



National Tiger Conservation Authority
Ministry of Environment, Forest & Climate Change
Government of India



3rd STOCK TAKING CONFERENCE ON TIGER CONSERVATION

JANUARY 28-29, 2019, NEW DELHI, INDIA



REPORT OF THE 3RD STOCKTAKING CONFERENCE ON TIGER CONFERENCE

Executive Summary

The 3rd Stocktaking Conference on tiger conservation was held on 28-29 January 2019, at the SCOPE Complex, New Delhi. This was organized by the Global Tiger Forum, as an implementing arm of the Global Tiger Initiative Council (GTIC), in collaboration with the National Tiger Conservation Authority (Government of India), Wildlife Conservation Trust (WCT), Wildlife Trust of India (WTI) and WWF.

The conference is the latest collective step in the process that began at the 2010 St Petersburg Tiger Summit - where 13 tiger-range governments committed to Tx2 - an ambitious goal to double the global wild tiger population by 2022.

The two-day conference included country updates on the Key Performance Indicators (KPIs) of Tiger Range Country specific National Tiger Recovery Program (NTRP), and technical presentations on themes such as protection, habitat/ prey/ tiger recovery, management of human wildlife interface issues, smart green infrastructure, habitat, field management, conservation finance and partnerships. Apart from this, there were four Side Events, viz. reviewing of the Sub continental level Tiger estimation for India, Bangladesh, Bhutan, and Nepal. Maximizing synergies of partnerships for tiger conservation, combating wildlife trafficking issues and a discussion on contours of strategy for conventions (CITES).

Tiger-range governments agreed on the urgent need to address critical gaps across the tiger range through a set of recommendations.

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PROCEEDINGS

Conference Agenda

Day I	28 January 2019
09:00 – 10:00	Registration
10:00 – 11:15	Inaugural Session
10:00 – 10:05	Welcome address by the IGF, National Tiger Conservation Authority (NTCA), Government of India
10:05 – 10:10	Remarks: Anup Nayak, Member Secretary, NTCA
10:10 – 10:15	Remarks: Rajesh Gopal, Secretary General, GTF
10:15 – 10:20	Remarks: Keshav Varma, CEO and Executive Director, GTI Council
10:20 – 10:50	Release of Reports and Publications
10:50 – 11:00	Remarks: Hon'ble Minister of State, Ministry of Environment, Forest and Climate Change, Government of India
11:00 – 11:10	Key Note Address: Hon'ble Minister of Environment, Forest and Climate Change, Government of India
11:10 – 11:15	Vote of thanks: Tenzin Wangchuk, Technical Officer, GTF
11:15 – 11:30	TEA/COFFEE BREAK
11:30 – 11:50	Chair: GTIC
	GTRP Score and Priority Actions: Rajesh Gopal, GTF
Status of GTRP Implementation: Country Updates	
11:50 – 12:20	Chair: Bangladesh
	Co-chair: WWF
	TRC presentations on Status of GTRP/ NTRP implementation
	(Presentation: 15 Minutes)
	TRCs: India and Cambodia
12:20 – 12:25	<u>Concluding Remarks (Chair and Co-Chair)</u>
	<u>5 minutes</u>
12:25 – 12:55	Chair: Bhutan
	Co-chair: IFAW/WTI
	TRC presentations on Status of GTRP/ NTRP implementation
	(Presentation: 15 Minutes)
	TRCs: Bangladesh and Thailand
12:55 – 13:00	<u>Concluding Remarks (Chair and Co-Chair)</u>
	<u>5 minutes</u>

