RCVD FEB 25 2014

Department of the Interior
U.S. Fish and Wildlife Service

OMB No. 1018-0093
Expires 02/28/2014

Federal Fish and Wildlife Permit Application Form

Return to: U.S. Fish and Wildlife Service
(Enter address from pages 4 and 5 of application)

Type of Activity:
REISSUANCE, RENEWAL, OR AMENDMENT OF A PERMIT
(For this application, all permits, registrations, and certificates are referred to as a permit.)

Complete Sections A or B, C, D, and E of this application. U.S. address may be required in Section C, see instructions for details.
See attached instruction pages for information on how to make your application complete and help avoid unnecessary delays.

A. Complete if applying as an individual

1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix

2. Date of birth (mm/dd/yyyy)	3. Social Security No.	4. Occupation	5. Affiliation/ Doing business as (see instructions)

6.a. Telephone number	6.b. Alternate telephone number	6.c. Fax number	6.d. E-mail address

B. Complete if applying on behalf of a business, corporation, public agency, tribe, or institution

1.a. Name of business, agency, tribe, or institution	1.b. Doing business as (dba)
Morani River Ranch	

2. [redacted]	3. Description of business, agency, tribe, or institution
	Exotic + White-tail breeding ranch

4.a. Principal officer Last name	4.b. Principal officer First name	4.c. Principal officer Middle name/ initial	4.d. Suffix
Reid	Kevin	L	

5. Principal officer title	6. Primary contact
Owner	Cole Reid

7.a. Business telephone number	7.b. Alternate telephone number	7.c. Business fax number	7.d. Business e-mail address
830-660-7648	[redacted]	830-278-3700	Cole@moraniriver.com

C. All applicants complete address information

1.a. Physical address (Street address, Apartment #, Suite #, or Room #; no P.O. Boxes)
[redacted]

1.b. City	1.c. State	1.d. Zip code/Postal code:	1.e. County/Province	1.f. Country
Uvalde	Texas	[redacted]		USA

2.a. Mailing Address (include if different than physical address; include name of contact person if applicable)
[redacted]

2.b. City	2.c. State	2.d. Zip code/Postal code:	2.c. County/Province	2.f. Country
Uvalde	Texas	[redacted]		USA

D. All applicants MUST complete

1. Attach check or money order payable to the U.S. FISH AND WILDLIFE SERVICE **in the amount indicated on pages 6 and 7.** Federal, tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – ***attach documentation of fee exempt status as outlined in instructions.*** (50 CFR 13.11(d))

2. Do you currently have or have you ever had any Federal Fish and Wildlife permits?
Yes ☒ If yes, list the number of the most current permit you have held or that you are applying to renew/re-issue: MA49112A-0 No ☐

3. Certification: I hereby certify that I have read and am familiar with the regulations contained in ***Title 50, Part 13 of the Code of Federal Regulations*** and the other ***applicable parts in subchapter B of Chapter I of Title 50***, and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

Signature (in blue ink) of applicant/person responsible for permit (No photocopied or stamped signatures) — Date of signature (mm/dd/yyyy): 02/24/2012

E. REISSUANCE, RENEWAL, OR AMENDMENT OF A PERMIT (For this application, all permits, registrations, and certificates are referred to as a permit.)

NOTE 1: *Applications **must** be submitted to the office that issued the initial permit. This form cannot be used for lost or damaged permit. Lost or damaged permit must use form 3-200-66.*

NOTE 2: *If you are renewing your Designated Port Exemption permit, use form 3-200-2 (http://www.fws.gov/forms/3-200-2.pdf). If you are renewing your Import/Export license (required for commercial activities), use form 3-200-3 (http://www.fws.gov/forms/3-200-3.pdf) and submit to appropriate Office of Law Enforcement address.*

NOTE 3: *If you are renewing or amending a master file for multiple shipments or a COSE, use the appropriate form for proposed activity (form 3-200-29 for samples; 3-200-30 for circus/traveling exhibits; 3-200-33 for Artificially Propagated Plants; 3-200-39 for COSEs) (http://www.fws.gov/forms/ display.cfm?number1=200).*

1. **Permit number.** Enter the permit number to be reissued/renewed MA49112A-0. The original permit **must** be submitted with this application.

2. **Past activities.**
   a. Provide copies of all cleared documents and form 3-177 (FWS declaration of wildlife) associated with this permit.
   b. Provide a summary detailing activities conducted under this permit, as well as a brief statement of why you are seeking reissuance/renewal.

3. **Annual Report**. If required by your permit, provide an annual report as conditioned. (Disregard if you have already submitted your annual report.)

4. **Captive-Bred Wildlife Registration (CBW):** If the location of activities has changed, attach a description and photographs or diagrams (no blueprints) of the current facilities. If a change in personnel (e.g., principal officer, curator, and primary animal care staff) has occurred, provide a brief description of their expertise in caring/handling of the species.

5. **Sport-hunted trophies:** If you did not hunt during the hunting season stated in your original application, you are not eligible for a renewal. Please submit a new application form.

6. **Certification.** Complete one of the statements below and supply any additional documentation requested:

   a. For **NO CHANGES** to original application:

   I certify that the information submitted in support of my original application for the permit indicated above has not changed and is still currently correct. I hereby request reissuance or renewal of this permit.

   Permittee's signature: _____ Date: _____

   b. For **CHANGES** to original application:

   I certify that the information submitted in support of my original application for the permit indicated above is still currently correct EXCEPT for the changes noted on the attached, signed page(s). I hereby request re-issuance or renewal of this permit with the indicated changes.
   [On an attached page(s), provide a complete description of any changes (e.g., change in principal officer, personnel, address, location of activities, port location.) Please sign each attached page. Also, please note that we may ask you to submit additional information.]

   Permittee's signature: _____ Date 02/24/2014

7. Address where you wish permit mailed (if different than page 1):

8. If you wish the permit to be sent to you by means other than regular mail, provide an air bill, pre-paid envelope, or billing information:

9. Who should we contact if we have questions about the application? (Include name, phone number, and email):

Cole Reid

[redacted]

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

FEDERAL FISH AND WILDLIFE PERMIT

2. AUTHORITY-STATUTES
16 USC 1539(a)

REGULATIONS
50 CFR 17.22
50 CFR 17.32

1. PERMITTEE

MORANI RIVER RANCH
[redacted]
UVALDE, TX [redacted]
U.S.A.

3. NUMBER
MA49112A-0

4. RENEWABLE	5. MAY COPY
☒ YES ☐ NO	☒ YES ☐ NO

6. EFFECTIVE	7. EXPIRES
05/07/2013	05/06/2014

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*
KEVIN LEWIS REID
OWNER

9. TYPE OF PERMIT
ENDANGERED/THREATENED SPECIES WILDLIFE

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
IMPORT THROUGH ANY PORT LISTED IN 50 CFR 14.12

11. CONDITIONS AND AUTHORIZATIONS:

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL, TRIBAL, OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

D. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the attached 'General Permit Conditions'.

E. Permittee is authorized to allow sport hunters to take (cull), as permittee's designated agents, excess **RED LECHWE** (*Kobus leche*), **ARABIAN ORYX** (*Oryx leucoryx*), **SCIMITAR-HORNED ORYX** (*Oryx dammah*), **ADDAX** (*Addax nasomaculatus*), and **DAMA GAZELLE** (*Nanger dama*), from the managed herds maintained by the permittee for enhancement of propagation and survival of the species as described in the permittee's application.

F. The sport hunter must have written authorization from permittee designating the hunter as permittee's agent. This letter must be in possession of this agent while culling the specimen, transporting across state lines, and during export.

G. Authorized to sell in interstate commerce the wildlife identified in E. A copy of this permit must be in the possession of the designated agent who culled an animal from permittee's herd and must accompany the resultant trophy across state lines.

H. Authorized to sell and export in foreign commerce the wildlife identified in E. A copy of this permit AND an original export permit issued under the Convention on International Trade in Endangered Species (CITES) must accompany the trophy during shipment overseas.

I. At the end of each year, permittee must submit the following:
1. An annual report including an inventory of all animals covered by this permit and the number of surplus animals of each species which were culled by your designated agents.

2. A complete accounting of all funds collected and donated as a result of the permitted activities. This information should clearly illustrate the percentage of income derived from sport-hunting which has been donated for conservation purposes.

3. A letter from the conservation organization confirming that a contribution was received, including the amount, and that the money was channeled to a program for the authorized species and/or its habitat.

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS
ANNUAL REPORT DUE 1/31 FOLLOWING EACH YEAR PERMIT IS VALID
SUBMIT COMPLETE REPORT TO : DMA, 4401 N. FAIRFAX DRIVE, ROOM 212, ARLINGTON, VA 22203.

ISSUED BY	TITLE	DATE
[signature]	CHIEF, BRANCH OF PERMITS, DMA	05/07/2013

01/09/2014

Mr. Mike Carpenter
Division of Management Authority
U.S. Fish & Wildlife Service
4401 N. Fairfax Dr., Room 212
Arlington, VA 22203

Dear Mr. Carpenter,

The Morani River Ranch LLC. possesses a Take permit that allows us to hunt certain Endangered Species in order to help conserve them.

Below is a summary of our Take for approved species for the calendar year. 2013.

POTETIAL SPECIES	INVENTORY OF ALL ANIMALS COVERED BY THE PERMIT	# SURPLUS ANIMALS HARVESTED BY OUR DESIGNATED AGENTS
Scimitar-horned oryx	40	3
Addax	40	2
Barasingha	10	1
Red lechwe	20	1
Dama gazelle	30	0
Arabian oryx	30	4
Eld's deer	0	0

This report should include a complete accounting of all funds collected and donated as a result of your permitted activities. This information should clearly illustrate the percentage of income derived from sport-hunting of permitted species which has been donated for conservation purposes.

POTETIAL SPECIES	TOTAL FUNDS COLLECTED FROM CULLING OF PERMITTED SPECIES	AMOUNT OF SUPPORT SENT TO IN SITU CONSERVATION OF THOSE SPECIES
Scimitar-horned oryx	$14,500	$1,450
Addax	$12,000	$1,200

Barasingha	$4500	$450
Red lechwe	$5,500	$550
Dama gazelle	$0	$0
Arabian oryx	$35,000	$3,500
Eld's deer	$0	$0

A letter from the conservation organization confirming that a contribution was received, including the amount, and that the money was channeled to a program for the authorized species and/or its habitat is enclosed.

Our current/original permit is enclosed and we request that it be renewed for 2014.

Sincerely,

(Cole L. Reid) 1/11/2014

Name Date

01/09/2014

Mr. Mike Carpenter
Division of Management Authority
U.S. Fish & Wildlife Service
4401 N. Fairfax Dr., Room 212
Arlington, VA 22203

Dear Mr. Carpenter,

The Morani River Ranch LLC., possesses a CBW, MA49112A-1, allowing us to purchase certain listed endangered species in interstate commerce. Please find the information below as a summary for the past calendar year, 2013.

1. Number of CBW species born in 2013 and survived for 30 days or longer. 6 species (Red Lechwe [x3], Arabian Oryx [x5], Scimitar-horned Oryx [x10], Addax [x5], Dama Gazelle [x8] and Barasingha [x4])

2. Number of CBW species that died in 2013 and why. 1 species (Arabian Oryx [1 death: Stillborn])

3. Number of CBW species sold in 2013 and the recipients' CBW #. 2 species (Arabian Oryx [3 total sales, all within the state of Texas], Dama [4 total sales, all within the state of Texas])

4. Number of CBW species purchased in 2013 and the source's CBW#. 2 species (Scimitar-horned Oryx [3 total purchases, all within the state of Texas], Red Lechwe [1 total purchase in the state of Texas])

5. Number of CBW species acquired in other means (loan, trade, donation) and from whom.
None were acquired by other means

6. Number of CBW species transferred to others by loan, trade and donation and to whom.
None were transferred by loan, trade, or donation.

Sincerely,

(Cole L. Reid) 1/11/2014

Name Date

Exotic Wildlife Association

Address:
105 Henderson Branch Rd. W.
Ingram, TX 78025

◆ ◆ ◆

Phone:
(830) 367-7761

◆ ◆ ◆

Fax:
(830) 367-7762

◆ ◆ ◆

Email:
info@exoticwildlife association.com

January 13, 2014

Kevin Reid
Morani River Ranch
P.O. Box 5513
Uvalde, TX 78802

Dear Kevin,

This is to inform you that the Exotic Wildlife Association is in receipt of $2,650.00 which is the required 10 percent enhancement fee to be used for the EWA's conservation programs for Scimitar Horned Oryx, Addax Antelope or Dama Gazelle.

You do have a choice of conservation programs and on behalf of the Exotic Wildlife Association, thank you for selecting the EWA conservation program.

Your conservation efforts in managing the Scimitar Horned Oryx, Addax Antelope and Dama Gazelle will insure the future of these species.

Charly Seale
Executive Director
Exotic Wildlife Association

CONSERVATION FORCE
A FORCE FOR WILDLIFE CONSERVATION

† BARON BERTRAND DES CLERS, PH.D.
† JAMES G. TEER, PH.D.
† BART O'GARA, PH.D.

January 24, 2014

Morani River Ranch
c/o Cole Reid
P.O. Box 5513
Uvalde, TX 78802

RE: Substantiation of charitable contribution to Conservation Force, Tax I.D. No. 72-1364493

Dear Cole:

Thank you for your contribution to Conservation Force's Ranching for Restoration Program. Conservation Force is a tax-exempt charitable organization described in Section 501(c)(3) of the Internal Revenue Code. It is also a publicly supported organization described in Section 509(a)(1), 509(a)(2) and 170(b)(1)(A)(vi) (Foundation Status Classification). This combination provides the maximum tax advantage possible to donors and contributors.

Consequently, you are entitled to deduct your contribution. This is intended to be the written substantiation of your donation as required by IRS regulations. This letter does not get filed with your income tax return, but you need to keep this letter in your tax records for this tax year.

We further certify that no goods, services, products or other reciprocal payments were provided to you for any portion of your contribution. Your donation of $4,500.00 was made on January 20, 2014.

Thank you again.

Sincerely,

John J. Jackson, III

JJJ,III/cd

3240 S I-10 Service Rd. W, Suite 200, Metairie, Louisiana 70001-6911, USA
Telephone: (504) 837-1233 • Fax (504) 837-1145 • E-mail: jjj@conservationforce.org
www.conservationforce.org

MORANI RIVER RANCH ANTELOPE TAKE PERMIT ADDENDUM

1. Permit number. Enter the permit number to be reissued/renewed: MA 49112A-0. The original permit must be submitted with this application.

The original permit is enclosed.

This application is being submitted by:

Morani River Ranch
[redacted]
Uvalde, Texas [redacted]
[redacted]

All permits and mail should be sent to:

Morani River Ranch
[redacted]
Uvalde, Texas [redacted]

2. Past activities.

a. Provide copies of all cleared documents and form 3-177 (FWS declaration of wildlife) associated with this permit.

Not applicable.

b. Provide a summary detailing activities conducted under this permit, as well as a brief statement of why you are seeking reissuance/renewal.

Not applicable.

3. Annual Report. If required by your permit, provide an annual report as conditioned. (Disregard if you have already submitted your annual report.)

Not applicable.

4. Captive-Bred Wildlife Registration (CBW): If the location of activities has changed, attach a description and photographs or diagrams (no blueprints) of the current facilities. If a change in personnel (e.g., principal officer, curator, primary animal care staff) has occurred, provide a brief description of their expertise in caring/handling of the species.

No changes in above.

5. **Sport-hunted trophies: If you did not hunt during the hunting season stated in your original application, you are not eligible for a renewal. Please submit a new application form.**

Not applicable.

6. **Certification. Complete one of the statements below and supply any addition documentation requested:**

a. For NO CHANGES to original application:
I certify that the information submitted in support of my original application for the permit indicated above has not changed and is still currently correct. I hereby request reissuance or renewal of this permit.

Permittee's signature: _____ Date: _____

Not applicable. Note changes in coverage requested below.

b. For CHANGES to original application:

I certify that the information submitted in support of my original application for the permit indicated above is still currently correct EXCEPT for the changes noted on the attached, signed page(s). I hereby request reissuance or renewal of this permit with the indicated changes.

[On an attached page(s), provide a complete description of any changes (e.g., change in principal officer, personnel, address, location of activities, port location.) Please sign each attached page. Also, please note that we may ask you to submit additional information.]

Permittee's signature: _____ Date: 02/24/2014

This addition is for Eld's deer and barasingha be added to our take permit.

Additional data is enclosed.

7. **Address where you wish permit mailed (if different than page 1):**

Same as above on page 1.

8. **If you wish the permit to be sent to you by means other than regular mail, provide an air bill, pre-paid envelope, or billing information: prmit should be mailed to the applicant.**

   Regular mail is satisfactory.

9. **Who should we contact if we have questions about the application? (Include the name, phone number, and email):**

   Alan Shoemaker

SUPPLEMENTARY INFORMATION FOR MORANI RIVER RANCH TAKE PERMIT ADDENDUM

1. The scientific name (genus, species and if applicable, subspecies) and common name of each species you are seeking to have added to our registration.

This application seeks to have additional coverage added to their current TAKE permit for the following species:

COMMON NAME	LATIN NAME
Scimitar-horned oryx	*Oryx dammah*
Addax	*Addax namasulatus*
Dama gazelle	*Nanger dama*

2. For each requested species, provide a description of your experience in maintaining and propagating the requested species or similar species, including:

a. The number of years you or the facility has/have maintained the requested species or similar species.

Since 1 Nov 2006, we have maintained the following requested species:

COMMON NAME	DATE OF ACQUISITION	No. IN COLLECTION 1.2012
Scimitar-horned oryx	2004	10.22.6
Addax	2004	10.18.4
Dama gazelle	2004	8.8

b. During the past five years, how many (by species, by year) successful births/hatches of each requested species or similar species have occurred at your facility? How may survived 30 days?

Species	Number
Addax	12.13
Scimitar-horned oryx	21.22

Female dama gazelles have not been in the ranch's collection until recently, hence their lack of reproduction. We fully expect this otherwise easily propagated bovid to breed at Morani River Ranch as soon as they mature.

c. How many mortalities of requested species or similar species have occurred at your facility 1 January, 2006? What where the causes? What measures have you taken to prevent future mortalities?

Deaths	Number
Addax	1.0

This is the only natural death and was related to advanced age. All other deaths were from harvest.

3. A detailed description (including size, construction materials, protection from the elements, etc.) and photographs or detailed diagrams clearing depicting your existing facilities where the wildlife will be maintained.

An aerial photograph with details of our 1,800+ acre property has already been submitted to DMA with the original application and the reviewer is asked to refer back to the original application. Overall the ranch has been in operation since 2001 and is completely surrounded by high fence. Photographs of the operational aspect of the ranch, its animals, and their husbandry has also been submitted in the initial CBW application and the application reviewer is requested to refer to the CD that was submitted with the initial take and CBW application. The ranch's paddocks and pastures that are broken up into 100 - 800 acre enclosures. Enclosures this size allow for large groups of animals of the same or compatible species to be maintained together, and to be moved from pasture to pasture in order to keep the turf in good condition. All ungulate enclosures have native trees present for shade and cover from inclement weather. Two photos depicting scimitar-horned oryx are enclosed. Additional pictures of the ranch are available at www.moraniriver.com. Due to our southern location (ca. 90 miles SW of San Antonio), all our ungulates may be left outside year around.

There are no staff changes since our initial application for take coverage.

4. A statement on how the activities will enhance or benefit the wild population (in situ and ex-situ projects). If your activities include conservation education, provide copies of education materials (e.g. handouts, text of signage or public presentations, etc.). Educational material must discuss the ecological role and conservation needs of the species involved in the proposed activity.

Morani River Ranch will donate 10% of the proceeds of each sport-hunted animal to an approved in situ conservation project for each of these three species for as long as the permit is in force. Typically this amount will equal $300 – 400 per animal taken, depending on the species.

Specifically Morani River Ranch will support the Sahara Conservation Fund to provide addition protection for addax and scimitar-horned oryx in nature. The Sahara

conservation Fund is a well-known NGO supported by both zoos and ranches. Funding will be used for anti-poaching support, reintroduction and translocation projects, and targets a wide range of Arabian and Saharan wildlife. A summary of this organization is available from the organization's web site, www.saharaconservation.org.

RCVD FEB 26 2014

Department of the Interior
U.S. Fish and Wildlife Service

OMB No. 1018-0093
Expires 02/28/2014

Federal Fish and Wildlife Permit Application Form

Return to: U.S. Fish and Wildlife Service
(Enter address from pages 4 and 5 of application)

Type of Activity:
REISSUANCE, RENEWAL, OR AMENDMENT OF A PERMIT
(For this application, all permits, registrations, and certificates are referred to as a permit.)

Complete Sections A or B, C, D, and E of this application. U.S. address may be required in Section C, see instructions for details.
See attached instruction pages for information on how to make your application complete and help avoid unnecessary delays.

A. Complete if applying as an individual

1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix

2. Date of birth (mm/dd/yyyy)	3. Social Security No.	4. Occupation	5. Affiliation/ Doing business as (see instructions)

6.a. Telephone number	6.b. Alternate telephone number	6.c. Fax number	6.d. E-mail address

B. Complete if applying on behalf of a business, corporation, public agency, tribe, or institution

1.a. Name of business, agency, tribe, or institution	1.b. Doing business as (dba)
Morani River Ranch	

2. [redacted]	3. Description of business, agency, tribe, or institution
	Exotic + White-tail breeding ranch

4.a. Principal officer Last name	4.b. Principal officer First name	4.c. Principal officer Middle name/ initial	4.d. Suffix
Reid	Kevin	L	

5. Principal officer title	6. Primary contact
Owner	Cole Reid

7.a. Business telephone number	7.b. Alternate telephone number	7.c. Business fax number	7.d. Business e-mail address
830-660-7648	[redacted]	830-278-3700	Cole@moraniriver.com

C. All applicants complete address information

1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes) [redacted]

1.b. City	1.c. State	1.d. Zip code/Postal code:	1.e. County/Province	1.f. Country
Uvalde	Texas	[redacted]		USA

2.a. Mailing Address (if different than physical address; include name of business, if applicable) [redacted]

2.b. City	2.c. State	2.d. Zip code/Postal code:	2.e. County/Province	2.f. Country
Uvalde	Texas	[redacted]		USA

D. All applicants MUST complete

1. Attach check or money order payable to the U.S. FISH AND WILDLIFE SERVICE **in the amount indicated on pages 6 and 7.** Federal, tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – ***attach documentation of fee exempt status as outlined in instructions.*** (50 CFR 13.11(d))

2. Do you currently have or have you ever had any Federal Fish and Wildlife permits?
Yes ☒ If yes, list the number of the most current permit you have held or that you are applying to renew/re-issue: MA49112A-0 No ☐

3. Certification: I hereby certify that I have read and am familiar with the regulations contained in ***Title 50, Part 13 of the Code of Federal Regulations*** and the other ***applicable parts in subchapter B of Chapter I of Title 50,*** and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

Signature (in blue ink) of applicant/person responsible for permit (No photocopied or stamped signatures) — Date of signature (mm/dd/yyyy): 02/24/2014

6. **Certification.** Complete one of the statements below and supply any additional documentation requested:

   a. For **NO CHANGES** to original application:

      I certify that the information submitted in support of my original application for the permit indicated above has not changed and is still currently correct. I hereby request reissuance or renewal of this permit.

      Permittee's signature: _____ Date: _____

   b. For **CHANGES** to original application:

      I certify that the information submitted in support of my original application for the permit indicated above is still currently correct EXCEPT for the changes noted on the attached, signed page(s). I hereby request re-issuance or renewal of this permit with the indicated changes.
      [On an attached page(s), provide a complete description of any changes (e.g., change in principal officer, personnel, address, location of activities, port location.) Please sign each attached page. Also, please note that we may ask you to submit additional information.]

      Permittee's signature: _____ Date: _____

7. Address where you wish permit mailed (if different than page 1):

8. If you wish the permit to be sent to you by means other than regular mail, provide an air bill, pre-paid envelope, or billing information:

9. Who should we contact if we have questions about the application? (Include name, phone number, and email):

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

FEDERAL FISH AND WILDLIFE PERMIT

2. AUTHORITY-STATUTES
16 USC 1539(a)

REGULATIONS
50 CFR 17.22
50 CFR 17.32

1 PERMITTEE

MORANI RIVER RANCH
3202 COUNTY ROAD 405
UVALDE, TX 78801
U.S.A.

3. NUMBER
MA49112A-2 AMENDMENT

4. RENEWABLE
☒ YES
☐ NO

5 MAY COPY
☒ YES
☐ NO

6. EFFECTIVE
08/04/2014

7 EXPIRES
10/24/2016

8 NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*
KEVIN LEWIS REID
OWNER

9 TYPE OF PERMIT
ENDANGERED/THREATENED SPECIES WILDLIFE

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
IMPORT THROUGH ANY PORT LISTED IN 50 CFR 14.12

11. CONDITIONS AND AUTHORIZATIONS

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL, TRIBAL, OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

D. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the attached 'General Permit Conditions'.

E. Permittee is authorized to allow sport hunters to take (cull), as permittee's designated agents, excess **BARASINGHA** (*Rucervus duvaucelii*), **RED LECHWE** (*Kobus leche*), **ARABIAN ORYX** (*Oryx leucoryx*), and **Eld's Deer** (*Rucervus eldi*) from the managed herds maintained by the permittee for enhancement of propagation and survival of the species as described in the permittee's application.

F. The sport hunter must have written authorization from permittee designating the hunter as permittee's agent. This letter must be in possession of this agent while culling the specimen, transporting across state lines, and during export.

G. Authorized to sell in interstate commerce the wildlife identified in E. A copy of this permit must be in the possession of the designated agent who culled an animal from permittee's herd and must accompany the resultant trophy across state lines.

H. Authorized to sell and export in foreign commerce the wildlife identified in E. A copy of this permit AND an original export permit issued under the Convention on International Trade in Endangered Species (CITES) must accompany the trophy during shipment overseas.

I. At the end of each year, permittee must submit the following:
1. An annual report including an inventory of all animals covered by this permit and the number of surplus animals of each species which were culled by your designated agents.

2. A complete accounting of all funds collected and donated as a result of the permitted activities. This information should clearly illustrate the percentage of income derived from sport-hunting which has been donated for conservation purposes.

3. A letter from the conservation organization confirming that a contribution was received, including the amount, and that the money was channeled to a program for the authorized species and/or its habitat.

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS
ANNUAL REPORT DUE 1/31 FOLLOWING EACH YEAR PERMIT IS VALID
SUBMIT COMPLETE REPORT TO : DMA, 4401 N. FAIRFAX DRIVE, ROOM 212, ARLINGTON, VA 22203.

ISSUED BY

TITLE
CHIEF, BRANCH OF PERMITS, DMA

DATE
08/04/2014

01/06/2015

RCVD JAN 09 2015

U.S. Fish and Wildlife Service
Division of Management Authority
Branch of Permits, MS: IA
5275 Leesburg Pike
Falls Church, VA 22041-3803

Dear Sir or Madam,

The Morani River Ranch LLC., possesses a Take permit that allows us to hunt certain Endangered Species in order to help conserve them.

Below is a summary of our Take for approved species for the calendar year, 2014.

POTETIAL SPECIES	INVENTORY OF ALL ANIMALS COVERED BY THE PERMIT	# SURPLUS ANIMALS HARVESTED BY OUR DESIGNATED AGENTS
Arabian oryx	23	0
Eld's deer	0	0
Barasingha	15	0
Red lechwe	18	2

This report should include a complete accounting of all funds collected and donated as a result of your permitted activities. This information should clearly illustrate the percentage of income derived from sport-hunting of permitted species which has been donated for conservation purposes.

POTETIAL SPECIES	TOTAL FUNDS COLLECTED FROM CULLING OF PERMITTED SPECIES AND SENT TO CONSERVATION ORGANIZATIONS
Arabian oryx	$0
Eld's deer	$0
Barasingha	$0
Red lechwe	$15,500

A letter from the conservation organization (Conservation Force) confirming that a contribution was received, including the amount, and that the money was channeled to a program for the authorized species and/or its habitat is enclosed.

Our current/original permit is enclosed.

Sincerely,

_____

Name Date

CONSERVATION FORCE
A FORCE FOR WILDLIFE CONSERVATION

† BARON BERTRAND DES CLERS, PH.D.
† JAMES G. TEER, PH.D.
† BART O'GARA, PH.D.

January 6, 2015

Cole Reid
Morani River Ranch
P.O. Box 5513
Uvalde, TX 78802

RE: Substantiation of charitable contribution to Conservation Force, Tax I.D. No. 72-1364493

Dear Cole:

Thank you for your contribution to Conservation Force's Ranching for Restoration Program. Conservation Force is a tax-exempt charitable organization described in Section 501(c)(3) of the Internal Revenue Code. It is also a publicly supported organization described in Section 509(a)(1), 509(a)(2) and 170(b)(1)(A)(vi) (Foundation Status Classification). This combination provides the maximum tax advantage possible to donors and contributors.

Consequently, you are entitled to deduct your contribution. This is intended to be the written substantiation of your donation as required by IRS regulations. This letter does not get filed with your income tax return, but you need to keep this letter in your tax records for this tax year.

We further certify that no goods, services, products or other reciprocal payments were provided to you for any portion of your contribution. Your donation of $1,550.00 was made on January 6, 2015.

Thank you again.

Sincerely,

John J. Jackson, III

JJJ,III/cd

3240 S I-10 Service Rd. W, Suite 200, Metairie, Louisiana 70001-6911, USA
Telephone: (504) 837-1233 • Fax (504) 837-1145 • E-mail: jjj@conservationforce.org
www.conservationforce.org

01/21/2016

U.S. Fish and Wildlife Service
Division of Management Authority
Branch of Permits, MS: IA
5275 Leesburg Pike
Falls Church, VA 22041-3803

Dear Sir or Madam,

The Morani River Ranch possesses a Take permit that allows us to hunt certain Endangered Species in order to help conserve them.

Below is a summary of our Take for approved species for the calendar year, 2015.

POTETIAL SPECIES	INVENTORY OF ALL ANIMALS COVERED BY THE PERMIT	# SURPLUS ANIMALS HARVESTED BY OUR DESIGNATED AGENTS
Arabian oryx	20	0
Eld's deer	12	0
Barasingha	15	1
Red lechwe	12	3

This report should include a complete accounting of all funds collected and donated as a result of your permitted activities. This information should clearly illustrate the percentage of income derived from sport-hunting of permitted species which has been donated for conservation purposes.

POTETIAL SPECIES	TOTAL FUNDS COLLECTED FROM CULLING OF PERMITTED SPECIES AND SENT TO CONSERVATION ORGANIZATIONS
Arabian oryx	$0
Eld's deer	$0
Barasingha	$4,500
Red lechwe	$18,500

A letter from the conservation organization (Conservation Force) confirming that a contribution was received, including the amount, and that the money was channeled to a program for the authorized species and/or its habitat is enclosed.

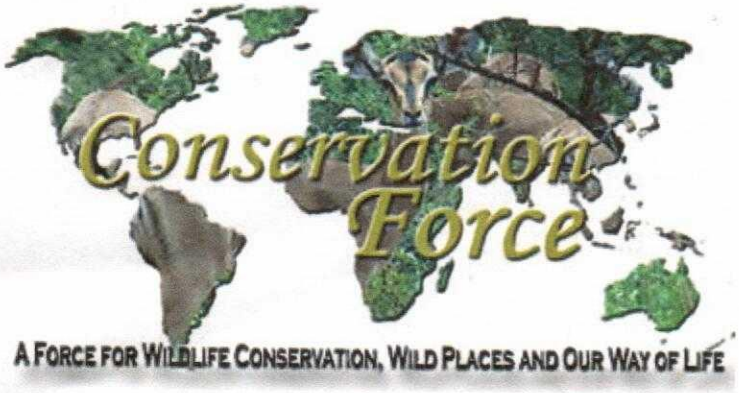
Our current/original permit is enclosed and we request that it be renewed for 2016.

Sincerely,

Name

01/21/2016

Date



Confirmation

Thank you for your online contribution.

You will receive a written confirmation via mail of your donation within 10 working days.

(If you do not receive an acknowledgment within 10 days, please contact us)

We sincerely thank you for your continued support!

Donation Made: $2,300 ($18,500-red lechwe + $4500 Barasingha = $23,000

$23,000 x .10 = $2,300

3240 S. I-10 Service Road W, Suite 200
Metairie, Louisiana 70001-6911 USA
504.837.1233 office | 504.837.1145 fax
email

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

FEDERAL FISH AND WILDLIFE PERMIT

2. AUTHORITY-STATUTES
16 USC 1539(a)

REGULATIONS
50 CFR 17.22
50 CFR 17.32

1. PERMITTEE

MORANI RIVER RANCH
3202 COUNTY ROAD 405
UVALDE, TX 78801
U.S.A.

3. NUMBER
MA49112A-2 AMENDMENT

4. RENEWABLE
☒ YES
☐ NO

5. MAY COPY
☒ YES
☐ NO

6. EFFECTIVE
08/04/2014

7. EXPIRES
10/24/2016

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*
KEVIN LEWIS REID
OWNER

9. TYPE OF PERMIT
ENDANGERED/THREATENED SPECIES WILDLIFE

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
IMPORT THROUGH ANY PORT LISTED IN 50 CFR 14.12

11. CONDITIONS AND AUTHORIZATIONS:

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL, TRIBAL, OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

D. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the attached 'General Permit Conditions'.

E. Permittee is authorized to allow sport hunters to take (cull), as permittee's designated agents, excess **BARASINGHA** (*Rucervus duvaucelii*), **RED LECHWE** (*Kobus leche*), **ARABIAN ORYX** (*Oryx leucoryx*), and **Eld's Deer** (*Rucerus eldii*) from the managed herds maintained by the permittee for enhancement of propagation and survival of the species as described in the permittee's application.

F. The sport hunter must have written authorization from permittee designating the hunter as permittee's agent. This letter must be in possession of this agent while culling the specimen, transporting across state lines, and during export.

G. Authorized to sell in interstate commerce the wildlife identified in E. A copy of this permit must be in the possession of the designated agent who culled an animal from permittee's herd and must accompany the resultant trophy across state lines.

H. Authorized to sell and export in foreign commerce the wildlife identified in E. A copy of this permit AND an original export permit issued under the Convention on International Trade in Endangered Species (CITES) must accompany the trophy during shipment overseas.

I. At the end of each year, permittee must submit the following:
1. An annual report including an inventory of all animals covered by this permit and the number of surplus animals of each species which were culled by your designated agents.

2. A complete accounting of all funds collected and donated as a result of the permitted activities. This information should clearly illustrate the percentage of income derived from sport-hunting which has been donated for conservation purposes.

3. A letter from the conservation organization confirming that a contribution was received, including the amount, and that the money was channeled to a program for the authorized species and/or its habitat.

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS
ANNUAL REPORT DUE 1/31 FOLLOWING EACH YEAR PERMIT IS VALID
SUBMIT COMPLETE REPORT TO : DMA, 4401 N. FAIRFAX DRIVE, ROOM 212, ARLINGTON, VA 22203.

ISSUED BY

TITLE
CHIEF, BRANCH OF PERMITS, DMA

DATE
08/04/2014

RCVD FEB 2 2016

OMB No. 1018-0093
Expires 05/31/2017

Department of the Interior
U.S. Fish and Wildlife Service

Federal Fish and Wildlife Permit Application Form

Return to: U.S. Fish and Wildlife Service
(Enter address from pages 5 and 6 of application)

Type of Activity:
REISSUANCE, RENEWAL, OR AMENDMENT OF A PERMIT
(For this application, all permits, registrations, and certificates are referred to as a permit.)

Complete Sections A or B, C, D, and E of this application. U.S. address may be required in Section C, see instructions for details.
See attached instruction pages for information on how to make your application complete and help avoid unnecessary delays.

A. Complete if applying as an individual

1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix

2. Date of birth (mm/dd/yyyy)	3. Social Security No.	4. Occupation	5. Affiliation/ Doing business as (see instructions)

6.a. Telephone number	6.b. Alternate telephone number	6.c. Fax number	6.d. E-mail address

B. Complete if applying on behalf of a business, corporation, public agency, Tribe, or institution

1.a. Name of business, agency, Tribe, or institution	1.b. Doing business as (dba)
Moran River Ranch	Exotic + Whitetail Breeding Ranch

2. Tax identification no.	3. Description of business, agency, Tribe, or institution
010596410	

4.a. Principal officer Last name	4.b. Principal officer First name	4.c. Principal officer Middle name/ initial	4.d. Suffix
Reid	Kevin	[redacted]	

5. Principal officer title	6. Primary contact name
Owner	Cole Reid

7.a. Business telephone number	7.c. Business fax number	7.d. Business e-mail address
830-660-7648 [redacted]	830-278-3700	Cole@moranriver.com

C. All applicants complete address information

1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes)
3202 County Road 405

1.b. City	1.c. State	1.d. Zip code/Postal code:	1.e. County/Province	1.f. Country
Uvalde	Texas	78801	Uvalde	USA

2.a. Mailing Address (include if different than physical address; include name of contact person if applicable)
P.O. Box 5513

2.b. City	2.c. State	2.d. Zip code/Postal code:	2.e. County/Province	2.f. Country
Uvalde	Texas	78802	Uvalde	USA

D. All applicants MUST complete

1. Attach check or money order payable to the U.S. FISH AND WILDLIFE SERVICE **in the amount indicated on pages 6 and 7**. Federal, Tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – ***attach documentation of fee exempt status as outlined in instructions.*** (50 CFR 13.11(d))

2. Do you currently have or have you ever had any Federal Fish and Wildlife permits?
Yes [X] If yes, list the number of the most current permit you have held or that you are applying to renew/re-issue: MA49112A-2 No [ ]

3. Certification: I hereby certify that I have read and am familiar with the regulations contained in ***Title 50, Part 13 of the Code of Federal Regulations*** and the other ***applicable parts in subchapter B of Chapter I of Title 50***, and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

Signature (in blue ink) of applicant/person responsible for permit (No photocopied or stamped signatures) — Date of signature (mm/dd/yyyy): 01/21/2016

6. **Certification -** Complete one of the statements below and supply any additional documentation requested: (original signature is required)

   a. For **NO CHANGES** to original application:

   I certify that the information submitted in support of my original application for the permit indicated above has not changed and is still currently correct. I hereby request reissuance or renewal of this permit.

   Permittee's signature: _____ Date: 01/21/2016

   b. For **CHANGES** to original application:

   On an attached page(s), provide a complete description of any changes (e.g., change in principal officer, personnel, address, location of activities, types of activities). Please sign each attached page. Also note that we need to request additional information regarding the changes after reviewing your initial request.

   I certify that the information submitted in support of my original application for the permit indicated above is still currently correct EXCEPT for the changes noted on the attached, signed page(s). I hereby request re-issuance or renewal of this permit with the indicated changes.

   Permittee's signature: _____ Date: _____

7. All international shipment(s) must be through a designated port, unless otherwise authorized. A list of designated ports (where an inspector is posted) is available from http://www.fws.gov/le/designated-ports.html. If you wish to use a port not listed, please contact either the Office of Law Enforcement for a Designated Port Exemption Permit (form 3-200-2) or the Division of Management Authority.

8. Name and address where you wish the permit to be mailed, **if** different from page 1 (All permits will be mailed via the U.S. Postal Service, unless you identify an alternative means below):

9. If you wish the permit to be delivered by means other than USPS regular mail, provide an air bill, pre-paid envelope, or billing information. If you do not have a pre-paid envelope or air bill and wish to pay for a courier service with your credit card, please check the box below. Please DO NOT include credit card number or other information; you will be contacted for this information.

   ☐ If a permit is issued, please send it via a courier service to the address on page 1 or question 8. I understand that you will contact me for my credit card information once the application has been processed.

11. Who should we contact if we have questions about the application? (Include name, phone number, and email): Cole Reid
[redacted]
Cole@moraniver.com

12. **Disqualification Factor.** A conviction, or entry of a plea of guilty or nolo contendere, for a felony violation of the Lacey Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act disqualifies any such person from receiving or exercising the privileges of a permit, unless such disqualification has been expressly waived by the Service Director in response to a written petition. [50 CFR 13.21(c)]. Have you or any of the owners of the business, if applying as a business, been convicted, or entered a plea of guilty or nolo contendere, forfeited collateral, or are currently under charges for any violations of the laws mentioned above?

☐ Yes ☒ No If you answered "Yes" provide: a) the individual's name, b) date of charge, c) charge(s), d) location of incident, e) court, and f) action taken for each violation.

01/21/2016

U.S. Fish and Wildlife Service
Division of Management Authority
Branch of Permits, MS: IA
5275 Leesburg Pike
Falls Church, VA 22041-3803

Dear Sir or Madam,

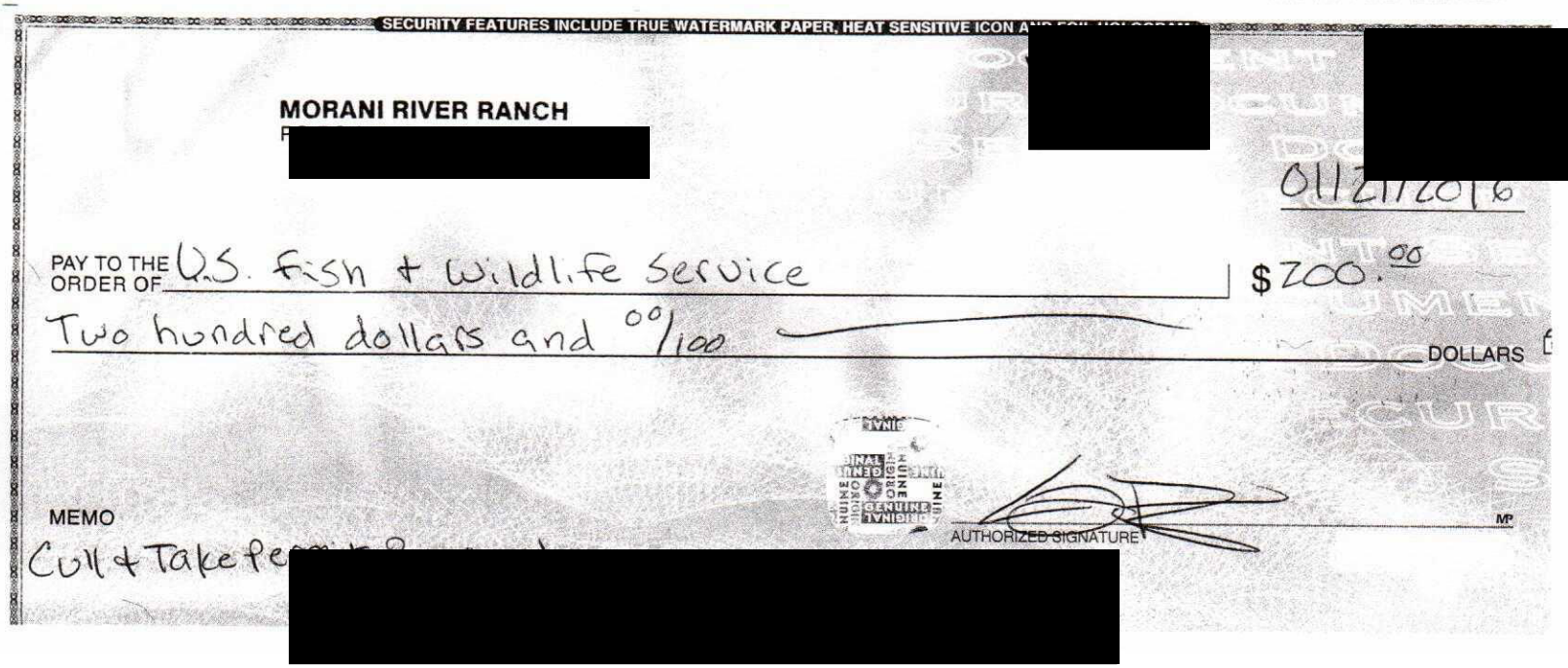
The Morani River Ranch possesses a CBW, MA46687A-3, allowing us to purchase certain listed endangered species in interstate commerce. Please find the information below as a summary for the past calendar year, 2015.

1. Number of CBW species born in 2015 and survived for 30 days or longer.
   - Barasingha- 4
   - Eld's Deer- 3
   - Addax- 5
   - Arabian Oryx- 7
   - Scimitar-horned Oryx- 15
   - Dama Gazelle- 0
   - Red Lechwe- 4
   - Grevy's Zebra- 0
   - Cuvier's Gazelle- 0

2. Number of CBW species that died in 2015 and why.
   - Barasingha- 2 (1 hunted, 1 natural causes)
   - Eld's Deer- 0
   - Addax- 4 (2 hunted, 2 natural causes)
   - Arabian Oryx- 2 (natural causes)
   - Scimitar-horned Oryx- 10 (7 hunted, 3 natural causes)
   - Dama Gazelle- 6 (1 hunted, 5 natural causes)
   - Red Lechwe- 4 (3 hunted, 1 natural causes)
   - Grevy's Zebra- 0
   - Cuvier's Gazelle- 0

3. Number of CBW species sold in 2015 and the recipients' CBW #.
   - N/A

RCVD FEB 2 2016



01/23/2017

U.S. Fish and Wildlife Service
Division of Management Authority
Branch of Permits, MS: IA
5275 Leesburg Pike
Falls Church, VA 22041-3803

Dear Sir or Madam,

The Morani River Ranch possesses a Take permit that allows us to hunt certain Endangered Species in order to help conserve them.

Below is a summary of our Take for approved species for the calendar year, 2016.

POTETIAL SPECIES	INVENTORY OF ALL ANIMALS COVERED BY THE PERMIT	# SURPLUS ANIMALS HARVESTED BY OUR DESIGNATED AGENTS
Arabian oryx	30	3
Eld's deer	12	1
Barasingha	27	1
Red lechwe	16	0

This report should include a complete accounting of all funds collected and donated as a result of your permitted activities. This information should clearly illustrate the percentage of income derived from sport-hunting of permitted species which has been donated for conservation purposes.

POTETIAL SPECIES	TOTAL FUNDS COLLECTED FROM CULLING OF PERMITTED SPECIES AND SENT TO CONSERVATION ORGANIZATIONS
Arabian oryx	$14,000 ($1,400)
Eld's deer	$12,000 ($1,200)
Barasingha	$5,500 ($550)
Red lechwe	$0 ($0)

A letter from the conservation organization (Conservation Force) confirming that a contribution was received, including the amount, and that the money was channeled to a program for the authorized species and/or its habitat is enclosed.

Our current/original permit is enclosed and we request that it be renewed for 2017.

Sincerely,

01/23/2017

Name (Cole L. Reid)

Date

Confirmation

Thank you for your online contribution.

You will receive a written confirmation via mail of your donation within 10 working days.

(If you do not receive an acknowledgment within 10 days, please contact us)

We sincerely thank you for your continued support!

Donation Made: $2,300 ($18,500-red lechwe + $4500 Barasingha=$23,0

$23,000 x .10 = $2,300

3240 S. I-10 Service Road W, Suite 200
Metairie, Louisiana 70001-6911 USA
504.837.1233 office | 504.837.1145 fax
email

Gmail

Cole Reid <moraniwariorr@gmail.com>

Form Submission Received

1 message

Submission Received <no-reply@powr.io> Mon, Jan 23, 2017 at 4:39 PM
Reply-To: Submission Received <no-reply@powr.io>
To: moraniwariorr@gmail.com

Thank you for your donation to Conservation Force, Be on the look out for a donation letter.

Conservation Force

Optional Program Designation	Barasingha Program
Contribution Amount	3,150
Endowment Fund Contribution	
Monthly Pledge	
Company	American Express
Card Number	[redacted]
Expiration Date	
Full Name	Cole Reid (Morani River Ranch)
Billing Address	P.O. Box 5513
Mailing Address	P.O. Box 5513
Phone Number	(830)-660-7648
Email	moraniwariorr@gmail.com

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

FEDERAL FISH AND WILDLIFE PERMIT

2. AUTHORITY-STATUTES
16 USC 1539(a)

REGULATIONS
50 CFR 17.22
50 CFR 17.32

1 PERMITTEE

MORANI RIVER RANCH
3202 COUNTY ROAD 405
UVALDE, TX 78801
U.S.A.

3 NUMBER
MA49112A-2
AMENDMENT

4. RENEWABLE
☒ YES
☐ NO

5. MAY COPY
☒ YES
☐ NO

6 EFFECTIVE
08/04/2014

7 EXPIRES
10/24/2016

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*
KEVIN LEWIS REID
OWNER

9. TYPE OF PERMIT
ENDANGERED/THREATENED SPECIES WILDLIFE

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
IMPORT THROUGH ANY PORT LISTED IN 50 CFR 14.12

11. CONDITIONS AND AUTHORIZATIONS

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL, TRIBAL, OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

D. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the attached 'General Permit Conditions'.

E. Permittee is authorized to allow sport hunters to take (cull), as permittee's designated agents, excess **BARASINGHA** (*Rucervus duvaucelii*), **RED LECHWE** (*Kobus leche*), **ARABIAN ORYX** (*Oryx leucoryx*), and **Eld's Deer** (*Rucervus eldi*) from the managed herds maintained by the permittee for enhancement of propagation and survival of the species as described in the permittee's application.

F. The sport hunter must have written authorization from permittee designating the hunter as permittee's agent. This letter must be in possession of this agent while culling the specimen, transporting across state lines, and during export.

G. Authorized to sell in interstate commerce the wildlife identified in E. A copy of this permit must be in the possession of the designated agent who culled an animal from permittee's herd and must accompany the resultant trophy across state lines.

H. Authorized to sell and export in foreign commerce the wildlife identified in E. A copy of this permit AND an original export permit issued under the Convention on International Trade in Endangered Species (CITES) must accompany the trophy during shipment overseas.

I. At the end of each year, permittee must submit the following:
1. An annual report including an inventory of all animals covered by this permit and the number of surplus animals of each species which were culled by your designated agents.

2. A complete accounting of all funds collected and donated as a result of the permitted activities. This information should clearly illustrate the percentage of income derived from sport-hunting which has been donated for conservation purposes.

3. A letter from the conservation organization confirming that a contribution was received, including the amount, and that the money was channeled to a program for the authorized species and/or its habitat.

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12 REPORTING REQUIREMENTS

ANNUAL REPORT DUE 1/31 FOLLOWING EACH YEAR PERMIT IS VALID
SUBMIT COMPLETE REPORT TO : DMA, 4401 N. FAIRFAX DRIVE, ROOM 212, ARLINGTON, VA 22203.

ISSUED BY

TITLE
CHIEF, BRANCH OF PERMITS, DMA

DATE
08/04/2014

RCVD JAN 31 2017

Department of the Interior
U.S. Fish and Wildlife Service

OMB No. 1018-0093
Expires 05/31/2017

Federal Fish and Wildlife Permit Application Form

Return to: U.S. Fish and Wildlife Service
(Enter address from pages 5 and 6 of application)

Type of Activity:
REISSUANCE, RENEWAL, OR AMENDMENT OF A PERMIT
(For this application, all permits, registrations, and certificates are referred to as a permit.)

Complete Sections A or B, C, D, and E of this application. U.S. address may be required in Section C, see instructions for details.
See attached instruction pages for information on how to make your application complete and help avoid unnecessary delays.

A. Complete if applying as an individual

1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix

2. Date of birth (mm/dd/yyyy)	3. Social Security No.	4. Occupation	5. Affiliation/ Doing business as (see instructions)

6.a. Telephone number	6.b. Alternate telephone number	6.c. Fax number	6.d. E-mail address

B. Complete if applying on behalf of a business, corporation, public agency, Tribe, or institution

1.a. Name of business, agency, Tribe, or institution	1.b. Doing business as (dba)
Morani River Ranch	

2. Tax identification no. [redacted]	3. Description of business, agency, Tribe, or institution
	Exotic + Whitetail breeding Ranch

Reid	4.b. Principal officer First name: Kevin	4.c. Principal officer Middle name/ initial [redacted]	4.d. Suffix

5. Principal officer title	6. Primary contact name
Owner	Cole Reid

7.a. Business telephone number	7.b. Alternate telephone number	7.c. Business fax number	7.d. Business e-mail address
830-660-7648		830-278-3700	Cole@moraniriver.com

C. All applicants complete address information

1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes)
3202 County Road 405

1.b. City	1.c. State	1.d. Zip code/Postal code:	1.e. County/Province	1.f. Country
Uvalde	Texas	78801	Uvalde	USA

2.a. Mailing Address (include if different than physical address; include name of contact person if applicable)
P.O. Box 5513

2.b. City	2.c. State	2.d. Zip code/Postal code:	2.e. County/Province	2.f. Country
Uvalde	Texas	78802	Uvalde	USA

D. All applicants MUST complete

1. Attach check or money order payable to the U.S. FISH AND WILDLIFE SERVICE **in the amount indicated on pages 6 and 7.** Federal, Tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – ***attach documentation of fee exempt status as outlined in instructions.*** (50 CFR 13.11(d))

2. Do you currently have or have you ever had any Federal Fish and Wildlife permits?
Yes ☑ If yes, list the number of the most current permit you have held or that you are applying to renew/re-issue: MA49112A-2 No ☐

3. Certification: I hereby certify that I have read and am familiar with the regulations contained in ***Title 50, Part 13 of the Code of Federal Regulations*** and the other ***applicable parts in subchapter B of Chapter I of Title 50***, and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

Signature (~~in blue ink~~) of applicant/person responsible for permit (No photocopied or stamped signatures) — Date of signature (mm/dd/yyyy): 01/23/2017

E. REISSUANCE, RENEWAL, OR AMENDMENT OF A PERMIT (For this application, all permits, registrations, and certificates are referred to as a permit.)

NOTE 1: If you are renewing your Designated Port Exemption permit, use form 3-200-2 (http://www.fws.gov/forms/3-200-2.pdf) and submit to appropriate Office of Law Enforcement address. If you are renewing your Import/Export license (required for commercial activities), use form 3-200-3 (http://www.fws.gov/forms/3-200-3.pdf) and submit to appropriate Office of Law Enforcement address.

NOTE 2: This form **cannot** be used for lost or damaged permit. If you need to replace a lost or damaged permit, please use form 3-200-66, http://www.fws.gov/international/pdf/permit-application-form-3-200-66-replacement-document.pdf. The application **must** be submitted to the office that issued the initial permit. Lost or damaged permit

NOTE 3: Some activities, such as all master files for multiple shipments, Certificate of Scientific Exchange (COSE), circus/traveling exhibits, and artificially propagated plants, can only be re-issued, renewed, or amended by submitting a new application for permits for those activities. Please refer to http://www.fws.gov/international/permits/by-form-number/index.html to determine if another application form would be more appropriate or contact the Division of Management Authority for more information.

1. **Permit number.** Enter the permit number to be reissued/renewed/amend MA49112A-2.

2. Submit the original permit with this application.

3. **Past activities.**
   a. Provide copies of all cleared documents and form 3-177 (FWS declaration of wildlife) associated with this permit.
   b. Provide a summary detailing activities conducted under this permit, as well as a brief statement of why you are seeking reissuance/renewal.

4. **Annual Report**. If required by your permit, provide an annual report as conditioned (Please disregard if you have already submitted your annual report.)

5. **Sport-hunted trophies:** If you did not hunt during the hunting season stated in your original application, you are not eligible for a renewal. Please submit a new application form.

6. **Certification** - Complete one of the statements below and supply any additional documentation requested: (original signature is required)

   a. For **NO CHANGES** to original application:

   I certify that the information submitted in support of my original application for the permit indicated above has not changed and is still currently correct. I hereby request reissuance or renewal of this permit.

   Permittee's signature: _____ Date: 01/23/2017

   b. For **CHANGES** to original application:

   On an attached page(s), provide a complete description of any changes (e.g., change in principal officer, personnel, address, location of activities, types of activities). Please sign each attached page. Also note that we need to request additional information regarding the changes after reviewing your initial request.

   I certify that the information submitted in support of my original application for the permit indicated above is still currently correct EXCEPT for the changes noted on the attached, signed page(s). I hereby request re-issuance or renewal of this permit with the indicated changes.

   Permittee's signature: _____ Date: _____

7. All international shipment(s) must be through a designated port, unless otherwise authorized. A list of designated ports (where an inspector is posted) is available from http://www.fws.gov/le/designated-ports.html. If you wish to use a port not listed, please contact either the Office of Law Enforcement for a Designated Port Exemption Permit (form 3-200-2) or the Division of Management Authority.

