

AMUR LEOPARD & WILDLIFE HEALTH PROJECT FINAL REPORT

Jan 1st, 2006 – March 31st, 2009

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Zoological Society of London

in collaboration with

Primorskaya State Academy of Agriculture

funded by

The Darwin Initiative for the Survival of Species



Abbreviations and Acronyms

ALCG	<i>Amur Leopard Conservation Group</i>
ALTA	<i>Amur Leopard and Tiger Alliance</i>
ALWHP	<i>Darwin Initiative ZSL-Amur Leopard & Wildlife Health Project</i>
CoC	<i>Contract of Cooperation</i>
CP	<i>ZSL Conservation Programme</i>
EAZA	<i>European Association of Zoo and Aquaria</i>
FAO	<i>Food and Agricultural Organization</i>
IBS	<i>Institute of Biology and Soils</i>
IFAW	<i>International Fund for Animal Welfare</i>
IZW	<i>Institute for Zoo- and Wildlife Research</i>
IZWG	<i>International Zoo Veterinary Group</i>
LSNR	<i>Lazovsky State Nature Reserve</i>
NGO	<i>Non-Government Organization</i>
Phoenix	<i>Phoenix Fund</i>
PSAA	<i>Primorskaya State Academy of Agriculture, Russia</i>
RFE	<i>Russian Far East</i>
RVC	<i>Royal Veterinary College</i>
SC	<i>Steering Committee</i>
Utios	<i>Utios Wildlife Rehabilitation Centre, Russia</i>
WCS Russia	<i>Wildlife Conservation Society, Representative Office in Russia</i>
WHMU	<i>Wildlife Health Monitoring Unit</i>
WHO	<i>World Health Organization</i>
WVI	<i>Wildlife Vets International</i>
Zapovednik	<i>State Nature Reserve</i>
ZSL	<i>Zoological Society of London</i>

Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders
(<http://darwin.defra.gov.uk/resources/reporting/>) -

it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin project information

Project Reference	13 – 034
Project Title	Wildlife health monitoring and capacity-building for leopard conservation in Russia (Amur Leopard & Wildlife Health Project)
Host country(ies)	Russian Federation
UK Contract Holder Institution	Sarah Christie, Programme Manager – East and Southeast Asia Conservation Programme, Zoological Society of London
UK Partner Institution(s)	Faculty of Veterinary Science and National Centre for Zoonosis Research, University of Liverpool Institute for Zoo- and Wildlife Research (IZW), Berlin, Germany
Host Country Partner Institution(s)	Primorskaya State Academy of Agriculture, Ussuriysk, Primorski Krai Wildlife Conservation Society, Representative Office in Russia, Vladivostok Moscow Zoo Novosibirsk Zoo Lazovsky State Nature Reserve, Lazo rayon, Primorski Krai Tigris, Vladivostok and The Netherlands Phoenix Fund, Vladivostok Institute of Biology and Soils, Far Eastern Branch of the Russian Academy of Science, Vladivostok Utios Wildlife Rehabilitation Centre, near Khabarovsk, Khabarovski Krai International Fund for Animal Welfare, Russian Office, Moscow
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1 Project Background

The project has made a major contribution to biodiversity conservation in the Russian Far East by training local wildlife vets and establishing a commercially viable Wildlife Health Monitoring Unit. Good progress has been made documenting the health status of wild and relevant domestic animals in the region, although delays with permits to obtain and export samples mean that this work will take another year or more to complete. The remaining outputs of a long-term wildlife health monitoring strategy and a disease risk management strategy for Amur leopard reintroduction are also under way, but require the sample analysis results for completion.

Приморский край



Figure 1: Map of Primorski Krai showing the cities of Ussuriysk and Vladivostok, the Lazovsky State Nature Reserve and the current Amur leopard range.

2 Project support to the Convention on Biological Diversity (CBD)

Capacity to monitor wildlife health is an integral part of any country's biodiversity conservation strategy. The project has supported the PSAA to build this capacity through training workshops and materials, and the establishment of a commercially viable Wildlife Health Monitoring Unit. Prior to the project there was no capacity at all for this type of work in the area; now there is a working diagnostics lab and improved training materials for the future, and of course a wide range of individuals from students to lecturers to practicing vets have benefited from the various training workshops and general contact with project vets. Also of great significance is the effect that building the lab has had on the PSAA, providing great motivation for them to raise funds to equip the lab (done) and continue working to extend the facilities in the building (see below for further details). The project has also supported host country institution capacity for ex situ conservation by providing training in two of Russia's major zoos holding Amur tigers and leopards, and surveying their leopards (and occasional other stock) for wildlife diseases.

The eventual realization of Project Output 4 will contribute to the long term survival of the current wildlife population in RFE, with a focus on Amur leopards and tigers and their prey species. The eventual realization of Project Output 5 will contribute to the successful re-introduction of a second Amur leopard population into the wild. Since both animals are flagship species their survival and/or re-introduction will furthermore contribute to the long term preservation of their habitat.

Please see also references to CBD at the end of section 3 under Primorskaya State Academy of Agriculture.

3 Project Partnerships

Primorskaya State Academy of Agriculture (PSAA)

The PSAA has been working with WCS (see below) in the Russian Far East since 2002 and was the major ZSL-ALWHP partner since the project's onset in 2006. They were the foundation of the animal health training & monitoring component of the project, taking responsibility for (1) advertising our teaching to their students, (2) managing the administrative aspects of the teaching, (3) providing facilities for teaching (rooms, boards), (4) receiving Diploma of Veterinary Medicine (DVM) theses from selected candidates.

In addition, the PSAA is completely committed to the development of the Wildlife Health Monitoring Unit (which was not originally intended to be part of their role) as a permanent regional resource for wildlife health monitoring and student training. Restoration work on the building began in October 2006 and by the end of December 08 all services had been restored to the building and one room was fully restored to working condition, complete with furnishings and equipment, a lot of it paid for with funds raised independently by the PSAA. This diagnostic lab is now running commercially and the PSAA and ZSL continue to seek funds to further develop the building to include a post mortem facility and lecture room (this was the aim of our failed Darwin followup application).

In 2008 the PSAA appointed a Director for the WHMU facility, Dr Irina Korotkova, produced a business plan for the WHMU and obtained commitments for sample processing from relevant local agencies, obtained a grant from the Russian government for equipment and salaries and contributed to renovation costs as far as they were able. They have also incorporated project training materials into their curriculum and fully cooperated in workshop organisation. They are also the host organisation for project veterinarian Dr. Misha Goncharuk's dissertation and hence are supporting his development as a key resource for the area.

The PSAA provided lecture faculties during veterinary training workshops in April 2006 and November 2007 (Annex 7 and 8) as well as taking responsibility for part of the overall organization of the Moscow zoo workshop in June 2008 (Annex 9). The WHMU facilities will of course also be used in future workshops and lectures beyond the scope of this project.

This collaboration throughout the project has supported the PSAA in building capacity to meet CBD requirements especially relating to articles 5, 12, 13 & 19.

Wildlife Conservation Society – Representative branch in Russia (WCS Russia)

Close collaboration with WCS Russia continued throughout the project. The project's veterinary advisor from the UK, Dr John Lewis, is now a key member of the WCS leopard capture team, working on capture sessions during 2007 and 2008 and will continue in future sessions. This involves long periods working with a range of Russian scientists and hence many opportunities to pass on knowledge. For two weeks in October 2008, the Darwin project vet and graduate student at PSAA Dr. Misha Goncharuk, after apprenticing with Dr. John Lewis, filled in as the on site veterinarian for WCS leopard captures after Dr. Lewis returned to the UK in autumn 2008.

