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Selected Abstracts from the Literature

Morphological analysis of the digestive tract of cockatiels (*Nymphicus hollandicus*)-oesophagus to colorectum. Marques ALR, Oliveira IJ, Mamgue VE, et al. *Anat Histol Embryol*. 2025;54:e70007.

Cockatiels (*Nymphicus hollandicus*) are commonly kept as pets. Because of their popularity, it is essential that veterinarians develop a basic understanding of their anatomy and physiology. In this article, the authors described the digestive tract of these Australian psittacine birds. Because this species is commonly presented for gastrointestinal disease (e.g., crop stasis, regurgitation, diarrhea), this basic knowledge can guide the veterinarian with their treatment. Post-mortem dissections of 6 cockatiels were performed to characterize the gross and histological anatomy of the birds' digestive tracts. A high degree of variation was reported for some sections of the gastrointestinal tract. The esophagus was divided into 2 sections: a cervical component with the ingluvies and the coelomic component. Mucosal folds and a stratified non-cornified epithelium were found in the esophagus and ingluvies. Submucosal glands were observed in the coelomic esophagus but not the cervical esophagus. As expected, the stomach was subdivided into glandular and muscular components. Simple columnar epithelium with PAS+ cells and gastric glands were found in the proventriculus, whereas a gastric cuticle, simple columnar epithelium with branched tubular glands, and muscular layers organized in inner circular and outer longitudinal bundles were found in the ventriculus. The intestines of the cockatiels were subdivided into the small intestine (duodenum, jejunum, ileum) and a short, large intestine (colorectum). Simple columnar epithelium with goblet cells and simple tubular glands were found in the tunica mucosa and lamina propria of the small intestine. Simple tubular glands and circular smooth muscles were also found in the large intestine. Numerous lymphocytes were observed in the lamina propria, likely serving a much-needed role because of the absence of lymph nodes in birds. While the histological characteristics of the cockatiel gastrointestinal tract were consistent with other avian species, species-specific differences were noted.

Variation in air sac morphology and postcranial skeletal pneumatization patterns in the African grey parrot. Lawson AB, Martinez A, Hedrick BP, et al. *J Anat*. 2025;246:1–19.

Psittacine birds are routinely presented to veterinarians for respiratory disease. While we may have a general understanding of their respiratory anatomy, there remains more we can learn, especially differences between species. The lower respiratory system of birds includes a complex interaction between the pulmonary tissues, air sacs, and skeleton. To date, there has been limited study characterizing within species descriptions of anatomical variation for these features, particularly for skeletal pneumatization, which are essential for establishing a baseline for evaluating between species variation. In this study, micro-computed tomography scans of live and deceased African grey parrots (*Psittacus erithacus*) were used to assess the within species variability for the lungs and air sacs, as well as the attachment of the air sacs to the skeleton through the pneumatic foramina. The authors found that the 2 pairs of caudal most air sacs were asymmetric and varied in size and position. Moreover, the pneumatic foramina were more variable for midline, non-costal skeletal elements compared to other pneumatized bones. The results of this pilot study suggest that veterinarians should consider within species differences in the lower respiratory tracts when interpreting diagnostic tests, such as computed tomography.

Estimated and in vivo measurements of bite force demonstrate exceptionally large bite forces in parrots (Psittaciformes). Harrison SL, Sutton GP, Herrel A, et al. *J Anat*. 2025;246:299–315.

If you have ever been bitten by a parrot, you know they can exert some bite force. While as veterinarians we may think that parrots developed large beaks to inflict pain, they serve a much more important function. The morphology of the beak (jaws) can provide insight into the types of dietary items that a bird consumes. For example, when comparing a parrot to a raptor, it is obvious that these two groups pursue different food types. Bite force represents the force exerted by the jaw musculature and applied via the skeleton. While bite force has been studied in a variety of taxa, research on Psittaciformes is limited. The purpose of this study was to calculate bite force for a range of parrot species of varied sizes. The analysis investigated allometric relationships between body size and calculated bite force. The authors found that bite force was positively allometric relative to body and skull mass. Macaws evaluated in this study were found to have the strongest bite on record for a bird. There was no statistical difference between calculated and measured values

for bite force. Muscle scars from the adductor muscle attachment on the mandible could also be used to accurately predict bite force in parrots. Biologists and veterinarians can use these findings to better understand how parrots process hard food items.

Cutaneous disorders in captive psittacines, a retrospective study of 1454 cases at a university veterinary teaching hospital (1988–2021). White SD, Beaufrère H, Guzman D, et al. *Vet Dermatol*. 2025; doi: 10.1111/vde.13320

Psittacines birds are commonly kept as pets and in zoological institutions. Because of their popularity, psittacine birds are routinely presented to veterinarians for a variety of disease conditions, including dermatologic conditions. Retrospective studies are an excellent method for identifying trends in disease presentations and potential risk factors associated with diseases. The authors of this study conducted a cross-sectional study utilizing the medical records for psittacine birds presented to the University of California-Davis (Davis, CA, USA) between 1988-2021. Birds diagnosed with dermatologic disease were included in the study. A total of 3472 psittacine bird cases were screened and 1454 (41.9%) had dermatologic disease. Pododermatitis (n = 729) and feather destructive behavior (FDB; n = 528) were the most common reasons for presentation. Older females were found to have higher odds of developing FDB, as well as birds from the genera *Cacatua*, *Psittacus*, *Ara*, and *Agapornis*. Older members of the genus *Agapornis* were also associated with higher odds of developing pododermatitis. Mites were the most common infectious disease identified in this population of birds; budgerigars were the primary group impacted by mites. In the case of mites, being older was found to be protective against infestation. Based on the high prevalence of dermatologic conditions found in this cohort of birds, it is important to thoroughly examine psittacine birds for dermatologic conditions as a part of their routine examination.