8. Name and address where you wish the permit to be mailed, **if** different from page 1 (All permits will be mailed via the U.S. Postal Service, unless you identify an alternative means below):

9. If you wish the permit to be delivered by means other than USPS regular mail, provide an air bill, pre-paid envelope, or billing information. If you do not have a pre-paid envelope or air bill and wish to pay for a courier service with your credit card, please check the box below. Please DO NOT include credit card number or other information; you will be contacted for this information.

   ☐ If a permit is issued, please send it via a courier service to the address on page 1 or question 8. I understand that you will contact me for my credit card information once the application has been processed.

11. Who should we contact if we have questions about the application? (Include name, phone number, and [redacted]

12. **Disqualification Factor.** A conviction, or entry of a plea of guilty or nolo contendere, for a felony violation of the Lacey Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act disqualifies any such person from receiving or exercising the privileges of a permit, unless such disqualification has been expressly waived by the Service Director in response to a written petition. [50 CFR 13.21(c)]. Have you or any of the owners of the business, if applying as a business, been convicted, or entered a plea of guilty or nolo contendere, forfeited collateral, or are currently under charges for any violations of the laws mentioned above?

☐ Yes ☒ No If you answered "Yes" provide: a) the individual's name, b) date of charge, c) charge(s), d) location of incident, e) court, and f) action taken for each violation.

RCVD JAN 31 2017

SECURITY FEATURES INCLUDE TRUE WATERMARK PAPER, HEAT SENSITIVE ICO

[redacted]

[redacted]

01/23/2

PAY TO THE ORDER OF U.S. Fish & Wildlife Service $200.00

Two hundred dollars and 00/100

DOLL

MEMO Cull Take Permit Renewal

AUTHORIZED SIGNATURE

[redacted]

Vargas, Darcy <darcy_vargas@fws.gov>

Application # 49112A

Vargas, Darcy <darcy_vargas@fws.gov> Tue, Mar 14, 2017 at 12:52 PM
To: Cole Reid work <cole@moraniriver.com>

Good afternoon Mr. Reid,
Ref: 49112A

On January 31, 2017, our office received an application request to renew your referenced permit. In order to complete your application request, please reply to the following:

1. According to your 2014 report, you obtained $15,500 from harvesting 2 red lechwe. From the funds obtained, $1,500 (10%) was donated to Conservation Force for their "Ranching Restoration Program".

- Please provide additional documentation on Conservation Force's Ranching Restoration Program. How does their Program enhance the survival of the species in the wild.

2. According to your 2015 report, you obtained $4,500 from harvesting 1 barasinga and $18,500 for harvesting 3 red lechwes. A hand written statement on an email from Conservation Force was provided, indicating that from the funds obtained, $2,300 (10%) was donated to Conservation Force. However, an invoice and/or signed statement was not provided.

- Please provide a signed statement from John Jackson with Conservation Force certifying the amount of funds received and the specific program the funds were donated to.
- Also, ensure to provide additional documentation on specific Conservation Force Program that funds were donated to. How does their Program enhance the survival of the species in the wild.

3. According to your 2016 report, you obtained $14,000 from harvesting 3 Arabian oryx, $12,000 from harvesting 1 Eld's deer, and $5,500 from harvesting 1 barasinga. As with your 2015 report, a hand written statement that looks exactly like the statement provided in your 2014 report was provided. On Conservation Force letter head was providing showing that from the funds obtained, $2,300 (less than 10% for 2015 funds earned) was donated to Conservation Force. However, an email from "No-reply@powr.io" was provided with a statement that Conservation Force received $3,150 (10%) from Morani River Ranch for Conservation Force's Barasingha Program.

- Please clarify why conflicting donation documentation was provided and reply with the correct amount of funds donated to Conservation Force.
- Because it is unclear as to whom sent the email enclosed in your application, please provide a signed statement from John Jackson with Conservation Force certifying the amount of funds received and the specific program the funds were donated to.
- Also, ensure to provide additional documentation on Conservation Force's Baraingha Program. How does their Program enhance the survival of the species in the wild.

Please ensure to respond to all the above requests at one time, as your application may only be reviewed once more before a final determination is made. If we do not receive the information requested above within 45 calendar days from the date of this message, your incomplete application will be placed in our inactive files and we will not complete your request for a permit.

Respectfully,

Darcy Vargas
Biologist
US Fish and Wildlife Service
MS: IA
5275 Leesburg Pike
Falls Church, VA 22041-3803
www.fws.gov
www.cites.org

***Sign up* for our e-newsletter to learn how we're working around the globe to protect species and their habitats!**

If you'd like to personalize your own sentence w/ hyperlink, here's the full link: http://visitor.r20.constantcontact.com/manage/optin?v=0016mDWXmlC-eCNJ4wf_4IA3WaTa8IjzcuPb8jWWJtQIDE8kRHO2RaQ17v2A6OUJgeCSOjzrh7ruV2Nz76Ues6ALGcio28DZ6UAnX5e55gpAO4%3D

CONSERVATION FORCE A FORCE FOR WILDLIFE CONSERVATION

† BARON BERTRAND DES CLERS, PH.D.
† JAMES G. TEER, PH.D.
† BART O'GARA, PH.D.
† DON LINDSAY

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RENEE SNIDER

April 28, 2017

Darcy Vargas, Biologist
U.S. Fish and Wildlife Service
MS:IA, 5275 Leesburg Pike
Falls Church, Virginia 22041-3803
darcy_vargas@fws.gov

Re: Response to March 14, 2017 Email, Ref. 49112A

Dear Ms. Vargas:

You emailed Mr. Cole Reid of Morani River Ranch with questions about the Ranch's 2017 application for renewal of a captive-bred species take permit. Please see Conservation Force's responses below. Please also find attached the requested supporting documentation and additional explanation of our Ranching for Restoration program.

Please do not hesitate to contact me if you have further questions.

Question: *According to your 2014 report, you obtained $15,500 from harvesting 2 red lechwe. From the funds obtained, $1,500 (10%) was donated to Conservation Force for their "Ranching Restoration Program." Please provide additional documentation on Conservation Force's Ranching Restoration Program. How does their Program enhance the survival of the species in the wild.*

***Response*:** The Ranching for Restoration program assists ranches that maintain populations of non-native endangered species in satisfying the ESA's "enhancement" requirement. Conservation Force helps these ranches obtain FWS cull/take permits. To satisfy the "enhancement" requirement, the ranches then donate 10% of revenues for hunting/culling to Ranching for Restoration. These donations are each typically a few thousand dollars. The Ranching for Restoration project aggregates the donations and funds projects that enhance the survival of these species in the wild, in their native countries. Species involved include some of the most endangered antelope and deer—dama gazelle, oryx, addax, lechwe, barasingha, Eld's deer, etc. Conservation Force identifies suitable projects and submits proposals to the FWS Chief of Permits for pre-approval of the "enhancement" qualification. Periodic reports are provided to the FWS.

Attached please find our brochure describing the Ranching for Restoration program; the three-year report we submitted to Chief Van Norman in May 2016; an email showing Chief Van Norman's pre-approval of our two most recent projects (August 2016); and a sample update to Chief Van Norman on our most recent red lechwe project in Namibia.

Question: *According to your 2015 report, you obtained $4,500 from harvesting 1 barasinga and $18,500 for harvesting 3 red lechwes. A hand written statement on an email from Conservation Force was provided, indicating that from the funds obtained, $2,300 (10%) was donated to Conservation Force. However, an invoice and/or signed statement was not provided. Please provide a signed statement from John Jackson with Conservation Force certifying the amount of funds received and the specific program the funds were donated to. Also, ensure to provide additional documentation on specific Conservation*

Force Program that funds were donated to. How does their Program enhance the survival of the species in the wild.

***Response*:** Please see the attached letter signed by John J. Jackson, III evidencing Moran River Ranch's donations made on behalf of species harvested in 2016 and 2015, respectively. Please see the response to the first question and attachments cited there for information on our Ranching for Restoration project.

Question: *According to your 2016 report, you obtained $14,000 from harvesting 3 Arabian oryx, $12,000 from harvesting 1 Eld's deer, and $5,500 from harvesting 1 barasinga. As with your 2015 report, a hand written statement that looks exactly like the statement provided in your 2014 report was provided. On Conservation Force letter head was providing showing that from the funds obtained, $2,300 (less than 10% for 2015 funds earned) was donated to Conservation Force. However, an email from "No-reply@powr.io" was provided with a statement that Conservation Force received $3,150 (10%) from Morani River Ranch for Conservation Force's Barasingha Program. Please clarify why conflicting donation documentation was provided and reply with the correct amount of funds donated to Conservation Force. Because it is unclear as to whom sent the email enclosed in your application, please provide a signed statement from John Jackson with Conservation Force certifying the amount of funds received and the specific program the funds were donated to. Also, ensure to provide additional documentation on Conservation Force's Baraingha Program. How does their Program enhance the survival of the species in the wild.*

***Response*:** Please see the attached letter signed by John J. Jackson, III evidencing Moran River Ranch's donations made on behalf of species harvested in 2016 and 2015, respectively.

Morani River Ranch's offtake for 2016 included three Arabian oryx ($14,000/$1,400 donation), one Eld's deer ($12,000/$1,200 donation), and one barasingha ($5,500/$550 donation). The acknowledgement email automatically generated by Conservation Force's website was provided as the second page of the attachments to the annual report submitted by Mr. Reid. Please disregard the first page of those attachments, which is the acknowledgement from 2015 take (dated 1/21/2016). This document is already in the FWS' files from the prior year's annual report, and was inadvertently re-submitted.

Please also see the response to the first question and attachments cited there for information on our Ranching for Restoration project.

Best wishes,

Regina Lennox

How To Contribute

YES, I want to help support Conservation Force

❑ General Contribution $_____

Method of Payment:

❑ Check ❑ Visa ❑ Master Card

Card #_____

Expiration _____

Signature_____

Donor/Contributor Information

Name:_____

Address:_____

_____

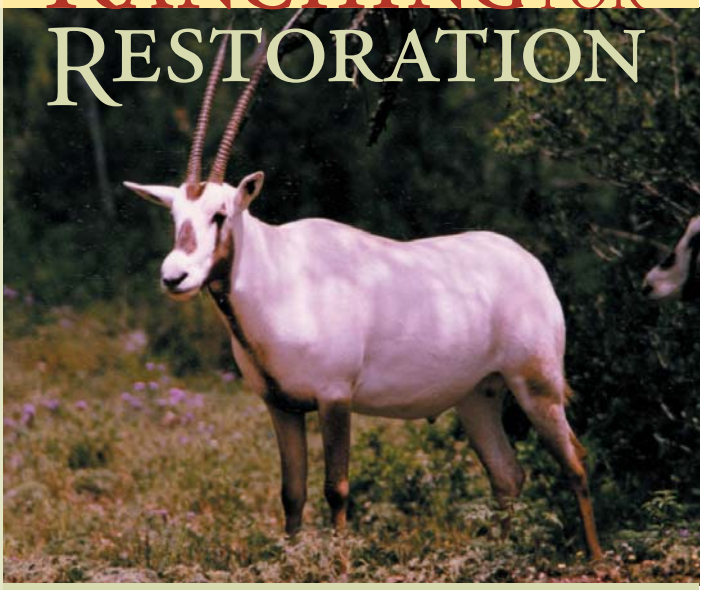
Phone:_____

Fax: _____

Email: _____

Mail to: Conservation Force
3900 N. Causeway Blvd., Suite 1045
Metairie, LA 70002 USA
(504) 837-1233
FAX: (504) 837-1145
EMAIL: jjw-no@att.net
HTTP://www.conservationforce.org

RANCHING FOR RESTORATION



Conservation FORCE

Ranching for Restoration

Ranching For Restoration is our program to help ranchers obtain the two necessary permits needed to breed and cull exotic, endangered game species. The USF&WS permits breeding and culling of listed exotics, provided that 10% of the trophy fees are directed to "enhancement" of the listed species. Enhancement is a mandatory requirement of the Endangered Species Act. Conservation Force provides two vital services. It acts as your legal representative at no charge to obtain the permits. Conservation Force also acts as recipient of the funds and places the funds in "Smart" projects pre-approved by the USF&WS for the enhancement of the species in the wild in their native ecosystem. The full sum is directed to pre-approved enhancement programs. No administrative, legal or other charge is made.

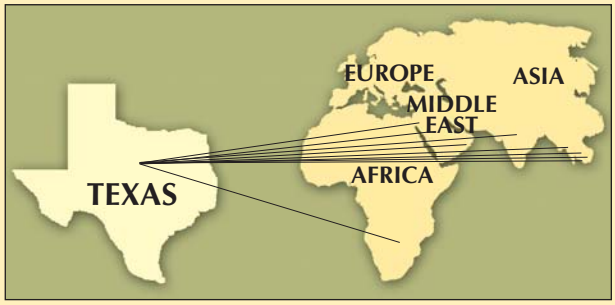
The program provides the following restoration benefits:

- Provides income and conservation incentives to landowners;
- Keeps private habitat intact in Texas;
- Smartly selects, supports, establishes and oversees effective projects in native ecosystems;
- Tracks and documents the conservation value of exotic breeding and hunting;
- Improves the image of the exotic game hunting industry;
- Ensures the restoration and the long-term survival of the listed game.

Who Are We?

Conservation Force is a non-profit 501(c)(3) public foundation. The name stands for the fact that sportsmen are the foremost force for wildlife conservation. Ranching For Restoration is a Conservation Force program that demonstrates that point. One of our main objectives is to insure the continued contribution and positive perception of the sportsmen's role in conservation. Our purpose is to improve the profile of hunting, hunters, and to expand and protect hunting and to unify the world's hunting organizations.

We have established and support select projects for Red Lechwe, Elds Deer, Barasingha, and Arabian Oryx in Cambodia, Burma, Laos, Vietnam, Oman, Saudi Arabia, Jordan, Zambia, and India. This we do for you as a public service.



What Do You Have To Do?

Contact Conservation Force to obtain the permit and representation forms. That's all!

CONSERVATION FORCE
RANCHING FOR RESTORATION

RANCHING FOR RESTORATION
UPDATE REPORT

As requested by the U.S. Fish and Wildlife Service (USFWS), below please find an update on the sources and uses of "Ranching for Restoration" enhancement funds.

I. ABOUT CONSERVATION FORCE AND RANCHING FOR RESTORATION

Conservation Force is a non-profit, 501(c)(3) public charitable foundation. The name stands for sportsmen and sportswomen who are the foremost force for wildlife conservation. One of our main objectives is to ensure the continued contribution and positive perception of the sportsmen's role in conservation.

Through the Ranching for Restoration program, Conservation Force assists ranches in applying for USFWS captive breeding and cull (take) permits for ESA-listed, non-native game species. The participating ranches that obtain these permits agree to donate a percentage of revenues from the hunting/culling and interstate sales to Conservation Force, which is exclusively used to fund "smart" projects pre-approved by the USFWS that will enhance the survival of these species in the wild.

Conservation Force provides free legal representation to its member ranches. We have assisted at least 75 separate ranches over almost two decades. Through Conservation Force and the Ranching for Restoration program, hundreds of thousands of dollars for monitoring, conservation, protection, and recovery projects have been invested in these enhancement activities in the countries of origin. The funds are treated by Conservation Force as wholly dedicated and restricted. All funds received are expended on enhancement activities pre-approved by the Division of Management Authority of the USFWS. No charges or any part of the funds are retained or saved by Conservation Force. Rather, we often add our own contributions to the sums expended.

II. RANCH CONTRIBUTIONS OF ENHANCEMENT FUNDS

Year	Number of Contributions	Average Contribution	Total Contributions
2013	27	$2,323.80	$62,742.50
2014	25	$3,350.74	$83,768.50
2015	13	$2,909.96	$37,829.50
2016	3	$3,408.75	$13,635.00

A financial statement documenting these contributions is attached.

III. USES OF FUNDS

Previous Projects:

Conservation Force presents potential enhancement expenditures and gets pre-approval from the USFWS before any contribution of enhancement funds is made. We look for a range of projects to spread the funding across species. To that end, some of our past projects include, but are not limited to:

1. Monitoring and protecting the barasingha population in Uttar Pradesh, India (2002-2006)
2. Successfully reintroducing Eld's deer to Thailand, where they are the national symbol, and funding an Eld's Deer Workshop and radio-collars and anti-poaching protection for the reintroduced deer (2008 and 2010-2011)
3. Collaring and tracking the population of Eld's deer in Cambodia (2010-2012; continued into 2013)
4. A countrywide survey of Eld's deer in Myanmar (2010-2011)

Projects 2013-2016:

1. Survey of dama gazelle in Chad [USFWS approved December 14, 2014]

Ranching for Restoration funds ($44,276.82) were sent to the Zoological Society of London to complete an aerial survey of dama gazelle in the Manga region of Chad. The survey's goal was to determine if there was a significant population of dama gazelle in this region. The results showed only four live dama, and the authors concluded that the dama gazelle have been marginalized to the edges of their preferred habitat.

The survey occurred in February 2015. The survey report was completed in October 2015 and is attached.

The report's recommendations include developing a national approach on dama conservation in Chad and evaluating the possibility of reintroduction. Conservation Force is following up to ascertain funding needs for these efforts.

2. Establishing a monitoring baseline for Laos' only Eld's Deer population [USFWS approved March 31, 2015]

Ranching for Restoration funds ($10,000) were used to assess the population and density of Eld's deer in the Savannakhet Sanctuary, to better monitor the effectiveness of conservation activities. Building off a prior grant, this study used distance-based line-transect sampling to estimate density.

The project benefits Eld's deer in Laos by improving knowledge about their status and distribution, to be used by the community management committee for adaptive protected area management. A presentation incorporating the research results is attached to demonstrate how the data is being used. The project also improves the global knowledge base on Eld's deer. The project proposal and the final report are attached.

3. Updating the Sahelo-Saharan Antelopes Action Plan [USFWS approved July 24, 2014]

Ranching for Restoration funds ($12,000) were used to update the Convention on Migratory Species (CMS) "Sahelo-Saharan Antelopes Action Plan," which covers the addax, dama gazelle, and scimitar-horned oryx in particular and has been adopted by 14 range nations. The updates were specifically requested by range nations, which use the Action Plan to set conservation priorities. The updated Action Plan "is foreseen to guide, catalyze, and align much needed conservation action across the Sahel and the Sahara for years to come." The project proposal is attached.

4. Thamin Eld's deer reintroduction in the Salakphra Wildlife Sanctuary, Thailand [USFWS approved December 17, 2013]

Ranching for Restoration funds ($8,000) were used to reintroduce ten Thamin Eld's deer to a wildlife sanctuary in Thailand, and to study the ecology of the sanctuary that impacted the re-introduction so as to improve future efforts.

The project included taking ten captive-bred deer, translocating them, soft- and then hard-releasing them, and radio-collaring at least two deer for constant monitoring, in the period from February 2014 to January 2015. The project proposal is attached.

5. Establishing a monitoring baseline for Laos' only Eld's Deer population [USFWS approved November 13 and December 17, 2013]

Ranching for Restoration funds ($6,000) were used for surveys and monitoring to establish a baseline of the population of Eld's deer in the Savannakhet Sanctuary. The Sanctuary is managed as a partnership with the local communities and the government resources authority. The study's main goal is to assess the population level and density for Eld's deer in the Sanctuary, but a secondary goal is to build capacity in Laos through using the study as a thesis project for conservation students and a third goal is to continue to build community engagement and support for the Sanctuary and for Eld's deer conservation. The project proposal is attached.

6. Promoting the conservation of Eld's deer in Chatthin Wildlife Sanctuary, Myanmar [USFWS approved November 13 and December 17, 2013]

Ranching for Restoration funds ($5,710) were used to promote conservation activities in the Sanctuary. The project's three primary objectives are to increase the Eld's deer population, to build capacity in the wildlife authority staff, and to raise awareness of the importance of Eld's deer conservation in Myanmar. Specific activities include patrols for monitoring and anti-poaching, surveys, training of field staff, and training of the wildlife authority and local villages. The project proposal is attached.

7. Conservation Review of the Dama Gazelle [approved September 9, 2013]

A roundtable workshop was held at the Royal Zoological Society of Scotland on November 19-21, 2013 to discuss the status, threats, and conservation of the highly endangered (fewer than 300 individuals) dama gazelle. Ranching for Restoration funds (approximately $2,500) were used to offset workshop expenses for key participants.

The final workshop report is attached. It outlines "next steps" for recovery and conservation and can serve as a foundation for national and international dama gazelle action plans. It includes, among other things, "a list of eight possible principal conservation actions that could be conducted in support of dama gazelle and their associated risks and benefits" and "a road map for moving conservation actions forward."

8. Tracking Eld's deer in Cambodia [approved by USFWS in 2011]

Four Eld's deer were radio-collared and tracked to obtain information on their movements, habitat, and the potential for deepening waterholes used by the deer to improve their habitat quality. The radio collars were obtained in late 2012, and the collaring occurred in March 2013 after proper permits were obtained from the Cambodian government. The Ranching for Restoration Funds ($22,500 total) were paid out prior to 2013.

Expenditures for Each Year for Each Project:

Project	2013	2014	2015	2016
1 Survey of dama gazelle in Chad			$16,881.00 $3,603.82	$23,792.00
2 Updating the Sahelo-Saharan Antelopes Action Plans		$12,000		
3 Establishing a monitoring baseline for Laos' only Eld's Deer population			$10,000	
4 Thamin Eld's deer reintroduction in the Salakphra Wildlife Sanctuary, Thailand		$8,040.00		
5 Establishing a monitoring baseline for Laos' only Eld's Deer population		$6,040.00		
6 Tracking Eld's Deer in Myanmar	$5,710.00			
7 Conservation Review of the Dama Gazelle	$2,540.00			
Total for Each Year	**$8,250.00**	**$26,080.00**	**$30,484.82**	**$23,792.00**

A financial statement documenting these contributions is attached. Please do not hesitate to contact us if you have any questions about this report.

Sincerely,

Regina Lennox, Conservation Force

ATTACHMENTS:

1. Ranching for Restoration brochure Please see above
2. Financial statement documenting contributions and expenditures
3. Excel spreadsheet summarizing financial statement
4. Final report of the survey of dama gazelle in Chad (2015)
5. Project proposal for Eld's deer research in Laos (2015)
6. Final report of 2015 project for Eld's deer research in Laos
7. PowerPoint summarizing research on Eld's deer in Laos (2013-2014)
8. Project proposal for updating the Sahelo-Saharan Antelopes Action Plan
9. Project proposal for Eld's deer reintroduction in Thailand
10. Project proposal for Eld's deer research in Laos
11. Project proposal for conservation activities for Eld's deer in Myanmar
12. Final report on Workshop, "Conservation Review of the Dama Gazelle" (2013)
13. Draft research paper based off Ranching for Restoration supported research in Cambodia

Ranching for Restoration has its own separate account. The bank was changed in July 2015 therefore there are two Profit & Loss Detail Sheets.

Chrissie Jackson
Conservation Force Treasurer

3240 S I-10 Service Rd. W, Suite 200, Metairie, Louisiana 70001-6911, USA
Telephone: (504) 837-1233 • Fax (504) 837-1145 • E-mail: jjj@conservationforce.org
www.conservationforce.org

Conservation Force
Profit & Loss Detail
July 1, 2015 through May 17, 2016

Type	Date	Num	Name	Memo	Class	Clr	Split	Amount	Balance
Income									
1000 Cash Donation									
Deposit	07/15/2015	913	Golden Eagle Ranc...	Donation for...	Donation		Chase Ranchi...		
Deposit	10/05/2015	577	Circle E. Ranch/Ro...	Donation fro...	Donation		Chase Ranchi...		
Deposit	01/26/2016	1235	Black Eagle Ranch	Donation fro...	Donation		Chase Ranchi...		
Deposit	01/26/2016	5002	Black Eagle Ranch	Donation fro...	Donation		Chase Ranchi...		
Deposit	02/17/2016	9520	Heart of the Lonest...	Donation fro...	Donation		Chase Ranchi...		
Deposit	03/21/2016	18147	777 Ranch	Donation fro...	Donation		Chase Ranchi...		
Total 1000 Cash Donation									
1004 Interest Income									
Deposit	07/31/2015			Interest			Chase Ranchi...		
Deposit	08/31/2015			Interest			Chase Ranchi...		
Deposit	09/30/2015			Interest			Chase Ranchi...		
Deposit	10/31/2015			Interest			Chase Ranchi...		
Deposit	11/30/2015			Interest			Chase Ranchi...		
Deposit	12/31/2015			Interest			Chase Ranchi...		
Deposit	01/31/2016			Interest			Chase Ranchi...		
Deposit	02/29/2016			Interest			Chase Ranchi...		
Deposit	03/31/2016			Interest			Chase Ranchi...		
Deposit	04/30/2016			Interest			Chase Ranchi...		
Total 1004 Interest Income									
Total Income									
Gross Profit									
Expense									
5517 Ranching For Restoration									
Check	04/14/2016	EFT	Zoological Society ...				Chase Ranchi...		
Total 5517 Ranching For Restoration									
Total Expense									
Net Income									

Conservation Force
Profit & Loss Detail
May 17, 2011 through May 17, 2016

Type	Date	Num	Name	Memo	Class	Clr	Split	Amount	Balance
Income									
1000 Cash Donation									
Deposit	06/09/2011	69902	Conroe Taxidermy	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	06/24/2011	4264	R.O.L. Enterprises,...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	09/27/2011	7083	Kyle Wildlife LP	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	10/25/2011	1445	KJC HoldingsLP/Al...	Donation for...	1000 Do...		CF Ranching -...		
Deposit	10/25/2011	7581	Heart of the Lonest...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	11/04/2011	2909	Laguna Vista Ranc...	Donation for...	1000 Do...		CF Ranching -...		
Deposit	01/10/2012	70690	Conroe Taxidermy	Donation fro...	Unrestric...		CF Ranching -...		
Deposit	01/10/2012	1515	KJC HoldingsLP/Al...	Donation for...	1000 Do...		CF Ranching -...		
Deposit	01/10/2012	15889	777 Ranch	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	01/24/2012	7694	Heart of the Lonest...	Ranch For R...	1000 Do...		CF Ranching -...		
Deposit	02/14/2012	7136	Priour Brothers Ra...	Priour Brothe...	1000 Do...		CF Ranching -...		
Deposit	03/05/2012	3009	H.Y.turria Land & ...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	03/09/2012	4074	C-Creek Ranch	C Creek Ran...	1000 Do...		CF Ranching -...		
Deposit	07/23/2012	8278	Heart of the Lone S...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	09/12/2012	3670	Global Health and ...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	10/01/2012	3079	Laguna Vista Ranc...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	10/16/2012	3688	Global Health and ...	Donation for...	1000 Do...		CF Ranching -...		
Deposit	10/19/2012	3692	Global Health and ...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	10/31/2012	1667	KJC HoldingsLP/Al...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	11/16/2012	7414	H. Scott Petty, Jr.	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	12/05/2012	1646	KJC HoldingsLP/Al...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	12/05/2012	1645	KJC HoldingsLP/Al...	Donation fro...	1000 Do...		CF Ranching -...		
Deposit	12/18/2012	2665	Paisano Ranch/Do...	Donation	Donation		CF Ranching -...		
Deposit	01/18/2013	7546	Kyle Wildlife LP	Kyle Wildlife ...	Ranchin...		CF Ranching -...		
Deposit	01/18/2013	72074	Conroe Taxidermy	Conroe Taxid...	Ranchin...		CF Ranching -...		
Deposit	01/18/2013	72075	Conroe Taxidermy	Conroe Taxid...	Ranchin...		CF Ranching -...		
Deposit	01/18/2013	1491	KDK Management ...	KDK Manage...	Ranchin...		CF Ranching -...		
Deposit	01/18/2013	4688	R. O. L. Enterprises...	R. O.L. Enter...	Ranchin...		CF Ranching -...		
Deposit	01/18/2013	769	John Christian H M...	John Christia...	Ranchin...		CF Ranching -...		
Deposit	01/18/2013	624	Monty F. Mathias	Monty F Mat...	Ranchin...		CF Ranching -...		
Deposit	02/14/2013	54397	DD Ranch	Donation frm...	Ranchin...		CF Ranching -...		
Deposit	02/14/2013	4703	Rancho Milagro/Do...	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	02/14/2013	564	Morani River Ranch...	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	02/14/2013	563	Diamond J. Ranch/...	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	02/14/2013	4360	David Nesbit	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	02/14/2013	561	Callvin Benson	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	02/14/2013	3749	Indianhead Ranch	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	02/15/2013	2106	Turkey Creek Ranc...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/26/2013	2252	Deep Creek Ranch	Donation for...	Ranchin...		CF Ranching -...		
Deposit	02/26/2013	16644	777 Ranch	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	02/26/2013	2200	Rancho Vedado, Inc.	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	03/06/2013	565	Montgomery Proper...	Donation Fro...	Donation		CF Ranching -...		
Deposit	03/25/2013	4324	H. Yturria Land & C...	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	03/25/2013	7391	Priour Brothers Ra...	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	04/10/2013	16146	Gegenheimer Famil...	Donation fro...	Ranchin...		CF Ranching -...		
Deposit	04/10/2013	6811	Record Buck Inc.	Donation for...	Ranchin...		CF Ranching -...		
Deposit	09/09/2013	012186	Lykes Bros. Inc.	Donation fro...	Donation		CF Ranching -...		
Deposit	09/23/2013	7969	Heart of the Lone S...	Donation Fro...	Donation		CF Ranching -...		
Deposit	11/13/2013	405702	Lucky V Ranch	Donation fro...	Donation		CF Ranching -...		
Deposit	12/21/2013	2330	Rancho Vedado, Inc.	Donation for...	Donation		CF Ranching -...		
Deposit	12/31/2013	1864	KJC HoldingsLP/Al...	KJC Holding...	Donation		CF Ranching -...		
Deposit	12/31/2013	1697	South Wen Inc.	Donation fro...	Donation		CF Ranching -...		
Deposit	01/07/2014	7130	Recordbuck, Inc.	Doantion fro...	Donation		CF Ranching -...		
Deposit	01/07/2014	7885	Kyle Wildlife LP	Donation fro...	Donation		CF Ranching -...		
Deposit	01/20/2014	10981	Duncan Double D ...	Donation for...	Donation		CF Ranching -...		
Deposit	01/21/2014	1106	Indianhead Ranch	Doantion fro...	Donation		CF Ranching -...		
Deposit	01/21/2014	1281	Victoria Oaks Ranch	Donation fro...	Donation		CF Ranching -...		
Deposit	01/21/2014	1009	Fallow Creek Ranc...	Donation fro...	Donation		CF Ranching -...		
Deposit	01/21/2014	4652	David Nesbit	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	2378	Deep Creek Ranch	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	570	Morani River Ranch...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	569	Y O Ranch/Schriener	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	571	Comanche Spring ...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	7108	Rod Ranch	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	1094	Laguna Vista Ranc...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	17309	777 Ranch	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	3626	Yeager Valley Ranc...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	572	Double Arrow Bow/...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	572	3-S Texas Outdoor...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	13385	Double Arrow Bow/...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/13/2014	573	Golden Eagle Ranc...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/26/2014	7614	Priour Brothers Ra...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/26/2014	574	Diamond J. Ranch/...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/26/2014	73599	Conroe Taxidermy	Doantion fro...	Donation		CF Ranching -...		
Deposit	02/26/2014	735600	Conroe Taxidermy	Donation fro...	Donation		CF Ranching -...		
Deposit	04/29/2014	5397	H Yturria Land & C...	Donation fro...	Donation		CF Ranching -...		

Conservation Force
Profit & Loss Detail
May 17, 2011 through May 17, 2016

Type	Date	Num	Name	Memo	Class	Clr	Split	Amount	Balance
Deposit	04/29/2014	1207	Black Eagle Ranch	Donation fron...	Donation		CF Ranching -...		
Deposit	07/01/2014	2335	Rancho Vedado, Inc.	Donation fro...	Donation		CF Ranching -...		
Deposit	08/15/2014	015285	Lykes Bros. Inc.	Donation fro...	Donation		CF Ranching -...		
Deposit	01/21/2015	2148	KJC HoldingsLP/Al...	Donation fro...	Donation		CF Ranching -...		
Deposit	01/21/2015	7654	Heart of the Lonest...	Donation fro...	Donation		CF Ranching -...		
Deposit	01/21/2015	843	Monty F. Mathias	Donation fro...	Donation		CF Ranching -...		
Deposit	01/21/2015	1154	Indianhead Ranch	Donation fro...	Donation		CF Ranching -...		
Deposit	02/09/2015	7880	Priour Brothers Ra...	Donation fro...	Donation		CF Ranching -...		
Deposit	02/09/2015	17744	777 Ranch	Donation fro...	Donation		CF Ranching -...		
Deposit	02/11/2015	5516	Recordbuck, Inc.	Donation fro...	Donation		CF Ranching -...		
Deposit	05/31/2015	1249	DRS Family Partne...	Donation fro...	Donation		CF Ranching -...		
Deposit	05/31/2015	3506	Ox Ranch Investme...	Donation fro...	Donation		CF Ranching -...		
Deposit	05/31/2015	75142	Conroe Taxidermy	Donation fro...	Donation		CF Ranching -...		
Deposit	05/31/2015	2059...	Lonesome Bull Ran...	Donation fro...	Donation		CF Ranching -...		
Deposit	05/31/2015	2059...	Lonesome Bull Ran...	Donation fro...	Donation		CF Ranching -...		
Total 1000 Cash Donation									
1004 Interest Income									
Deposit	05/31/2011		Interest Earned	Interest			CF Ranching -...		
Deposit	06/30/2011		Interest Earned	Interest			CF Ranching -...		
Deposit	07/31/2011		Interest Earned	Interest			CF Ranching -...		
Deposit	08/31/2011		Interest Earned	Interest			CF Ranching -...		
Deposit	09/30/2011		Interest Earned	Interest			CF Ranching -...		
Deposit	10/31/2011		Interest Earned	Interest			CF Ranching -...		
Deposit	11/30/2011		Interest Earned	Interest			CF Ranching -...		
Deposit	12/31/2011		Interest Earned	Interest			CF Ranching -...		
Deposit	01/31/2012			Interest			CF Ranching -...		
Deposit	02/29/2012			Interest			CF Ranching -...		
Deposit	03/31/2012			Interest			CF Ranching -...		
Deposit	04/30/2012			Interest			CF Ranching -...		
Deposit	05/31/2012			Interest			CF Ranching -...		
Deposit	06/30/2012			Interest			CF Ranching -...		
Deposit	07/31/2012			Interest			CF Ranching -...		
Deposit	08/31/2012			Interest			CF Ranching -...		
Deposit	09/30/2012			Interest			CF Ranching -...		
Deposit	10/31/2012			Interest			CF Ranching -...		
Deposit	11/30/2012			Interest			CF Ranching -...		
Deposit	12/31/2012			Interest			CF Ranching -...		
Deposit	01/31/2013			Interest			CF Ranching -...		
Deposit	02/28/2013			Interest			CF Ranching -...		
Deposit	03/31/2013			Interest			CF Ranching -...		
Deposit	04/30/2013			Interest			CF Ranching -...		
Deposit	05/31/2013			Interest			CF Ranching -...		
Deposit	06/30/2013			Interest			CF Ranching -...		
Deposit	07/31/2013			Interest			CF Ranching -...		
Deposit	08/31/2013			Interest			CF Ranching -...		
Deposit	09/30/2013			Interest			CF Ranching -...		
Deposit	10/31/2013			Interest			CF Ranching -...		
Deposit	11/30/2013			Interest			CF Ranching -...		
Deposit	12/31/2013			Interest			CF Ranching -...		
Deposit	01/31/2014			Interest			CF Ranching -...		
Deposit	02/28/2014			Interest			CF Ranching -...		
Deposit	03/31/2014			Interest			CF Ranching -...		
Deposit	04/30/2014			Interest			CF Ranching -...		
Deposit	05/31/2014			Interest			CF Ranching -...		
Deposit	06/30/2014			Interest			CF Ranching -...		
Deposit	07/31/2014			Interest			CF Ranching -...		
Deposit	08/31/2014			Interest			CF Ranching -...		
Deposit	09/30/2014			Interest			CF Ranching -...		
Deposit	10/31/2014			Interest			CF Ranching -...		
Deposit	11/30/2014			Interest			CF Ranching -...		
Deposit	12/31/2014			Interest			CF Ranching -...		
Deposit	01/31/2015			Interest			CF Ranching -...		
Deposit	02/28/2015			Interest			CF Ranching -...		
Deposit	03/31/2015			Interest			CF Ranching -...		
Deposit	04/30/2015			Interest			CF Ranching -...		
Deposit	05/31/2015			Interest			CF Ranching -...		
Deposit	06/30/2015			Interest			CF Ranching -...		
Deposit	07/16/2015			Interest			CF Ranching -...		
Total 1004 Interest Income									

Conservation Force
Profit & Loss Detail
May 17, 2011 through May 17, 2016

Type	Date	Num	Name	Memo	Class	Clr	Split
1021 Three Amigos Donation							
Deposit	07/23/2012	8278	Heart of the Lone S...	Donation fro...	3 Amigo		CF Ranching -
Deposit	07/23/2012	7398	Kyle Wildlife LP	Donation fro...	3 Amigo		CF Ranching -
Total 1021 Three Amigos Donation							
Total Income							
Gross Profit							
Expense							
2100 GENERAL & ADMINISTRATIVE							
5170 Bank Charge							
Check	01/31/2012			Service Char...			CF Ranching -
Check	02/29/2012			Service Char...			CF Ranching -
Check	03/31/2012			Service Char...			CF Ranching -
Check	04/30/2012			Service Char...			CF Ranching -
Check	05/31/2012			Service Char...			CF Ranching -
Check	06/30/2012			Service Char...			CF Ranching -
Check	07/31/2012			Service Char...			CF Ranching -
Check	08/31/2012			Service Char...			CF Ranching -
Check	09/30/2012			Service Char...			CF Ranching -
Total 5170 Bank Charge							
Total 2100 GENERAL & ADMINISTRATIVE							
5489 Laos Elds Deer Project							
Check	04/30/2015	BAN...	WWF GREATER ...	Establishing ...			CF Ranching -.
Total 5489 Laos Elds Deer Project							
5490 Sustainable Use Proj-prog							
Check	04/30/2015	BAN...	WWF GREATER ...	Int'l wiring fee			CF Ranching -.
Total 5490 Sustainable Use Proj-prog							
5517 Ranching For Restoration							
Check	11/13/2013	BAN...	International Game ...	3 AMIGO'S P...			CF Ranching -.
Check	12/20/2013	BK W...	Friends of Wildlife	tHAILAND			CF Ranching -.
Check	01/31/2014	BK W...	LAO WILDLIFE CO...	LA0S ELD'S ...			CF Ranching -.
Check	02/18/2014	BKWI...	Faculty Of Forestry	Eld's Deer R...			CF Ranching -.
Check	10/15/2014	BK W...	International Game ...	1st Installme...			CF Ranching -.
Check	10/15/2014	BK W...	International Game ...	International ...			CF Ranching -.
Check	01/21/2015	BKWI...	International Game ...	Ariel survey ...			CF Ranching -.
Check	01/21/2015	BKWI...	International Game ...	International ...			CF Ranching -.
Deposit	04/02/2015	1504...	International Game ...	Refund of gr...	Ranchin...		CF Ranching -.
Check	04/02/2015	ELCD...	Capital One	Cost of recei...			CF Ranching -.
Check	05/05/2015	BkWI...	Zoological Society ...	Addax Projec...			CF Ranching -.
Total 5517 Ranching For Restoration							
Total Expense							
Net Income							

Ranching for Restoration - Sources and Uses Summary

SOURCES - CONTRIBUTIONS FROM RANCH PARTICIPANTS

2013	2014	2015	2016
$680.00	$16,043.50	$1,340.00	$700.00
$350.00	$900.00	$1,750.00	$3,500.00
$700.00	$3,600.00	$1,800.00	$1,935.00
$250.00	$2,750.00	$1,442.50	$7,500.00
$500.00	$300.00	$490.00	**$13,635.00**
$10.00	$500.00	$275.00	
$980.00	$250.00	$1,835.00	
$3,600.00	$1,500.00	$9,250.00	
$200.00	$4,500.00	$16,444.00	**$197,975.50**
$2,750.00	$450.00	$890.00	**2013-2016**
$80.00	$300.00	$200.00	**Total Donate**
$625.00	$400.00	$1,090.00	
$350.00	$5,150.00	$1,000.00	
$4,755.00	$27,095.00	$23.00	
$300.00	$550.00	**$37,829.50**	
$1,800.00	$290.00		
$13,450.00	$425.00		
$250.00	$250.00		
$450.00	$425.00		
$11,580.00	$2,450.00		
$2,070.00	$150.00		
$400.00	$1,650.00		
$10,272.50	$1,050.00		
$1,000.00	$9,590.00		
$775.00	$2,150.00		
$450.00	$250.00		
$435.00	$800.00		
$2,780.00	**$83,768.50**		
$900.00			
$62,742.50			

USES - CONTRIBUTIONS TO PRE-APPROVED IN-COUNTRY PROJECTS

YEAR	USE
2013	
$2,540.00	Conservation Review of the Dama Gazelle Workshop
$5,710.00	Myanmar Eld's Deer Project (Chattin Sanctuary)
$8,250.00	**2013 Total**
2014	
$6,040.00	Lao Eld's Deer Project (establishing baseline)
$8,040.00	Thailand Eld's Deer Project (re-introduction)
$12,000.00	Updating Sahelo-Saharan Antelope Action Plan
$26,080.00	**2014 Total**
2015	
$10,000.00	Lao Eld's Deer Project (establishing baseline)
$25,000.00	*Chad Aerial Survey for Dama Gazelle & Addax*
-$21,396.18	*Reversed because survey admin. moved to ZSL*
$16,881.00	Chad Aerial Survey for Dama Gazelle & Addax (ZSL)
$30,484.82	**2015 Total**
2016	
$23,792.00	Chad Aerial Survey for Dama Gazelle & Addax (ZSL)
$88,606.82	**2013-2016 Total Spend**

** The uses do not always include wiring and account fees, which are paid from RFR funds

DAMA GAZELLE SURVEY

THE MANGA REGION WESTERN CHAD

FEBRUARY 2015

By:

Tim Wacher, Darren Potgieter,

Mahamat Hassan, Satangar Dogringar,

Thomas Rabeil

CITATION: Wacher, T., Potgieter, D., Hassan, M., Dogringar, S., Rabeil, T. 2015. *Dama gazelle survey. The Manga region, Western Chad, February 2015.* Zoological Society of London, African Parks Network and Sahara Conservation Fund. iii + 28 pp.

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SPONSORS and PARTNERS

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Air Survey team
Darren Potgieter – Pilot (APN)
Tim Wacher – Recorder (ZSL)
Satangar Dogringar – observer (APN)
Mahamat Hassan Hatcha – observer (DCBPNC))

Ground survey Team
Thomas Rabeil (SCF)
Ahamat Hassane (DCBPNC)
Rocco Rava (SVS)
Paul Benecke (APN)

Logistics: African Parks Network managed logistics and fuel for the air survey. Rocco Ravà and his team from Société de Voyages Sahariens (SVS) managed the ground survey logistics.

CONTENTS

ACRONYMS

APN	African Parks Network
DCBPNC	Direction de la Conservation de la Biodiversité, des Parcs Nationaux et de la Chasse
EU	European Union
IGF	International Foundation for the Conservation of Wildlife
MAE	Ministère de l'Agriculture et de l'Environnement
NGO	Non-governmental organisation
O.	Ouadi ('wadi' in English)
OROAGR	Ouadi Rimé–Ouadi Achim Game Reserve
PAM	Programme Alimentaire Mondiale – World Food Program.
RFOROA	Réserve de Faune de l'Ouadi Rimé-Ouadi Achim
SCF	Sahara Conservation Fund
SSIG	Sahelo-Saharan Interest Group
SVS	*Société de Voyages Sahariens*
TLU	Tropical livestock units
ZSL	Zoological Society of London

SUMMARY

This report summarises results of a combined aerial and ground survey of dama gazelle habitats in the Manga region (Kanem) of western Chad.

The survey was funded through Conservation Force with input from African Parks Network and Sahara Conservation Fund. It was carried out by a combined team from Direction de la Conservation de la Biodiversité, des Parcs Nationaux et de la Chasse (DCBPNC), Chad, Africa Parks Network (Zakouma), Sahara Conservation Fund and the Zoological Society of London.

The survey was undertaken to establish whether the largest known area of occupancy in which dama gazelle (IUCN Critically Endangered) have been found in recent years corresponded to a significant population.

The aerial team used standard aerial strip count methodology to record wildlife and livestock in just under 6% of a 12800km^2 survey zone, augmented by extensive free searching of zones where dama signs were reported. The ground team used SCF's standard reconnaissance and line transect methods. Regular coordination between the two teams through satellite phone, enabled exchange of information on dama location and well sites.

Only four dama were found in two groups, both at the northern limit of suitable habitat in areas least frequented by livestock. Two adult females, one 6-12 month calf and one adult male were observed. No sightings were made where additional fresh tracks were observed by the ground team in the extreme east of the survey zone.

No dama were found in the Manga habitat, where 17 animals in several widespread groups were seen in a 2001 ground survey. The groups that were found in the Acacia-Panicum habitat in 2015 were in essentially the same locations as found in a ground survey in 2014. There was no evidence that a larger population is dispersed through the greater survey zone.

The aerial survey estimate of just under 3000 dorcas in the survey is likely to be an underestimate, since comparison of aerial and ground survey methods indicated potential undercounting bias from the air for dorcas gazelles. There was no evidence of undercounting bias in the estimate of some 30,000 camels in the survey zone.

The survey results are disappointing for dama gazelle, since the only discernible trend across the sequence of surveys in the Manga region, 2001 to date, appears to be downward (from 'very low' to 'extremely low' numbers). The Manga region holds one of only five known remaining sub-populations of dama (RZSS & IUCN 2014), and although it is the largest in area of extent, it is now known that it may be close to extirpation.

At the same time the exercise has been useful in removing a significant 'unknown' (whether the large area of extent indicated a significant but 'hidden' population that was being missed in slow moving ground surveys) and has clarified options for future conservation of the species in Chad.

Because the Manga area is remote and difficult to access, with no formal protected status, it is recommended that this population does not merit a major conservation initiative at this

stage. But action to increase sensitisation and awareness of the national law on dama & wildlife conservation among all levels of local authority operating around the Manga area should be taken and a flow of information on the status of this remnant group be maintained. An EU supported project being implemented by SCF can provide a mechanism to help achieve this.

But in the light of these results the clear indication from this survey and previous work by SCF, DCBPNC and other partners, is that the dama gazelle is at high risk of extinction in Chad and throughout its remaining range.

Accordingly it is also recommended:

1) That a national strategy for dama conservation in Chad is created.

2) The strategy should include assessment of the option to re-inforce the small population living in the Ouadi Rimé-Ouadi Achim Game Reserve, primarily using captive descendents of dama originally caught in the Ouadi Hawach sector of Ouadi-Rime Ouadi Achim Game Reserve. These are available in zoos, private collections and ranches, particularly in the US and Gulf region. It is noted that the scimitar-horned oryx re-introduction project infrastructure and process currently underway in Chad can provide an excellent framework to achieve this. A detailed review to identify the exact stocks to use for such an effort should be incorporated.

2) The strategy should also ensure that the potential for dama re-introduction to the Ennedi region is assessed in the context of the Ennedi management plan currently being developed by African Parks Network. The existing tourism infrastructure and proposed management plan for Ennedi region offers potential to incorporate and manage such a project for the benefit of the local region, and to provide a second 'pole' of dama conservation within the country, complementing the proposed initiative for dama at OROA.

INTRODUCTION

The dama gazelle is one of four African antelopes currently classified as Critically Endangered by the IUCN Red list system (IUCN 2014). Formerly found from Morocco to central Sudan, a detailed review of the current status of dama indicates that in the last 10 years this striking species has only been recorded in the wild in small numbers in five widely scattered locations (RZSS & IUCN-ASG 2014). The Sahara Conservation Fund and Zoological Society of London have been actively collecting systematic information on the status of these populations in the field. Encounter rates in all five populations are so low that scientific estimates of population sizes have been mainly impossible to obtain. The most intensively monitored population at Termit Massif in Niger, is believed to number no more than 20-50 animals restricted to an area of less than 1000km^2.

The Manga region of western Chad and the adjacent plains to the east of the Manga's fixed dunes is the region in which dama have been found over the largest area in these studies, c. 10,000km^2, Map.1. This has been established by direct observation of animals together with records of tracks and faecal pellets. Faecal pellet identification has been verified by subsequent DNA analysis from samples (Senn et al. 2014).

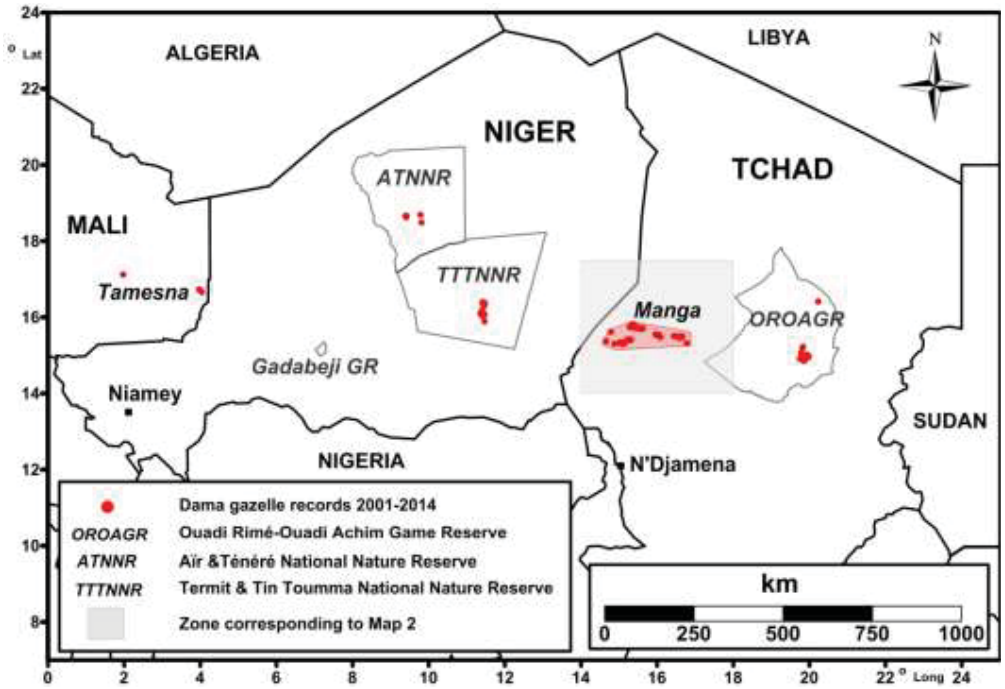
The Manga region is not protected and is widely inhabited by nomads and their livestock (mainly camels and small stock) using a network of wells. Recent social and economic changes have also led to an increased level of trading and transport activity along a major north-south route running between the fixed dunes and the Acacia-Panicum plains. But in general the area is difficult to access and while an open landscape, is slow to travel over on the ground, largely due to the dune slopes, sandy substrate, and numerous small sand hillocks built up against Panicum and other plant tussocks. This has been considered a contributory factor in the persistence of dama there.

In view of the large area over which dama have been recorded in and around the Chadian Manga (5 - 6 x greater than other sites) and the location of the Manga midway between the small dama populations at Termit and Ouadi-Rimé-Ouadi Achim, the region has been identified as a priority site for aerial survey (RZSS & IUCN-ASG 2014). This document reports results of a combined aerial and ground survey conducted in the Manga in February 2015. The survey was achieved through close collaboration between conservation agencies working in Chad (DCBPNC, APN, SCF and ZSL). Core funding was based on a grant administered by the US NGO 'Conservation Force' arising from taxation on desert ungulate ownership in the US, with significant contributions from African Parks Network and Sahara Conservation Fund.

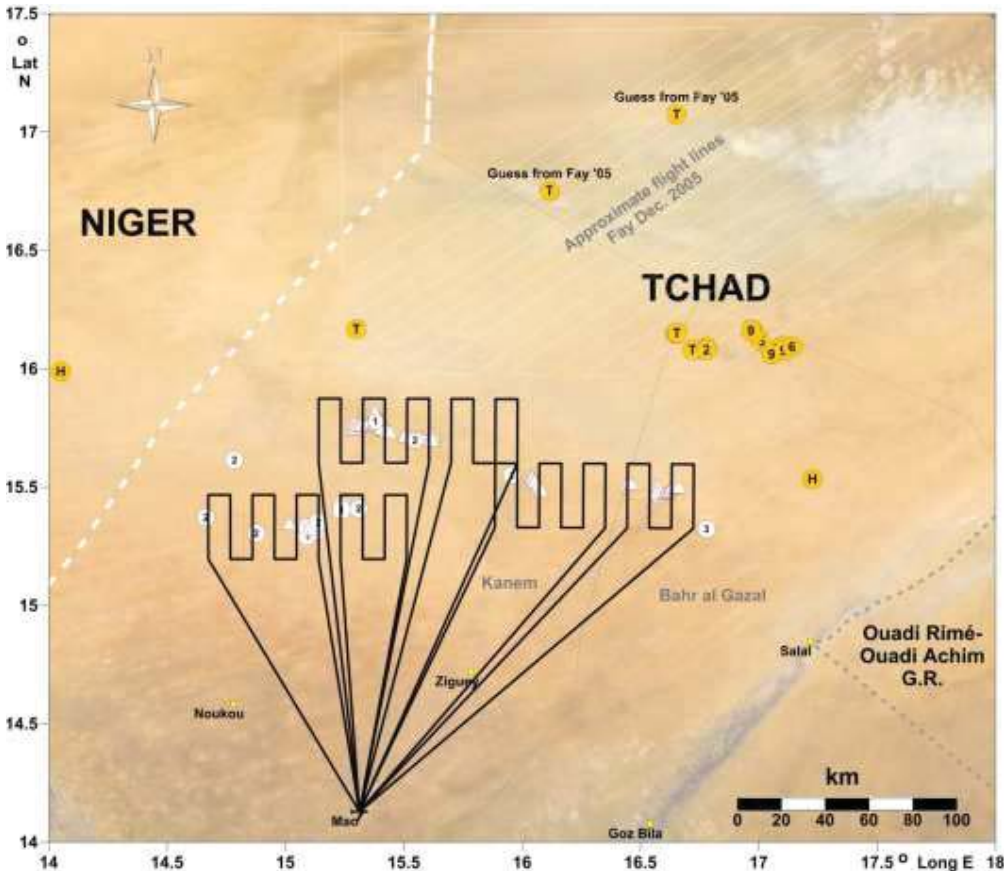
METHODS

The survey was organised into an aerial sample survey using a team comprised of DNPNRFC/APN and ZSL staff, while a simultaneous and coordinated ground survey was conducted by a team of DCBPNC and SCF staff.

Air Survey: The air survey team was based at Mao town in the administrative district of Kanem, using the 1700m asphalt airstrip, Map 2. The air survey objective was to complete a



Map 1. Distribution of all dama gazelle observations recorded by the Sahara Conservation Fund since 2001, with the relatively large area of extent in the Manga



Map 2. Proposed transect survey routes in relation to all dama gazelle observations (white points) and all addax records (orange points) from the region since 2001.

sample transect survey using a 600m fixed strip width across two principle habitats, the fixed dunes of the Manga and the Acacia-Panicum plains to the east. The survey area was centred on locations where dama had been detected by ground surveys in previous years (Monfort, Newby et al. 2004; Wacher & Newby 2010; Newby, Wacher & Hassan, 2014). The survey zone includes parts of Kanem and Bahr al Gazal districts.