WCS staff now contact Dr. Lewis for veterinary advice on any wild animal (e.g. tiger, bear) rescued. In May 2009, WCS also requested assistance from Dr. Misha Goncharuk to immobilize a captive tiger held at Utios (see below) in order to perform surgery on the sick animal. The immobilization went well and the surgery was a success, despite the advanced age of the tiger. WCS frequently give us advice and support, for example in 2008 and 2009, they loaned the project a dart gun for the sampling work. Without this we would have been unable to proceed, because dart guns are classed as weapons and import restrictions are tight; Claudia Schoene was scheduled to bring one back from Germany with her in January 2008, prior to her resignation, and would have been permitted to do so as a qualified vet holding a firearms certificate. We had no other immediate way of getting one into the country.

Moscow Zoo

Moscow Zoo, which is a member of ALTA, provides free accommodation for project staff on their way to and from the Russian Far East and, through Head of International Cooperation Tanya Arzhanova, much valuable advice on administrative and logistical issues such as the obtaining of CITES permits for the export of samples collected for the project. In 2007 and 2008, Tanya and other zoo staff also arranged all the logistics, and provided free accommodation, for the training workshop and evaluation of Amur leopards at the zoo conducted in June 2007 and July 2008 (please see Annex 9 and 10). Tanya also accompanied project staff and students to Novosibirsk Zoo as part of the same trip in 2007 to act as interpreter; her grasp of not only both languages but also the highly specialised vocabulary involved makes her irreplaceable in this role, which is one she has undertaken for ZSL many times before.

Novosibirsk Zoo

Novosibirsk Zoo successfully hosted part of the training and leopard evaluation workshop as planned, in June 2007 (Please see Annex 10).

Lazovsky State Nature Reserve (LSNR)

Collaboration with LSNR has been good from the start and developed further during 2007 to the present with the selection of the reserve as the most likely release location for Amur leopards. Because of this decision, the sampling effort for the project is now concentrated in and around the reserve. Dr Linda Kerley, a researcher based at LSNR, was contracted to work for the project following the departure of project manager Claudia Schoene at the end of 2007. Linda is working with and training Misha Goncharuk – one of the most promising students from the Academy and already a qualified vet - in capture and sampling of wild animals. Misha and Linda are also covering domestic animal sampling in villages around the reserve. Reserve Director Alexander Laptev is fully supportive of both the proposed Amur leopard reintroduction and the disease sampling work (Annex 11).

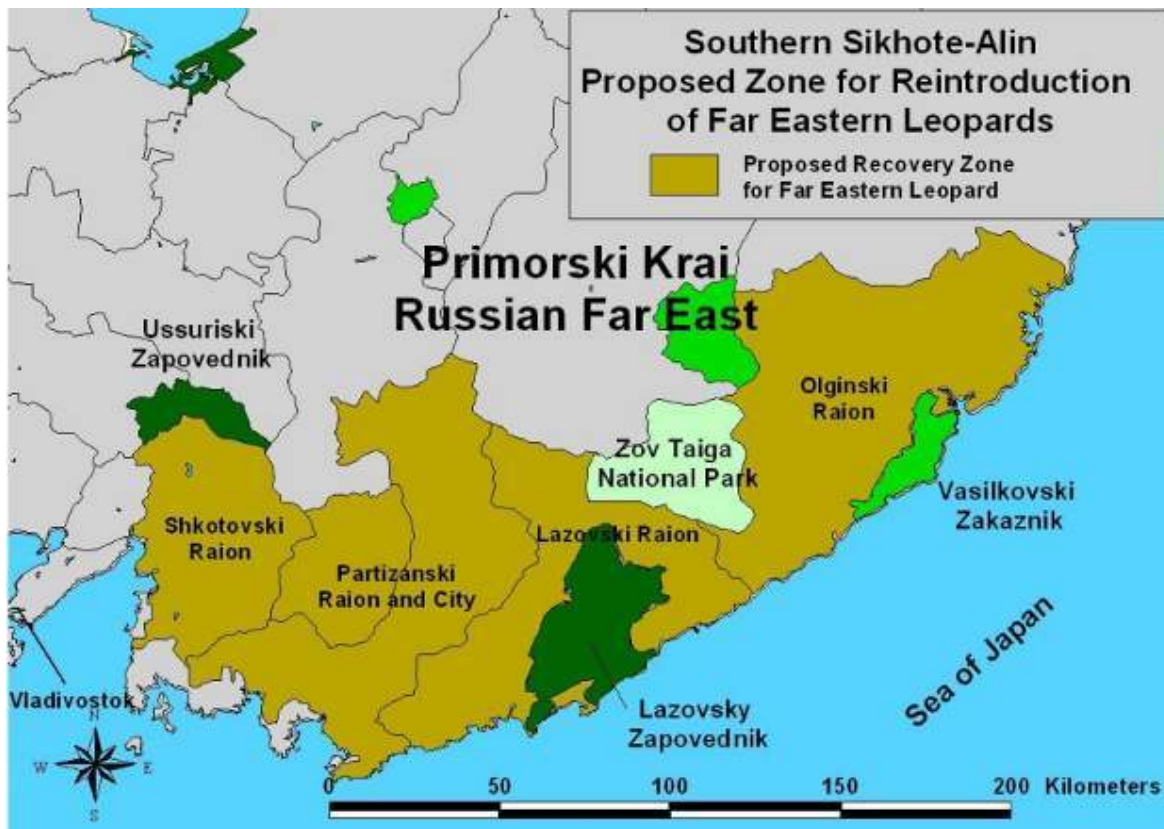


Figure 2. Proposed area for reintroduction of Amur leopards, centring on Lazovsky Zapovednik. *WCS/Tigis*.

Tigris

Tigris is a Dutch NGO funded and run by Michiel Hötte and is a member of ALTA. Michiel has worked part time for ZSL throughout the duration of this project, spending part of his time in the RFE and part fundraising in the Netherlands. Michiel is the coordinator for ALTA and raises funds for various aspects of leopard conservation implemented by Phoenix, WCS and ZSL. During the reporting period Michiel worked with the project manager on various documents and provided advice on local politics and contacts. He is also involved in the production of the Amur leopard reintroduction plan which is currently in preparation – in fact he will be going Russia for three months in late 2009 on a contract to WCS with terms including completion of this plan.

Phoenix Fund (Phoenix)

Phoenix is a Russian Conservation NGO based in Vladivostok and a member of ALTA. Its Director Sergei Bereznuik and his four members of staff support and run a number of education, compensation-of-livestock-losses, fire-fighting and anti-poaching projects in Primorski Krai. Phoenix assists the project with local contacts and Irina Goodrich, Projects Coordinator of Phoenix, routinely undertakes relevant English / Russian translations for the project.

Institute of Biology and Soils (ISB)

The main contact person at the IBS is Dr Alexei Kostyria. Dr Kostyria also works for WCS Russia and is the official and overall responsible scientist for the Amur leopard captures in Nadezhdenskii and Xasanskii rayon. A second contact is Ms Olga Uphyrkina, a geneticist with the IBS. She frequently contacted Claudia Schoene and John Lewis to ask for veterinary support and advice. In 2008/9 Olga undertook disease and genetic studies on small carnivore species (far eastern leopard cat in particular) in the current Amur leopard range and often seeks veterinary advice from Dr. Misha Goncharuk. Misha worked on her project in 2007

helping her immobilize and draw blood from captured animals. Olga has also agreed to be an academic advisor to Misha to share results on disease status of small carnivores captured on her study site and Misha will write his dissertation on a comparison of the health status of animals from LSNR and current leopard range.

Utios Wildlife Rehabilitation Centre (Utios)

In April 2006 and November 2007, two one-week practical veterinary workshops took place at Utios (please see Annexes 7 and 8). Eduard Kruglow, the owner of the Centre, kindly provided accommodation for the participants of the veterinary workshop. Furthermore, under the guidance of experienced wildlife veterinarians, the workshop participants performed necessary health checks on a number of wild animals kept at Utios, which provided them with a chance to gain hands-on experience in wildlife immobilization. Project vet Dr Mikhail Goncharuk was also called in to immobilise the centre's resident Amur tiger in 2009 as mentioned above. Despite the tiger's advanced age, this treatment went well.

