

European College of Zoological Medicine



POLICIES & PROCEDURES, PART 2: AVIAN SPECIALTY

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The European College of Zoological Medicine (ECZM) recognizes five separate specialties under the ECZM umbrella; Avian, Herpetology, Small Mammal; Wildlife Population Health and Zoo Health Management.

The avian specialty Policies & Procedures, Part 2 document follows the structure below:

Chapter 1: Introduction

Chapter 2: Requirements for admission to the European College of Zoological Medicine

Chapter 3: Avian Residency Programmes

Chapter 4: Examination Credentialing and Application Procedure

Chapter 5: Avian Approved Residency Training Sites

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Appendix 1: ECZM-avian self-assessment checklist for approval of residency training sites

Chapter1: Introduction

Zoological medicine, the state of the art medical treatment and care of zoological species, other than the traditional domestic animals, is a distinct specialized field of veterinary medicine, which is subdivided into specialties according to the taxonomical group or discipline in which the specialist is acknowledged. The European College of Zoological Medicine (ECZM) is an umbrella organization which aims to include veterinary medicine of animal species other than the traditional domestic species.

The ECZM evolved from the European College of Avian Medicine and Surgery (ECAMS), which was founded in August 1993. ECAMS was founded according to the guidelines laid down in the Report and Recommendations on the Transnational Organisation of Veterinary Specialisation (III/F/5385/5/91), which was adopted by the Advisory Committee on Veterinary Training of the European Commission at its meeting on 12th February 1992. The ECAMS was an initiative of the European Committee of the Association of Avian Veterinarians, which in turn resulted from initiatives in the late eighties/early nineties in Europe and other non-European countries (i.e. USA, Australia, Israel) in response to a growing demand for better avian medical and surgical services for birds through specialization, and a need to harmonize certification in this area. In 1995, ECAMS gained full recognition of the EBVS. As a reaction to requests from the veterinary field directed at the European Board of Veterinary Specialisation (EBVS) to develop specialties in fields of zoological medicine other than the avian field, negotiations were initiated between representatives from EBVS, ECAMS and the European Association of Zoo and Wildlife Veterinarians (EAZVW) and other interested parties. The need for specialization in various taxonomical fields was recognized to safeguard future developments in zoological medicine, as well as to increase the public's recognition of this field of veterinary medicine. Finally ECAMS took the initiative, seeking permission of EBVS, to change its name to the ECZM, then forming a series of taxonomic and discipline Specialities, within the umbrella organisation of ECZM. Approval for this concept was agreed in principle by EBVS at their AGM in April 2008. In principal EBVS judged this to be a good idea and based on this EBVS judgement an official decision was made at the 2008 Annual General Meeting of ECAMS to broaden the scope of the college to include other taxonomic groups of animals and change the name of the College into European College of Zoological Medicine.

As a taxon related discipline the Avian Specialty is clinically oriented and involves various medical and surgical disciplines and various body systems within the avian taxon. Avian medicine, the state of the art medical treatment and care of avian species, other than the traditional (commercial/farmed) poultry, is a distinct specialized field of veterinary medicine. Diplomates in avian medicine and surgery work primarily as clinicians who are concerned with all aspects of diagnosis and management of diseases of birds other than commercial poultry (i.e. companion birds such as psittacines and passerines, ornamental birds, zoo and aviary birds including penguins, flamingos, ratites, waterfowl, racing pigeons, birds kept for falconry, free-range birds,).

The primary objective of the College is to advance avian medicine in Europe and increase the competency of those who practice in this field by:

- a) Establishing guidelines for post-graduate education and experience prerequisite to become a specialist in the specialties of avian medicine.
- b) Examining and authenticating veterinarians as specialists in the avian specialties to serve their respective patients, their owners and the public in general and by providing expert care.
- c) Encouraging research and other contributions to knowledge relating to avian medicine and promoting communication and dissemination of this knowledge.
- d) Promoting Diplomates of the College as European Veterinary Specialists in Zoological Medicine (*avian*).

- e) Promoting avian medicine within the veterinary student curriculum.
- f) Promoting continued improvement of practice standards and knowledge in clinical avian medicine through continuing education, and self-assessment.
- g) Promoting wise stewardship, responsible management, sustainability and preservation of captive and free-ranging avian species and their habitats.
- h) Improving and promoting the structure of health care for birds, thereby improving its perception and understanding by owners, veterinary practitioners
- i) Promoting the prevention of zoonoses and other ailments associated with avian species.

A further objective is to increase awareness of avian medicine in the veterinary and allied professions, and the public by promoting the benefits that members of the College can bring locally, nationally and internationally on all issues relating to the health, welfare, diseases, zoonoses and biosecurity as they relate to avian care, management, and medicine.

Chapter 2: Requirements for admission to the European College of Zoological Medicine

The requirements for admission to the College as a Diplomate and being a Specialist are specified in the Bylaws of the College, in line with the Policies and Procedures determined by the EBVS. The requirements listed below are a condensed version Chapter 4 of the Policies and Procedures, Part 1: General Information and the requirements found in Article 4 in the ECZM Constitution.

Diplomates of the avian specialty appointed by the College are veterinarians who:

- Have demonstrated fitness and ability to practise avian medicine and surgery by meeting the established training and experience requirements as assessed by the College, including publication requirements.
- Have attained acceptable scores in the avian examination.
- Demonstrate moral and ethical standing in the profession and practise scientific, evidence-based veterinary medicine, which complies with animal welfare legislation.
- Practise avian medicine and surgery for at least 60% of their time, based on a 40 hour working week (i.e > 24 hours/week).
- Are re-evaluated every 5 years using a standard re-certification process.

Each individual who satisfies the above requirements shall be authorized to use the designation of Diplomate of the European College of Zoological Medicine (*Avian*), abbreviated to DipECZM (*Avian*). The individual is also awarded, by the EBVS, the title of European Veterinary Specialist™ in Avian Medicine and Surgery, following successful re-evaluation every 5 years.