13:00 – 13:30	Chair: Cambodia
	Co-chair: WCT
	TRC presentations on Status of GTRP/NTRP implementation
	(Presentation: 15 Minutes)
	TRCs: Malaysia and Myanmar
13:30 – 13:35	Concluding Remarks (Chair and Co-Chair)
	<u>5 minutes</u>
13:35 – 14:15	LUNCH BREAK
14:15 – 14:45	Chair: India
	Co-chair: IUCN
	TRC presentations on Status of GTRP/NTRP implementation
	(Presentation: 15 Minutes)
	TRCs: Russia and Lao PDR
14:45 – 14:50	Concluding Remarks (Chair and Co-Chair)
	<u>5 minutes</u>
14:50 – 15:20	Chair: Lao PDR
	Co-chair: GTIC
	TRC presentations on Status of GTRP/NTRP implementation
	(Presentation: 15 Minutes)
	TRCs: Bhutan and Nepal
15:20 – 15:25	Concluding Remarks (Chair and Co-Chair)
	<u>5 minutes</u>
15:25 – 16:15	Open Discussion/Q and A
16:15 – 16:30	TEA/COFFEE BREAK
16:30 – 17:30	Side Event 1:
	Subcontinent level Tiger Estimation (Status review – Bangladesh, Bhutan, India and Nepal)
	Invitation only) – Tagore Hall
17:30 – 18:30	Side Event 2:
	Partnerships for Tiger Conservation: How to maximize synergies – Main Auditorium

Day II	29 January 2019
Day 2 Session 1	Chair: Malaysia
	Co-chair: WWF TAI
09:40 – 09:55	TRC presentations on Status of GTRP/NTRP implementation
	(Presentation: 15 Minutes)
	TRCs: Vietnam
09:55 – 10:00	<u>Concluding Remarks (Chair and Co-Chair)</u>
	<u>5 minutes</u>
Technical Sessions	
Day 2 Session 2	Chair: Myanmar
	Co-chair: WTI
10:00 – 10:15	Synthesis of Key Performance Indicators from TRCs: Issues, Challenges & Way Forward: Sejal Worah, WWF
10.15 – 10:30	Tenets of in-situ Tiger conservation: Planning and Proactive Management: Vaibhav Mathur, NTCA and
	L. Krishnamoorthy, Kanha Tiger Reserve
10:30 – 10:35	<u>Concluding Remarks (Chair and Co-Chair)</u>
	<u>5 minutes</u>
10:35 – 10:55	TEA/COFFEE BREAK
Day 2 Session 3	Chair: Nepal
	Co-chair: WCT
10:55 – 11:10	An analysis of the Global Tiger Recovery framework: Joseph Vattakaven, WWF International
11:10 – 11:25	Beyond Numbers – Indicators for Assessing Tiger Recovery: WWF
11:25 – 11:30	<u>Concluding Remarks (Chair and Co-Chair)</u>
	<u>5 minutes</u>
Day 2 Session 4	Chair: Russia
	Co-chair: WCS Russia
11:30 – 11:45	Active Management for Tiger: H.S. Negi, IGF, NTCA
11:45 – 12:00	Status of Tiger in High Altitude (Bhutan, India and Nepal): K Ramesh, Wildlife Institute of India and
	Wangchuk Dorji, Regional Tiger and Cat Research Center, Bhutan
12:00 – 12:05	<u>Concluding Remarks (Chair and Co-Chair)</u>
	<u>5 minutes</u>