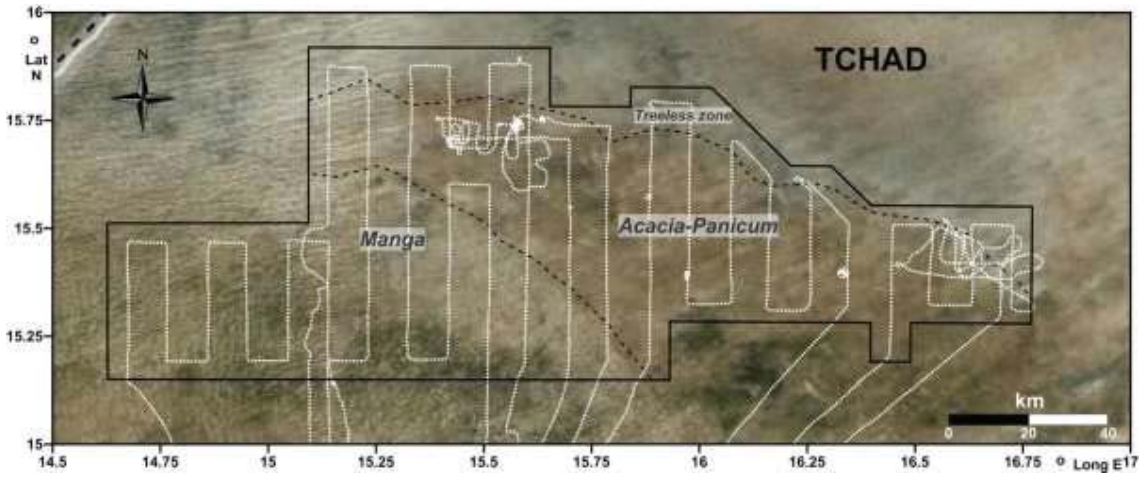
Air survey methods closely followed standard procedures for sample strip counts (Norton-Griffiths 1978). The air survey team consisted of pilot, recorder and two rear seat observers. A four-seat Cessna Skylane 182 operated by African Parks was rigged with metal rods projecting back c. 1m from custom made attachment pods on the wing struts, positioned relative to individual eye height for each rear seat observer to indicate the outer limit of a 300m strip width on the ground when flying at 90m altitude (Norton-Griffiths 1978 & Annex II).

A Garmin GPSMAP 296 was used for navigation, displaying prepared parallel transect routes at 10km intervals, organised into 8 contiguous survey blocks. Planned routes are shown in Map 2 and the realised final survey routes in Map 3. Altitude was managed by laser altimeter aiming for a sustained height of 90m during transect recording. Observers called all observations of wildlife at all times, using the wing strut rods to classify them as inside or outside the sample strip. On transects observers also called all sightings of livestock within the 300m strip, and records were taken of nomad camps and well sightings. The recorder entered all observations into a custom made android GPS data capture application (Wildlife Survey ©Darren Potgieter) on a tablet computer for subsequent download. Two short test flights on 12th February 2015 were used to familiarise the team with observation conditions and methods. The formal transect flying was completed over 6 mornings between 13th to 19th February. In response to information received from the ground team, time was also allocated to free searching for dama gazelles from the air on some days.

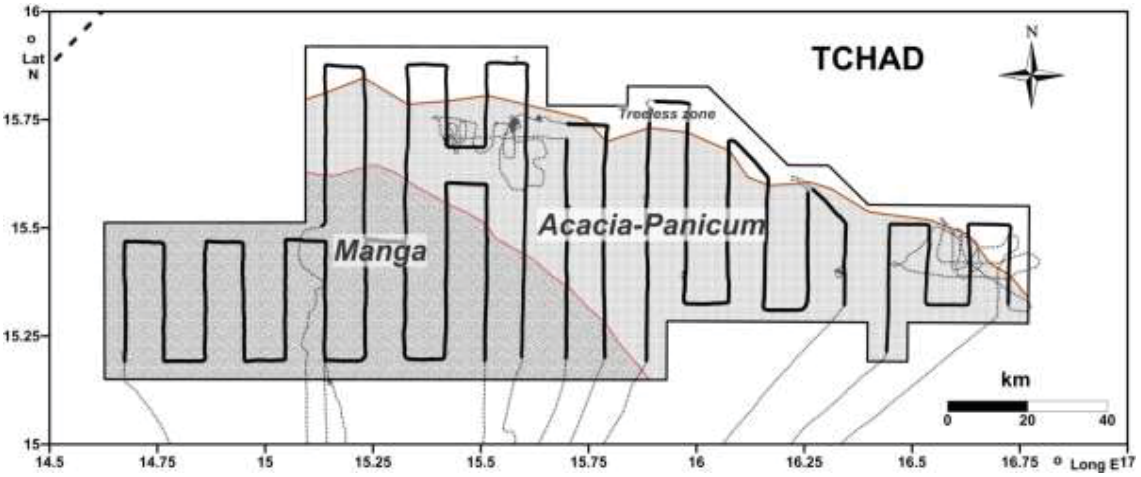
Ground survey: The ground survey team consisted of two vehicles. The observation team consisting of one driver- observer, one recorder-observer and one observer in the lead vehicle. The ground survey objective was to duplicate part of the transect survey route of the air survey to provide a comparative data set on wildlife and livestock sightings (particularly dorcas gazelle and camels), investigate and follow up leads on possible dama information obtained from local nomads and supply up to date information to the air survey team. Following standard SCF protocols all wildlife observations were entered into a prepared Cybertracker sequence (www.Cybertracker.org). On transect sectors data were collected in line transect (Distance sampling) format. Daily meteorological records were stored at 3 hour intervals on a Kestrel hand held weather station (Annex I). Opportunistic camera trapping was conducted at overnight stops. (Annex V).

Co-ordination between ground and air survey team: Daily satellite telephone contact between the two teams enabled the ground team to update the air team on ground conditions and information on presence and location of dama signs. The latter proved crucial to finding dama. The air team was also able to forward locations of well sites and water, allowing the ground team to travel more efficiently towards areas of interest for dama detection.

Analysis: The aerial sample survey block was stratified into two principle habitat zones, representing the fixed vegetated dunes of the Manga and the Acacia-Panicum plains to the east of the Manga (Map 4). A third stratum, the 'treeless zone' represented a relatively small area at the northern fringe of the main survey zone. Aerial transect data were allocated to habitat strata and analysed using Jolly method for unequal transect lengths (Norton-Griffiths 1978 & Annex III). Ground survey data from transect sectors was analysed using the software Distance 6.0 (Thomas, Laake et al. 2009 & Annex IV).



Map 3. Survey zone (polygon)and all aerial survey routes overlaid on Google earth imagery of local habitats, western central Tchad. .



Map 4. Survey zone and survey transects overlaid on habitat strata: the Manga fixed dunes, the *Acacia-Panicum* plains and the ' treeless zone. Limits determined from a combination of satellite imagery (see Map 3) and ground truth experience. Aerial transects shown in bold black lines. Approach and departure routes, and free aerial search movements over areas where the ground team reported dama tracks, shown in pale grey lines.

RESULTS

Results for all livestock and larger wildlife sightings during strip transect flying are given with analysis of associated population estimates for each survey stratum in Annex III. Results of line transect ground survey analysis for dorcas and camel population estimates from distance sampling are given in Annex IV.

Results for individual species are summarised below.

ENVIRONMENTAL CONDITIONS

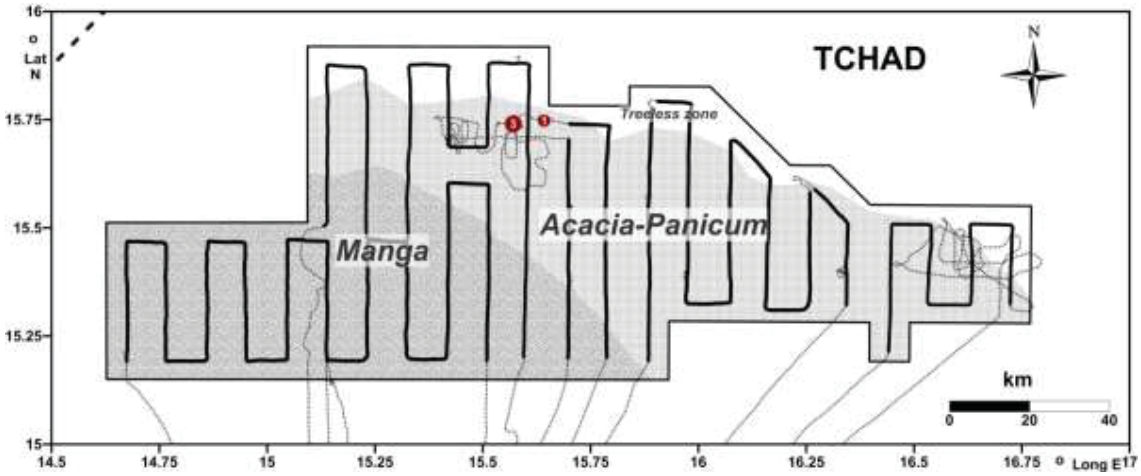
The survey took place in the mid dry season period. Weather records kept by the ground team are shown in Annex I.

- Wind speeds (mostly below 20km/hr before 9am) and visibility (mostly >5km with light haze) were both favorable throughout the survey period, with north-easterly airflow typical of the season.
- Humidity was low and vegetation notably dry. The ground team scored the grazing layer vegetation as <10% green at 66% of thirty-eight 5km recording stations.
- Appearance of the landscape in the three major strata is shown in Plate 1-4 and generally dry vegetation conditions are apparent in all the Plates .
- No natural surface water was observed by either survey team in the survey zone.

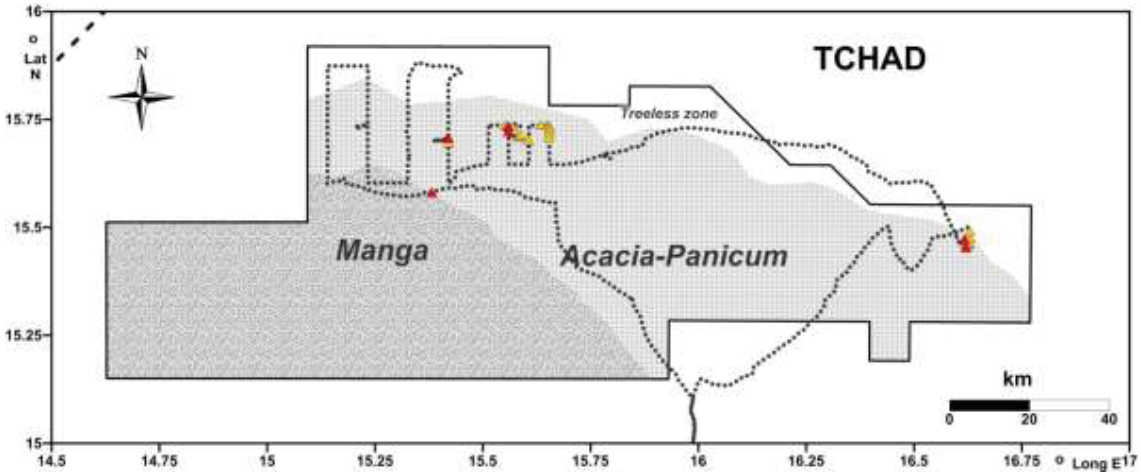
1) Dama gazelle *Nanger dama*

- No dama were seen while flying transects.
- Free searching from the air, in combination with information relayed by the ground team on location of fresh track sightings, resulted in discovery of two groups of dama on 16th February. Map 5 and Plate 3.
- All additional data on dama tracks and signs made on the ground are summarised in Map 6.
- Combined dama information from 2015 is compared with results in 2014 and 2001-2010 in Map 7.
- A group of three individuals consisted of one adult female accompanied by a younger adult female and young of year were observed towards the northern limit of the Acacia-Panicum habitat. The ground team were about 1.8 km distant to the south of the dama at the time. From the air the dama were observed moving away from the ground team in a north-easterly direction, using a mixture of walking and trotting gaits. They did not appear unduly alarmed by the presence of the aircraft, which circled them 5 or 6 times. At one point the dama were observed to stop and browse from a *Maerua crassifolia* shrub. They appeared to be aware of the ground team behind them, stopped to look in that direction and moved consistently away from them. In the course of observation they were seen to cross one of the main tracks used by heavy transport travelling north to Niger and Libya. They were thus in a very exposed position.
- A single adult male was found 6km to the east of the first group, apparently moving in a parallel direction. Like the females this individual appeared relatively calm in the presence of the aircraft. Although seen to run for one or two short bursts, this animal also stood to watch several passes by the aircraft. Like the others, he was located close to the lorry track and moving north towards the treeless zone.

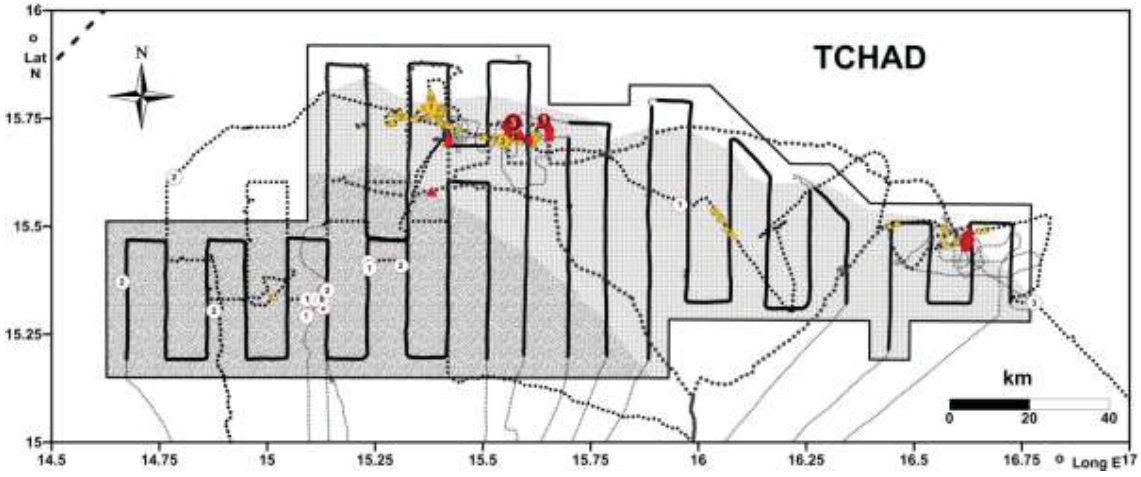
- On the ground fresh tracks of dama gazelle were frequently seen to indicate movements from shrub to shrub of *Leptadenia pyrotechnica.*
- A relatively fresh skull of a middle aged (adult dentition not heavily worn) female dama was found, with no associated skeleton, close to one of the main bush tracks in regular use by commercial and military vehicles.
- Besides direct observation of frequent heavy trucks travelling through the area in use by dama, the ground team recorded presence of military and police officials at check points intended to regulate this developing traffic.



Map 5. Location where two groups of dama gazelle were seen from the air, February 2015. Sightings made while free searching over an area where fresh tracks were reported by the ground survey team.



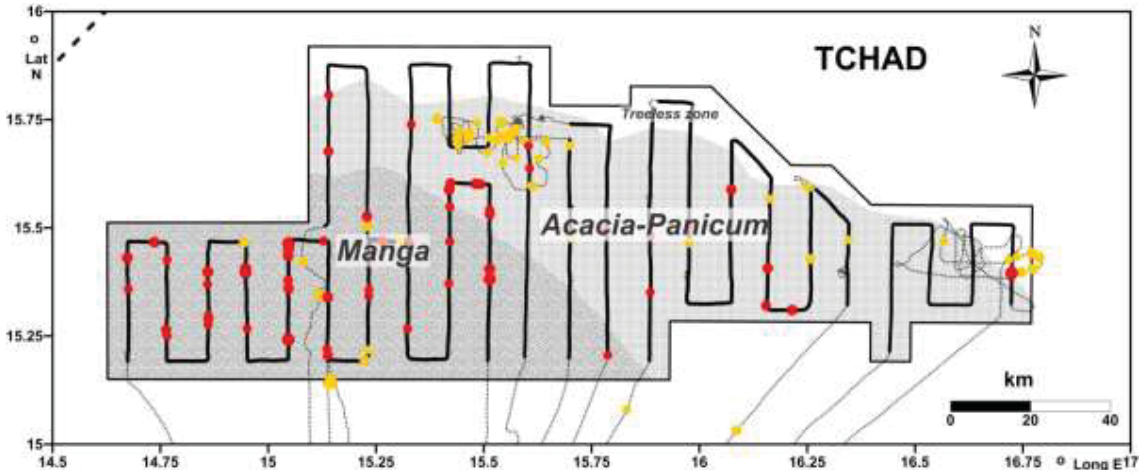
Map 6. Location of all tracks and signs of dama gazelle seen along survey route by the ground survey team, February 2015. Sites of dung sample collections (n=6) shown in red.



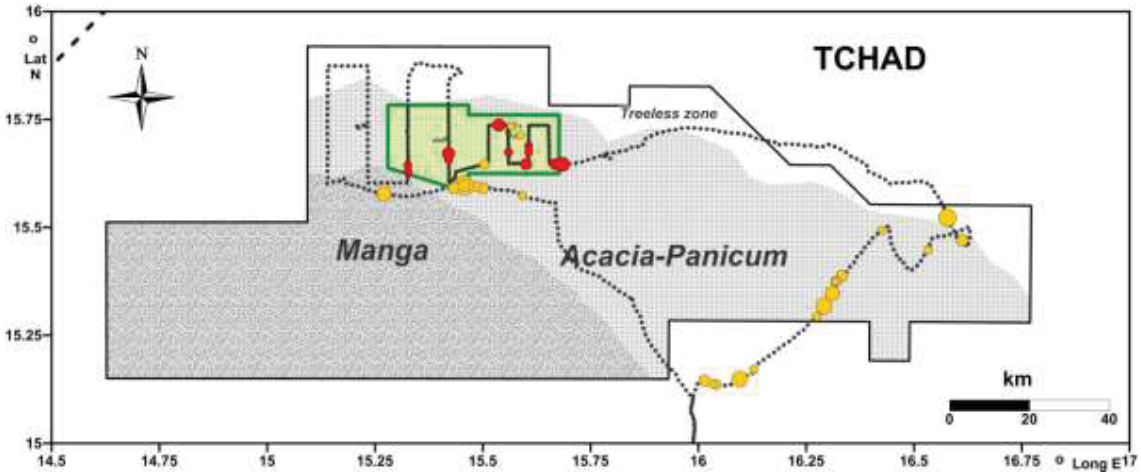
Map 7. All dama locations in 2015 (red) compared to 2014 (yellow), with all ground and air search routes in 2014 & 2015 indicated. All direct observations of live dama 2001-2010 also shown (white).

2) Dorcas gazelle *Gazella dorcas*

- A total of 330 dorcas gazelles were counted in 133 groups during all flying. This includes all animals seen *en route* to the sample zone, animals seen during free searching and all animals seen inside and outside the transect bandwidth during transect flying.
- A subset of 178 gazelles in 64 groups were recorded inside the 300m strip widths during transect flying. Map 8.
- Dorcas density recorded from the aerial survey was 0.5 / km^2 in the Manga and at 0.13 / km^2 in the Acacia-Panicum plains, Table 1. Statistical confidence in the estimates was very low (c.v. >50%). Full analysis is shown in Annex 1.
- The ground team observed 103 dorcas in 41 groups during all reconnaissance and transect work Map 9.
- Conditions on the ground transect survey proved harsh. No gazelles were seen on the first two (most westerly) transects where proportionately more sand and very little tree cover was available (compare westernmost transects in Map 6 with habitat in Map 3). Analysis of ground transect work was consequently limited to the 6 easterly transects.
- A subset of 21 dorcas in 11 groups was encountered in the resulting transect survey. Their location and the restricted sample zone in the Acacia-Panicum habitat are shown in Map 9.
- Because 11 groups is too few for reliable application of line transect methods, the data were analysed as a separate stratum in Distance 6.0 using 2014 observations combined with 2015 observations to create a global detection function based on 83 observations.
- This provided a ground based dorcas density estimate of 0.67 / km^2 for the Acacia-Panicum ground survey zone in 2015. (see Map 9).
- Dorcas density estimates for the Acacia-Panicum habitat are compared between years using line transect methods in 2014 & 2015 and within the same year using line transect and aerial survey methods in Table 1 and Fig. 1.
- Results show that ground surveys using the same methodology in 2014 & 2015 returned similar results. Comparison of these results with a significantly lower density estimate obtained from the air survey implies that the aerial survey result may be affected by undercounting bias. Dorcas are the smallest and most cryptic species recorded on this survey, particularly when lying down and do not necessarily stand up when overflown (Plate 4), so undercounting, especially with the relatively wide strip width used to search for the much more obvious dama, would not be surprising.



Map 8. Distribution of all aerial dorcas observations in the survey zone; red points shows groups seen inside the transect strip and contributing to population estimate; orange shows groups seen outside transect strip count limits.



Map 9. Distribution of all ground-based dorcas observations in the survey zone; red points shows groups seen during line transect recordings used in population density estimate for transect survey zone (green); orange shows all other groups. Dotted line shows vehicle route. .

Date	Method	Density / km2 +/- 95% C.I.
Feb 2014	Ground survey line transect (Distance6) Truncated @400m	0.9 (0.4-1.9)
Feb 2015	Ground survey line transect(Distance6) Truncated @400m	0.67 (0.32-1.4)
Feb 2015	Aerial survey strip transect (300m x2)	0.13 (0.03-0.23)

Table 1. Methods and results for dorcas density estimates in the *Acacia-Panicum* habitat, 2014-2015.

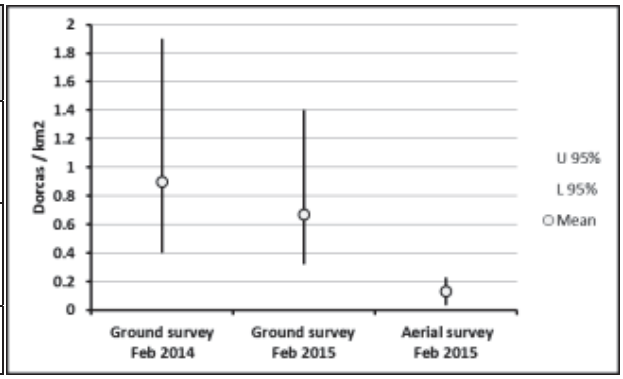


Fig. 1. Comparison of dorcas density estimates in the *Acacia-Panicum* habitat; see also Table 1.

3) Camels and livestock

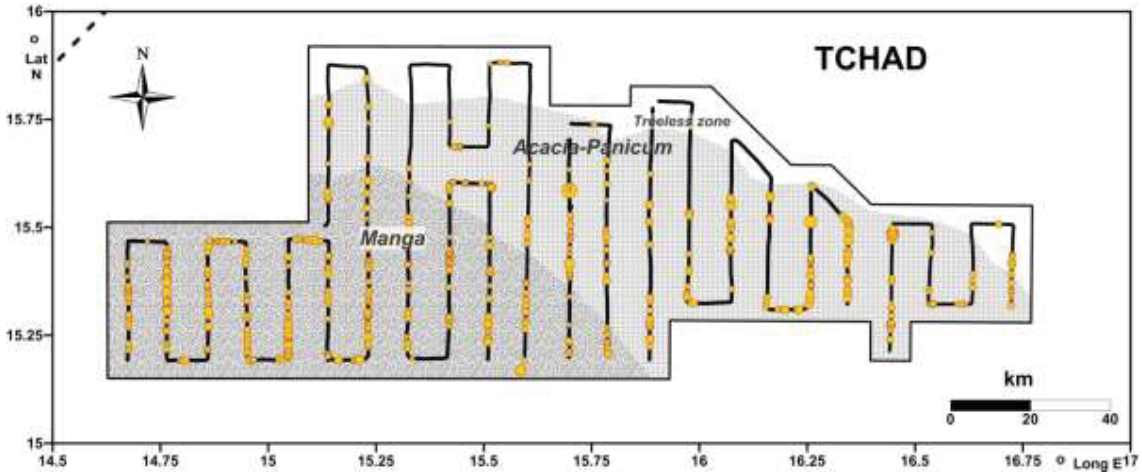
A summary of all livestock numbers seen on transect flights is given in Table 2. The distribution of all camel locations is shown in Map 10.

Table 2. Total livestock counted within the aerial survey strips.

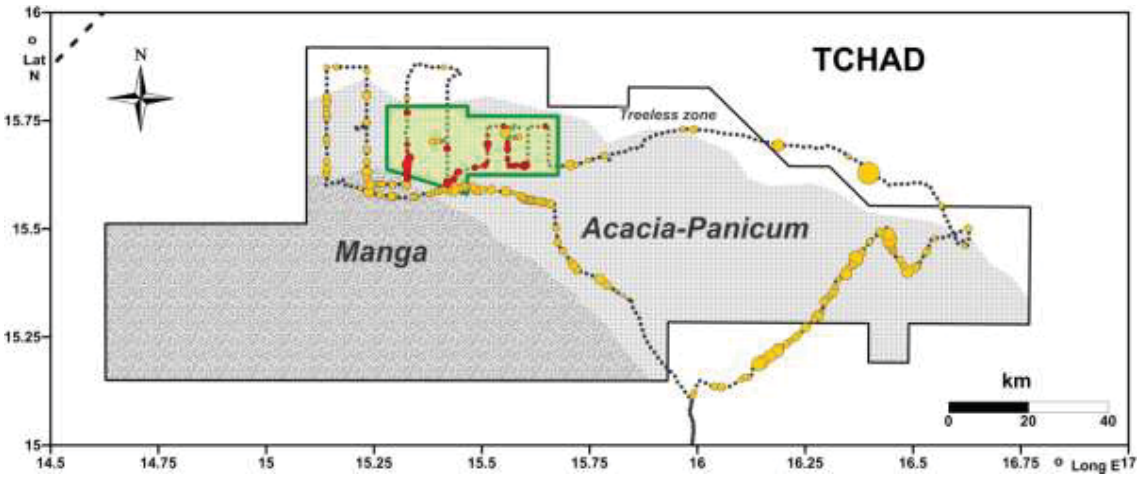
	Camels	Cattle	Donkey	Horse	Small stock
Manga	936	41	303	27	1186
Acacia-Panicum	926	-	82	-	75
Treeless zone	48				

- These figures translate to a combined density of just over 8 head of livestock / km^2 in the Manga and nearly 3 head of livestock /km^2 , in the *Acacia-Panicum* grasslands.
- Camel densities are slightly higher in the Manga, but the much greater presence of small stock and donkeys in the Manga were the main factors in this difference.
- Full analysis is shown in Annex II indicating nearly 16,000 (+/- 20%) camels in the Manga and nearly 14,000 (+/- 40%) camels in the Acacia-Panicum system. .
- After conversion of livestock and gazelle densities (Annex II) to livestock units (FAO, http: //www.fao.org/ag/againfo/programmes/en/lead/toolbox/Mixed1/TLU.htm) the results indicate that around 99% of all energy flow through grazing herbivores in the combined Manga & Acacia-Panicum system is under control of people.

- The ground team observed 1706 camels in 169 groups during all reconnaissance and transect work Map 11.
- A subset of 149 camels in 32 groups were recorded from transect routes in the transect survey zone (Map 11). These data were analysed as a separate stratum in Distance 6.0 using 2014 camel observations combined with 2015 observations. The resulting global detection function is based on 191 observations.
- This provided a ground based line transect estimate of camel density of 2.7 / km^2 for the Acacia-Panicum ground survey zone in 2015.
- Camel density estimates for the Acacia-Panicum habitat are compared between years using line transect methods in 2014 & 2015 and within the same year using line transect and aerial survey methods in Table 3 and Fig.2.
- Results show a good correspondence between aerial and ground survey results for comparatively easily visible camels.



Map 10. Distribution of all aerial camel observations in the survey zone; .



Map 11. Distribution of all ground based camel observations. Red points shows groups seen during line transect recordings used in population density estimate for transect survey zone (green); orange shows all other groups. Dotted line shows vehicle route.

Date	Method	Density / km2 +/- 95% C.I.
Feb 2014	Ground survey line transect (Distance6) Truncated @400m	3.9 (2.2-7.0)
Feb 2015	Ground survey line transect(Distance6) Truncated @400m	2.7 (1.7-4.5)
Feb 2015	Aerial survey strip transect (300m x2)	2.3 (1.8-2.7)

Table 3. Methods and results for camel density estimates in the *Acacia-Panicum* habitat, 2014-2015.

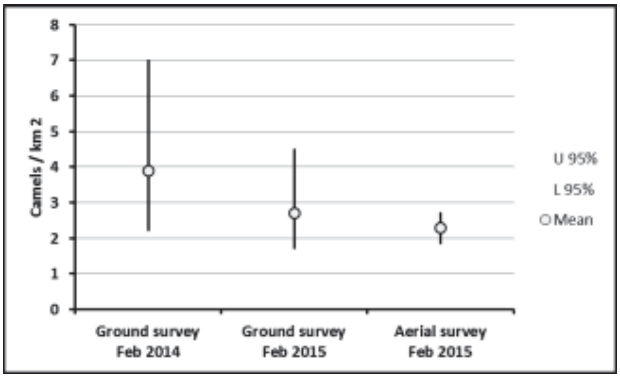
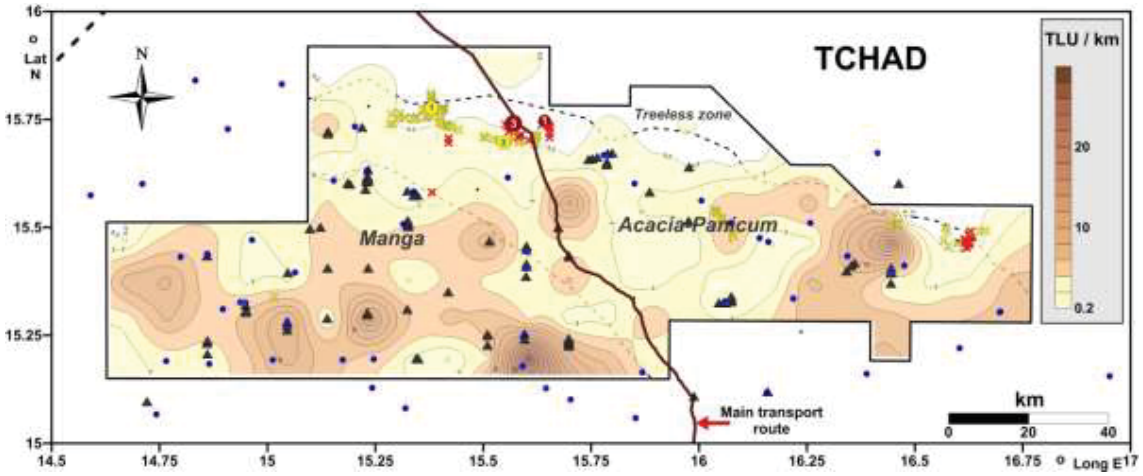


Fig. 2. Comparison of camel density estimates in the *Acacia-Panicum* habitat; see also Table 3.

DISTRIBUTION OF DAMA, LIVESTOCK AND NOMADS

The distribution of critically endangered dama gazelles in the Manga region is examined in relation to the distribution of livestock and human activity in Map 12.

- Although seen several times in the Manga in 2001 & 2010, only local reports and some old tracks were recorded in 2014 and no dama were seen in the Manga dune system from the air in this survey.
- After searching the area widely, the only locations where dama have been detected in 2015 lie at the northern limit of the vegetated habitats on the Acacia-Panicum plains.
- The places where dama were found co-incides with parts of the northern limit of wooded grassland habitat where livestock and human presence were minimal.
- The places where dama were found in 2014 and 2015 were essentially the same.
- Habitat to the north of this limit is effectively treeless and rapidly becomes fully Saharan.
- Map 12 illustrates the way dama gazelles in this area are marginalised to the limits of their preferred habitat.



Map 12. Location of dama gazelles in Feb. 2015 (red symbols) and Feb. 2014 (yellow symbols) in relation to livestock distribution, livestock camps and principal commercial transport route north; February 2015. Circular symbols indicate dama sightings and group size; crosses indicate dama tracks and signs recorded by ground teams. Contours derived by converting mixed species livestock counts to total tropical livestock units summed along each 5km sector of aerial transect survey route, assigning the resulting observation rate to the centre point of the sector and interpolating using Kriging. Blue points indicate known wells, and black triangles indicate all nomad encampments observed in February 2015.

CONCLUSIONS & RECOMMENDATIONS

The survey methodology has provided a detailed overview of the distribution and status of dama gazelle in relation to livestock and human activity in the Manga and nearby grasslands of western Chad.

- Disappointingly the evidence suggests that the large area of extent over which dama have been recorded in this zone does not indicate a relatively large population.
- The survey has provided further illustration of the way dama appear to be avoiding areas of increased livestock density and human activity and results suggest that the population is fragmented and at risk from increasing human activity.
- Coordinated aerial and ground survey proved effective in locating a very rare target species
- Comparison of ground and aerial survey results provided valuable evidence that aerial survey, in the configuration used, was missing a significant proportion of comparatively small and cryptic dorcas gazelles, but both methods provided similar results for more easily observed camels. Modifications such as a narrower strip width and smaller survey zone may be implicated for aerial dorcas survey in future.
- The impact of this effect on dama observation could not be directly assessed, but it is clear that the contrasting white and dark colouring of the dama was much more easily visible than dorcas (Plate 3 & 4). Whilst some may have been missed it is not likely this happened frequently enough to alter the essential result.
- Local nomads indicated a strong awareness of the dama, providing reliable information on their whereabouts and consistently remarking on the negative trend in their numbers.
- The increasing presence of commercial traffic presents a particular risk. Comments are provided below on steps needed to address this.
- Strategically the Manga area is extremely difficult to patrol and monitor. Nevertheless steps to re-inforce sensitisation and enforcement of national wildlife law at all levels of authority in the local towns and communities, including the security agencies charged with monitoring the main commercial traffic route, are necessary steps to protect the dama gazelle in western Chad. The trans-border conservation project being planned under EU funding and managed by the Sahara Conservation Fund will provide resources and a mechanism to help achieve this in the near future.

Chad is a key nation for the conservation of dama gazelle in the wild. Results of the survey underscore the opportunity to develop a national approach to dama conservation. In addition to promoting awareness in the Manga area as recommended above, the principle actions should be taken where infrastructure and management opportunities are better developed. Specific measures recommended are:

- Develop a program to re-inforce the very small remnant population the Ouadi Rimé-Ouadi Achim Game reserve, using captive bred animals (suitable stock are available from a range of zoos, ranches and private collections, particularly in the US and Gulf regions) and the infra-structure being developed for scimitar-horned oryx re-introduction.
- Explore opportunities for future re-introduction of dama gazelle to the Ennedi within the management program currently being developed by African Parks Network for that region.

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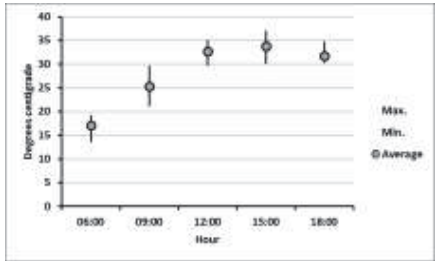
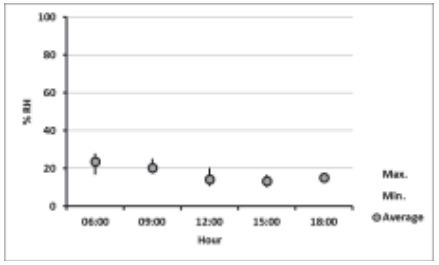
ANNEX I Meteorological records:

Date	Time	Latitude	Longitude	Temperature oC	Humidity %	Wind speed av. (km/hr)	Wind speed max. (km/hr)	Wind direction	Visibility	CLOUD STATUS
12/02/2015	06:11:11	14.4301362	15.7034972	17.5	25.2	13.7	15.1	NE (35-56)	> 1 km < 5 km	Low Stratus
12/02/2015	09:01:20	14.7660937	15.9585779	24.5	17.2	17.6	23.4	NE (35-56)	> 1 km < 5 km	No cloud
12/02/2015	12:05:02	15.3255215	15.8485861	31.5	10.7	21.6	28.8	ENE (57-78)	> 1 km < 5 km	No cloud
12/02/2015	15:03:01	15.4725073	15.6749718	30	10	19.1	25.6	ENE (57-78)	> 1 km < 5 km	No cloud
13/02/2015	06:03:11	15.5876253	15.4868382	13.6	20.3	3.2	5.8	ENE (57-78)	> 5 km (some haze)	No cloud
13/02/2015	09:00:34	15.5825367	15.3838164	21.1	17.5	14	18.7	ENE (57-78)	> 5 km (some haze)	No cloud
13/02/2015	12:14:20	15.6712438	15.1413211	30	12.3	19.4	25.6	NE (35-56)	> 1 km < 5 km	
13/02/2015	15:00:29	15.7719832	15.1405683	32.1	13.2	18.4	24.8	NE (35-56)	> 5 km (some haze)	No cloud
13/02/2015	17:41:32	15.7804173	15.2337818	30.3	14	11.9	15.5	NE (35-56)	Bright and clear	No cloud
14/02/2015	06:02:29	15.7804243	15.2338606	15.8	23.9			No wind	Bright and clear	No cloud
14/02/2015	09:00:49	15.7367954	15.2257896	26.5	17.4	5	6.1	East (79-101)	> 5 km (some haze)	No cloud
14/02/2015	12:38:25	15.6672747	15.3324154	34.7	13.5	14	15.8	East (79-101)	> 5 km (some haze)	No cloud
14/02/2015	14:59:50	15.7219642	15.3236058	37	13.3	5	8.6	East (79-101)	> 5 km (some haze)	No cloud
14/02/2015	17:51:24	15.8598598	15.4507857	34.7	13.9	0.4	2.2	East (79-101)	> 5 km (some haze)	No cloud
15/02/2015	05:59:50	15.8597338	15.4506134	17.4	27.9			No wind	> 5 km (some haze)	No cloud
15/02/2015	09:02:32	15.7490096	15.4200928	29.7	18.7	4.3	5.8	SE (124-146)	> 5 km (some haze)	No cloud
15/02/2015	12:00:01	15.6293483	15.4198741	35.1	13.7	14.8	21.6	NNE (12-34)	> 1 km < 5 km	No cloud
15/02/2015	15:11:46	15.6473429	15.5125514	37	13	5.4	10.4	North (349-11)	> 1 km < 5 km	No cloud
15/02/2015	17:51:53	15.7128842	15.5892066	33.5	14.1	4.3	5.4	NW (304-326)	> 5 km (some haze)	No cloud
16/02/2015	06:04:36	15.7128289	15.589265	18.9	24.5	1.8	3.2	NW (304-326)	> 5 km (some haze)	No cloud
16/02/2015	09:18:21	15.7356196	15.5595736	27	23.8	9	12.2	NE (35-56)	> 5 km (some haze)	No cloud
16/02/2015	12:04:52	15.6918713	15.6068357	33.9	15.9	5.4	7.9	NE (35-56)	> 5 km (some haze)	No cloud
16/02/2015	15:01:07	15.7366314	15.6366699	37.1	13.7	5	7.2	S W (214-236)	> 5 km (some haze)	
16/02/2015	18:31:22	15.6613301	15.7947658	31	16.4	4	5.4	NW (304-326)	> 5 km (some haze)	No cloud
17/02/2015	06:01:52	15.6616259	15.7948176	19.3	22.3	6.5	8.3	North (349-11)	> 1 km < 5 km	No cloud

Date	Time	Latitude	Longitude	Temperature oC	Humidity %	Wind speed av. (km/hr)	Wind speed max. (km/hr)	Wind direction	Visibility	CLOUD STATUS
17/02/2015	09:00:11	15.687176	15.86029	24.1	20.2	22.3	28.4	North (349-11)	> 5 km (some haze)	No cloud
17/02/2015	13:19:36	15.6927561	16.3018489	32.8	13.1	21.2	28.4	NNE (12-34)	> 1 km < 5 km	No cloud
17/02/2015	14:52:34	15.6542307	16.3745297	31	12.8	21.2	23.4	North (349-11)	> 1 km < 5 km	No cloud
18/02/2015	05:59:15	15.4696001	16.5999712	15	16.6	2.9	5.4	North (349-11)	> 5 km (some haze)	No cloud
18/02/2015	09:00:02	15.4815177	16.6294355	24	25.2	13.7	16.6	NE (35-56)	> 5 km (some haze)	No cloud
18/02/2015	12:00:50	15.4261555	16.4647471	29.7	20.3	6.1	7.2	NE (35-56)	> 5 km (some haze)	No cloud
18/02/2015	15:01:41	15.5024157	16.4429095	31.5	16.8	7.9	10.4	NE (35-56)	> 5 km (some haze)	Low Stratus
18/02/2015	18:04:17	15.2583934	16.2362294	30.3	16.3	6.5	9.4	NE (35-56)	> 5 km (some haze)	Low Stratus
19/02/2015	06:04:49	15.2582758	16.2363073	19.2	27.8	6.1	9.7	NE (35-56)	> 5 km (some haze)	6-25 % cloud; Low Stratus
19/02/2015	09:01:32	15.1350085	16.0733774	25.7	22.4	22	27.7	ENE (57-78)	> 5 km (some haze)	6-25 % cloud; Low Stratus
19/02/2015	12:20:30	14.5791623	15.7802761	33.4	15.5	9	16.6	NE (35-56)	> 5 km (some haze)	51 - 75 % cloud; Low Stratocumulus
19/02/2015	15:00:45	14.2816564	15.5389537	34.1	14.3	14.4	17.3	NNE (12-34)	> 5 km (some haze)	26 - 50 % cloud; Low Stratus
19/02/2015	18:00:49	14.1131712	15.3153009	30.9	16.4	4	9.4	NE (35-56)	> 1 km < 5 km	6-25 % cloud; Low Stratus



Daily temperature range



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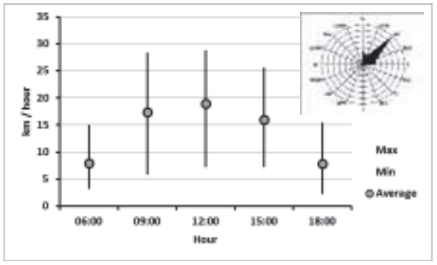
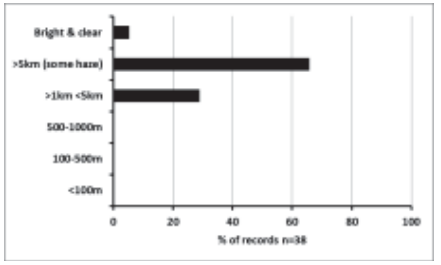


Wind speed and direction



Visibility scores

ANNEX II AIRCRAFT SET UP FOR STRIP COUNT SURVEY

Aircraft set up and strip width management was based on Norton-Griffiths 1978. Strip width markers are set on the wing struts by aligning them with each observers eye position in the aircraft (h) and a marker set out on the ground at a distance from the aircraft (w) determined by the expected flight altitude (H)and required strip width (W). Fig. 1 & 2.

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Fig. 1. Mahamat Hassan Hatcha (DCBPNC) and Darren Potgieter (APN), adjusting wing strut marker for observer Satangar Dogringar (APN).

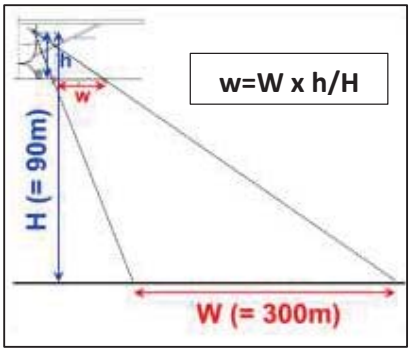


Fig. 2. Measurements used for wing strut marker positioning.

During transect counting actual altitude is recorded at regular intervals (Fig. 3) to obtain an average realised altitude for each stratum. Actual effective strip width is derived by substituting actual mean altitude (H) into the rearranged formula **W = H x w/h** Table 1.

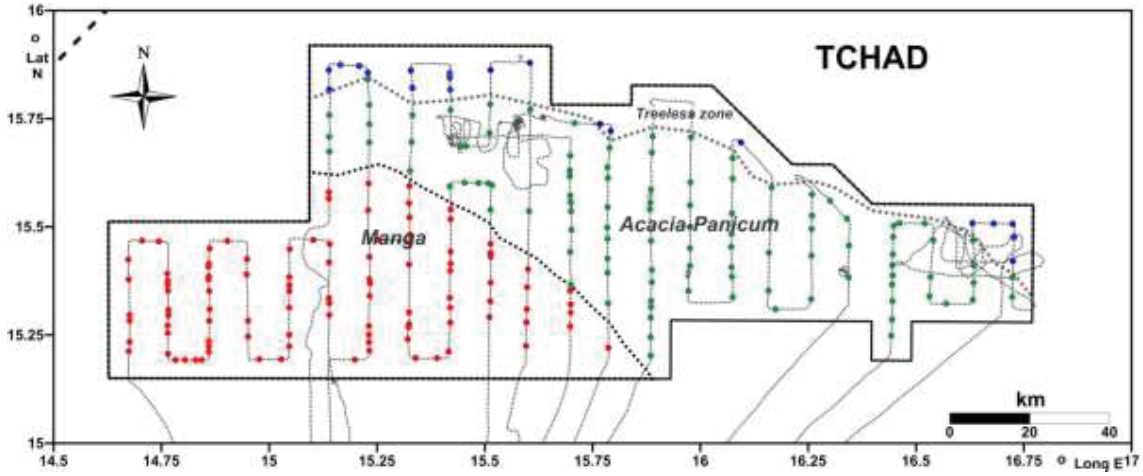


Fig. 3. Location of all spot height measurements made during transect flying over three habitat strata.

Table 1. Corrected sample strip widths based on realised average altitude.

	Observer	Mean Alt. (H)	Eye ht. (h)	w	Effective W (m)	
AP	Mahamat	95.7	1.41	4.7	319	638
	Satangar	95.7	1.47	4.9	319	
Manga	Mahamat	96.4	1.41	4.7	321	643
	Satangar	96.4	1.47	4.9	321	
TZ	Mahamat	91.6	1.41	4.7	305	611
	Satangar	91.6	1.47	4.9	305	

ANNEX III

AERIAL SURVEY RESULTS: STRATUM 1:THE MANGA

Total area : 5103 km^2
Total sample units (N) : 202
Total samples (n) : 13
Average altitude: : 96.4m (n=103)
Sample fraction : 5.9%

Transect	Length km	Width km	Area km2 (z)	Camels (y)	Cattle (y)	Donkey (y)	Horse (y)	Shoats (y)	Dorcas (y)	Nubian bustard (y)
1	35	0.643	22.5	46	0	41	0	40	5	0
2	40	0.643	25.7	134	0	16	2	11	10	9
3	40	0.643	25.7	79	0	28	0	9	10	7
4	40	0.643	25.7	55	26	1	1	42	19	4
5	40	0.643	25.7	116	0	31	0	128	41	7
6	47.1	0.643	30.3	77	0	51	0	90	8	6
7	49.1	0.643	31.6	147	0	32	0	175	10	0
8	45.8	0.643	29.4	61	15	4	7	67	3	1
9	39.6	0.643	25.5	66	0	0	1	133	3	0
10	34.6	0.643	22.2	62	0	40	5	211	15	0
11	26.2	0.643	16.8	53	0	53	2	200	0	2
12	18.9	0.643	12.2	15	0	0	9	80	0	0
13	9.1	0.643	5.9	25	0	6	0	0	1	6
Σz			299.3	299.3	299.3	299.3	299.3	299.3	299.3	299.3
Σy				936	41	303	27	1186	125	42
Σz**2** or Σy2			7542.815	85912	901	11769	165	171774	2675	272
Σz.y				23962.42	1110.46	7367.94	563.08	28433.14	3232.43	974.40
Density R =Σy/Σz				3.13	0.14	1.01	0.09	3.96	0.42	0.14
sy2				1543.33	64.31	392.23	9.08	5297.86	122.76	11.36
sz2				54.52	54.52	54.52	54.52	54.52	54.52	54.52
szy				201.36	13.89	32.76	-4.87	94.34	29.58	0.63
Population Estimate Y				**15961**	**699**	**5167**	**460**	**20224**	**2132**	**716**
Var Y				2399590.7	180685.6	1121231.5	30541.4	15877215.2	315861.8	35991.2
SE Y				1549.1	425.1	1058.9	174.8	3984.6	562.0	189.7
95% cl Y t=2.1				3253.0	892.6	2223.7	367.0	8367.7	1180.2	398.4
cl as % Y				20.4	127.7	43.0	79.7	41.4	55.4	55.6

ANNEX III Cont'd.

AERIAL SURVEY RESULTS: STRATUM 2: : *Acacia-Panicum* plains

Total area : 6058 km^2
Total sample units : 282
Total samples : 18
Average altitude : 95.7m (n=105)
Sample fraction : 6.7%

Transect	kms	Width km	Area km2	Camels	Cattle	Donkeys	Horse	Shoats	Dorcas	Nubian bustard
1	21.1	0.638	13.5	31	0	6	0	0	3	2
2	23	0.638	14.7	12	0	0	0	0	0	3
3	19.4	0.638	12.4	2	0	12	0	0	1	0
4	26.4	0.638	16.8	29	0	0	0	0	6	5
5	32.9	0.638	21.0	25	0	5	0	0	10	2
6	38.4	0.638	24.5	20	0	9	0	0	2	2
7	42.4	0.638	27.1	118	0	16	0	0	0	4
8	55.2	0.638	35.2	31	0	4	0	10	1	3
9	59.4	0.638	37.9	59	0	11	0	0	2	2
10	48.8	0.638	31.1	40	0	0	0	0	1	0
11	43.6	0.638	27.8	64	0	0	0	0	3	2
12	36.8	0.638	23.5	42	0	3	0	0	5	0
13	40.4	0.638	25.8	115	0	4	0	60	4	5
14	26.9	0.638	17.2	105	0	4	0	0	0	0
15	37.6	0.638	23.9	156	0	5	0	5	0	1
16	30.1	0.638	19.2	29.0	0	0	0	0.0	0.0	0
17	30	0.638	19.1	22	0	0	0	0	0	0
18	25	0.638	15.9	26	0	3	0	0	15	1
Σz			406.7	406.7		406.7		406.7	406.7	406.7
Σy				926.0		82.0		75.0	53.0	32.0
Σz2 or Σy2			10100.7	79388.0		754.0		3725.0	431.0	106.0
Σz.y				22553.9		1955.3		2018.6	1098.1	760.2
Density R =Σy/Σz				**2.28**		**0.20**		**0.18**	**0.13**	**0.08**
sy2				1867.7		22.38		200.7	16.2	2.89
sz2				53.7		53.7		53.7	53.7	53.7
szy				96.09		6.04		19.07	-5.84	2.19
Population Estimate Y				**13795**		**1222**		**1117**	**790**	**477**
Var Y				7066962.8		91517.1		808704.4	76965.9	11896.6
SE Y				2658.4		302.5		899.3	277.4	109.1
95% cl Y t=2.1				5582.6		635.3		1888.5	582.6	229.1
cl as % Y				40.5		52.0		169.0	73.8	48.0

ANNEX III cont'd.

AERIAL SURVEY RESULTS: STRATUM 3: Treeless zone

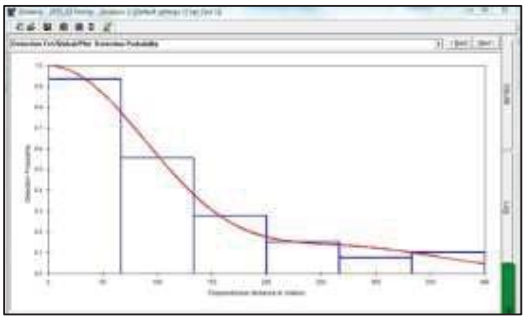
Total area : 1725 km^2
Total sample units : 213
Total samples : 13
Average altitude: : 91.6m (n=21)
Sample fraction : 5.2%

Transect	kms	Width	Area km2	Camels	Cattle	Donkey	Horse	Shoats	Dorcas	Nubian bustard
TZ01	11.9	0.611	7.2709	0	0	0	0	0	0	0
TZ02	6.9	0.611	4.2159	0	0	0	0	0	0	0
TZ03	14.8	0.611	9.0428	0	0	0	0	0	0	0
TZ04	14	0.611	8.554	0	0	0	0	0	0	0
TZ05	12.6	0.611	7.6986	5	0	0	0	0	0	2
TZ06	14.8	0.611	9.0428	0	0	0	0	0	0	0
TZ07	8.1	0.611	4.9491	2	0	0	0	0	0	0
TZ08	9	0.611	5.499	0	0	0	0	0	0	0
TZ09	12.4	0.611	7.5764	2	0	0	0	0	0	0
TZ10	9.7	0.611	5.9267	0	0	0	0	0	0	0
TZ11	8.3	0.611	5.0713	0	0	0	0	0	0	0
TZ12	7.7	0.611	4.7047	0	0	0	0	0	0	0
TZ13	17.8	0.611	10.8758	39	0	0	0	0	0	0
Σ			90.428	48	0	0	0	0	0	2

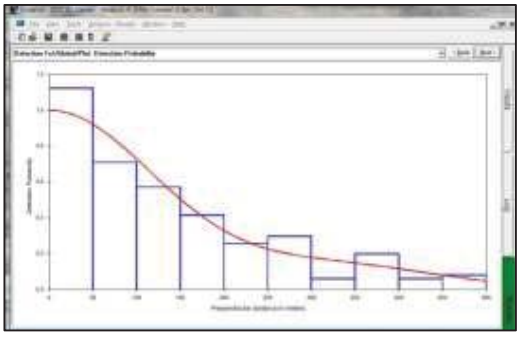
ANNEX IV – GROUND SURVEY LINE TRANSECT ANALYSIS

Output of Distance 6.0 comparing dorcas and camel records from line transect sampling in the Acacia-Panicum habitat, 2014 & 2015, using a global detection function from both years to increase sample size. [Note: population estimates from the surveys are not comparable as they apply to significantly different sized sample zones in each year; densities are the more appropriate comparative measures].

DORCAS				
Acacia/Panicum Feb 2014	**Estimate**	**%CV**	**df**	**95% c.i.**
Half-normal/Cosine				
D (Density / km^2)	0.79	32.09	12.62	0.4 - 1.5
Acacia/Panicum Feb 2015	**Estimate**	**%CV**	**df**	**95% c.i.**
D (Density / km^2)	0.67	34.55	13.75	0.3 - 1.4



CAMELS				
Acacia/Panicum Feb 2014	**Estimate**	**%CV**	**df**	**95% c.i.**
Half-normal/Cosine				
D (Density / km^2)	3.3	28.63	26.02	1.8-5.8
Acacia/Panicum Feb 2015	**Estimate**	**%CV**	**df**	**95% c.i.**
D (Density / km^2)	2.7	24.74	63.09	1.7 - 4.5



ANNEX V CAMERA TRAPPING

The ground team set baited camera traps at overnight camp sites. Five species were recorded, with fennec accounting for just over 80% of events*. Jackal, hare hedgehog and small mammals made up the rest.

