

**Report on Ecosystem Health Training in Kabul, Afghanistan  
November 27 – December 6, 2012**



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**Cover photos starting from top:**

Dr Qader, the senior veterinarian at Kabul Zoo, Mr Sarwar paraveterinarian in Kandkhun Village, Wakhan District, and Mr. Mohammad Gul, paraveterinarian in Avgarch Village, Wakhan District, practice Rose Bengal Test for the detection of brucellosis antibodies in blood samples, WCS office, Kabul.

Dr Qader, Mr Sarwar and Mr Mohammad Gul, the three trainees, getting familiar with quantitative coproscopy technique, WCS office, Kabul.

## **Introduction**

Between November 27<sup>th</sup> and December 6<sup>th</sup> we conducted at WCS headquarter in Kabul a theoretical and practical training course for the two paraveterinarians we have been supporting in Wakhan, Badakshan Province, and the senior veterinarian of Kabul Zoo. The main goal of the training was to enhance the technical capacity of trainees in the field of sensitive epidemio-surveillance. The training started with lectures on the principles of ecosystem health using achievements of the WCS work in Afghanistan and on snow leopard captures in Wakhan as examples. It was coupled with practical training in field diagnostic test, using the qualitative Rose Bengal Test (RBT) for rapid detection of antibodies against *Brucella* sp. in blood samples. Trainees were also taught about quantitative coproscopy for fecal parasite count according to a modified MacMaster method. Trainees practiced the tests on samples collected from domestic and wild sheep in Wakhan. Eventually they received refresher training about field necropsy procedures using a chicken as educative material. We also organized visits of Ka Farushi bird market and Kabul Zoo to have them understand the epidemiological risk posed by wildlife in urban areas.

The lack of technical capacity among Afghan practitioners is one of the biggest constraints on animal health activities in Afghanistan. The purpose of the training was to increase the capacity of three animal health professionals operating at the interface of wildlife, livestock and human beings.

## **A-Theoretical courses**

### ***Presentation 1: Immobilization of wildlife***

Chemical immobilization of wildlife is one of the most wanted topics requested by veterinary practitioners when introduced to wildlife medicine. WCS already delivered in the past training in this field to numerous Afghan veterinarians and produced a short document in Dari detailing the main combinations and dosages required to tranquilize Afghan wildlife. On November 27<sup>th</sup>, Dr. Hafizullah “Noori” delivered a presentation on wildlife immobilization using the snow leopard captures recently performed by WCS in Wakhan to illustrate the topic. He introduced the reasons for studying the ecology of snow leopard, explained basics of satellite telemetry and detailed the technical steps of the leopard immobilization, including darting, handling, sampling, health monitoring during the anesthesia and recovery management. He also took the opportunity of this presentation to discuss with trainees on the issue of disease transmission risk between wildlife and livestock and also between handled wildlife and human beings. In the afternoon the trainees were offered a tour and explanations on the biology of displayed species at Kabul Zoo.



Plate 1: Dr Hafizullah ‘Noori’ (WCS) gives a presentation on snow leopard capture in Wakhan to Mr Sarwar and Mr Mohammad Gul, the two paravets from Wakhan (on the right of the picture), and to Dr. Qader, senior veterinarian at Kabul Zoo (on the left). December 27, 2012, WCS Headquarter, Kabul, Afghanistan.

### ***Presentation 2: Ecosystem Health in Afghanistan***

On November 28<sup>th</sup>, Dr Ali Madad “Rajabi” gave to trainees a presentation on the principles of ecosystem health using as examples the activities and achievements of the WCS ecosystem health team in Afghanistan.

In Badakhshan Province, the team worked exclusively in the most impoverished and isolated Wakhan District. A large part of the work consisted at detecting the presence of endemic diseases prevailing in livestock using questionnaires, clinical examinations and laboratory investigations on collected biological samples. An important discovery was the endemic presence of foot-and-mouth disease in the area, and the selection of an appropriate vaccine that was used very successfully in mass vaccination operations of cattle and yak between 2009 and 2012. Another important finding that allows to better understand the spatial distribution of diseases in Afghanistan was the very low prevalence, or lack, of a number of diseases allegedly common in this part of the country, such as brucellosis, bovine tuberculosis or glanders. An important effort was also devoted to monitor livestock numbers in upper Wakhan Valley and to learn more on their landscape utilization in connection with the habitat of valuable wildlife resources. This initiative tries to identify the areas of highest risk of disease spill-over between livestock and wildlife.

Outside Badakhshan the team developed the capacity of local technical staff and governmental staff in avian influenza surveillance in wild birds, in handling and sampling of wildlife, and waterfowl population monitoring, wildlife immobilization, and wildlife medicine.