Day 2 Session 5	Chair: Thailand
	Co-chair: UNDP
12:05 – 12:20	Emerging trends in Poaching and Illegal trafficking of Big Cats: James Compton, TRAFFIC International
12:20 – 12:35	Best practices and cooperation for combatting wildlife crime: WCCB-India and WCCB-Nepal
12:35 – 12:50	Security Audit Protocol for Tiger Range States: S.P. Yadav, U.P. Biodiversity Board
12:50 – 12:55	Concluding Remarks (Chair and Co-Chair)
	<u>5 minutes</u>
13:00 – 14:00	LUNCH BREAK
Day 2 Session 6	Chair: Vietnam
	Co-Chair: ZSL
14:00 – 14:15	Conservation Assured Tiger Standards – Global Status and CA TS Lite Assessment: Bhutan (Chair CA TS committee) and B.S. Bonal, GTF
14:15 – 14:30	Innovative approaches for managing Human-Wildlife Conflict: Dr Dipankar Ghose, WWF
14:30 – 14:35	Concluding Remarks (Chair and Co-Chair)
	<u>5 minutes</u>
Day 2 Session 7	Chair: GTF
	Co-Chair: TRAFFIC International
14:35 – 14:50	Connectivity and Smart Green Linear Infrastructure: WCT
14:50 – 15:05	Managing Human Wildlife Conflict: WTI
15:05 – 15:20	Open Discussion/ Q and A for Day 2 - Session 1 to 6
15:20 – 15:25	Concluding Remarks (Chair and Co-Chair)
	<u>5 minutes</u>
15:25 – 15:45	TEA/COFFEE BREAK
Day 2 Session 8	Chair: GTIC
	Co-chairs: World Bank and KfW
15:45 – 16:00	Partnerships and financing for conservation: Keshav Varma, GTIC and UNDP
16:00 – 16:15	Integrated Tiger Habitat Conservation Programme (ITHCP): Sugoto Roy, IUCN
16:15 – 16:35	Summing up, next steps and planning for 2022: Keshav Varma, GTIC and Rajesh Gopal, GTF
16:35 – 16:40	Concluding Remarks (Chair and Co-Chair)
	<u>5 minutes</u>

16:40 – 16:50	Concluding Address: Rajesh Gopal, GTF
17:00 – 17:30	Side Event 3:
	Contours of strategy for conventions (CITES) (By invitation only) – Tagore Hall
17:30 – 18:30	Side Event 4:
	Combatting Wildlife Trafficking: Issues Pertaining to Asian Big Cats – Main Auditorium

Inaugural Session

Amit Mallick: Inspector General of Forests, National Tiger Conservation Authority (NTCA), Government of India



Dr Amit Mallick, welcomed the Honorable Minister of Environment, Forest and Climate Change, Government of India and Chairman National Tiger Conservation Authority, Dr. Harsh Vardhan, along with delegates from range countries and conservation partners.

Dr Mallick gave a background on the 3rd Stocktaking Conference, wherein progress with respect to the resolution adopted by Tiger Range Countries in 2010, at St. Petersburg, Russia, were to be presented by TRCs in the context of key performance indicators of Tiger Range Countries.

Anup K. Nayak: Additional Director General of Forest, Project Tiger and Member Secretary of National Tiger Conservation Authority



Dr Anup K. Nayak gave a background of tiger conservation in India. He spoke about the launch of Project Tiger in 1973 and its subsequent growth from 9 to 50 tiger reserves, spreading across 18 tiger range states, covering an area of 7300 sq km. He further mentioned about the ongoing India Tiger Conservation exercise involving NTCA, Wildlife Institute of India, forest officials of Tiger Range States and conservation partners, which was initiated

in the year 2006 on a four year cycle. The estimation and patrolling process have evolved with the use of an android based application, M-Stripes (Monitoring System for Tigers, Intensive Patrolling and Ecological Status). He also mentioned about the implementation of Security Audit in 25 Tiger reserves of India, while requesting Tiger Range Countries to share their seizure details for better coordination towards combatting wildlife trafficking.

Rajesh Gopal: Secretary General, Global Tiger Forum



Dr. Gopal gave a brief introduction of the Global Tiger Forum, its engagement with Tiger Range Countries as well as its role as an implementing arm of the Global Tiger Initiative Council for the tiger agenda. Apart from ongoing efforts in South Asia, he highlighted the focus on South East Asia, including development of a Tiger Conservation Plan for Htamanthi Wildlife Sanctuary, Myanmar, frontline capacity building and consultations on: landscape level

tiger planning, scientific assessment of tiger/prey population and combating wildlife trafficking. He stressed upon the fact that tiger agenda cannot be viewed as the mandate of forest department alone, as it is a composite arithmetic involving several sectors where tiger is not a priority. Further, he congratulated the Tiger Range Countries for their untiring efforts to conserve tigers in the wild, despite several challenges.