International Fund for Animal Welfare – Russian Office (IFAW)

Project manager Claudia Schoene acted as a veterinary consultant for IFAW Moscow throughout 2007, advising on the care of rescued tiger cubs and other matters. The Russian branches of IFAW became more active and communicative partners in ALTA during 2007 and 8, thanks partly to the relations established with this project.

Faculty of Veterinary Science and National Centre for Zoonosis Research, University of Liverpool (Liverpool)

Two of Professor Malcolm Bennett's students at the University of Liverpool carried out an academic disease risk assessment in order to identify diseases of importance in prey species which can have a major impact on the long term health and survival of their predators, e.g. Amur leopards. The results of this were rather a long time in coming (because the work was being done for free), but once available were invaluable in enabling us to prioritise our sampling with our limited resources. As a result, sampling effort has been concentrated on the area intended for Amur leopard reintroduction, rather than spread between that and the existing range of the Amur leopard.

Institute for Zoo- and Wildlife Research (IZW)

Dr Katarina Jewgenow and Dr Frank Göritz of the IZW, world leaders in the field of artificial reproduction in exotic animals, are a long-standing ZSL contact with regard to Amur leopards, which are one of the few taxa for which such work might have real conservation relevance in the foreseeable future. Both scientists formed part of the team for the Moscow component of the zoo workshop in June 2007, providing the Russian veterinary students with a unique opportunity to learn about their cutting edge work in artificial reproductive techniques and observe and assist with ultrasound examinations and semen collection.

CBD Focal Point

The CBD focal contact in Moscow has proved uncommunicative, despite efforts made by Tanya Arzhanova at Moscow Zoo to establish contact on behalf of the project.

4 Project Achievements

See Annex 1 and 2 - the narrative against the project log frame and the final log frame.

4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

Wildlife health monitoring is an increasingly important component of wildlife conservation and highly relevant to the small remaining populations of Russia's most high-profile endangered species; Amur leopards and tigers. Prior to this project it was clear that the Russian Far East had no capacity for this type of work. During the project's implementation it became clear that the PSAA are deeply committed to improving the service they can provide in this area, but limited by lack of funds and incountry expertise. The achievements made by this project over the past three years in partnership with PSAA will have a positive impact on CBD in RFE because a) they have established a veterinary diagnostics lab in the region as part of the new Wildlife Health Monitoring Unit and trained numerous veterinary staff, thus improving the area's capacity to deal with threats from wildlife disease to critically endangered species such as the Amur leopard and tiger; and b) they are important for the reintroduction plan of a new wild Amur leopard population; an action identified as necessary for conservation of the taxon in 2001.

4.2 Outcomes: achievement of the project purpose and outcomes

Extensive improvements in wildlife health veterinary capacity in the RFE, in terms of both professional knowledge and practical experience, were achieved during two training workshops in both Ussurisk and Khabarovsk and three at Moscow and Novosibirsk zoos. A young Russian vet, Dr Mikhail Goncharuk, was engaged as the project veterinary counterpart working with Linda Kerley in LSNR sampling wild and domestic species. Misha is an outstanding student for postgraduate work and ZSL is delighted to have him as a project employee; he is acquiring unique and vital practical experience which makes him a crucially important repository of skills and experience for the region. Already in 2009 his experience proved valuable when he assisted WCS with immobilization of a wild orphaned tiger cub and performed an immobilization of an elderly captive tiger held at Utios. A great deal of knowledge has been passed on by Dr John Lewis, project veterinary advisor, who has taught on all training courses and worked on all the WCS leopard capture sessions alongside many Russian scientists (eg see Annex 12).

The output of making the WHMU capable of conducting analyses of biological samples from wild and domestic animals has been achieved, along with a business plan to ensure commercial viability (please see Annex 13). This output has considerably increased in importance since the project's inception due to the discovery that the only existing laboratory in the region (originally intended as a project partner) is focused primarily on domestic livestock and is unwilling to provide training or cooperate in general. Although the WHMU does not yet have the full capacity for disease screening (for example some highly specialized tests needed for our project), it is clear that the PSAA is completely committed to its continued development as a permanent regional resource for wildlife health monitoring and student training – the only facility of its kind in RFE. The WHMU director, Dr Irina Korotkova, obtained commitments for the processing of wildlife veterinary samples from relevant local agencies including Inspection Tiger (Annex 14), obtained a grant from the Russian government for equipment and salaries, and contributed to renovation costs as far as they are able. In 2009, she oversaw several wildlife health cases including (but not limited to) the necropsy and screening of a wild pregnant Amur leopard found dead and suspected poached. The information she collected will be used as evidence for a possible prosecution. The WHMU is also a commercially run veterinary diagnostic laboratory for the PSAA.

The third achievement was the collection of veterinary samples from a variety of wild and domestic species for analysis of disease presence, the results of which will be vital to investigate the veterinary feasibility of leopard reintroduction. Collecting veterinary samples anywhere, especially in Russia, is no small feat and we experienced delays due to permit, staff, logistics, and weather problems but we eventually proceeded; we now have samples from 34 captive and 4 wild leopards and 3 wild tigers, whether supplied by zoos or collected during training workshops and the WCS capture sessions to which this project contributed funds

(Annex 15 and 16); and samples from a variety of wild prey species in LSNR as well as domestic dogs and cats from adjacent villages (Annex 17). We also acquired data on zoonanthropotic and zoonotic disease history in the area from local and regional hospitals and county veterinary offices. While some analysis have been conducted in country, others will be conducted in the UK and the US when export permits are finally secured (a lengthy process). Until then biological samples are stored frozen in liquid nitrogen at LSNR.

A veterinary chapter for the Amur leopard reintroduction plan has been produced (Annex 18).

4.3 Outputs (and activities)

The project achieved its outputs 1 and 3 (see below) and made considerable progress towards output 2, which when accomplished will ensure the accomplishments of Project output 4 & 5 which were not fully achieved during the project time frame.

Four successful veterinary training workshops were held (two in the RFE with both theory and practical sessions, one spread over Moscow and Novosibirsk zoos, mostly practical, and one in Moscow zoo with both theory and practice, please see Annexes 7-10 inclusive) and several students identified for support in developing their careers. In particular, Misha Goncharuk has been engaged to work for ZSL since early 2008 and will be retained, if funds can be found, for the longer term. Training materials are now permanently available on the Academy's website, and have also been adopted into the curriculum of several class at the PSAA. (Please see Annex 19). In addition, project vet Dr John Lewis is now a regular participant in WCS Russia's leopard capture teams, passing on his knowledge to a range of Russian vets and wildlife biologists on every visit.

The fact that a collaboration with the Regional Veterinary Diagnostic Laboratory turned out not to be possible, along with delays first in obtaining sampling permits and then in exporting the samples, caused substantial delay in the achievement of Project Outputs 2 & 3. However, during FY 2007-9 great progress was made in restoration of the building that is now the Academy's WHMU laboratory and now offers the project the ability to analyse some samples in country. Efforts to export the collected samples of course continue and will do so until they are in the UK or USA and can be tested. Funds to cover this are in hand to some extent (some tests have proved hugely expensive) and fundraising for this purpose continues. It will be possible to complete these portions of the project in the future without any further funding from Darwin and of course reports will be sent to Darwin when available.