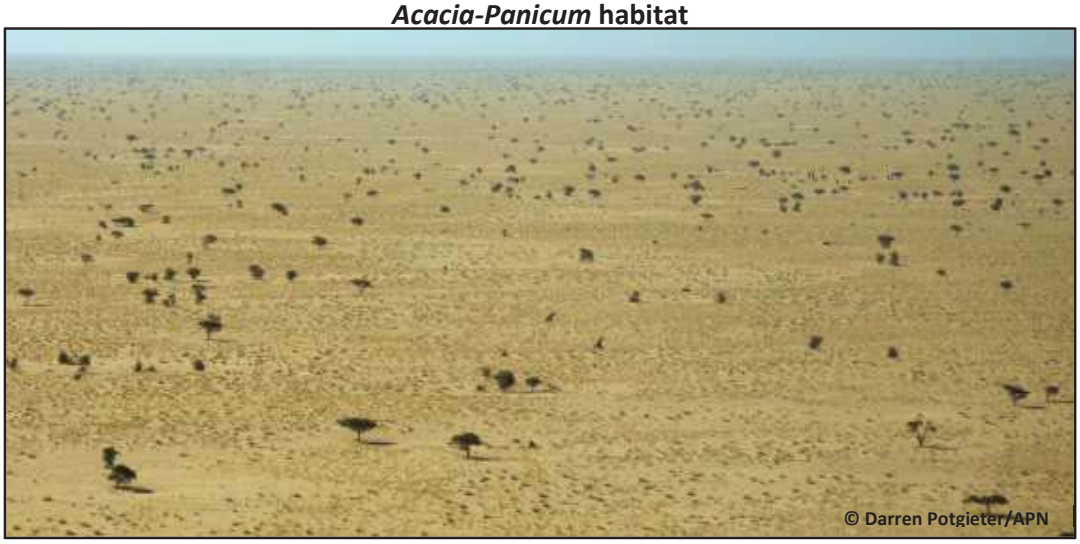
Camera	Lat.	Long.	Set up	Recovery	Hrs	Jackal	Fennec	Hare	Hedgehog	Gerbil (Unid.)
Reconyx01	14.4290	15.7020	11/02/2015 19:30	12/02/2015 06:10	10.67	0	0	0	0	0
Reconyx01	15.5870	15.4870	12/02/2015 19:30	13/02/2015 06:44	11.24	0	3	0	0	0
Reconyx03	15.5870	15.4880	12/02/2015 19:35	13/02/2015 06:50	11.25	0	2	0	0	1
Scoutguard 560C	15.5865	15.4885	12/02/2015 18:04	13/02/2015 07:00	12.93	0	0	0	0	0
Reconyx01	15.7810	15.2340	13/02/2015 18:12	14/02/2015 07:13	13.01	0	3	0	0	0
Reconyx03	15.7800	15.2320	13/02/2015 17:59	14/02/2015 07:06	13.13	0	5	0	1	0
Scoutguard 560C	15.7820	15.2310	13/02/2015 18:20	14/02/2015 07:09	12.83	0	3	0	0	0
Reconyx01	15.8590	15.4510	14/02/2015 18:04	15/02/2015 07:15	13.17	3	0	0	0	0
Scoutguard 560C	15.8580	15.4500	14/02/2015 18:19	15/02/2015 07:09	12.84	1	6	0	0	0
Reconyx01	15.7120	15.5910	15/02/2015 18:08	16/02/2015 06:55	12.79	0	5	1	0	0
Reconyx03	15.7120	15.5900	15/02/2015 18:00	16/02/2015 07:01	13.01	0	7	0	0	0
Scoutguard 560C	15.7110	15.5910	15/02/2015 18:18	16/02/2015 06:57	12.64	0	3	0	0	0
Reconyx01	15.4690	16.6000	17/02/2015 17:50	18/02/2015 06:46	12.94	0	0	0	0	0
Scoutguard 560C	15.4680	16.6010	17/02/2015 18:01	17/02/2015 18:01	0.00	0	0	0	0	0
Reconyx03	15.4670	15.5999	17/02/2015 19:07	18/02/2015 06:59	11.87	0	0	0	0	0
Scoutguard 560C	15.2555	16.2383	18/02/2015 18:00	19/02/2015 07:19	13.31	1	1	0	0	0
Reconyx01	15.2444	16.2382	18/02/2015 17:51	19/02/2015 07:20	13.48	0	0	0	0	0
TOTAL					**201.1**	**5**	**38***	**1**	**1**	**1**

* Numbers in species columns correspond to number of 'events' – defined as sets of photos taken after a lapse of at least 30mins since previous photo of the same species.

PLATE 1 – HABITATS

The Manga

***Acacia-Panicum* habitat**



'Treeless' zone

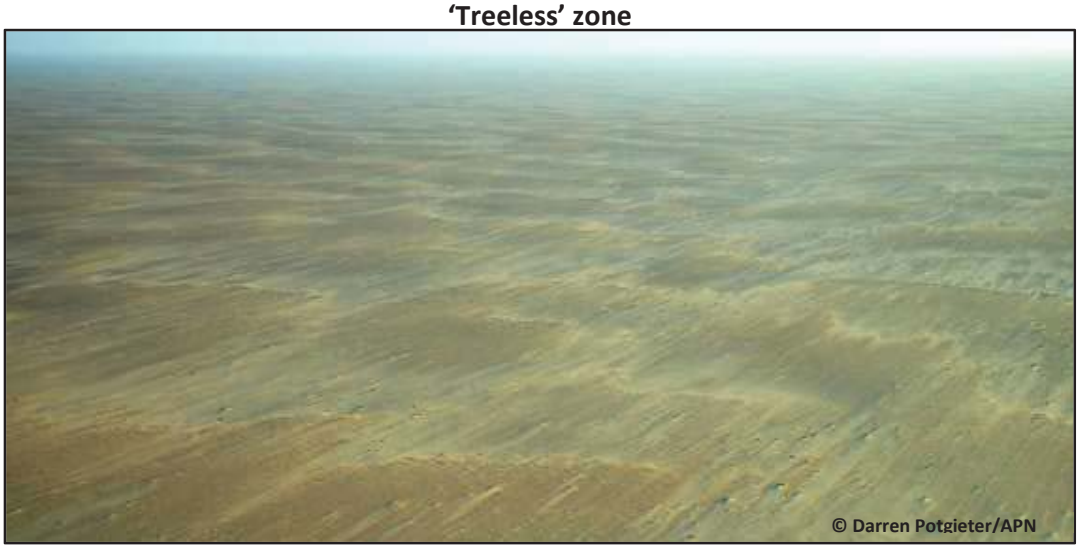


PLATE 2 – HUMAN LAND USE

Camel grazing

Well development

Lorries near the dama gazelles on the transport route illustrated in Map 12

PLATE 3 - DAMA GAZELLES

Adult females with young of year- 16 Feb 2015

Same adult female with young of year- 16 Feb 2015

Adult male - 16 Feb 2015

Plate 4 – OTHER WILDLIFE

Dorcas from the air - 16 Feb 2015

Dorcas

Fennec: note dense 'cool season' pelage

Arabian bustard

Establishing a monitoring baseline for Laos PDR's only Eld's deer *Recervus elddi* population

March 2015

Project Background

The only known population of Eld's deer (*Rucervus eldii siamensis*) in Lao PDR occurs within the Savannakhet Eld's deer sanctuary, founded in 2005 in partnership with the Savannakhet Provincial government and NGOs. The site is currently managed in partnership with local communities with technical and financial support provided through WWF-Laos (World Wide Fund for Nature) and CEPF (Critical Ecosystem Partnership Fund). The site therefore represents a rare example of a community-managed, species-focused protected area in South East Asia. The primary objective of the sanctuary is to protect Eld's deer from extinction and maintain a healthy deciduous dipterocarp forest ecosystem. WWF began working on the Eld's Deer Sanctuary as part of the Dry forest Ecoregion Program in 2008. WWF continued core activities started by WCS (Wildlife Conservation Society) including patrolling, education, and direct incentives for villages to work continuously on patrolling and monitoring. WWF worked together with Government counterparts and local communities to complete boundary demarcation of 2,260 ha core zone within the sanctuary, and also worked with three villages to develop artificial water reservoir in the key habitat site to provide alternative water sources for the Eld's deer during the dry season. The proposed project will form part of Phayvieng Vongkhamheng MSc thesis at the Suranaree University of Technology, Thailand. Therefore in addition to supporting Eld's deer conservation it will also help build conservation capacity in Laos.

2.Research aims and Objectives

The aim of this study is to assess population and density of Eld's deer in the Eld's deer sanctuary, central Lao PDR. This is critical for monitoring the effectiveness of conservation activities within the Eld's deer sanctuary and for creating a population baseline to assess changes in population size in the future. The study will use robust distance-based line-transect sampling to estimate Eld's deer density. This approach is widely used in South and South East Asia for monitoring ungulates and tiger prey.

The specific objectives of the study are to:

1) Assess Eld's deer density and population through line-transect based distance sampling.
2) Examine distribution of Eld's deer and factors influencing distributions across the Eld's deer sanctuary.

3. The benefit for Eld's deer conservation

This project will provide direct benefits to Eld's deer conservation through improved information on the species status and distribution within the sanctuary which can be used by the community management committee for adaptive protected area management. Over the past years, the local community has been actively involved in the management of the Eld's deer sanctuary. As a result, illegal logging and poaching have been reduced for the benefit of the Eld's deer populations and the protection of the deciduous dipterocarp forest. Lots of improvements have been brought over the past years but the pressure on the forest ecosystem and Eld's deer population still remains. To build on the past success and make the action more sustainable over the time, it is important to maintain the law enforcement work and implement Eld's deer population's knowledge and monitoring. In addition there is no existing robust population or density estimate of Eld's deer from Indochina. This project would therefore improve the global understanding of Eld's deer biology and natural history.

Expected project's field work start and end dates: 1 April to 30 June 2015

Progress Reports

A field report, including photographs and 'stories from the forest' would be produced on completion of the field surveys (August 2015). A subsequent report would share the analysis of results including robust Eld's deer density estimates and threat assessment. A final peer-reviewed publication (December 2015) would also be produced which could be shared on the Conservation Force website and will fully acknowledge all funders and supporters of this work.

4. Contact details:

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5. Total budget: $ 10,000

Activity	Total	Remark
Field survey: lodging, meals and Incidentals	6696	Training on Eld's deer monitoring techniques (line transects/occupancy) for villagers and district staff USD 500, Marking line transects USD 500, Monitor population of Eld's Deer, using distance-based line transect surveys USD 5,696
Local travel	800	For main researcher Phayvieng Vongkhamheng, Co-Advisor Tom Gray, and District staff
Fuel	200	
Printing service	1000	Communications/Publications
Indirect Cost15%	1,304	

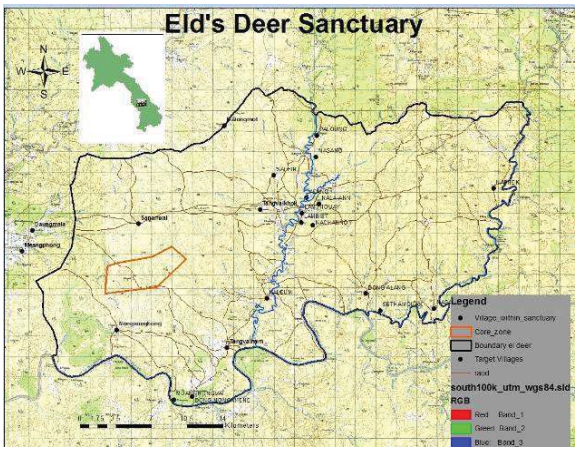
WWF Technical Progress Report
May to July 2015

Eld's Deer Conservation Project in Xonnabuly District, Savannakhet Province

Project Name	Establishing a monitoring baseline for Laos PDR's only Eld's Deer population
Project Start Date	May 2015
Date Report Completed (MM/YR)	May to July 2015
Report Completed By	Phayvieng VONGKHAMHENG

I. Project Background

The only known population of Eld's deer (*Rucervus eldii siamensis*) in Lao PDR occurs within the Savannakhet Eld's deer sanctuary, founded in 2005 in partnership with the Savannakhet Provincial government and NGOs. The site is currently managed in partnership with local communities with technical and financial support provided through WWF-Laos, Critical Ecosystems Partnership Fund (CEPF), and other donors including Conservation Force. The site represents a rare example of a community-managed, species-focused protected area in Indo-Burma. The primary objective of the sanctuary is to protect Eld's deer from extinction and maintain a healthy deciduous dipterocap forest ecosystem. WWF began working on the Eld's Deer Sanctuary as part of the Dry forest Ecoregion Program in 2008. WWF supports communities and local government with core activities including patrolling, education, and direct incentives for villages to work continuously on patrolling and monitoring. WWF worked together with Government counterparts and local communities to complete boundary demarcation of 2,260 ha core zone within the sanctuary, and also worked with three villages to develop artificial water reservoir in the key habitat site to provide alternate water sources for the Eld's deer in the dry season. The ponds will benefit Eld's deer and other Wildlife species by reducing their exposure to human and livestock in natural ponds outside the core zone or nearby villages. This project will form part of Phayvieng Vongkhamheng MSc thesis at the Suranaree University of Technology, Thailand. Therefore in addition to supporting Eld's deer conservation it will also help build conservation capacity in Laos.



Activity/progress:

2.1 Training village conservation teams on the principles of wildlife conservation and Eld's deer monitoring techniques

The purpose of this training was to provide a basic concept on Eld's deer conservation, field survey techniques (occupancy and line transect), using navigation tools (i.e. compass, maps, and GPS) and threat data collection.

2.2 Establish fouty-one lines transects in the Eld's Deer Sanctuary.

Set up line transects in the Eld's deer sanctuary, each Transect has 2 km in length and at 1 km interval between lines. The primary goal of using transects is to estimate Eld's deer population in the Eld's deer sanctuary Careful monitoring of changes in the Eld's deer population (or density) in the sanctuary allows us to evaluate the effectiveness or impacts of current conservation in the core area, which is a subset of the sanctuary. This work also represents the first robust estimates of Eld's deer density from anywhere in South East Asia.

Lines transects markers to mark every 50 meters along each transect so that villagers and teams can follow easily.

2.3 Eld's Deer Population Estimation (Line transect surveys) On May to July 2015

We completed set up 41 line transect, Each line transect of 2 km in length. covering approximately 328 km from and Line transects survey 4 times during May to July 2015. All transects will be walked in the early morning between 6:30 to 8:00 am and between 15:00-18:00 pm. To ensure robust data collection the following assumptions are met during surveys:

(1) Animals on the line are detected with certainty, i.e. no animals on the line are missed by observers.

(2) Animals are detected and their location recorded before they move, i.e. observers must see an animal before it sees them and flees.

(3) Measurements are exact. Training and appropriate equipment must be used to ensure accuracy of distance measurements.

(4) Group sizes are accurately recorded.

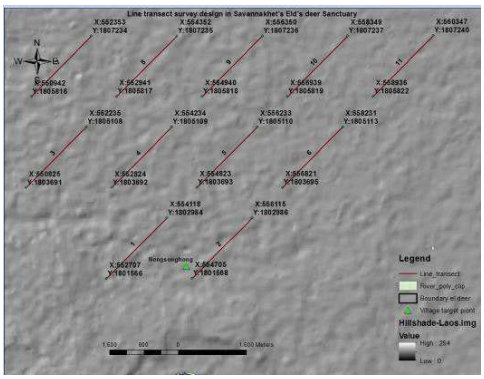


Table 1 number of Eld's deer groups recorded & number of transects recorded from

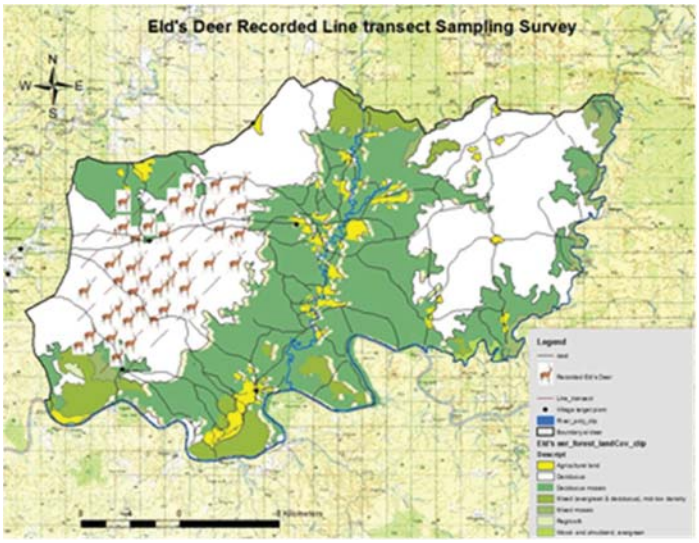
Line Transect ID	Number of Eld's deer recorded			UTM		Habitat type	Note
	M	F	J				
01	2	4	2	554117	1802983	DDF	
02						DDF	No sighting
03	2	3	2	551054	1803945	DDF	
03	1	2	1	551935	1804756	DDF	
04		3	2	553646	1804517	DDF	
05		2	1	555176	1804045	DDF	
06	0	0	0			DDF	No sighting
07						DDF	No sighting
08	1	2	2	554040	1806903	DDF	

08	1	3	1	553326	1806241	DDF	
09	1	2	2	555966	1806860	DDF	
09				555027	1805940	DDF	
10		2	1	557925	1806807	DDF	
10	1	1		557140	1806017	DDF	
11	1	4	1	559899	1806801	DDF	
11	2	3	3	560124	1806998	DDF	
12	1	3	1	551456	1808305	DDF	
13	1			554256	1809138	DDF	
14		1	1	555442	1808244	Grassland	
14	2	2	1	555901	1808820	Grassland	
14		1	1	556030	1808963	Grassland	
14		2	1	556355	1809283	DDF	
15		2		557379	1808324	DDF	
15		1		557645	1808599	DDF	
15	1	1	1	557950	1808905	DDF	
15	1	2	1	558112	1808998	DDF	
15	2	3	2	558378	1809308	DDF	
16	1	2	2	559732	1808641	DDF	
17						DDF	No sighting
18						DDF	No sighting
19	1			553390	1810247	Grassland	
19	1	1		553561	1810429	Grassland	
20	2	3	2	555259	1810172	DDF	
20		3	1	555656	1810531	DDF	
20		2	1	555769	1810655	DDF	
21		3	2	558038	1810948	DDF	

22		2	1	559534	1810460	DDF	
23		1	1	561562	1810510	DDF	
24		2	1	563727	1810468	DDF	
25						DDF	No sighting
26	2			554282	1813236	DDF	
26		2	1	554644	1813446	DDF	
27	1	2	2	555634	1812540	DDF	
27	1			556627	1813539	DDF	
28	1	2	1	557909	1812883	DDF	
29						DDF	No sighting
30		1	1	562404	1813327	DDF	
31		2	2	563715	1812623	DDF	
31		1		563995	1812901	DDF	
32	1	2	1	554597	1815509	DDF	
33						DDF	No sighting
34	1						
34	1	2	1	558717	1815638	DDF	
35		2	1	559846	1814728	DDF	
35	1	1		559846	1814901	DDF	
36	2			561725	1814657	DDF	
37	1	1		564215	1815146	DDF	
38						DDF	No sighting
39		2		559921	1816771	DDF	
39	1	2	1				
40	1	3	1	561929	1816843	DDF	
40		2	2	562061	1816972	DDF	
41		1	1	563683	1816619	DDF	

Note: DDF, Dry dipterocarp forest;

Figure1: Eld's deer sighting from line transect survey



2.3. Forest Patrolling for illegal activities in the sancturary by village community group (i.e. poaching Eld's deer and encroaching deer's habitats)

In the Eld's deer sanctuary there are three target villages where local communities patrol to protect the deer from poaching. Each of the three target villages established a patrol team, composed of 14 people (village, militia, police, foresters and teachers). Each team is responsible for patrolling within village management boundaries, and conducted the patrolling once a month. District government officials also join the village team once per month in field patrolling and monitoring.

The patrolling teams were mainly focused on looking for signs and sighting of illegal activities such as people carrying guns into the sanctuary without permission, burning the grass, cutting trees, and rice field expansion. When encounter problems, the teams reported to DONRE (District Office of Natural Resources and Environment) with approval by village authority, and the process of law enforcement such as warning, fine, trial will be made by DONRE and PONRE (Provincial Office of Natural Resources and Environment) authorities.

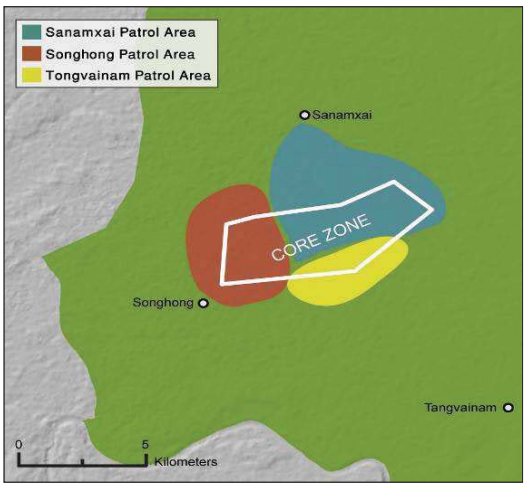


Figure 2. Map showing the approximate areas of the village patrol zones.

Figure 2. Threats encountered during foot-patrolling by VPT

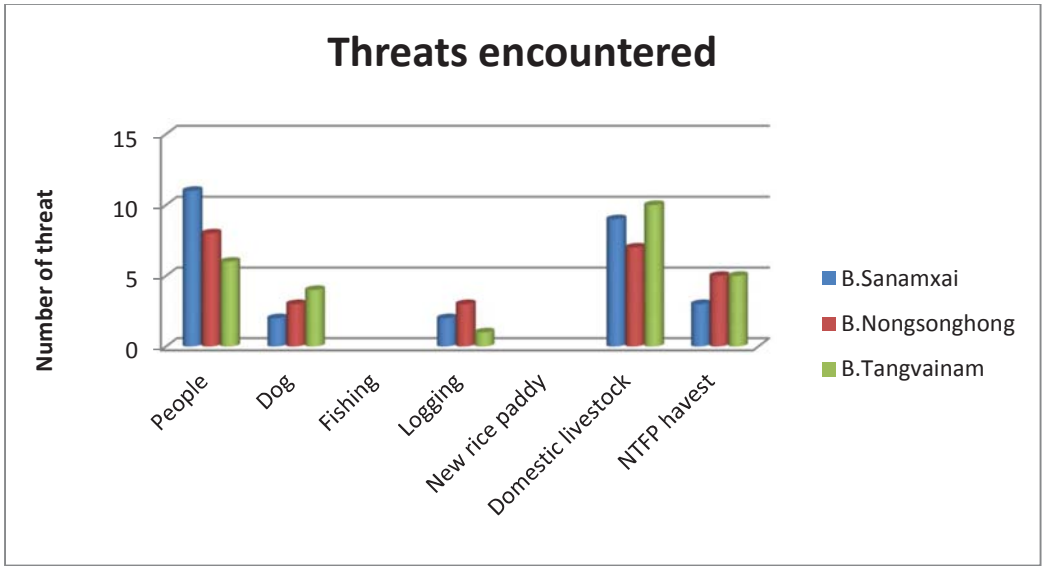


Figure3: Eld's deer records threat data by three villages from April-July2015

3. Eld's deer sightings

According to village monitoring sightings, Ban Nongsonghong recorded most deer sightings during their foot-patrols from January to June, followed by Ban Sanamxai and then Ban Tangvainam (see Fig.4).

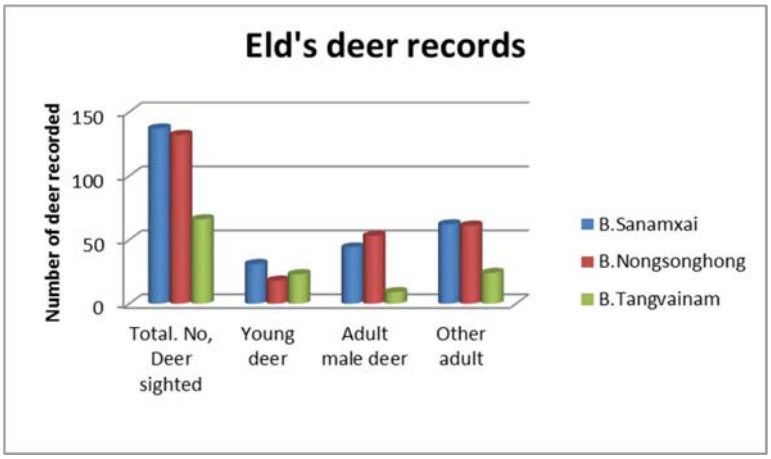


Figure4. Eld's Deer Records by three villages from January-June 2015

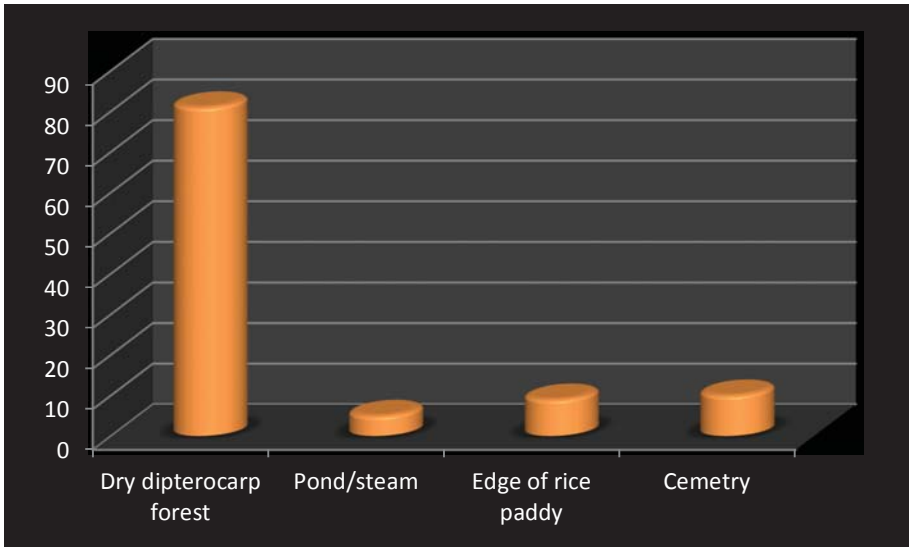


Figure 5. Habitat of Eld's deer sightings recorded from January– June 2015.

Appendices

Village Conservation Teams

Appendix 1 Patrol data form

Eld's deer Sanctuary, Chonnabuly District, Savannakhet Province
Patrol Datasheet

Page 1 of

Date (D/M/Y)
Observers
1
2
3
4

Time (24 H)
Start time
End time
Total hrs.

Weather
Last raining period (Date)

Evidence Codes

Threats									
WILDLIFE	1.0 Seen alive	1.1 Seen dead	1.2 Tracks	1.3 Vocal	1.4 Scat	1.5 Eating sign			
HUNTING	2.0 Gun	2.1 Gunshot	2.2 Person	2.3 Dogs	2.4 Snares	2.5 Fishing	2.6 Camp	2.7 Campfire	
OTHER	3.0 New cut	3.1 New burn	3.2 New rice paddies		3.3 Domestic livestock	3.4 New hut	3.5 NTFP harvest		

Time (24 H)	Location	GPS E/N	Evidence Code	#	Wildlife type (OR) Threat details	M/F	A/J	Collect evidence?	Wildlife measurements (OR) Threat origin	Old/New

APPENDIX 2: LINE TRANSECT FORM

ທີມສຳຫຼວດ Observers:			ແລວສຳຫຼວດເລກທີ Line transect No:			ວັນທີ Date:				
ເວລາເລີ່ມຕົ້ນ Starting time:		ເວລາສິ້ນສຸດ Ending time:	ຈຸດເລີ່ມຕົ້ນ Starting point:			ອາກາດ Weather:				
ເປີເຊັ້ນໄຟໄໝ້ປ່າ % Forest Fire			ຈຸດສິ້ນສຸດ Ending point:			ທິດທາງແລວ Line direction	☐ ເໜືອ N ☐ ໃຕ້ S	~~S ໃຕ້~~ N ~~ເໜືອ~~		
ມຸມທີ່ພົບຫັນສັດ Angle to animal	ໄລຍະຫ່າງຄົ້ນ-ສັດ Distance	ຊະນິດສັດ Species	ຈຸດພິກັດ UTM:	ມຸມແລວສຳຫຼວດ Angle to line	ເວລາ Time	Number of Animals ຈຳນວນສັດທີ່ພົບ			ລັກສະນະທີ່ຢູ່ອາໄສ Habitat Type:	ໝາຍເຫດ Note:
						ໂຕຜູ້M	ໂຕແມ່F	ໂຕນ້ອຍJ		

PROJECT PROPOSAL

[redacted]

Summary

The Action Plan on Sahelo-Saharan Antelopes negotiated under the Convention on Migratory Species (CMS) has since its adoption by 14 range states in 1998 proven to be an effective tool for the conservation and restoration of the large ungulate fauna of the Sahelo-Saharan region, in particular for the Addax, Dama gazelle, Scimitar-horned Oryx in the wild in northern Africa. Its successful implementation has benefited significantly from the strong network of NGOs, scientists, local communities, and the support of Range States. However, the threats and needs in the Sahel and Sahara have changed considerably since 1998 and in order or the Action Plan to remain effective this international policy tool urgently needs updating.

The proposed updated Action Plan is foreseen to guide, catalyse and align much needed conservation action across the Sahel and Sahara for years to come. It is envisaged to be technically reviewed by an already foreseen meeting of the Sahelo-Saharan Interest Group in spring 2015 and politically reviewed and adopted by a meeting of range states in late 2015, which the CMS Secretariat and partners are currently fundraising for. Following its adoption the new Action Plan for Sahelo-Saharan Megafauna will catalyse and guide conservation action across range states in northern Africa for years to come.

Background and rationale

The Sahara and adjacent Sahel form the largest tropical desert ecosystem worldwide and harbour a unique set of large mammals, which have adapted to thrive in this harsh arid environment, including iconic species such as the Addax and Saharan Cheetah. However, Sahelo-Saharan biodiversity is disappearing fast, with the Scimitar-horned Oryx (*Oryx dammah*) already extinct in the wild and the Addax (A*ddax nasomaculatus*), the Dama gazelle (*Nanger dama*) and the Saharan Cheetah (*Acinonyx jubatus hecki*) absent from 95% of their former range (Durant et al. 2014). In fact, almost all large mammals and birds have becomes threatened as a result of overhunting and habitat degradation, including competition with domestic livestock.

Already in the 1990s these trends were apparent and concern amongst the North African range states and experts led to the adoption of the „Action Plan for the conservation and restoration of Sahelo-Saharan antelopes“ in 1998 within the framework of the Convention on Migratory Species (CMS), an international UN treaty for wildlife management across national borders which has been ratified by 120 Parties today. The CMS Action Plan provides a framework for governments, NGOs, scientists, local people and the wider international

community to collaborate in the conservation of the most threatened antelope and gazelle populations in Northern Africa. Its implementation is only feasible thanks to the active partnership of many stakeholders, including Sahara Conservation Fund (SCF), Noé Conservation, the Royal Belgian Institute of Natural Sciences (IRSNB), the IUCN Antelope Specialist Group, and numerous funding agencies in particular the EU, FFEM and AFD. It also greatly benefits from the continuous support of the international zoo community.

The Action Plan covers six CMS Appendix I species in total, with five being endemic to the region: Addax (*Addax nasomaculatus*), Cuvier's Gazelle (*Gazella cuvieri*), Dama Gazelle (*Nanger dama*), Scimitar-horned Oryx (*Oryx dammah*) and Slender-horned Gazelle (*Gazella leptoceros*), as well as the wider ranging Dorcas Gazelle (*Gazella dorcas*). This Action Plan has given rise not only to range states developing and implementing national strategies on the target mammals, but also fuelled fundraising for much needed research and conservation projects across the range and provided a forum for the range states to more closely collaborate. Individual success stories which the Action Plan contributed to include the establishment of Termit Tin Toumma National Nature Reserve in Niger in 2012, the largest protected area in Africa to date.

Since the adoption of the CMS Action Plan in 1998 the landscape of threats affecting Sahelo-Saharan antelopes has changed considerably, thus there is an urgent need to update the Action Plan to optimise its use as a catalyst for action today. IUCN, the Royal Zoological Society of Scotland and a group of experts on the species are currently leading a conservation review process for the Dama Gazelle, including a wide consultation process of all stakeholders, an extensive work that is preparing the way for an updated action plan for the species (https://sites.google.com/site/damagazellenetwork). Preparation of an updated Action Plan for the Cuvier‘s gazelle is also underway with the three Range States under the guidance of IUCN; both of which should be integrated into the overall CMS Action Plan to ensure that all can be enforced through the CMS treaty. The update of the CMS Action Plan on Sahelo-Saharan antelopes was highlighted as a priority matter for the CMS Secretariat and partners of the Action Plan to pursue at a recent 14th Meeting of the Sahelo-Saharan Interest Group (30 April - 2 May 2014, Porto, Portugal). Following the adoption of CMS Recommendation 9.2 on Sahelo-Saharan Megafauna, it should be assessed whether additional species such as the Cheetah (*Acinonyx jubatus*) and/or Barbary sheep (*Ammotragus lervia*) would benefit from inclusion in the updated CMS Action Plan. The CMS Secretariat is currently fundraising for a meeting of range states in 2015 where the updated Action Plan could be adopted by range states and other CMS Parties acting as donors, assuming external funds can be raised through the proposal presented here to update the plan itself.

Further information on the Action Plan is available on the CMS website:

http://www.cms.int/en/legalinstrument/sahelo-saharan-megafauna

Description of activities

Tentative implementation period: September 2014 – June 2015

Objectives	Activities	Implementing body	Timeframe
Updating of the CMS Action Plan on Sahelo-Saharan Megafauna	*Assessment of appropriate species coverage of CMS Action Plan, including Addax, Dama Gazelle and*	*IUCN Antelope Specialist Group; Sahara Conservation Fund; Scientific Council CMS; CMS Secretariat*	*September - October 2014*

	Scimitar-horned Oryx		
	Preparation of updated CMS Action Plan, including the integration of the conservation review on Dama Gazelle and updated Action Plan on Cuvier's Gazelle (if completed in time)	*IUCN Antelope Specialist Group; Scientific Council CMS; IRSNB*	*October 2014 - February 2015*
	Peer-review of updated CMS Action Plan	*Coordinated by IUCN Antelope Specialist Group, in consultation with the CMS Scientific Council and CMS Secretariat*	*February 2015 - April 2015, including the 15th Meeting of the Sahelo-Saharan Antelope Group (April/May 2015, Abu Dhabi)*
	Formatting and online pdf publication of the CMS Action Plan	*CMS Secretariat*	*June 2015*

Expected outcomes

The updated CMS Action Plan on Sahelo-Saharan Megafauna is the core output of the proposed project. This policy instrument under the Convention on Migratory Species will in its updated form continue to structure and facilitate conservation action within 15 range states in northern and western Africa. The individual objectives and activities foreseen by the Action Plan will guide the national conservation work of the range states, as well as those of the many NGO partners, scientists and other stakeholders contributing to the implementation of the plan today.

Countries and partners have for a number of years called for the updating of the Action Plan, indicating a strong determination to apply and implement this international legal instrument under CMS. It is therefore very likely that the investment in updating the Action Plan will have a strong multiplication factor and that the conservation management of Addax, Dama Gazelle, Scimitar-horned Oryx and other species covered will significantly benefit.

Overall budget

Item	units	Cost/ unit (USD)	Total costs (USD)
Preparation of updated Action Plan, including assessment of species coverage and peer-review	1	20 000	20 000
Formatting and online pdf publication of the CMS Action Plan	1	pro bono (CMS)	0
13 % UNEP overhead			2,600
Total			**22,600**

Thamin Eld's deer (*Rucervus eldii thamin*) Reintroduction in Salakphra Wildlife Sanctuary Project

Introduction:

Eld's deer (*Rucervus eldii*) is a subtropical cervid species of South and Southeast Asia. This deer is listed as Endangered (EN) by the IUCN red list and listed on CITES Appendix I (Timmins and Duckworth, 2008). The species is listed under the ThaiNational Wildlife Reservation and Protection Act Since 1992. Two subspecies of Eld's deer; the Thamin Eld's deer (*Rucervus eldii thamin*) and Siamese Eld's deer (*Rucervus eldii siamensis*) (Balakrishnan et al, 2003) historically existed in Thailand's dry forest but were extinct in the wild since 1980s. However, both species are maintained in captivity in Thailand (zoos and breeding centers), and at present, there are 641 *Thamin* and 50 *Simemsis* Eld's deer in Thai *ex-situ* conservation centers (Nikorn Thongtip, personal data).

The *Siamensis* populations in captivity exhibit low fecundity and high incidence of stillbirths (Keeper's record, Dusit Zoo, Thailand). However, the *Thamin* subspecies have been successfully bred and reintroduced into the wild as part of a collaborative effort among Thai government agencies, including the Zoological Park Organization, Department of National Parks, Wildlife and Plant Conservation, Kasetsart University and Smithsonian Conservation Biology Institute, The first reintroduction effort was conducted in 1983 with 25 Eld's deer released to Phukhieo Wildlife Sanctuary in North Eastern part of Thailand; however, the released individuals did not persist (Ronglarp Sukmasuang, personal communication). In 1998, 42 Eld's deer were reintroduced to Wiang Lor Wildlife Sanctuary in Northern part of Thailand. From post release monitoring data, 34 animals (7 died inside and another 1 died outside sanctuary) are still

living in the sanctuary (Ronglarp Sukmasuang, personal communication). In 2006, 6 deer were reintroduced to Sublungka Wildlife Sanctuary in Middle part of Thailand (Naris Bhumbhakbhan, personal communication). Then, during 2008-2011, 84 Thamin Eld's deer have been released at Huai Kha Khaeng Wildlife Sanctuary, 12 of which survived. This work was partially supported by Conservation Force. Of these 12 individuals, six gave birth to nine offspring and the remaining deer were captured to send back to the Huai Kha Khaeng Wildlife Breeding Center. Finally, during 2008-2011 and eight deer were reintroduced to Salakhrara Wildlife Sanctuary, six of which are still alive including a female hind that was born from artificial insemination with frozen-thawed semen. In 2013 four fawns were born, three of which are still alive, including the one produced from the female produced by frozen-thawed semen (Buranapim et al, 2008; Prempree et al, 2013). We have learned much from these efforts on how to conduct a successful reintroduction and propose to work in a new location, Salakphra Wildlife Sanctuary in the western forest complex.

Objectives:

1. To reintroduce 10 *Thamin* Eld's deer (seven females and three males) to Salakphra Wildlife Sanctuary.
2. To study some ecological factors of Thamin Eld's deer reintroduction in Salakphra Wildlife Sanctuary including of home range, predators and food availability.

Materials and Methods:

1. Quarantine 10 candidate animals at least 1 month and collect blood for health check (hematology, blood chemistry, parasites) in all deer. Transport 10 adult *Thamin* Eld's deer (seven females and three males) from Khao Kheow Open Zoo (KKOZ) from Cholburi province to Salakphra Wildlife Sanctuary, Kanchanaburi province.
2. Put radio collar to at least two deer before releasing to soft release area (150 x 150 m2): one for male and one for female.
3. Let deer adapted with soft release for at least three months before releasing to the wild.
4. Monitoring post-release with radio collar tracking regularly for at least one year.
5. Collect release deer feces for diet analysis.
6. Collect plant samples and identify species to assess food variety and availability for the released deer.
7. In the end of the year, organize a meeting of research team for data analysis and report.

Timetable (February 2014 to January 2015)

Activities	Feb-	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan
1. Quarantine and Health check	X											
2. Transportation		x										
3. Soft release		x	x	x								
4. Release to the wild					x							

5. Post-release monitoring		x	x	x	x	x	x	x	x	x	x	x
6. Plant collection and identification	X	x	x	x								
7. Fecal collection and diet analysis		x	x	x	x	x	x	x				
8. Stakeholder meeting												x

Benefits:

1. Increase founder numbers of the released population in Salakphra Wildlife Sanctuary.
2. Increase knowledge about ecological factors of Thamin Eld's deer reintroduction that can be applied to other protected area.

The responsibility organizations:

1. Faculty of Veterinary Medicine, Kasetsart University (KU)
2. Faculty of Forestry, Kasetsart University (KU)
3. Zoological Park Organization (ZPO)
4. Salakphra Wildlife Sanctuary, Department of National Parks, Wildlife and Plant Conservation (DNP)

Investigators:

Assist. Prof. Dr. Nikorn Thongtip, KU	Principal Investigator
Assoc. Prof. Dr. Naris Bhumbhakbhan, KU	Co-Investigator
Assist. Prof. Dr. Ronglarp Sukmasuang, KU	Co-Investigator
Dr. Boripat Siriaroonrat, ZPO	Co-Investigator
Mr. Prawoot Prempree, DNP	Co-Investigator
Assoc. Prof. Dr. Worawidh Wajjwalku, KU	advisor
Dr. Bill McShea, Smithsonian Conservation Biology Institute	advisor

Budget: $8,000

1. Animal transportation and health checking expenses	$1,700
2. Radio collar (2)	$700
3. Ranger salary for deer tracking (200 x 1)	$2,200
4. Fuels for travelling to and within the project site ($150 x 12)	$1,800
5. Service for plant species identification	$1,000
5. Diet analysis	$1,000
6. Workshop organization	$600

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Proposal to Conservation Force

Establishing a monitoring baseline for Laos PDR's only Eld's Deer population

Project Background

The only known population of Eld's deer (*Rucervus eldii siamensis*) in Lao PDR occurs within the Savannakhet Eld's deer sanctuary, founded in 2005 in partnership with the Savannakhet Provincial government and NGOs. The site is currently managed in partnership with local communities with technical and financial support provided through WWF-Laos and CEPF. The site therefore represents a rare example of a community-managed, species-focused protected area in Indo-Burma. The primary objective of the sanctuary is to protect Eld's deer from extinction and maintain a healthy deciduous dipterocap forest ecosystem. WWF began working on the Eld's Deer Sanctuary as part of the Dry forest Ecoregion Program in 2008. WWF continued core activities started by WCS including patrolling, education, and direct incentives for villages to work continuously on patrolling and monitoring. WWF worked together with Government counterparts and local communities to complete boundary demarcation of 2,260 ha core zone within the sanctuary, and also worked with three villages to develop artificial water reservoir in the key habitat site to provide alternate sourcing water for the Eld's deer in a dry season. The ponds will benefit Eld's deer and other Wildlife species by reducing their exposure to human and livestock in natural ponds outside core zone or nearby the villages. This project will form part of Phayvieng Vongkhamheng MSc thesis at the Suranaree University of Technology, Thailand. Therefore in addition to supporting Eld's deer conservation it will also help build conservation capacity in Laos.

Research aims and Objectives

The aim of this study is to assess population and density of Eld's deer in the Eld's deer sanctuary, central Lao PDR.

The specific objectives of the study are to:

1) Assess Eld's deer population abundance using distance sampling.
2) Examine distribution of Eld's deer and its associate factors in the Eld's deer sanctuary.

3. The benefit Eld's deer conservation

This project will provide direct benefits to Eld's deer conservation through improved information on the species status and distribution within the sanctuary which can be used by the community management committee for adaptive protected area management. Over the past years, the local community has been actively involved in the management of the Eld's deer sanctuary. As a result, illegal logging or poaching has been reduced for the benefit of the Eld's deer populations and the protection of the deciduous dipterocarp forest. Lots of improvements have been brought over the past years but the pressure on the forest ecosystem and Eld's deer population still remain.s To build on the past success and make it more sustainable over the time, it is important to maintain the law enforcement work and implement Eld's deer population's monitoring. In addition there is no existing robust population or density estimate of Eld's deer from Indochina. This project would therefore improve the global understanding of Eld's deer biology and natural history.

Expected project start- and end dates: 1 March to 30 June 2014

Progress Reports

A field report, including photographs and 'stories from the forest' would be produced on completion of the field surveys (July 2014). A subsequent report would share the analysis of results including robust Eld's deer density estimates and threat assessment. A final peer-reviewed publication (December 2014) would also be produced which could be shared on the donors website and will fully acknowledge all funders and supporters of this work.

4. Contact details:

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6. Budget: $ 6,000

Activity	Unite	#Unite	Unite cost	Total	Remark
Lodging, Meals and Incidentals				5,400	Training on Eld's deer monitoring techniques (line transects/occupancy) for villagers and district staff

					USD 700, Monitor threats to and population of Eld's deer USD 4700
Local travel				100	Phayvieng, DONRE
Fuel				100	
Printing service				400	Communications/Publications
Total funding request amount: US$ 6,000					

Promoting the conservation of Eld's deer in Chatthin Wildlife Sanctuary

Grant Proposal from Friends of Wildlife to Conservation Force

Background

Chatthin Wildlife Sanctuary (CWS), located in the northern part of central dry zone of Myanmar, is home to the world's largest known population of Eld's deer (locally known as thamin) (FAO/UNDP 1982-1983). This species is listed as globally endangered by the IUCN Red List and CWS is recognized by the IUCN Deer Specialist Group as the most important global site for conservation of this species.

Country-wide surveys conducted by the Forest Department (FD), Smithsonian Institution (SI) and Friends of Wildlife (FOW) indicate that the population of thamin in Myanmar has declined dramatically from 2,200 individuals in 1972, to about 1,600 in 2010 with the largest population (about 950 deer) found in CWS. The surveys also showed that the number of townships in which thamin were distributed has fallen from 34 in 1972 to 12 in 2010 as a result of habitat degradation and hunting.

CWS is covered by dry dipterocarp forest, which was once abundant in Myanmar. However, globally, these forests are more degraded, and proportionately more threatened than rain forests, and CWS is no exception.

In terms of patrolling, surveying for deer, protection policy, development of staff capability, and law enforcement, CWS has performed relatively well in recent years because of support from Conservation Force, SI and FOW. However, park leadership has not been knowledgeable or effective since 2009. In correlation with this lack of leadership we have noticed 4 disturbing trends: 1) the deer population has declined in density from 7.12 deer per sq.km in 2009 to 3.8 deer per sq.km in 2013, 2) new encroachments from villagers have occurred in the park, 3) illegal extraction of timber increased, and 4) the motivation of field staff declined. The most severe deforestation inside CWS occurred within 1 km of the sanctuary boundary. As forests declined in the buffer and beyond, CWS has become a forest island surrounded by agriculture, a water reservoir, and human settlements. The situation raises serious concern for the future of CWS.

In April 2013, FD realized the bad situation of CWS and appointed a forest officer as new warden in May 2013. According to new FD guidelines, new warden is willing to work with local conservation NGOs/civil societies. To assist CWS in solving some problems, FOW is seeking the support of Conservation Force to re-promote conservation activities in 2014.

Project Plan

We have 3 objectives:

1) to increase the number of Eld's deer within CWS
2) to build the capacity and motivation of CWS field staff to conserve Eld's deer
3) to increase authorities' support for Eld,s deer conservation through raising awareness

I. Increasing Eld's deer population in CWS

Patrolling and sighting records

Three reserve teams will carry out patrolling activities 10-15 days every month. A team consisted of 5 staff and will focus the core zone of CWS. The teams will prevent all human disturbances inside the core zone during mating season from February to May. The teams will also focus to stop illegal hunting.

During the patrolling period, all sightings such as illegal human signs/activities, deer sightings will be maintained in ledger books. This practice was disappeared since 2005. The project will adopt this practice again and all data such as date, time, place, block number, habitat type, types of signs for illegal activities, sex & age & number for deer sighting, etc., will be noted for presentation to authorities.

Core zone management

Management of CWS began in 1985. Based on the resource use practices of local people, the park administration divided the reserve into three zones: Zone 1 (core zone – 121.2 sq.km), Zone 2 (community use zone – 49.2 sq.km), and Zone 3 (development zone – 79.8 sq.km). However, since 2009 the staff and local people did not recognized or respect the zoning system. Even in core zone, many illegal activities such as hunting, extraction of timber regularly occur. Our project will re-start the systematic management of core zone.

Block and Line marking

During the 1990's an effective transect system was established in the core zone, with 11 transects (each separated by 1.5 km; total of 87 km) along a north-south axis and a second set of transects along a east-west axis to create 54 survey blocks (1.5 x1.5 km each). Those transects were demarcated as permanent lines using a compass, measuring tape, color flags and paints for tree marking. We propose to re-mark all 54 blocks (1.5 km x 1.5 km) and 11 transect lines. It will be very helpful for long term monitoring of Eld's deer.

Signboards

Signboards will be posted along the boundary of core zone. Those signboards would be for education about Eld's deer, prohibiting resource extraction, and raising awareness.

Surveys

A deer census will be conducted in 1st week of April cooperating by CWS staff and FOW members. It will use the newly demarcated transects to conduct a distance sampling survey to estimate current deer densities and distribution in CWS.

Building up the capacity and motivation of field staff

The project will carry out 3 different trainings on deer census (line transect sampling), SMART patrol and sighting records, and environmental education and community participation in conservation of Eld's deer.

II. Getting authorities' supports through raising awareness

A team consisting of CWS staff and FOW members will conduct environmental talks at 5 villages located near core zone. The project will also send articles mentioning project activities and CWS to famous country-wide journals such as The Voice Weekly, Eleven Weekly, etc. In addition, the project will invite the journalists and television media reporters to CWS. The quarterly reports of the project will also submit to FD head office, and Minister for Forest and Mining, Sagaing Regional Government.

Expected outputs

- The project goal is to protect the hunting activity through regular patrolling, mainly in core zone and during mating season, and thereby reduce poaching pressure on wildlife.
- Systematic park management will be re-adopted in CWS and deer population will increase.
- Scientific data will be collected and comparison between former and present data will be useful to increase authorities' awareness.
- Sanctuary staff will work with conservation NGOs again and local villagers to recognize the core zone of CWS.
- Awareness will be raised to Sagaing Regional Parliament, Sagaing Regional Government and the Nay-pyi-taw head-office.

Implementation team

This project will be a cooperative activity between the FD, the Smithsonian Institution and a local NGO FOW. It will directly benefit for the deer, sanctuary staff and the sanctuary ecosystem. Dr. William J. McShea, the Smithsonian Wildlife Ecologist will monitor and evaluate the outputs and outcomes of the project. He will help on data analysis, and management categories. The NGO FOW will disburse funds and lead all field activities. U Myint Aung, ex-warden of CWS, chairman of FOW will supervise all project activities. The FOW is an established NGO in Myanmar, received an official registration issued by Ministry of Home Affairs in 2012. The FOW leader, U Myint Aung has worked with the US Consulate in Yangon on multiple sustainability projects in Myanmar. At present, FOW is currently working with five local communities at western site of CWS for development of community based conservation since October 2013.

Proposed budget

Sr. No.	**Description**	**Estimated Cost**	**Requested fund**	**Applicant' s in-kind**
I.	***Regular patrolling and Core zone management***			
	Rice bags for patrolling team - $120/month x 12 months.	$1440	$1440	-

	Zone and transect line marking Supplies (paints, brushes, etc.) Per diem for 3 field staff x $4/day x 30 days	 $100 $360	 $100 $360	 - -
	Signboards	$130	$130	-
	Sighting records	$50	$50	-
	Deer census (daily allowances 20 persons x $4 /day x 3 days & transportation - diesel/gasoline)	$300	$300	-
II.	***Building the capacity/motivation of field staff***			
	3 trainings 15 CWS staff x $5/day x 6 days	$450	$450	-
III.	***Support by authorities through raising awareness***			
	Education activities at 5 targeted villages	$500	$500	-
	Articles released and reports to FD	$90	$90	-
	Interviews with media (travel & per diem $10 x 12 months)	$120	$120	-
IV.	***Personnel for FOW members***			
	Project supervisor ($900 x 2 mon.)	$1800	-	$1800
	Field officer ($250/mon. x 3 mon.)	$750	$750	$240
	Field assistant ($150/mon. x 6 mon.)	$900	$900	$240
	Travel for FOW ($80 x 12 times)	$960	-	
	TOTAL	**$7950**	**$5670**	**$2280**

Products provided to Conservation Force

We will provide a brief update on our activities six months after receiving funds, including an accounting, a list of activities accomplished and some photos of our actions. One year after receiving funding we will provide a final report on our activities including a complete accounting and short text on each activity and photographs of each activity.

Artificially deepening natural seasonal waterholes in eastern Cambodia: impact on water retention and use by globally-threatened large ungulates and waterbirds

Abstract

Natural seasonal waterholes (trapeang in Khmer) are an important feature of the deciduous dipterocarp forests of eastern Cambodia and are utilised by a number of globally threatened species of large ungulates and waterbirds. However at the end of the dry-season (April) only a small proportion of waterholes retain water. We artificially deepened six waterholes in the core area of Mondulkiri Protected Forest, eastern Cambodia removing between 3-m^3 and 24-m^3 of earth (mean 16.5-m^3) from each. Surveys prior to deepening demonstrated that only one of these waterholes, and 10% of all waterholes surveyed in the study area, held water at the end of the dry-season. Following modification five of the six deepened waterholes (83%) held water at the end of the subsequent dry-season. Twenty-three species including two globally threatened large ungulates, Banteng *Bos javanicus* and Eld's deer *Cervus eldii*, and two Critically Endangered ibises (Giant *Thaumatibis gigantea* and White-shouldered *Pseudibis davisoni*), were photographed by remote camera-traps foraging and drinking at the deepened waterholes between March and June 2012. Our results suggest that artificially deepening natural waterholes does not cause damage to the natural structure of the waterhole, which remains suitable for utilisation by threatened species and that this technique can be used to modify natural waterholes thus allowing them to hold water throughout the dry-season in the face of a changing climate.

Key Words: conservation evidence, climate change, dry forest, Indochina, protected area management

Abbreviations: IUCN - International Union for Conservation of Nature; MPF – Mondulkiri Protected Forest; WWF - World Wide Fund for Nature

Introduction

The deciduous dipterocarp forests of eastern Cambodia form part of the Lower Mekong Dry Forests Ecoregion and are globally significant for biodiversity conservation (Tordoff et al. 2005, Gray et al. 2012a). These forests support particularly important populations of large ungulates, including the largest global population of the IUCN Endangered banteng *Bos javanicus* (Gray et al. 2012b), and large waterbirds including two IUCN Critically Endangered species of ibis (Wright *et al.* 2012a). Deciduous dipterocarp forest in the Eastern Plains Landscape of Mondulkiri have also been identified as irreplaceable for tiger *Panthera tigris* conservation, representing the only large block of dry forest habitat in South-East Asia, with a reintroduction program recommended (Lynham 2010).

Deciduous dipterocarp forest in the Eastern Plains Landscape are affected by a strong monsoonal climate creating a highly seasonal environment with long periods of water stress during the dry-season when precipitation is rare (<10% of annual precipitation, total approx 1500-1800-mm, between November and April; Bruce 2013). A key feature of the deciduous dipterocarp landscape in the Eastern Plains are natural seasonal waterholes (trapeang in Khmer) which stud the landscape. By the end of the dry-season (March-April) the majority of the waterholes in the landscape do not retain water (Koehncke 2010).

Given increasing human activities across the landscape, including legal Non Timber Forest Product collection and illegal hunting and fishing, waterholes that retain water throughout the dry-season are increasingly disturbed (WWF-internal data). This is likely to be detrimental to a number of threatened species including Eld's deer *Cervus eldii*, which do not drink from other water-sources e.g. pools in

seasonal rivers, and ibis for which waterholes are key foraging resources (Wright et al. 2012b; Wright et al. 2013). Predicted changes in precipitation and temperature associated with climate change are also likely to affect water retention during the dry-season in the landscape (Beaumont et al. 2011).

Artificial manipulation of water availability through modifying natural waterholes, or developing entirely new water sources, is widely used in tropical savannah and dry forest ecosystems for ungulate conservation (Owen-Smith 1996, Smit et al. 2007). However there have been no previous, documented, attempts to modify natural waterholes in South-east Asian deciduous dipterocarp forest for conservation. The aims of this study were to experimentally deepen waterholes in the core area of Mondulkiri Protected Forest, eastern Cambodia to examine 1) whether deepened waterholes held water for longer during the dry-season than prior to modification and 2) whether artificially deepened waterholes could be used by globally threatened large ungulates and large waterbirds.

Materials and Methods

Study Area

Mondulkiri Protected Forest (MPF) is located in eastern Cambodia and forms part of the Eastern Plains Landscape, a protected area complex of over 13,000 km^2 including Yok Don National Park in Dak Lak province, Vietnam. The study area is largely flat and dominated by deciduous dipterocarp forest (Pin et al. 2013) with smaller patches of bamboo and riverine gallery forest. The study was conducted within approximately 450-km^2 inside the proposed core zone of MPF (approx. location 13°05′N, 107°30′E). This area supports the highest ungulate densities in the Eastern Plains Landscape, approximately 6 individuals per km^2, (Gray et al. 2013) and is the only area in MPF from which Eld's deer are regularly recorded. The

study area, and modified waterholes, are all >30-km from nearest villages and not used at all by domestic ungulates. The total number of waterholes throughout the approximately 2,120-km^2 core area of MPF, based on remotely sensed imagery, is 430 (WWF-internal data).

Waterhole manipulation

In April 2011 six natural waterholes (henceforth modified waterhole) in the study area were artificially deepened-by up to 100-cm depth, from their centre when totally dry (Fig. 2; Table 1). Extracted earth was moved to the edge of the waterhole and spread over an area 2-3-m from the waterhole. Deepening was done by hand using sub-contracted local villagers (total cost approximately 3,000 US$) with deepening of each waterhole taking approximately 2-3 days. Five waterholes were deepened by between 50-cm and 100-cm with between 16-m^3 and 24-m^3 (mean 19.2-m^3) of earth removed (Table 1). Due to a hard rock-like substrate forming the bottom of one of the waterholes one of the modified waterholes (#6) was deepened by only approximately 20-cm with a total of 3-m^3 earth removed (Table 1).

Monitoring use by ungulates and large waterbirds

Between March and June 2012 (late dry-season to early wet-season) automatic camera-traps (Reconyx RapidFire Professional PC90; Reconyx) were operational at each of the modified waterholes set to photograph any animals using each waterhole. One camera-trap was set at each of the six waterholes and used to assess the use of the modified waterholes by mammals and waterbirds. One camera-trap (at trapeang # 4) malfunctioned with no data collected. The remaining five modified waterholes were trapped for a total of 448 camera-trap nights (range 86-92 nights per waterhole). Water retention within the modified waterholes was assessed based on ad-hoc visits to each site.