Keshav Varma, CEO and Executive Director, GTI Council:

Mr. Varma provided a brief background on the Global Tiger Initiative Council, which was launched at the World Bank in 2008 as the 'Global Tiger Initiative'. It was stated that in November 2010, leaders of Tiger Range Countries resolved at an International Tiger Forum in St. Petersburg, Russia for adopting a declaration on Tiger Conservation (St. Petersburg Declaration) along with its implementation mechanism, known



as the Global Tiger Recovery Program. The overarching goal of the same was to double the number of wild tigers across their geographical area by 2022. He highlighted the need to use the platform provided by the global stocktaking conference to undertake a midterm review of the trajectory of ongoing programmes, while mapping the way forward.

Dr. Harsh Vardhan: Honorable Minister of Environment, Forest and Climate Change, Government of India, and Chairman National Tiger Conservation Authority

- Dr. Harsh Vardhan, Honorable Minister of Environment, Forest and Climate Change, Government of India, and Chairman National Tiger Conservation Authority stated that the conservation of tiger is a duty that needs to be meticulously pursued for the targets adopted by Tiger Range Countries in 2010 at St. Petersburg, Russia.
- It was stated that the Government of India has doubled the budgetary allocation for tiger conservation and is committed to the cause. Around 4000 square kilometres of area has been brought under the category of tiger reserve.
- Support of the government of India towards developing innovative technology for wildlife management and protection across India and Tiger Range Countries was also stated.
- Further, he extended support towards developing innovative technology for wildlife management and protection across India and Tiger Range Countries.





Launch of the 4th Edition of Action Tiger

DAY I: January 28, 2019

Rajesh Gopal, GTF: GTRP Score and Priority Actions



- GTRP: composite portfolio of actions
- Levels: source area, national and trans-national
- Good GTRP implementation: leads to viable population
- GTRP scored and incorporated in PHVA
- Wild tiger status, South Asia: optimal to sub optimal
- Wild tiger status, South East Asia: sub optimal to extinction
- Special actions for optimal and optimal areas suggested

Tiger Range Country Updates

This session was focused on tiger range country updates pertaining to key performance indicators (KPIs) of National Tiger Recovery Program (NTRP).

Below are highlights of presentations from the said session –

Anup Nayak, Member Secretary, NTCA, India



- Priority given to tiger agenda by the Government of India, with 35 site specific approved tiger conservation plans and 63 million USD for implementation during 2019-2020.
- 22% of tiger population of India thriving outside TRs: protection required for 32 tiger corridors identified at landscape level.
- Challenges: protection, managing human tiger interface

Mark Drew, WWF Cambodia



- Efforts initiated to build capacity of local communities on SMART patrolling
- Challenges: lack of proper protection limited by sparse funding, inadequate skills, lack of protection infrastructure and policy gaps.
- Strengthened: wildlife protection through capacity building and intensive patrolling.
- Financial and human resource to sustain and enhance efforts on tiger and prey recovery needed.

Md. Jahidul Kabir, Conservator of Forests, Wildlife and Nature Conservation Circle, Bangladesh



- Strengthened protection efforts by skill development and training of 685 staff members, along with SMART Patrolling.
- Community engagement efforts led to development of Village Tiger Response Teams (49 teams to manage HTC) and Community Patrolling Groups of 85 members. No record of retaliatory tiger killings since 2015.
- Provision for 30% of risk allowance announced.
- Challenge: lack of manpower.

Somphot Duangchantrasiri, Head, Khao Nang Rum Wildlife Research, Thailand



- Strengthening efforts: SMART patrolling and workshops on the CITES agenda.
- Initiation of Network Centric Anti-Poaching System (NCAPS) aiming to enhance protection and law enforcement efforts
- 2000 locals living inside/outside PAs employed as park rangers and field assistants.
- Trans-boundary collaborations in place, with the initiation of work in the wildlife corridor of Dong Phrayayen-Khao Yai Forest Complex from June 2019.

