

ACTION HISTORY OF RTI REQUEST No.WLIOI/R/E/20/00002

Applicant Name Sangeeta Dogra

Text of Application Kindly furnish the copy of request letter received from Central Zoo authority new delhi and National Zoological Park New Delhi for the Year March 2018-January 2020 as on date. 1. Name of Scientist, Officers deployed on each letter request received from from CZA and Delhi Zoo National Zoological Park from 2. Kindly furnish the copy of each all the reports submitted or retained with WII

Reply of Application Kindly see the attached letter

SN.	Action Taken	Date of Action	Action Taken By	Remarks
1	RTI REQUEST RECEIVED	07/01/2020	Nodal Officer	
2	REQUEST FORWARDED TO CPIO	08/01/2020	Nodal Officer	Forwarded to CPIO(s) : (1) Anju Baroth
3	ADDITIONAL PAYMENT REQUIRED FOR INFORMATION	29/01/2020	Anju Baroth-(CPIO)	The information is available in 45 pages. As per sec. 7 (5) you are requested to pay Rs. 2/- per page as photocopy charge.
4	ADDITIONAL PAYMENT RECEIVED FROM REQUESTER	08/02/2020	RTI Applicant	
5	REQUEST DISPOSED OF	10/02/2020	Anju Baroth-(CPIO)	

[Print](#)

No. WII/RTI/CPIO/2019-20 (Qtr-IV)

Date: 10 February, 2020

To,

Ms. Sangeeta Dogra
Mahagun Mywoods, Tower Alpine Wood,
Flat no 3114, Opp. Gaur City 2 Noida Extension, Pin:201305
Tel.: 09871452327
Email: confederationredlynx@gmail.com

Sub.: Information under RTI Act, 2005-reg.

Ref.: Your Online RTI No. WLIOI/R/E/20/00002 dated 07 January, 2020

Dear Madam,

Please refer to your application cited above under RTI Act, 2005. In this context, this is to confirm that additional fee deposited by you as per Rule 5 of RTI Act, 2005 has been received and point-wise response to your queries is given below:

The additional
money deposited
by applicant on
Saturday, 8 Feb, 2020.
The information sent
to applicant by speed
post on Monday,
10 Feb, 2020.
AB
10/02/2020

Information Sought under RTI	Reply
Kindly furnish the copy of request letter received from Central Zoo authority New Delhi and National Zoological Park New Delhi for the Year March 2018-January 2020 as on date.	
1. Name of Scientist, Officers deployed on each letter request received from CZA and Delhi Zoo National Zoological Park from	Please see Annexure-I .
2. Kindly furnish the copy of each all the reports submitted or retained with WII	Please see Annexure-II .

If you are not satisfied with the aforesaid reply, you may appeal to the Appellate Authority i.e. "Director, Wildlife Institute of India, Post Box 18, Chandrabani, Dehradun - 248 001, Ph. 0135-2640910"

Thanking you,

(Dr. Anju Baroth)
NO & CPIO (RTI)

Encl.: as above.

1. Annexure - I (Pages 22)
2. Annexure - II (Pages 23)

10/4/2020

No. WII/RTI/CPIO/2019-20 (Qtr-IV)

Date: 10 February, 2020

To,

Ms. Sangeeta Dogra
Mahagun Mywoods, Tower Alpine Wood,
Flat no 3114, Opp. Gaur City 2 Noida Extension, Pin:201305
Tel.: 09871452327
Email: confederationredlynx@gmail.com

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Ref.: Your Online RTI No. WLIOI/R/E/20/00002 dated 07 January, 2020

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Kindly furnish the copy of request letter received from Central Zoo authority New Delhi and National Zoological Park New Delhi for the Year March 2018-January 2020 as on date.	
1. Name of Scientist, Officers deployed on each letter request received from CZA and Delhi Zoo National Zoological Park from	Please see Annexure-I .
2. Kindly furnish the copy of each all the reports submitted or retained with WII	Please see Annexure-II .

If you are not satisfied with the aforesaid reply, you may appeal to the Appellate Authority i.e. "Director, Wildlife Institute of India, Post Box 18, Chandrabani, Dehradun - 248 001, Ph. 0135-2640910"

Thanking you,

Dr. Anju Baroth
NO & CPIO (RTI)

Encl.: as above.

1. Annexure -I (pages 22)
2. Annexure -II (Pages 23)

Dr. Anju Baroth
10/4/2020

Dr. Anju Baroth

Annexure - I
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Note

Dated 17th January 2020

Ref: Online RTI WLIOI/R/E/20/00002 submitted by Sangeeta Dogra Noida

With reference to above, the summary of request letter received from Central Zoo Authority and National Zoological Park by undersigned between March 2018 till January 2020 is provided along with the copies of request letters.

REQUEST LETTER RECEIVED BY DR PARAG NIGAM FROM CZA AND NATIONAL ZOOLOGICAL PARK (MARCH 2018- JANUARY 2020)

Sr. No.	Letter received	Name of Scientist
1	Meeting on project titled 'Development and Maintenance of Studbooks for selected Endangered Species in Indian Zoos Ref: MS-CZA letter no 9-2/2012-CZA (Vol.1)2565/2018 dated 12 th March 2018	Dr. Parag Nigam
2	Meeting on project titled 'Development and Maintenance of Studbooks for selected Endangered Species in Indian Zoos Ref: MS-CZA letter no 9-2/2012-CZA (Vol.1)2565/2018 dated 13 th March 2018	Dr. Parag Nigam
3	Invitation for Brainstorming session on 'Green Skill Development program Ref: MS-CZA letter no. 7-6/2018-CZA (NS)/4196/2018 dated 14 th August 2018	Dr. Parag Nigam
4	Annual conference of Indian Zoo-Invitation thereof Ref: MS-CZA letter no. 6-2/2018-CZA (NS)/4704/2018 dated 31 st October 2018	Dr. Parag Nigam
5	Meeting of Sub-Committee to review the Standard operating procedures and Protocols in accordance with the National Zoo Policy, 1998 and Recognition of Zoo Rules, 20099-reg Ref: Vety. Consultant & Member Convener, CZA letter no. 19-115/93-CZA(53)(VolXIII)/1536/2019 dated 4 th October 2019	Dr. Parag Nigam
6	Issue of the ill health of Tiger Rama and Chimpanzee Rita at National Zoological Park, New Delhi Ref: MS-CZA letter no. F.No. 19-115/93-CZA(53)(Vol.XIII)(D)/1484 dated 29-09-2019 (Copy available with Sh P.C. Tyagi	Sh. P.C. Tyagi Dr Pradeep K Malik Dr. Parag Nigam Dr Abhilash Khandekar
7	Committee for checking various activities in NZA as advised by the high-level committee of MoEF &CC Ref: Director, NZP letter no. III-17/2019-NZP/2746-47 dated 18/11/19	Dr. Parag Nigam
8	Committee for checking various activities in NZA as advised by the high-level committee of MoEF &CC Ref: Director, NZP letter no. III-17/2019-NZP/2739-40 dated 18/11/19	Dr. Parag Nigam

Information may kindly be sought from other Scientist in this regard.

Parag Nigam
Scientist F

Dr Anju Baroth
NO & CPIO (RTI)

ATTESTED
CPIO, Wild Life Institute of India, Dehradun



GOVERNMENT OF INDIA

भारत सरकार

MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय

Central Zoo Authority

केन्द्रीय चिड़ियाघर प्राधिकरण

268 2



F. No. 21-2/2019-CZA(NS) / 1976/2019

By Post/ E-mail
DATE: 17.12.2019

To

All Evaluators (as per list)

Sub:-Invitation for "Orientation Workshop" regarding the Zoo Evaluation on 23rd December, 2019 from 1000 to 1330 hrs- reg.

Sir,

The Central Zoo Authority is planning to undertake evaluation of zoos. In order to facilitate the process of evaluation an "Orientation Workshop" has been scheduled on 23rd December, 2019 from 10:30 AM to 1:30 PM at WWF Auditorium, Pirojsha Godrej Building, 172 B, Lodhi Rd, Lodhi Gardens, Lodhi Estate, New Delhi, Delhi 110003.

I am directed to request you to attend the said workshop.

The Central Zoo Authority would reimburse expenditure incurred on travel (as per entitlement) and provide boarding and lodging during the workshop. **The TA claims will be reimbursed as per the TA Rules applicable on serving officers of the Govt. of India. The members entitled to travel by air should fly through Air India by economy class only.** The Air Tickets may please be booked from the Balmer Lawrie/ Ashoka Tour and Travels/ IRCTC or direct from the Air India booking counter/ web-site/ The Boarding Passes of the air travel has to be submitted alongwith TE Bill. The Air Tickets may please be booked immediately to avoid booking of tickets at higher cost.

For further details/ query or assistance, please contact the following person:

1. Dr. Devender Kumar, Evaluation and Monitoring Officer, Central Zoo Authority, New Delhi (E-mail: so-cza@nic.in, devleohp@gmail.com) (Ph. No. +91 11 24367851, 52 Mob. No. +91 9911582195).

This is for your information and necessary action please.

Yours sincerely,


(Dr. Sonali Ghosh)
DIG (HQ)

Copy for information and necessary action to:

1. Finance Officer, Central Zoo Authority, MoEF&CC, Govt. of India, New Delhi. (Email: fo-cza@nic.in)

B-1 Wing, 6th Floor, Pt. Deendayal Antyodaya Bhawan, CGO Complex, Lodhi Road, New Delhi-110003

बी-1 विंग, छठा तल, पंडित दीनदयाल अन्तोदय भवन, सीजीओ परिसर, लोधी रोड़, नई दिल्ली-110003

Tel.: 011-24367846, 24367851, 24367852, Fax: 011-24367849

E-mail: cza@nic.in, Website: http://www.cza.nic.in



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Central Zoo Authority

केन्द्रीय चिड़ियाघर प्राधिकरण



F. No. 21-2/2019-CZA(NS) / 1975/2019

By E-mail
DATE: 17.12.2019

To
All Evaluators (as per list)

Sub:- Invitation for Consultation on "Management Effectiveness Evaluation (MEE)" framework for zoos on 23rd December, 2019 from 14:00 to 17:00 hrs - reg.

Sir,

It is to inform that the Central Zoo Authority is in process of developing "Guidelines, Criterion and indicators for Management Effectiveness Evaluation of Zoos" and the work has been assigned to the Wildlife Institute of India, Dehradun.

The representative, Wildlife Institute of India, Dehradun is making a presentation on development of "Guidelines, Criteria and Indicators for Management Effectiveness Evaluation of Zoos" on 23rd December, 2019 from 14:00 to 17:00 hrs at WWF Auditorium, Pirojsha Godrej Building, 172 B, Lodhi Rd, Lodhi Gardens, Lodhi Estate, New Delhi, Delhi 110003.

Accordingly, I am directed to invite you to attend the presentation and provide your valuable comments.

The Central Zoo Authority would reimburse expenditure incurred on travel (as per entitlement) and provide boarding and lodging during the workshop. **The TA claims will be reimbursed as per the TA Rules applicable on serving officers of the Govt. of India. The members entitled to travel by air should fly through Air India by economy class only.** The Air Tickets may please be booked from the Balmer Lawrie/ Ashoka Tour and Travels/ IRCTC or direct from the Air India booking counter/ web-site/ The Boarding Passes of the air travel has to be submitted alongwith TA Bill. The Air Tickets may please be booked immediately to avoid booking of tickets at higher cost.

For further details/ query or assistance, please contact the following person:

1. Dr. Devender Kumar, Evaluation and Monitoring Officer, Central Zoo Authority, New Delhi (E-mail: so-cza@nic.in, devleohp@gmail.com) (Ph. No. +91 11 24367851, 52 Mob. No. +91 9911582195).

This is for your information and necessary action please.