Each Diplomate is expected to actively participate in the scientific and business affairs of the College.

Further information on specific requirements for prospective candidates is also found in the ECZM Policies and Procedures, Part 1: General Information.

Chapter 3:ECZM Avian Residency Programmes

The Residency Programme will focus primarily on birds other than commercial poultry and prepare the Resident for examination in that discipline.

3a) General Objectives of the Avian Speciality Training Programme

- The avian specialist is a professional that has an extensive knowledge regarding the avian taxonomy, anatomy and physiology, avian husbandry and management techniques, as well as biology, health and welfare of both free-living and captive birds (excluding commercial poultry). He/she has a great in-depth knowledge of the use and application of clinical laboratory diagnostic techniques, as well as current, state-of-the-art diagnostic and surgical techniques employed in avian medicine and surgery, including their indications and contraindications, and is capable of making decisions and recommendations about their need in both routine and emergency cases as well as manage individual and flock-related issues according to the highest standards in the field, from both a therapeutic and preventive perspective.
- Comprehensive knowledge of general anatomy, physiology and immunology is expected. The avian specialist should be aware of important variations between the different orders of birds, understanding the natural history, particularly in regard to their feeding habits and nutritional requirements. Also which of these birds is territorial (all the time or only when breeding) and which is potentially aggressive and predatory.
- The candidate must be able to assess diets, understand the formulation of diets for birds and be aware of the current trends in nutrition. They must have a sound knowledge of the interaction of nutrition & health. An avian specialist should be familiar with the various aspects of husbandry and management, including propagation, neonatal and developmental care.
- Genetic principles and their application in birds must be understood by the specialist. A detailed knowledge of the diseases of avian patients (aetiology, epidemiology, pathology, diagnosis, treatment and control) is required. It is not sufficient to know the pathogens responsible for the disease, but it is also important to have knowledge on which types of disease occur more commonly in various groups. Also to have a knowledge of which pathogens infect a wide range of species including humans across the taxonomic range. The avian specialist needs to know the gross pathology of each disease but will realise that a specific diagnosis can only be confirmed by using appropriate laboratory techniques.
- Specialists must be familiar with common toxins which are most likely to affect birds. They must know the clinical signs these toxins produce and be familiar with the differential diagnosis. Specialists will need to know which body tissues and specimens are required by a laboratory for the identification of the toxin. It is important that the clinician is adept at gathering circumstantial information in cases of poisoning.
- It is necessary to have a general knowledge of the legislation affecting the field and a detailed knowledge of the legislation relating to the role of the veterinary practitioner in the field (e.g. CITES, legislation with regard to import and export of birds, animal welfare, legislation regarding animals, their nests, eggs and other derivatives as relevant. Wild bird protection, legislation on hunting and capture of birds, the use of drugs and immunobiologicals).

- The avian specialist should have had extensive practical experience with a wide variety of species, taking into account all the different ways birds may be kept, depending on their use and situation.
- The specialist must be competent in the various skills associated with the field including history taking, catching and handling birds, and clinical examination of individual or groups of animals for assessment of clinical condition, for clinical pathology sample collection, vaccination and medication methods (including tube-feeding) and in addition anaesthetic and surgical procedures.
- A detailed knowledge of the advanced diagnostic possibilities in avian medicine (e.g. haematology, blood chemistry, endocrinological tests, immunology tests, diagnostic imaging, including radiography, ultrasonography and contrast studies, diagnostic endoscopy, electrocardiography, aspiration biopsy, parasitology, microbiology, cytology) and the ability to interpret results of these techniques is expected.
- Avian specialists must have sound knowledge of the principles of individual and group medication of their patients. This includes knowledge on the pharmacokinetics and bioavailability of drugs which are suitable for treating their avian patients and also the various methods of administration.
- The avian specialist should be familiar with the techniques of radio-surgery and know about such routine techniques as endoscopy and beak repair, the principles of orthopaedic surgery, surgery of the gastrointestinal tract, the respiratory tract and reproductive tracts, etc. A specialist in avian medicine shall be able to handle emergencies in birds.

3b) Prerequisites for specialty training

Details of the training required prior to undertaking a residency programme can be found in section 5.2 of the Policies and Procedures, Part 1, General Information.

In summary, this first period must be a one year rotating multi-disciplinary internship (in any species) or 2 years in general practice. This period of training must be approved by the Education and Residency prior to starting a residency training programme, but *pre-approval* of this training period is not required.

3c) Residency programme description

A second period shall comprise a three-year (minimum) postgraduate training programme (standard residency) or an alternate programme under supervision of an avian Diplomate of ECZM.

The specific requirements for a standard residency programme or an alternate route can be found in chapter 5 of the Policies and Procedures, Part 1: General Information and, in particular sections 5.3 – 5.6.

This period is designed to educate the resident primarily in the art and science of avian medicine. There shall be instruction in avian anatomy, physiology, diagnostic imaging, anaesthesiology, ophthalmology, clinical pathology, surgery, clinical nutrition, epidemiology, preventive medicine, and gross pathology.

A. Avian medical service rotations facilitate the development of the knowledge, skill, and

proficiency via exposure to a wide variety of respective diseases together with the guidance and collaboration of avian specialists.

1. At least 60% of the 3 year residency programme must be spent on an avian medical and surgical service under the direct supervision of an ECZM avian Diplomate.
2. Resident responsibilities: the degree of responsibility assumed by the Resident shall be appropriate to the nature of the procedure and training experience. The Resident on an avian medical and surgical service shall be responsible for:
 - a) Receiving clinic appointments.
 - b) Supervising daily management of hospitalized animals.
 - c) Participation in clinical teaching
 - d) Providing optimal clinical service and prompt professional communications.
3. The case load of the institution must be large enough to afford the candidate adequate exposure to all required phases of practice of the avian specialty. The minimum acceptable number of accessions will depend upon the difficulty of the problem and the extent of treatment provided, but should consist of at least 10 (ten) avian cases per week. Relevant group site visits/consultations should be a part of the caseload. In case that important avian species are underrepresented a collaboration with other institutes should be considered.