The project's progress was also hindered when at Christmas 2007 the project manager Claudia Schoene resigned to take up a job in Berlin, giving the project no notice. This decision may have been connected with her mother's illness following her father's death the previous year. After Claudia Schoene's departure, the length of time needed to recruit a new staff member and obtain a visa, plus new visa laws stipulating that no-one without a green card is permitted to stay in Russia longer than 3 months in every six, precluded appointment of a fulltime replacement. Instead the necessary work was undertaken by Sarah Christie at ZSL, Linda Kerley and Misha Goncharuk in Russia, and Robin Kachka from the US (who spent two months on the project in summer 2008 to organise the training workshop at Moscow Zoo and other matters and who can speak and write fluently in Russian). This restructuring caused delays in the last quarter of the FY 2007-08, both in progressing the work and in reporting, but even so significant progress was made during the Jan 2008 – March 2009 period. In Jan – March 2008, one room of the laboratory building was made fully functional, requiring only equipment and sampling, the other area in which progress has been slow, got properly under way during early 2008 and continued for the rest of the project. Due to initial delays and setbacks we were granted a 3 month extension to our project moving the end date from 31 December 2008, up to 31 March 2009.

Sampling in LSNR took considerable time to get going due to both permit problems and delays in establishing a suitable strategy. However, we do have samples now and sampling is still under way in the Lazo region for a larger sample of wild animals, and samples are stored from leopards and tigers captured in SW Primorye. We also have samples taken from Amur leopards in Moscow and Novosibirsk zoos, which are necessary in preparation for Amur leopard reintroduction from captive stocks. In March 2008 a protocol for collection of samples

from relevant leopards in other zoos was circulated to the zoos in the Amur leopard breeding programmes in Europe and America (Annex 20) and as a result we acquired additional samples from 25 captive Amur leopards held in zoos outside of Russia. Project veterinary advisor John Lewis has made arrangements with a number of laboratories in the UK for various tests to be run, most of them for free, and the paperwork for export of samples for analysis in the UK is under way.

Sample analysis was not completed during the project's three year time frame, as most samples have yet to arrive in the UK and most institutions are carrying out the work without payment and hence we cannot hurry them, but the necessary resources exist to continue the work beyond the project end date. We do have some results from the European captive leopard samples, as these were subject to only normal paperwork delays, and these are included in Annex 20. Dr Lewis has also established, with the help of MSc student Samantha Earle and Amur leopard zoo breeding programme coordinator Sarah Christie, a database to hold and analyse all the records on Amur leopard health from both wild and captive cats

Project Output 1: Improvements in the capacity of vets in the RFE to address wildlife health issues, in terms of both professional knowledge and practical experience

Indicator: Approximately 110 students trained over three years through a total of 15 weeks of training workshops. Each student will receive 3 – 5 weeks of training.

The ALWHP achieved 163 student weeks of training workshops over the three years of the project. Two veterinary training workshops focusing on clinical examination of captive Amur leopards and other available species at Novosibirsk and Moscow Zoo (June 2007) and Moscow Zoo and Captive breeding facility (June 2008) were conducted. Each workshop provided one week of training for a total of 30 veterinarians / students from PSAA from Dr. John Lewis who demonstrated how to immobilize and conduct physical and genetic examinations of captive leopards and, in the process, also collected veterinary samples from 9 captive Amur leopards as part of a screening process for possible reintroductions (Figure 3). Detailed reports of both workshops are presented in Annex 9 and 10.



Figure 3. Dr. Lewis and a student examine a leopard at the Moscow Zoo Breeding Station. Some participants fan the animal to keep it cool.

The ALWHP also assisted WCS in the organization of the two additional workshops in “Veterinarian Training in Wildlife Health and Tiger-Human Conflict Resolution Training” for the next generation of wildlife health professionals in RFE. These workshops conducted in April 2006 and November 2007, were done in close collaboration with WCS Russia and the PSAA. Main funding was provided by the Trust for Mutual Understanding to WCS Russia with a smaller part of the costs covered by the Darwin Grant and provided a total of 133 student hours of training. In April 2006, seven experts from five different countries provided a weeks lectures (thirty-five hours) at the PSAA: Dr Douglas Armstrong (Omaha Zoo / USA), Professor Neil Duncan (University of Pretoria / RSA), Professor Bruce Gummow (University of Pretoria / RSA), Dr John Lewis (WVI / UK), Dr Kathy Quigley (DVM / USA), Dr Claudia Schoene (ALWHP / Germany), and Sergei Zubsov (Inspection Tiger / Russian Federation). Lecture topics included wildlife diseases, immobilization, epidemiology, pathology and tiger-human conflict resolution. Up to 50 participants attended the various lectures (Figure 4). In addition to a selected number of students from the PSAA a number of state veterinarians as well as other Russian (veterinary) experts dealing with various wildlife-related issues had been invited to this theoretical part of the workshop. The lecture session was followed by a second week of hands-on training for the fifteen best participants. This practical training, for example in wildlife immobilization, took place at Utios (Figure 4). A detailed report of the workshop is attached in Annex 7.

In November 2007 ten experts from four different countries, including Russia, provided a weeks lectures at the PSAA: Dr Douglas Armstrong (Omaha Zoo/USA), Dr John Lewis (WVI/UK), Dr Claudia Schoene (ZSL/Germany), Dr Guli Kultun (PSAA/Russia), Dr Dee MacAloose (WCS/USA), Elena Nikolaevna (Ussurisk Veterinary Public Health Dept), Galina Vladimirovna (PSAA/Russia) and Dr Olga Tereschenko (Vladivostok Circus/Russia) provided professional veterinary lectures, while Sergei Zubsov (Inspection Tiger/Russia) and Galina Salkina (Lazovsky Zapovednik /Russia) contributed relevant information on tiger conflict resolution and tiger research. Subjects included an overview of wildlife health and disease, infectious diseases in the Russian Far East focusing primarily on tigers and domestic animals (which might transmit diseases to wildlife), disease risk assessment methods, an extensive introduction to veterinary epidemiology, disease implications at the wildlife/livestock/human interface, an introduction to wildlife pathology including necropsy techniques, Avian influenza, biological sampling and laboratory diagnostics, capture and anaesthesia procedures of wildlife including emergency medicine, health evaluation, relocation of problem tigers, humane euthanasia of injured or problem animals, human safety in the field, proper record keeping, remote darting and other capture systems, and handling animals in captivity.



Figure 4: Participants of the 2nd Workshop in “Veterinarian Training in Wildlife Health and Tiger-Human Conflict Resolution Training” in April 2006. Left: during lectures at the PSAA. Right: During hands-on training in Utios with Dr John Lewis demonstrating the intubation of a wild boar to a group of the participants.

As with the first workshop, a total of 50 participants attended the 35 hours of lectures and in addition to a selected of students from the PSAA a number of state veterinarians as well as other Russian (veterinary) experts dealing with various wildlife-related issues had been invited to this theoretical part of the workshop. The lecture session was followed by a second week of hands-on training for eighteen best participants. This practical training, for example in wildlife immobilization, took place at Utios. A detailed report of the workshop is attached in Annex 8. A local newspaper, "Trud 7" ran a detailed article on the work entitled "Local vets for local wildlife" and including photographs.

Handouts from all workshops were translated into Russian and are available for all subjects, distributed to each workshop participant, and later made available on the PSAA website and to instructors on DVD Power point presentations.

After the resignation of Claudia Schoene neither ZSL nor WCS were able to find a replacement coordinator for the fourth and final planned TMU workshop that was planned to occurred in fall 2008 (Robin Kachka, who was engaged to handle the 2008 zoo training workshop, was unavailable in the autumn), so that workshop has been postponed until autumn 2009, beyond the time frame of this project. However it will take place, and it will use materials produced by this project.

As outlined in the first annual report the PSAA is currently establishing a Diploma Course in Wildlife Health. The application for the establishment of such a new course as part of the curriculum has to be done at country level and therefore through responsible authorities in Moscow. This is a long and complicated process which is still ongoing.