Yours sincerely,


(Dr. Sonali Ghosh)
DIG (HQ)

Copy for information and necessary action to:

1. The Director, Wildlife Institute of India, Post Box No. 18, Chandrabani, Dehradun- 248 001. Uttarakhand. (E-mail: dwii@wii.gov.in)
2. Sh. P.C. Tyagi, Senior Fellow, Wildlife Institute of India, Post Box No. 18, Chandrabani, Dehradun- 248 001. Uttarakhand. (E-mail: pctyagi@wii.gov.in)
3. Finance Officer, Central Zoo Authority, MoEF&CC, Govt. of India, New Delhi. (Email: fo-cza@nic.in)

B-1 Wing, 6th Floor, Pt. Deendayal Antyodaya Bhawan, CGO Complex, Lodhi Road, New Delhi-110003

बी-1 विंग, छठा तल, पंडित दीनदयाल अन्तोदय भवन, सीजीओ परिसर, लोधी रोड, नई दिल्ली-110003

Tel.: 011-24367846, 24367851, 24367852, Fax: 011-24367849

E-mail: cza@nic.in, Website: http://www.cza.nic.in



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पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change



केंद्रीय चिड़ियाघर प्राधिकरण
Central Zoo Authority

F. No. 7-24/2019-CZA(PKR)

1745/2019

By Post/E-mail
Date: 15.11.2019

To,

1. The Head,
Department of Landscape Architecture,
School of Planning and Architecture,
Delhi
2. The Representative of the Civil Construction Unit,
Ministry of Environment, Forest and Climate Change,
7th Floor, Pt. Deendayal Antyodaya Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110 003.
3. Shri P.C. Tyagi,
Senior Professional Fellow,
Wildlife Institute of India,
Dehradun,
Former PCCF & CWLW (HOFF), Tamil Nadu
4. Shri B. S. Bonal,
Former Member Secretary, CZA &
Member Secretary,
National Tiger Conservation Authority,
New Delhi
5. Dr. Rommel Mehta,
Former Head,
Department of Landscape Architecture,
School of Planning and Architecture,
New Delhi
6. Dr. Devender Kumar,
R/o B-83, 2nd Floor, Dena Bank Building,
Near Mayur Vihar Public School,
Mangalam, I.P. Extension,
East Delhi – 110 092.

INFORMATION PROVIDED
UNDER RTI

Attended meeting
& provided inputs as
per Agenda circulated
during meeting
Pctyag
15/11/20

Sub:- 90th Meeting of the Expert Group on Zoo Designing of the Central Zoo Authority – reg.

Sir / Madam,

It is to inform that the 90th Meeting of the Expert Group on Zoo Designing of the Central Zoo Authority (CZA) is scheduled to be held on Tuesday, 26.11.2019 at 11:00 AM in the Committee Room of the CZA at B-1 Wing, 6th Floor, Pandit Deendayal Antyodaya Bhawan, CGO Complex, New Delhi – 110 003.

It is, therefore, requested to kindly make it convenient to attend the meeting.

Yours sincerely,

(Dr. S. P. Yadav)
Member Secretary

बी -1 विंग, 6 तल, पं.दीनदयाल अंत्योदय भवन, सी.जी.ओ. कॉम्प्लेक्स, लोधी रोड, नई दिल्ली – 110003
B-1 Wing, 6th Floor, Pt. Deendayal Antyodaya Bhawan, C.G.O. Complex, Lodhi Road, New Delhi – 110003
दूरभाष (Tel) : 011-24367846, 24367851, 24367852 फ़ैक्स (Fax) : 011-24367849
ईमेल (Email): cza@nic.in, वेबसाइट (Website): http://www.cza.nic.in



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Ministry of Environment, Forest & Climate Change



केंद्रीय चिड़ियाघर प्राधिकरण
Central Zoo Authority

F.No.21-1/2019-CZA(AK) | 1365/2019

BY POST / E-MAIL
DATE: 6.09.2019

To

The Director,
Wildlife Institute of India,
Post Box # 18, Chandrabani,
Dehradun - 248 001, Uttarakhand,
Email: dwi@wii.gov.in

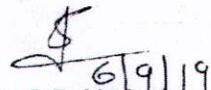
Sub: Development of Criteria, Indicators and Guidelines for Management Effectiveness Evaluation of Zoos – regarding

Sir,

The Wildlife Institute of India has been involved in Management Effectiveness Evaluation of Tiger Reserves, National Parks and Wildlife Sanctuaries for over a decade and has gained considerable experience. Though Guidelines and format exist for zoo evaluation but at present, there is no mechanism to evaluate effectiveness of the management.

In view of the above, you are requested to kindly develop Criteria, Indicators and Guidelines for Management Effectiveness Evaluation of Zoos. Cost estimate, if any, in this regard may kindly be submitted to this Authority for the needful.

Yours sincerely


(Dr. S.P. Yadav)
Member Secretary

Copy to:

Dr. P.C. Tyagi, IFS (Retired), Senior Fellow, Wildlife Institute of India, Post Box # 18, Chandrabani, Dehradun - 248 001, Uttarakhand, E-mail: pctyagi@wii.gov.in

बी -1 विंग, 6 तल, पं.दीनदयाल अंत्योदय भवन, सी.जी.ओ. कॉम्प्लेक्स, लोधी रोड, नई दिल्ली - 110003
B-1 Wing, 6th Floor, Pt. Deendayal Antyodaya Bhawan, C.G.O. Complex, Lodhi Road, New Delhi - 110003
दूरभाष (Tel) : 011-24367846, 24367851, 24367852 फ़ैक्स (Fax) : 011-24367849
ईमेल (Email): cza@nic.in, वेबसाइट (Website): <http://www.cza.nic.in>



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पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change



केंद्रीय चिड़ियाघर प्राधिकरण
Central Zoo Authority

F. No. 7-5/2016-CZA(Pt.)(PKR)

1629/2019

Date: 22.10.2019

OFFICE ORDER

Sub:- Re-constitution of Expert Group on Zoo Designing in the Central Zoo Authority – reg.

Ref:- This office Order No. 7-5/2016-CZA(AK)/2464/2016, dated 26.08.2016.

With reference to above, Expert Group on Zoo Designing in the Central Zoo Authority is re-constituted with following composition:-

1. Head,
Department of Landscape Architecture,
School of Planning and Architecture,
Delhi Member
2. Representative of the Civil Construction Unit,
Ministry of Environment, Forest and Climate Change,
7th Floor, Pt. Deendayal Antyodaya Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110 003. Member
3. Shri P.C. Tyagi,
Senior Professional Fellow,
Wildlife Institute of India,
Dehradun,
Former PCCF & CWLW (HOFF), Tamil Nadu Member
4. Shri B. S. Bonal,
Former Member Secretary, CZA &
Member Secretary,
National Tiger Conservation Authority,
New Delhi Member
5. Dr. Rommel Mehta,
Former Head,
Department of Landscape Architecture,
School of Planning and Architecture,
New Delhi Member

INFORMATION PROVIDED
UNDER RTI

Continued...

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F. No. 7-5/2016-CZA(Pt.)(PKR), Dt. 22.10.2019

Central Zoo Authority

-2-

- | | |
|---|-------------------|
| 6. i. Evaluation & Monitoring Officer,
CZA | Member |
| ii. Scientific Officer, CZA | Member |
| 7. The Member Secretary,
Central Zoo Authority,
New Delhi | Member (Convenor) |

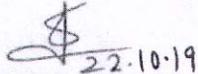
The terms of reference of the said Expert Group on Zoo Designing of the Central Zoo Authority are as follows:-

- i. To scrutinize, suggest improvements, changes and make recommendations (to the Technical Committee, CZA) in the proposed Master Plan and Master (Layout) Plan submitted by various zoos for their long term development.
- ii. To scrutinize, suggest improvements/ changes and approve/ disapprove the designs of animal enclosures submitted by various zoos.
- iii. To suggest standards and norms for designing of animal enclosures for various species.

Travelling allowance and sitting fee will be paid by the Central Zoo Authority to above members as per existing Government of India Rules and instructions in the matter at that point of time.

The term of the Expert Group on Zoo Designing is valid till 23.05.2020.

This issues with the approval of the Hon'ble Minister, Environment, Forest & Climate Change, Government of India & Chairman, Central Zoo Authority.


(Dr. S. P. Yadav)
Member Secretary

Distribution:-

1. PS to the Hon'ble Minister, MoEF&CC & Chairman, CZA.
2. Addl. PS to Hon'ble MoS, MoEF&CC.
3. PPS to Secretary, MoEF&CC.
4. PPS to DGF & SS, MoEF&CC.
5. PPS to ADG (WL), MoEF&CC.
6. Members of Expert Group on Zoo Designing.
7. Members of Governing Body of the Central Zoo Authority.
8. The Director, School of Planning & Architecture, New Delhi.
9. The Chief Engineer, Civil Construction Unit, Ministry of Environment, Forest & Climate Change, Government of India.
10. Finance Officer, Central Zoo Authority.
11. DPA, CZA – to upload on the website of the Central Zoo Authority.



GOVERNMENT OF INDIA

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MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय

Central Zoo Authority

केन्द्रीय चिड़ियाघर प्राधिकरण

262 (8)
8

F. No. 19-115/93-CZA(53)(Vol. XIII)(D)/1491/2019

By-post/ E-mail
DATE: 23.09.2019

OFFICE ORDER

Sub:- Issue of the ill health of Tiger Rama and Chimpanzee Rita at National Zoological Park, New Delhi – reg.

Ref:- This Office Order no. 19-115/93-CZA(53)(Vol. XIII)(D)/1484/2019 dated 20.09.2019 (copy enclosed).

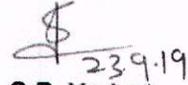
With reference to office order cited above, wherein the Central Zoo Authority has constituted a three member committee to look into illness of Tiger Rama and Chimpanzee Rita at National Zoological Park, New Delhi. The Central Zoo Authority has decided to opt one more member in the committee. Accordingly, the Committee shall now comprise of the following:

Sl.	Member	Designation
i.	Shri P.C. Tyagi, IFS (Retd.), Sr. Fellow, WII, Dehradun	Member Convener
ii.	Dr. P.K. Malik, Senior Scientist (Veterinarian)	Member
iii.	Dr. Parag Nigam, Scientist G (Veterinarian)	Member
iv.	Dr. Abhilash Khandekar, Member CZA	Member

The ToR & other conditions will remain the same.

Yours sincerely,

Encl.: As above.


(Dr. S.P. Yadav)
Member Secretary

Copy for information to:

1. PPS to the ADGF (WL), MoEF&CC.
2. The Director, Wildlife Institute of India, Dehradun.
3. The Director, National Zoological Park, New Delhi.
4. Committee members.



GOVERNMENT OF INDIA

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Central Zoo Authority

केन्द्रीय विडियाधर प्राधिकरण



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F. No. 9-2/2012-CZA(Vol. I)(D)/2585/2018

By post/e-mail
DATE: 13.03.2018

To

Dr. Parag Nigam,
Principal Investigator,
Studbook Project,
Wildlife Institute of India,
P.O. Box # 18, Chandabani,
Dehradun - 248001

Sub:- Meeting on the project titled 'Development and Maintenance of Studbooks for Selected Endangered Species in Indian Zoos – regarding.

**Ref:- (i) Your e-mail letter dated 13.03.2018.
(ii) This Office letter no. 9-2/2012-CZA(Vol. I)/2565/2018 dated 12.03.2018.**

Sir,

With reference to the above correspondences, it is to inform you that the above mentioned meeting is rescheduled on 19.03.2018 at 3:00 PM in the office premises of the Central Zoo Authority, New Delhi.

You are requested to make it convenient to attend the meeting. A line of confirmation in this regard is requested.