While a minimum case load is necessary to develop clinical experience, the candidate must also be provided with sufficient time to evaluate patients properly, to study, and to participate in rounds, workshops, work with other Board Certified Specialists and to lecture. This should be a minimum of 4 hours a week.

B. Anaesthesiology, diagnostic imaging, surgery, commercial poultry and pathology service rotations:

1. **Anaesthesiology:** During the residency period the Resident must obtain a total of two (2) weeks (equals 10 working days) of training under the supervision of a Diplomate, European or American College of Veterinary Anaesthesiologists or their equivalent.
2. **Diagnostic imaging:** During the residency period the Resident must obtain a total of at least two (2) weeks (equals 10 working days) of training under the supervision of a Diplomate, European or American College of Veterinary Diagnostic Imaging or their equivalent
3. **Surgery:** A one (1) month (equals 20 working days) instruction and training on basic surgical principles, radio-surgery and microsurgery under the supervision of Diplomate European or American College of Veterinary Surgery, or their equivalent, is required during the residency period.
4. **Avian pathology:** Additionally, the resident must write up 30 pathology reports of avian patients. Post mortem examinations of these cases have preferably been performed by the residents themselves but require the resident to at least have been present at the time of necropsy or having seen the bird as a clinical case. All cases should furthermore have been supervised by a

Diplomate European or American College of Veterinary Pathology (or their equivalent, as approved by the Education and Residency Committee). The reports should subsequently be complemented by the resident with a discussion of the results in relation to the clinical symptoms and treatment. Only pathology examinations including at least histology but preferably also further examination techniques (special stains, microbiological examinations, etc) are accepted for pathology case reports.

5. **Commercial poultry medicine:** Knowledge and skills concerned with the practice of commercial poultry medicine should include theoretical and practical training, preferably in cooperation with Poultry Health Department for four (4) weeks (equals 20 working days) under the supervision of a European or American Diplomate, or their equivalent). A specialist in avian medicine and surgery must have a working knowledge of those aspects of poultry medicine which are applicable to the specialty avian medicine and surgery; must be acquainted with the most common poultry diseases. This training should enable the Diplomate to perform diagnostic and therapeutic procedures in backyard poultry (i.e. non-commercial Anseriformes and Galliformes) and to take actions on the basis of knowledge of legislation, preventive medicine, zoonoses, nutrition and husbandry.
- C. Emergency duty: the resident must participate in an avian medical and surgical emergency service.
 - D. Residents must spend at least 20% of their Programme in any or all of the following ways:
 1. Research or clinical investigation.
 2. Preparation of scientific manuscripts.
 3. Graduate degree studies.
 4. Anaesthesiology, diagnostic imaging, surgery, pathology, and commercial poultry external service rotation requirements.
 - E. Study and education
 1. A minimum of fifty hours of formal continual professional development (CPD) is required per year. This may be within the residency training site, or at local, regional and national avian meetings.
 2. Required attendance: during medical service rotations, the Resident is required to attend avian clinical pathological rounds or resident rounds, internal CPD such as journal clubs and avian ward rounds. The aforementioned are recommended on a weekly basis but are formally required twice-monthly.
 3. Optional attendance: the following conferences are recommended for attendance:
 - a. Conferences relevant to birds
 - b. Poultry disease conferences
 - c. Veterinary internal medicine conferences
 - d. Veterinary anaesthesiology conferences.
 - e. Veterinary diagnostic imaging conferences.
 - f. Veterinary pathology conferences.
 - g. Veterinary surgery conferences.

H. Documentation

The resident is responsible for maintaining and timely submission of the reporting package to the Education and Residency Committee as described in Policies and Procedures; Part 1, sections 5.6.

The avian specialty is considered a clinical residency program and therefore follows the report submission frequency 3-3-6-6-6-6 months (Policies and Procedures: Part 1, section 5.6.1). The reports must be maintained and submitted in the officially approved specialty report templates as described below:

1. Medical and Surgical Case Log

A medical and surgical Case Log must be maintained by the Resident listing the case number (running total), date of initial presentation, clinical number, species, clinical signs, organ system involved, medical or surgical procedures performed (including findings of diagnostic tests), tentative/differential and/or final diagnosis, treatment initiated and outcome of the case.

In addition, the Resident will designate whether the case presented as an elective/routine visit or emergency case, whether the case was supervised by a Diplomate or no, and what the Resident's responsibility was with regard to the case (i.e., assistant or primary clinician). The Resident may be considered to be the primary clinician when that individual can document a significant role in all of the following aspects of management: determination or confirmation of the diagnosis, provision of preoperative care, selection and performance of appropriate operative procedure, direction of the postoperative care, and accomplishments of sufficient follow-up to be acquainted with the course of the disease and the outcome of its treatment.

Where a case is seen several times, all follow up visits should appear with the initial examination, although dated as the date of each examination.

In addition, the Resident must list unexpected complications (morbidity/mortality) in the Case Log, if they have occurred (including details/reason for the unexpected morbidity/mortality, if known). For any patient that has died and a necropsy has been performed, the resident should list these findings in the Case Log as well (including gross necropsy findings as well as findings of additional tests such as histopathology, cytology, culture and sensitivity and the post mortem diagnosis)..