Results

Patterns of water retention prior to modification

Between January and April 2010 (mid to late dry-season) 50 waterholes within the study area were surveyed for water availability during three survey visits (Koehncke 2010; Fig. 1). These waterholes were a sub-set of the 64 trapeang within the study area. The percentage of the 50 surveyed waterholes holding any water declined from 86% (43) in late January to 10% (5) in early April. The fifty surveyed waterholes included five of the modified waterholes four of which held water in early March declining to one (#6) in April.

Patterns of water retention following modification

Five of the six modified waterholes retained water in April 2012 (83%) compared to only one of these waterholes (20%), and 10% of all waterholes surveyed, at the same time of year prior to modification i.e. in April 2010. On 14th March 2012 all six of the modified waterholes contained water; on the 27th April 2012 five of the modified waterholes contained water with only waterhole (#6) dry. Assuming patterns of water retention in the unmodified waterholes across the study area were the same as during the 2010 surveys the manipulation of waterholes doubled the amount of waterholes holding water within the study area at the height of the 2012 dry-season

Use of modified waterholes by large mammals and waterbirds

A total of 242 independent (*sensu* Phan et al. 2010) camera-trap photographs of 23 species, including 10 globally threatened species, were obtained from the five camera-trapped waterholes (Table 2; Fig. 3 and 4; Appendix 1). This included banteng from all five of the camera-trapped waterholes and Eld's deer from

three. Six species of large waterbird (i.e. stork, ibis and crane) were photographed foraging within the modified waterholes (Table 2). Giant ibis was recorded from all five of the camera-trapped modified waterholes and white-shouldered ibis from three (Fig. 4).

Discussion and Conclusions

Direct conservation management actions to benefit threatened species, for example manipulating water availability, are relatively common in protected areas in southern Africa and Europe but rare in Indochina (Owen-Smith 1996, Gaudioso Lacasa et al. 2010, Shrader et al. 2010). This is partly a result of limited research into the effectiveness of such direct management in tropical Asia. Active provision of additional water into waterholes in South-east Asia may be unsustainable and logistically difficult. Therefore ways in which waterholes can be artificially modified to retain water for longer, as in this study, are likely to be valuable. Whilst it is unclear the extent to which water limitation impacts survivorship and reproduction of threatened ungulates within Cambodian dry forest it would be logical for it to a limiting factor and increased water availability could improve ungulate productivity. Indeed radio-collaring of Eld's deer in similar forest in Myanmar suggested movements and home-ranges were larger in the dry-season and this was likely related to reduced water availability (Aung et al. 2001).

In this study we addressed a potential limitation to populations of threatened waterbirds and large ungulates through experimentally enhancing dry-season water levels in Cambodian deciduous dipterocarp forest. Our results demonstrate that the simple technique we used increased water retention post-manipulation and that the manipulated waterholes were used by a suite of threatened species characteristic of the Lower Mekong Dry Forests Ecoregion.

Prior to the deepening of waterholes we had identified two potentially negative outcomes of modifying natural waterholes within the landscape. Firstly that deepening waterholes may disrupt the natural base of the waterhole and break through an impermeable barrier thus leading to rapid draining away of water. However one of the modified waterholes (#6) did appear to lose water more rapidly than during the pre-modified state possibly due to disruption of an impermeable rock-like base. Secondly that modification may make waterholes unsuitable for use by focal endangered species through, for example, disturbing key foraging resources for waterbirds, making areas of deepened waterholes inaccessible to foraging waterbirds, or damaging the edge of waterholes thus preventing access by ungulates. Our results clearly demonstrate that these concerns were largely unfounded with both giant and white-shouldered ibis actively foraging in modified waterholes. We also do not believe that modifying waterholes is likely to increase chances of disease transmission between animals and may, through increasing availability of water during the dry-season across more waterholes, prevent high densities of animals concentrated in few places.

Our results, however, clearly indicate that artificially deepening waterholes does not prevent use by threatened species of large ungulates and waterbirds. Camera-trap photographs clearly show both ibis and storks foraging (Fig. 4) and Eld's deer and banteng drinking (Fig. 3) at modified waterholes. When enhancing water availability within protected areas it is important that law enforcement and patrolling activities are focused to ensure modified water features are not targeted for illegal hunting or disturbance. Camera-trapping at the modified waterholes did not record any local people although unaccompanied domestic dogs were recorded from one waterhole on one occasion.

Whilst our results suggest that artificially deepening natural waterholes is a valuable technique for increasing dry-season water availability in highly seasonal deciduous dipterocarp forest we recommend a number of future research activities into the process and ecological impacts of artificially deepening waterholes. Studies are required to assess the degree to which water availability is limiting for focal species in deciduous dipterocarp forests thus clarifying the extent to which waterhole manipulation is necessary. Recent studies have also suggested that dried substrates surrounding waterholes are an important breeding season resource for the Critically Endangered white-shouldered ibis and thus retaining water throughout the dry-season in a majority of waterholes may be detrimental for this species (Wright et al. 2013). Studies are thus needed to compare large waterbird food resources between modified and unmodified waterholes across both dry and wet-seasons. The impacts of anthropogenic climate change on Indochina's lowland deciduous forests are not yet clearly understood, but altered rainfall and evaporation will probably affect waterhole hydrology especially during the dry-season when water stress is already high (Timmins 2011). Modeling has also demonstrated that water stress may negatively impact ungulate populations particularly those which are sedentary and largely grazers i.e. banteng and Eld's deer (Duncan et al. 2012). Given that we have demonstrated the value of artificially manipulating waterholes for increasing water availability for large ungulates and waterbirds our technique may be particularly valuable throughout South-east Asian deciduous dipterocarp forests in the face of a changing climate.

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235 **Tables**

236

ID	Open	Water	Max depth deepened (cm)	Total excavated (m^3)
1	50-m x 60-m	25-m x 40-m	50	20
2	30-m x 30-m	20-m x 25-m	100	18
3	n/a	n/a	50	18
4	15-m x 40-m	7-m x 15-m	100	16
5	30-m x 40-,	20-m x 15-m	100	24
6	20-m x 600m	15-m x 50-m	20	3

237

238 Table 1. Estimated dimensions of the open area and of water in early dry-season 2010 prior to
239 modification (from Koehncke 2010; waterhole #3 not visited) for six artificially deepened waterhole in
240 Mondulkiri Protected Forest, eastern Cambodia. Maximum depth deepened (cm) and total earth excavated
241 (m^3) during April 2011, for each waterhole, indicated.

242

243

Species	**IUCN**	**#1**	**#2**	**#3**	**#5**	**#6**
Eld's deer *Cervus eldii*	EN	X	X		X	
Banteng *Bos javanicus*	EN	X	X	X	X	X
Red muntjac *Muntiacus muntjak*	LC	X	X	X	X	X
Wild pig *Sus scrofa*	LC	X	X	X	X	X
Dhole *Cuon alpinus*	EN	X				
Large-spotted-civet *Viverra megaspila*	VU	X				X
Giant ibis *Thaumatibis gigantea*	CR	X	X	X	X	X
White-shouldered ibis *Pseudibis davisoni*	CR	X	X		X	
Black-necked Stork *Ephippiorhynchus asiaticus*	NT	X				
Woolly-necked Stork *Ciconia episcopus*	LC	X	X	X	X	X
Lesser Adjutant *Leptoptilos javanicus*	VU		X	X	X	
Sarus Crane *Grus antigone*	VU				X	
Red-headed Vulture *Sarcogyps calvus*	CR		X			
Green Peafowl *Pavo muticus*	EN	X				

244

245 Table 2. Globally-threatened species of mammals and bird, plus all ungulate and large waterbird species,
246 recorded by camera-trapping from five artificially deepened waterholes in Mondulkiri Protected Forest
247 during the 2012 dry-season.

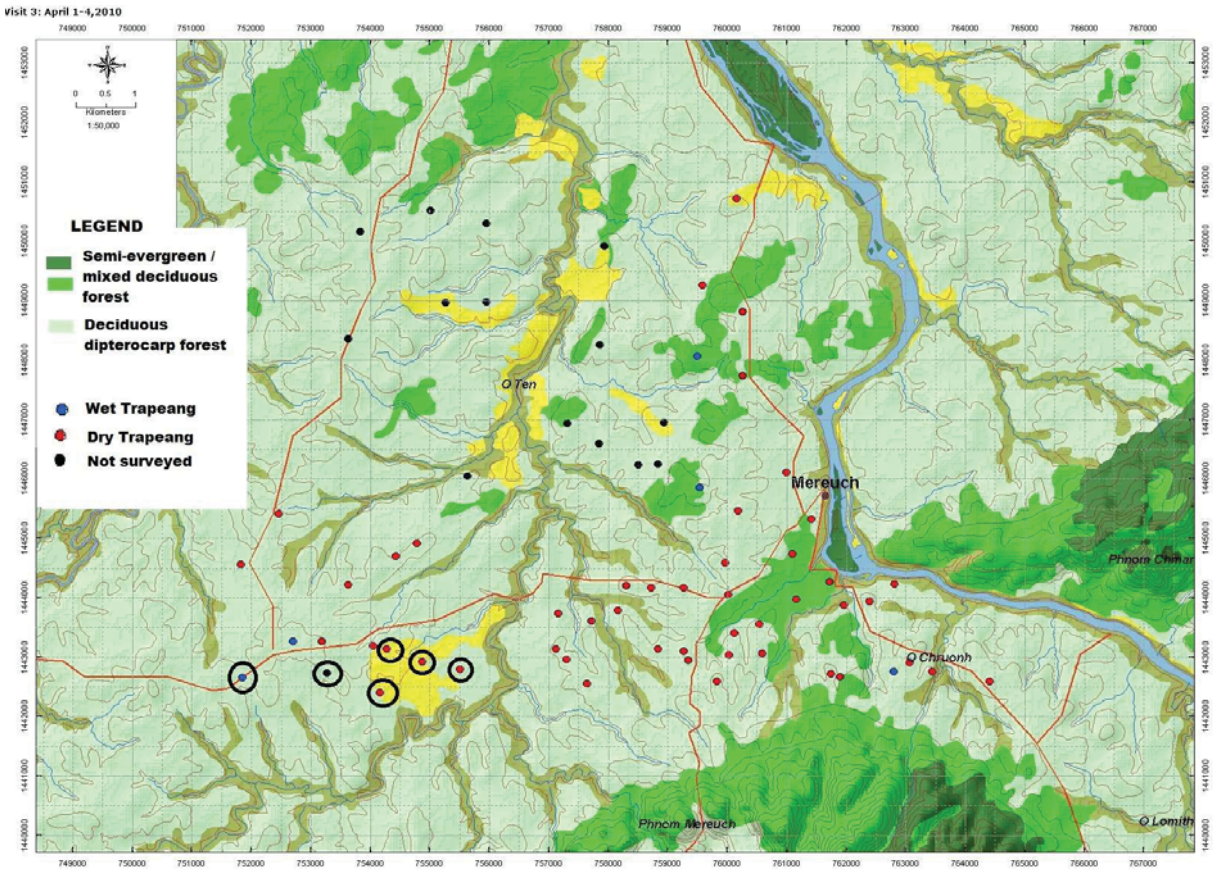
248

249

250 **List of Figures**

251

261


Visit 3: April 1-4,2010
LEGEND
Semi-evergreen / mixed deciduous forest
Deciduous dipterocarp forest
Wet Trapeang
Dry Trapeang
Not surveyed
Mereuch
O Ten
O Chruonh
Phnom Mereuch
O Lomith

262

263

264

277 **Appendix One**

278

279 Number of manipulated waterholes (n=5) each species was recorded at, and number of independent
280 encounters (*sensu* Phan *et al.* 2010), for all bird and mammal species camera-trapped from artificially
281 deepened waterholes in Mondulkiri Protected Forest, eastern Cambodia March-June 2012.

282

Species		**Locations**	**Encounters**
Wild Pig	*Sus scrofa*	5	90
Banteng	*Bos javanicus*	5	33
Eld's Deer	*Cervus eldii*	3	7
Red Muntjac	*Muntiacus muntjak*	5	6
Asiatic Jackal	*Canis aureus*	2	4
Small Indian Civet	*Viverricula indica*	3	3
Common Palm Civet	*Paradoxurus hermaphroditus*	2	2
Dhole	*Cuon alpinus*	1	2
Large-spotted Civet	*Viverra megaspila*	2	2
Jungle Cat	*Felis chaus*	1	1
Siamese Hare	*Lepus peguensis*	1	1
Small Asian Mongoose	*Herpestes javanicus*	1	1
Wooly-necked Stork	*Ciconia epicopus*	5	29
Giant Ibis	*Thaumatibis gigantea*	5	22
White-shouldered Ibis	*Pseudibis davisoni*	3	16
Lesser Adjutant	*Leptoptilos javanicus*	3	8

Sarus Crane	*Grus antigone*	1	4
Black-necked Stork	*Ephippiorhychus asiaticus*	1	3
Green Peafowl	*Pavo muticus*	1	3
Black-collared Starling	*Sturnus nigricollis*	1	2
Chinese Francolin	*Francolinus pintadeanus*	1	1
Red Collared Dove	*Streptopelia tranquebarica*	1	1
Red-headed Vulture	*Sarcogyps calvus*	1	1

283

284

Gmail **Regina Lennox <regina.lennox.cf@gmail.com>**

Request for Project Approvals -- Ranching for Restoration

Vannorman, Tim <tim_vannorman@fws.gov> Mon, Aug 1, 2016 at 2:04 PM
To: "Regina A. Lennox" <regina.lennox@conservationforce.org>
Cc: "John J. Jackson, III" <jjw-no2@att.net>

Regina,

Thank you for the information. With that information, this sounds like an excellent project. Go ahead and fund it.

Tim

On Mon, Aug 1, 2016 at 2:39 PM, Regina A. Lennox <regina.lennox@conservationforce.org> wrote:
> Dear Tim,
> Thank you for the response. Perfect timing -- NASCO just asked us about the funding. Ranching for Restoration is able to cover the full cost of the $[redacted], and Conservation Force will cover the administrative costs.
> Thanks,
> Regina
>
> On Mon, Aug 1, 2016 at 12:34 PM, Vannorman, Tim <tim_vannorman@fws.gov> wrote:
> > Dear Regina and John,
> >
> > I am sorry that I have not responded sooner. I know that you have been sitting on pins and needles for my response.
> >
> > Both projects look good. For the E;ld's deer, the proposal has a cost of [redacted]or the two years. Is Ranching for Restoration funds covering the total cost? If not, how sum is being contributed?
> >
> > I am good with the red lechwe project, so that is acceptable.
> >
> > Tim
> >
> > On Fri, Jul 8, 2016 at 11:52 AM, Regina A. Lennox <regina.lennox@conservationforce.org> wrote:
> > > Dear Tim,
> > >
> > > Bill McShea from the Smithsonian has asked me about the status of our approval. Have you had a chance to look at these projects? The Burma project is a logical follow-up from the Eld's deer project we funded last year. We would appreciate your approval so they can move forward with implementing the priority items of the management plan.
> > >
> > > Thanks,
> > > Regina
> > >
> > > ---------- Forwarded message ----------
> > > From: **Regina A. Lennox** <regina.lennox@conservationforce.org>
> > > Date: Tue, Jun 14, 2016 at 10:08 AM
> > > Subject: Request for Project Approvals -- Ranching for Restoration
> > > To: "Vannorman, Tim" <tim_vannorman@fws.gov>
> > > Cc: "John J. Jackson, III" <jjw-no2@att.net>

Dear Tim,

We are requesting two approvals for use of Ranching for Restoration funds.

First, on May 31, we sent a proposal for implementation of the Eld's Deer Action Plan in Myanmar, in the Chatthim Wildlife Sanctuary. I reattach the documents for ease of reference. This is a critical project to protect the sanctuary and encourage growth of the current population. We would partner with the non-profit Friends of Wildlife, who we previously worked with in an Eld's deer project (explained in our May report). They

This project is intended to begin July 2016, so if possible, we would appreciate your attention to and approval of this proposal as soon as possible.

Second, we previously sent you information on a red lechwe project in Namibia. [redacted] We would work with the Namibian Association of Conservancies to support ongoing surveying and monitoring of red lechwe in the wetlands of northeastern Namibia. For the past 15 years, game counts by foot have been used to monitor and estimate this population, with a helicopter survey in 2014 improving the knowledge on lechwe in the area. This project will introduce regular helicopter and fixed-wing aerial surveying to reach the populations in the wetlands which cannot be reached by foot. These aerial surveys will provide enhanced data for quota setting and population performance monitoring and tracking. Aerial surveillance will also assist with anti-poaching and deterrence.

The Ministry of Environment and Tourism (MET) has requested that a helicopter survey be performed in the first year (which is why that contribution is higher), with fixed-wing surveys to follow in years two-four. It is expected that the helicopter survey would be conducted in September 2016 and would expand the areas covered by the 2014 survey (Zambezi, Linyanti, and Chobe River ecosystems). In future years, the entire river system will be surveyed. This project is supported and technically advised by WWF-Namibia and in partnership with MET's Directorate of Scientific Services. A draft survey report is expected to be prepared in December 2016, and we would also receive a financial report.

You indicated initial support for this red lechwe project. Please confirm that FWS approves the four-year expenditure, which we think will provide valuable data for red lechwe conservation in Namibia as well as anti-poaching support for MET.

Thanks very much, we appreciate your attention to these requests so we can begin to support these important projects.

Regina

--
Regina A. Lennox
Conservation Force
3240 S I-10 Service Road W, Suite 200
Metairie, Louisiana 70001 USA
504-837-1233 (office)
919-452-8652 (cell)
regina.lennox@conservationforce.org

--
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--
Timothy J. Van Norman, Chief
Branch of Permits
Division of Management Authority
U.S. Fish and Wildlife Service
(703) 358-2350

***Sign up* for our e-newsletter to learn how we're working around the globe to protect species and their habitats!**

--
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Gmail **Regina Lennox <regina.lennox.cf@gmail.com>**

Conservation Fund_Financial reports

Annatjie du Preez <annatjiedp@iway.na> Thu, Dec 8, 2016 at 12:18 AM
To: Chrissie Jackson <cjackson@conservationforce.org>, Chris Weaver <cweaver@wwf.na>, Greg Stuart-Hill <gstuart@wwf.na>
Cc: "John J. Jackson, III" <cf@conservationforce.org>, Regina Lennox <regina.lennox@conservationforce.org>, Unknown <tim_vannorman@fws.gov>, [redacted]ll@met.gov.na>, maxi@nacso.org.na

Dear Chrissie and Regina,

Herewith the financial reports for August and September 2016, after which no more movement has taken place.

If any questions please let me know – however will only be back on 11 January 2017.

May you have a blessed festive season, kind regards

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

From: Annatjie du Preez [mailto:annatjiedp@iway.na]
Sent: 05 December 2016 10:41 AM
To: 'Chrissie Jackson'; 'Chris Weaver'; 'Greg Stuart-Hill'
Cc: 'John J. Jackson, III'; 'Regina Lennox'; 'Unknown'; piet beytell (piet.beytell@met.gov.na)
Subject: RE: Lechwe

Dear Regina and Chrissie,

This is only a brief email to let you know that the wetlands survey (lechwe) was postponed till this month December as various other drought related activities needed addressing by MET (Piet Beytell). However, the funding has been spent (procurement of AVGAS) and I will let you know in late January 2017 on the status of a census report.

Once again thank you and kind regards.

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

From: Annatjie du Preez [mailto:annatjiedp@iway.na]
Sent: 30 August 2016 11:48 AM
To: 'Chrissie Jackson'; 'Chris Weaver'; 'Greg Stuart-Hill'
Cc: 'John J. Jackson, III'; 'Regina Lennox'; 'Unknown'; piet beytell (piet.beytell@met.gov.na); admin@binvis.co
Subject: RE: Lechwe

Dear Chrissie,

We received the funding on 19 August 2016 – after exchange rate applied: N$198,825.00. Apologies for late notification – I was out of town till yesterday.

Kind regards.

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

From: Annatjie du Preez [mailto:annatjiedp@iway.na]
Sent: 19 August 2016 08:08 AM
To: 'Chrissie Jackson'; 'Chris Weaver'; 'Greg Stuart-Hill'
Cc: 'John J. Jackson, III'; 'Regina Lennox'; 'Unknown'; piet beytell (piet.beytell@met.gov.na); admin@binvis.co
Subject: RE: Lechwe

Thank you Chrissie, much appreciated.

I will confirm receipt of the funds as soon as possible. I will keep you informed regarding the survey schedule as well as regular financial expenditure feedback.

Kind regards.

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

From: Chrissie Jackson [mailto:cjackson@conservationforce.org]
Sent: 18 August 2016 09:45 PM
To: annatjiedp@iway.na; Chris Weaver; Greg Stuart-Hill
Cc: John J. Jackson, III; Regina Lennox; Unknown
Subject: Re: Lechwe

Dear Annatjie,

This is a heads up to let you know the grant from Conservation Force has been wired today from Chase Bank wiring reference number ES2313965900 as per you wiring instruction. We are very proud to be supporting this survey. We

trust it will be very successful for the conservation of lechwe in Namibia.

This sum is only to be expended on the project/projects we have pre-approved. Any part not used for Conservation Force approved projects is to be refunded to Conservation Force. These funds are not yours to use as you wish. The Internal Revenue Code of the USA requires Conservation Force to maintain control and exercise this discretion for the contribution to be tax deductible to the donor. Straight “pass through” earmarked donations to “foreign” charities are not deductibe unless the US charity (Conservation Force) maintains discretion and control. i.e., independently allocates such funds. In some cases we may return a donor’s contribution or expend it on some other project. Please work with us to protect the donor’s interest. Thank youi.

Best regards,

Chrissie Jackson

Sent from my iPad

Chrissie Jackson

Conservation Force Treasurer

3240 S. I-10 Service Road W., Ste. 200

Metairie, Louisiana 70001-6911 USA

cjackson@conservationforce.org

On Aug 12, 2016, at 10:30 AM, Regina A. Lennox <regina.lennox@conservationforce.org> wrote:

> Dear Chrissie,
> This is a request for funding for the lechwe project in Namibia. Please let me know or Annatjie know if you need anything else to disburse RFR funds.
> Thanks,
>
> Regina
>
> ---------- Forwarded message ----------
> From: **Annatjie du Preez** <annatjiedp@iway.na>
> Date: Fri, Aug 12, 2016 at 4:42 AM
> Subject: Lechwe
> To: "Regina A. Lennox" <regina.lennox@conservationforce.org>
>
> Dear Regina,
>
> Attached please find our letter. Also attached is our banking details and we will confirm as soon as it has been deposited.
>
> Kind regards.

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

--

Regina A. Lennox

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919-452-8652 (cell)

regina.lennox@conservationforce.org

<Funding request_Aug2016.pdf>

<NACSO NRWG account details.pdf>

20161208070329756.pdf
99K

CONSERVATION FORCE

A FORCE FOR WILDLIFE CONSERVATION

† BARON BERTRAND DES CLERS, PH.D.
† JAMES G. TEER, PH.D.
† BART O'GARA, PH.D.
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April 28, 2017

Darcy Vargas, Biologist
U.S. Fish and Wildlife Service
MS:IA, 5275 Leesburg Pike
Falls Church, Virginia 22041-3803
darcy_vargas@fws.gov

Re: Response to March 14, 2017 Email, Ref. 49112A

Dear Ms. Vargas:

I write in response to your email to Mr. Cole Reid of Morani River Ranch.

I am the President of Conservation Force. Conservation Force is a tax-exempt, charitable organization as described in Section 501(c)(3) of the Internal Revenue Code. It is also a publicly supported organization as described in Sections 509(a)(1)–(2) and 170(b)(1)(A)(vi).

Conservation Force has supported the recovery work of exotic game ranches in the United States for decades. One way we do this is through our Ranching for Restoration project, which directs a portion of the proceeds from hunts of Endangered Species Act-listed species on ranches with captive-bred registrations and take permits, and invests those funds in carefully chosen "smart" projects that enhance the survival of these species in the countries of origin. We obtain pre-approval from the U.S. Fish and Wildlife Service before we invest in these projects. This program has been operating for years, and the FWS has repeatedly found the "enhancement" requirement of the ESA is satisfied.

Morani River Ranch is a participant in our Ranching for Restoration project, and has donated ten percent of proceeds from the taking/culling of endangered species on an annual basis. I hereby confirm that Morani River Ranch donated $2,300.00 to Conservation Force as ten percent of the proceeds from taking/culling barasingha and red lechwe in 2015, as stated in its 2015 Annual Report.

Relevant to its 2016 Annual Report, on January 23, 2017, Morani River Ranch donated [redacted] to Conservation Force as ten percent of the proceeds from taking/culling oryx, Eld's deer, and barasingha in 2016. A copy of the acknowledgement letter we sent is attached.

Sincerely,

John J. Jackson, III
President

3240 S I-10 Service Road W, Suite 200, Metairie, Louisiana 70001, USA
Telephone: (504) 837-1233 • Fax (504) 837-1145 • Email: cf@conservationforce.org
www.conservationforce.org

CONSERVATION FORCE

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BERT KLINEBURGER
SHANE MAHONEY

March 17, 2017

Cole Reid
Morani River Ranch
P.O. Box 5513
Uvalde, TX 78802

RE: Substantiation of charitable contribution to Conservation Force, Tax I.D. No. 72-1364493

Dear Cole:

Thank you for your contribution to Conservation Force's Ranching for Restoration Program. Conservation Force is a tax-exempt charitable organization described in Section 501(c)(3) of the Internal Revenue Code. It is also a publicly supported organization described in Section 509(a)(1), 509(a)(2) and 170(b)(1)(A)(vi) (Foundation Status Classification). This combination provides the maximum tax advantage possible to donors and contributors.

Consequently, you are entitled to deduct your contribution. This is intended to be the written substantiation of your donation as required by IRS regulations. This letter does not get filed with your income tax return, but you need to keep this letter in your tax records for this tax year.

We further certify that no goods, services, products or other reciprocal payments were provided to you for any portion of your contribution. Your donation of [redacted] was made on January 23, 2017.

Thank you again.

Sincerely,

John J. Jackson III
Chairman

3240 S 1-10 Service Rd. W, Suite 200, Metairie, Louisiana 70001-6911, USA
Telephone: *(504)* 837-1233 • Fax (504) 837-1145 • E-mail: jjj@conservationforce.org
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CONSERVATION FORCE A FORCE FOR WILDLIFE CONSERVATION

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RENEE SNIDER

April 28, 2017

Darcy Vargas, Biologist
U.S. Fish and Wildlife Service
MS:IA, 5275 Leesburg Pike
Falls Church, Virginia 22041-3803
darcy_vargas@fws.gov

Re: Response to March 14, 2017 Email, Ref. 49112A

Dear Ms. Vargas:

You emailed Mr. Cole Reid of Morani River Ranch with questions about the Ranch's 2017 application for renewal of a captive-bred species take permit. Please see Conservation Force's responses below. Please also find attached the requested supporting documentation and additional explanation of our Ranching for Restoration program.

Please do not hesitate to contact me if you have further questions.

Question: *According to your 2014 report, you obtained $15,500 from harvesting 2 red lechwe. From the funds obtained, $1,500 (10%) was donated to Conservation Force for their "Ranching Restoration Program." Please provide additional documentation on Conservation Force's Ranching Restoration Program. How does their Program enhance the survival of the species in the wild.*

***Response*:** The Ranching for Restoration program assists ranches that maintain populations of non-native endangered species in satisfying the ESA's "enhancement" requirement. Conservation Force helps these ranches obtain FWS cull/take permits. To satisfy the "enhancement" requirement, the ranches then donate 10% of revenues for hunting/culling to Ranching for Restoration. These donations are each typically a few thousand dollars. The Ranching for Restoration project aggregates the donations and funds projects that enhance the survival of these species in the wild, in their native countries. Species involved include some of the most endangered antelope and deer—dama gazelle, oryx, addax, lechwe, barasingha, Eld's deer, etc. Conservation Force identifies suitable projects and submits proposals to the FWS Chief of Permits for pre-approval of the "enhancement" qualification. Periodic reports are provided to the FWS.

Attached please find our brochure describing the Ranching for Restoration program; the three-year report we submitted to Chief Van Norman in May 2016; an email showing Chief Van Norman's pre-approval of our two most recent projects (August 2016); and a sample update to Chief Van Norman on our most recent red lechwe project in Namibia.

Question: *According to your 2015 report, you obtained $4,500 from harvesting 1 barasinga and $18,500 for harvesting 3 red lechwes. A hand written statement on an email from Conservation Force was provided, indicating that from the funds obtained, $2,300 (10%) was donated to Conservation Force. However, an invoice and/or signed statement was not provided. Please provide a signed statement from John Jackson with Conservation Force certifying the amount of funds received and the specific program the funds were donated to. Also, ensure to provide additional documentation on specific Conservation*

Force Program that funds were donated to. How does their Program enhance the survival of the species in the wild.

***Response*:** Please see the attached letter signed by John J. Jackson, III evidencing Moran River Ranch's donations made on behalf of species harvested in 2016 and 2015, respectively. Please see the response to the first question and attachments cited there for information on our Ranching for Restoration project.

Question: *According to your 2016 report, you obtained $14,000 from harvesting 3 Arabian oryx, $12,000 from harvesting 1 Eld's deer, and $5,500 from harvesting 1 barasinga. As with your 2015 report, a hand written statement that looks exactly like the statement provided in your 2014 report was provided. On Conservation Force letter head was providing showing that from the funds obtained, $2,300 (less than 10% for 2015 funds earned) was donated to Conservation Force. However, an email from "No-reply@powr.io" was provided with a statement that Conservation Force received $3,150 (10%) from Morani River Ranch for Conservation Force's Barasingha Program. Please clarify why conflicting donation documentation was provided and reply with the correct amount of funds donated to Conservation Force. Because it is unclear as to whom sent the email enclosed in your application, please provide a signed statement from John Jackson with Conservation Force certifying the amount of funds received and the specific program the funds were donated to. Also, ensure to provide additional documentation on Conservation Force's Baraingha Program. How does their Program enhance the survival of the species in the wild.*

***Response*:** Please see the attached letter signed by John J. Jackson, III evidencing Moran River Ranch's donations made on behalf of species harvested in 2016 and 2015, respectively.

Morani River Ranch's offtake for 2016 included three Arabian oryx ($14,000/$1,400 donation), one Eld's deer ($12,000/$1,200 donation), and one barasingha ($5,500/$550 donation). The acknowledgement email automatically generated by Conservation Force's website was provided as the second page of the attachments to the annual report submitted by Mr. Reid. Please disregard the first page of those attachments, which is the acknowledgement from 2015 take (dated 1/21/2016). This document is already in the FWS' files from the prior year's annual report, and was inadvertently re-submitted.

Please also see the response to the first question and attachments cited there for information on our Ranching for Restoration project.

Best wishes,

Regina Lennox

How To Contribute

YES, I want to help support Conservation Force

❑ General Contribution $_____

Method of Payment:

❑ Check ❑ Visa ❑ Master Card

Card #_____

Expiration _____

Signature_____

Donor/Contributor Information

Name:_____

Address:_____

_____

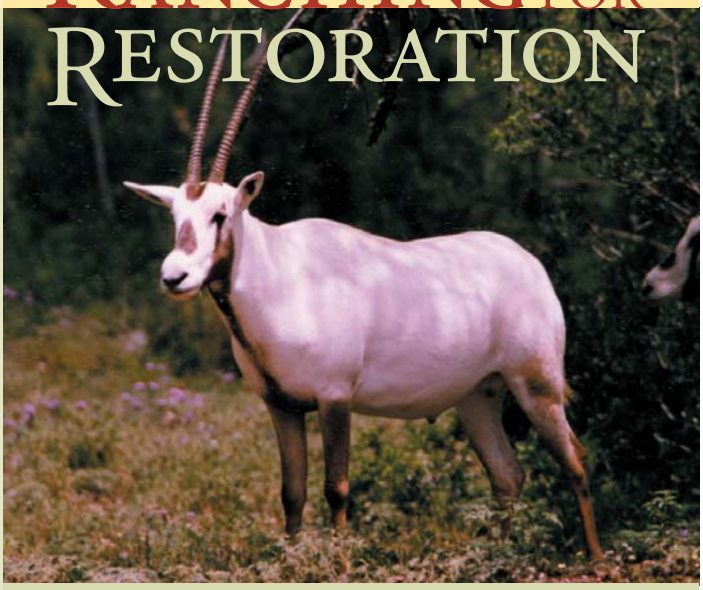
Phone:_____

Fax: _____

Email: _____

Mail to: Conservation Force
3900 N. Causeway Blvd., Suite 1045
Metairie, LA 70002 USA
(504) 837-1233
FAX: (504) 837-1145
EMAIL: jjw-no@att.net
HTTP://www.conservationforce.org

RANCHING FOR RESTORATION



Conservation FORCE

Ranching for Restoration

Ranching For Restoration is our program to help ranchers obtain the two necessary permits needed to breed and cull exotic, endangered game species. The USF&WS permits breeding and culling of listed exotics, provided that 10% of the trophy fees are directed to "enhancement" of the listed species. Enhancement is a mandatory requirement of the Endangered Species Act. Conservation Force provides two vital services. It acts as your legal representative at no charge to obtain the permits. Conservation Force also acts as recipient of the funds and places the funds in "Smart" projects pre-approved by the USF&WS for the enhancement of the species in the wild in their native ecosystem. The full sum is directed to pre-approved enhancement programs. No administrative, legal or other charge is made.

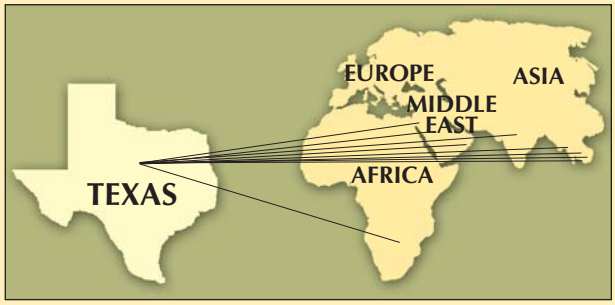
The program provides the following restoration benefits:

- Provides income and conservation incentives to landowners;
- Keeps private habitat intact in Texas;
- Smartly selects, supports, establishes and oversees effective projects in native ecosystems;
- Tracks and documents the conservation value of exotic breeding and hunting;
- Improves the image of the exotic game hunting industry;
- Ensures the restoration and the long-term survival of the listed game.

Who Are We?

Conservation Force is a non-profit 501(c)(3) public foundation. The name stands for the fact that sportsmen are the foremost force for wildlife conservation. Ranching For Restoration is a Conservation Force program that demonstrates that point. One of our main objectives is to insure the continued contribution and positive perception of the sportsmen's role in conservation. Our purpose is to improve the profile of hunting, hunters, and to expand and protect hunting and to unify the world's hunting organizations.

We have established and support select projects for Red Lechwe, Elds Deer, Barasingha, and Arabian Oryx in Cambodia, Burma, Laos, Vietnam, Oman, Saudi Arabia, Jordan, Zambia, and India. This we do for you as a public service.



What Do You Have To Do?

Contact Conservation Force to obtain the permit and representation forms. That's all!

CONSERVATION FORCE
RANCHING FOR RESTORATION

RANCHING FOR RESTORATION
UPDATE REPORT

As requested by the U.S. Fish and Wildlife Service (USFWS), below please find an update on the sources and uses of "Ranching for Restoration" enhancement funds.

I. ABOUT CONSERVATION FORCE AND RANCHING FOR RESTORATION

Conservation Force is a non-profit, 501(c)(3) public charitable foundation. The name stands for sportsmen and sportswomen who are the foremost force for wildlife conservation. One of our main objectives is to ensure the continued contribution and positive perception of the sportsmen's role in conservation.

Through the Ranching for Restoration program, Conservation Force assists ranches in applying for USFWS captive breeding and cull (take) permits for ESA-listed, non-native game species. The participating ranches that obtain these permits agree to donate a percentage of revenues from the hunting/culling and interstate sales to Conservation Force, which is exclusively used to fund "smart" projects pre-approved by the USFWS that will enhance the survival of these species in the wild.

Conservation Force provides free legal representation to its member ranches. We have assisted at least 75 separate ranches over almost two decades. Through Conservation Force and the Ranching for Restoration program, hundreds of thousands of dollars for monitoring, conservation, protection, and recovery projects have been invested in these enhancement activities in the countries of origin. The funds are treated by Conservation Force as wholly dedicated and restricted. All funds received are expended on enhancement activities pre-approved by the Division of Management Authority of the USFWS. No charges or any part of the funds are retained or saved by Conservation Force. Rather, we often add our own contributions to the sums expended.

II. RANCH CONTRIBUTIONS OF ENHANCEMENT FUNDS

Year	Number of Contributions	Average Contribution	Total Contributions
2013	27	$2,323.80	$62,742.50
2014	25	$3,350.74	$83,768.50
2015	13	$2,909.96	$37,829.50
2016	3	$3,408.75	$13,635.00

A financial statement documenting these contributions is attached.

III. USES OF FUNDS

Previous Projects:

Conservation Force presents potential enhancement expenditures and gets pre-approval from the USFWS before any contribution of enhancement funds is made. We look for a range of projects to spread the funding across species. To that end, some of our past projects include, but are not limited to:

1. Monitoring and protecting the barasingha population in Uttar Pradesh, India (2002-2006)
2. Successfully reintroducing Eld's deer to Thailand, where they are the national symbol, and funding an Eld's Deer Workshop and radio-collars and anti-poaching protection for the reintroduced deer (2008 and 2010-2011)
3. Collaring and tracking the population of Eld's deer in Cambodia (2010-2012; continued into 2013)
4. A countrywide survey of Eld's deer in Myanmar (2010-2011)

Projects 2013-2016:

1. Survey of dama gazelle in Chad [USFWS approved December 14, 2014]

Ranching for Restoration funds ($44,276.82) were sent to the Zoological Society of London to complete an aerial survey of dama gazelle in the Manga region of Chad. The survey's goal was to determine if there was a significant population of dama gazelle in this region. The results showed only four live dama, and the authors concluded that the dama gazelle have been marginalized to the edges of their preferred habitat.

The survey occurred in February 2015. The survey report was completed in October 2015 and is attached.

The report's recommendations include developing a national approach on dama conservation in Chad and evaluating the possibility of reintroduction. Conservation Force is following up to ascertain funding needs for these efforts.

2. Establishing a monitoring baseline for Laos' only Eld's Deer population [USFWS approved March 31, 2015]

Ranching for Restoration funds ($10,000) were used to assess the population and density of Eld's deer in the Savannakhet Sanctuary, to better monitor the effectiveness of conservation activities. Building off a prior grant, this study used distance-based line-transect sampling to estimate density.

The project benefits Eld's deer in Laos by improving knowledge about their status and distribution, to be used by the community management committee for adaptive protected area management. A presentation incorporating the research results is attached to demonstrate how the data is being used. The project also improves the global knowledge base on Eld's deer. The project proposal and the final report are attached.

3. Updating the Sahelo-Saharan Antelopes Action Plan [USFWS approved July 24, 2014]

Ranching for Restoration funds ($12,000) were used to update the Convention on Migratory Species (CMS) "Sahelo-Saharan Antelopes Action Plan," which covers the addax, dama gazelle, and scimitar-horned oryx in particular and has been adopted by 14 range nations. The updates were specifically requested by range nations, which use the Action Plan to set conservation priorities. The updated Action Plan "is foreseen to guide, catalyze, and align much needed conservation action across the Sahel and the Sahara for years to come." The project proposal is attached.

4. Thamin Eld's deer reintroduction in the Salakphra Wildlife Sanctuary, Thailand [USFWS approved December 17, 2013]

Ranching for Restoration funds ($8,000) were used to reintroduce ten Thamin Eld's deer to a wildlife sanctuary in Thailand, and to study the ecology of the sanctuary that impacted the re-introduction so as to improve future efforts.

The project included taking ten captive-bred deer, translocating them, soft- and then hard-releasing them, and radio-collaring at least two deer for constant monitoring, in the period from February 2014 to January 2015. The project proposal is attached.

5. Establishing a monitoring baseline for Laos' only Eld's Deer population [USFWS approved November 13 and December 17, 2013]

Ranching for Restoration funds ($6,000) were used for surveys and monitoring to establish a baseline of the population of Eld's deer in the Savannakhet Sanctuary. The Sanctuary is managed as a partnership with the local communities and the government resources authority. The study's main goal is to assess the population level and density for Eld's deer in the Sanctuary, but a secondary goal is to build capacity in Laos through using the study as a thesis project for conservation students and a third goal is to continue to build community engagement and support for the Sanctuary and for Eld's deer conservation. The project proposal is attached.

6. Promoting the conservation of Eld's deer in Chatthin Wildlife Sanctuary, Myanmar [USFWS approved November 13 and December 17, 2013]

Ranching for Restoration funds ($5,710) were used to promote conservation activities in the Sanctuary. The project's three primary objectives are to increase the Eld's deer population, to build capacity in the wildlife authority staff, and to raise awareness of the importance of Eld's deer conservation in Myanmar. Specific activities include patrols for monitoring and anti-poaching, surveys, training of field staff, and training of the wildlife authority and local villages. The project proposal is attached.

7. Conservation Review of the Dama Gazelle [approved September 9, 2013]

A roundtable workshop was held at the Royal Zoological Society of Scotland on November 19-21, 2013 to discuss the status, threats, and conservation of the highly endangered (fewer than 300 individuals) dama gazelle. Ranching for Restoration funds (approximately $2,500) were used to offset workshop expenses for key participants.

The final workshop report is attached. It outlines "next steps" for recovery and conservation and can serve as a foundation for national and international dama gazelle action plans. It includes, among other things, "a list of eight possible principal conservation actions that could be conducted in support of dama gazelle and their associated risks and benefits" and "a road map for moving conservation actions forward."

8. Tracking Eld's deer in Cambodia [approved by USFWS in 2011]

Four Eld's deer were radio-collared and tracked to obtain information on their movements, habitat, and the potential for deepening waterholes used by the deer to improve their habitat quality. The radio collars were obtained in late 2012, and the collaring occurred in March 2013 after proper permits were obtained from the Cambodian government. The Ranching for Restoration Funds ($22,500 total) were paid out prior to 2013.

Expenditures for Each Year for Each Project:

Project	2013	2014	2015	2016
1 Survey of dama gazelle in Chad			$16,881.00 $3,603.82	$23,792.00
2 Updating the Sahelo-Saharan Antelopes Action Plans		$12,000		
3 Establishing a monitoring baseline for Laos' only Eld's Deer population			$10,000	
4 Thamin Eld's deer reintroduction in the Salakphra Wildlife Sanctuary, Thailand		$8,040.00		
5 Establishing a monitoring baseline for Laos' only Eld's Deer population		$6,040.00		
6 Tracking Eld's Deer in Myanmar	$5,710.00			
7 Conservation Review of the Dama Gazelle	$2,540.00			
Total for Each Year	**$8,250.00**	**$26,080.00**	**$30,484.82**	**$23,792.00**

A financial statement documenting these contributions is attached. Please do not hesitate to contact us if you have any questions about this report.

Sincerely,

Regina Lennox, Conservation Force

ATTACHMENTS:

1. Ranching for Restoration brochure Please see above
2. Financial statement documenting contributions and expenditures
3. Excel spreadsheet summarizing financial statement
4. Final report of the survey of dama gazelle in Chad (2015)
5. Project proposal for Eld's deer research in Laos (2015)
6. Final report of 2015 project for Eld's deer research in Laos
7. PowerPoint summarizing research on Eld's deer in Laos (2013-2014)
8. Project proposal for updating the Sahelo-Saharan Antelopes Action Plan
9. Project proposal for Eld's deer reintroduction in Thailand
10. Project proposal for Eld's deer research in Laos
11. Project proposal for conservation activities for Eld's deer in Myanmar
12. Final report on Workshop, "Conservation Review of the Dama Gazelle" (2013)
13. Draft research paper based off Ranching for Restoration supported research in Cambodia

Ranching for Restoration has its own separate account. The bank was changed in July 2015 therefore there are two Profit & Loss Detail Sheets.

Chrissie Jackson
Conservation Force Treasurer

3240 S I-10 Service Rd. W, Suite 200, Metairie, Louisiana 70001-6911, USA
Telephone: (504) 837-1233 • Fax (504) 837-1145 • E-mail: jjj@conservationforce.org
www.conservationforce.org

Conservation Force
Profit & Loss Detail
July 1, 2015 through May 17, 2016

Type	Date	Num	Name	Memo	Class	Clr	Split	Amount	Balance
Income									
1000 Cash Donation									
Deposit	07/15/2015	913	Golden Eagle Ranc...	Donation for...	Donation		Chase Ranchi...	1,340.00	1,340.00
Deposit	10/05/2015	577	Circle E. Ranch/Ro...	Donation fro...	Donation		Chase Ranchi...	1,750.00	3,090.00
Deposit	01/26/2016	1235	Black Eagle Ranch	Donation fro...	Donation		Chase Ranchi...	700.00	3,790.00
Deposit	01/26/2016	5002	Black Eagle Ranch	Donation fro...	Donation		Chase Ranchi...	3,500.00	7,290.00
Deposit	02/17/2016	9520	Heart of the Lonest...	Donation fro...	Donation		Chase Ranchi...	1,935.00	9,225.00
Deposit	03/21/2016	18147	777 Ranch	Donation fro...	Donation		Chase Ranchi...	7,500.00	16,725.00
Total 1000 Cash Donation								16,725.00	16,725.00
1004 Interest Income									
Deposit	07/31/2015			Interest			Chase Ranchi...	6.83	6.83
Deposit	08/31/2015			Interest			Chase Ranchi...	11.32	18.15
Deposit	09/30/2015			Interest			Chase Ranchi...	10.96	29.11
Deposit	10/31/2015			Interest			Chase Ranchi...	11.08	40.19
Deposit	11/30/2015			Interest			Chase Ranchi...	11.47	51.66
Deposit	12/31/2015			Interest			Chase Ranchi...	11.48	63.14
Deposit	01/31/2016			Interest			Chase Ranchi...	10.76	73.90
Deposit	02/29/2016			Interest			Chase Ranchi...	11.93	85.83
Deposit	03/31/2016			Interest			Chase Ranchi...	12.27	98.10
Deposit	04/30/2016			Interest			Chase Ranchi...	10.86	108.96
Total 1004 Interest Income								108.96	108.96
Total Income								16,833.96	16,833.96
Gross Profit								16,833.96	16,833.96
Expense									
5517 Ranching For Restoration									
Check	04/14/2016	EFT	Zoological Society ...				Chase Ranchi...	23,792.00	23,792.00
Total 5517 Ranching For Restoration								23,792.00	23,792.00
Total Expense								23,792.00	23,792.00
Net Income								**-6,958.04**	**-6,958.04**

Conservation Force
Profit & Loss Detail
May 17, 2011 through May 17, 2016

Type	Date	Num	Name	Memo	Class	Clr	Split	Amount	Balance
Income									
1000 Cash Donation									
Deposit	06/09/2011	69902	Conroe Taxidermy	Donation fro...	1000 Do...		CF Ranching -...	700.00	700.00
Deposit	06/24/2011	4264	R.O.L. Enterprises,...	Donation fro...	1000 Do...		CF Ranching -...	500.00	1,200.00
Deposit	09/27/2011	7083	Kyle Wildlife LP	Donation fro...	1000 Do...		CF Ranching -...	300.00	1,500.00
Deposit	10/25/2011	1445	KJC HoldingsLP/Al...	Donation for...	1000 Do...		CF Ranching -...	400.00	1,900.00
Deposit	10/25/2011	7581	Heart of the Lonest...	Donation fro...	1000 Do...		CF Ranching -...	500.00	2,400.00
Deposit	11/04/2011	2909	Laguna Vista Ranc...	Donation for...	1000 Do...		CF Ranching -...	1,534.00	3,934.00
Deposit	01/10/2012	70690	Conroe Taxidermy	Donation fro...	Unrestric...		CF Ranching -...	1,050.00	4,984.00
Deposit	01/10/2012	1515	KJC HoldingsLP/Al...	Donation for...	1000 Do...		CF Ranching -...	320.00	5,304.00
Deposit	01/10/2012	15889	777 Ranch	Donation fro...	1000 Do...		CF Ranching -...	4,700.00	10,004.00
Deposit	01/24/2012	7694	Heart of the Lonest...	Ranch For R...	1000 Do...		CF Ranching -...	575.00	10,579.00
Deposit	02/14/2012	7136	Priour Brothers Ra...	Priour Brothe...	1000 Do...		CF Ranching -...	525.00	11,104.00
Deposit	03/05/2012	3009	H.Y.turria Land & ...	Donation fro...	1000 Do...		CF Ranching -...	370.00	11,474.00
Deposit	03/09/2012	4074	C-Creek Ranch	C Creek Ran...	1000 Do...		CF Ranching -...	100.00	11,574.00
Deposit	07/23/2012	8278	Heart of the Lone S...	Donation fro...	1000 Do...		CF Ranching -...	950.00	12,524.00
Deposit	09/12/2012	3670	Global Health and ...	Donation fro...	1000 Do...		CF Ranching -...	1,845.00	14,369.00
Deposit	10/01/2012	3079	Laguna Vista Ranc...	Donation fro...	1000 Do...		CF Ranching -...	1,384.50	15,753.50
Deposit	10/16/2012	3688	Global Health and ...	Donation for...	1000 Do...		CF Ranching -...	1,650.00	17,403.50
Deposit	10/19/2012	3692	Global Health and ...	Donation fro...	1000 Do...		CF Ranching -...	990.00	18,393.50
Deposit	10/31/2012	1667	KJC HoldingsLP/Al...	Donation fro...	1000 Do...		CF Ranching -...	500.00	18,893.50
Deposit	11/16/2012	7414	H. Scott Petty, Jr.	Donation fro...	1000 Do...		CF Ranching -...	250.00	19,143.50
Deposit	12/05/2012	1646	KJC HoldingsLP/Al...	Donation fro...	1000 Do...		CF Ranching -...	400.00	19,543.50
Deposit	12/05/2012	1645	KJC HoldingsLP/Al...	Donation fro...	1000 Do...		CF Ranching -...	150.00	19,693.50
Deposit	12/18/2012	2665	Paisano Ranch/Do...	Donation	Donation		CF Ranching -...	250.00	19,943.50
Deposit	01/18/2013	7546	Kyle Wildlife LP	Kyle Wildlife ...	Ranchin...		CF Ranching -...	680.00	20,623.50
Deposit	01/18/2013	72074	Conroe Taxidermy	Conroe Taxid...	Ranchin...		CF Ranching -...	350.00	20,973.50
Deposit	01/18/2013	72075	Conroe Taxidermy	Conroe Taxid...	Ranchin...		CF Ranching -...	700.00	21,673.50
Deposit	01/18/2013	1491	KDK Management ...	KDK Manage...	Ranchin...		CF Ranching -...	250.00	21,923.50
Deposit	01/18/2013	4688	R. O. L. Enterprises...	R. O.L. Enter...	Ranchin...		CF Ranching -...	500.00	22,423.50
Deposit	01/18/2013	769	John Christian H M...	John Christia...	Ranchin...		CF Ranching -...	10.00	22,433.50
Deposit	01/18/2013	624	Monty F. Mathias	Monty F Mat...	Ranchin...		CF Ranching -...	980.00	23,413.50
Deposit	02/14/2013	54397	DD Ranch	Donation frm...	Ranchin...		CF Ranching -...	3,600.00	27,013.50
Deposit	02/14/2013	4703	Rancho Milagro/Do...	Donation fro...	Ranchin...		CF Ranching -...	200.00	27,213.50
Deposit	02/14/2013	564	Morani River Ranch...	Donation fro...	Ranchin...		CF Ranching -...	2,750.00	29,963.50
Deposit	02/14/2013	563	Diamond J. Ranch/...	Donation fro...	Ranchin...		CF Ranching -...	80.00	30,043.50
Deposit	02/14/2013	4360	David Nesbit	Donation fro...	Ranchin...		CF Ranching -...	625.00	30,668.50
Deposit	02/14/2013	561	Callvin Benson	Donation fro...	Ranchin...		CF Ranching -...	350.00	31,018.50
Deposit	02/14/2013	3749	Indianhead Ranch	Donation fro...	Ranchin...		CF Ranching -...	4,755.00	35,773.50
Deposit	02/15/2013	2106	Turkey Creek Ranc...	Donation fro...	Donation		CF Ranching -...	300.00	36,073.50
Deposit	02/26/2013	2252	Deep Creek Ranch	Donation for...	Ranchin...		CF Ranching -...	1,800.00	37,873.50
Deposit	02/26/2013	16644	777 Ranch	Donation fro...	Ranchin...		CF Ranching -...	13,450.00	51,323.50
Deposit	02/26/2013	2200	Rancho Vedado, Inc.	Donation fro...	Ranchin...		CF Ranching -...	250.00	51,573.50
Deposit	03/06/2013	565	Montgomery Proper...	Donation Fro...	Donation		CF Ranching -...	450.00	52,023.50
Deposit	03/25/2013	4324	H. Yturria Land & C...	Donation fro...	Ranchin...		CF Ranching -...	11,580.00	63,603.50
Deposit	03/25/2013	7391	Priour Brothers Ra...	Donation fro...	Ranchin...		CF Ranching -...	2,070.00	65,673.50
Deposit	04/10/2013	16146	Gegenheimer Famil...	Donation fro...	Ranchin...		CF Ranching -...	400.00	66,073.50
Deposit	04/10/2013	6811	Record Buck Inc.	Donation for...	Ranchin...		CF Ranching -...	10,272.50	76,346.00
Deposit	09/09/2013	012186	Lykes Bros. Inc.	Donation fro...	Donation		CF Ranching -...	1,000.00	77,346.00
Deposit	09/23/2013	7969	Heart of the Lone S...	Donation Fro...	Donation		CF Ranching -...	775.00	78,121.00
Deposit	11/13/2013	405702	Lucky V Ranch	Donation fro...	Donation		CF Ranching -...	450.00	78,571.00
Deposit	12/21/2013	2330	Rancho Vedado, Inc.	Donation for...	Donation		CF Ranching -...	435.00	79,006.00
Deposit	12/31/2013	1864	KJC HoldingsLP/Al...	KJC Holding...	Donation		CF Ranching -...	2,780.00	81,786.00
Deposit	12/31/2013	1697	South Wen Inc.	Donation fro...	Donation		CF Ranching -...	900.00	82,686.00
Deposit	01/07/2014	7130	Recordbuck, Inc.	Doantion fro...	Donation		CF Ranching -...	16,043.50	98,729.50
Deposit	01/07/2014	7885	Kyle Wildlife LP	Donation fro...	Donation		CF Ranching -...	900.00	99,629.50
Deposit	01/20/2014	10981	Duncan Double D ...	Donation for...	Donation		CF Ranching -...	3,600.00	103,229.50
Deposit	01/21/2014	1106	Indianhead Ranch	Doantion fro...	Donation		CF Ranching -...	2,750.00	105,979.50
Deposit	01/21/2014	1281	Victoria Oaks Ranch	Donation fro...	Donation		CF Ranching -...	300.00	106,279.50
Deposit	01/21/2014	1009	Fallow Creek Ranc...	Donation fro...	Donation		CF Ranching -...	500.00	106,779.50
Deposit	01/21/2014	4652	David Nesbit	Donation fro...	Donation		CF Ranching -...	250.00	107,029.50
Deposit	02/13/2014	2378	Deep Creek Ranch	Donation fro...	Donation		CF Ranching -...	1,500.00	108,529.50
Deposit	02/13/2014	570	Morani River Ranch...	Donation fro...	Donation		CF Ranching -...	4,500.00	113,029.50
Deposit	02/13/2014	569	Y O Ranch/Schriener	Donation fro...	Donation		CF Ranching -...	450.00	113,479.50
Deposit	02/13/2014	571	Comanche Spring ...	Donation fro...	Donation		CF Ranching -...	300.00	113,779.50
Deposit	02/13/2014	7108	Rod Ranch	Donation fro...	Donation		CF Ranching -...	400.00	114,179.50
Deposit	02/13/2014	1094	Laguna Vista Ranc...	Donation fro...	Donation		CF Ranching -...	5,150.00	119,329.50
Deposit	02/13/2014	17309	777 Ranch	Donation fro...	Donation		CF Ranching -...	27,095.00	146,424.50
Deposit	02/13/2014	3626	Yeager Valley Ranc...	Donation fro...	Donation		CF Ranching -...	550.00	146,974.50
Deposit	02/13/2014	572	Double Arrow Bow/...	Donation fro...	Donation		CF Ranching -...	290.00	147,264.50
Deposit	02/13/2014	572	3-S Texas Outdoor...	Donation fro...	Donation		CF Ranching -...	425.00	147,689.50
Deposit	02/13/2014	13385	Double Arrow Bow/...	Donation fro...	Donation		CF Ranching -...	250.00	147,939.50
Deposit	02/13/2014	573	Golden Eagle Ranc...	Donation fro...	Donation		CF Ranching -...	425.00	148,364.50
Deposit	02/26/2014	7614	Priour Brothers Ra...	Donation fro...	Donation		CF Ranching -...	2,450.00	150,814.50
Deposit	02/26/2014	574	Diamond J. Ranch/...	Donation fro...	Donation		CF Ranching -...	150.00	150,964.50
Deposit	02/26/2014	73599	Conroe Taxidermy	Doantion fro...	Donation		CF Ranching -...	1,650.00	152,614.50
Deposit	02/26/2014	735600	Conroe Taxidermy	Donation fro...	Donation		CF Ranching -...	1,050.00	153,664.50
Deposit	04/29/2014	5397	H Yturria Land & C...	Donation fro...	Donation		CF Ranching -...	9,590.00	163,254.50