Yours sincerely,

(Dr. D.N. Singh)
Member Secretary



GOVERNMENT OF INDIA

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MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय

Central Zoo Authority

केन्द्रीय चिड़ियाघर प्राधिकरण

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F. No. 9-2/2012-CZA(Vol. I) / 2565/2018

By post/e-mail
DATE: 12.03.2018

To

Dr. Parag Nigam,
Principal Investigator,
Studbook Project,
Wildlife Institute of India,
P.O. Box # 18, Chandabani,
Dehradun - 248 001, Uttarakhand

Sub:- Meeting on the project titled 'Development and Maintenance of Studbooks for Selected Endangered Species in Indian Zoos' - regarding.

Sir,

This is to inform you that the Central Zoo Authority has convened a meeting to discuss the progress so far made under the above mentioned project by the Wildlife Institute of India, Dehradun. The meeting is scheduled at the office premises of the Central Zoo Authority, New Delhi at 3:00 PM on 13.03.2018.

You are requested to make it convenient to attend the meeting. A line of confirmation in this regard is solicited.

INFORMATION FOR
GUIDANCE

Yours sincerely,

(Dr. D. N. Singh)
Member Secretary



GOVERNMENT OF INDIA

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MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय

Central Zoo Authority

केन्द्रीय चिड़ियाघर प्राधिकरण



F. No. 7-6/2018-CZA(NS) / 4196/2018

To

Dr. Parag Nigam,
Scientist - F,
Wildlife Institute of India,
Post Box No. 18, Chandrabani,
Dehradun - 248 001, Uttarakhand.
(E-mail: nigamp@wil.gov.in)

E-mail

DATE: 4/08.2018

Sub:- Invitation for Brainstorming Session on "Green Skill Development Programme" – reg.

Sir,

The Hon'ble Minister for Environment, Forest & Climate Change, Govt. of India has launched the Green Skill Development Programme on 14 May, 2018. It is an initiative for skill development in the environment and forest sector to enable India's youth to get gainful employment and/or self employment. The programme endeavors to develop green skilled workers having technical knowledge and commitment to sustainable development, which will help in the attainment of the Intended Nationally Determined Contribution (INDCs), Sustainable Development Goals (SDGs) and National Biodiversity Targets (NBTs).

In this regard, the Central Zoo Authority is organizing a Brainstorming session on "Green Skill Development Programme" to implement and initiate the programme in the zoos of the country. The participants of the Brainstorming session are Zoo Managers of the large category zoos in India, subject experts and other stakeholders.

It is to inform you that the Central Zoo Authority has identified you as one of the resource person for the session and would like to seek your inputs to identify the areas and courses for skill development of the youth and other related stakeholders in the field of Veterinary Sciences in the zoo to implement the "Green Skill Development Programme" in the recognized zoos in country. The session has been scheduled on 17th August, 2018 in New Delhi.

The Central Zoo Authority will reimburse expenditure incurred on travel (as per entitlement) and provide boarding and lodging. **The Officer/resource person entitled to travel by air should avail Air India flight only.** The Air Tickets may please be booked from the Balmer Lawrie/Ashoka Tour and Travels/IRCTC or direct from the Air India booking counter/website. The Boarding Passes of the air travel has to be submitted alongwith TE Bill.

Continue....

B-1 Wing, 6th Floor, Pt. Deendayal Antyodaya Bhawan, CGO Complex, Lodhi Road, New Delhi-110003

बी-1 विंग, छठा तल, पंडित दीनदयाल अन्तोदय भवन, सीजीओ परिसर, लोधी रोड, नई दिल्ली-110003

Tel.: 011-24367846, 24367851, 24367852, Fax: 011-24367849



भारत सरकार
Government of India
पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
Ministry of Environment, Forest & Climate Change



केंद्रीय चिड़ियाघर प्राधिकरण
Central Zoo Authority

39
258

By-post/ E-mail
DATE: 31.10.2018

F. No. 7-9/2018-CZA(D)/ 4704/ 2018
To

Dr. Parag Nigam,
Scientist - F,
Wildlife Institute of India,
Post Box No. 18, Chandrabani,
Dehradun - 248 001, Uttarakhand.
(E-mail: nigamp@wii.gov.in)

Sub:- Annual conference of Indian Zoo – Invitation thereof.
Sir,

The Central Zoo Authority in collaboration with the Nawab Wazid Ali Shah Zoological Garden, Lucknow, Uttar Pradesh is organizing a Conference on the aforesaid subject from 12th to 15th November, 2018 at Lucknow, Uttar Pradesh. The participants of the Conference are Director/ Officer-in-Charge of the recognized Zoos in India.

The Central Zoo Authority desires to have you as one of the resource persons for the said Conference. Accordingly, your inputs on the topic "**Elements of Health & Disease Management**" for a duration of forty five minutes on **12th November, 2018 from 12:35 pm to 01:20 pm** is requested. Your valuable inputs would go a long way in our efforts to strengthen *ex-situ* wildlife conservation.

The Nawab Wazid Ali Shah Zoological Garden, Lucknow, Uttar Pradesh on behalf of the Central Zoo Authority would reimburse expenditure incurred on travel (as per entitlement) and provide boarding and lodging. **The Officer/resource person entitled to travel by air should avail Air India flight only in economy class.** The Air Tickets may please be booked from the M/s. Balmer Lawrie/ Ashoka Tour and Travels/ IRCTC or direct from the Air India booking counter/ website. The Boarding Passes of the air travel has to be submitted alongwith TE Bill. The Air Tickets may please be booked immediately to avoid booking of tickets at higher cost.

The venue of the Conference and accommodation for participants and resource person is mentioned below:

- G REST Hotel & Resort, Near Bani Bridge, Kanpur Road, Lucknow, Uttar Pradesh
Contact No. of Resort: 7317000118
- **Zoo Contact person:** Dr. Brijendra Mani Yadav, Assistant Veterinary Officer,
(E-mail: aidzc2018@gmail.com, Mob. no.: +91 9452026980, 8005493611).

The direction map of the venue and accommodation is enclosed for your information and guidance.

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For further details, you may contact the following persons:

At Central Zoo Authority

1. Dr. Devender Kumar, Scientific Officer (E-mail: so-cza@nic.in, devleohp@gmail.com Ph. No. +91 11 24367850, 51, Mob.: +91 9911582195).

At Nawab Wazid Ali Shah Zoological Garden, Lucknow

1. Dr. Ashish Kumar, Assistant Veterinary Officer (Mob. No.: +91 9455704877).
2. Ms. Shweta Chauhan, DTP Operator (E-mail: lucknowzoo@gmail.com, Ph. no.: +91 522 2239588, Fax No. : +91 522 2236538, Mob.: +91 8726506336).

Yours sincerely,



(Dr. DN Singh)
Member Secretary

Copy to for information and necessary action:

1. The Chief Wildlife Warden, Govt. of Uttar Pradesh, 17, Rana Pratap Marg, Lucknow – 226001, Uttar Pradesh (E-mail: cwlwup@gmail.com, cwlwup@rediffmail.com).
2. The Director, Wildlife Institute of India, Wildlife Institute of India, Post Box No. 18, Chandrabani, Dehradun - 248 001, Utrakhand (dwii@wii.gov.in).
3. The Director, Nawab Wazid Ali Shah Zoological Garden, Hazratganj, Lucknow, Uttar Pradesh – 226 001 (E-mail: lucknowzoo@gmail.com).



(Dr. DN Singh)
Member Secretary

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(256)

F. No. 19-115/93-CZA (53) (Vol. XIII) / 1536/2019
Government of India
Ministry of Environment, Forest and Climate Change
Central Zoo Authority

B-1 Wing, 6th Floor
Pandit Deendayal Antyodaya Bhawan
CGO Complex, Lodhi Road
New Delhi – 110 003
Tel. No. +91-11-24367846/51/52
Fax: +91-11-24367849
E-mail: cza@nic.in
Dated the 4th October, 2019

MEETING NOTICE

Sub:- Meeting of the Sub-Committee to review the Standard Operating Procedures and Protocols in accordance with the National Zoo Policy, 1998 and Recognition of Zoo Rules, 2009– reg.

This has reference to Sub-Committee on subject cited above constituted vide this office order no. 19-115/93-CZA(53)(Vol.XIII)/1516/2019. As directed by the Member Secretary to inform that the above said committee is scheduled at 11:30 AM on 22.10.2019 (Tuesday) in the Conference hall, Central Zoo Authority, B-1 Wing, 6th Floor, Pt. Deendayal Antyodaya Bhawan, C.G.O. Complex, Lodhi Road, New Delhi – 110 003.

You are requested to make it convenient to attend the said meeting. A line of confirmation of your participation in the Meeting is solicited.

Mrinalini Saini
4/10/19

Dr. Mrinalini Saini
Veterinary Consultant and
Member Convener

Copy for information and necessary action to:

1. The Committee Members
2. The Director, Wildlife Institute of India, Dehradun, Post Box #18, Chandrabani, Dehradun – 248001, Uttarakhand. Email: dwwi@wii.gov.in
3. The Director, Nawab Wazid Ali Shah Zoological Garden, Hazratganj Road, Opp to Civil Hospital, Lucknow, Uttar Pradesh, 226001. Email: lucknowzoo@gmail.com
4. The Municipal Commissioner, Amdavad Municipal Corporation, Mahanagar Seva Sadan, Sardar Patel Bhavan, Danapith, Ahmedabad – 380001, Gujarat, Email: mc@ahmedabadcity.gov.in

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F. No. 19-115/93-CZA (53) (Vol. XIII) / 1658/2019
Government of India
Ministry of Environment, Forest and Climate Change
Central Zoo Authority

B-1 Wing, 6th Floor
Pandit Deendayal Antyodaya Bhawan
CGO Complex, Lodhi Road
New Delhi - 110 003
Tel. No. +91-11-24367846/51/52
Fax: +91-11-24367849
E-mail: cza@nic.in
Dated the 22nd October 2019

Sub: - Minutes of the meeting of the Committee to review and develop various Standard Operating Procedures adopted by the Zoos in accordance with the National Zoo Policy, 1998 and Recognition of Zoo Rules, 2009 with respect to general health care management

Please find enclosed minutes of the meeting of the committee in order to develop standard operating procedures adopted by the Zoos in accordance with the National Zoo Policy, 1998 and Recognition of Zoo Rules, 2009 with respect to general health care management held on Tuesday, 22nd October, 2019 in the Conference Hall of the Central Zoo Authority under the Chairmanship of the Member Secretary, Central Zoo Authority, for perusal and comments, if any.

Encl. As above.

\$
25.10.19
(Dr. S. P. Yadav)
Member Secretary
Central Zoo Authority

To,

Members of the Committee

The committee concluded with above steps and points to be covered in the SOP document. However, there may be some more important points to be addressed in future meetings.

All the members were requested to submit their points to the Convener Dr Mrinalini through mail at the earliest, for preparing draft SOP for circulation among members.

The meeting ended with vote of thanks from the Chair.

Dr. G. S. Rawat
Director



भारतीय वन्यजीव संस्थान 44
Wildlife Institute of India

No.: WHM/Vet/310/NZP

Dated: 27th November, 2019

253

To,

Dr. Suneesh Buxy
Director
National Zoological Park,
Government of India,
Mathura Road, New Delhi -110 003
Email: nzpnewdelhi@gmail.com

Sub: Conveying name of WII representative for constituting a Committee for checking various activities in NZP as advised by the high Level Committee of MoEF&CC

Sir,

With reference to your letter F.No. III-17/2019-NZP/2746-47 dt. 18/11/19 and on the above subject, following name is proposed to represent Wildlife Institute of India for constituting a Committee for checking various activities of National Zoological Park.

- Dr. Parag Nigam**
Scientist - F
Dept. of Wildlife Health Management
Wildlife Institute of India, Chandrabani
Dehradun, Uttarakhand
Mob : 9412974486
Email : nigamp@wii.gov.in

Thanking you.