2. Resident Procedures Log

A Resident Procedures Log must be maintained which lists a running total of special procedures performed. Special procedures are those diagnostic or treatment procedures required beyond routine physical examination, such as, blood chemistry and haematology, culture and sensitivity testing, cytology, biopsy collection and histopathology, radiology, ultrasonography, endoscopy, anesthesia (with facemask or intubation), orthopaedic and soft-tissue surgery

3. Resident Activity Log

A Resident Activity Log is maintained which includes an overview of the (internal) continuing

education followed by the Resident, as well as any presentations and publications of the Resident.

This continuing education to be listed in the log includes all (inter)national conferences, seminars and lectures attended by the Resident, including details of those meetings (date, occasion, location, duration, topic and speakers).

Any presentations/lectures given by the Resident, as well as the peer-reviewed publications of which the Resident is listed as a first or co-author, should also be included in this log, including details with regard to the lecture (date, location, occasion, audience, duration, topic) or publication (list of all co-authors, title, journal and full bibliographic details).

4. Resident Pathology Log

This is required to document the post-mortem cases as described in section 3cB.4 above.

5. Resident Log and Programme Summary Form

The Resident Log Summary form provides a summary of the cases seen per year by the Resident throughout the Training Period, including the total number of cases by system, the number of surgical and medical cases, the number of routine and emergency cases, a summary of residents role in these cases (assistant or primary), and a summary of the number of cases that have been supervised.

6. Resident Progress Report

This Progress Report contains a summary of the residents activity throughout the residency period and includes an up-to-date overview of the residency, including the % of supervision, total number of cases seen so far, days of specialist training that have been completed in the various disciplines, hours of completed CPD, number of international conferences attended and progress with regard to the research project, number of publications in peer-reviewed journals and presentations/lectures.

7. Supervisor Progress report

Similar to the Resident, the Resident Supervisor will also submit a Supervisor Progress Report to the Education and Residency Committee, in which the Supervisor states that he/she has seen and verified the Case Log submitted by the Resident, as well as his/her expectations with regard to completion of the residency and additional concerns and/or actions to be taken.

In addition, the resident is required to complete an annual **Residency Evaluation Form**. This is submitted to the Chair of the Education and Residency Committee, and gives the resident an opportunity to evaluate the residency programme they are taking part in. The information is strictly confidential and if problems are raised, the Chair will contact the resident privately to discuss things further.

Late submission of reports may be subject to sanctions as detailed in section 5.6.3 of the Policies and Procedures; Part 1; General Information.

3d) Facilities Required for Residencies

- A. Imaging services: separate rooms and appropriate equipment for comprehensive diagnostic imaging and darkroom processing must be available where applicable, or digital diagnostic imaging can be used. A 33 MA 125 KVP radiographic machine is a minimum for adequate examination. Suitable plates and viewers, labelling, recording and filing/documenting of all radiographs. Safety monitoring is mandatory.
 Ultrasonographic equipment (suitable for avian patients)
 ECG
 Endoscopy equipment for internal visualisation and biopsy collection
 In addition fluoroscopy, knowledge about MRI and CT.
 Equipment must be used by and interpretation conducted by residents.
- B. Pathology services: Clinical pathology: a clinical pathology laboratory for haematology, clinical chemistry, microbiology, and cytological diagnosis must be available either by internal or external laboratory. Clinical pathology reports must be retained and retrievable.
- Morphologic pathology: A separate room for gross pathologic examination must be available. Facilities for histopathological examination of necropsy tissues must be available either by internal or external laboratory. Anatomic pathology reports must be retained and retrievable.
- C. Medical and surgical facilities:
1. Clinical examination rooms: the examination rooms must be designed, constructed, used, and maintained consistent with the current concepts of practice. They must be sufficient in number and size to accommodate the case load.
 2. Treatment areas: Areas for intensive care, special procedures, isolation, and good nursing must be available. Intensive care units with heat control and oxygen delivery system (e.g. in the form of a human incubators) are mandatory, as well as facilities for fluid therapy including a supply of intraosseous cannulas. Consideration to biosecurity and control of pathogen spread between patients is advisory: Hospitalisation facilities, with control of contagious agents.
 Suitable enclosures (size, temperature, humidity), perches and visual seclusion where required, in-patient recording system, including daily weights and medication.
 3. Operating room: the operating rooms must be designed, constructed, used and maintained consistent with current concepts of veterinary surgery. The surgery room(s) must be sized adequately for the patient, staff, and associated equipment. Emergency lighting must be available. In accordance with modern standards, the separate theatre should only be used for surgical procedures. .
 4. Isolation facilities/Quarantine areas including appropriate consideration to biosecurity and control of pathogen spread between units must be present and individually equipped. Hospitalisation areas ensuring good nursing must be available with consideration to biosecurity and control of pathogen spread between patients.
 5. Anaesthetic and critical care equipment: appropriate anaesthetic and critical care equipment must be available. An isoflurane vaporizer with an adequate scavenging system is mandatory. Routine monitoring of surgical patients with respiratory or

cardiac monitors is required.
Range of induction masks, agents and suitable circuits
Suitable volatile and parenteral agents are essential.
Sterilised air sac canulation equipment.
Ready to hand emergency resuscitation equipment
Record of anaesthetic difficulties.

6. Surgical instrumentation: a full complement of general and special instrumentation for diagnostic and surgical procedures must be available. Ophthalmologic equipment and orthopaedic instrumentation sufficient for current standards of practice must be present.
Surgical equipment:
Soft tissue: radio-surgery including bipolar must be available and in use. Haemoclips.
Magnification and good illumination is essential.
Micro-surgical instruments (suitable numbers, quality etc.)
Suitable suture materials
Suitable sterilisation methods and verification techniques
Orthopaedic: Suitable pins (threaded), wire, ESF fixators, drill (+shroud), splints.
7. Sterilization: steam and/or heat sterilization of surgical instrumentation and supplies must be available, and the sterilization capacity must be commensurate with the avian caseload.