The team also developed two long term health monitoring initiatives in Kabul. The first intends to monitor the availability of veterinary diclofenac in Kabul veterinary drug market (diclofenac

residues in dead livestock has caused the quasi-extinction of three vulture species in southern Asia), it has been started in 2008 and will end in spring 2013. The other initiative consists at monitoring the birdlife trade at Ka Farushi market in Kabul, and the occurrence of mass mortality events.

WCS sponsored and provided trainings to two paravets and to two resident veterinarians, including outside country training to increase their capacity. The goals of these trainings were to create a specific capacity in the field of wildlife medicine and educate trainees on the ethics of wild animal husbandry.

## **B. Practical trainings**

### ***Rose Bengal Test (RBT) for brucellosis detection***

On November 29<sup>th</sup> morning, we taught trainees the principles and usage of Rose Bengal plate agglutination test for diagnosis of brucellosis. The theoretical background of the test was explained and trainees could use this test on several occasions during the training period on a selection of negative and positive control samples. This test is particularly useful for preliminary and large scale epidemiological surveys of brucellosis in livestock. It also qualifies perfectly as a crude diagnostic tool in the epidemio-surveillance scheme that should be developed in Wakhan in the future.

### ***Parasite egg counting on urial and domestic sheep fecal samples***

On November 29<sup>th</sup> in the afternoon, we taught trainees an easy method of quantitative coproscopy, using urial sheep and domestic sheep feces collected in Wakhan as training material. Trainees under supervision of WCS resident veterinarians were taught the method of flotation and fecal parasite egg (and coccidia) counts using a modified MacMaster method. They used the test on 28 samples of domestic and wild sheep collected in Wakhan during autumn 2012.



Plate 2: Trainees practice quantitative coproscopy, 27 December 2012, WCS Headquarter, Kabul, Afghanistan.



Plate 3. Micrographs of coccidia (left) and *Trichuris* sp. nematode egg (right) as seen in feces sample of domestic sheep from Wakhan District, Badakhshan Province, Afghanistan, December 29, 2012

### C. Basics of epidemio-surveillance

On December 3rd the paravets were taught on how to respond to an epidemic event, whether affecting wildlife or livestock. Because they are present all-year-round in Wakhan they are at fore-front of early warning system of disease outbreak in the district. They should be capable to record and report appropriately on a die-off event affecting livestock or wildlife. We taught

them measures they should implement in case of such event happening in Wakhan, including personal sanitary precautions, external examination of dead animals, sampling, and recording of the likely cause of death, documentation and reporting.

At the end of this course we gave them a refresher on basic necropsy procedures using a chicken. This was useful to remind them about basic sanitary precautions, sample collection and storage pending laboratory investigations.



Plate 4: Dr. Ali Madad “Rajabi” refreshes paravet’s knowledge on basic necropsy procedures using a chicken as educative material, December 3<sup>rd</sup>, WCS headquarter, Kabul, Afghanistan.

## Conclusions

During the training paravets and the veterinarian from Kabul zoo were taught a variety of subjects related to wildlife health and ecosystem health. Besides improving their theoretical knowledge on wildlife immobilization and ecosystem health principles, we believe that practicing simple diagnostic tests was very useful to them, both to emphasize the importance of good sampling and also to disclose part of the ‘mystery’ of laboratory diagnostic work.

We privileged practice over theory and they had the opportunity to test 30 serum samples from Wakhan with RBT and 28 fecal samples from wild and domestic sheep for fecal parasite egg counts. At the end of the training we evaluated the level of acquisition of new knowledge with a rapid and off-the-cut examination and trainees reached scores in excess of 75%.

**Appendix 1:** Results of *Trichuris* and coccidia egg count on fecal sample performed by trainees during the practical course on quantitative coproscopy organized at WCS headquarter, Kabul, Afghanistan in November-December 2012.