Conservation Force
Profit & Loss Detail
May 17, 2011 through May 17, 2016

Type	Date	Num	Name	Memo	Class	Clr	Split	Amount	Balance
Deposit	04/29/2014	1207	Black Eagle Ranch	Donation fron...	Donation		CF Ranching -...	2,150.00	165,404.50
Deposit	07/01/2014	2335	Rancho Vedado, Inc.	Donation fro...	Donation		CF Ranching -...	250.00	165,654.50
Deposit	08/15/2014	015285	Lykes Bros. Inc.	Donation fro...	Donation		CF Ranching -...	800.00	166,454.50
Deposit	01/21/2015	2148	KJC HoldingsLP/Al...	Donation fro...	Donation		CF Ranching -...	1,800.00	168,254.50
Deposit	01/21/2015	7654	Heart of the Lonest...	Donation fro...	Donation		CF Ranching -...	1,442.50	169,697.00
Deposit	01/21/2015	843	Monty F. Mathias	Donation fro...	Donation		CF Ranching -...	490.00	170,187.00
Deposit	01/21/2015	1154	Indianhead Ranch	Donation fro...	Donation		CF Ranching -...	275.00	170,462.00
Deposit	02/09/2015	7880	Priour Brothers Ra...	Donation fro...	Donation		CF Ranching -...	1,835.00	172,297.00
Deposit	02/09/2015	17744	777 Ranch	Donation fro...	Donation		CF Ranching -...	9,250.00	181,547.00
Deposit	02/11/2015	5516	Recordbuck, Inc.	Donation fro...	Donation		CF Ranching -...	16,444.00	197,991.00
Deposit	05/31/2015	1249	DRS Family Partne...	Donation fro...	Donation		CF Ranching -...	890.00	198,881.00
Deposit	05/31/2015	3506	Ox Ranch Investme...	Donation fro...	Donation		CF Ranching -...	200.00	199,081.00
Deposit	05/31/2015	75142	Conroe Taxidermy	Donation fro...	Donation		CF Ranching -...	1,090.00	200,171.00
Deposit	05/31/2015	2059...	Lonesome Bull Ran...	Donation fro...	Donation		CF Ranching -...	1,000.00	201,171.00
Deposit	05/31/2015	2059...	Lonesome Bull Ran...	Donation fro...	Donation		CF Ranching -...	23.00	201,194.00
Total 1000 Cash Donation								201,194.00	201,194.00
1004 Interest Income									
Deposit	05/31/2011		Interest Earned	Interest			CF Ranching -...	7.34	7.34
Deposit	06/30/2011		Interest Earned	Interest			CF Ranching -...	7.43	14.77
Deposit	07/31/2011		Interest Earned	Interest			CF Ranching -...	7.92	22.69
Deposit	08/31/2011		Interest Earned	Interest			CF Ranching -...	5.38	28.07
Deposit	09/30/2011		Interest Earned	Interest			CF Ranching -...	4.20	32.27
Deposit	10/31/2011		Interest Earned	Interest			CF Ranching -...	4.44	36.71
Deposit	11/30/2011		Interest Earned	Interest			CF Ranching -...	4.99	41.70
Deposit	12/31/2011		Interest Earned	Interest			CF Ranching -...	5.27	46.97
Deposit	01/31/2012			Interest			CF Ranching -...	3.45	50.42
Deposit	02/29/2012			Interest			CF Ranching -...	0.21	50.63
Deposit	03/31/2012			Interest			CF Ranching -...	0.38	51.01
Deposit	04/30/2012			Interest			CF Ranching -...	0.33	51.34
Deposit	05/31/2012			Interest			CF Ranching -...	0.27	51.61
Deposit	06/30/2012			Interest			CF Ranching -...	0.19	51.80
Deposit	07/31/2012			Interest			CF Ranching -...	0.22	52.02
Deposit	08/31/2012			Interest			CF Ranching -...	0.36	52.38
Deposit	09/30/2012			Interest			CF Ranching -...	0.45	52.83
Deposit	10/31/2012			Interest			CF Ranching -...	0.89	53.72
Deposit	11/30/2012			Interest			CF Ranching -...	1.13	54.85
Deposit	12/31/2012			Interest			CF Ranching -...	1.43	56.28
Deposit	01/31/2013			Interest			CF Ranching -...	1.55	57.83
Deposit	02/28/2013			Interest			CF Ranching -...	2.63	60.46
Deposit	03/31/2013			Interest			CF Ranching -...	6.25	66.71
Deposit	04/30/2013			Interest			CF Ranching -...	8.48	75.19
Deposit	05/31/2013			Interest			CF Ranching -...	9.21	84.40
Deposit	06/30/2013			Interest			CF Ranching -...	8.91	93.31
Deposit	07/31/2013			Interest			CF Ranching -...	6.44	99.75
Deposit	08/31/2013			Interest			CF Ranching -...	6.14	105.89
Deposit	09/30/2013			Interest			CF Ranching -...	6.01	111.90
Deposit	10/31/2013			Interest			CF Ranching -...	6.29	118.19
Deposit	11/30/2013			Interest			CF Ranching -...	5.98	124.17
Deposit	12/31/2013			Interest			CF Ranching -...	5.93	130.10
Deposit	01/31/2014			Interest			CF Ranching -...	7.03	137.13
Deposit	02/28/2014			Interest			CF Ranching -...	8.11	145.24
Deposit	03/31/2014			Interest			CF Ranching -...	10.81	156.05
Deposit	04/30/2014			Interest			CF Ranching -...	10.50	166.55
Deposit	05/31/2014			Interest			CF Ranching -...	11.81	178.36
Deposit	06/30/2014			Interest			CF Ranching -...	11.43	189.79
Deposit	07/31/2014			Interest			CF Ranching -...	11.83	201.62
Deposit	08/31/2014			Interest			CF Ranching -...	11.88	213.50
Deposit	09/30/2014			Interest			CF Ranching -...	11.52	225.02
Deposit	10/31/2014			Interest			CF Ranching -...	11.38	236.40
Deposit	11/30/2014			Interest			CF Ranching -...	10.53	246.93
Deposit	12/31/2014			Interest			CF Ranching -...	10.89	257.82
Deposit	01/31/2015			Interest			CF Ranching -...	10.21	268.03
Deposit	02/28/2015			Interest			CF Ranching -...	15.97	284.00
Deposit	03/31/2015			Interest			CF Ranching -...	22.88	306.88
Deposit	04/30/2015			Interest			CF Ranching -...	25.49	332.37
Deposit	05/31/2015			Interest			CF Ranching -...	22.32	354.69
Deposit	06/30/2015			Interest			CF Ranching -...	21.64	376.33
Deposit	07/16/2015			Interest			CF Ranching -...	5.08	381.41
Total 1004 Interest Income								381.41	381.41

Conservation Force
Profit & Loss Detail
May 17, 2011 through May 17, 2016

Type	Date	Num	Name	Memo	Class	Clr	Split	Amount	Balance
1021 Three Amigos Donation									
Deposit	07/23/2012	8278	Heart of the Lone S...	Donation fro...	3 Amigo		CF Ranching -...	250.00	250.00
Deposit	07/23/2012	7398	Kyle Wildlife LP	Donation fro...	3 Amigo		CF Ranching -...	80.00	330.00
Total 1021 Three Amigos Donation								330.00	330.00
Total Income								201,905.41	201,905.41
Gross Profit								201,905.41	201,905.41
Expense									
2100 GENERAL & ADMINISTRATIVE									
5170 Bank Charge									
Check	01/31/2012			Service Char...			CF Ranching -...	15.00	15.00
Check	02/29/2012			Service Char...			CF Ranching -...	15.00	30.00
Check	03/31/2012			Service Char...			CF Ranching -...	15.00	45.00
Check	04/30/2012			Service Char...			CF Ranching -...	15.00	60.00
Check	05/31/2012			Service Char...			CF Ranching -...	15.00	75.00
Check	06/30/2012			Service Char...			CF Ranching -...	15.00	90.00
Check	07/31/2012			Service Char...			CF Ranching -...	15.00	105.00
Check	08/31/2012			Service Char...			CF Ranching -...	15.00	120.00
Check	09/30/2012			Service Char...			CF Ranching -...	15.00	135.00
Total 5170 Bank Charge								135.00	135.00
Total 2100 GENERAL & ADMINISTRATIVE								135.00	135.00
5489 Laos Elds Deer Project									
Check	04/30/2015	BAN...	WWF GREATER ...	Establishing ...			CF Ranching -...	10,000.00	10,000.00
Total 5489 Laos Elds Deer Project								10,000.00	10,000.00
5490 Sustainable Use Proj-prog									
Check	04/30/2015	BAN...	WWF GREATER ...	Int'l wiring fee			CF Ranching -...	40.00	40.00
Total 5490 Sustainable Use Proj-prog								40.00	40.00
5517 Ranching For Restoration									
Check	11/13/2013	BAN...	International Game ...	3 AMIGO'S P...			CF Ranching -...	2,540.00	2,540.00
Check	12/20/2013	BK W...	Friends of Wildlife	tHAILAND			CF Ranching -...	5,710.00	8,250.00
Check	01/31/2014	BK W...	LAO WILDLIFE CO...	LA0S ELD'S ...			CF Ranching -...	6,040.00	14,290.00
Check	02/18/2014	BKWI...	Faculty Of Forestry	Eld's Deer R...			CF Ranching -...	8,040.00	22,330.00
Check	10/15/2014	BK W...	International Game ...	1st Installme...			CF Ranching -...	12,000.00	34,330.00
Check	10/15/2014	BK W...	International Game ...	International ...			CF Ranching -...	40.00	34,370.00
Check	01/21/2015	BKWI...	International Game ...	Ariel survey ...			CF Ranching -...	25,000.00	59,370.00
Check	01/21/2015	BKWI...	International Game ...	International ...			CF Ranching -...	40.00	59,410.00
Deposit	04/02/2015	1504...	International Game ...	Refund of gr...	Ranchin...		CF Ranching -...	-21,396.18	38,013.82
Check	04/02/2015	ELCD...	Capital One	Cost of recei...			CF Ranching -...	15.00	38,028.82
Check	05/05/2015	BkWI...	Zoological Society ...	Addax Projec...			CF Ranching -...	16,881.00	54,909.82
Total 5517 Ranching For Restoration								54,909.82	54,909.82
Total Expense								65,084.82	65,084.82
Net Income								**136,820.59**	**136,820.59**

Ranching for Restoration - Sources and Uses Summary

SOURCES - CONTRIBUTIONS FROM RANCH PARTICIPANTS

2013	2014	2015	2016
$680.00	$16,043.50	$1,340.00	$700.00
$350.00	$900.00	$1,750.00	$3,500.00
$700.00	$3,600.00	$1,800.00	$1,935.00
$250.00	$2,750.00	$1,442.50	$7,500.00
$500.00	$300.00	$490.00	**$13,635.00**
$10.00	$500.00	$275.00	
$980.00	$250.00	$1,835.00	
$3,600.00	$1,500.00	$9,250.00	
$200.00	$4,500.00	$16,444.00	**$197,975.50**
$2,750.00	$450.00	$890.00	**2013-2016**
$80.00	$300.00	$200.00	**Total Donate**
$625.00	$400.00	$1,090.00	
$350.00	$5,150.00	$1,000.00	
$4,755.00	$27,095.00	$23.00	
$300.00	$550.00	**$37,829.50**	
$1,800.00	$290.00		
$13,450.00	$425.00		
$250.00	$250.00		
$450.00	$425.00		
$11,580.00	$2,450.00		
$2,070.00	$150.00		
$400.00	$1,650.00		
$10,272.50	$1,050.00		
$1,000.00	$9,590.00		
$775.00	$2,150.00		
$450.00	$250.00		
$435.00	$800.00		
$2,780.00	**$83,768.50**		
$900.00			
$62,742.50			

USES - CONTRIBUTIONS TO PRE-APPROVED IN-COUNTRY PROJECTS

YEAR	USE
2013	
$2,540.00	Conservation Review of the Dama Gazelle Workshop
$5,710.00	Myanmar Eld's Deer Project (Chattin Sanctuary)
$8,250.00	**2013 Total**
2014	
$6,040.00	Lao Eld's Deer Project (establishing baseline)
$8,040.00	Thailand Eld's Deer Project (re-introduction)
$12,000.00	Updating Sahelo-Saharan Antelope Action Plan
$26,080.00	**2014 Total**
2015	
$10,000.00	Lao Eld's Deer Project (establishing baseline)
$25,000.00	*Chad Aerial Survey for Dama Gazelle & Addax*
-$21,396.18	*Reversed because survey admin. moved to ZSL*
$16,881.00	Chad Aerial Survey for Dama Gazelle & Addax (ZSL)
$30,484.82	**2015 Total**
2016	
$23,792.00	Chad Aerial Survey for Dama Gazelle & Addax (ZSL)
$88,606.82	**2013-2016 Total Spend**

** The uses do not always include wiring and account fees, which are paid from RFR funds

DAMA GAZELLE SURVEY

THE MANGA REGION WESTERN CHAD

FEBRUARY 2015

By:

Tim Wacher, Darren Potgieter,

Mahamat Hassan, Satangar Dogringar,

Thomas Rabeil

CITATION: Wacher, T., Potgieter, D., Hassan, M., Dogringar, S., Rabeil, T. 2015. *Dama gazelle survey. The Manga region, Western Chad, February 2015.* Zoological Society of London, African Parks Network and Sahara Conservation Fund. iii + 28 pp.

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SPONSORS and PARTNERS

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Air Survey team
Darren Potgieter – Pilot (APN)
Tim Wacher – Recorder (ZSL)
Satangar Dogringar – observer (APN)
Mahamat Hassan Hatcha – observer (DCBPNC))

Ground survey Team
Thomas Rabeil (SCF)
Ahamat Hassane (DCBPNC)
Rocco Rava (SVS)
Paul Benecke (APN)

Logistics: African Parks Network managed logistics and fuel for the air survey. Rocco Ravà and his team from Société de Voyages Sahariens (SVS) managed the ground survey logistics.

CONTENTS

ACRONYMS

APN	African Parks Network
DCBPNC	Direction de la Conservation de la Biodiversité, des Parcs Nationaux et de la Chasse
EU	European Union
IGF	International Foundation for the Conservation of Wildlife
MAE	Ministère de l'Agriculture et de l'Environnement
NGO	Non-governmental organisation
O.	Ouadi ('wadi' in English)
OROAGR	Ouadi Rimé–Ouadi Achim Game Reserve
PAM	Programme Alimentaire Mondiale – World Food Program.
RFOROA	Réserve de Faune de l'Ouadi Rimé-Ouadi Achim
SCF	Sahara Conservation Fund
SSIG	Sahelo-Saharan Interest Group
SVS	*Société de Voyages Sahariens*
TLU	Tropical livestock units
ZSL	Zoological Society of London

SUMMARY

This report summarises results of a combined aerial and ground survey of dama gazelle habitats in the Manga region (Kanem) of western Chad.

The survey was funded through Conservation Force with input from African Parks Network and Sahara Conservation Fund. It was carried out by a combined team from Direction de la Conservation de la Biodiversité, des Parcs Nationaux et de la Chasse (DCBPNC), Chad, Africa Parks Network (Zakouma), Sahara Conservation Fund and the Zoological Society of London.

The survey was undertaken to establish whether the largest known area of occupancy in which dama gazelle (IUCN Critically Endangered) have been found in recent years corresponded to a significant population.

The aerial team used standard aerial strip count methodology to record wildlife and livestock in just under 6% of a 12800km^2 survey zone, augmented by extensive free searching of zones where dama signs were reported. The ground team used SCF's standard reconnaissance and line transect methods. Regular coordination between the two teams through satellite phone, enabled exchange of information on dama location and well sites.

Only four dama were found in two groups, both at the northern limit of suitable habitat in areas least frequented by livestock. Two adult females, one 6-12 month calf and one adult male were observed. No sightings were made where additional fresh tracks were observed by the ground team in the extreme east of the survey zone.

No dama were found in the Manga habitat, where 17 animals in several widespread groups were seen in a 2001 ground survey. The groups that were found in the Acacia-Panicum habitat in 2015 were in essentially the same locations as found in a ground survey in 2014. There was no evidence that a larger population is dispersed through the greater survey zone.

The aerial survey estimate of just under 3000 dorcas in the survey is likely to be an underestimate, since comparison of aerial and ground survey methods indicated potential undercounting bias from the air for dorcas gazelles. There was no evidence of undercounting bias in the estimate of some 30,000 camels in the survey zone.

The survey results are disappointing for dama gazelle, since the only discernible trend across the sequence of surveys in the Manga region, 2001 to date, appears to be downward (from 'very low' to 'extremely low' numbers). The Manga region holds one of only five known remaining sub-populations of dama (RZSS & IUCN 2014), and although it is the largest in area of extent, it is now known that it may be close to extirpation.

At the same time the exercise has been useful in removing a significant 'unknown' (whether the large area of extent indicated a significant but 'hidden' population that was being missed in slow moving ground surveys) and has clarified options for future conservation of the species in Chad.

Because the Manga area is remote and difficult to access, with no formal protected status, it is recommended that this population does not merit a major conservation initiative at this

stage. But action to increase sensitisation and awareness of the national law on dama & wildlife conservation among all levels of local authority operating around the Manga area should be taken and a flow of information on the status of this remnant group be maintained. An EU supported project being implemented by SCF can provide a mechanism to help achieve this.

But in the light of these results the clear indication from this survey and previous work by SCF, DCBPNC and other partners, is that the dama gazelle is at high risk of extinction in Chad and throughout its remaining range.

Accordingly it is also recommended:

1) That a national strategy for dama conservation in Chad is created.

2) The strategy should include assessment of the option to re-inforce the small population living in the Ouadi Rimé-Ouadi Achim Game Reserve, primarily using captive descendents of dama originally caught in the Ouadi Hawach sector of Ouadi-Rime Ouadi Achim Game Reserve. These are available in zoos, private collections and ranches, particularly in the US and Gulf region. It is noted that the scimitar-horned oryx re-introduction project infrastructure and process currently underway in Chad can provide an excellent framework to achieve this. A detailed review to identify the exact stocks to use for such an effort should be incorporated.

2) The strategy should also ensure that the potential for dama re-introduction to the Ennedi region is assessed in the context of the Ennedi management plan currently being developed by African Parks Network. The existing tourism infrastructure and proposed management plan for Ennedi region offers potential to incorporate and manage such a project for the benefit of the local region, and to provide a second 'pole' of dama conservation within the country, complementing the proposed initiative for dama at OROA.

INTRODUCTION

The dama gazelle is one of four African antelopes currently classified as Critically Endangered by the IUCN Red list system (IUCN 2014). Formerly found from Morocco to central Sudan, a detailed review of the current status of dama indicates that in the last 10 years this striking species has only been recorded in the wild in small numbers in five widely scattered locations (RZSS & IUCN-ASG 2014). The Sahara Conservation Fund and Zoological Society of London have been actively collecting systematic information on the status of these populations in the field. Encounter rates in all five populations are so low that scientific estimates of population sizes have been mainly impossible to obtain. The most intensively monitored population at Termit Massif in Niger, is believed to number no more than 20-50 animals restricted to an area of less than 1000km^2.

The Manga region of western Chad and the adjacent plains to the east of the Manga's fixed dunes is the region in which dama have been found over the largest area in these studies, c. 10,000km^2, Map.1. This has been established by direct observation of animals together with records of tracks and faecal pellets. Faecal pellet identification has been verified by subsequent DNA analysis from samples (Senn et al. 2014).

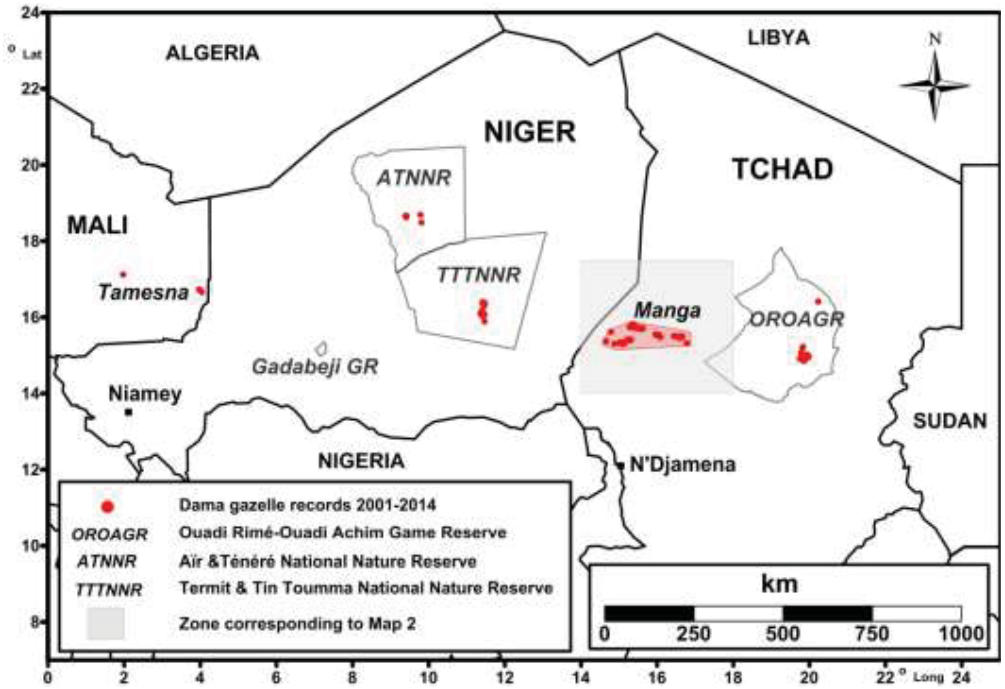
The Manga region is not protected and is widely inhabited by nomads and their livestock (mainly camels and small stock) using a network of wells. Recent social and economic changes have also led to an increased level of trading and transport activity along a major north-south route running between the fixed dunes and the Acacia-Panicum plains. But in general the area is difficult to access and while an open landscape, is slow to travel over on the ground, largely due to the dune slopes, sandy substrate, and numerous small sand hillocks built up against Panicum and other plant tussocks. This has been considered a contributory factor in the persistence of dama there.

In view of the large area over which dama have been recorded in and around the Chadian Manga (5 - 6 x greater than other sites) and the location of the Manga midway between the small dama populations at Termit and Ouadi-Rimé-Ouadi Achim, the region has been identified as a priority site for aerial survey (RZSS & IUCN-ASG 2014). This document reports results of a combined aerial and ground survey conducted in the Manga in February 2015. The survey was achieved through close collaboration between conservation agencies working in Chad (DCBPNC, APN, SCF and ZSL). Core funding was based on a grant administered by the US NGO 'Conservation Force' arising from taxation on desert ungulate ownership in the US, with significant contributions from African Parks Network and Sahara Conservation Fund.

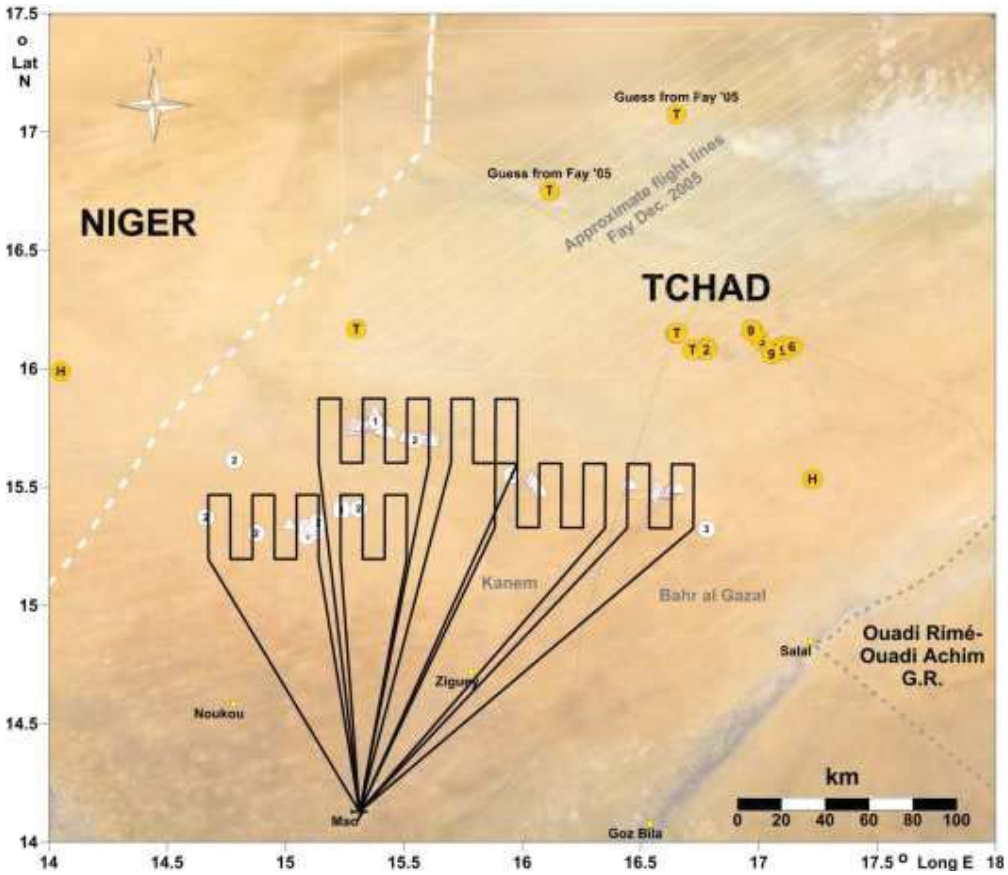
METHODS

The survey was organised into an aerial sample survey using a team comprised of DNPNRFC/APN and ZSL staff, while a simultaneous and coordinated ground survey was conducted by a team of DCBPNC and SCF staff.

Air Survey: The air survey team was based at Mao town in the administrative district of Kanem, using the 1700m asphalt airstrip, Map 2. The air survey objective was to complete a



Map 1. Distribution of all dama gazelle observations recorded by the Sahara Conservation Fund since 2001, with the relatively large area of extent in the Manga



Map 2. Proposed transect survey routes in relation to all dama gazelle observations (white points) and all addax records (orange points) from the region since 2001.

sample transect survey using a 600m fixed strip width across two principle habitats, the fixed dunes of the Manga and the Acacia-Panicum plains to the east. The survey area was centred on locations where dama had been detected by ground surveys in previous years (Monfort, Newby et al. 2004; Wacher & Newby 2010; Newby, Wacher & Hassan, 2014). The survey zone includes parts of Kanem and Bahr al Gazal districts.

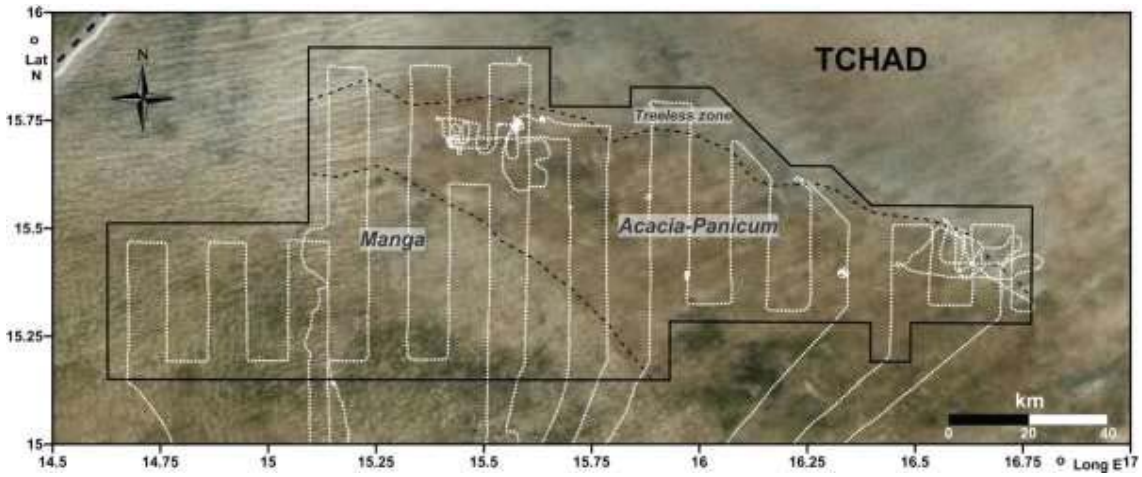
Air survey methods closely followed standard procedures for sample strip counts (Norton-Griffiths 1978). The air survey team consisted of pilot, recorder and two rear seat observers. A four-seat Cessna Skylane 182 operated by African Parks was rigged with metal rods projecting back c. 1m from custom made attachment pods on the wing struts, positioned relative to individual eye height for each rear seat observer to indicate the outer limit of a 300m strip width on the ground when flying at 90m altitude (Norton-Griffiths 1978 & Annex II).

A Garmin GPSMAP 296 was used for navigation, displaying prepared parallel transect routes at 10km intervals, organised into 8 contiguous survey blocks. Planned routes are shown in Map 2 and the realised final survey routes in Map 3. Altitude was managed by laser altimeter aiming for a sustained height of 90m during transect recording. Observers called all observations of wildlife at all times, using the wing strut rods to classify them as inside or outside the sample strip. On transects observers also called all sightings of livestock within the 300m strip, and records were taken of nomad camps and well sightings. The recorder entered all observations into a custom made android GPS data capture application (Wildlife Survey ©Darren Potgieter) on a tablet computer for subsequent download. Two short test flights on 12th February 2015 were used to familiarise the team with observation conditions and methods. The formal transect flying was completed over 6 mornings between 13th to 19th February. In response to information received from the ground team, time was also allocated to free searching for dama gazelles from the air on some days.

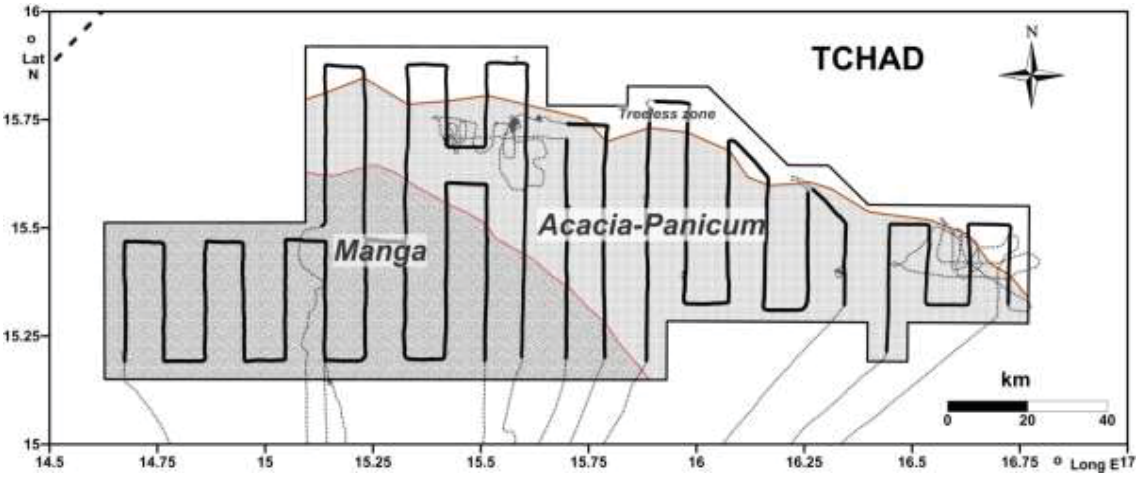
Ground survey: The ground survey team consisted of two vehicles. The observation team consisting of one driver- observer, one recorder-observer and one observer in the lead vehicle. The ground survey objective was to duplicate part of the transect survey route of the air survey to provide a comparative data set on wildlife and livestock sightings (particularly dorcas gazelle and camels), investigate and follow up leads on possible dama information obtained from local nomads and supply up to date information to the air survey team. Following standard SCF protocols all wildlife observations were entered into a prepared Cybertracker sequence (www.Cybertracker.org). On transect sectors data were collected in line transect (Distance sampling) format. Daily meteorological records were stored at 3 hour intervals on a Kestrel hand held weather station (Annex I). Opportunistic camera trapping was conducted at overnight stops. (Annex V).

Co-ordination between ground and air survey team: Daily satellite telephone contact between the two teams enabled the ground team to update the air team on ground conditions and information on presence and location of dama signs. The latter proved crucial to finding dama. The air team was also able to forward locations of well sites and water, allowing the ground team to travel more efficiently towards areas of interest for dama detection.

Analysis: The aerial sample survey block was stratified into two principle habitat zones, representing the fixed vegetated dunes of the Manga and the Acacia-Panicum plains to the east of the Manga (Map 4). A third stratum, the 'treeless zone' represented a relatively small area at the northern fringe of the main survey zone. Aerial transect data were allocated to habitat strata and analysed using Jolly method for unequal transect lengths (Norton-Griffiths 1978 & Annex III). Ground survey data from transect sectors was analysed using the software Distance 6.0 (Thomas, Laake et al. 2009 & Annex IV).



Map 3. Survey zone (polygon)and all aerial survey routes overlaid on Google earth imagery of local habitats, western central Tchad. .



Map 4. Survey zone and survey transects overlaid on habitat strata: the Manga fixed dunes, the *Acacia-Panicum* plains and the ' treeless zone. Limits determined from a combination of satellite imagery (see Map 3) and ground truth experience. Aerial transects shown in bold black lines. Approach and departure routes, and free aerial search movements over areas where the ground team reported dama tracks, shown in pale grey lines.

RESULTS

Results for all livestock and larger wildlife sightings during strip transect flying are given with analysis of associated population estimates for each survey stratum in Annex III. Results of line transect ground survey analysis for dorcas and camel population estimates from distance sampling are given in Annex IV.

Results for individual species are summarised below.

ENVIRONMENTAL CONDITIONS

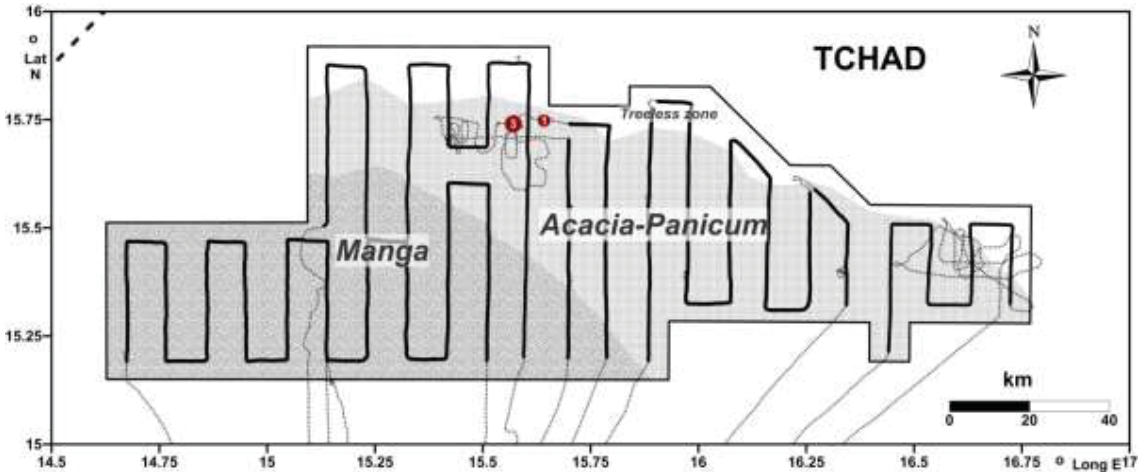
The survey took place in the mid dry season period. Weather records kept by the ground team are shown in Annex I.

- Wind speeds (mostly below 20km/hr before 9am) and visibility (mostly >5km with light haze) were both favorable throughout the survey period, with north-easterly airflow typical of the season.
- Humidity was low and vegetation notably dry. The ground team scored the grazing layer vegetation as <10% green at 66% of thirty-eight 5km recording stations.
- Appearance of the landscape in the three major strata is shown in Plate 1-4 and generally dry vegetation conditions are apparent in all the Plates .
- No natural surface water was observed by either survey team in the survey zone.

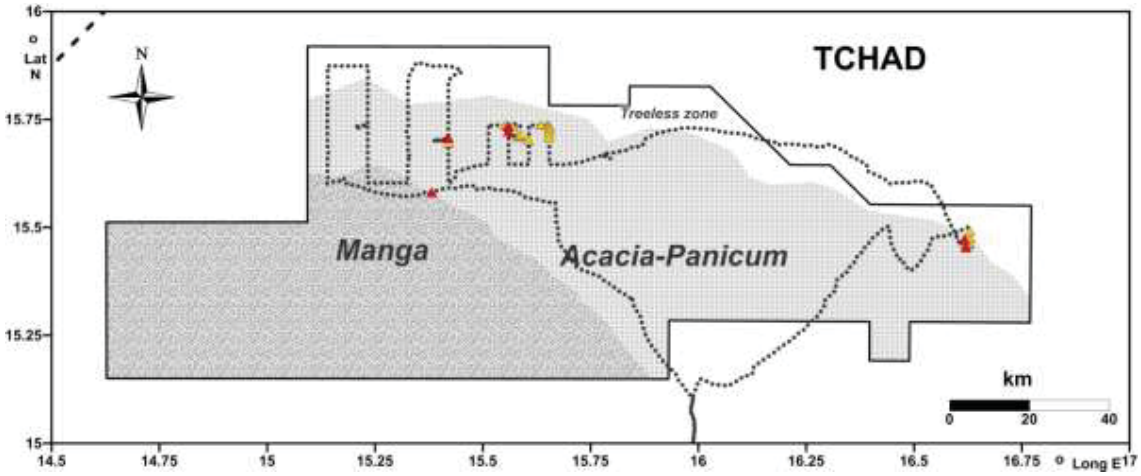
1) Dama gazelle *Nanger dama*

- No dama were seen while flying transects.
- Free searching from the air, in combination with information relayed by the ground team on location of fresh track sightings, resulted in discovery of two groups of dama on 16th February. Map 5 and Plate 3.
- All additional data on dama tracks and signs made on the ground are summarised in Map 6.
- Combined dama information from 2015 is compared with results in 2014 and 2001-2010 in Map 7.
- A group of three individuals consisted of one adult female accompanied by a younger adult female and young of year were observed towards the northern limit of the Acacia-Panicum habitat. The ground team were about 1.8 km distant to the south of the dama at the time. From the air the dama were observed moving away from the ground team in a north-easterly direction, using a mixture of walking and trotting gaits. They did not appear unduly alarmed by the presence of the aircraft, which circled them 5 or 6 times. At one point the dama were observed to stop and browse from a *Maerua crassifolia* shrub. They appeared to be aware of the ground team behind them, stopped to look in that direction and moved consistently away from them. In the course of observation they were seen to cross one of the main tracks used by heavy transport travelling north to Niger and Libya. They were thus in a very exposed position.
- A single adult male was found 6km to the east of the first group, apparently moving in a parallel direction. Like the females this individual appeared relatively calm in the presence of the aircraft. Although seen to run for one or two short bursts, this animal also stood to watch several passes by the aircraft. Like the others, he was located close to the lorry track and moving north towards the treeless zone.

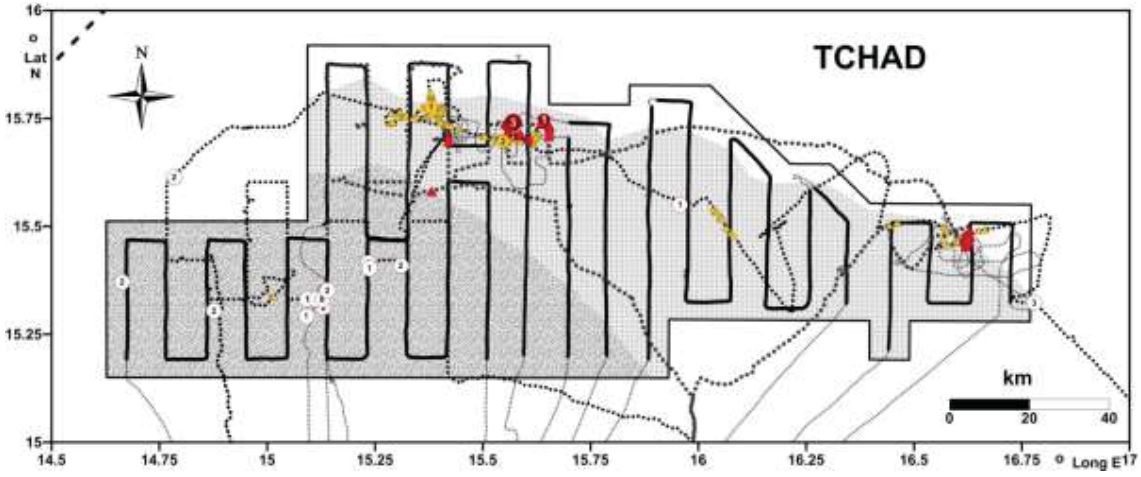
- On the ground fresh tracks of dama gazelle were frequently seen to indicate movements from shrub to shrub of *Leptadenia pyrotechnica.*
- A relatively fresh skull of a middle aged (adult dentition not heavily worn) female dama was found, with no associated skeleton, close to one of the main bush tracks in regular use by commercial and military vehicles.
- Besides direct observation of frequent heavy trucks travelling through the area in use by dama, the ground team recorded presence of military and police officials at check points intended to regulate this developing traffic.



Map 5. Location where two groups of dama gazelle were seen from the air, February 2015. Sightings made while free searching over an area where fresh tracks were reported by the ground survey team.



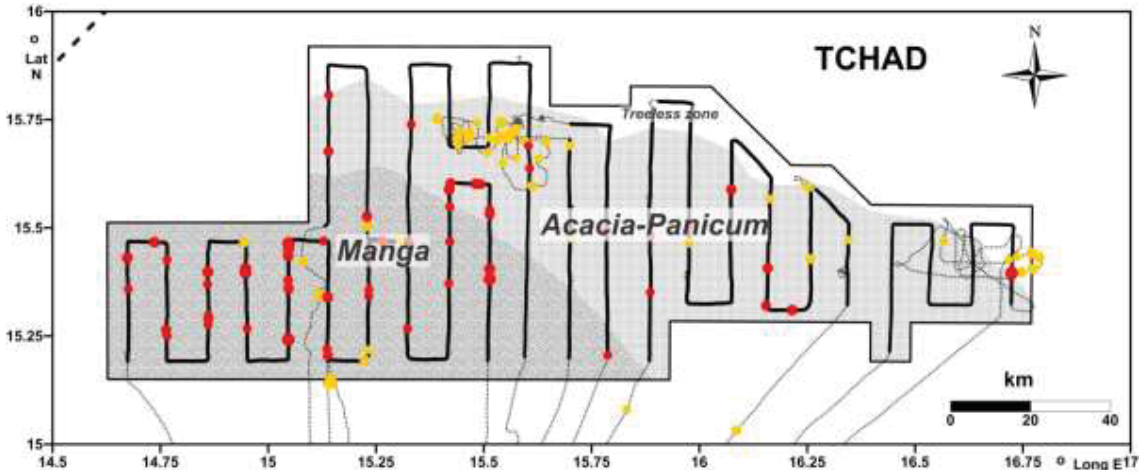
Map 6. Location of all tracks and signs of dama gazelle seen along survey route by the ground survey team, February 2015. Sites of dung sample collections (n=6) shown in red.



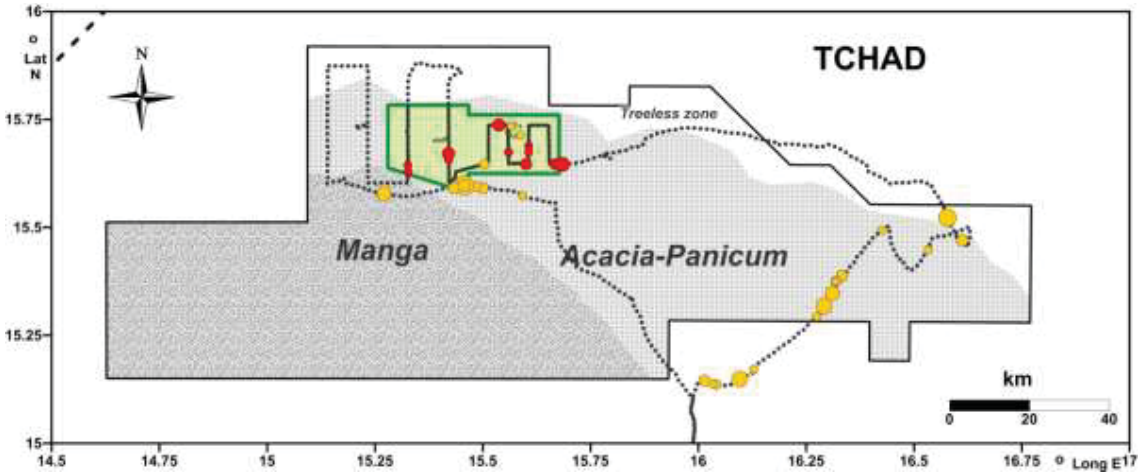
Map 7. All dama locations in 2015 (red) compared to 2014 (yellow), with all ground and air search routes in 2014 & 2015 indicated. All direct observations of live dama 2001-2010 also shown (white).

2) Dorcas gazelle *Gazella dorcas*

- A total of 330 dorcas gazelles were counted in 133 groups during all flying. This includes all animals seen *en route* to the sample zone, animals seen during free searching and all animals seen inside and outside the transect bandwidth during transect flying.
- A subset of 178 gazelles in 64 groups were recorded inside the 300m strip widths during transect flying. Map 8.
- Dorcas density recorded from the aerial survey was 0.5 / km^2 in the Manga and at 0.13 / km^2 in the Acacia-Panicum plains, Table 1. Statistical confidence in the estimates was very low (c.v. >50%). Full analysis is shown in Annex 1.
- The ground team observed 103 dorcas in 41 groups during all reconnaissance and transect work Map 9.
- Conditions on the ground transect survey proved harsh. No gazelles were seen on the first two (most westerly) transects where proportionately more sand and very little tree cover was available (compare westernmost transects in Map 6 with habitat in Map 3). Analysis of ground transect work was consequently limited to the 6 easterly transects.
- A subset of 21 dorcas in 11 groups was encountered in the resulting transect survey. Their location and the restricted sample zone in the Acacia-Panicum habitat are shown in Map 9.
- Because 11 groups is too few for reliable application of line transect methods, the data were analysed as a separate stratum in Distance 6.0 using 2014 observations combined with 2015 observations to create a global detection function based on 83 observations.
- This provided a ground based dorcas density estimate of 0.67 / km^2 for the Acacia-Panicum ground survey zone in 2015. (see Map 9).
- Dorcas density estimates for the Acacia-Panicum habitat are compared between years using line transect methods in 2014 & 2015 and within the same year using line transect and aerial survey methods in Table 1 and Fig. 1.
- Results show that ground surveys using the same methodology in 2014 & 2015 returned similar results. Comparison of these results with a significantly lower density estimate obtained from the air survey implies that the aerial survey result may be affected by undercounting bias. Dorcas are the smallest and most cryptic species recorded on this survey, particularly when lying down and do not necessarily stand up when overflown (Plate 4), so undercounting, especially with the relatively wide strip width used to search for the much more obvious dama, would not be surprising.



Map 8. Distribution of all aerial dorcas observations in the survey zone; red points shows groups seen inside the transect strip and contributing to population estimate; orange shows groups seen outside transect strip count limits.



Map 9. Distribution of all ground-based dorcas observations in the survey zone; red points shows groups seen during line transect recordings used in population density estimate for transect survey zone (green); orange shows all other groups. Dotted line shows vehicle route. .

Date	Method	Density / km2 +/- 95% C.I.
Feb 2014	Ground survey line transect (Distance6) Truncated @400m	0.9 (0.4-1.9)
Feb 2015	Ground survey line transect(Distance6) Truncated @400m	0.67 (0.32-1.4)
Feb 2015	Aerial survey strip transect (300m x2)	0.13 (0.03-0.23)

Table 1. Methods and results for dorcas density estimates in the *Acacia-Panicum* habitat, 2014-2015.

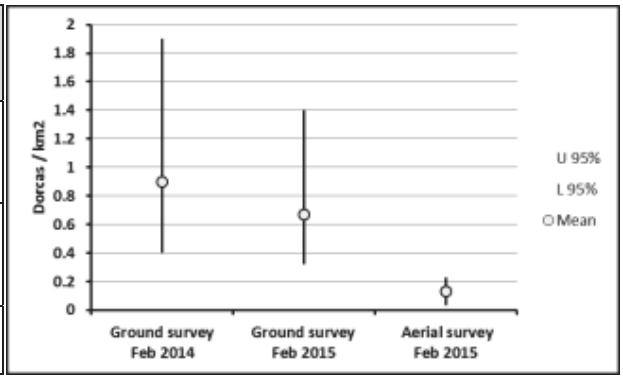


Fig. 1. Comparison of dorcas density estimates in the *Acacia-Panicum* habitat; see also Table 1.

3) Camels and livestock

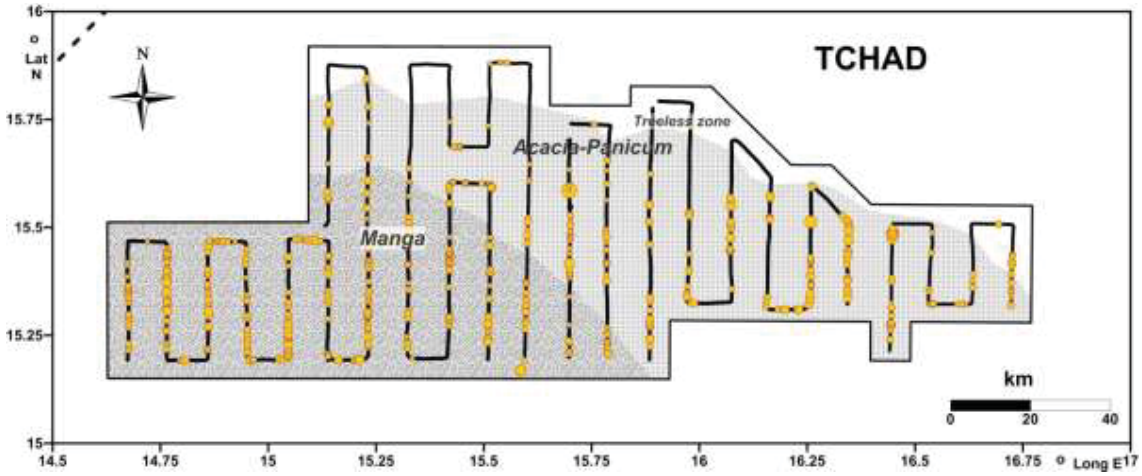
A summary of all livestock numbers seen on transect flights is given in Table 2. The distribution of all camel locations is shown in Map 10.

Table 2. Total livestock counted within the aerial survey strips.

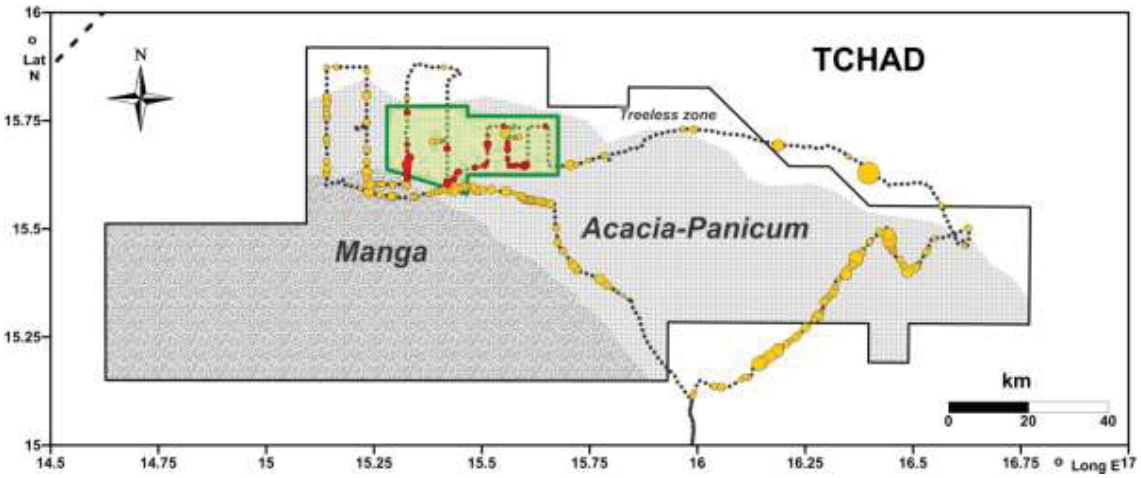
	Camels	Cattle	Donkey	Horse	Small stock
Manga	936	41	303	27	1186
Acacia-Panicum	926	-	82	-	75
Treeless zone	48				

- These figures translate to a combined density of just over 8 head of livestock / km^2 in the Manga and nearly 3 head of livestock /km^2 , in the *Acacia-Panicum* grasslands.
- Camel densities are slightly higher in the Manga, but the much greater presence of small stock and donkeys in the Manga were the main factors in this difference.
- Full analysis is shown in Annex II indicating nearly 16,000 (+/- 20%) camels in the Manga and nearly 14,000 (+/- 40%) camels in the Acacia-Panicum system. .
- After conversion of livestock and gazelle densities (Annex II) to livestock units (FAO, http: //www.fao.org/ag/againfo/programmes/en/lead/toolbox/Mixed1/TLU.htm) the results indicate that around 99% of all energy flow through grazing herbivores in the combined Manga & Acacia-Panicum system is under control of people.

- The ground team observed 1706 camels in 169 groups during all reconnaissance and transect work Map 11.
- A subset of 149 camels in 32 groups were recorded from transect routes in the transect survey zone (Map 11). These data were analysed as a separate stratum in Distance 6.0 using 2014 camel observations combined with 2015 observations. The resulting global detection function is based on 191 observations.
- This provided a ground based line transect estimate of camel density of 2.7 / km^2 for the Acacia-Panicum ground survey zone in 2015.
- Camel density estimates for the Acacia-Panicum habitat are compared between years using line transect methods in 2014 & 2015 and within the same year using line transect and aerial survey methods in Table 3 and Fig.2.
- Results show a good correspondence between aerial and ground survey results for comparatively easily visible camels.



Map 10. Distribution of all aerial camel observations in the survey zone; .



Map 11. Distribution of all ground based camel observations. Red points shows groups seen during line transect recordings used in population density estimate for transect survey zone (green); orange shows all other groups. Dotted line shows vehicle route.

Date	Method	Density / km2 +/- 95% C.I.
Feb 2014	Ground survey line transect (Distance6) Truncated @400m	3.9 (2.2-7.0)
Feb 2015	Ground survey line transect(Distance6) Truncated @400m	2.7 (1.7-4.5)
Feb 2015	Aerial survey strip transect (300m x2)	2.3 (1.8-2.7)

Table 3. Methods and results for camel density estimates in the *Acacia-Panicum* habitat, 2014-2015.