In April 2006 discussions started between PSAA and ALWHP on the production of training modules and the possible input of the ALWHP into the wildlife disease lecture curriculum at PSAA. Following these preliminary meetings Claudia Schoene submitted a proposal regarding the possible input of the ALWHP into the PSAA's curriculum on Wildlife diseases. It became clear during 2007 that there was some resistance within the Academy to improvements being made; this is not uncommon in developing countries, where individuals can feel their positions are threatened by innovation. During the second steering committee in November 2008, Sarah Christie asked Nadezhda Bessonova (NB) what had been done to improve the wildlife veterinary curriculum at PSAA since the last SC meeting. NB told us that wildlife veterinary medicine is still not an official part of the PSAA's curriculum due administrative restriction. However she assured us that the information gained from the training workshops is available on the PSAA website and is heavily used by PSAA lecturers and students, and that the information greatly adds to the quality of education of all vet students. NB provided numerous examples of how training materials (especially the power point presentations) are used and she provided us with a report of how workshop materials are used by PSAA (Annex 19). The workshops are very popular among students and get national recognition through TV and newspaper articles about the PSAA and the training workshops.

Project Output 2: Completion of assessments of health status for leopards, their prey, and domestic livestock and cats and dogs, and subsequent assessment of health risks to wild leopard

Indicator 1: Approximately 548 samples (from approx 17 species) collected and processed.

Indicator 2: Presence of approximately 15 diseases documented.

These indicators were deemed too ambitious and the sampling strategy was revised (see section 6 below).

Sets of veterinary samples were collected from 277 individuals from 17 species, including leopards, and a total of 430 samples during the ALWHP. Each set of veterinary samples consists of one to six different biological samples based on availability at the time the animals were handled.

Sets of veterinary samples from nine captive Amur leopards were collected during zoo training workshops, and an additional 25 captive leopards held in zoos in Europe and America have so far been collected using the protocol written and distributed to the Captive Breeding Program by John Lewis. Some results are available from these samples, which were a lot easier to get into the UK than the Russian ones, and both the protocol and the results to date can be found in Annex 20. This work is ongoing and we expect more samples to arrive over the next year or so.

Four wild Amur leopards and three wild Amur tigers were sampled during four WCS / ZSL capture sessions. Project veterinary advisor John Lewis was present at all three sessions and Claudia Schoene and Misha Goncharuk also participated for short periods. Dr. John Lewis assisted in collecting biological materials (blood, tissue, sperm) and in conducting full biomedical examinations of all captured individuals (two male and two female leopards). Heart murmurs were possible in at least two individuals but still need further analysis; it is possible that they may be an artefact of anaesthesia and work with captive leopards (training to have their hearts listened to without anaesthesia) is ongoing to check this. It is also possible that there may be complications associated with small population sizes and inbreeding depression of leopards in south western Primorye. Clinical laboratory finding conducted in the field on wild leopards demonstrated that cats had good red blood cell counts (none were anemic), all were negative for feline leukaemia virus and feline immunodeficiency virus, and all were negative for heartworms. Blood serum will be tested in the UK to look at the overall health of each individual (serum chemistry panels) and will be screened for exposure to disease agents known to be pathogenic to non-domestic felids (please see Annex 15 and 16). Samples are stored in a liquid nitrogen container at the ALWHP's office until export permits to the UK can be secured.

In March 2008 sampling effort concentrated in and around Lazovsky National Park, the intended release site for Amur leopard reintroduction, began. Issuing of necessary capture and collection permits both locally and in Moscow took up a great deal of time. Misha Goncharuk's assistance and contacts were invaluable in progressing these. We also collected samples from hunters during the hunting season over the winter. Because acquisition of capture permits took a long time this work only began during the final year of the project. Even so, set of samples from 103 individuals representing 9 wild prey species and domestic cats and dogs have been collected so far. This work is continuing beyond the project to increase sample sizes needed for disease analysis and health risk assessment. Annex 11 details the sampling strategy accepted by the scientific board of LSNR and Annex 17 details the samples collected to date.

Clinical laboratory findings conducted by Misha Goncharuk and Robin Kochka in Russia demonstrated that animals had good red blood cell counts (none were anemic), all were negative for feline leukaemia virus, immunodeficiency virus, and heartworms. Some individual raccoon dogs suffered from skin lesions that suggest scabies although this is not yet conclusive. Blood serum will be tested in the UK to look at the overall health of each animal (serum chemistry panels) and will be screened for exposure to disease agents known to be pathogenic to non-domestic felids. Samples are stored in a liquid nitrogen container at the ALWHP's office in Lazo until export permits to the UK can be secured.



Figure 5: Misha and Linda taking samples from a wild mink captured in the reserve.



Figure 6. Misha Goncharuk and Misha Borisenko taking samples from a wild sika deer captured in the reserve.



Figure 7. Misha and Robin working on samples.

Project Output 3: Establishment of the proposed Wildlife Health Monitoring Unit in Ussuriysk

Indicator: All staff and equipment in place and fully functional by Year 3.

Described in detail in section 4.2.

The decision outlined above, to restore the currently empty, former veterinary laboratory of the PSAA, situated about 10 km north of Ussuriysk on the original premises of the Veterinary Faculty and make it into the planned WHMU, meant a major shift of budget expenditure, which is reflected in the project expenditure reporting and which was discussed with the Darwin Secretariat at the time.

Work on the roof was completed in October 2006. In FY 2007-8 a fence was erected around the premises (this is required by Russian law as well as being a necessary security precaution), new windows and doors were fitted and water, electricity and heating were fully installed. Then the smaller of the two internal rooms was fully restored to usable order in terms of plastering, fittings, flooring etc – including a fume cupboard (see Figure 7) and lab table (see Figure 8). Available funds do not yet allow for the other rooms to be renovated as a post mortem facility and classroom (this was the subject of a Darwin Followup application, sadly unsuccessful) and additional funding is being sought by both ZSL and the PSAA. By summer 2009 the diagnostics lab was commercially functional, though of course not capable of carrying out all of the tests possible in sophisticated university facilities in the UK.



Figure 7; the finished room at the PSAA laboratory in Ussurisk.



Figure 8. New additions since the last report; a laboratory table purchased by the project and lab equipment for urine analysis purchased by the PSAA.

Blood swabs from 69 domestic dogs and cats collected by ALWHP are currently being screened by WHMU for the possible presence of blood parasites that could affect Amur leopards. And of course a set of samples is also being exported to the UK for analysis, unfortunately the paperwork for this is taking forever and we are now having to apply for a second set of import permits, the first having expired before the Russian veterinary permits could be obtained. We are not alone here; WCS Russia are also seeking to export samples from the captures and have got no further than us as yet. However all samples are properly stored.

Project Output 4: Production of a wildlife health monitoring strategy to monitor and limit disease transmission in the wild populations of leopards, tigers and their prey

Project Output 5: Production of a disease risk management strategy for the proposed Amur leopard reintroduction programme

Both project outputs depend on the baseline data provided by Output 2.

Output 5 also involves collection of data on the disease status of captive Amur leopards that may be used as breeding stock for the reintroduction. And as outlined in Output 2 sets of veterinary samples from nine captive Amur leopards were collected during zoo training workshops in Russia. Western zoos have sufficient resources to collect the necessary samples themselves, and in March 08 a protocol was circulated to them for this purpose. To date samples from 25 zoo leopards have been received; some tests have been run, and the both protocol and results can be found in Annex 20. Testing will continue after the project's end date using resources from elsewhere.

Indicator: Two strategies formulated and distributed by the end of Year 3.

This indicator is still adequate, provided one extends the timeline. Formulation of the strategies is within the control of the project, however distribution of the Amur leopard reintroduction plan in which they will be included is dependent on other parties providing the other sections of the plan. Following the departure of Claudia Schoene, responsibility for strategy production falls to the projects veterinary advisor John Lewis. The wildlife health monitoring strategy will be delayed beyond the project timeframe, but it will be produced due course. WCS are employing Michiel Hotte, who also works part time for ZSL, with a brief to complete the leopard reintroduction plan (among other things) in late 2009, which will help to move the process along.

4.4 Project standard measures and publications

Please see Annexes 4 and 5.