Chlamydial infections in free-ranging raptors presenting to a university veterinary medical teaching hospital (1993–2022). Hawkins MG, Blair E, Keel MK, et al. *Am J Vet Res*. 2025;8:1–10.

Chlamydiosis is an important disease of birds because of the morbidity and mortality it causes across species, and because of its zoonotic potential. The authors of this study measured the prevalence and risk factors associated with this disease, and described the clinical findings and lesions observed in positive birds. A cross-sectional study was performed by retrospectively reviewing medical records for raptors admitted to the University of California-Davis veterinary medical teaching hospital from January 1993 through April 2022 and tested for *Chlamydia* spp infections using molecular and culture methods. Multivariable logistic regression was used to measure potential associations between *Chlamydia* spp infection status and various risk factors, including age class, species, sex, and season of admission. The prevalence for cases that tested positive for *Chlamydia* spp on 1 or more diagnostic tests was 1.9% (74/3983). The positive cases were all from the genus *Buteo*. Age and season of admission were significant risk factors, with higher odds of infection found in juvenile birds and birds presenting in the winter. All affected birds were in poor body condition. Postmortem examinations of *Chlamydia*-positive birds frequently found intracellular bacteria in the liver, kidneys, spleen, and respiratory system. The results of this study found that the prevalence of disease was low in these birds; however, age and season of admission were important risk factors. Because of the zoonotic potential of this bacterial pathogen, it is important for biologists, rehabilitators, and veterinarians working with raptors to take appropriate biosecurity precautions to limit the likelihood of transmitting this disease.

First assessment of the prevalence of haemosporidian infections in Accipitriformes raptors in Greece. Markakis G, Palinauskas V, Aželytė J, et al. *Parasitol Res.* 2025;124:2.

If you have ever screened blood smears from wild raptors, you have probably observed haemosporidians. These vector-borne parasites parasitize the blood cells and internal organs of various animal species, including raptors. Members from the genera *Plasmodium*, *Haemoproteus*, and *Leucocytozoon* are commonly seen in raptors. While these parasites are common in raptors across the globe, limited data is available for many raptor species in Greece. In this study, the authors measured the prevalence and described the geographical distribution of haemosporidian infections (primarily *Leucocytozoon* sp and *Plasmodium* sp) in the common buzzard (*Buteo buteo*) and the Eurasian sparrowhawk (*Accipiter nisus*) in Greece. The birds selected for this study were from a Greek wildlife rehabilitation center. Blood samples were collected from the birds, stained with Giemsa, and reviewed under light microscopy. DNA samples were also extracted from each blood sample and screened for the presence of mitochondrial cytochrome b gene using a nested PCR protocol. All positive samples were subjected to sequencing. In total, 62 common buzzards and 26 Eurasian sparrowhawks were included in this

study, and the prevalence of haemosporidian infection by morphological and molecular examination was 59% and 73.9%, respectively. Binary logistic regression found that *Leucocytozoon* spp. was the most common hemoparasite, but that most cases were mixed infections. These findings reinforce the commonness of these parasites, and screening for them should be done as part of a routine examination for wild raptors.

Middle ear mechanics in the barn owl. Peacock J, Benson MA, Field DJ, et al. *J Morphol.* 2025;286: e70020.

It is well recognized that owls manage their surroundings using their elaborate hearing, and while barn owls (*Tyto alba*) are a commonly used model for auditory science due to its exceptional capacity for high frequency hearing, the function of its middle ear is poorly studied. In this study, the authors used laser Doppler vibrometry and direct measurements of inner ear pressures to characterize the middle ear transfer function in barn owls. The study found that the barn owl middle ear produces a pressure gain between the ear canal and the inner ear vestibule of up to 35 dB, which is comparable to mammals. The footplate velocity transfer function magnitudes overlapped with those measured in other bird species; however, differences in the phase between the footplate velocity and the sound pressure stimulus found a middle ear group delay that was notably shorter than other birds. These results provided more insight into characterizing the physiology of hearing in a model organism in auditory science.

Assessing mitigation translocation as a tool to reduce human-great horned owl conflicts. Washburn BE, Massey BJ, Sonnek AC, et al. *Environ Manage.* 2025; doi: 10.1007/s00267-025-02114-4

Great horned owls (*Bubo virginianus*) are highly adaptable nocturnal hunters that inhabit wide-ranging territories. Because of urban sprawl and human encroachment, human-owl conflicts are common. These types of negative interactions include the killing of poultry, domestic pets, and other wildlife, as well as posing a hazard to safe aircraft operations. Managing these conflicts can be challenging because of the times of day these birds are active, and because they adapt to a variety of habitats. In this study, the authors measured the impact of great horned owl collisions with civilian aircraft. To minimize these interactions, birds are often translocated away from airports. The goal of this study was to determine whether biological and logistical factors influenced the return rate of great horned owls following a mitigation translocation from 13 civil airports and 3 military airfields during 2013-2023. Great horned owls (n = 1,020) were live trapped, banded, and translocated various distances from the airfields, and the airfields monitored for returning owls. Binomial-distributed generalized linear models were used to analyze the data. The return rate of translocated great horned owls was low (2.6%), and there was no evidence that the biological or logistical factors influenced great horned owl homing behavior. Based on these results, management programs that use release sites 40 km from the conflict location and translocate individual owls only once can increase program efficacy by minimizing homing behavior and decreasing implementation costs.