diurnal vs. Nocturnal vs. Crepuscular
    - Indoor vs. outdoor options
- Temperature/Humidity
    - POTZ for all species
    - Proper gradients
    - How to provide appropriately for pets in captivity
    - What is normal for these species in their natural environments and how best to recreate that for pets in captivity
- Bathing
    - Frequency and techniques (spraying vs. misting vs. fogging vs. soaking, etc.)
    - Which species require alternative “bathing” options (dust or soil baths)
- Hibernation
    - Which species naturally hibernate
    - When, as a pet in captivity, is hibernation appropriate
    - How to safely create an environment for these species to hibernate
    - Brumation vs. hibernation
- Longevity
    - Average life expectancy for captive pet species
- Grooming Needs
    - Which species may need grooming (nails/claws, feathers, beaks, etc)
    - What techniques are commonly used

- What are signs of illness vs. normal captive overgrowth (ie: overgrown beak of a turtle due to nutritional deficiency vs. improper cage furniture and substrate)

Surgical Procedures

Candidate must have a complete understanding of each of these procedures including which species may require specific procedures, how to prep for procedures, how to assist during the procedure, what instruments/tools/equipment will be required and how to properly use them, and possible pre and post surgical/procedural complications. Candidate must also be able to determine what each procedure is for and under what circumstances the procedure may or may not be indicated.

- Abscess management
- Abscess removal
- Adrenal tumor removal
- Amputation
  - Extremity
  - Penis
  - Hemipene
- Anastamosis
- Aural abscess removal
- Beak repair/reconstruction
- Biopsy
  - Dermal
  - Visceral
- Bite wound repair
- Caesarian
- Cloacalpexy
- Cryosurgery
- Cutaneous parasite removal
- Cystotomy
- Cystectomy
- Dental surgery
- Dental scaling
- Dental trimming
- Descenting
- Egg removal

- Endoscopy
    - Coelomic
    - Tracheal/Upper airway
    - Cloacal
    - Gastro-intestinal
    - Nasal
    - Intubation
- Enterotomy
- Enucleation
- Esophageal tube placement
- Exploratory abdominal
- Exploratory coeliotomy
- Gastrotomy
- Laser surgery
- Mammary tumor removal
- Orchiectomy
    - Scrotal
    - Pre-scrotal
    - Abdominal
- Orthopedic surgeries
    - Pinning
    - Plating
    - Splinting
    - Bandaging/external coaptation
    - Luxation reduction
    - Plastron/Carapace traumatic injuries
- Ovariohysterectomy
- Pancreatic tumor removal
- Prolapse repair
    - Hemipene
    - Penis
    - Oviduct
    - Colon
    - Cloaca
    - Bladder
- Radio surgery
- Salpingectomy

- Salpingotomy
- Salpingohysterectomy
- Soft tissue mass removal
- Thymoma removal
- Tracheal intubation
- Urethrotomy

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