4.5 Technical and Scientific achievements and co-operation

The ALWHP cooperated in scientific research with WCS and numerous Russian partners (see above under Project Partnerships) in work that aimed at collecting data on a variety of ecological and biomedical parameters of Amur leopards and tigers. This research is ongoing and will continue past the end of the ALWHP. As outlined in previous sections, the project's veterinary advisor Dr. John Lewis is a key member of the WCS leopard capture team and also gives veterinary advice on any wild animal rescue. Dr. Misha Goncharuk also assisted on leopard captures (but to a lesser extent) when John Lewis could not be present. Methods and findings to date are detailed in Annex 15 and 16. Zoo training workshops were conducted in Moscow and Novosibirsk and are reported on in Annexes 9 and 10.

The ALWHP also conducted scientific research in cooperation with LSNR and other Russian partners (see above under Project Partners) aimed at sampling for the presence of diseases in prey species and domestic animals in the proposed reintroduction site for Amur leopards. Methods and findings are detailed in Annex 17. Publications will certainly be produced after it has been possible to analyse the samples.

4.6 Capacity building

The ALWHP supported host country capacity in institution building, training and human resources, and the development of incentives as a result of expertise and experience sharing, the passing of knowledge, and by providing the resources to PSAA to make the diagnostics lab in the WHMU operational. Capacity building activities are outlined throughout this report but especially in 4.1 and 4.2.

ZSL built its own capacity to be an effective project partner through the incorporation of Misha Goncharuk as a staff member from early 2008.

The project also worked as a partner with WCS Russian biologists to effectively disease sample wildlife leopards captured in RFE.

4.7 Sustainability and Legacy

The project is now well-known in the area and well connected with other conservation organisations.

The Wildlife Health Monitoring Unit is now running commercially with, for example, a contract with Inspection Tiger to test wildlife samples. As the only such unit focusing on wildlife in the area, the WHMU is likely to play a useful role in future project work relating to wildlife disease, both with existing partners such as ZSL, Phoenix and WCS and with appropriate international agencies overseas (e.g. FAO, WHO).

Continuation of project benefits regarding Amur leopard conservation is highly significant: the wildlife and captive leopard health assessment, when complete, will form one of the foundations of the strategy for reintroduction of Amur leopards in their former range. In addition, the project will contribute to the proposed Amur leopard reintroduction through provision of local capacity for ongoing monitoring of the health status of local wildlife and released leopards.

ZSL has obtained funds to retain Russian vet Misha Goncharuk and wildlife biologist Linda Kerely during the rest of 2009, and continues to fundraise to establish both of them as a long-term employees in the area. If successful, this will provide an avenue for continued liaison with the Academy and further collection of samples if needed. Sarah Christie also remains in contact with the PSAA by email, discussing possible funding sources for further work on the WHMU building. Establishment of a post mortem facility in particular would be hugely useful to the region as there is currently nowhere suitable to establish the cause of death of dead leopards, tigers and other wildlife.

5 Lessons learned, dissemination and communication

Lessons learned

One lesson learned during the project was just how difficult it is for foreigners to obtain research permits in this region. Misha Goncharuk's assistance was invaluable in obtaining sampling permits but a lot of time was lost before we employed his help. In this regard, we did seek advance advice from the PSAA on this matter, but with hindsight it would have been useful to have made enquiries in other quarters too. However, to some extent success was a matter of political connections as much as of knowledge of the processes. We still have not been successful at obtaining export permits necessary for bring samples to the UK to be analyzed. The CITES permit is relatively easy, but has expired before the veterinary permits have been obtained – we are now renewing. The export permit process in Russia is complex and subject to frequent changes that are quite difficult to follow even for Russian nationals. We have the ISBS in the RFE and Moscow Zoo in Moscow working on these matters for us but even so it is taking a *very long time*.

We also learned that it is essential to establish personal contact with all proposed project partners prior to project design. In the planning stages of this work we were assured by various bodies that the existing diagnostics lab in Ussurisk would be keen to collaborate, but in the event they were unwilling to so much as allow project personnel in to look at their testing setup, never mind run training workshops for students. It appeared we had overlooked some sort of political relationship which is still not clear, and that that lab is very much focused on commercial farm livestock. This meant a major revision of the project plan (and budget) to allow for development of the current WHMU building, owned by the PSAA. In the event, this was actually a good thing as the lab and teaching are both under the control of the PSAA, and the PSAA has taken on the running of the lab with a will, raising extra money for equipment and forging agreements to check wildlife samples with various relevant agencies in order to make it commercially viable; but there was considerable stress involved in the transition for all concerned!

It is also true that we were overambitious initially in the sampling targets given the problems of working in the area. For that reason indicators for this aspect were revised and are detailed in the relevant section.

Dissemination and its continuation

Dissemination of information about the ALWHP project in the RFE was mainly through the conduction of the various veterinary workshops, and the subsequent spreading of respective information by the participants. Information was further spread by the veterinary students of the PSAA and other conservationists with whom contact was established.

A third means of spreading information was through the information brochure, which has been distributed by email and made available on the PSAA website, and through displaying a copy of the ALWHP poster at the PSAA..

The WHMU which is now a commercially-viable veterinary diagnostic laboratory run by the PSAA is a continued source of the dissemination of the ALWHP's project purpose and outputs that continues after the end of the actual project. There is a Darwin logo displayed inside the lab and when the outside has been renovated to the same standard (it is currently weatherproof, but not painted) a permanent logo will be placed at the front.

Information about the project is also spread internationally via ALTA news, which is distributed around the world. Two issues have contained articles about the project (Annexes 21 and 22). Misha Goncharuk's ongoing blog on the ZSL website (Annex 12) is another international communication mechanism.

As stated in the previous section, continuation of project benefits regarding Amur leopard conservation is highly significant: the wildlife and captive leopard health assessment will form one of the foundations of the strategy for reintroduction of Amur leopards in their former range. In addition, the project will contribute to the proposed Amur leopard reintroduction through provision of local capacity for ongoing monitoring of the health status of local wildlife and released leopards.

5.1 Darwin identity

The WHMU has been named 'the Darwin Wildlife Health Centre' and a Darwin logo is mounted in the building leaving a permanent reminder of Darwin's contribution to Russian Far East. When the outside has been renovated to the same standard as the inside (the PSAA continues to seek funds to complete the renovation and ZSL is supporting them in doing this) then a Darwin logo will also be mounted on the outside.

The project vehicle carries the Darwin logo and it also appears in publicity material.

All project materials, including Misha's dissertation, do (will) credit the Darwin Initiative as the donor to the project. This type of material is extremely popular in Russia. The PSAA will continue to provide powerpoint presentations and other materials crediting Darwin to their students.

The final reports and the Amur leopard reintroduction strategies will show the Darwin logo in a prominent position on their cover, and will explicitly credit the Darwin Initiative. All scientific publications, reports and press releases acknowledge the Darwin Initiative.

All efforts have been made to ensure that the Darwin Initiative is credited in any radio or TV coverage, but as the media are generally reluctant to mention sponsors, we try to carefully positioning the jeep logo in any publicity photos.

People who are familiar with the Darwin Initiative are those working in the field of conservation, and especially on leopard and tigers, and those living in or near villages where we have conducted sampling of domestic animals. Other people will know about the Darwin Initiative are students and other people who are familiar with the WHMU, the PSAA and the training workshops.

6 Monitoring and evaluation

For project output 2

Indicator 1: Approximately 548 samples (from approx 17 species) collected and processed.

The original indicator of 600 samples from six species was deemed too ambitious by the scientific board of LSNR and the sampling strategy was revised as outlined in the half-yearly report and the minutes of the 2nd meeting of the project steering committee (Annex 23). The strategy included in the half-yearly report aimed at sampling in three locations, but following the departure of Claudia Schoene the project had staff only in the Lazovsky area and, as this is also the focal area for Amur leopard reintroduction, it was decided to concentrate effort there.

Indicator 2: Presence of approximately 15 diseases documented.