D. Library/ Documentation

Medical library: a library containing recent textbooks and current journals relating to avian medicine and its supporting disciplines must be immediately accessible to the Resident (working collection). All books and journals on the reading list should be accessible to the resident and available in the institution that runs the residency program.

Medical records: a complete medical record must be maintained for each individual case and rapid retrieval of information about any patient or flock should be possible. The problem oriented medical record (POMR) system is recommended

Photography: photographic equipment (including video) for the documentation of disease must be available.

A summary of the facility requirements can be found in the self-inspection form in appendix 1.

Chapter 4: Examination Credentialing and Application Procedure

Examination Credentialing

The process, documentation, and deadlines required to credential to sit an ECZM examination is detailed in chapter 6 of the Policies and Procedures, Part 1: General Information.

Listed below is a **summarized** version of that section with reference to specific avian specialty requirements. Applicants are advised to refer to **BOTH** this list and section 6.4. of the Policies and Procedures, Part 1: General Information, in order to submit a complete application for examination credentialing.

- **Covering Letter**
- **Curriculum Vitae**
- **Reference letter(s)** from the programme supervisor(s) of each institution involved in the training programme.
- **Documentation logs.** For avian these include *Medical and Surgical Case Log, Resident Procedures Log, Resident Activity Log, Resident Pathology Log (if needed), Resident Log and Programme summary form*. If the training programme is not yet finished, then the logs must be complete up to the time of application.
- **Publications.** Three (3) original peer reviewed papers in avian medicine, published in a well established internationally refereed scientific journal (i.e. mentioned in the Science Citation Index or on the avian specialty reading list). Of one (1) of these papers the applicant must be the principal author and it must be the result of an original research project; of the others, the applicant is not necessarily the principal author. Publications must be already published or fully accepted for publication as evidenced by a letter from the editor. Any publication meeting the above mentioned requirements will be acknowledged if they were published or accepted for publication within the 5 years leading up to credentialing for the examination.

First author co-authorships between different residents will only be accepted under the condition that all first authors can demonstrate an equal contribution to the article and that they worked individually in different parts of the article, but that they present it in a single paper in order to make the article stronger.

Interim arrangement – residents who started their residencies prior to 2018 may choose to credential for the examination using the requirements in place at the time they started their program. This includes 2 publications and 5 case reports as detailed in ECZM Policies and Procedures, Part 2; Avian Specialty, edited October 2016 (available on request). They may also chose to credential for the examination using the updated requirements listed above but NOT a mixture of the requirements.

- Any relevant previous correspondence relating to the training programme and application.
- Evidence of payment of **Credentialing for Examination fee**.

The application materials must be arranged as detailed above and sent electronically to the ECZM Secretary before the deadline. Any subsequent correspondence should be through the Secretary unless advised otherwise. All submitted application materials become the sole property of the ECZM and will not be returned to the applicant.

Applying for and sitting the examination

The avian specialty examination and application process follows the general format of all College examinations as detailed in **Chapter 7** of the Policies and Procedures, Part 1: General Information. Candidates are advised to read that chapter alongside this section, so they are fully informed about all aspects of the application and examination.

The avian specialty examination will aim to test all aspects of avian medicine and surgery. It will be composed of two sections:

- The first section consists of 100 multiple choice questions each worth one point (total available this section; 100 points). Each multiple-choice question consists of two parts: the stem and the responses. The stem is the introductory statement or question. The responses are suggested answers that complete the statement or answer the question asked in the stem. For each question, there is one correct response, and 4 distractors. The MCQ examination is 3 hours in duration only, with no additional perusal time.
- The second part is the practical/written part of the exam and contains 27 questions spread across 9 “stations”, with 3 separate questions at each station. The questions relate to appropriate avian clinical or management situations. Each question will be read or shown to the candidate and 20 minutes will be given to answer before moving on. After all questions have been seen, a further review period of 20 minutes will be allowed, where the candidate can return to any station, before the exam papers are handed in to the examiner. Each question is worth 10 points (total available this section; 270 points).

The integrity of the Diplomate status examination will be maintained by the European College of Zoological Medicine to insure the validity of scores awarded to candidates.

Obligations for the successful examination candidate and requirements for re-application for an examination, along with all other policies and deadlines regarding the exam are found in **Chapter 7** of the Policies and Procedures, Part 1: General Information.

Chapter 5: Current approved training centres

Louisiana State University, School of Veterinary Medicine, Dept VCS, Baton Rouge, **United States**
Supervisor: Thomas N Tully
ttully1@lsu.edu

Vets Now Referrals , Swindon, **United Kingdom**
Supervisor: Neil A Forbes
Neil.Forbes@vets-now.com

Universität Leipzig, Institute for Avian and Reptilian Diseases, Leipzig, **Germany**
Supervisor: Maria Krautwald-Junghanns
Krautwald@vogelklinik.uni-leipzig.de

Clinic for Zoo Animals, Exotic Pets + Wildlife, Vetsuisse Faculty, University of Zurich , Zürich, **Switzerland**
Supervisor: Jean-Michel Hatt
jmhatt@vetclinics.uzh.ch

Health Sciences Centre, Ontario Veterinary College, University of Guelph , Guelph, **Canada**

Supervisor: Hugues Beaufriere
h.beaufriere@gmail.com

Faculty of Veterinary Medicine, Division of Zoological Medicine, Utrecht University, Utrecht, **The Netherlands**

Supervisors: Nico Schoemaker, Yvonne Van Zeeland and Ineke Westerhof
N.J.Schoemaker@uu.nl, y.r.a.vanzeeland@uu.nl and I.Westerhof@uu.nl

Centre Hospitalier Vétérinaire Frégis , Arcueil, **France**

Supervisor: Minh Huynh
timmean@hotmail.com

Chapter 6: Avian Reading List

This document is intended to assist residents in compiling a list of text books and journals that should be read prior to sitting the ECZM Avian examination. The program/resident supervisor should ensure these are available at the main institution where the resident works, either as part of the university or practice library, or owned personally by the resident or supervisor. It is important that the resident has access to the entire reading list as this forms the basis of the examination. The resident should ensure they have the latest (current years) edition for examination preparation as additional texts and journals may have been added by the examination team.