Yours faithfully,

(Dr. G.S.Rawat)



सत्यमेव जयते

राष्ट्रीयप्राणीउद्यान
मथुरारोड, नईदिल्ली-110003
Government of India
National Zoological Park
Mathura Road, New Delhi-110003



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252

07
25/11/19

F. No.III-17/2019-NZP 2746-42

dated : 18/11/19

To,

The Director,
Wildlife Institute of India,
Post Box No-18, Chandrabani
Dehradun- 248001

Sub: Request for conveying name of representative for constituting a Committee for checking various activities in NZP as advised by the High Level Committee of MoEF&CC- regarding.

Ref: Vide F.No.5-5/2016-WL(Pt) dated 18th June 2019 of JD(WL).

Sir,

With reference to the above, I would like to state that MoEF&CC constituted a High Level committee to look into various issues and allegations made against NZP officials vide F.No. 17-241/2016/WL dated 18th June 2018. And the High Level Committee looked into all allegations and put forwarded their recommendations vide F.No.5-5/2016-WL(Pt) dated 18th June 2019 as follows:

3. Expert Committee for review of SOPs and Protocols:

Major issues which has surfaced during the course of enquiry are the poor understanding about the procedures for general health care management, veterinary care and management and recording and reporting procedure for cold blooded burrowing animals. Therefore, a team of Zoo experts including the members for Zoo Advisory committee should be constituted by the MoEF&CC after consultation. CZA to review the various procedures adopted by the Zoo and evolve Standard Operating Procedures in accordance with Zoo Policy 1998 and Recognition of Zoo Rules 2009 for:

- General health care management
- Veterinary care management
- Recording and Reporting of the information about cold blooded burrowing animals.
- Quarantine
- Inclusion of the Rescued/seized newly born in the Annual Inventory Report

DWI OFFICE
DIARY NO.: 2748
DATE: 26/11/19

Dr. P.K. Malik
Dr. Puray Nigam
to Pls repairs
will
M. Nigam
25/11/19



सत्यमेव जयते

राष्ट्रीयप्राणीउद्यान
मथुरारोड, नईदिल्ली-110003
Government of India
National Zoological Park
Mathura Road, New Delhi-110003

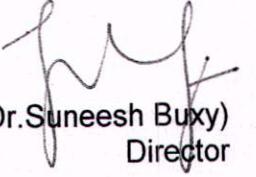


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To check and closely examine/ inspection of above issues in National Zoological Park, you are hereby requested to kindly nominate a suitable official from your organization so as to constitute a committee in this regard at an early date.

Yours faithfully,


(Dr. Suneesh Buxy)
Director

Copy to: The Member Secretary, Central Zoo Authority, Government of India, Ministry of Environment, Forest & Climate Change, B-1 Wing, 6th Floor, Pt. Deendayal Antyodaya Bhawan, CGO Complex, Lodhi Road, New Delhi-110003 for kind information.

INFORMATION PROVIDED
UNDER RTI

Dr. G. S. Rawat
Director



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

47

No.: WHM/Vet/310/NZP

Dated: 27th November, 2019

250

To,

Dr. Suneesh Buxy
Director
National Zoological Park,
Government of India,
Mathura Road, New Delhi -110 003
Email: nzpnewdelhi@gmail.com

Sub: Conveying name of WII representative for constituting a Committee for checking various activities in NZP as advised by the high Level Committee of MoEF&CC

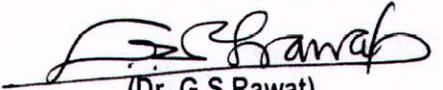
Sir,

With reference to your letter F.No. III-17/2019-NZP/2739-40 dt. 18/11/19 on the above subject, following name is proposed to represent Wildlife Institute of India for constituting a Committee for checking various activities of National Zoological Park.

- Dr. Parag Nigam**
Scientist - F
Dept. of Wildlife Health Management
Wildlife Institute of India, Chandrabani
Dehradun, Uttarakhand
Mob : 9412974486
Email : nigamp@wii.gov.in

Thanking you.

Yours faithfully,


(Dr. G.S. Rawat)

पत्रपेटी सं० 18, चन्द्रबनी, देहरादून - 248 001, उत्तराखण्ड, भारत
Post Box No. 18, Chandrabani, Dehradun - 248 001, Uttarakhand, INDIA
ई.पी.ए.बी.एक्स : +91-135-2640114, 2640115, 2646100 फ़ैक्स : 0135-2640117
EPABX : +91-135-2640114, 2640115, 2646100 Fax : 0135-2640117



सत्यमेव जयते

राष्ट्रीयप्राणीउद्यान
मथुरारोड, नईदिल्ली-110003
Government of India
National Zoological Park
Mathura Road, New Delhi-110003



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F. No.III-17/2019-NZP 239-40

dated 18/11/19

To,

The Director,
Wildlife Institute of India,
Post Box No-18, Chandrabani
Dehradun- 248001

Sub: Request for conveying name of representative for constituting a Committee for checking various activities in NZP as advised by the High Level Committee of MoEF&CC- regarding.

Ref: Vide F.No.5-5/2016-WL(Pt) dated 18th June 2019 of JD(WL).

Sir,

With reference to the above, i would like to state that MoEF&CC constituted a High Level committee to look into various issues and allegations made against NZP officials vide F.No. 17-241/2016/WL dated 18th June 2018. And the High Level Committee looked into all allegations and put forwarded their recommendations vide F.No.5-5/2016-WL(Pt) dated 18th June 2019 as follows:

A 5: Illegal procurement and missing of Schedule "X" Drug Ketamine from the NZP New Delhi Vide Letter no.27-1/2016-CZA(AK)/3188/2016 dated 19.12.2016:

- ii. Close examination of the action and procedure adopted by Dr.AbhijitBhawal, Veterinary Officer and Shri M.A. Paulose, Veterinary Compounder in utilising the Drug 'Ketamine' by a team preferably comprising the members from Wild Crime Control Bureau, CZA and WII/IVRI.
- iv. There is need to strictly adhere to the provisions laid down for procurement, storage, usage and disposal of all psychotropic and narcotic drugs. Guidelines and protocols are required to be developed in consultation with Central Drugs Standard Control Organization (CDSCO) and CZA.
- v. There should be proper inspection at various levels, in conformity with the provisions laid down by Central Drugs Standard Control Organization (CDSCO).

12
25/11/19

Dr. P. L. Malik
Dr. Parag Nigam

Mhula
25/11/19

DWII OFFICE
DIARY NO.: 2749
DATE: 26/11/19



सत्यमेव जयते

राष्ट्रीयप्राणीउद्यान
मथुरारोड, नईदिल्ली-110003
Government of India
National Zoological Park
Mathura Road, New Delhi-110003



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(248)

To check and closely examine/ inspection of above issues in National Zoological Park, you are hereby requested to kindly nominate a suitable official from your organization so as to constitute a committee in this regard at an early date.

Your response in this regard is solicited.

Yours faithfully,

(Dr. Suneesh Buxy)
Director

INFORMATION PROVIDED
UNDER RTI

Copy to, The Member Secretary, Central Zoo Authority, Government of India, Ministry of Environment, Forest & Climate Change, B-1 Wing, 6th Floor, Pt. Deendayal Antyodeya Bhawan, CGO Complex, Lodhi Road, New Delhi-110003 for kind information.

REPORT ON INVESTIGATION OF MORTALITY OF TIGER RAMA AND HEALTH STATUS OF CHIMPANZEE RITA AT NATIONAL ZOOLOGICAL PARK, NEW DELHI



Photo Credit: NZP, Library

Submitted by:

Sh. P.C. Tyagi, PCCF (HoFF, Retd.) Senior Fellow, Wildlife Institute of India (WII)
Dr. Pradeep Malik, Sr. Professor, Dept. of Wildlife Health Management, WII
Dr. Parag Nigam, Scientist F, Dept. of Wildlife Health Management, WII
Dr. Abhilash Khandekar, Member, Central Zoo Authority



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

OCTOBER 2019

ATTESTED

[Signature]
CPD, Wildlife Institute of India, Dehradun

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ATTESTED

Director, Institute of Animal Health

(11)
(245)

REPORT ON INVESTIGATION OF MORTALITY OF TIGER RAMA AND HEALTH OF CHIMPANZEE RITA AT NATIONAL ZOOLOGICAL PARK, NEW DELHI

Investigation, Evaluation and Review of Procedures

OCTOBER 2019

1. Introduction

The investigation was conducted at the request of Member Secretary, Central Zoo Authority, New Delhi vide letter no. 19-115/93-CZA(53)(Vol.XIII)(D)/1484 dated 20-09-2019 and 23-09-2019 by a team comprising of Sh. P.C Tyagi, Senior Fellow, WII, Dr. Pradeep K. Malik and Dr. Parag Nigam, Sr. Professor, Dept. of Wildlife Health Management, WII, Dehradun and Dr. Abhilash Khandekar, Member, CZA, New Delhi.

The team visited NZP, New Delhi on 23rd September, 2019 and investigated the matter based on the terms of reference. The team met the Director NZP, Ms. Renu Singh, Dr. Vikash Jayswal, Veterinary Officer, Mr. Saurabh Vashist, Range Officer, animal keepers and other staff. The records examined by the team included; medical history, treatment sheet, vaccination schedule, postmortem report, animal Keepers records, photographs & PM report, diet chart and schedule and veterinary reports of NZP and IVRI scientists who examined the animal and prescribed treatment. The paddock area, night shelter/ feeding cell, kraal and other surrounding areas were inspected and reviewed. The committee was appraised on husbandry practices, sanitation and hygiene, upkeep and maintenance to get information on the causes of the mortality of tiger (Rama) (died on 21st, September 2019) and Chimpanzee (Rita) who is at present a geriatric patient.

The investigation and review of facilities were conducted in the presence of the above-mentioned personnel and the staff responsible for facilities of tiger and Chimpanzee housing and enclosures.

2. Terms of Reference

The terms of reference of the committee are laid out in CZA letter no. 19-115/93-CZA(53)(Vol.XIII)(D)/1484 dated 20-09-2019 and are the following:

1. To enquire into the circumstances leading to ill health of Tiger Rama, its broken canine and appropriateness of treatment.
2. Status of upkeep housing and appropriateness of treatment to Chimpanzee (Rita).
3. Hygiene status of National Zoological park and animal enclosures.

3. Findings of the Investigation

The committee examined the animal history cards, treatment sheets, laboratory investigation reports, necropsy reports and histopathology reports in both the cases and reviewed the veterinary care provided to Tiger (Rama) and Chimpanzee (Rita), the animal facilities, upkeep, sanitation and hygiene and the finding are summarized below:

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CASE NO. 1- MALE TIGER RAMA

Born 16-05-2011, died on 20-09-2019, age at mortality 8Y, 4M, 4D

3.1. Circumstances leading to ill health of tiger & General history and medical management

The veterinary records confirms vaccination of tiger against important diseases as per CZA guidelines. The record also confirms last dosage of vaccine for rabies and canine distemper on 23/3/19 and 03/01/19 respectively.

As per the Animal treatment record provided by the NZP officials, the animal (Rama Tiger) was noticed with reduced food intake on 29th July 2019 though was otherwise active and normal in health. The treatment provided was symptomatic and included supplementation of vitamins and liver tonic. Due to subsequent deterioration in health condition, a team of scientists from Indian Veterinary Research Institute (IVRI) examined the animal on 03-08-2019, 01/09/19 and 13/09/19. Consequently, the treatment was carried out under the guidance of experts from IVRI and included NSAIDs/antimicrobials and supportive therapy for a month and subsequently from 1st September 2019, homeopathic treatment was prescribed by IVRI for some duration. The blood samples were collected on 06/09/2019 and detailed clinical examination was conducted by the Veterinary Officer of NZP. Hematology and serum biochemistry profile of the tiger showed significant deviation from the normal reference values as reported from literature for Urea, BUN, Creatinine and showed electrolyte imbalance with low sodium and chloride levels. The blood test indicated higher phosphorous level and low calcium. The animal continued being off feed, dull, and consumed very little of the soft meat. Further symptomatic treatment continued with a combination of medicines as the specific diagnosis, cause of illness remained ascertained, and the condition of the animal progressively deteriorated.