Pazil Abdul Patah, Director, Department of Wildlife and National Parks, Malaysia



- The INTAC or Intelligence and Tactical Centre for Wildlife Crime proved elemental in bringing down pangolin smuggling syndicate
- CA|TS accreditation given to Royal Belum State Park (RBSP)
- First countrywide tiger assessment aimed by 2022

Tin Zar Kywe, Assistant Director, Nature & Wildlife Conservation Division, Myanmar



- Latest Estimation, 2018: Minimum 22 tigers
- Revision of the National Tiger Action Plan with inputs from several conservation agencies and partners
- Challenges: monitoring/surveying, inaccessible areas, local turmoil, lack of survey infrastructure and skilled staff

Amirkhan M. Amirkhanov, Deputy Chair, Federal Supervisory Natural Resources Management Service, Russia



- Tiger habitat increased by 2 million hectares and 2 new protected areas proposed, leading to increase in coverage of protected area to 38% of country's geographical area
- Smart green infrastructures: construction of the first ecological tunnel (with a length of 575 mts), the Primorye -2 (transport corridor), and tunnel built under a forested area and spread across cat dispersal routes.
- Challenges: lack of focus to garner funds from collaborative partnerships to improve/upscale projects.

Saysamone Phothisat, Deputy Director General, Ministry of Agriculture and Forestry, Laos PDR



- Protection efforts: ground foot patrol, SMART System training and forest department inspection.
- Challenges: front line staff capacity and low conviction, despite high rate of seizures.

Letro, Senior Forestry Officer, Nature Conservation Division, Bhutan



- Engagement with local communities increased via initiation of a community-based ecotourism, while augmenting their income.
- Initiation of ecotourism facilities alongside identified eco trails.
- Zero poaching strategy adopted.
- SMART Patrolling agenda in every Protected Area.
- Challenges: limited capacity of enforcement agencies and inadequate funding to green infrastructure initiatives.

Bhupendra Prasad Yadav, Assistant Ecologist, Department of National Parks and Wildlife Conservation, Nepal



- Focus on conserving tiger corridors and inherent connectivity within the landscape.
- 0.68% increase in habitat occupancy and tiger population.
- Protection efforts robust because of efficient frontline staff in Protected Areas.
- Community engagement: deployment of 450 units of community based anti-poaching units, alongside other methods of economic augmentations.
- Strengthening efforts: building frontline and community capacity to curb poaching and illegal trade, minimize habitat loss and mitigate HTC/HWC.

DAY II: January 29, 2019

Second day of the conference included the country presentation from Vietnam, followed by technical presentations on themes such as protection, habitat/ prey/ tiger recovery, management of human wildlife interface issues, smart green infrastructure, habitat and field management, conservation finance and partnerships.

Below is a brief outline of the presentations from the said session -

Vuong Tien Manh, Deputy Director, Ministry of Agriculture and Rural Development, Vietnam:



- The latest Estimated Tiger Population in Vietnam is less than 30 individuals.
- The joint ranger-community enforcement teams have seized 3000 traps, 22 hunting guns and destroyed more than 200 poacher camps.
- The country is using technology, such as drones, camera traps, and satellite navigation devices, across three priority sites to monitor wildlife movement and prevent poaching.
- Challenges include: lack of financial resources, poaching and illegal trade of wildlife body parts and derivatives and lack of manpower in frontline.