It is impossible for such a list to be comprehensive and cover all current information on the discipline. It is the resident's responsibility (with the assistance of their supervisor and program director) to ensure they are current on all relevant information in the field.

The reading list will be circulated by the chairperson at least 3 months prior to the AGM for the members of the avian specialty to put forward any up-to-date alterations. Those will then be integrated into the reading list aiming to keep to a page limit of 10,000 pages.

All avian Diplomates are required to refer to the *Nomina Anatomica Avium*, as listed below, for anatomical nomenclature and to Howard and Moore (2003), as listed below, for names of species when writing material for ECZM.

The reading list consists of a Compulsory Bibliographic Reading List and a Consultative Bibliographic Reading List. The up-dated versions can also be found on the website.

Reading list edited in 2016 and valid for the examination in 2017:

Compulsory Bibliographic Reading List

Refereed Journals

Published in the 5 previous years prior to the according exam. Publications related to wild, aviary and pet birds, as well as (backyard) poultry only. Also includes the abstracts from articles from other journals which are not included in the listed journals. (total approx. 4000-4500 p.)

- A. American Journal of Veterinary Research
- B. Avian Diseases
- C. Avian Pathology
- D. Journal of the American Veterinary Medicine Association
- E. Journal of Avian Medicine and Surgery.
- F. Journal of Zoo and Wildlife Medicine.
- G. Journal of Exotic Pet Medicine.
- H. Veterinary Clinics of North America, Exotic Animal Practice.

Books

Campbell TW and Grant K. Avian and Exotic Animal Hematology and Cytology, 3rd edition, Wiley and Blackwell, Oxford, 2007 (142 p.)

Selected chapters

Chapter 1 Hematology of Birds

Chapter 6 Comparative Cytology

Chapter 7 Diagnostic Microscopy Using Wet Mount Preparations

Chitty J and Lierz M. BSAVA Manual of Raptors, Pigeons and Passerine Birds. British Small Animal Veterinary Association, Quedgeley, Gloucester, 2008. (336 p.)

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Selected chapters

Part 3 Surgery

Section 10 Soft tissue surgery

Section 11 Orthopaedic and beak surgery

Part 4 Clinical Syndromes

Section 12 Nutrition and nutritional diseases

Section 13 Systemic infectious disease

Section 14 Respiratory disease

Section 15 Gastrointestinal disease

Section 16 Feather and skin disorders

Section 18 Reproduction and paediatrics

Section 19 Neurology and ophthalmology

Section 20 Systemic non-infectious disease

Section 21 The sick small psittacid

Harrison G and Lightfoot T. Clinical Avian Medicine, Spix Publications, Palm Beach, Florida, 2005 (104 p.)

Selected Chapters

Volume I

Chapter 12 Evaluating and Treating the Cardiovascular System (16 p.)

Volume II

Chapter 21 Preventive Medicine and Screening (14 p.)

Chapter 27 Update on *C. psittaci*: A Short Comment (2 p.)

Chapter 30 Implications of *Macrorhabdus* in Clinical Disorders (10 p.)

Chapter 32 Implications of Viruses in Clinical Disorders (26 p.)

Chapter 39 Management of Canaries, Finches and Mynahs (36 p.)

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Luescher AU. Manual of parrot behaviour. Blackwell publishing, Oxford, 2006. (105 p.)

Selected Chapters

Chapter 10 Hand-Rearing: Behavioral Impacts and Implications for Captive Parrot Welfare

Chapter 16 Clinical Evaluation of Psittacine Behavioural Disorders

Chapter 17 Diagnostic Workup of Suspected Behavioural Problems

Chapter 18 Aggressive Behaviour in Pet Birds

Chapter 19 Parrot Vocalization

Chapter 20 Parrots and Fear
Chapter 21 Problem Sexual Behaviours of Companion Parrots
Chapter 22 Mate Trauma
Chapter 23 Feather-Picking Disorder in Pet Birds
Chapter 24 Psittacine Behavioural Pharmacotherapy

Lumeij JT. Avian Clinical Biochemistry. In: Kaneko JJ, Harvey JW and Bruss ML (ed). Clinical Biochemistry of Domestic Animals, 6th edition, pp 839-872, Elsevier/Academic Press, Amsterdam/Boston, 2008. (33 p.)

Miller ER and Fowler ME, Saunders (W.B.) Zoo and Wild Animal Medicine, Co Ltd; 6th, 7th and 8th revised edition, 2007, 2012, 2014 (resp. 55, 97, and 171 p.)
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Orosz SE et al. Avian Surgical Anatomy, WB Saunders, Philadelphia, 1992. (129 p.)

Ritchie BW, Harrison GJ and Harrison LR. Avian Medicine: Principles and Application, Wingers Publishing, Lake Worth, Florida, 1994. (1170 p.)
Except Section 7 on Comparative Medicine and Management

Samour J (ed). Avian Medicine, 3rd edition, Elsevier, London, 2016. (608 p.)

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Speer B. Current Veterinary Therapy in Avian Medicine and Surgery. Elsevier, 2016. (928 p.)

Tully TN and Shane S.M (eds). Ratite Management Medicine and Surgery, Krieger Publishing Company, Malabar, 1996. (177 p.)

Whittow GC. Sturkie's Avian Physiology, 6th edition, Elsevier, Boston, 2015. (174 p.)