Following experiences to date as well as the restriction on the budget for sampling expenditure, and the results of the academic risk assessment carried out by the University of Liverpool, this indicator was also revised. It originally called for determination of prevalence and incidence of 15 diseases; this was too ambitious.

The sampling effort allowed for the general detection of the presence of certain diseases in the selected populations. The establishment and documentation of prevalence and incidence of any such disease would require an additional sampling effort, and this will be written into the plan for Amur leopard reintroduction.

The M&E component of the project was essential for keeping our work focused on the achievable.

6.1 Actions taken in response to annual report reviews

We addressed all issues raised by reviewers in the subsequent reports (including points not marked as “response required”) and discussed these with project partners where appropriate. The questions and our responses are itemised in Annex 24 for easy reference.

7 Finance and administration

7.1 Project expenditure

Variations from the original budget were largely due to the need to restore a laboratory building as detailed in section 4.2.

	2005/2006	2006/2007	2007/2008	2008/2009	TOTAL
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Rents, rates, heating, lighting, cleaning, overheads

Darwin budget

Expenditure

Balance

Office costs e.g. postage, telephone, stationery

Darwin budget

Expenditure

Balance

Travel and subsistence

Darwin budget

Expenditure

Balance

Printing

Darwin budget

Expenditure

Balance

Conferences, seminars etc

Darwin budget

Expenditure

Balance

Capital items/equipment (increased from budget due to need to restore the lab)

Darwin budget

Expenditure

Balance

Other costs (contributions to WCS's leopard captures, sample testing fees and trapping costs – decreased due to shift of funds from WCS to fund the lab restoration)

Darwin budget

Expenditure

Balance

Salaries

Darwin budget

Expenditure

Balance

TOTAL DI FUNDING

NB The total includes the amounts in the final claim, currently being processed.

EXPENDITURE

Balance

ORIGINAL DI BUDGET (including 10% admin)

7.2 Additional funds or in-kind contributions secured

Wildlife Vets International £3,000 for equipment and consumables

Twycross Zoo Conservation and Welfare Fund £3,000 for equipment and consumables

PSAA £19,320 for equipment for the diagnostics lab

CMTS travel agents – three free plane tickets London-Vladivostok, one per year. Waiver of fees on all visa applications.

7.3 Value of DI funding

DI funding enabled the establishment of a permanent and commercially viable Wildlife Health Monitoring Unit in Ussurisk, development of professional wildlife veterinarians in RFE, and increased knowledge about the health and disease risk to the last remaining Amur leopards in RFE as well as the many other species of wildlife in the region. All entirely impossible without the Darwin funding.

Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/planned for next period
<p>Goal: <i>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>		<p>A great deal of expertise and experience has been passed on by John Lewis, project veterinary advisor and UK national, who has taught on every training course so far and on all the WCS leopard capture sessions alongside many Russian scientists. Sarah Christie has also provided talks to students on conservation of Amur leopards.</p>	<p><i>(do not fill not applicable)</i></p>
<p>Purpose Biodiversity conservation in the RFE enhanced by developing local capacity to conduct wildlife health surveys and monitoring and by assessing the health status of Amur leopards, of their prey, and of domestic animals suspected of passing diseases on to wild cat populations as the basis for improved strategies for long-term wildlife health monitoring and management, and disease risk management in Amur leopard reintroduction.</p>	<p>Wildlife health and disease status of leopards, prey and domestic animals assessed by Year 3</p> <p>Evidence of improved wildlife health monitoring in Russian vets by Year 3</p> <p>Strategies developed by end of Year 3 for long-term wildlife health monitoring and management, and for possible leopard reintroduction programme</p>	<p>Achieved all but one workshop completed as planned and materials translated into Russian and made available to interested students at PSAA.</p> <p>The WHMU capable of conducting rudimentary analyses of biological samples from wild and domestic animals was completed along with a business plan to ensure commercial viability.</p> <p>The director of WHMU, Irina Korotkova, supervises over health surveys and disease monitoring of a variety of wildlife species for various NGOs and the Russian government and she has been awarded grant money to continue her work.</p> <p>Veterinary samples were collected from wild and domestic animals; due to delays in export permits, production of the long-term monitoring strategy may be delayed.</p> <p>Data on zoonanthropotic and zoonotic disease history in the area acquired from the regional hospital and county veterinary office.</p> <p>Veterinary chapters for the Amur leopard reintroduction plan have been produced.</p>	<p>Continue our pursuit of necessary export permits to transport samples to the US for disease analysis.</p> <p>Work with PSAA to find funds to restore a second room in the WHMU for post-mortems, then the final room as a classroom. Also paint the outside and put up the Darwin name sign.</p>

Output 1. Capacity of vets in the RFE to address wildlife health issues increased	Approx 110 students trained over three years through a total of 15 weeks of training workshops. Each student will receive 3-5 weeks of training.	Over 163 student-weeks of training was provided. This Indicator is appropriate.
Activity 1.1. All but one training workshop was conducted on schedule and several instructors at PSAA have incorporated workshop notes and DVDs into their curriculum.		Nether ZSL nor WCS were able to find a coordinator for the final TMU workshop in autumn 08 and it has been rescheduled by WCS for autumn 2009. Intended Darwin contributions to this were small, and the workshop will still happen and the students will be trained using materials developed during the project.
Output 2. Health status assessed of leopards, their prey, domestic cats and dogs, and of health threats to wild leopards.	Approx 548 samples (from approx 17 species) collected and processed And the presence of disease established.	430 samples were collected but analysis has not been completed. We have sets of samples from 34 captive zoo leopards (169 total samples) collected during ALWHP workshops and from Western zoos; four wild leopards (27 total samples) and three tigers (23 total samples) collected during the WCS capture sessions to which this project contributed funds; and samples from 34 wild animals of 9 species from three areas in LSNR and 69 domestic dogs and cats from eight adjacent villages (211 samples total). Data on zoonotic and zoonotic diseases history in the area were acquired from the local and regional hospitals and county veterinary office. Indicator 1 was overambitious at the start and was revised. Indicator 2 was also too ambitious and was revised. Instead of prevalence and incidence only the <u>presence</u> of disease can be established under the three-year Darwin Grant and this indicator was revised during the project
Activity 2.1. Four sampling sessions on wild Amur leopards and tigers completed as planned. One season was not completed (Spring 2008) because permits were not aquired.		WCS will continue sampling sessions of wild Amur leopards and tigers in 2009 and indeed beyond, and results from any additional samples obtained will be pooled with the ones we already have.
Output 3. WHMU established in Ussuriysk	All staff and equipment in place and fully functional in Year 3	
Activity 3.1. Restoration of veterinary laboratory started in October 2006		WHMU has a fully functional diagnostic lab with staff and equipment in place.
Output 4. Strategies developed to monitor and limit disease transmission and for possible release programme	2 strategies formulated and distributed by the end of Year 3	Progress depending on progress towards output 2 & 3 This indicator is appropriate The veterinary chapter for the Amur leopard reintroduction plan has been produced.
Activity 4.1. Progress depending on progress towards output 2 & 3		Continue progress towards output 2 & 3. Funds are in hand for this. Papers will be written when the data are in.