The blood samples collected on 16/09/19 again showed indistinguishable pattern in its values. The tiger remained off feed and drank little water and urinated sparingly. The treatment provided from 6th September onwards till 20th September included variety of antimicrobials and supportive therapy though no confirmatory diagnosis was made. At this point, condition deteriorated rapidly with constrained movement and by the time it died it could not move, and showed shallow respiration.

The animal died on 20/09/19.

References for Blood values.

Shrivatav, A. B., Singh, K. P., Mittal, S. K., & Malik, P. K. (2012). Haematological and biochemical studies in tigers (*Panthera tigris tigris*). *European journal of wildlife research*, 58(1), 365-367.

Padmanath, K., Dash, D., Behera, P. C., Sahoo, N., Sahoo, G., Subramanian, S., & Bisoi, P. C. (2015). Biochemical reference values of captive Royal Bengal tigers (*Panthera tigris tigris*) in Orissa, India. *Int. J. Adv. Res. Biol. Sci*, 2(4), 274-278.

McRee, A., & Ramsay, E. C. (2013). ISIS normal values for tigers (*Panthera tigris*): are they better than domestic cat reference intervals. In *Proc Am Assoc Zoo Vet* (pp. 193-195).

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3.1.1 Circumstances leading to the broken canine of tiger Rama

During the course of treatment, the animal had been restrained and immobilized at various occasions in the squeeze cage for administration of medicaments and supportive therapy as well as biological sampling for laboratory analysis. The report provided by IVRI team dated 31st July 2019 shows that during close observation the left lower canine tooth was broken. In the animal treatment card, the same fact is recorded on 3rd August 2019, that the left lower canine was broken. The report of IVRI team dated 13th September 2019 states that the tiger Rama was lying inside the squeeze cage and during observation the upper left canine teeth of tiger fell down in pieces. The communication (note) dated 13th September 2019 duly signed by the RO, NZP revealed that the canine broke into three pieces while the animal was being restrained in squeeze cage for treatment during the visit of IVRI team and has been kept in safe custody. The animal keeper report dated 13th September 2019 also mentions that the tooth was broken.

Based on the available documents, the probable cause for the upper left canine breakage could be the clenching of bars during restraining process in the squeeze cage. This fact has been corroborated by the report of IVRI, Range Officer and the Animal Keeper.

3.1.2 Appropriateness of treatment

In the present case, the management of the National Zoological Park tried their efforts to the best of their ability and knowledge to treat and manage deteriorating & debilitating condition based on symptoms with broad-spectrum medications and supportive therapy and by consulting animal health experts from Indian Veterinary Research Institute (IVRI).

The hematological and biochemical values though showed deviations in certain parameters, were non-conclusive for the want of confirmatory specific diagnosis and may likely to be associated with variety of medicaments administered over a period of several weeks. However, in spite of the efforts, the diagnosis of the cause of sickness remained non-conclusive and the treatment given remained nonspecific and broad-spectrum.

3.1.3. Findings of PM report and laboratory report from Indian Veterinary Research Institute

(A) Finding in PM report: Suppurative pneumonitis with generalized degenerative changes and generalized congestion in brain and heart, generalized icteric lesions in abdominal cavity including pleura, severe fibrin deposition in kidneys, ecchymosis in liver and progressive degenerative muscular lesions in hind limb. The PM report is suggestive of changes in lungs, spleen and kidneys.

The cause of death in the PM report states **Multiple Organ Degenerative Lesions and Septicemia**. NZP collected tissue sections of heart, lung, liver, spleen and kidneys in 10% formalin for Indian Veterinary Research Institute to conduct laboratory tests for histopathology, microbiology, virology and molecular tests.

(B) Histo-pathological findings: The tissues were examined at the Division of Pathology, Indian Veterinary Research Institute (IVRI), Izatnagar (**Report attached**).

Histopathological changes suggestive of progressive Chronic Myocardiopathy and nephropathy. However, the etiology is unknown.

19 (242)
All other tests, Canine Distemper, Feline-Panleucopaenia, Canine Adenovirus-1, , Leptospira and GI parasites are negative.

No intestinal parasites were found in samples of gastrointestinal tract.

Microbiology and Virology is negative for any pathogenic organism

CASE NO. 2- CHIMPANZEE RITA
Born 15/12/1959, age 59 Y, 9M
The animal acquired from Artis Amsterdam Royal Zoo

3.2 Status of upkeep housing and appropriateness of treatment to Chimpanzee (Rita)

Health and General Geriatric Management of Female Chimpanzee and appropriateness of treatment was examined by the committee and on-site visit included close examination of the animal, food and diet cart, general treatment and its management including hygiene of housing and enclosure .

As informed by Zoo officials, the female chimpanzee aged around 59 years is generally off feed and currently being managed on liquid diet. The animal has bedsores at two places and ordinarily lying quiet in indoor ward. The animal did not show any overt signs of illness though had poor body condition and was lethargic possibly due to age effect. The skin appeared normal. The animal is being managed on soft bedding material placed indoor.

Following recommendations are made : The average longevity of the chimpanzee is about 45 years with median expectancy of 38 years (female) & 32 years (male). At the age of 59 years, the animal is well exceeding the average age of mortality of both wild and captive chimpanzees. The animal's age is the reason for poor body condition because of the non-intake of prescribed diet and nutrition, due to age related reduced digestion and absorption. The animal at this age due to the above factors also become immunocompromised.

3.2.1 Recommendation on health care

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- A. NZP may continue with present diet regimen of fruit juices. However, the nutrition requirement may remain deficient and it is recommended that the animal may be provided Ensure Nutrition Powder (Abbott Laboratories, India). One serving of Ensure Nutrition Powder will provide 8 gram of protein, 24 essential vitamins and minerals & 240 calories. The formula is suitable for lactose intolerance and has been successfully tried at Zoological Society of London, ZSL Zoo. The nutrient data and composition per serving is given as Annexure 1. The committee also recommended to avoid use of Savlon antiseptic for the dressing of bedsores and instead use Betadine liquid and additional use of an antibiotic skin powder.
 - B. Chimpanzees are omnivore. In captivity, their general diet is composed of fruits, nuts, leaves, and plants. In the present case, figs and honey may be tried as a good source of energy. Figs and honey

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have been recommended in diet of Chimpanzees at the Tchimpounga Chimpanzee Rehabilitation Center, Pointe Noire, Republic of the Congo, (Jane Goodall Institute).

- C. Due to the challenge arising from maintaining a geriatric patient, and from a quality of life perspective and constant discomfort, the animal must be suffering from, Euthanasia is a general option in such cases in zoos in Europe and North America. However, this may not be a likely option under given circumstances in the present case and the animal should be provided palliative therapy.

3.3 Hygiene status of National Zoological park and animal enclosures

The team could visit two enclosures (Tiger and Chimpanzee), night shelter, and the committee makes following observation:

NZP sanitation and hygiene requires continuous improvement as the facilities for housing animal, the enclosures (paddock, night shelter, kraal) used by the animals degrade very quickly because of urination and defecation by animals. Any complacency in daily cleaning and washing will cause growth of virus and bacteria and other pathogens affecting the general health of animals. The night shelter where the animals spends the night are old structures. Iron gates and bars towards the keeper's gallery have developed corrosion and requires upgradation. The cement floor and wooden platform can get soiled by urine and faeces and can compromise cleanliness. The gaps in the cage frames through which the waste water drains out also allow waste to settle and support building of pathogens. Floor hygiene and civil maintenance is thus necessary. Additionally, the drainage should not be open but adequately closed and the waste flushed out to the sewer drain so that pathogens are unlikely to infect animals.

The maintenance and upkeep of facility however, was satisfactory under the present circumstances. The night cell of tiger (observed closely during inspection) comprising of rows of iron frame cells and its size was comparatively small hindering free movement of animal. The open drainage of waste and fecal material is a cause of concern. In most zoos in the country similar design is followed which has basic flaws. These old iron cages need to be replaced and renovated and their size increased to allow free movement of animal. Animals kept in these cells are visible to each other and may result in aggression thereby subjecting the animals to unduly stress. Tigers in social groups, mother and cubs would bond well if visible to each other but adult potential breeding males and females may have to be screened from each other.

The kraal in the tiger enclosure is placed tandem to the night shelter iron frame cell on one side and paddock on the other. The animal enters into the paddock through this kraal. The purpose of the kraal is to allow free movement and linear space for the exercise of the animal which are retained and not released on daily basis and to allow veterinary staff and keepers to observe movement and gait of animal in this kraal. The location of kraal sandwiched between paddock and night shelter may not be very appropriate and though there is another adjoining kraal, additional kraal needs to be constructed. The chain link of kraal requires maintenance. Wooden rest platforms should be provided and feeding platform should be created to prevent meat from being soiled.

The squeeze cage is old with corroded iron bars and design is not in consonance with animal welfare parameters. The cage should be placed in a manner that animal during its release into kraal moves through it and gets trained / conditioned to be squeezed without stress and trauma.

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Species-specific enrichment is to be provided in the enclosure and night shelter for enhancing animal welfare.

The night shelter and enclosure should be made pest proof, as evidence of movement of rodents was found during visit. The design guidelines of Zoo needs to be followed for planning construction of civil structures and erecting devices to prevent entry of pests (rodents and snakes) and keeping the immediate environment free from vectors of pathogenic diseases.

The guidelines and rules of CZA and the monitoring protocols for upkeep, maintenance and hygiene and feed quality and inspection are most important for providing and addressing animal welfare issues. These must be scrupulously followed and reviewed by Director and curator of the Zoo periodically.

3.4 Recommendations

3.4.1 The health and medical management of wild animals in captivity is a multifaceted subject involving quality of nutrition & food, housing and husbandry and animal keeper's knowledge of the basic ecological attributes of the species, behavior, enrichment and general husbandry practices. All such aspects at NZP need substantial improvement.

3.4.2 There is an urgent need for enhancing capabilities of Veterinary Medical Officer and his team of support staff besides adequate infrastructure and logistics to provide improved medical care and early assessment of an individual's ill health. The veterinary medical officer and staff is insufficient for a large zoo like NZP. There is a minimum requirement of three qualified veterinary medical officers and 5 to 6 support staff with proper training in various aspects of health management of captive wild animals. Physicians attending the animal need to have formal training and education in zoological medicine to manage variety of animals in the collection. A functional laboratory with adequate infrastructure, logistics and trained technicians will be in corroboration for the early detection of disease and appropriate treatment regimen. Such trainings and residency in zoological medicine is highly specialized subject and not available in India. IVRI also has limited expertise in zoological medicine; however, their laboratories are of highest standards in providing laboratory support & diagnosis for histopathology, bacteriology, virology and molecular diagnosis of biological samples submitted by NZP or any zoological collections. Central Zoo Authority has an MoU with Smithsonian Zoological Pak-National Zoo (SZP-NZ) and capacity building is one of its salient feature. NZP may like to explore this opportunity by sending veterinarians and support staff to SZP-NZ for 2-3 months each year over a period of 5 years to gain them comprehensive knowledge on zoological medicine and health management of wild animals in captivity.

3.4.3 There is also requirement of scientifically designed housing conditions to support appropriate and hygienic husbandry in consultation with zoo architects/ professionals having experience in execution of such works. NZP/CZA may consult zoo architects abroad as the expertise is not available currently in India. The housing and husbandry conditions require revisit as the animal housing are old and the opportunity of pathogen buildup in the housing cannot be ruled out. The prevailing conditions allows multiple pathogens to grow in the surrounding and environment of the animal thereby compromising health and wellbeing. The housing and enclosure conditions need improvement to circumvent opportunities for pathogens to grow and remain alive in housing structures in latent state. The night

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shelters require redesigning and renovation to maintain hygienic conditions as described above. The plan, design and construction of animal housing facilities (civil work) is to be carefully reviewed and any flaws have to be rectified.

