SYLLABUS

CFAN 3510

Belize: Wildlife Medicine and Conservation

May 17 – June 7, 2015 (Tentative)

Introduction:

The College of Food, Agricultural and Natural Resource Sciences, University of Minnesota is offering a wildlife medicine and conservation course to Belize as a May short-term study abroad program.

The Wildlife Medicine & Conservation course is an intensive introduction to key topics in wildlife medicine. Students will learn medical issues and approaches, the role of the veterinarian in wildlife conservation, zoo medicine, and wildlife rescue & rehabilitation. This program is held at the Belize Wildlife & Referral Clinic's (BWRC) teaching facility with BWRC's founder and wildlife veterinarian, Dr. Isabelle Paquet-Durand. Labs include distance immobilization, suture, spay & neuter, necropsy, comparative anatomy, radiography, parasitology and blood analysis. Field visits are conducted with Dr. Isabelle to the Belize Zoo and to avian, reptile, primate, and manatee centers. Students are introduced to preventative medicine and common diseases for many of these species. A spay & neuter lab reviews theory and suture practice, this is followed by a spay & neuter clinic organized in the field or at BWRC. Students also have the opportunity to observe, and when possible, assist the BWRC veterinary staff during their daily operations.

Students are likewise introduced to critical conservation issues in the region, focusing on strategies to mitigate human-wildlife conflict. Students visit wildlife organizations around Belize, and guest speakers enrich the course content with perspectives drawn from the front lines of wildlife medicine and conservation. In between visiting field sites and classroom sessions, students may enjoy recreational activities and Belizean culture.

Students will also learn general principles in marine animal zoology and physiology on Glover Reef Atoll in Belize. A certified master diver will give them instruction on how to snorkel and dive. Students will have the option to get their PADI certification on the island, so novice divers are welcome! Each day, students will begin with a lecture on marine animal identification, physiology and behavior. Conservation and invasive species such as the lionfish will be discussed. They will also be given instruction on underwater photography. Each night students will discuss and share experiences and observations.

The program will be based in Belize (May 17 – May 29) and Glover Reef Atoll (May 30 – June 6).
Credits: 3 semester credits

Prerequisites: None

Course Learning Objectives:

This program improves student's knowledge and abilities in the following areas:

- Wildlife medical issues and approaches
- Distance immobilization & restraint
- Wildlife examination in the field
- Stressors and risk evaluation
- Performing procedures in the field
- Field anesthesia and surgery
- Emergency medicine and triage protocol
- Wildlife Transport
- Comparative wildlife anatomy, osteology, and radiography
- Basic anatomy and physiology of large cats, monkeys, iguanas, snakes, and birds of Belize
- Necropsy
- Basic suturing
- Spay & neuter surgery assistance
- Avian wing wraps and IM bone pins
- Tropical parasitology
- Emerging and common Zoonotic diseases
- Understanding the role and key challenges and opportunities for veterinarians in wildlife medicine and conservation;
- Zoo and preventative medicine
- Challenges of wildlife medicine
- International and local regulatory and practical applications associated with wildlife conservation
- The role of community based conservation organizations, NGOs and governmental entities in conservation
- Critical conservation issues in the tropics, and specific examples of their challenges

Lead Instructor:

Dr. Melissa Palmer, PhD

College of Food, Agricultural and Natural Resource Sciences
University of Minnesota
1364 Eckles Avenue, Haecker Hall, rm. 317B
St. Paul, MN 55108
Email address: melissap@umn.edu
Dr. Isabelle Paquet-Durand

Belize Wildlife and Referral Clinic
Central Farm, Belize
Central America

Supporting Instructors:

Kendra and Jim Schofield
Off The Wall Dive Center & Resort
Long Caye, Glover’s Reef Atoll, Belize, C.A.
PADI Five Star Gold Palm Resort
Divers Alert Network World Business Member
Phone in Belize: +(501) 532-2929
offthewallbelize@gmail.com
www.offthewallbelize.com

Student Learning Outcomes:

- Can identify, define, and solve problems

Students will be introduced to the major ecosystems in Belize, the plant and animal organisms inhabiting these areas, and the strategies employed by biologists and resource managers in managing these ecosystems. Students will also be exposed to the many challenges in managing these resources from both from biological and policy perspectives.