Selected chapters:

Chapter 12. Osmoregulatory systems of birds (15 p)
Chapter 13. Respiration (35 p)
Chapter 14. Gastrointestinal anatomy and physiology (29 p)
Chapter 30. Reproduction in the female (28 p)
Chapter 31. Reproduction in male birds (26 p)
Chapter 6. Stress in birds (41 p)

Consultative Bibliographic Reading List

These texts are considered useful but candidates will **NOT** be specifically examined on these. Other texts listed here may be out of print and difficult to source but are useful if obtainable.

Proceedings

Published in the 5 previous years. Avian publications only

- A. American Association of Zoo Veterinarians.
- B. Association of Avian Veterinarians.
- C. European Association of Avian Veterinarians.
- D. European College of Zoological Medicine (Avian) Scientific Meetings.
- E. European Association of Zoo Wildlife Veterinarians.

Books (Avian sections only)

Altman RB, Clubb S, Dorrestein G and Quesenberry K. Avian Medicine and Surgery, WB Saunders, Philadelphia, 1997.

Anderson Brown AF and Robbins GES. The New Incubation Book, World Pheasant Association, Millenium Edition, Fordingbridge, 2002.

Arent LR. Raptors in Captivity: Guidelines for Care and Management, Hancock House, Blaine, 2007.

Atkinson CT, Thomas NJ, Hunter B. Parasitic Diseases of Wild Birds. Wiley, Ames, Iowa, 2008.

Baumel JJ et al. Handbook of Avian Anatomy. *Nomina Anatomica Avium*, 2nd edition, Nuttall Ornithological Club, Cambridge, 1993.

Bird DM and Bildstein KL. Raptors: Research and Management Techniques, Raptor Research Foundation, Hancock House, Blaine, 2007.

Clements, J. F., Schulenberg, T. S., Iliff, M. J., Sullivan, B. L., Wood, C. L., & Roberson, D. The eBird/Clements checklist of birds of the world: Version 6.7, 2013. Available for free online at: <http://www.birds.cornell.edu/clementschecklist/downloadable-clements-checklist>.

Cooper JE. Captive Birds in Health and Disease, Hancock House, Blaine, 2003.

Del Hoyo J, Elliot A and Christie D (eds). The Handbook of Birds of the World, Lynx edicions, volume 1-15, Barcelona, Spain, 1992-2010.

Del Hoyo J, Collar NJ. HBW and BirdLife International Illustrated Checklist of the Birds of the World. Volume 1. Non-passerines. Lynx Edicions Publications, Barcelona, Spain, 2014.
Note: Volume 2 (Passerines) to be released in 2016

Fudge AM. Laboratory Medicine. Avian and Exotic Pets, WB Saunders, Philadelphia, 2000

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Volume 1 & II

Howard R and Moore A. 3rd Ed. A Complete Checklist of the Birds of the World, Academic Press, Oxford, 2003.

Jepson L. Exotic Animal Medicine: A quick Reference Guide, Saunders Elsevier, Oxford, 2009.

Chapters

5 Parrots and related species.

6 Songbirds and softbills.

Klasing, KC. Comparative Avian Nutrition. CABI Publishing, 1998.

Loye JE and Zuk M. Bird-Parasite Interactions, Oxford University Press, Oxford, 1991.

Ritchie, B. Avian Viruses: Function and Control. Wingers Publishing, Lake Worth, Florida, 1995

Schubot R, Clubb S and Clubb K. Psittacine Aviculture, Loxahatchee, Avicultural Breeding and Research Center, 1992.

Saif YM (ed). Diseases of Poultry, 13th edition, Iowa State Press, Ames, Iowa, 2013.

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Tully TN, Dorrestein GM and Jones AK (eds). Handbook of Avian Medicine, 2nd edition. WB Saunders, Philadelphia, 2009.

Wernery R, et al. Colour Atlas of Falcon Medicine, Schlütersche, Hannover, 2004.

West G, Heard DJ and Caulkett N (eds). Zoo Animal & Wildlife Immobilization and Anesthesia, Blackwell Publishing, Oxford, 2007.

Chapter V

Section 22 Cagebirds

Section 23 Free-living waterfowl and shorebirds

Section 24 Ratites

Wildlife Information Network (WIN)

Modules

Wildlife: Disease Investigation and Management (Birds).

West Nile Virus.

Waterfowl: Health and Management.

Available from: win@wildlifeinformationnetwork.org.

Wobeser GA. Diseases of Wild Waterfowl, London, Plenum Press, Tierärztliche Praxis, 2003.

Useful Self-Assessment Books

Altman RB and Forbes NA. Self Assessment Color Review of Avian Medicine, Manson Publishing, London, 1998.

Coles BH, Krautwald-Junghanns ME and Herman TJ. Self Assessment Picture Tests in Avian Medicine, Mosby, London, 1998.

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Pees M (ed). Leitsymptome bei Papageien und Sittichen, 2nd edition, Enke Verlag, Hannover, 2010.

Rosenthal KL, Forbes NA, Frye F L and Lewbart GA. Rapid Review of Exotic Animal Medicine and Husbandry, Manson Publishing, London, 2008.

Section

Birds pp 99 - 150

Samour J. Exotic Animal Medicine: Review and Test, Elsevier, Oxford, 2012.