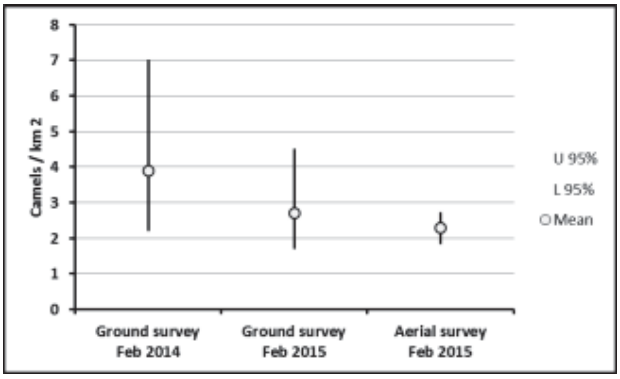
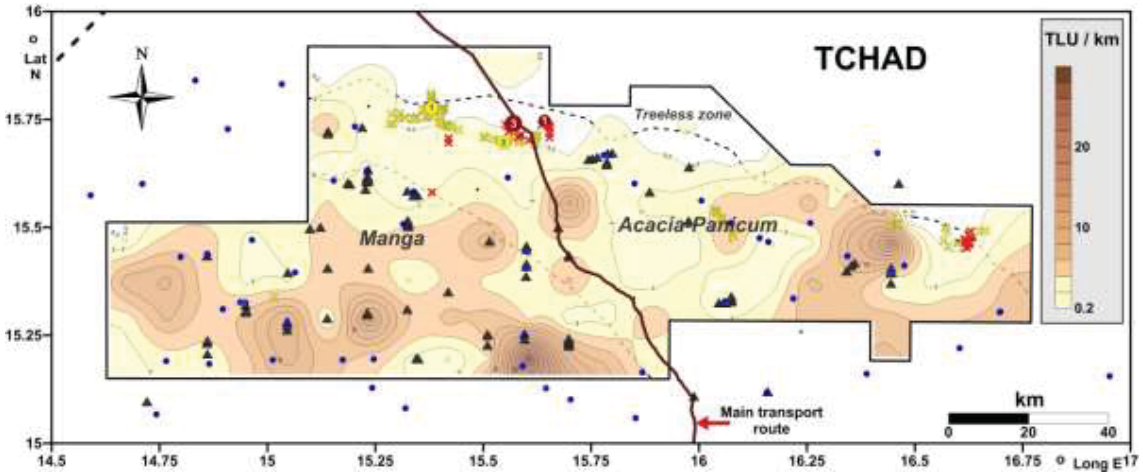


Fig. 2. Comparison of camel density estimates in the *Acacia-Panicum* habitat; see also Table 3.

DISTRIBUTION OF DAMA, LIVESTOCK AND NOMADS

The distribution of critically endangered dama gazelles in the Manga region is examined in relation to the distribution of livestock and human activity in Map 12.

- Although seen several times in the Manga in 2001 & 2010, only local reports and some old tracks were recorded in 2014 and no dama were seen in the Manga dune system from the air in this survey.
- After searching the area widely, the only locations where dama have been detected in 2015 lie at the northern limit of the vegetated habitats on the Acacia-Panicum plains.
- The places where dama were found co-incides with parts of the northern limit of wooded grassland habitat where livestock and human presence were minimal.
- The places where dama were found in 2014 and 2015 were essentially the same.
- Habitat to the north of this limit is effectively treeless and rapidly becomes fully Saharan.
- Map 12 illustrates the way dama gazelles in this area are marginalised to the limits of their preferred habitat.



Map 12. Location of dama gazelles in Feb. 2015 (red symbols) and Feb. 2014 (yellow symbols) in relation to livestock distribution, livestock camps and principal commercial transport route north; February 2015. Circular symbols indicate dama sightings and group size; crosses indicate dama tracks and signs recorded by ground teams. Contours derived by converting mixed species livestock counts to total tropical livestock units summed along each 5km sector of aerial transect survey route, assigning the resulting observation rate to the centre point of the sector and interpolating using Kriging. Blue points indicate known wells, and black triangles indicate all nomad encampments observed in February 2015.

CONCLUSIONS & RECOMMENDATIONS

The survey methodology has provided a detailed overview of the distribution and status of dama gazelle in relation to livestock and human activity in the Manga and nearby grasslands of western Chad.

- Disappointingly the evidence suggests that the large area of extent over which dama have been recorded in this zone does not indicate a relatively large population.
- The survey has provided further illustration of the way dama appear to be avoiding areas of increased livestock density and human activity and results suggest that the population is fragmented and at risk from increasing human activity.
- Coordinated aerial and ground survey proved effective in locating a very rare target species
- Comparison of ground and aerial survey results provided valuable evidence that aerial survey, in the configuration used, was missing a significant proportion of comparatively small and cryptic dorcas gazelles, but both methods provided similar results for more easily observed camels. Modifications such as a narrower strip width and smaller survey zone may be implicated for aerial dorcas survey in future.
- The impact of this effect on dama observation could not be directly assessed, but it is clear that the contrasting white and dark colouring of the dama was much more easily visible than dorcas (Plate 3 & 4). Whilst some may have been missed it is not likely this happened frequently enough to alter the essential result.
- Local nomads indicated a strong awareness of the dama, providing reliable information on their whereabouts and consistently remarking on the negative trend in their numbers.
- The increasing presence of commercial traffic presents a particular risk. Comments are provided below on steps needed to address this.
- Strategically the Manga area is extremely difficult to patrol and monitor. Nevertheless steps to re-inforce sensitisation and enforcement of national wildlife law at all levels of authority in the local towns and communities, including the security agencies charged with monitoring the main commercial traffic route, are necessary steps to protect the dama gazelle in western Chad. The trans-border conservation project being planned under EU funding and managed by the Sahara Conservation Fund will provide resources and a mechanism to help achieve this in the near future.

Chad is a key nation for the conservation of dama gazelle in the wild. Results of the survey underscore the opportunity to develop a national approach to dama conservation. In addition to promoting awareness in the Manga area as recommended above, the principle actions should be taken where infrastructure and management opportunities are better developed. Specific measures recommended are:

- Develop a program to re-inforce the very small remnant population the Ouadi Rimé-Ouadi Achim Game reserve, using captive bred animals (suitable stock are available from a range of zoos, ranches and private collections, particularly in the US and Gulf regions) and the infra-structure being developed for scimitar-horned oryx re-introduction.
- Explore opportunities for future re-introduction of dama gazelle to the Ennedi within the management program currently being developed by African Parks Network for that region.

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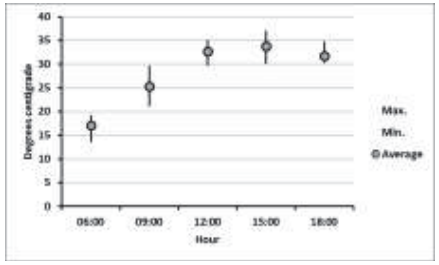
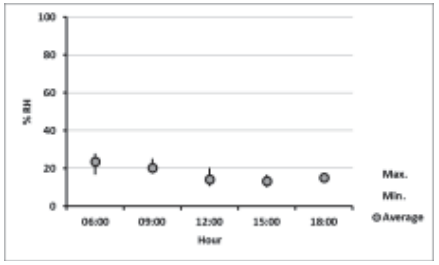
ANNEX I Meteorological records:

Date	Time	Latitude	Longitude	Temperature oC	Humidity %	Wind speed av. (km/hr)	Wind speed max. (km/hr)	Wind direction	Visibility	CLOUD STATUS
12/02/2015	06:11:11	14.4301362	15.7034972	17.5	25.2	13.7	15.1	NE (35-56)	> 1 km < 5 km	Low Stratus
12/02/2015	09:01:20	14.7660937	15.9585779	24.5	17.2	17.6	23.4	NE (35-56)	> 1 km < 5 km	No cloud
12/02/2015	12:05:02	15.3255215	15.8485861	31.5	10.7	21.6	28.8	ENE (57-78)	> 1 km < 5 km	No cloud
12/02/2015	15:03:01	15.4725073	15.6749718	30	10	19.1	25.6	ENE (57-78)	> 1 km < 5 km	No cloud
13/02/2015	06:03:11	15.5876253	15.4868382	13.6	20.3	3.2	5.8	ENE (57-78)	> 5 km (some haze)	No cloud
13/02/2015	09:00:34	15.5825367	15.3838164	21.1	17.5	14	18.7	ENE (57-78)	> 5 km (some haze)	No cloud
13/02/2015	12:14:20	15.6712438	15.1413211	30	12.3	19.4	25.6	NE (35-56)	> 1 km < 5 km	
13/02/2015	15:00:29	15.7719832	15.1405683	32.1	13.2	18.4	24.8	NE (35-56)	> 5 km (some haze)	No cloud
13/02/2015	17:41:32	15.7804173	15.2337818	30.3	14	11.9	15.5	NE (35-56)	Bright and clear	No cloud
14/02/2015	06:02:29	15.7804243	15.2338606	15.8	23.9			No wind	Bright and clear	No cloud
14/02/2015	09:00:49	15.7367954	15.2257896	26.5	17.4	5	6.1	East (79-101)	> 5 km (some haze)	No cloud
14/02/2015	12:38:25	15.6672747	15.3324154	34.7	13.5	14	15.8	East (79-101)	> 5 km (some haze)	No cloud
14/02/2015	14:59:50	15.7219642	15.3236058	37	13.3	5	8.6	East (79-101)	> 5 km (some haze)	No cloud
14/02/2015	17:51:24	15.8598598	15.4507857	34.7	13.9	0.4	2.2	East (79-101)	> 5 km (some haze)	No cloud
15/02/2015	05:59:50	15.8597338	15.4506134	17.4	27.9			No wind	> 5 km (some haze)	No cloud
15/02/2015	09:02:32	15.7490096	15.4200928	29.7	18.7	4.3	5.8	SE (124-146)	> 5 km (some haze)	No cloud
15/02/2015	12:00:01	15.6293483	15.4198741	35.1	13.7	14.8	21.6	NNE (12-34)	> 1 km < 5 km	No cloud
15/02/2015	15:11:46	15.6473429	15.5125514	37	13	5.4	10.4	North (349-11)	> 1 km < 5 km	No cloud
15/02/2015	17:51:53	15.7128842	15.5892066	33.5	14.1	4.3	5.4	NW (304-326)	> 5 km (some haze)	No cloud
16/02/2015	06:04:36	15.7128289	15.589265	18.9	24.5	1.8	3.2	NW (304-326)	> 5 km (some haze)	No cloud
16/02/2015	09:18:21	15.7356196	15.5595736	27	23.8	9	12.2	NE (35-56)	> 5 km (some haze)	No cloud
16/02/2015	12:04:52	15.6918713	15.6068357	33.9	15.9	5.4	7.9	NE (35-56)	> 5 km (some haze)	No cloud
16/02/2015	15:01:07	15.7366314	15.6366699	37.1	13.7	5	7.2	S W (214-236)	> 5 km (some haze)	
16/02/2015	18:31:22	15.6613301	15.7947658	31	16.4	4	5.4	NW (304-326)	> 5 km (some haze)	No cloud
17/02/2015	06:01:52	15.6616259	15.7948176	19.3	22.3	6.5	8.3	North (349-11)	> 1 km < 5 km	No cloud

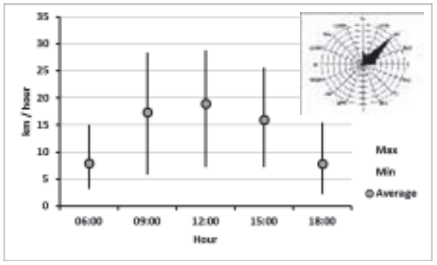
Date	Time	Latitude	Longitude	Temperature oC	Humidity %	Wind speed av. (km/hr)	Wind speed max. (km/hr)	Wind direction	Visibility	CLOUD STATUS
17/02/2015	09:00:11	15.687176	15.86029	24.1	20.2	22.3	28.4	North (349-11)	> 5 km (some haze)	No cloud
17/02/2015	13:19:36	15.6927561	16.3018489	32.8	13.1	21.2	28.4	NNE (12-34)	> 1 km < 5 km	No cloud
17/02/2015	14:52:34	15.6542307	16.3745297	31	12.8	21.2	23.4	North (349-11)	> 1 km < 5 km	No cloud
18/02/2015	05:59:15	15.4696001	16.5999712	15	16.6	2.9	5.4	North (349-11)	> 5 km (some haze)	No cloud
18/02/2015	09:00:02	15.4815177	16.6294355	24	25.2	13.7	16.6	NE (35-56)	> 5 km (some haze)	No cloud
18/02/2015	12:00:50	15.4261555	16.4647471	29.7	20.3	6.1	7.2	NE (35-56)	> 5 km (some haze)	No cloud
18/02/2015	15:01:41	15.5024157	16.4429095	31.5	16.8	7.9	10.4	NE (35-56)	> 5 km (some haze)	Low Stratus
18/02/2015	18:04:17	15.2583934	16.2362294	30.3	16.3	6.5	9.4	NE (35-56)	> 5 km (some haze)	Low Stratus
19/02/2015	06:04:49	15.2582758	16.2363073	19.2	27.8	6.1	9.7	NE (35-56)	> 5 km (some haze)	6-25 % cloud; Low Stratus
19/02/2015	09:01:32	15.1350085	16.0733774	25.7	22.4	22	27.7	ENE (57-78)	> 5 km (some haze)	6-25 % cloud; Low Stratus
19/02/2015	12:20:30	14.5791623	15.7802761	33.4	15.5	9	16.6	NE (35-56)	> 5 km (some haze)	51 - 75 % cloud; Low Stratocumulus
19/02/2015	15:00:45	14.2816564	15.5389537	34.1	14.3	14.4	17.3	NNE (12-34)	> 5 km (some haze)	26 - 50 % cloud; Low Stratus
19/02/2015	18:00:49	14.1131712	15.3153009	30.9	16.4	4	9.4	NE (35-56)	> 1 km < 5 km	6-25 % cloud; Low Stratus



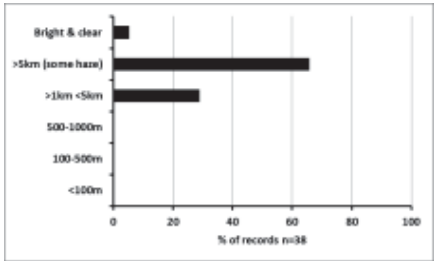
Daily temperature range



Daily humidity range



Wind speed and direction



Visibility scores

ANNEX II AIRCRAFT SET UP FOR STRIP COUNT SURVEY

Aircraft set up and strip width management was based on Norton-Griffiths 1978. Strip width markers are set on the wing struts by aligning them with each observers eye position in the aircraft (h) and a marker set out on the ground at a distance from the aircraft (w) determined by the expected flight altitude (H)and required strip width (W). Fig. 1 & 2.

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Fig. 1. Mahamat Hassan Hatcha (DCBPNC) and Darren Potgieter (APN), adjusting wing strut marker for observer Satangar Dogringar (APN).

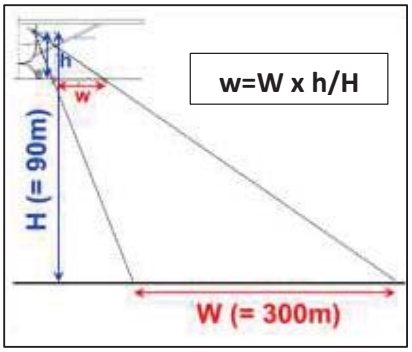


Fig. 2. Measurements used for wing strut marker positioning.

During transect counting actual altitude is recorded at regular intervals (Fig. 3) to obtain an average realised altitude for each stratum. Actual effective strip width is derived by substituting actual mean altitude (H) into the rearranged formula **W = H x w/h** Table 1.

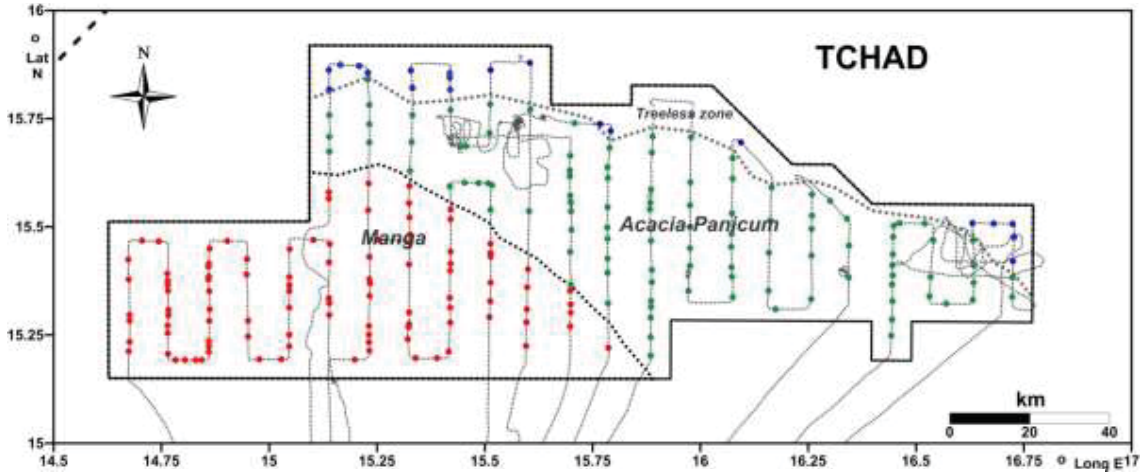


Fig. 3. Location of all spot height measurements made during transect flying over three habitat strata.

Table 1. Corrected sample strip widths based on realised average altitude.

	Observer	Mean Alt. (H)	Eye ht. (h)	w	Effective W (m)	
AP	Mahamat	95.7	1.41	4.7	319	638
	Satangar	95.7	1.47	4.9	319	
Manga	Mahamat	96.4	1.41	4.7	321	643
	Satangar	96.4	1.47	4.9	321	
TZ	Mahamat	91.6	1.41	4.7	305	611
	Satangar	91.6	1.47	4.9	305	

ANNEX III

AERIAL SURVEY RESULTS: STRATUM 1:THE MANGA

Total area : 5103 km^2
Total sample units (N) : 202
Total samples (n) : 13
Average altitude: : 96.4m (n=103)
Sample fraction : 5.9%

Transect	Length km	Width km	Area km2 (z)	Camels (y)	Cattle (y)	Donkey (y)	Horse (y)	Shoats (y)	Dorcas (y)	Nubian bustard (y)
1	35	0.643	22.5	46	0	41	0	40	5	0
2	40	0.643	25.7	134	0	16	2	11	10	9
3	40	0.643	25.7	79	0	28	0	9	10	7
4	40	0.643	25.7	55	26	1	1	42	19	4
5	40	0.643	25.7	116	0	31	0	128	41	7
6	47.1	0.643	30.3	77	0	51	0	90	8	6
7	49.1	0.643	31.6	147	0	32	0	175	10	0
8	45.8	0.643	29.4	61	15	4	7	67	3	1
9	39.6	0.643	25.5	66	0	0	1	133	3	0
10	34.6	0.643	22.2	62	0	40	5	211	15	0
11	26.2	0.643	16.8	53	0	53	2	200	0	2
12	18.9	0.643	12.2	15	0	0	9	80	0	0
13	9.1	0.643	5.9	25	0	6	0	0	1	6
Σz			299.3	299.3	299.3	299.3	299.3	299.3	299.3	299.3
Σy				936	41	303	27	1186	125	42
Σz**2** or Σy2			7542.815	85912	901	11769	165	171774	2675	272
Σz.y				23962.42	1110.46	7367.94	563.08	28433.14	3232.43	974.40
Density R =Σy/Σz				3.13	0.14	1.01	0.09	3.96	0.42	0.14
sy2				1543.33	64.31	392.23	9.08	5297.86	122.76	11.36
sz2				54.52	54.52	54.52	54.52	54.52	54.52	54.52
szy				201.36	13.89	32.76	-4.87	94.34	29.58	0.63
Population Estimate Y				**15961**	**699**	**5167**	**460**	**20224**	**2132**	**716**
Var Y				2399590.7	180685.6	1121231.5	30541.4	15877215.2	315861.8	35991.2
SE Y				1549.1	425.1	1058.9	174.8	3984.6	562.0	189.7
95% cl Y t=2.1				3253.0	892.6	2223.7	367.0	8367.7	1180.2	398.4
cl as % Y				20.4	127.7	43.0	79.7	41.4	55.4	55.6

ANNEX III Cont'd.

AERIAL SURVEY RESULTS: STRATUM 2: : *Acacia-Panicum* plains

Total area : 6058 km^2
Total sample units : 282
Total samples : 18
Average altitude : 95.7m (n=105)
Sample fraction : 6.7%

Transect	kms	Width km	Area km2	Camels	Cattle	Donkeys	Horse	Shoats	Dorcas	Nubian bustard
1	21.1	0.638	13.5	31	0	6	0	0	3	2
2	23	0.638	14.7	12	0	0	0	0	0	3
3	19.4	0.638	12.4	2	0	12	0	0	1	0
4	26.4	0.638	16.8	29	0	0	0	0	6	5
5	32.9	0.638	21.0	25	0	5	0	0	10	2
6	38.4	0.638	24.5	20	0	9	0	0	2	2
7	42.4	0.638	27.1	118	0	16	0	0	0	4
8	55.2	0.638	35.2	31	0	4	0	10	1	3
9	59.4	0.638	37.9	59	0	11	0	0	2	2
10	48.8	0.638	31.1	40	0	0	0	0	1	0
11	43.6	0.638	27.8	64	0	0	0	0	3	2
12	36.8	0.638	23.5	42	0	3	0	0	5	0
13	40.4	0.638	25.8	115	0	4	0	60	4	5
14	26.9	0.638	17.2	105	0	4	0	0	0	0
15	37.6	0.638	23.9	156	0	5	0	5	0	1
16	30.1	0.638	19.2	29.0	0	0	0	0.0	0.0	0
17	30	0.638	19.1	22	0	0	0	0	0	0
18	25	0.638	15.9	26	0	3	0	0	15	1
Σz			406.7	406.7		406.7		406.7	406.7	406.7
Σy				926.0		82.0		75.0	53.0	32.0
Σz2 or Σy2			10100.7	79388.0		754.0		3725.0	431.0	106.0
Σz.y				22553.9		1955.3		2018.6	1098.1	760.2
Density R =Σy/Σz				**2.28**		**0.20**		**0.18**	**0.13**	**0.08**
sy2				1867.7		22.38		200.7	16.2	2.89
sz2				53.7		53.7		53.7	53.7	53.7
szy				96.09		6.04		19.07	-5.84	2.19
Population Estimate Y				**13795**		**1222**		**1117**	**790**	**477**
Var Y				7066962.8		91517.1		808704.4	76965.9	11896.6
SE Y				2658.4		302.5		899.3	277.4	109.1
95% cl Y t=2.1				5582.6		635.3		1888.5	582.6	229.1
cl as % Y				40.5		52.0		169.0	73.8	48.0

ANNEX III cont'd.

AERIAL SURVEY RESULTS: STRATUM 3: Treeless zone

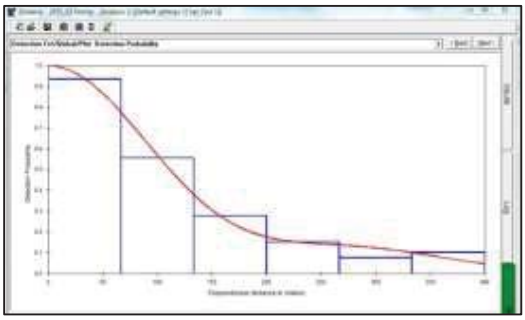
Total area : 1725 km^2
Total sample units : 213
Total samples : 13
Average altitude: : 91.6m (n=21)
Sample fraction : 5.2%

Transect	kms	Width	Area km2	Camels	Cattle	Donkey	Horse	Shoats	Dorcas	Nubian bustard
TZ01	11.9	0.611	7.2709	0	0	0	0	0	0	0
TZ02	6.9	0.611	4.2159	0	0	0	0	0	0	0
TZ03	14.8	0.611	9.0428	0	0	0	0	0	0	0
TZ04	14	0.611	8.554	0	0	0	0	0	0	0
TZ05	12.6	0.611	7.6986	5	0	0	0	0	0	2
TZ06	14.8	0.611	9.0428	0	0	0	0	0	0	0
TZ07	8.1	0.611	4.9491	2	0	0	0	0	0	0
TZ08	9	0.611	5.499	0	0	0	0	0	0	0
TZ09	12.4	0.611	7.5764	2	0	0	0	0	0	0
TZ10	9.7	0.611	5.9267	0	0	0	0	0	0	0
TZ11	8.3	0.611	5.0713	0	0	0	0	0	0	0
TZ12	7.7	0.611	4.7047	0	0	0	0	0	0	0
TZ13	17.8	0.611	10.8758	39	0	0	0	0	0	0
Σ			90.428	48	0	0	0	0	0	2

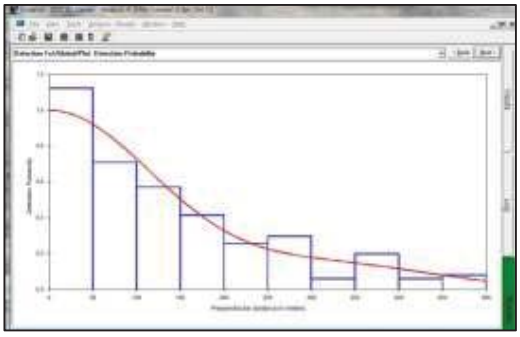
ANNEX IV – GROUND SURVEY LINE TRANSECT ANALYSIS

Output of Distance 6.0 comparing dorcas and camel records from line transect sampling in the Acacia-Panicum habitat, 2014 & 2015, using a global detection function from both years to increase sample size. [Note: population estimates from the surveys are not comparable as they apply to significantly different sized sample zones in each year; densities are the more appropriate comparative measures].

DORCAS				
Acacia/Panicum Feb 2014	**Estimate**	**%CV**	**df**	**95% c.i.**
Half-normal/Cosine				
D (Density / km^2)	0.79	32.09	12.62	0.4 - 1.5
Acacia/Panicum Feb 2015	**Estimate**	**%CV**	**df**	**95% c.i.**
D (Density / km^2)	0.67	34.55	13.75	0.3 - 1.4



CAMELS				
Acacia/Panicum Feb 2014	**Estimate**	**%CV**	**df**	**95% c.i.**
Half-normal/Cosine				
D (Density / km^2)	3.3	28.63	26.02	1.8-5.8
Acacia/Panicum Feb 2015	**Estimate**	**%CV**	**df**	**95% c.i.**
D (Density / km^2)	2.7	24.74	63.09	1.7 - 4.5



ANNEX V CAMERA TRAPPING

The ground team set baited camera traps at overnight camp sites. Five species were recorded, with fennec accounting for just over 80% of events*. Jackal, hare hedgehog and small mammals made up the rest.

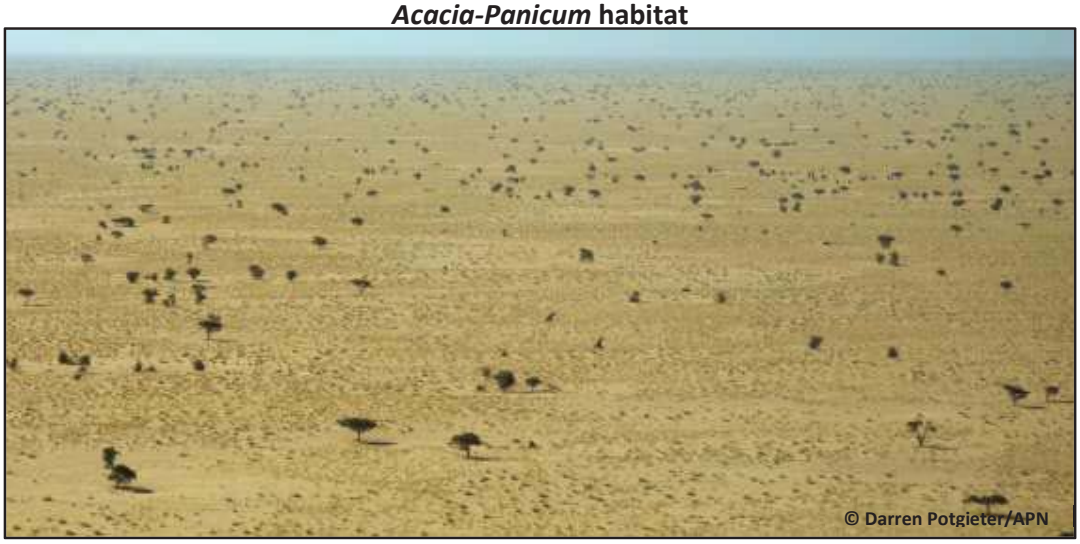
Camera	Lat.	Long.	Set up	Recovery	Hrs	Jackal	Fennec	Hare	Hedgehog	Gerbil (Unid.)
Reconyx01	14.4290	15.7020	11/02/2015 19:30	12/02/2015 06:10	10.67	0	0	0	0	0
Reconyx01	15.5870	15.4870	12/02/2015 19:30	13/02/2015 06:44	11.24	0	3	0	0	0
Reconyx03	15.5870	15.4880	12/02/2015 19:35	13/02/2015 06:50	11.25	0	2	0	0	1
Scoutguard 560C	15.5865	15.4885	12/02/2015 18:04	13/02/2015 07:00	12.93	0	0	0	0	0
Reconyx01	15.7810	15.2340	13/02/2015 18:12	14/02/2015 07:13	13.01	0	3	0	0	0
Reconyx03	15.7800	15.2320	13/02/2015 17:59	14/02/2015 07:06	13.13	0	5	0	1	0
Scoutguard 560C	15.7820	15.2310	13/02/2015 18:20	14/02/2015 07:09	12.83	0	3	0	0	0
Reconyx01	15.8590	15.4510	14/02/2015 18:04	15/02/2015 07:15	13.17	3	0	0	0	0
Scoutguard 560C	15.8580	15.4500	14/02/2015 18:19	15/02/2015 07:09	12.84	1	6	0	0	0
Reconyx01	15.7120	15.5910	15/02/2015 18:08	16/02/2015 06:55	12.79	0	5	1	0	0
Reconyx03	15.7120	15.5900	15/02/2015 18:00	16/02/2015 07:01	13.01	0	7	0	0	0
Scoutguard 560C	15.7110	15.5910	15/02/2015 18:18	16/02/2015 06:57	12.64	0	3	0	0	0
Reconyx01	15.4690	16.6000	17/02/2015 17:50	18/02/2015 06:46	12.94	0	0	0	0	0
Scoutguard 560C	15.4680	16.6010	17/02/2015 18:01	17/02/2015 18:01	0.00	0	0	0	0	0
Reconyx03	15.4670	15.5999	17/02/2015 19:07	18/02/2015 06:59	11.87	0	0	0	0	0
Scoutguard 560C	15.2555	16.2383	18/02/2015 18:00	19/02/2015 07:19	13.31	1	1	0	0	0
Reconyx01	15.2444	16.2382	18/02/2015 17:51	19/02/2015 07:20	13.48	0	0	0	0	0
TOTAL					**201.1**	**5**	**38***	**1**	**1**	**1**

* Numbers in species columns correspond to number of 'events' – defined as sets of photos taken after a lapse of at least 30mins since previous photo of the same species.

PLATE 1 – HABITATS

The Manga

***Acacia-Panicum* habitat**



'Treeless' zone

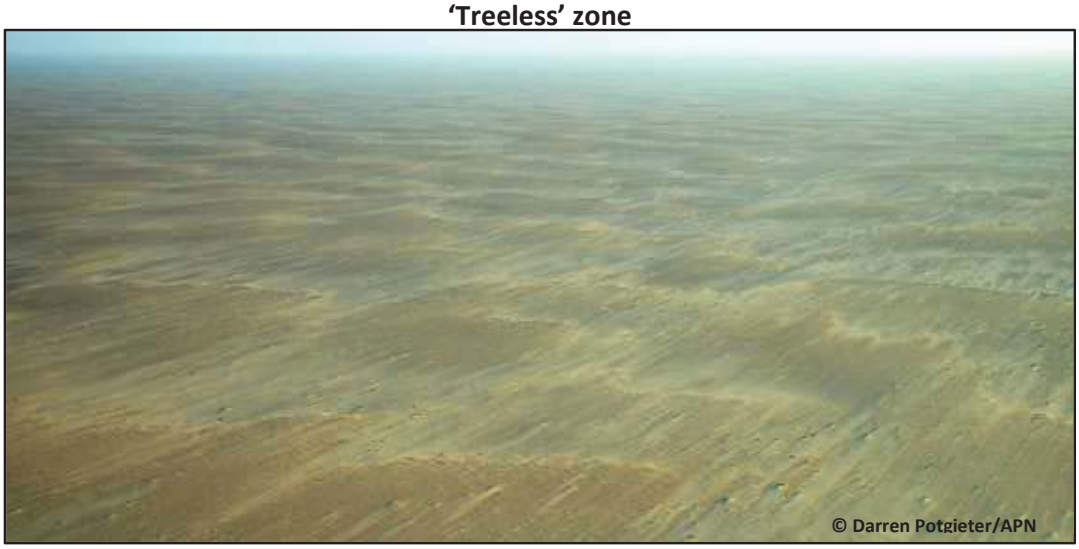


PLATE 2 – HUMAN LAND USE

Camel grazing

Well development

Lorries near the dama gazelles on the transport route illustrated in Map 12

PLATE 3 - DAMA GAZELLES

Adult females with young of year- 16 Feb 2015

Same adult female with young of year- 16 Feb 2015

Adult male - 16 Feb 2015

Plate 4 – OTHER WILDLIFE

Dorcas from the air - 16 Feb 2015

Dorcas

Fennec: note dense 'cool season' pelage

Arabian bustard

Establishing a monitoring baseline for Laos PDR's only Eld's deer *Recervus elddi* population

March 2015

Project Background

The only known population of Eld's deer (*Rucervus eldii siamensis*) in Lao PDR occurs within the Savannakhet Eld's deer sanctuary, founded in 2005 in partnership with the Savannakhet Provincial government and NGOs. The site is currently managed in partnership with local communities with technical and financial support provided through WWF-Laos (World Wide Fund for Nature) and CEPF (Critical Ecosystem Partnership Fund). The site therefore represents a rare example of a community-managed, species-focused protected area in South East Asia. The primary objective of the sanctuary is to protect Eld's deer from extinction and maintain a healthy deciduous dipterocarp forest ecosystem. WWF began working on the Eld's Deer Sanctuary as part of the Dry forest Ecoregion Program in 2008. WWF continued core activities started by WCS (Wildlife Conservation Society) including patrolling, education, and direct incentives for villages to work continuously on patrolling and monitoring. WWF worked together with Government counterparts and local communities to complete boundary demarcation of 2,260 ha core zone within the sanctuary, and also worked with three villages to develop artificial water reservoir in the key habitat site to provide alternative water sources for the Eld's deer during the dry season. The proposed project will form part of Phayvieng Vongkhamheng MSc thesis at the Suranaree University of Technology, Thailand. Therefore in addition to supporting Eld's deer conservation it will also help build conservation capacity in Laos.

2.Research aims and Objectives

The aim of this study is to assess population and density of Eld's deer in the Eld's deer sanctuary, central Lao PDR. This is critical for monitoring the effectiveness of conservation activities within the Eld's deer sanctuary and for creating a population baseline to assess changes in population size in the future. The study will use robust distance-based line-transect sampling to estimate Eld's deer density. This approach is widely used in South and South East Asia for monitoring ungulates and tiger prey.

The specific objectives of the study are to:

1) Assess Eld's deer density and population through line-transect based distance sampling.
2) Examine distribution of Eld's deer and factors influencing distributions across the Eld's deer sanctuary.

3. The benefit for Eld's deer conservation

This project will provide direct benefits to Eld's deer conservation through improved information on the species status and distribution within the sanctuary which can be used by the community management committee for adaptive protected area management. Over the past years, the local community has been actively involved in the management of the Eld's deer sanctuary. As a result, illegal logging and poaching have been reduced for the benefit of the Eld's deer populations and the protection of the deciduous dipterocarp forest. Lots of improvements have been brought over the past years but the pressure on the forest ecosystem and Eld's deer population still remains. To build on the past success and make the action more sustainable over the time, it is important to maintain the law enforcement work and implement Eld's deer population's knowledge and monitoring. In addition there is no existing robust population or density estimate of Eld's deer from Indochina. This project would therefore improve the global understanding of Eld's deer biology and natural history.

Expected project's field work start and end dates: 1 April to 30 June 2015

Progress Reports

A field report, including photographs and 'stories from the forest' would be produced on completion of the field surveys (August 2015). A subsequent report would share the analysis of results including robust Eld's deer density estimates and threat assessment. A final peer-reviewed publication (December 2015) would also be produced which could be shared on the Conservation Force website and will fully acknowledge all funders and supporters of this work.

4. Contact details:

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5. Total budget: $ 10,000

Activity	Total	Remark
Field survey: lodging, meals and Incidentals	6696	Training on Eld's deer monitoring techniques (line transects/occupancy) for villagers and district staff USD 500, Marking line transects USD 500, Monitor population of Eld's Deer, using distance-based line transect surveys USD 5,696
Local travel	800	For main researcher Phayvieng Vongkhamheng, Co-Advisor Tom Gray, and District staff
Fuel	200	
Printing service	1000	Communications/Publications
Indirect Cost15%	1,304	

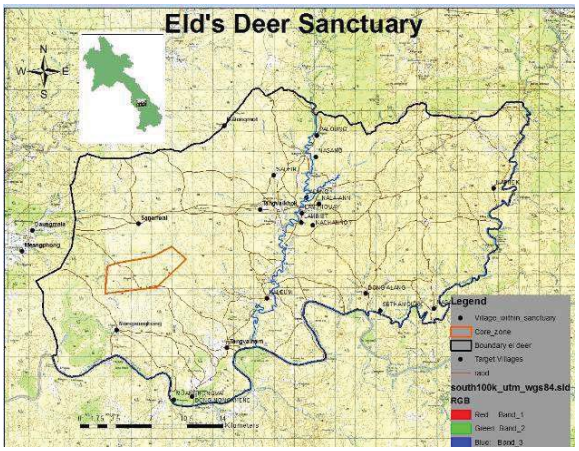
WWF Technical Progress Report
May to July 2015

Eld's Deer Conservation Project in Xonnabuly District, Savannakhet Province

Project Name	Establishing a monitoring baseline for Laos PDR's only Eld's Deer population
Project Start Date	May 2015
Date Report Completed (MM/YR)	May to July 2015
Report Completed By	Phayvieng VONGKHAMHENG

I. Project Background

The only known population of Eld's deer (*Rucervus eldii siamensis*) in Lao PDR occurs within the Savannakhet Eld's deer sanctuary, founded in 2005 in partnership with the Savannakhet Provincial government and NGOs. The site is currently managed in partnership with local communities with technical and financial support provided through WWF-Laos, Critical Ecosystems Partnership Fund (CEPF), and other donors including Conservation Force. The site represents a rare example of a community-managed, species-focused protected area in Indo-Burma. The primary objective of the sanctuary is to protect Eld's deer from extinction and maintain a healthy deciduous dipterocap forest ecosystem. WWF began working on the Eld's Deer Sanctuary as part of the Dry forest Ecoregion Program in 2008. WWF supports communities and local government with core activities including patrolling, education, and direct incentives for villages to work continuously on patrolling and monitoring. WWF worked together with Government counterparts and local communities to complete boundary demarcation of 2,260 ha core zone within the sanctuary, and also worked with three villages to develop artificial water reservoir in the key habitat site to provide alternate water sources for the Eld's deer in the dry season. The ponds will benefit Eld's deer and other Wildlife species by reducing their exposure to human and livestock in natural ponds outside the core zone or nearby villages. This project will form part of Phayvieng Vongkhamheng MSc thesis at the Suranaree University of Technology, Thailand. Therefore in addition to supporting Eld's deer conservation it will also help build conservation capacity in Laos.



Activity/progress:

2.1 Training village conservation teams on the principles of wildlife conservation and Eld's deer monitoring techniques

The purpose of this training was to provide a basic concept on Eld's deer conservation, field survey techniques (occupancy and line transect), using navigation tools (i.e. compass, maps, and GPS) and threat data collection.

2.2 Establish fouty-one lines transects in the Eld's Deer Sanctuary.

Set up line transects in the Eld's deer sanctuary, each Transect has 2 km in length and at 1 km interval between lines. The primary goal of using transects is to estimate Eld's deer population in the Eld's deer sanctuary Careful monitoring of changes in the Eld's deer population (or density) in the sanctuary allows us to evaluate the effectiveness or impacts of current conservation in the core area, which is a subset of the sanctuary. This work also represents the first robust estimates of Eld's deer density from anywhere in South East Asia.

Lines transects markers to mark every 50 meters along each transect so that villagers and teams can follow easily.

2.3 Eld's Deer Population Estimation (Line transect surveys) On May to July 2015

We completed set up 41 line transect, Each line transect of 2 km in length. covering approximately 328 km from and Line transects survey 4 times during May to July 2015. All transects will be walked in the early morning between 6:30 to 8:00 am and between 15:00-18:00 pm. To ensure robust data collection the following assumptions are met during surveys:

(1) Animals on the line are detected with certainty, i.e. no animals on the line are missed by observers.

(2) Animals are detected and their location recorded before they move, i.e. observers must see an animal before it sees them and flees.

(3) Measurements are exact. Training and appropriate equipment must be used to ensure accuracy of distance measurements.

(4) Group sizes are accurately recorded.

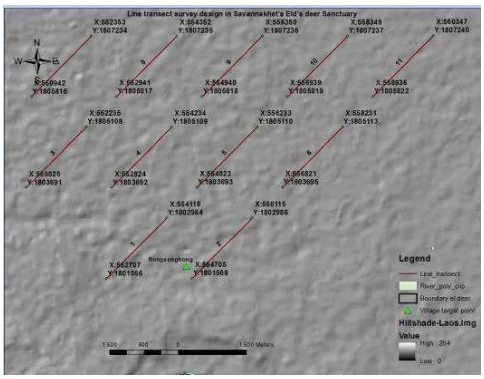


Table 1 number of Eld's deer groups recorded & number of transects recorded from

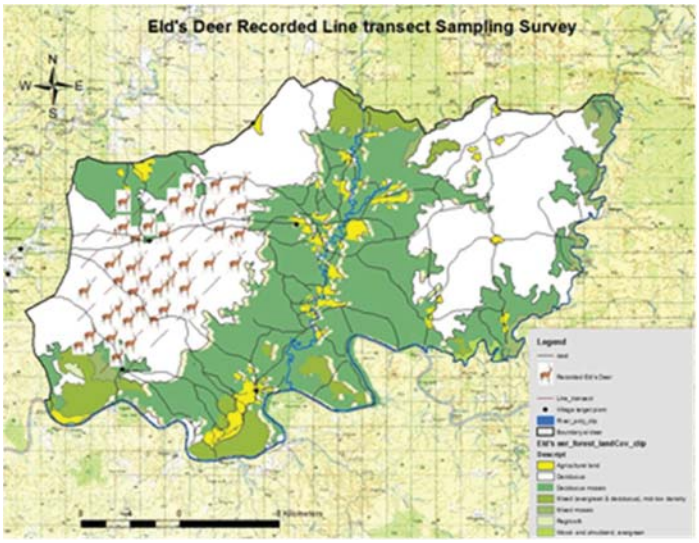
Line Transect ID	Number of Eld's deer recorded			UTM		Habitat type	Note
	M	F	J				
01	2	4	2	554117	1802983	DDF	
02						DDF	No sighting
03	2	3	2	551054	1803945	DDF	
03	1	2	1	551935	1804756	DDF	
04		3	2	553646	1804517	DDF	
05		2	1	555176	1804045	DDF	
06	0	0	0			DDF	No sighting
07						DDF	No sighting
08	1	2	2	554040	1806903	DDF	

08	1	3	1	553326	1806241	DDF	
09	1	2	2	555966	1806860	DDF	
09				555027	1805940	DDF	
10		2	1	557925	1806807	DDF	
10	1	1		557140	1806017	DDF	
11	1	4	1	559899	1806801	DDF	
11	2	3	3	560124	1806998	DDF	
12	1	3	1	551456	1808305	DDF	
13	1			554256	1809138	DDF	
14		1	1	555442	1808244	Grassland	
14	2	2	1	555901	1808820	Grassland	
14		1	1	556030	1808963	Grassland	
14		2	1	556355	1809283	DDF	
15		2		557379	1808324	DDF	
15		1		557645	1808599	DDF	
15	1	1	1	557950	1808905	DDF	
15	1	2	1	558112	1808998	DDF	
15	2	3	2	558378	1809308	DDF	
16	1	2	2	559732	1808641	DDF	
17						DDF	No sighting
18						DDF	No sighting
19	1			553390	1810247	Grassland	
19	1	1		553561	1810429	Grassland	
20	2	3	2	555259	1810172	DDF	
20		3	1	555656	1810531	DDF	
20		2	1	555769	1810655	DDF	
21		3	2	558038	1810948	DDF	

22		2	1	559534	1810460	DDF	
23		1	1	561562	1810510	DDF	
24		2	1	563727	1810468	DDF	
25						DDF	No sighting
26	2			554282	1813236	DDF	
26		2	1	554644	1813446	DDF	
27	1	2	2	555634	1812540	DDF	
27	1			556627	1813539	DDF	
28	1	2	1	557909	1812883	DDF	
29						DDF	No sighting
30		1	1	562404	1813327	DDF	
31		2	2	563715	1812623	DDF	
31		1		563995	1812901	DDF	
32	1	2	1	554597	1815509	DDF	
33						DDF	No sighting
34	1						
34	1	2	1	558717	1815638	DDF	
35		2	1	559846	1814728	DDF	
35	1	1		559846	1814901	DDF	
36	2			561725	1814657	DDF	
37	1	1		564215	1815146	DDF	
38						DDF	No sighting
39		2		559921	1816771	DDF	
39	1	2	1				
40	1	3	1	561929	1816843	DDF	
40		2	2	562061	1816972	DDF	
41		1	1	563683	1816619	DDF	

Note: DDF, Dry dipterocarp forest;

Figure1: Eld's deer sighting from line transect survey



2.3. Forest Patrolling for illegal activities in the sancturary by village community group (i.e. poaching Eld's deer and encroaching deer's habitats)

In the Eld's deer sanctuary there are three target villages where local communities patrol to protect the deer from poaching. Each of the three target villages established a patrol team, composed of 14 people (village, militia, police, foresters and teachers). Each team is responsible for patrolling within village management boundaries, and conducted the patrolling once a month. District government officials also join the village team once per month in field patrolling and monitoring.

The patrolling teams were mainly focused on looking for signs and sighting of illegal activities such as people carrying guns into the sanctuary without permission, burning the grass, cutting trees, and rice field expansion. When encounter problems, the teams reported to DONRE (District Office of Natural Resources and Environment) with approval by village authority, and the process of law enforcement such as warning, fine, trial will be made by DONRE and PONRE (Provincial Office of Natural Resources and Environment) authorities.

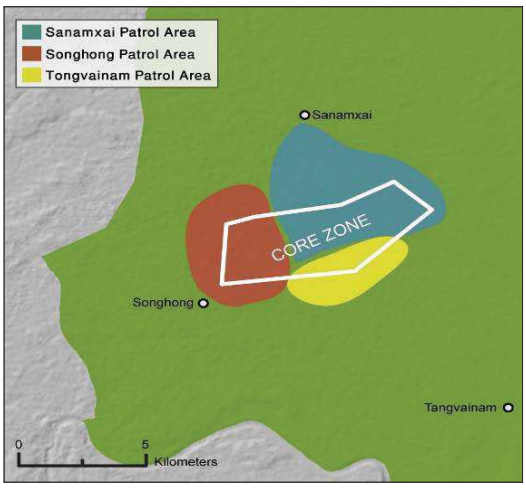


Figure 2. Map showing the approximate areas of the village patrol zones.

Figure 2. Threats encountered during foot-patrolling by VPT

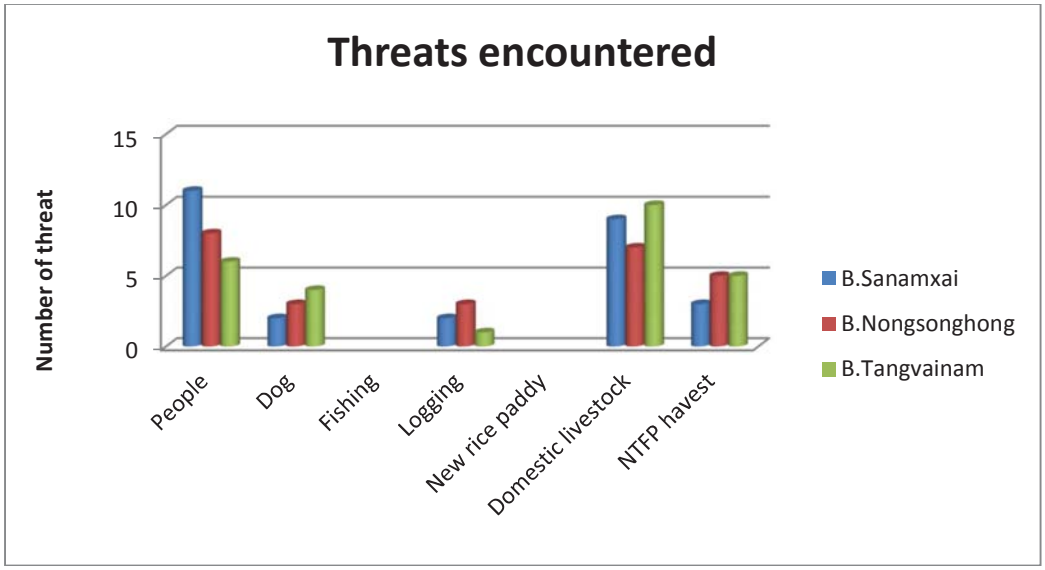


Figure3: Eld's deer records threat data by three villages from April-July2015

3. Eld's deer sightings

According to village monitoring sightings, Ban Nongsonghong recorded most deer sightings during their foot-patrols from January to June, followed by Ban Sanamxai and then Ban Tangvainam (see Fig.4).

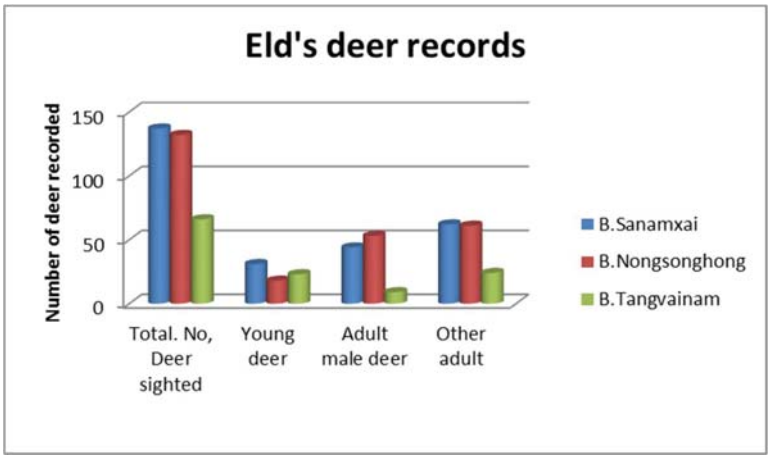


Figure4. Eld's Deer Records by three villages from January-June 2015

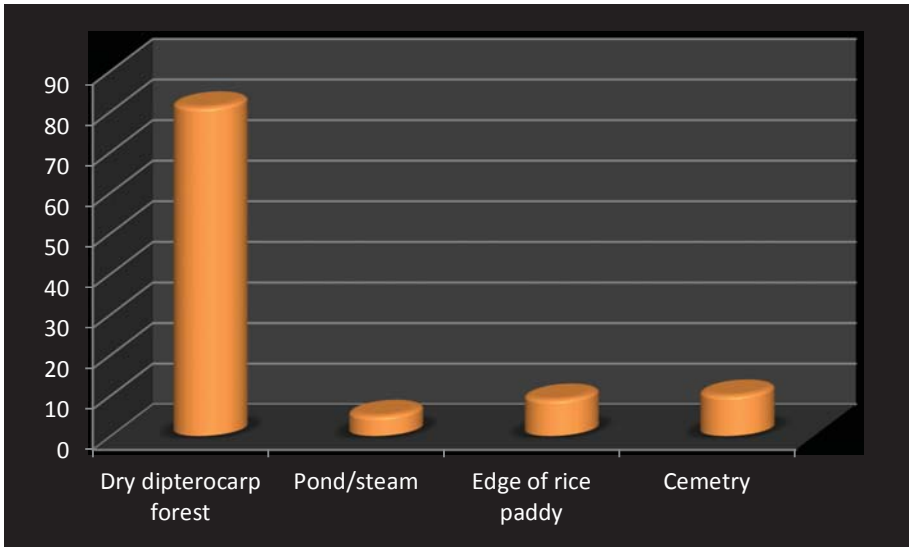


Figure 5. Habitat of Eld's deer sightings recorded from January– June 2015.

Appendices

Village Conservation Teams

Appendix 1 Patrol data form

Eld's deer Sanctuary, Chonnabuly District, Savannakhet Province
Patrol Datasheet

Page 1 of

Date (D/M/Y)
Observers
1
2
3
4

Time (24 H)
Start time
End time
Total hrs.

Weather
Last raining period (Date)

Evidence Codes

Threats									
WILDLIFE	1.0 Seen alive	1.1 Seen dead	1.2 Tracks	1.3 Vocal	1.4 Scat	1.5 Eating sign			
HUNTING	2.0 Gun	2.1 Gunshot	2.2 Person	2.3 Dogs	2.4 Snares	2.5 Fishing	2.6 Camp	2.7 Campfire	
OTHER	3.0 New cut	3.1 New burn	3.2 New rice paddies		3.3 Domestic livestock	3.4 New hut	3.5 NTFP harvest		

Time (24 H)	Location	GPS E/N	Evidence Code	#	Wildlife type (OR) Threat details	M/F	A/J	Collect evidence?	Wildlife measurements (OR) Threat origin	Old/New

APPENDIX 2: LINE TRANSECT FORM

ທີມສຳຫຼວດ Observers:			ແລວສຳຫຼວດເລກທີ Line transect No:			ວັນທີ Date:				
ເວລາເລີ່ມຕົ້ນ Starting time:		ເວລາສິ້ນສຸດ Ending time:	ຈຸດເລີ່ມຕົ້ນ Starting point:			ອາກາດ Weather:				
ເປີເຊັ້ນໄຟໄໝ້ປ່າ % Forest Fire			ຈຸດສິ້ນສຸດ Ending point:			ທິດທາງແລວ Line direction	☐ ເໜືອ N ☐ ໃຕ້ S	~~S ໃຕ້~~ N ~~ເໜືອ~~		
ມຸມທີ່ພົບຫັນສັດ Angle to animal	ໄລຍະຫ່າງຄົ້ນ-ສັດ Distance	ຊະນິດສັດ Species	ຈຸດພິກັດ UTM:	ມຸມແລວສຳຫຼວດ Angle to line	ເວລາ Time	Number of Animals ຈຳນວນສັດທີ່ພົບ			ລັກສະນະທີ່ຢູ່ອາໄສ Habitat Type:	ໝາຍເຫດ Note:
						ໂຕຜູ້M	ໂຕແມ່F	ໂຕນ້ອຍJ		

PROJECT PROPOSAL

Updating of the CMS Action Plan for Sahelo-Saharan Megafauna

Summary

The Action Plan on Sahelo-Saharan Antelopes negotiated under the Convention on Migratory Species (CMS) has since its adoption by 14 range states in 1998 proven to be an effective tool for the conservation and restoration of the large ungulate fauna of the Sahelo-Saharan region, in particular for the Addax, Dama gazelle, Scimitar-horned Oryx in the wild in northern Africa. Its successful implementation has benefited significantly from the strong network of NGOs, scientists, local communities, and the support of Range States. However, the threats and needs in the Sahel and Sahara have changed considerably since 1998 and in order or the Action Plan to remain effective this international policy tool urgently needs updating.

The proposed updated Action Plan is foreseen to guide, catalyse and align much needed conservation action across the Sahel and Sahara for years to come. It is envisaged to be technically reviewed by an already foreseen meeting of the Sahelo-Saharan Interest Group in spring 2015 and politically reviewed and adopted by a meeting of range states in late 2015, which the CMS Secretariat and partners are currently fundraising for. Following its adoption the new Action Plan for Sahelo-Saharan Megafauna will catalyse and guide conservation action across range states in northern Africa for years to come.

Background and rationale

The Sahara and adjacent Sahel form the largest tropical desert ecosystem worldwide and harbour a unique set of large mammals, which have adapted to thrive in this harsh arid environment, including iconic species such as the Addax and Saharan Cheetah. However, Sahelo-Saharan biodiversity is disappearing fast, with the Scimitar-horned Oryx (*Oryx dammah*) already extinct in the wild and the Addax (A*ddax nasomaculatus*), the Dama gazelle (*Nanger dama*) and the Saharan Cheetah (*Acinonyx jubatus hecki*) absent from 95% of their former range (Durant et al. 2014). In fact, almost all large mammals and birds have becomes threatened as a result of overhunting and habitat degradation, including competition with domestic livestock.