Assessment: Students will be take two quizzes over the three week period that are designed to assess their grasp of the key concepts in the lectures, readings, and field excursions. Students will also write an eight page research/term paper designed to assess students’ ability to synthesize/integrate the major topics covered in the course.

- Can locate and critically evaluate information

Students are required to write an eight page research/term paper. Students will locate and evaluate relevant primary, secondary, and web resources to support their research paper topic. At least four sources must be cited in the research paper and a minimum of half of the citations must be from the primary or secondary literature.

Assessment: Research papers will be assessed by the instructor using the specific criteria outlined in the assignment.

- Can communicate effectively

Throughout this 3-week course, students will complete daily entries in a reflection
Students will be asked to reflect on their impressions of Belizean culture, traditions, food, physical spaces/geography, etc.

Assessment: Instructor will collect journals at the end of the program and evaluate whether they completed a daily entry, addressed at least some of the recommended questions/areas of emphasis, and the clarity and creativity of their written reflections.

**Evaluation:**

Students' grades in this course will be determined by: 100 points total

- Participation in class discussions and field excursions – 10 points
- Journal – 10 points
- Two quizzes – 15 points each – 30 points
- and a final research/term paper - 50 points

Class participation is expected and will be reflected in your grade. The lead instructors will monitor your participation during lectures, discussions, and excursions.

Quizzes are designed to assess students' understanding of the major points discussed in the classroom and field excursions.

The research/term paper is designed to assess students' ability to synthesize/integrate the topics covered in the course. Students will have an opportunity to develop the research/term paper topic in consultation with the lead instructors in the class.

**Grading guidelines:**

The following grading standards will be used to assign grades in the course:

A/A- = 90-100%  B+/B- = 80-89%  C+/C- = 70-79%  D+/D = 65-69%  F = < 65%

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>100-94</td>
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<tr>
<td>A-</td>
<td>93.9-90</td>
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<tr>
<td>B+</td>
<td>89.9-87</td>
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<tr>
<td>B</td>
<td>86.9-83</td>
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<tr>
<td>B-</td>
<td>82.9-80</td>
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<tr>
<td>C+</td>
<td>79.9-77</td>
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<tr>
<td>C</td>
<td>76.9-73</td>
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<tr>
<td>C-</td>
<td>72.9-70</td>
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<tr>
<td>D+</td>
<td>69.9-67</td>
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<tr>
<td>D</td>
<td>66.9-65</td>
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<tr>
<td>F</td>
<td>64.9 or lower</td>
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**Program Structure:**

The course is three weeks in length. About one month prior to departure, there will be a pre-departure meeting held in Room TBA on the St. Paul campus. The purpose of the pre-departure meeting is to discuss: course objectives, program itinerary, air travel, housing accommodations, clothing and equipment needs, safety issues, travel documents (passport), the intercultural development inventory (IDI) and some basic photography training. In addition, there will be a brief lecture presented at this meeting to familiarize students with the topics to be studied in Belize.