Section - Birds pp 109 – 300

Appendix 1: ECZM-avian self-assessment checklist for approval of residency training sites

ECZM avian visitation / self-assessment checklist

Visitation and inspection of:

Purpose of visitation:

✓ approval as a residency training centre for ECZM

✓ re-inspection after 10 years

✓ re-inspection due to meaningful changes within the residency site (indicate which changes)

Date inspection conducted:

Inspectors names:

Institute / centre representatives present (name and address):

<p>Case load: Average number of cases per taxon per year over the past 5 years:</p> <ul style="list-style-type: none"> - Psittaciformes - Passeriformes - Falconiformes - Galliformes - Anseriformes - Columbiformes - Other orders <p>Average number of procedures performed per year over the past 5 years:</p> <ul style="list-style-type: none"> - Radiographs - Ultrasonographies - Endoscopies - CT/MRIs - Anesthetics - Soft tissue surgeries - Orthopedic surgeries - Hematologies - Clinical chemistries - Cytologies - Fecal examinations - Post mortem examinations <p>The case load should consist of at least 10 (ten) relevant cases per week. ✓</p>	<p>-</p>
<p>Medical records: complete medical records must be maintained for each individual case and rapid retrieval of information about any patient or flock should be possible.</p> <p>✓ Indicate which computer programme or equivalent is used. ✓ Indicate how radiographs, ultrasonography findings, clinical pathology reports etc. also be stored and related to client?</p>	

<p>✓ A computer programme or equivalent is used to record patients' medical history. This includes all diagnostic results including radiographs, ultrasonography findings, clinical pathology reports etc.</p> <p>✓ Data sheet available for hospitalised patients?</p> <p>✓ Regular documentation of patients' weight?</p>	
<p>Diagnostic imaging equipment must be used and interpretation conducted by the residents. Safety monitoring is mandatory.</p> <p>✓ Safety monitoring is put into place?</p> <p>✓ Radiography equipment available?</p> <p>✓ Ultrasonography equipment available?</p> <p>✓ Endoscopy equipment available?</p> <p>✓ ECG available?</p> <p>✓ MRI, fluoroscopy, CT available (not mandatory)?</p>	
<p>Clinical pathology: a clinical pathology laboratory for haematological, clinical chemistry, microbiological, and cytological diagnosis must be available. Clinical pathology reports must be retained and retrievable.</p> <p>✓ Microscope and equipment for staining available?</p> <p>✓ Blood chemistry bench top analyser/ blood gas analyser available or available through an external laboratory (in which time frame)?</p> <p>✓ Microbiology available on site or through an external laboratory (in which time frame)?</p> <p>✓ Cytology staining equipment available?</p>	
<p>Pathology services: Morphologic pathology: a separate room for gross pathological examination must be available. Facilities for histopathological examination of necropsy tissues must be available. Anatomic pathology reports must be retained and retrievable.</p> <p>✓ PM-room available?</p> <p>✓ Histology service on site or through an external laboratory?</p> <p>✓ Microscope available for resident to review slides?</p>	
<p>Clinical examination rooms: the examination rooms must be designed, constructed, used, and maintained consistent with the current concepts of practice.</p> <p>✓ Sufficient in number and size to accommodate the case load?</p> <p>✓ Appropriate clinical examination rooms available?</p> <p>✓ Microscope within the room?</p> <p>✓ Weighing scales within the room?</p>	
<p>Isolation facilities/Quarantine areas including appropriate consideration to biosecurity and control of pathogen spread between units must be present.</p> <p>✓ Appropriate isolation facilities available?</p> <p>✓ Individual equipment available?</p>	
<p>Operating rooms must be designed, constructed, used and maintained consistent with current concepts of veterinary surgery.</p> <p>✓ must not be used for other purposes as sterility would inevitably be compromised.</p> <p>✓ must be sized adequately for the patient, staff and associated equipment.</p>	

<p>✓ must be ventilated according to the current concepts of aseptic surgery. ✓ Emergency lighting available?</p>	
<p>Hospitalisation areas ensuring good nursing must be available with consideration to biosecurity and control of pathogen spread between patients.</p> <p>✓ Separate units with head / humidity control available? ✓ Daily weighing with traceable documentation? ✓ Recording of treatments and progress of the patient? ✓ Oxygen chamber available?</p>	
<p>Anaesthetic and critical care equipment: must be available.</p> <p>✓ Range of induction masks, agents and suitable circuits? ✓ Gaseous vaporiser together with an adequate scavenging system? ✓ ✓ Anaesthetic monitoring equipment? ✓ Ready to hand emergency resuscitation equipment? ✓ Suitable volatile and parenteral agents available? ✓ Sterilised air sac cannulation equipment available? ✓ Ready to hand emergency resuscitation equipment available? ✓ Recording of anaesthetic process and difficulties?</p>	
<p>Surgical instrumentation: a full complement of general and special instrumentation for diagnostic and surgical procedures must be available.</p> <p>✓ Appropriate surgical equipment for avian patients (haemoclips, suitable pins (threaded), wire, ESF fixators, drill (+shroud), splints) ? ✓ Micro-surgery equipment? ✓ Magnification and good illumination equipment? ✓ Ophthalmological equipment? ✓ Suitable suture material available? ✓ Radio-surgery including bipolar available?</p>	
<p>Sterilisation: Steam or heat sterilisation of surgical instrumentation and supplies must be available.</p> <p>✓ Sterilisation equipment? ✓ Verification of sterilisation? ✓ Labelling and dating of all sterilised instruments?</p>	
<p>Photography: photographic equipment for documentation of disease must be available.</p> <p>✓ Digital camera and option for image storage.</p>	
<p>Medical library: a library containing recent textbooks and current journals relating to avian medicine and its supporting disciplines must be immediately accessible to the resident.</p> <p>✓ Does the resident have access to all titles on the current reading list?</p>	
<p>Staff: Resident should work with multiple veterinarians, veterinary technicians / keepers.</p> <p>✓ How many vets on staff? ✓ How many veterinary technician / specialised keepers?</p>	

In the case of self-assessment:

I, the responsible programme director, attest that the above is an accurate indication of facilities available, and will provide additional information or documentation as requested by the Education Committee.

Signed

Dated

For self-inspections, please provide a series of photographs documenting the facilities and above confirmed equipment.

In case of an external inspection:

We the undersigned inspectors recommend:

The following mandatory conditions are made:

The following non-mandatory recommendations are made:

Signed

Dated