Already in the 1990s these trends were apparent and concern amongst the North African range states and experts led to the adoption of the „Action Plan for the conservation and restoration of Sahelo-Saharan antelopes“ in 1998 within the framework of the Convention on Migratory Species (CMS), an international UN treaty for wildlife management across national borders which has been ratified by 120 Parties today. The CMS Action Plan provides a framework for governments, NGOs, scientists, local people and the wider international

community to collaborate in the conservation of the most threatened antelope and gazelle populations in Northern Africa. Its implementation is only feasible thanks to the active partnership of many stakeholders, including Sahara Conservation Fund (SCF), Noé Conservation, the Royal Belgian Institute of Natural Sciences (IRSNB), the IUCN Antelope Specialist Group, and numerous funding agencies in particular the EU, FFEM and AFD. It also greatly benefits from the continuous support of the international zoo community.

The Action Plan covers six CMS Appendix I species in total, with five being endemic to the region: Addax (*Addax nasomaculatus*), Cuvier's Gazelle (*Gazella cuvieri*), Dama Gazelle (*Nanger dama*), Scimitar-horned Oryx (*Oryx dammah*) and Slender-horned Gazelle (*Gazella leptoceros*), as well as the wider ranging Dorcas Gazelle (*Gazella dorcas*). This Action Plan has given rise not only to range states developing and implementing national strategies on the target mammals, but also fuelled fundraising for much needed research and conservation projects across the range and provided a forum for the range states to more closely collaborate. Individual success stories which the Action Plan contributed to include the establishment of Termit Tin Toumma National Nature Reserve in Niger in 2012, the largest protected area in Africa to date.

Since the adoption of the CMS Action Plan in 1998 the landscape of threats affecting Sahelo-Saharan antelopes has changed considerably, thus there is an urgent need to update the Action Plan to optimise its use as a catalyst for action today. IUCN, the Royal Zoological Society of Scotland and a group of experts on the species are currently leading a conservation review process for the Dama Gazelle, including a wide consultation process of all stakeholders, an extensive work that is preparing the way for an updated action plan for the species (https://sites.google.com/site/damagazellenetwork). Preparation of an updated Action Plan for the Cuvier‘s gazelle is also underway with the three Range States under the guidance of IUCN; both of which should be integrated into the overall CMS Action Plan to ensure that all can be enforced through the CMS treaty. The update of the CMS Action Plan on Sahelo-Saharan antelopes was highlighted as a priority matter for the CMS Secretariat and partners of the Action Plan to pursue at a recent 14th Meeting of the Sahelo-Saharan Interest Group (30 April - 2 May 2014, Porto, Portugal). Following the adoption of CMS Recommendation 9.2 on Sahelo-Saharan Megafauna, it should be assessed whether additional species such as the Cheetah (*Acinonyx jubatus*) and/or Barbary sheep (*Ammotragus lervia*) would benefit from inclusion in the updated CMS Action Plan. The CMS Secretariat is currently fundraising for a meeting of range states in 2015 where the updated Action Plan could be adopted by range states and other CMS Parties acting as donors, assuming external funds can be raised through the proposal presented here to update the plan itself.

Further information on the Action Plan is available on the CMS website:

http://www.cms.int/en/legalinstrument/sahelo-saharan-megafauna

Description of activities

Tentative implementation period: September 2014 – June 2015

Objectives	Activities	Implementing body	Timeframe
Updating of the CMS Action Plan on Sahelo-Saharan Megafauna	*Assessment of appropriate species coverage of CMS Action Plan, including Addax, Dama Gazelle and*	*IUCN Antelope Specialist Group; Sahara Conservation Fund; Scientific Council CMS; CMS Secretariat*	*September - October 2014*

	Scimitar-horned Oryx		
	Preparation of updated CMS Action Plan, including the integration of the conservation review on Dama Gazelle and updated Action Plan on Cuvier's Gazelle (if completed in time)	*IUCN Antelope Specialist Group; Scientific Council CMS; IRSNB*	*October 2014 - February 2015*
	Peer-review of updated CMS Action Plan	*Coordinated by IUCN Antelope Specialist Group, in consultation with the CMS Scientific Council and CMS Secretariat*	*February 2015 - April 2015, including the 15th Meeting of the Sahelo-Saharan Antelope Group (April/May 2015, Abu Dhabi)*
	Formatting and online pdf publication of the CMS Action Plan	*CMS Secretariat*	*June 2015*

Expected outcomes

The updated CMS Action Plan on Sahelo-Saharan Megafauna is the core output of the proposed project. This policy instrument under the Convention on Migratory Species will in its updated form continue to structure and facilitate conservation action within 15 range states in northern and western Africa. The individual objectives and activities foreseen by the Action Plan will guide the national conservation work of the range states, as well as those of the many NGO partners, scientists and other stakeholders contributing to the implementation of the plan today.

Countries and partners have for a number of years called for the updating of the Action Plan, indicating a strong determination to apply and implement this international legal instrument under CMS. It is therefore very likely that the investment in updating the Action Plan will have a strong multiplication factor and that the conservation management of Addax, Dama Gazelle, Scimitar-horned Oryx and other species covered will significantly benefit.

Overall budget

Item	units	Cost/ unit (USD)	Total costs (USD)
Preparation of updated Action Plan, including assessment of species coverage and peer-review	1	20 000	20 000
Formatting and online pdf publication of the CMS Action Plan	1	pro bono (CMS)	0
13 % UNEP overhead			2,600
Total			**22,600**

Thamin Eld's deer (*Rucervus eldii thamin*) Reintroduction in Salakphra Wildlife Sanctuary Project

Introduction:

Eld's deer (*Rucervus eldii*) is a subtropical cervid species of South and Southeast Asia. This deer is listed as Endangered (EN) by the IUCN red list and listed on CITES Appendix I (Timmins and Duckworth, 2008). The species is listed under the ThaiNational Wildlife Reservation and Protection Act Since 1992. Two subspecies of Eld's deer; the Thamin Eld's deer (*Rucervus eldii thamin*) and Siamese Eld's deer (*Rucervus eldii siamensis*) (Balakrishnan et al, 2003) historically existed in Thailand's dry forest but were extinct in the wild since 1980s. However, both species are maintained in captivity in Thailand (zoos and breeding centers), and at present, there are 641 *Thamin* and 50 *Simemsis* Eld's deer in Thai *ex-situ* conservation centers (Nikorn Thongtip, personal data).

The *Siamensis* populations in captivity exhibit low fecundity and high incidence of stillbirths (Keeper's record, Dusit Zoo, Thailand). However, the *Thamin* subspecies have been successfully bred and reintroduced into the wild as part of a collaborative effort among Thai government agencies, including the Zoological Park Organization, Department of National Parks, Wildlife and Plant Conservation, Kasetsart University and Smithsonian Conservation Biology Institute, The first reintroduction effort was conducted in 1983 with 25 Eld's deer released to Phukhieo Wildlife Sanctuary in North Eastern part of Thailand; however, the released individuals did not persist (Ronglarp Sukmasuang, personal communication). In 1998, 42 Eld's deer were reintroduced to Wiang Lor Wildlife Sanctuary in Northern part of Thailand. From post release monitoring data, 34 animals (7 died inside and another 1 died outside sanctuary) are still

living in the sanctuary (Ronglarp Sukmasuang, personal communication). In 2006, 6 deer were reintroduced to Sublungka Wildlife Sanctuary in Middle part of Thailand (Naris Bhumbhakbhan, personal communication). Then, during 2008-2011, 84 Thamin Eld's deer have been released at Huai Kha Khaeng Wildlife Sanctuary, 12 of which survived. This work was partially supported by Conservation Force. Of these 12 individuals, six gave birth to nine offspring and the remaining deer were captured to send back to the Huai Kha Khaeng Wildlife Breeding Center. Finally, during 2008-2011 and eight deer were reintroduced to Salakhrara Wildlife Sanctuary, six of which are still alive including a female hind that was born from artificial insemination with frozen-thawed semen. In 2013 four fawns were born, three of which are still alive, including the one produced from the female produced by frozen-thawed semen (Buranapim et al, 2008; Prempree et al, 2013). We have learned much from these efforts on how to conduct a successful reintroduction and propose to work in a new location, Salakphra Wildlife Sanctuary in the western forest complex.

Objectives:

1. To reintroduce 10 *Thamin* Eld's deer (seven females and three males) to Salakphra Wildlife Sanctuary.
2. To study some ecological factors of Thamin Eld's deer reintroduction in Salakphra Wildlife Sanctuary including of home range, predators and food availability.

Materials and Methods:

1. Quarantine 10 candidate animals at least 1 month and collect blood for health check (hematology, blood chemistry, parasites) in all deer. Transport 10 adult *Thamin* Eld's deer (seven females and three males) from Khao Kheow Open Zoo (KKOZ) from Cholburi province to Salakphra Wildlife Sanctuary, Kanchanaburi province.
2. Put radio collar to at least two deer before releasing to soft release area (150 x 150 m2): one for male and one for female.
3. Let deer adapted with soft release for at least three months before releasing to the wild.
4. Monitoring post-release with radio collar tracking regularly for at least one year.
5. Collect release deer feces for diet analysis.
6. Collect plant samples and identify species to assess food variety and availability for the released deer.
7. In the end of the year, organize a meeting of research team for data analysis and report.

Timetable (February 2014 to January 2015)

Activities	Feb-	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan
1. Quarantine and Health check	X											
2. Transportation		x										
3. Soft release		x	x	x								
4. Release to the wild					x							

5. Post-release monitoring		x	x	x	x	x	x	x	x	x	x	x
6. Plant collection and identification	X	x	x	x								
7. Fecal collection and diet analysis		x	x	x	x	x	x	x				
8. Stakeholder meeting												x

Benefits:

1. Increase founder numbers of the released population in Salakphra Wildlife Sanctuary.
2. Increase knowledge about ecological factors of Thamin Eld's deer reintroduction that can be applied to other protected area.

The responsibility organizations:

1. Faculty of Veterinary Medicine, Kasetsart University (KU)
2. Faculty of Forestry, Kasetsart University (KU)
3. Zoological Park Organization (ZPO)
4. Salakphra Wildlife Sanctuary, Department of National Parks, Wildlife and Plant Conservation (DNP)

Investigators:

Assist. Prof. Dr. Nikorn Thongtip, KU	Principal Investigator
Assoc. Prof. Dr. Naris Bhumbhakbhan, KU	Co-Investigator
Assist. Prof. Dr. Ronglarp Sukmasuang, KU	Co-Investigator
Dr. Boripat Siriaroonrat, ZPO	Co-Investigator
Mr. Prawoot Prempree, DNP	Co-Investigator
Assoc. Prof. Dr. Worawidh Wajjwalku, KU	advisor
Dr. Bill McShea, Smithsonian Conservation Biology Institute	advisor

Budget: $8,000

1. Animal transportation and health checking expenses	$1,700
2. Radio collar (2)	$700
3. Ranger salary for deer tracking (200 x 1)	$2,200
4. Fuels for travelling to and within the project site ($150 x 12)	$1,800
5. Service for plant species identification	$1,000
5. Diet analysis	$1,000
6. Workshop organization	$600

References:

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Buranapim, N., Sukmsuang, R. and Bhumparkpan, N. 2008. Population Viability Analysis of Reintroducing Brow-antlered Deer (*Cervus eldi thamin*) in Huai Kha Khaeng Wildlife Sanctuary, Uthai Thanee Province. Thesis. Graduate school. Kasetsart University.

Prempree, P., Sukmasuang, R., Bhumpakphan, N. and Yindee, M. 2013. Post-released Monitoring of Hog deer, Eld's deer and Sambar deer in Salakphra Wildlife Sanctuary, Kanchanaburi Province. Thesis. Graduated school. Kasetsart University.

Timmins, R.J. and Duckworth, J.W. 2008. *Rucervus eldii* In: IUCN 2012: IUCN Red List of Threatened Species. Version 2012.1. Available: iucnredlist.org

Proposal to Conservation Force

Establishing a monitoring baseline for Laos PDR's only Eld's Deer population

Project Background

The only known population of Eld's deer (*Rucervus eldii siamensis*) in Lao PDR occurs within the Savannakhet Eld's deer sanctuary, founded in 2005 in partnership with the Savannakhet Provincial government and NGOs. The site is currently managed in partnership with local communities with technical and financial support provided through WWF-Laos and CEPF. The site therefore represents a rare example of a community-managed, species-focused protected area in Indo-Burma. The primary objective of the sanctuary is to protect Eld's deer from extinction and maintain a healthy deciduous dipterocap forest ecosystem. WWF began working on the Eld's Deer Sanctuary as part of the Dry forest Ecoregion Program in 2008. WWF continued core activities started by WCS including patrolling, education, and direct incentives for villages to work continuously on patrolling and monitoring. WWF worked together with Government counterparts and local communities to complete boundary demarcation of 2,260 ha core zone within the sanctuary, and also worked with three villages to develop artificial water reservoir in the key habitat site to provide alternate sourcing water for the Eld's deer in a dry season. The ponds will benefit Eld's deer and other Wildlife species by reducing their exposure to human and livestock in natural ponds outside core zone or nearby the villages. This project will form part of Phayvieng Vongkhamheng MSc thesis at the Suranaree University of Technology, Thailand. Therefore in addition to supporting Eld's deer conservation it will also help build conservation capacity in Laos.

Research aims and Objectives

The aim of this study is to assess population and density of Eld's deer in the Eld's deer sanctuary, central Lao PDR.

The specific objectives of the study are to:

1) Assess Eld's deer population abundance using distance sampling.
2) Examine distribution of Eld's deer and its associate factors in the Eld's deer sanctuary.

3. The benefit Eld's deer conservation

This project will provide direct benefits to Eld's deer conservation through improved information on the species status and distribution within the sanctuary which can be used by the community management committee for adaptive protected area management. Over the past years, the local community has been actively involved in the management of the Eld's deer sanctuary. As a result, illegal logging or poaching has been reduced for the benefit of the Eld's deer populations and the protection of the deciduous dipterocarp forest. Lots of improvements have been brought over the past years but the pressure on the forest ecosystem and Eld's deer population still remain.s To build on the past success and make it more sustainable over the time, it is important to maintain the law enforcement work and implement Eld's deer population's monitoring. In addition there is no existing robust population or density estimate of Eld's deer from Indochina. This project would therefore improve the global understanding of Eld's deer biology and natural history.

Expected project start- and end dates: 1 March to 30 June 2014

Progress Reports

A field report, including photographs and 'stories from the forest' would be produced on completion of the field surveys (July 2014). A subsequent report would share the analysis of results including robust Eld's deer density estimates and threat assessment. A final peer-reviewed publication (December 2014) would also be produced which could be shared on the donors website and will fully acknowledge all funders and supporters of this work.

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6. Budget: $ 6,000

Activity	Unite	#Unite	Unite cost	Total	Remark
Lodging, Meals and Incidentals				5,400	Training on Eld's deer monitoring techniques (line transects/occupancy) for villagers and district staff

					USD 700, Monitor threats to and population of Eld's deer USD 4700
Local travel				100	Phayvieng, DONRE
Fuel				100	
Printing service				400	Communications/Publications
Total funding request amount: US$ 6,000					

Promoting the conservation of Eld's deer in Chatthin Wildlife Sanctuary

Grant Proposal from Friends of Wildlife to Conservation Force

Background

Chatthin Wildlife Sanctuary (CWS), located in the northern part of central dry zone of Myanmar, is home to the world's largest known population of Eld's deer (locally known as thamin) (FAO/UNDP 1982-1983). This species is listed as globally endangered by the IUCN Red List and CWS is recognized by the IUCN Deer Specialist Group as the most important global site for conservation of this species.

Country-wide surveys conducted by the Forest Department (FD), Smithsonian Institution (SI) and Friends of Wildlife (FOW) indicate that the population of thamin in Myanmar has declined dramatically from 2,200 individuals in 1972, to about 1,600 in 2010 with the largest population (about 950 deer) found in CWS. The surveys also showed that the number of townships in which thamin were distributed has fallen from 34 in 1972 to 12 in 2010 as a result of habitat degradation and hunting.

CWS is covered by dry dipterocarp forest, which was once abundant in Myanmar. However, globally, these forests are more degraded, and proportionately more threatened than rain forests, and CWS is no exception.

In terms of patrolling, surveying for deer, protection policy, development of staff capability, and law enforcement, CWS has performed relatively well in recent years because of support from Conservation Force, SI and FOW. However, park leadership has not been knowledgeable or effective since 2009. In correlation with this lack of leadership we have noticed 4 disturbing trends: 1) the deer population has declined in density from 7.12 deer per sq.km in 2009 to 3.8 deer per sq.km in 2013, 2) new encroachments from villagers have occurred in the park, 3) illegal extraction of timber increased, and 4) the motivation of field staff declined. The most severe deforestation inside CWS occurred within 1 km of the sanctuary boundary. As forests declined in the buffer and beyond, CWS has become a forest island surrounded by agriculture, a water reservoir, and human settlements. The situation raises serious concern for the future of CWS.

In April 2013, FD realized the bad situation of CWS and appointed a forest officer as new warden in May 2013. According to new FD guidelines, new warden is willing to work with local conservation NGOs/civil societies. To assist CWS in solving some problems, FOW is seeking the support of Conservation Force to re-promote conservation activities in 2014.

Project Plan

We have 3 objectives:

1) to increase the number of Eld's deer within CWS
2) to build the capacity and motivation of CWS field staff to conserve Eld's deer
3) to increase authorities' support for Eld,s deer conservation through raising awareness

I. Increasing Eld's deer population in CWS

Patrolling and sighting records

Three reserve teams will carry out patrolling activities 10-15 days every month. A team consisted of 5 staff and will focus the core zone of CWS. The teams will prevent all human disturbances inside the core zone during mating season from February to May. The teams will also focus to stop illegal hunting.

During the patrolling period, all sightings such as illegal human signs/activities, deer sightings will be maintained in ledger books. This practice was disappeared since 2005. The project will adopt this practice again and all data such as date, time, place, block number, habitat type, types of signs for illegal activities, sex & age & number for deer sighting, etc., will be noted for presentation to authorities.

Core zone management

Management of CWS began in 1985. Based on the resource use practices of local people, the park administration divided the reserve into three zones: Zone 1 (core zone – 121.2 sq.km), Zone 2 (community use zone – 49.2 sq.km), and Zone 3 (development zone – 79.8 sq.km). However, since 2009 the staff and local people did not recognized or respect the zoning system. Even in core zone, many illegal activities such as hunting, extraction of timber regularly occur. Our project will re-start the systematic management of core zone.

Block and Line marking

During the 1990's an effective transect system was established in the core zone, with 11 transects (each separated by 1.5 km; total of 87 km) along a north-south axis and a second set of transects along a east-west axis to create 54 survey blocks (1.5 x1.5 km each). Those transects were demarcated as permanent lines using a compass, measuring tape, color flags and paints for tree marking. We propose to re-mark all 54 blocks (1.5 km x 1.5 km) and 11 transect lines. It will be very helpful for long term monitoring of Eld's deer.

Signboards

Signboards will be posted along the boundary of core zone. Those signboards would be for education about Eld's deer, prohibiting resource extraction, and raising awareness.

Surveys

A deer census will be conducted in 1st week of April cooperating by CWS staff and FOW members. It will use the newly demarcated transects to conduct a distance sampling survey to estimate current deer densities and distribution in CWS.

Building up the capacity and motivation of field staff

The project will carry out 3 different trainings on deer census (line transect sampling), SMART patrol and sighting records, and environmental education and community participation in conservation of Eld's deer.

II. Getting authorities' supports through raising awareness

A team consisting of CWS staff and FOW members will conduct environmental talks at 5 villages located near core zone. The project will also send articles mentioning project activities and CWS to famous country-wide journals such as The Voice Weekly, Eleven Weekly, etc. In addition, the project will invite the journalists and television media reporters to CWS. The quarterly reports of the project will also submit to FD head office, and Minister for Forest and Mining, Sagaing Regional Government.

Expected outputs

- The project goal is to protect the hunting activity through regular patrolling, mainly in core zone and during mating season, and thereby reduce poaching pressure on wildlife.
- Systematic park management will be re-adopted in CWS and deer population will increase.
- Scientific data will be collected and comparison between former and present data will be useful to increase authorities' awareness.
- Sanctuary staff will work with conservation NGOs again and local villagers to recognize the core zone of CWS.
- Awareness will be raised to Sagaing Regional Parliament, Sagaing Regional Government and the Nay-pyi-taw head-office.

Implementation team

This project will be a cooperative activity between the FD, the Smithsonian Institution and a local NGO FOW. It will directly benefit for the deer, sanctuary staff and the sanctuary ecosystem. Dr. William J. McShea, the Smithsonian Wildlife Ecologist will monitor and evaluate the outputs and outcomes of the project. He will help on data analysis, and management categories. The NGO FOW will disburse funds and lead all field activities. U Myint Aung, ex-warden of CWS, chairman of FOW will supervise all project activities. The FOW is an established NGO in Myanmar, received an official registration issued by Ministry of Home Affairs in 2012. The FOW leader, U Myint Aung has worked with the US Consulate in Yangon on multiple sustainability projects in Myanmar. At present, FOW is currently working with five local communities at western site of CWS for development of community based conservation since October 2013.

Proposed budget

Sr. No.	**Description**	**Estimated Cost**	**Requested fund**	**Applicant' s in-kind**
I.	***Regular patrolling and Core zone management***			
	Rice bags for patrolling team - $120/month x 12 months.	$1440	$1440	-

	Zone and transect line marking Supplies (paints, brushes, etc.) Per diem for 3 field staff x $4/day x 30 days	 $100 $360	 $100 $360	 - -
	Signboards	$130	$130	-
	Sighting records	$50	$50	-
	Deer census (daily allowances 20 persons x $4 /day x 3 days & transportation - diesel/gasoline)	$300	$300	-
II.	***Building the capacity/motivation of field staff***			
	3 trainings 15 CWS staff x $5/day x 6 days	$450	$450	-
III.	***Support by authorities through raising awareness***			
	Education activities at 5 targeted villages	$500	$500	-
	Articles released and reports to FD	$90	$90	-
	Interviews with media (travel & per diem $10 x 12 months)	$120	$120	-
IV.	***Personnel for FOW members***			
	Project supervisor ($900 x 2 mon.)	$1800	-	$1800
	Field officer ($250/mon. x 3 mon.)	$750	$750	$240
	Field assistant ($150/mon. x 6 mon.)	$900	$900	$240
	Travel for FOW ($80 x 12 times)	$960	-	
	TOTAL	**$7950**	**$5670**	**$2280**

Products provided to Conservation Force

We will provide a brief update on our activities six months after receiving funds, including an accounting, a list of activities accomplished and some photos of our actions. One year after receiving funding we will provide a final report on our activities including a complete accounting and short text on each activity and photographs of each activity.

Artificially deepening natural seasonal waterholes in eastern Cambodia: impact on water retention and use by globally-threatened large ungulates and waterbirds

Abstract

Natural seasonal waterholes (trapeang in Khmer) are an important feature of the deciduous dipterocarp forests of eastern Cambodia and are utilised by a number of globally threatened species of large ungulates and waterbirds. However at the end of the dry-season (April) only a small proportion of waterholes retain water. We artificially deepened six waterholes in the core area of Mondulkiri Protected Forest, eastern Cambodia removing between 3-m^3 and 24-m^3 of earth (mean 16.5-m^3) from each. Surveys prior to deepening demonstrated that only one of these waterholes, and 10% of all waterholes surveyed in the study area, held water at the end of the dry-season. Following modification five of the six deepened waterholes (83%) held water at the end of the subsequent dry-season. Twenty-three species including two globally threatened large ungulates, Banteng *Bos javanicus* and Eld's deer *Cervus eldii*, and two Critically Endangered ibises (Giant *Thaumatibis gigantea* and White-shouldered *Pseudibis davisoni*), were photographed by remote camera-traps foraging and drinking at the deepened waterholes between March and June 2012. Our results suggest that artificially deepening natural waterholes does not cause damage to the natural structure of the waterhole, which remains suitable for utilisation by threatened species and that this technique can be used to modify natural waterholes thus allowing them to hold water throughout the dry-season in the face of a changing climate.

Key Words: conservation evidence, climate change, dry forest, Indochina, protected area management

Abbreviations: IUCN - International Union for Conservation of Nature; MPF – Mondulkiri Protected Forest; WWF - World Wide Fund for Nature

Introduction

The deciduous dipterocarp forests of eastern Cambodia form part of the Lower Mekong Dry Forests Ecoregion and are globally significant for biodiversity conservation (Tordoff et al. 2005, Gray et al. 2012a). These forests support particularly important populations of large ungulates, including the largest global population of the IUCN Endangered banteng *Bos javanicus* (Gray et al. 2012b), and large waterbirds including two IUCN Critically Endangered species of ibis (Wright *et al.* 2012a). Deciduous dipterocarp forest in the Eastern Plains Landscape of Mondulkiri have also been identified as irreplaceable for tiger *Panthera tigris* conservation, representing the only large block of dry forest habitat in South-East Asia, with a reintroduction program recommended (Lynham 2010).

Deciduous dipterocarp forest in the Eastern Plains Landscape are affected by a strong monsoonal climate creating a highly seasonal environment with long periods of water stress during the dry-season when precipitation is rare (<10% of annual precipitation, total approx 1500-1800-mm, between November and April; Bruce 2013). A key feature of the deciduous dipterocarp landscape in the Eastern Plains are natural seasonal waterholes (trapeang in Khmer) which stud the landscape. By the end of the dry-season (March-April) the majority of the waterholes in the landscape do not retain water (Koehncke 2010).

Given increasing human activities across the landscape, including legal Non Timber Forest Product collection and illegal hunting and fishing, waterholes that retain water throughout the dry-season are increasingly disturbed (WWF-internal data). This is likely to be detrimental to a number of threatened species including Eld's deer *Cervus eldii*, which do not drink from other water-sources e.g. pools in

seasonal rivers, and ibis for which waterholes are key foraging resources (Wright et al. 2012b; Wright et al. 2013). Predicted changes in precipitation and temperature associated with climate change are also likely to affect water retention during the dry-season in the landscape (Beaumont et al. 2011).

Artificial manipulation of water availability through modifying natural waterholes, or developing entirely new water sources, is widely used in tropical savannah and dry forest ecosystems for ungulate conservation (Owen-Smith 1996, Smit et al. 2007). However there have been no previous, documented, attempts to modify natural waterholes in South-east Asian deciduous dipterocarp forest for conservation. The aims of this study were to experimentally deepen waterholes in the core area of Mondulkiri Protected Forest, eastern Cambodia to examine 1) whether deepened waterholes held water for longer during the dry-season than prior to modification and 2) whether artificially deepened waterholes could be used by globally threatened large ungulates and large waterbirds.

Materials and Methods

Study Area

Mondulkiri Protected Forest (MPF) is located in eastern Cambodia and forms part of the Eastern Plains Landscape, a protected area complex of over 13,000 km^2 including Yok Don National Park in Dak Lak province, Vietnam. The study area is largely flat and dominated by deciduous dipterocarp forest (Pin et al. 2013) with smaller patches of bamboo and riverine gallery forest. The study was conducted within approximately 450-km^2 inside the proposed core zone of MPF (approx. location 13°05′N, 107°30′E). This area supports the highest ungulate densities in the Eastern Plains Landscape, approximately 6 individuals per km^2, (Gray et al. 2013) and is the only area in MPF from which Eld's deer are regularly recorded. The

study area, and modified waterholes, are all >30-km from nearest villages and not used at all by domestic ungulates. The total number of waterholes throughout the approximately 2,120-km^2 core area of MPF, based on remotely sensed imagery, is 430 (WWF-internal data).

Waterhole manipulation

In April 2011 six natural waterholes (henceforth modified waterhole) in the study area were artificially deepened-by up to 100-cm depth, from their centre when totally dry (Fig. 2; Table 1). Extracted earth was moved to the edge of the waterhole and spread over an area 2-3-m from the waterhole. Deepening was done by hand using sub-contracted local villagers (total cost approximately 3,000 US$) with deepening of each waterhole taking approximately 2-3 days. Five waterholes were deepened by between 50-cm and 100-cm with between 16-m^3 and 24-m^3 (mean 19.2-m^3) of earth removed (Table 1). Due to a hard rock-like substrate forming the bottom of one of the waterholes one of the modified waterholes (#6) was deepened by only approximately 20-cm with a total of 3-m^3 earth removed (Table 1).

Monitoring use by ungulates and large waterbirds

Between March and June 2012 (late dry-season to early wet-season) automatic camera-traps (Reconyx RapidFire Professional PC90; Reconyx) were operational at each of the modified waterholes set to photograph any animals using each waterhole. One camera-trap was set at each of the six waterholes and used to assess the use of the modified waterholes by mammals and waterbirds. One camera-trap (at trapeang # 4) malfunctioned with no data collected. The remaining five modified waterholes were trapped for a total of 448 camera-trap nights (range 86-92 nights per waterhole). Water retention within the modified waterholes was assessed based on ad-hoc visits to each site.

Results

Patterns of water retention prior to modification

Between January and April 2010 (mid to late dry-season) 50 waterholes within the study area were surveyed for water availability during three survey visits (Koehncke 2010; Fig. 1). These waterholes were a sub-set of the 64 trapeang within the study area. The percentage of the 50 surveyed waterholes holding any water declined from 86% (43) in late January to 10% (5) in early April. The fifty surveyed waterholes included five of the modified waterholes four of which held water in early March declining to one (#6) in April.

Patterns of water retention following modification

Five of the six modified waterholes retained water in April 2012 (83%) compared to only one of these waterholes (20%), and 10% of all waterholes surveyed, at the same time of year prior to modification i.e. in April 2010. On 14th March 2012 all six of the modified waterholes contained water; on the 27th April 2012 five of the modified waterholes contained water with only waterhole (#6) dry. Assuming patterns of water retention in the unmodified waterholes across the study area were the same as during the 2010 surveys the manipulation of waterholes doubled the amount of waterholes holding water within the study area at the height of the 2012 dry-season

Use of modified waterholes by large mammals and waterbirds

A total of 242 independent (*sensu* Phan et al. 2010) camera-trap photographs of 23 species, including 10 globally threatened species, were obtained from the five camera-trapped waterholes (Table 2; Fig. 3 and 4; Appendix 1). This included banteng from all five of the camera-trapped waterholes and Eld's deer from

three. Six species of large waterbird (i.e. stork, ibis and crane) were photographed foraging within the modified waterholes (Table 2). Giant ibis was recorded from all five of the camera-trapped modified waterholes and white-shouldered ibis from three (Fig. 4).

Discussion and Conclusions

Direct conservation management actions to benefit threatened species, for example manipulating water availability, are relatively common in protected areas in southern Africa and Europe but rare in Indochina (Owen-Smith 1996, Gaudioso Lacasa et al. 2010, Shrader et al. 2010). This is partly a result of limited research into the effectiveness of such direct management in tropical Asia. Active provision of additional water into waterholes in South-east Asia may be unsustainable and logistically difficult. Therefore ways in which waterholes can be artificially modified to retain water for longer, as in this study, are likely to be valuable. Whilst it is unclear the extent to which water limitation impacts survivorship and reproduction of threatened ungulates within Cambodian dry forest it would be logical for it to a limiting factor and increased water availability could improve ungulate productivity. Indeed radio-collaring of Eld's deer in similar forest in Myanmar suggested movements and home-ranges were larger in the dry-season and this was likely related to reduced water availability (Aung et al. 2001).

In this study we addressed a potential limitation to populations of threatened waterbirds and large ungulates through experimentally enhancing dry-season water levels in Cambodian deciduous dipterocarp forest. Our results demonstrate that the simple technique we used increased water retention post-manipulation and that the manipulated waterholes were used by a suite of threatened species characteristic of the Lower Mekong Dry Forests Ecoregion.

Prior to the deepening of waterholes we had identified two potentially negative outcomes of modifying natural waterholes within the landscape. Firstly that deepening waterholes may disrupt the natural base of the waterhole and break through an impermeable barrier thus leading to rapid draining away of water. However one of the modified waterholes (#6) did appear to lose water more rapidly than during the pre-modified state possibly due to disruption of an impermeable rock-like base. Secondly that modification may make waterholes unsuitable for use by focal endangered species through, for example, disturbing key foraging resources for waterbirds, making areas of deepened waterholes inaccessible to foraging waterbirds, or damaging the edge of waterholes thus preventing access by ungulates. Our results clearly demonstrate that these concerns were largely unfounded with both giant and white-shouldered ibis actively foraging in modified waterholes. We also do not believe that modifying waterholes is likely to increase chances of disease transmission between animals and may, through increasing availability of water during the dry-season across more waterholes, prevent high densities of animals concentrated in few places.

Our results, however, clearly indicate that artificially deepening waterholes does not prevent use by threatened species of large ungulates and waterbirds. Camera-trap photographs clearly show both ibis and storks foraging (Fig. 4) and Eld's deer and banteng drinking (Fig. 3) at modified waterholes. When enhancing water availability within protected areas it is important that law enforcement and patrolling activities are focused to ensure modified water features are not targeted for illegal hunting or disturbance. Camera-trapping at the modified waterholes did not record any local people although unaccompanied domestic dogs were recorded from one waterhole on one occasion.

Whilst our results suggest that artificially deepening natural waterholes is a valuable technique for increasing dry-season water availability in highly seasonal deciduous dipterocarp forest we recommend a number of future research activities into the process and ecological impacts of artificially deepening waterholes. Studies are required to assess the degree to which water availability is limiting for focal species in deciduous dipterocarp forests thus clarifying the extent to which waterhole manipulation is necessary. Recent studies have also suggested that dried substrates surrounding waterholes are an important breeding season resource for the Critically Endangered white-shouldered ibis and thus retaining water throughout the dry-season in a majority of waterholes may be detrimental for this species (Wright et al. 2013). Studies are thus needed to compare large waterbird food resources between modified and unmodified waterholes across both dry and wet-seasons. The impacts of anthropogenic climate change on Indochina's lowland deciduous forests are not yet clearly understood, but altered rainfall and evaporation will probably affect waterhole hydrology especially during the dry-season when water stress is already high (Timmins 2011). Modeling has also demonstrated that water stress may negatively impact ungulate populations particularly those which are sedentary and largely grazers i.e. banteng and Eld's deer (Duncan et al. 2012). Given that we have demonstrated the value of artificially manipulating waterholes for increasing water availability for large ungulates and waterbirds our technique may be particularly valuable throughout South-east Asian deciduous dipterocarp forests in the face of a changing climate.

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235 **Tables**

236

ID	Open	Water	Max depth deepened (cm)	Total excavated (m^3)
1	50-m x 60-m	25-m x 40-m	50	20
2	30-m x 30-m	20-m x 25-m	100	18
3	n/a	n/a	50	18
4	15-m x 40-m	7-m x 15-m	100	16
5	30-m x 40-,	20-m x 15-m	100	24
6	20-m x 600m	15-m x 50-m	20	3

237

238 Table 1. Estimated dimensions of the open area and of water in early dry-season 2010 prior to
239 modification (from Koehncke 2010; waterhole #3 not visited) for six artificially deepened waterhole in
240 Mondulkiri Protected Forest, eastern Cambodia. Maximum depth deepened (cm) and total earth excavated
241 (m^3) during April 2011, for each waterhole, indicated.

242

243

Species	**IUCN**	**#1**	**#2**	**#3**	**#5**	**#6**
Eld's deer *Cervus eldii*	EN	X	X		X	
Banteng *Bos javanicus*	EN	X	X	X	X	X
Red muntjac *Muntiacus muntjak*	LC	X	X	X	X	X
Wild pig *Sus scrofa*	LC	X	X	X	X	X
Dhole *Cuon alpinus*	EN	X				
Large-spotted-civet *Viverra megaspila*	VU	X				X
Giant ibis *Thaumatibis gigantea*	CR	X	X	X	X	X
White-shouldered ibis *Pseudibis davisoni*	CR	X	X		X	
Black-necked Stork *Ephippiorhynchus asiaticus*	NT	X				
Woolly-necked Stork *Ciconia episcopus*	LC	X	X	X	X	X
Lesser Adjutant *Leptoptilos javanicus*	VU		X	X	X	
Sarus Crane *Grus antigone*	VU				X	
Red-headed Vulture *Sarcogyps calvus*	CR		X			
Green Peafowl *Pavo muticus*	EN	X				

244

245 Table 2. Globally-threatened species of mammals and bird, plus all ungulate and large waterbird species,
246 recorded by camera-trapping from five artificially deepened waterholes in Mondulkiri Protected Forest
247 during the 2012 dry-season.

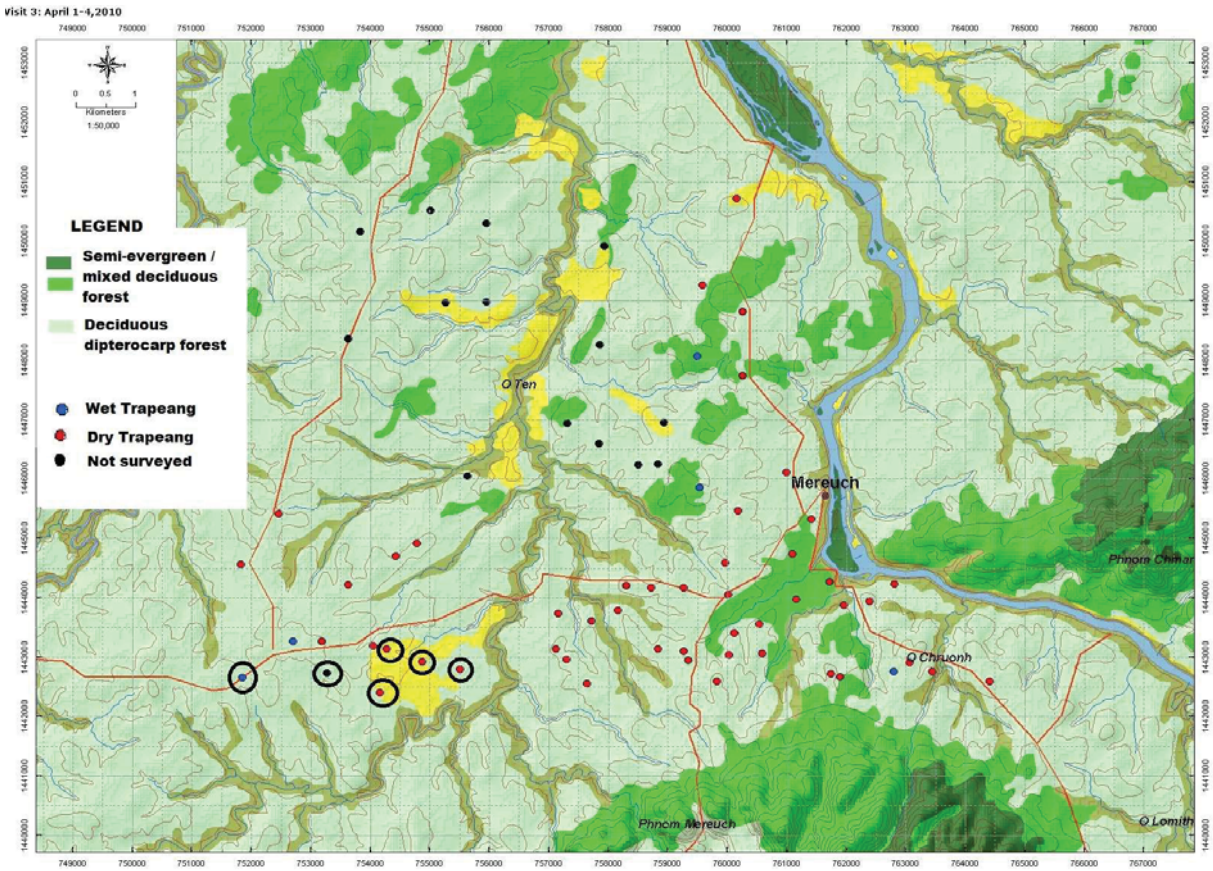
248

249

250 **List of Figures**

251

261


Visit 3: April 1-4,2010
LEGEND
Semi-evergreen / mixed deciduous forest
Deciduous dipterocarp forest
Wet Trapeang
Dry Trapeang
Not surveyed
Mereuch
O Ten
O Chruonh
Phnom Mereuch
O Lomith

262

263

264

277 **Appendix One**

278

279 Number of manipulated waterholes (n=5) each species was recorded at, and number of independent
280 encounters (*sensu* Phan *et al.* 2010), for all bird and mammal species camera-trapped from artificially
281 deepened waterholes in Mondulkiri Protected Forest, eastern Cambodia March-June 2012.

282

Species		**Locations**	**Encounters**
Wild Pig	*Sus scrofa*	5	90
Banteng	*Bos javanicus*	5	33
Eld's Deer	*Cervus eldii*	3	7
Red Muntjac	*Muntiacus muntjak*	5	6
Asiatic Jackal	*Canis aureus*	2	4
Small Indian Civet	*Viverricula indica*	3	3
Common Palm Civet	*Paradoxurus hermaphroditus*	2	2
Dhole	*Cuon alpinus*	1	2
Large-spotted Civet	*Viverra megaspila*	2	2
Jungle Cat	*Felis chaus*	1	1
Siamese Hare	*Lepus peguensis*	1	1
Small Asian Mongoose	*Herpestes javanicus*	1	1
Wooly-necked Stork	*Ciconia epicopus*	5	29
Giant Ibis	*Thaumatibis gigantea*	5	22
White-shouldered Ibis	*Pseudibis davisoni*	3	16
Lesser Adjutant	*Leptoptilos javanicus*	3	8

Sarus Crane	*Grus antigone*	1	4
Black-necked Stork	*Ephippiorhychus asiaticus*	1	3
Green Peafowl	*Pavo muticus*	1	3
Black-collared Starling	*Sturnus nigricollis*	1	2
Chinese Francolin	*Francolinus pintadeanus*	1	1
Red Collared Dove	*Streptopelia tranquebarica*	1	1
Red-headed Vulture	*Sarcogyps calvus*	1	1

283

284

Gmail **Regina Lennox <regina.lennox.cf@gmail.com>**

Request for Project Approvals -- Ranching for Restoration

Vannorman, Tim <tim_vannorman@fws.gov> Mon, Aug 1, 2016 at 2:04 PM
To: "Regina A. Lennox" <regina.lennox@conservationforce.org>
Cc: "John J. Jackson, III" <jjw-no2@att.net>

Regina,

Thank you for the information. With that information, this sounds like an excellent project. Go ahead and fund it.

Tim

On Mon, Aug 1, 2016 at 2:39 PM, Regina A. Lennox <regina.lennox@conservationforce.org> wrote:
> Dear Tim,
> Thank you for the response. Perfect timing -- NASCO just asked us about the funding. Ranching for Restoration is able to cover the full [redacted], and Conservation Force will cover the administrative costs.
> Thanks,
> Regina
>
> On Mon, Aug 1, 2016 at 12:34 PM, Vannorman, Tim <tim_vannorman@fws.gov> wrote:
> > Dear Regina and John,
> >
> > I am sorry that I have not responded sooner. I know that you have been sitting on pins and needles for my response.
> >
> > Both projects look good. For the E;ld's deer, the proposal has a [redacted]s. Is Ranching for Restoration funds covering the total cost? If not, how sum is being contributed?
> >
> > I am good with the red lechwe project, so that is acceptable.
> >
> > Tim
> >
> >
> > On Fri, Jul 8, 2016 at 11:52 AM, Regina A. Lennox <regina.lennox@conservationforce.org> wrote:
> > > Dear Tim,
> > >
> > > Bill McShea from the Smithsonian has asked me about the status of our approval. Have you had a chance to look at these projects? The Burma project is a logical follow-up from the Eld's deer project we funded last year. We would appreciate your approval so they can move forward with implementing the priority items of the management plan.
> > >
> > > Thanks,
> > > Regina
> > >
> > >
> > > ---------- Forwarded message ----------
> > > From: **Regina A. Lennox** <regina.lennox@conservationforce.org>
> > > Date: Tue, Jun 14, 2016 at 10:08 AM
> > > Subject: Request for Project Approvals -- Ranching for Restoration
> > > To: "Vannorman, Tim" <tim_vannorman@fws.gov>
> > > Cc: "John J. Jackson, III" <jjw-no2@att.net>

Dear Tim,

We are requesting two approvals for use of Ranching for Restoration funds.

First, on May 31, we sent a proposal for implementation of the Eld's Deer Action Plan in Myanmar, in the Chatthim Wildlife Sanctuary. I reattach the documents for ease of reference. This is a critical project to protect the sanctuary and encourage growth of the current population. We would partner with the non-profit Friends of Wildlife, who we previously worked with in an Eld's deer project (explained in our May report). They

This project is intended to begin July 2016, so if possible, we would appreciate your attention to and approval of this proposal as soon as possible.

Second, we previously sent you information on a red lechwe project in Namibia. We propose to contribute [redacted]ur (with the intent to continue to support the project in future years, subject to re-approval by FWS). We would work with the Namibian Association of Conservancies to support ongoing surveying and monitoring of red lechwe in the wetlands of northeastern Namibia. For the past 15 years, game counts by foot have been used to monitor and estimate this population, with a helicopter survey in 2014 improving the knowledge on lechwe in the area. This project will introduce regular helicopter and fixed-wing aerial surveying to reach the populations in the wetlands which cannot be reached by foot. These aerial surveys will provide enhanced data for quota setting and population performance monitoring and tracking. Aerial surveillance will also assist with anti-poaching and deterrence.

The Ministry of Environment and Tourism (MET) has requested that a helicopter survey be performed in the first year (which is why that contribution is higher), with fixed-wing surveys to follow in years two-four. It is expected that the helicopter survey would be conducted in September 2016 and would expand the areas covered by the 2014 survey (Zambezi, Linyanti, and Chobe River ecosystems). In future years, the entire river system will be surveyed. This project is supported and technically advised by WWF-Namibia and in partnership with MET's Directorate of Scientific Services. A draft survey report is expected to be prepared in December 2016, and we would also receive a financial report.

You indicated initial support for this red lechwe project. Please confirm that FWS approves the four-year expenditure, which we think will provide valuable data for red lechwe conservation in Namibia as well as anti-poaching support for MET.

Thanks very much, we appreciate your attention to these requests so we can begin to support these important projects.

Regina

--
Regina A. Lennox
Conservation Force
3240 S I-10 Service Road W, Suite 200
Metairie, Louisiana 70001 USA
504-837-1233 (office)
[redacted]
regina.lennox@conservationforce.org

--
Regina A. Lennox
Conservation Force
3240 S I-10 Service Road W, Suite 200
Metairie, Louisiana 70001 USA
504-837-1233 (office)

[redacted]
regina.lennox@conservationforce.org

--
Timothy J. Van Norman, Chief
Branch of Permits
Division of Management Authority
U.S. Fish and Wildlife Service
(703) 358-2350

***Sign up* for our e-newsletter to learn how we're working around the globe to protect species and their habitats!**

--
Regina A. Lennox
Conservation Force
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Metairie, Louisiana 70001 USA
504-837-1233 (office)
[redacted]
regina.lennox@conservationforce.org

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***Sign up* for our e-newsletter to learn how we're working around the globe to protect species and their habitats!**

Gmail **Regina Lennox <regina.lennox.cf@gmail.com>**

Conservation Fund_Financial reports

Annatjie du Preez <annatjiedp@iway.na> Thu, Dec 8, 2016 at 12:18 AM
To: Chrissie Jackson <cjackson@conservationforce.org>, Chris Weaver <cweaver@wwf.na>, Greg Stuart-Hill <gstuart@wwf.na>
Cc: "John J. Jackson, III" <cf@conservationforce.org>, Regina Lennox <regina.lennox@conservationforce.org>, Unknown <tim_vannorman@fws.gov>, piet beytell <piet.beytell@met.gov.na>, maxi@nacso.org.na

Dear Chrissie and Regina,

Herewith the financial reports for August and September 2016, after which no more movement has taken place.

If any questions please let me know – however will only be back on 11 January 2017.

May you have a blessed festive season, kind regards

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

From: Annatjie du Preez [mailto:annatjiedp@iway.na]
Sent: 05 December 2016 10:41 AM
To: 'Chrissie Jackson'; 'Chris Weaver'; 'Greg Stuart-Hill'
Cc: 'John J. Jackson, III'; 'Regina Lennox'; 'Unknown'; piet beytell (piet.beytell@met.gov.na)
Subject: RE: Lechwe

Dear Regina and Chrissie,

This is only a brief email to let you know that the wetlands survey (lechwe) was postponed till this month December as various other drought related activities needed addressing by MET (Piet Beytell). However, the funding has been spent (procurement of AVGAS) and I will let you know in late January 2017 on the status of a census report.

Once again thank you and kind regards.

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

From: Annatjie du Preez [mailto:annatjiedp@iway.na]
Sent: 30 August 2016 11:48 AM
To: 'Chrissie Jackson'; 'Chris Weaver'; 'Greg Stuart-Hill'
Cc: 'John J. Jackson, III'; 'Regina Lennox'; 'Unknown'; piet beytell (piet.beytell@met.gov.na); admin@binvis.co
Subject: RE: Lechwe

Dear Chrissie,

We received the funding on 19 August 2016 – after exchange rate applied: N$198,825.00. Apologies for late notification – I was out of town till yesterday.

Kind regards.

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

From: Annatjie du Preez [mailto:annatjiedp@iway.na]
Sent: 19 August 2016 08:08 AM
To: 'Chrissie Jackson'; 'Chris Weaver'; 'Greg Stuart-Hill'
Cc: 'John J. Jackson, III'; 'Regina Lennox'; 'Unknown'; piet beytell (piet.beytell@met.gov.na); admin@binvis.co
Subject: RE: Lechwe

Thank you Chrissie, much appreciated.

I will confirm receipt of the funds as soon as possible. I will keep you informed regarding the survey schedule as well as regular financial expenditure feedback.

Kind regards.

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

From: Chrissie Jackson [mailto:cjackson@conservationforce.org]
Sent: 18 August 2016 09:45 PM
To: annatjiedp@iway.na; Chris Weaver; Greg Stuart-Hill
Cc: John J. Jackson, III; Regina Lennox; Unknown
Subject: Re: Lechwe

Dear Annatjie,

This is a heads up to let you know the grant from Conservation Force has been wired today from Chase Bank wiring reference number ES2313965900 as per you wiring instruction. We are very proud to be supporting this survey. We

trust it will be very successful for the conservation of lechwe in Namibia.

This sum is only to be expended on the project/projects we have pre-approved. Any part not used for Conservation Force approved projects is to be refunded to Conservation Force. These funds are not yours to use as you wish. The Internal Revenue Code of the USA requires Conservation Force to maintain control and exercise this discretion for the contribution to be tax deductible to the donor. Straight “pass through” earmarked donations to “foreign” charities are not deductibe unless the US charity (Conservation Force) maintains discretion and control. i.e., independently allocates such funds. In some cases we may return a donor’s contribution or expend it on some other project. Please work with us to protect the donor’s interest. Thank youi.

Best regards,

Chrissie Jackson

Sent from my iPad

Chrissie Jackson

Conservation Force Treasurer

3240 S. I-10 Service Road W., Ste. 200

Metairie, Louisiana 70001-6911 USA

cjackson@conservationforce.org

On Aug 12, 2016, at 10:30 AM, Regina A. Lennox <regina.lennox@conservationforce.org> wrote:

> Dear Chrissie,
> This is a request for funding for the lechwe project in Namibia. Please let me know or Annatjie know if you need anything else to disburse RFR funds.
> Thanks,
>
> Regina
>
> ---------- Forwarded message ----------
> From: **Annatjie du Preez** <annatjiedp@iway.na>
> Date: Fri, Aug 12, 2016 at 4:42 AM
> Subject: Lechwe
> To: "Regina A. Lennox" <regina.lennox@conservationforce.org>
>
> Dear Regina,
>
> Attached please find our letter. Also attached is our banking details and we will confirm as soon as it has been deposited.
>
> Kind regards.

Annatjie du Preez

Project Coordinator (NACSO – Natural Resource Working Group)

P.O. Box 98353

Pelican Square, Windhoek

Tel. nr.: 264-61-230888

Fax nr.: 264-61-239799

Email: annatjiedp@iway.na

--

Regina A. Lennox

Conservation Force

3240 S I-10 Service Road W, Suite 200

Metairie, Louisiana 70001 USA

504-837-1233 (office)

[redacted]

[redacted]

<Funding request_Aug2016.pdf>

<NACSO NRWG account details.pdf>

20161208070329756.pdf
99K

CONSERVATION FORCE

A FORCE FOR WILDLIFE CONSERVATION

† BARON BERTRAND DES CLERS, PH.D.
† JAMES G. TEER, PH.D.
† BART O'GARA, PH.D.
† DON LINDSAY

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April 28, 2017

Darcy Vargas, Biologist
U.S. Fish and Wildlife Service
MS:IA, 5275 Leesburg Pike
Falls Church, Virginia 22041-3803
darcy_vargas@fws.gov

Re: Response to March 14, 2017 Email, Ref. 49112A

Dear Ms. Vargas:

I write in response to your email to Mr. Cole Reid of Morani River Ranch.

I am the President of Conservation Force. Conservation Force is a tax-exempt, charitable organization as described in Section 501(c)(3) of the Internal Revenue Code. It is also a publicly supported organization as described in Sections 509(a)(1)–(2) and 170(b)(1)(A)(vi).

Conservation Force has supported the recovery work of exotic game ranches in the United States for decades. One way we do this is through our Ranching for Restoration project, which directs a portion of the proceeds from hunts of Endangered Species Act-listed species on ranches with captive-bred registrations and take permits, and invests those funds in carefully chosen "smart" projects that enhance the survival of these species in the countries of origin. We obtain pre-approval from the U.S. Fish and Wildlife Service before we invest in these projects. This program has been operating for years, and the FWS has repeatedly found the "enhancement" requirement of the ESA is satisfied.

Morani River Ranch is a participant in our Ranching for Restoration project, and has donated ten percent of proceeds from the taking/culling of endangered species on an annual basis. I hereby confirm that Morani River Ranch donated $2,300.00 to Conservation Force as ten percent of the proceeds from taking/culling barasingha and red lechwe in 2015, as stated in its 2015 Annual Report.

Relevant to its 2016 Annual Report, on January 23, 2017, Morani River Ranch donated $3,150.00 to Conservation Force as ten percent of the proceeds from taking/culling oryx, Eld's deer, and barasingha in 2016. A copy of the acknowledgement letter we sent is attached.

Sincerely,

John J. Jackson, III
President

3240 S I-10 Service Road W, Suite 200, Metairie, Louisiana 70001, USA
Telephone: (504) 837-1233 • Fax (504) 837-1145 • Email: cf@conservationforce.org
www.conservationforce.org

CONSERVATION FORCE

A FORCE FOR WILDLIFE CONSERVATION

† BARON BERTRAND DES CLERS, PH.D.
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EXECUTIVE COMMITTEE:

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CHRISSIE JACKSON
PHILIPPE CHARDONNET, D.V.M.
BERT KLINEBURGER
SHANE MAHONEY

March 17, 2017

Cole Reid
Morani River Ranch
P.O. Box 5513
Uvalde, TX 78802

RE: Substantiation of charitable contribution to Conservation Force, Tax I.D. No. 72-1364493

Dear Cole:

Thank you for your contribution to Conservation Force's Ranching for Restoration Program. Conservation Force is a tax-exempt charitable organization described in Section 501(c)(3) of the Internal Revenue Code. It is also a publicly supported organization described in Section 509(a)(1), 509(a)(2) and 170(b)(1)(A)(vi) (Foundation Status Classification). This combination provides the maximum tax advantage possible to donors and contributors.

Consequently, you are entitled to deduct your contribution. This is intended to be the written substantiation of your donation as required by IRS regulations. This letter does not get filed with your income tax return, but you need to keep this letter in your tax records for this tax year.

We further certify that no goods, services, products or other reciprocal payments were provided to you for any portion of your contribution. Your donation of $3,150.00 was made on January 23, 2017.

Thank you again.

Sincerely,

John J. Jackson III
Chairman

3240 S 1-10 Service Rd. W, Suite 200, Metairie, Louisiana 70001-6911, USA
Telephone: *(504)* 837-1233 • Fax (504) 837-1145 • E-mail: jjj@conservationforce.org
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