<table>
<thead>
<tr>
<th>Clinical Day</th>
<th>Topics and Activities</th>
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| **Topic 1 – May 18** | **Introduction to Wildlife Medicine and Conservation**  
Issues and approaches to wildlife conservation  
Introduction to wildlife of Belize & BWRC  
Role of Veterinarians in Wildlife Medicine  
Case Studies in Wildlife Confiscation & Rescue (A tale of two Jaguars)  
BWRC welcome dinner |
| **Topic 2 – May 19** | **Wildlife Examination, Capture and Immobilization**  
Introduction to examination, distance immobilization & restraint Chemical capture and restraint lab  
Wildlife examination in the field Stressors and risk evaluation Performing procedures in the field Field anesthesia and surgery Wildlife Transport |
| **Topic 3 – May 20** | **Avian & Reptile Medicine**  
Early morning birding; identification, vocalization, life history Field visit Green Iguana Project; examination; blood draws Scarlet Macaw health checks  
Role of veterinarian in avian rescue and rehabilitation  
Introduction to reptile diseases  
Lecture on Snakes of Belize (Belize Herpetarium) |
| **Topic 4 – May 21** | **Primate & Zoo Medicine**  
Community Baboon Sanctuary; primate medicine  
Role of veterinarian in primate rescue and rehabilitation  
VIP behind the scenes Belize Zoo tour  
Zoo and preventative medicine |
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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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| May 22      | **Recreation Day**  
Xunantunich Maya Ruin Site  
Belize Botanical Gardens |
| Topic 5 – May 23 | **Comparative Wildlife Anatomy; Necropsy; Radiography; Basic Avian Fracture Repair**  
Introduction to comparative wildlife anatomy  
Anatomy labs: comparative wildlife osteology & necropsy  
Avian wing wraps, splints and IM bone pins  
Comparative wildlife radiology |
| Topic 6 – May 24 | **Surgery and Clinic preparation with suture practice**  
Spay & neuter theory and preparation  
Anesthesia  
Monitoring  
Suture Lab |
| Topic 7 – May 25 | **Spay & Neuter Clinic**  
Spay & Neuter Clinic  
Surgeries as needed |
| Topic 8 – May 26 | **Parasitology and Public Health**  
Vaccination & parasitology public health awareness  
Sample collection  
Sample analysis |
| Topic 9 – May 27 | **Vertebrate Fishes & Reptiles**  
Tropical Fish survey  
Crocodile capture, restraint & medicine  
Reptile parasites  
Intro to Vertebrate Fishes & Marine Reptiles  
Fish survey/ identification snorkeling trip (optional)  
Crocodile Spotting (optional) |
| Topic 10 – May 28 | **Marine Mammal Medicine**  
Manatee Biology and Conservation at Wildtracks  
Manatee husbandry, rehabilitation and medicine  
Manatee Examination and clinical procedures  
Marine Mammal Medicine  
Visit WildTracks Manatee and Howler Monkey rehabilitation center |
May 29 | Airport Transfer
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May 30 – June 6 | Glover Reef Atoll
| Intro to Marine Zoology and Physiology
| Fish Identification
| Wildlife and Invasive Species Management

*Note on wildlife rescue or emergency field visits:* The need for wildlife rescue or emergency visits is unpredictable. Past students and interns have been involved in a number of exciting wildlife rescue, relocation, and emergency response situations. When the occasions arise, BWRC will make every effort for the student to observe or in some cases participate in these efforts.

**Services and fees included in the cost of your program:**

- Airport transfers (pick-up/drop off)
- All ground transportation
- Round trip water taxi transfer from Ambergris Caye to Belize City airport
- Accommodation includes breakfast
- Lunches
- $200 USD per person donation to BWRC
- BWRC labs
- BWRC community spay & neuter clinic (when possible)
- All activities, entrance fees, tour guides fees, and donations to support partner wildlife projects
- Free BWRC t-shirt or other merchandise as available
- Video of the Wildlife Medicine & Conservation program

**Accommodations**
Mid-range accommodations include multiple occupancy, private bath, free wifi and breakfast (amenities may vary on Ambergris caye depending on service provider).

**Filming and photography**
Interns and students are routinely filmed and photographed during BWRC and related events. If you are not willing to be on film or in photographs depicting BWRC or related events, you are responsible for informing the filmmaker and photographer on site at that time.
May 30 – June 6
Diving at Glover Reef Atoll

Diving:

Imagine a Caribbean island vacation where you are slipping into the deep, crystal clear, aquamarine water, bubbles gently tickling your face, as you slowly descend along a 3000-foot coral wall, millions of years old. The first to welcome you to the ocean is a Short-nose Batfish waiting at the bottom of the mooring line. As you scuba dive towards the enormous coral formations that make up the famous Long Caye Wall, one of Jacques Cousteau's favorite dives, you see plenty of nooks and crannies loaded with Spiny Lobsters and Arrow Crabs. A highway of Creole Wrasse files by you as numerous Parrot Fish munch on coral close by. An enormous Spotted Eagle Ray soars past, silhouetted by the dark blue of the abyss beyond. While nearby, a Hawksbill Turtle snacks on a Barrel Sponge. In additional to our several world famous dive sites at Glover's, we have miles and miles of undiscovered walls. Here at Off The Wall Dive Center, a PADI International Dive Resort, you will experience scuba diving in pristine conditions, with incredible visibility averaging over 100 feet, with warm water, abundant sea-life and no crowds.

Details about Diving:

- Option of adding on a Dive Package or individual dives to your Week Long Accommodation Package
- All dives are done from a boat
- Average boat ride to dive site is 2 to 10 minutes
- Average dive group is 2 to 6 guests
- A licensed tour guide and Dive Master escorts all certified divers on each dive
- All dives include tank, air, weights and weight belts
- Night dives available, no shore diving available
- Sherwood BCDs and Regulators are available to rent
- Wetsuits, dive lights, masks, fins & snorkels available to rent
- All divers must bring scuba certification cards. No certified diver will be allowed to dive without their car

Snorkeling:

Inside Glover's Reef Atoll, the snorkeling is considered some of the best in the Caribbean. Take your pick of over 700 patch reefs to explore. Any and every patch reef will amaze and inspire with its color and abundance. The reef is plentiful with Brittle Stars encrusting Tube Sponges, and spotted Flamingo Tongues.
resting on purple Sea Fans. Schools of curious Snappers eye you from behind Brain Coral and rainbow colored Angelfish swim by as a Nurse Shark sleeps under a ledge. Each patch reef is an aquarium in itself.

Details about Snorkeling:

- Private daily guided snorkel excursions by boat can be purchased as a Snorkel Package or individual snorkel excursions in addition to your Week Long Accommodation Package.
- Snorkel Excursions by boat are about an hour length in time.
- Snorkeling off the beach, dock or sandbar available anytime
- Night snorkeling off the beach available
- Wetsuits, underwater lights, masks, fins and snorkels available to rent

Other Activities:

- Kayaking
- Stand-up-Paddle Boarding
- Bird Watching (over 80 species has been recorded)
- Low Tide Walks
- Nature Walks
- Beach Combing
- Sunbathing
- Swimming
- Relaxing
- Hammock Time
- Sunrise, Sunset, Moonrise and Moonset watching
- Star Gazing
- Hermit Crab Races

Financial Aid & Scholarships:

Most financial aid may be applied to study abroad. However, for students enrolled in May-term courses, it is required that they have a minimum of 6 credits of May/summer combined enrollment to qualify for financial aid. See more information about financial aid resources on the Learning Abroad Center website: http://www.umabroad.umn.edu/financial
Undergraduate students currently enrolled in the College of Food, Agricultural and Natural Resource Sciences and in good academic standing are encouraged to apply for an International Learning Grant. Current award amount for successful grant applications is $800 for May-session courses.

**Students With Disabilities:**

Any student with a documented disability condition (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the instructor as soon as possible. Students with special needs should also contact Disability Services on campus. Their phone number is (612) 624-3316 and website is http://www.ds.umn.edu.

**Student Academic Integrity and Scholastic Dishonesty**

Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows:

Scholastic Dishonesty: submission of false records of academic achievement; cheating on assignments or examinations; plagiarizing; altering, forging, or misusing a University academic record; taking, acquiring, or using test materials without faculty permission; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement.
CONTACTS:

Belize Wildlife and Referral Clinic
Central Farm, Belize
Central America

c/o Justin Ford
c/o Isabelle Paquet-Durand

Clinic phone: 632-3257
Clinic email: bwwildlifeclinic@gmail.com
For educational program information, contact BWRC co-founder Justin Ford
jford@wildlife-institute.com

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