3.4.4 Handling of animals is both an art and science and requires adequate training, exposure of various procedures for ethical, humane and scientific handling. Adequately trained manpower and infrastructure is extremely deficient at NZP as well as availability of new drugs for safe restraint of animals.

3.5 Conclusions of the investigation and findings

- a. The post mortem reports of the tiger and histo-pathological findings provided by Indian Veterinary Research Institute (IVRI) are in corroboration to the extent that there has been significant involvement of the lungs, heart, brain and kidneys considering gross and histo-pathological changes.
- b. The hematological, biochemical and urine examination report showed deviations in certain parameters, however, etiology could not be established.
- c. The histopathological examination of various tissues carried out at IVRI concludes progressive chronic myocardiopathy and nephropathy though the specific etiology could not be established. Other biological samples for pathogen isolation did not reveal any significant pathogen.
- d. Based on symptoms, diagnostic findings and progressive nature of degenerative changes involving multiple organ system, the exact cause of death of Tiger Rama could not be ascertained.
- e. The areas that need attention are veterinary care, improvement in animal facilities, veterinary support and facilities, communication and networking, human health and interactions, and continuing education/training of veterinary medical officers and staff.
- f. The Animal Keeper is the focal point for noticing any small change in behavior and activity pattern of the animal which is a valuable aid in the early detection of any sign of sickness. The Animal Keepers need additional training in such areas so that they are able to detect any deviation from the animal's normal and routine activity pattern. This will allow proper recording of clinical history and subsequent laboratory tests for timely detection of the reason for the sickness.
- g. In case of female chimpanzee, at the age of 59 years, the animal is well exceeding the average age of mortality of both wild and captive chimpanzees. The animal's age is the reason for poor body condition because of the non-intake of prescribed diet and nutrition, due to age related reduced digestion and absorption. The animal at this age due to the above factors also become immunocompromised.

Detailed review & recommendations in veterinary health management is provide as Annexure 1.

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4. Review & Recommendation for Improvement in Veterinary Management

4.1 Veterinary Care:

A comprehensive health program for a captive wild animal or tigers requires the integration of preventive medical programs, clinical medicine, nutrition, husbandry practices, pathological surveillance, and the effective recording of all these activities in a detailed medical records system. Recommendations for improvement to the current health program are as follows:

4.1.1 Quarantine Protocol for Animals Entering Collection

- i. Quarantine facility should be isolated from all other animal facilities.
 - a. downwind from all animal facilities
 - b. in a location where drainage from the quarantine facility does not enter other animal facilities
 - c. in a location that is out of normal paths of foot and vehicle traffic
 - d. no fence contact with other animal facilities
- ii. The indoor portion of the quarantine facility should be easy to clean and disinfect with smooth, seamless, and non-rusting surfaces.
 - a. at least twice a day pick-up and disposal of solid wastes and spot cleaning.
 - b. at least once a day thorough scrubbing with a detergent, rinsing, application of an effective disinfectant (i.e., sodium hypochlorite/bleach) to all surfaces, followed by thorough rinsing.
 - c. The facility should have good drain or catchment systems to catch all water used for cleaning and remove it from the area. No effluent should run into the outdoor enclosure or surrounding service areas.
- iii. Keepers servicing the quarantine facility should only work in this area, or if this is not possible, should service the quarantine facility only after finishing all other animal enclosures.
 - a. Keepers should change into a set of clothing and boots that are only used at the quarantine facility to prevent transfer of pathogens.
 - b. A separate set of cleaning utensils should only be used at this facility.
- iv. At least a 30 day quarantine period is required to cover the incubation period of many infectious diseases. Newly captured animals or animals arriving with no medical history may require a longer quarantine period.
- v. The evaluation of a new animals/collection begins with a review of its past medical history, including details of any previous medical problems, past vaccinations, fecal examinations, anesthetic episodes, and blood values. Medical history reports should be transferred to the receiving veterinarian from the sending veterinarian prior to receipt of the animal from the sending zoo.
- vi. Any diet transitions should occur gradually to minimize gastrointestinal upset.
- vii. Following an acclimatization period of 7-14 days, a complete physical examination and diagnostic evaluation should be performed under general anesthesia. This evaluation should include:
 - a. Complete physical examination
 - b. CBC + Serum Chemistry Profile

- c. Serology for any other pathogens of concern)
- d. Heartworm diagnostics
- e. Banking of serum in frozen serum bank
- f. Urinalysis
- g. Fecal culture for enteric pathogens
- h. Permanent identification (i.e., transponder, tattoo, ear notch, etc.)
- i. A least three fecal examinations for enteric parasites (direct, flotation, sedimentation, and Baerman)
- j. External parasite evaluation
- k. Body weight in and out of quarantine and frequent assessment of body condition and appetite.
- l. Dental prophylaxis and other dental procedures if needed
- m. Vaccinations if needed as the current requirement of the species
- n. Daily evaluations for evidence of illness and infectious disease.

4.1.2 Quarantine of animals Showing Evidence of Infectious Disease:

Animals that show clinical signs of infectious disease should be placed under a quarantine protocol to prevent spread of disease to other animals.

- i. Should be isolated as much as possible for other animals
- ii. Keepers and veterinarians should change into coveralls and boots that are left at this exhibit
- iii. A separate set of cleaning utensils should only be used for the sick tiger enclosure
- iv. Maintenance and cleaning of this enclosure should occur last to prevent transfer of pathogens to other enclosures.

4.1.3. Routine Health Evaluations

Various observations and diagnostic evaluations should be done on a routine and scheduled basis to help in detecting illness in tigers before advanced disease occurs.

- i. Routine daily observations by the keeper staff on each tiger
 - a. Activity level, presence of abnormal behavior, appetite, aggression between animals should be recorded on a daily log
 - b. Fecal quantity and characteristics should be recorded
 - c. Urine characteristics should be recorded.
 - d. Food should be weighed into and out of the enclosure and the weights recorded.
- ii. Daily veterinary rounds and visits to see each tiger
 - a. The veterinarians and Zoo Rangers should speak with the keepers each day to be informed of any problems seen and read the keeper's daily log
 - b. The veterinarian should observe for signs of illness and record observations in medical records
- iii. Routine weighing
 - a. An electronic scale should be purchased that will allow routine weights of certain species to be taken while they are in their squeeze cage
 - b. Weights of each animal should be taken at least monthly and recorded in the keeper log and the animal's medical record
 - c. Weights can be used to adjust amount of food being fed to each animal
 - d. If abnormal weight loss is occurring in an animal, the animal should be scheduled for a complete physical examination under anesthesia to determine the cause of the weight loss

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- iv. Routine diagnostic sampling
- a. Fecal examinations for parasites and parasite ova should be performed on samples from individual animals at least quarterly
- Direct and fecal flotation examinations should be done on each sample
 - Sedimentation and Baerman examinations should be done biannually
 - Most internal parasite ova found on routine fecal examinations are relatively common parasites. Fecal examinations should be repeated after treatment to assess efficacy
- b. Routine blood collection for tiger health assessment
- blood can be collected through the use of a squeeze cage or positive reinforcement training
 - blood should be collected in EDTA tubes for hematology including white blood cell count (WBC) and differential, red blood cell count (RBC), hemoglobin, hematocrit, total solids, fibrinogen, MCV, MCH, MCHC, nucleated RBC, platelet count, red blood cell morphology, and presence of hemoparasites
 - blood should be collected in red top serum tubes for serum chemistry analysis including calcium, phosphorus, glucose, BUN, cholesterol, total bilirubin, creatinine, alkaline phosphatase, SGOT, SGPT, CPK, sodium, chloride, potassium, magnesium, total protein, albumin, and globulin.
 - A serum sample should be frozen in a serum bank for availability for future diagnostics or epidemiologic investigations.
 - At least once a year, canine heartworm diagnostics should be performed
 - direct microscopic evaluation for microfilaria
 - serology
 - tigers should be on heartworm prophylaxis monthly using ivermectin at 0.1 to 0.2 mg/kg.
 - tigers should be examined for the presence of microfilaria prior to starting on prophylaxis.
- Routine urine collection for urinalysis
- Urine can be collected at least bimonthly whenever an uncontaminated sample can be collected from the floor or squeeze cage.
 - Urine examination should include a visual description of the urine (color, turbidity, etc), specific gravity, urine dipstick (pH, glucose, ketones, urobilinogen, blood, etc.), and centrifuged microscopic examination of sediment for presence of casts, crystals, WBCs, RBCs, abnormal cells, bacteria, parasites, etc.
- v. Annual examination
- A protocol of regular physical examinations under general anesthesia should be established for ongoing preventative medical care in tigers.
- a. A thorough examination and diagnostic investigation under anesthesia should be performed on each tiger each year unless age concerns are present. This evaluation should include:
- Complete physical examination
 - CBC + Serum Chemistry Profile
 - Serology for FIV, FeLV, and FCoV (+ any other pathogens of concern)
 - Heartworm diagnostics
 - Banking of serum in frozen serum bank

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- Urinalysis
- Fecal culture for enteric pathogens
- Confirm permanent identification
- External parasite evaluation
- Body weight and assessment of body condition
- Dental prophylaxis and other dental procedures if needed

4.1.4 Vaccination

All vaccines used in wildlife should be killed vaccines whenever possible in order to prevent the occurrence of vaccine induced disease. No modified live vaccines have been adequately tested in wild animals.

4.1.5. Nutrition and Food Hygiene

Tigers-Unique nutritional requirements of felids must be recognized in feeding captive tigers, including the need for high protein and fat diets, inclusion of necessary vitamins, arachadonic acid, and taurine. Also strict hygiene must be adhered to in the entire food stream, from the butchery to feeding the tiger, in order to prevent food contamination, overgrowth of potential pathogenic bacteria, and resulting gastrointestinal disease.

- i. The amount of meat to feed each tiger should be based upon maintaining good weight and body condition in the tiger. Routine weighing of each tiger and weighing of food given and removed from each tiger will help in adjusting amounts of meat fed. Determination of ration amounts is a dynamic process to meet changes in metabolic needs, such as in seasonal needs, illness, pregnancy, lactation, and growth.
- ii. Generally tigers' appetites and body conditions improve if they are fasted one to two days a week. Tigers can benefit from receiving large bones on fast days for enrichment and dental/periodontal health.
- iii. In case where only muscle meat is fed with a small inclusion of bone, it is recommended that a complete supplement designed for use with slab meat be used in place of using only calcium carbonate (CaCO₃), as now the case. ["Mazuri® Carnivore Supplement for Slab Meat" This could be imported, or mixed to specification locally. Until a complete supplement can be instituted the CaCO₃ supplementation should be increased from 1.0 gm/kg meat to 14 to 17 gm/kg meat in order to provide 1% calcium on a dry weight basis.]
- iv. Food hygiene is of particular concern at NZP as there appear to be numerous points in the food acquisition and preparation stream where contamination with potential pathogenic bacteria and other harmful substances, as well as potential overgrowth of pathogenic bacteria can occur. Areas where improvements can be made are:
 - a. Assure that healthy, disease-free livestock are purchased as the meat source.
 - b. Assure adequate veterinary inspection of carcass is occurring at slaughterhouse.
 - c. Slaughterhouse must maintain human food quality standards of cleanliness and hygiene.
 - d. The carcass should be hung and never touch the floor of the butchery during the skinning and evisceration process.
 - e. During the evisceration process, the gastrointestinal tract should not be opened or nicked to allow contamination of the carcass meat with digesta.