No	Species	Sex	Age/year	Location	Date testing	No. Coccidia	No. <i>Strongyls</i>	No. <i>Trichuris</i> sp.
1	sheep	Male	3	Dehqankhana	27/11/2012	5+2	0	0
2	sheep	Female	3	Dehqankhana	27/11/2012	3+2	0	0
3	sheep	Female	4	Dehqankhana	27/11/2012	3+1	0	0
4	sheep	Male	3	Digargond	27/11/2012	2+1	0	0
5	sheep	Female	3	Digargond	27/11/2013	11+13	0	1
6	sheep	Female	3	Worgond Payen	27/11/2013	0	0	0
7	sheep	Female	4	Digargond	27/11/2014	0+1	0	0
8	sheep	Male	4	Dehqankhana	27/11/2014	1+2	0	0
9	sheep	Female	2	Worgond Payen	27/11/2015	0+1	0	0
10	sheep	Female	3	Digargond	28/11/2012	19+17	0	0
11	urial	?	?	Pikut valley	28/11/2012	0	0	1
12	urial	?	?	Pikut valley	28/11/2012	2+3	0	2
13	urial	?	?	Pikut valley	28/11/2012	0	0	0
14	urial	?	?	Pikut valley	28/11/2012	0	0	0
15	urial	?	?	Pikut valley	28/11/2012	9+8	0	0
16	urial	?	?	Pikut valley	28/11/2012	2+3	0	0
17	sheep	Female	1	yrop	29/11/2012	3+2	0	0
18	sheep	Female	?	Karkat	29/11/2012	2+0	0	0
19	sheep	Female	4	Worgond Payen	29/11/2012	0	0	0
20	sheep	Female	3	Abgarch	2/12/2012	2+0	0	1
21	sheep	Female	2	Abgarch	2/12/2012	1+2	0	0
22	sheep	Female	3	Abgarch	2/12/2012	19+27	0	3
23	sheep	Male	1	Abgarch	2/12/2012	13+16	0	0
24	sheep	Female	2	Abgarch	2/12/2012	5+8	0	0
25	sheep	Female	3	Digargond	2/12/2012	3+2	0	0
26	sheep	Female	1	Abgarch	2/12/2012	2+3	0	0
27	sheep	Female	2	Abgarch	2/12/2012	0	0	0
28	sheep	Male	1	Abgarch	2/12/2012	7+10	0	1

## Appendix 2: Training agenda

*Attendance:* 3 male trainees (2 paravets from Wakhan and the senior veterinarian from Kabul Zoo)

*Duration:* 9 days

*Main venue:* WCS headquarter, Kabul

*Trainers:* Drs. Ali Madad Rajabi & Hafizullah Noori (WCS)

*Teaching language:* Dari

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**26/Nov/2012:** Welcome speech and general discussion on livestock health in Wakhan District, Badakhshan Province. During the afternoon survey of birds at Ka Farushi market as an example of wildlife trade health surveillance, followed by a visit to veterinary drugstores to check for the presence of non-steroid anti-inflammatory drugs (NSAID), focusing at those reported toxic to vultures.

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**27/Nov/2012:** Presentation and discussion on the capture and tranquilization of snow leopards in Wakhan. As wet lab practice, parasitological examination of fecal material of domestic and wild sheep collected in Wakhan. Dog vaccination opportunity.

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**28/Nov/2012:** Presentation about principles of ecosystem health emphasizing achievements of WCS in Afghanistan. As wet lab, parasitological examination of fecal material of domestic and wild sheep collected in Wakhan. Visit of the Kabul Zoo and discussion about health problems in this zoological collection.

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**29/Nov/2012:** Wet lab all day. Brucellosis detection test (RBT) and parasite egg counting on domestic sheep and urial feces samples. Open discussion on various animal health related topics.

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**02/Dec/2012:** Practicing parasite egg counting on domestic sheep and urial feces samples as well as RBT.

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**03/Dec/2012:** In the morning discussion on epidemio-surveillance and necropsy of a chicken. The afternoon was left free.

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**04/Dec/2012:** Purchasing tools and disposable for sampling kits, organizing the kits with paravets and training them at using them adequately. The afternoon was left free.

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**05/Dec/2012:** Detailed discussion about range utilization of livestock in the Hindu Kush mountain range of Wakhan District.

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**06/Dec/2012:** Ultimate wet lab; quantitative coproscopy on domestic sheep and urial feces samples. Final evaluation

**Appendix 3:** List of equipments and disposables in sampling kits provided for the two Wakhi paravets.

No.	Item	Quantity	Expiry date
1	Digital camera with charger	2	NA
2	Surgical box with necropsy tools	2	NA
3	Disposable gloves	2 packs	NA
4	Sterile gloves	10 pairs	NA
5	Face mask (each pack contains 50 masks)	2 packs	NA
6	Formalin	1 bottle	NA
7	Ethanol	1 bottle	NA
8	Swabs	50	NA
9	Stuart media bacteriology swabs	10	03/2014
10	Blood sampling sterile vials (dry/silicon)	60	NA
11	FTA cards	20	NA
12	Cryovials	?	NA

13	Labeling pen	4	NA
14	Pasteur plastic pipettes	100	NA
15	Needle holder	4	NA
16	Venoject needles (each pack contains 100 needles)	1 pack	NA
17	Syringe 10ml-vol.	10	NA
18	Syringe 5ml-vol.	10	NA
19	Cryovials 4.5ml-vol.	30	NA
20	Envelope for dry tissue sample	10	NA
21	Yellow stopper plastic vials for feces samples	16	NA