Annex 2 Project's final logframe, including criteria and indicators

<i>Project summary</i>	<i>Measurable indicators</i>	<i>Means of verification</i>	<i>Important assumptions</i>
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> • the conservation of biological diversity, • the sustainable use of its components, and • the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 			
<p>Purpose</p> <p>Biodiversity conservation in the RFE enhanced by developing local capacity to conduct wildlife health surveys and monitoring and by assessing the health status of Amur leopards, of their prey, and of domestic animals suspected of passing diseases on to wild cat populations as the basis for improved strategies for long-term wildlife health monitoring and management, and disease risk management in Amur leopard reintroduction.</p>	<p>Wildlife health and disease status of leopards, prey and domestic animals assessed by Year 3</p> <p>Evidence of improved wildlife health monitoring in Russian vets by Year 3</p> <p>Strategies developed by end of Year 3 for long-term wildlife health monitoring and management, and for possible leopard reintroduction programme</p>	<p>ZSL and partner organisation reports</p> <p>Wildlife health monitoring reports</p> <p>Disease transmission limitation strategy and leopard reintroduction strategy</p>	<p>Sampling effort successful</p> <p>Sampling effort successful.</p> <p>Baseline data for wildlife health monitoring established</p> <p>Local authorities collaborative and supportive of leopard conservation</p> <p>Broad consensus can be reached among all stakeholders on appropriate next steps.</p>

<p>Outputs</p> <p>Capacity of vets in the RFE to address wildlife health issues increased</p> <p>Health status assessed of leopards, their prey, domestic cats and dogs, and of health threats to wild leopards.</p>	<p>Approx 110 students trained over three years through a total of 15 weeks of training workshops. Each student will receive 3-5 weeks of training.</p> <p>Approx 548 samples (from approx 17 species – revised from 600 and 6) collected and processed Prevalence and incidence of approx 15 diseases documented This indicator has been revised to just presence of diseases.</p>	<p>Training workshop reports (including evaluations by participants)</p> <p>Reports on analyses conducted in RFE and overseas Project reports and scientific publications</p>	<p>Partner institutions collaborative and logistical problems overcome</p> <p>Necessary agreements reached with all parties was revised to: <i>Necessary agreements and sampling permits can be obtained in time to ensure the collection of all samples required for a scientifically sound assessment on the presence of the selected diseases of interest.</i> Sampling effort successful Journal editor(s) interested</p>
<p>WHMU established in Ussuriysk</p>	<p>All staff and equipment in place and unit fully functional by Year 3</p>		
<p>Strategies developed to monitor and limit disease transmission and for possible reintroduction programme.</p>	<p>2 strategies formulated and distributed by the end of Year 3 (this is likely to be delayed til after the project end date, at least for the longterm monitoring strategy)</p>	<p>Strategy documents in English and Russian versions</p>	<p>Local authorities and other stakeholders supportive of leopard conservation Sample analysis data available in good time</p>

Annex 3 Project contribution to Articles under the CBD

Please complete the table below to show the project's contribution to the different actions for biodiversity conservation defined in the CBD Articles.

Please record only the **2 or 3 main articles** to which your project has contributed. It is recognised that most Darwin projects make a smaller contribution to many other Articles in their work. Please sum the contributions made to other articles and record this percentage in the 'Other' row at the bottom of the table.

The recording of articles helps Defra to report on the collective contribution of the Darwin Initiative at particular CBD elements. We have focused on the CBD Articles that are the most relevant to biodiversity conservation initiatives by small projects in developing countries. However, certain Articles have been omitted where they apply across the board (especially Art. 18 to which all projects are expected to contribute). Where there is overlap between measures described by two different Articles, allocate the % to the most appropriate one.

Please note: A more detailed description of the contribution of the project to the CBD is made in reference to the specific theme or cross cutting issue programme of work in section 2 above.

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use	15	Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	20	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
9. Ex-situ Conservation	10	Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
12. Research and Training	45	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
Other Contribution	10	Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

Annex 4 Standard Measures

Please quantify and briefly describe all project standard measures using the coding and format of the Darwin Initiative Standard Measures. Download the updated list explaining standard measures from <http://darwin.defra.gov.uk/resources/reporting/>. If any sections are not relevant, please omit or delete them.

Code No.	Description	Total
Established codes		
4a, 4b	Two sessions of professional training in Ussuriysk completed; 2 weeks, 100 students	100 student/weeks
4a, 4b	Two sessions of practical training in Khabarovsk completed, 2 weeks, 33 students	33 student/weeks
4a, 4b	First and second zoos workshop completed; 2 week, 17 and 13 students / participants each	30 weeks
4d	Post graduate student Misha Goncharuk received hands-on field techniques and orientation training in LSNR working for ALWHP	1 year
5	Three field personnel received hands-on training in veterinary techniques of capture animals while working in LSNR; 3 people and 1 year	3 years
7	Brochure promoting the project produced and circulated in Russian as well as English	1
7	DVDs with Power point presentations of each workshop produced and made available to students and teachers.	3
10	ALWHP sampling strategy research plan for LSNR was reviewed and accepted by the Reserve's scientific board.	1 document
15a	Newspaper articles about each training workshop published in Russian national newspaper "Trud"	3
15c	A news article in Wild About 2008 magazine called "Less is Amur", pages 17-21, summarized the project	1
24	Sample collection from other species than leopards begun	69 domestic, 34 wild sets of samples totalling 211 samples.
24	Sample collection from zoo leopards begun internationally and 9 sets of leopard samples taken in Russian zoos	34 sets of samples totalling 169 samples
24	fourth session of sampling wild Amur leopards completed	4 sets of leopards, 3 sets of tiger samples totalling 50 samples
New - Project specific measures	Restoration of PSAA former veterinary laboratory into the new WHMU – all services restored, roof and security fence done, one room completed and equipped and working commercially	100%

Annex 5 Publications

Provide full details of all publications and material that can be publicly accessed, eg title, name of publisher, contact details, cost. Mark (*) all publications and other material that you have included with this report

Type *	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Poster	Introducing the Amur Leopard Wildlife Health Project. Claudia Schoene, Lada V. Ziliakova, Sarah Christie, John Lewis 2006	ZSL	Project website	n/a
Contribution to Conference Proceedings	Same as above	EAZA conference 2007	As above	n/a
Darwin Newsletter article	Introducing the Amur Leopard Wildlife Health Project Claudia Schoene & Lada Vladimirowna Ziliakova	Darwin Initiative	Darwin website	n/a
Articles in ALTA News 2006 and 2007	Introduction to the project in the 2006 edition, three relevant sections in the 2007 edition (4, 5 and 7)	ZSL	www.amur-leopard.org	n/a
ALWHP Blog on ZSL website	Misha Goncharuk describes his experiences	ZSL	http://www.zslblogs.org/?cat=10	n/a
ALWHP photo story on ZSL website	Vets in action in the wild in Russia	ZSL	http://www.zsl.org/conservation/carnivores-and-people/checking-the-leopards-spots,66,PS.html	n/a
Article in Wild About magazine	“Less is Amur”, Conservation in Action section Autumn issue, pages 17-21. Author Malcolm Tait	ZSL	c/o ZSL, Regent’s Park, London NW1 4RY (also emailed to Darwin as pdfs)	

Annex 6 Darwin Contacts

Ref No	13-034
Project Title	Amur leopards and wildlife health
UK Leader Details	
Name	Sarah Christie
Role within Darwin Project	Oversight
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Annex 7

Report on the TMU training workshop April 2006

Annex 8

Report on the TMU training workshop Nov 2007

Annex 9

Report on the zoo workshop June 2008

Annex 10

Report on the zoo workshop June 2007

Annex 11

Sampling strategy for ALWHP accepted by LSNR scientific committee.

Annex 12

Misha Goncharuk's blog on ZSL website <http://www.zslblogs.org/?cat=10>

Annex 13

WHMU's business plan

Annex 14

Inspection Tiger's agreement with SPAA and Dr. Irina Korotkova.

Annex 15

Report on the ecology of Amur tigers and Far Eastern Leopards in Southwestern Primorye.

Annex 16

Interim Report on the Health Status of Wild Far Eastern Leopards, Oct-06-Nov 08.

Annex 17

Linda Kerley's annual report to LSNR

Annex 18

Veterinary chapter for the Amur leopard Reintroduction Plan

Annex 19

A list of PSAA uses for ALWHP training workshop materials

Annex 20

Protocol for collection of samples from zoo leopards, and report on progress with testing

Annex 21

ALTA News 2006

Annex 22

ALTA News 2007

Annex 23

All three steering committee minutes

Annex 24

Summary of responses to review questions