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- f. The butchery employees must be wearing clean coveralls, boots, and gloves and use knives and tools that are cleaned and disinfected between carcasses.
- g. As the carcass is quartered, it should go directly into clean, disinfected covered containers and should never touch the floor/ground.
- h. From the time the meat enters the transport containers until it reaches National Zoological Park, it should be kept refrigerated/cold in some way to prevent bacterial overgrowth. Ideally, a closed, refrigerated truck should be used for transport of the meat to the zoological park.
- i. The meat preparation facility at NZP must be kept thoroughly cleaned and disinfected – detergent and sodium hypochlorite (bleach). All dirt, cobwebs, etc. must be removed from the ceiling and kept off the ceiling. It should be maintained as clean and sanitary as a surgery suite. It should be kept locked and closed when not in use to prevent foot traffic through the facility. The room should be air conditioned to decrease room temperature and bacterial growth.
 - The walkway into the meat preparation facility should be cement to prevent tracking of dirt into the facility.
 - The facility should have in place a good drainage system to prevent wastes and water from the facility from draining onto the ground surrounding the facility where foot traffic will carry pathogens around and where wildlife will become exposed to the waste.
 - A functioning freezer should be available in the meat processing facility to keep meat cold until it is fed. The freezer should be kept clean and disinfected.
- j. Once the meat reaches NZP, it should be transported in its containers into the meat preparation facility.
- k. Those entering the facility should change into clean and disinfected boots and coveralls and should be wearing gloves when handling the meat.
- l. The meat should be cut with clean and disinfected knives and utensils on clean, disinfected cutting boards made of impervious materials. The old wood stumps used for chopping should be removed.
- m. The cut meat portions should be put into clean feeding containers and then these containers placed immediately into the freezer until feeding time.
- n. After the meat preparation is completed, the entire facility should be thoroughly scrubbed with detergent, rinsed, sodium hypochlorite applied and allowed to set for 15-20 minutes, and then thoroughly rinsed again.
- o. Gloves should always be worn by keepers, if they handle the meat prior to feeding.
- p. The meat should always be fed on a clean, disinfected surface and at a time when the animal will consume it as quickly as possible. Never place the meat on a surface that is soiled with waste products. If possible, use feeding pans that can be cleaned and disinfected between feedings.

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4.1.6. Medical Records

The value of medical records cannot be overemphasized. The systematic gathering and recording of medical and pathological data in a uniform manor is mandatory to any medical program. These records contain vaccinations, diseases, surgeries, anesthetic episodes, parasite problems, weights, medications received, blood and other

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clinical pathology data, etc. It is vital to start this during the quarantine period and continue it through the existence of the animal in the collection and then if the animal dies the necropsy findings will be part of the record. Medical records can be in paper format or electronic format.

- a. It is suggested that NZP acquire and use ARKS (Zoo Animal Management Record System) and MedARKS (Zoo Animal Medical Records System) which are computerized databases for records used throughout the world. These programs will streamline record keeping and make searching and analyzing data much easier. MedARKS will help normal blood data for tigers.

4.1.7 Adequate Drug Availability for Animal Treatment

NZP should have a pharmacy on-site in its veterinary hospital where routinely used drugs, such as emergency resuscitative medications, antibiotics, anthelmintics, fluids, anesthetics, analgesics, tranquilizers, etc. can be maintained according to local, state and federal regulations.

4.1.8 Veterinary Decision Making and Approvals

There appears to be a general notion by veterinarians that they must be overly cautious in their decisions regarding animal health, because they will be blamed if things go wrong or an animal dies under their care. This uneasiness may make the veterinarian less assertive and self-confident when making decisions regarding the diagnostic and treatment plans for an animal. Consequently, an attitude of waiting and symptomatic treatment develops for many cases, rather than a more aggressive diagnostic plan to determine the cause of illness followed by a treatment plan tailored to the problem. This can lead to less satisfactory outcomes in cases.

4.1.9 Pathology

Complete gross and histopathologic examinations, along with all other ancillary testing should be performed on all animals that die to determine cause of death and any other useful information to improve animal health.

- i. The veterinarian should be involved in all necropsies of NZP animals. Veterinarians can learn a great deal about the animals they care for during a necropsy procedure (i.e., anatomy, surgical approaches, pathophysiology of disease, etc.)
- ii. The NZP veterinarians should receive some specialized training in proper gross necropsy techniques and sample collection to improve their diagnostic capabilities.
- iii. A specific protocol for tiger necropsies should be developed so all necropsies are done the same way and the same samples are collected.
- iv. A complete set of tissues should be collected in formalin, not just major organs. A checklist of tissues to collect will make sure that all tissues are collected.
- v. A set of tissues and other material (i.e., stomach contents, feces, urine, etc.) should also be frozen from each carcass so materials are available for further diagnostics (i.e. virus isolation, PCR, toxicology, etc.)
- vi. It would be beneficial to have one pathologist that does the histopathology on all tiger deaths in India. This would allow this pathologist to become intimately familiar with all tiger diseases and to be able to better investigate new problems and trends. Good pathology support is essential in determining cause of death and in the investigation of new health problems.

4.1.10 Drug Management and Immobilization Procedures

Basic knowledge of physiology of various groups of wild animals is important to have your better understanding of the animal's responses to the anesthetic drugs and subsequent handling of carnivores. Understanding of pharmacology of chemical immobilization drugs and knowledge of the way in which drugs effect body function, is essential to enable a proper understanding of the chemical immobilization of carnivores. Various aspects of needs that may be required for the veterinary medical officer at NZP are discussed as below:

Training needs: Veterinary education in India deals primarily with Production Animal Medicine and Husbandry. The veterinary curriculum has very little or no emphasis on wildlife medicine. For the Veterinarian at NZP, it is essential that an opportunity should be available for wildlife restraint and immobilization training. Such training programmes are available in Africa or this can also be achieved through a study tour in a large North American Zoo. This will provide knowledge and skills needed for successful immobilization and restraint of tigers, other carnivores and variety of ungulates in NZP.

Availability of latest drugs: While some drugs are available at NZP, there is a need to have wider variety of chemical restraint drugs. This will enhance capability to safely handle wild carnivores and use of drugs based on procedures to be carried out.

Storage facilities & disposal: Common factors which influence the rate of drug degradation are temperature, light and pH. Storage should be done according to the labeling on drugs. Drugs packaged in amber color bottles are sensitive to light. A separate refrigerator should be dedicated for storage of chemical restraint drugs. The disposal of expired drugs should be done in accordance with the procedures described in the drug packaging.

Transport units for equipment & drugs: Proper transport boxes are necessary for equipment and drugs. For equipment custom made boxes supplied by the immobilization equipment manufacturer should be purchased. For the drugs, tackle boxes with several compartments are necessary for safe transport of drugs and syringes.

The vehicle used for carrying immobilization equipment and drugs should have a mobile refrigerator for various types of drugs.

Sample collection accessories: It was noticed that there is a lack of availability of disposable sample collection accessories. Various types of vacutainers, transport medium swabs and sterile syringes should be available at all times.

Data sheets: A standard data sheet should be developed for recording information on various aspects of immobilization, drugs used, anesthesia monitoring and sample collection.

4.1.11 Behavior Modification through Positive Reinforcement

Positive reinforcement training is a useful tool for conditioning animals to perform needed behaviors. Positive reinforcement of behaviors which allow examination, blood collection, and medication, without the use of physical or chemical restraint, allow these procedures to be performed more often and with far less stress to the animal.

- i. NZP should consider using positive reinforcement to train its tigers specific behaviors that will allow blood collection, weighing, and some other examinations without restraint.
- ii. Squeeze cage conditioning for healthy animals as a routine should be done so that examination and blood samples collection can be done without causing any stress to the animal.

5. Review and Recommendation for Improvement in Animal Facilities

5.1 Animal Facilities

The indoor houses though large with adequate aeration and lighting had small in-built iron cages partially corroded with paint peeling off and edges are the basic shortcoming in design and these design limits effective cleaning and disinfection. Suggestions for improvements include:

5.1.1 Improving Current Indoor Enclosures

- i. If iron cages be replaced by stainless or galvanized steel grid this will allow free flow of air through the enclosures and socializing between animals. Animals showing incompatibility and high levels of aggression should be housed in brick built cages. Airflow will reduce exposure to inhaled pathogens, allow more rapid drying which reduces pathogen burdens, and provides more light. If possible, the enclosures should be larger and they should allow the animal to stand up on their hind legs. These enclosures should still have a full roof to prevent exposure to rains. Plantings can be used as sight barriers to reduce stress from seeing foot and vehicle traffic. Floors should be sealed concrete or have a seamless finish to allow easy cleaning. Effective closed drains and catchments should be in place to prevent wastes and waste water from draining into the outdoor enclosure or onto surrounding soil where it can be tracked to other enclosures.
- ii. Sandblast steel grid, tracks and sliding doors to remove rust and coat with rust resistant coating or replace with stainless steel or galvanized steel.
Create more openings through the walls to allow better airflow and provide more light. Providing fans to blow through the enclosures may aid in providing better airflow and quicker drying.
- iii. Floors and walls should be sealed to reduce the presence of seams and irregularities that hold debris and prevent adequate cleaning and disinfection.
- iv. Where animals will come in contact with one another, shift doors should be made solid or use smaller grid to prevent fighting through the doors and trauma.
- v. New squeeze cages can be made from aluminum alloy to reduce rusting surfaces and also make them much lighter for moving.
- vi. The drainage and waste water catchment systems in the enclosures need to be dramatically improved to keep waste water from draining into other enclosures, into the service area, and outside onto the ground where it can be tracked around or come into contact with free-ranging wildlife. Collected water should go to a septic system to reduce pollution to surrounding bodies of water.
- vii. Separate boots should be available at each enclosure for keepers to change into and then take them off before leaving – this is more effective than footbaths.
- viii. Animals should only be locked into indoor enclosures when necessary for cleaning and repair of outdoor enclosures, shifting, treatment, etc.
- ix. Indoor enclosures should have raised platforms that they can lie on to remain dry from the moist floor.

5.1.2 Improving Outdoor Enclosures

- i. Make double fence barriers between outdoor enclosures to prevent fighting through the fence and trauma.
- ii. Natural plantings can be made between enclosure barriers to act as a sight barrier to reduce aggressive interactions and reduce stress.
- iii. Enclosures should be cleaned more often to remove animal wastes and decaying meat that is dragged into the exhibit.
- iv. Large fallen trees or logs should be placed in outdoor exhibits for scratching behavior and enrichment.

- v. Cement pools should be drained and cleaned with bleach daily.
- vi. Natural substrate pools should be drained whenever possible and debris removed. They should then be allowed to stay dry for awhile and exposed to the sun before refilling. These pools should be flow-through with clean water. Routine coliform bacteria counts should be done on the water to monitor fecal contamination. If counts are high, the pool should be drained.
- vii. If animals are to be introduced to one another, such as for breeding purposes, a standard protocol should be developed for the introductions to reduce risk of serious fighting and trauma. Methods should be in place for rapidly separating animals if serious fighting starts.
- viii. The outdoor feeding pans should be thoroughly cleaned and disinfected daily between feedings.

6. Education and Training

6.1 Training and Continuing Education to Veterinary Medical Officers of NZP

Provision for opportunities for continuing education on an annual basis should also be made in following areas:

- i. To form the fundamental and basic knowledge of wildlife, every veterinarian hired for health management of zoological collection must attend PG Diploma Course in Wildlife Management conducted annually by Wildlife Institute of India. Further, to enhance clinical and diagnostic skills in zoological medicine, a minimum of one year training in a large North American Zoo will equip them to provide quality health care of captive wild animals. Such trainings through residency programs available in North American, European and Australian zoos must be continued at least 3 months each year over a period of 5 years. Additionally, each veterinary medical officer must attend annual conference on Zoological Medicine-American Association of Zoo Veterinarians (AAZV) and International Wildlife Disease Conference organized by Wildlife Disease Association(WDA). The attendance to such conferences will enhance their knowledge and provide opportunities for networking with fellow colleague
- ii. One of the other important area is training in Wild Animal Restraint and Immobilization. These course are conducted annually by University of Pretoria(<http://www.enterprises.up.ac.za/info-brochure/Advanced%20Course%20in%20Wildlife%20Chemical%20Immobilisation%20and%20Field%20Practice.pdf>) & an another Course in Wild Animal Restraint & Anesthesia is conducted annually by Zimbabwe Wildlife Veterinary Trust(<http://wildlifecaptureafrica.com/>)
- iii. Safe handling of wild animals is an important key for medical management and surgical procedures.
- iii. Specialized knowledge and skills
 - a. Pathology
 - Workshop on wildlife pathology conducted with internationally accredited pathologist.
 - b. Other diagnostic procedures (e.g. imaging and lab analysis)
 - Short experiences with veterinary college faculty, who will provide capabilities and consultation when needed.

6.2 Veterinary Support Staff

A well trained ancillary veterinary staff is an essential component to an animal health program. To supplement any advanced training for Compounders and Laboratory Technicians that may be available in India, one week workshops by international presenters should be arranged. This kind of training could be coordinated with CZA with participation of personnel from other Parks and Zoos. Indian Veterinary Research Institute (IVRI) may be assigned to develop a 3 months course for veterinary support staff and animal keepers. WII, Smithsonian National

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Zoological Park and IVRI may be able to design and develop such courses for veterinary support staff and animal keepers.

7. Communication

- i. Procedures to maintain frequent and consistent communications among veterinary staff, animal care staff, and park administration should be established. These might consist of daily oral rounds and briefings, written summaries of activities and events, and longer term reviews of existing policies and procedures.
- ii. A rapid communication capability should be installed for use by all personnel within the park. This might be best accomplished through walkie-talkie or mobile phone systems.

8. Human Health and Interaction

Veterinary and animal care staff must be aware of the physical and biological dangers of working with captive wildlife. There should be staff training in these areas, as well as standard protocols for animal contact which aim to mitigate dangerous situations. Policies that cover protection of the public should also be reviewed. Protocols to address emergency situations should also be developed.

8.1 Zoonotic disease prevention

- i. Knowledge of zoonotic diseases

Generally, zoonotic diseases are more easily prevented than treated, provided these are rapidly diagnosed/identified and prompt measures are taken for prevention and control. Nevertheless, many zoonotic diseases are not easily identified because the clinical signs observed are not highly specific or distinguishable from other clinical infections, or the animals are healthy carriers. Many zoonotic diseases have a wildlife reservoir, which very few veterinarians are trained to recognize, identify or even care for. It is important that veterinarians working with wildlife keep themselves updated on new and emerging zoonotic diseases.

- ii. Collaboration with other Institutions for diagnosis and identification of zoonoses

A major limitation in zoonotic disease recognition is the lack of training in zoonotic diseases, especially the exotic disease and pathogens. Division of Veterinary Public Health at Indian Veterinary Research Institute (IVRI), Izatnagar is an excellent resource and highly accomplished in research and training on zoonotic diseases. NZP may coordinate with them for their needs on formulation of protocols for investigation, diagnosis, treatment, control and prevention of carnivore zoonoses.

- iii. Evaluation of health of zoo keepers

A complete medical examination of all the keepers should be done every six months. The medical examination should include chest X-Ray and all other aspects to evaluate the health of keepers. This will minimize transfer of any zoonotic diseases such as tuberculosis to the carnivores.

- iv. Human safety procedures

Keepers, Veterinary Medical Staff and other official entering into housing areas must wear protecting clothing. Rubber boots, gloves and aprons can minimize the risk of exposure for diseases transmitted by blood, feces or saliva.

Eating and drinking of any food material and beverages should be strictly prohibited in and around enclosure. Many of the zoonoses are spread by fecal-oral contamination. Hands should be properly washed after working

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with animals in enclosure followed by disinfection with 70% alcohol. Sanitation procedures & disposal of contaminated articles

Clean animal holding and handling areas. Scrub tools, tables, reusable gloves and equipment with water and soap or detergent. Rinse the area with a disinfectant that contains bleach. A proper procedure should be followed for disposal of contaminated article and disposable accessories. Bio safety bags should be used for disposal of various contaminated article.

vi. Use of incinerator & bio safety bags

A pathological incinerator for animal carcasses for all burnable waste is highly recommended. Potentially infectious material should be properly collected in bio safety bags for incineration. Transport container for such materials must also be cleaned and decontaminated.

vii. Training & education of keepers

Zoo keepers lacked adequate training and education for the job assigned to them. For a zoo keeper, it is important that he/she is familiar with aspects of basic animal husbandry, hygiene, animal behaviour and nutrition.

viii. Production of a guide in regional language providing basic knowledge on wildlife zoonoses.

It is important to develop curricular materials in local language on zoonotic diseases. Such material should contain information in a simple and understandable manner with diagrams and pictures etc. A zoo keeper training manual can also be produced in local language.

9. Reference Materials

i. A basic library of reference books and journals should be readily accessible by the veterinary staff. The American Association of Zoo Veterinarians has a bibliography that can be used to select the appropriate texts for this purpose.

ii. A computer with high-speed internet access should be available in the veterinary hospital. Web resources and email contact with colleagues is an invaluable source of information.

No. 118
 Veterinary Hospital, National Zoological Park
 Date: 20/09/2019
 Kind of Animal with Remarks of Identification if any/ Name of Animal: Royal Bengal Tiger (Kuma)

Scientific Name: _____
 Sex: Male
 Age: 5 to 10 years

Time, Date and Place of Death: 1.50 PM, 20/09/2019, at Beat No. 05
 Date, Time of Post Mortem: 20/09/2019, at 3.30 PM
 History of Illness, if any: Animal reported affected since 20/07/2019 with tremors, animal started inappetent, loss of weight, depression, sunken eyes, general debility signs with prostration, sunken eyes, pale mucus, bloody muscular lesion in fundus.

A. General Description: _____
 B. Organ wise Description of Lesions:

(i) Head and Neck: (a) Skull and Brain: Generalized congestion in brain tissue with no external injury marks.
 (b) Cervical Membrane: N.A.D.
 (c) Lungs: Suffered pneumonia with generalized degenerative changes.
 (d) Heart: Generalized congestion.
 (e) Pleura: Sterile lesions.
 (f) Liver: Round edges with edematous haemorrhages, dense lesions at sites.
 (g) Stomach: Empty.
 (h) Intestine: Generalized pale mucus.
 (i) Kidney: Severe fibrin deposition (Hirnodysplastic) with haemorrhagic lesions.
 (j) Spleen: Hyperplastic at sites with generalised splenic lesions.

(ii) Chest (Thoracic Cavity): (a) Lungs: Suffered pneumonia with generalized degenerative changes.
 (b) Heart: Generalized congestion.
 (c) Pleura: Sterile lesions.

(iii) Abdominal Cavity: (a) Liver: Round edges with edematous haemorrhages, dense lesions at sites.
 (b) Stomach: Empty.
 (c) Intestine: Generalized pale mucus.
 (d) Kidney: Severe fibrin deposition (Hirnodysplastic) with haemorrhagic lesions.
 (e) Spleen: Hyperplastic at sites with generalised splenic lesions.

(iv) Pelvic Cavity: (a) Uterus and Ovaries: Fully distended with dark urine.
 (b) Bladder: Fully distended with dark urine.
 (c) General Passage: _____

(v) Limbs: (a) Fore Limb: Nothing abnormal detected.
 (b) Hind Limb: Progressive degenerative muscular lesions with pale niss.

(vi) Any other Special Features (Histological Test Done, if any): Multiple organ degenerative lesions with nephrotic lesions leading to pulmonary collapse, correlated with histopathology findings.

(vii) Instructions For Disposal: (i) Blood (Heart blood) for smear and (ii) Urine (Urine) for smear. (iii) Biopsy (kidney, liver, heart, urinary bladder, stomach, spleen) for histology. (iv) Bussing for smears.

Place: N.Z.P. (Dr. N. Mohan Kumar) (Dr. N. Mohan Kumar)
 Date: 20/09/2019
 Signature: _____
 Name: Dr. Vikash K. Mishra
 Designation: Asst. Vet. Officer.
 Muz. (Dr. N. Mohan Kumar) (Dr. N. Mohan Kumar)
 Muz. (Dr. N. Mohan Kumar) (Dr. N. Mohan Kumar)
 Muz. (Dr. N. Mohan Kumar) (Dr. N. Mohan Kumar)

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Center For Wildlife Conservation, Management and
Disease Surveillance
Indian Veterinary Research Institute
Izatnagar - 243 122, Bareilly, U.P., India



Ref no: II-87/2017-NZP

Dated: 20.09.2019

Address Director
National Zoological Park-New Delhi

Laboratory Report

Specimen no: 138-WLS/19
Dated 21-09-2019

HP charges has not been received

Histopathological examination: 138-WLS/19 (Tiger- Rama)

The formalin fixed tissue samples from liver, lung, kidney, spleen, heart, stomach, tongue, brain and were received and processed for histopathological examination. The tissue sections were examined microscopically. The liver revealed severely engorged and dilated sinusoids and central vein with moderate degeneration of hepatocytes. Hemosiderin pigment laden Kupffer cells and some hepatocytes were also seen throughout the liver parenchyma. The kidney depicted severe degeneration of tubular epithelial cells as well as Bowman's epithelium. The renal tubular epithelial cells were swollen and some of them sloughed into the lumen. Increased Bowman's space with presence of pinkish material was also observed in the glomeruli. The spleen showed severely congested red pulp sinuses with deposition of hemosiderin pigments. The heart depicted moderate degeneration of myocardial fibres with severe intermyocardial fibrosis. The lung section revealed severely engorged pulmonary vessels with hemosiderin laden alveolar macrophages. The brain showed severe neuronal degeneration with satellitosis and neuronophagia. Other organs did not reveal any significant histological changes.

Note: 1. Presence of hemosiderin deposition in liver, lung and spleen section was confirmed by Pearls Prussian Blue staining and fibrosis in the heart section by Masson's Trichrome Staining.

The lung tissue section and impression smear was negative for acid-fast organisms by ZN staining

Virological examination: Brain sample was found negative for Feline panleucopenia virus and canine adenovirus-1 by PCR and canine distemper virus by RT PCR using N gene primers.

Bacteriological examination: The heart blood was subjected to bacterial isolation and ABST.

Bacteria Isolated: *Proteus vulgaris*, *Proteus mirabilis* and *Alcaligenes* spp

ABST: Sensitive to- Gentamicin and Atreonom

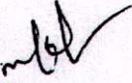
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Resistant to- Chloramphenicol, moxalactam, tigecycline, cefepime, ceftriaxone, meropenem and imipenem.

Leptospira serodiagnosis: The serum sample (collected before death on 16.09.19) of "Rama" Tiger was negative for antibodies against Leptospiral serovars by MAT.

Parasitological examination: The intestinal content was negative for any GI parasites.

Diagnosis: Histopathological changes suggestive of chronic myocardopathy (cardiac failure) and nephropathy, which are of progressive in nature


M. Karikalan
Scientist


Incharge
Centre for Wildlife
प्रभारी
वन्य प्राणी केन्द्र
भा.प.सि.अनु.सं.

Note: This report is intellectual property of ICAR- IVRI, Izatnagar and not valid/liable for any vetrolegal procedure.
टिप्पणी : यह विरलेषण प्रतिवेदन मध्य कृषि विद्यापीठ, इजतनगर की संपत्ति है और किसी भी पशुचिकित्सीय -वैधिक प्रयोजन हेतु लागू नहीं है।

INFORMATION PROVIDED
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