Sejal Worah, WWF: Synthesis of KPIs through TRPs



- The synthesis of KPIs through Tiger Recovery Programmes (TRPs), was achieved through categorization of KPIs into 8 key pillars. These were Habitats, Prey, Policy, Capacity, Community, Conflict, Collaboration, Protection, and Investment.
- The TRCs need to follow the principle of zero poaching, led with zero degradation of habitats, followed by focusing on the protection of corridors.
- Across all TRCs, the protection measures appeared promising, as there was better understanding of the gaps, extensive implementation of Law Enforcement Management (LEM), wide understanding and implementation of M-STrIPES and SMART technology. Whereas, lack of capacity and skill in the staff, appeared to be major challenges in strengthening protection measures
- The focus needs to be on transboundary collaborations, participate extensively in transboundary sharing of successful practices, intelligence and knowledge sharing, while emphasizing on a need to reassess the target and goals given the present access to better resources, technology and information.

Vaibhav Mathur, NTCA: Tenets of in-situ Tiger conservation: Planning and Proactive Management



- The core-buffer strategy for tiger reserves focuses on habitat carrying capacity towards creating a viable tiger population in a given area.

- The strategy aims to create large meta-populations of tigers instead of having small pockets of isolated ones, borne out of in-breeding. The state of Madhya Pradesh that delineated several active corridors.
- The Tiger Conservation Plan (TCP) of a tiger reserve has three different parts (core critical tiger habitat, buffer and corridor) with a focus on prescriptions provided as area/habitat specific zone plans and overlapping theme plans

L. Krishnamoorthy, IFS, Field Director Kanha: Innovative Practices in the Kanha Tiger Reserve Madhya Pradesh



- Kanha Tiger Reserve with a total area of 2185 sq km, houses a viable source population
- With 182 patrolling camps, comprising of a forest guard and an assistant, the protected area has 24 base camps replete with wireless network and elephant units for patrolling, sniffer dog squads for patrolling buffer areas and CCTV cameras that conduct a 24x7 surveillance in key tiger areas.
- The Bagheera Safari app, an android application has been developed with a motive to regulate and control tourism activity, such as over-speeding, making unusual stoppages, provided guide details and live GPS locations of the vehicle in the park.
- He presented the methods for achieving successful translocation of wild tigers from high to low density sites
- Tiger Reserve management is conducting awareness program for kids around the Kanha Landscape.

Joseph Vattakaven, WWF Intl.: Analysis of the Global Tiger Recovery Framework



- The open tiger recovery framework has been designed by the WWF with an aim to double tigers from 18 tiger sites, with best recovery potential and defined their recovery systems, with one system having a source site, recovery site and support region.
- Few sites were not capable of doubling tigers, while some carried a potential for increasing it over 20 times, thus there was a need for setting tangible and reasonable targets.
- There is need to advocate an unwavering commitment towards tiger and prey recovery. While the goal is visionary, it calls for a realistic approach in terms of investments and timelines.

Pranav Chanchani, WWF: Beyond Numbers: Indicators of assessing tiger recovery



- Tiger population growth pattern is not monotonic in nature.
- The characteristics of tiger recovery can have 4 possible scenarios:
1st Scenario: Rapid Recovery- areas with high prey base and good habitat, example: Sathyamangalam TR. 2nd Scenario: Tiger Recovery Depressed- areas with high prey base and extensive habitat, example: Rajaji NP. 3rd Scenario: Prey Recovery Dependent- areas where both prey and habitat have been depleted, example:

Nandhaur WLS. And 4th Scenario: Areas with low prey base and habitat mostly defined as a herder's habitat where prey populations have been severely depleted and tigers have been locally extirpated, example: Ripu and Charang WLS (southern part of Manas TR).

- Recovery gradient for these 4 scenarios were judged on the following parameters- tiger population numbers, prey population estimates, human impact indicators, management indicators and habitat indicators.

H.S. Negi, IFS: Active management for tiger



- There is a need for active management for orphaned cubs, straying tigers, for prey species, from protected area to protected area/ source areas to potential sinks. And for this to happen, there is an emerging need to exchange ideas beyond boundaries, experiences regarding reintroduction in forums and global discussions.
- Case study on the active management and reintroduction of 3 orphaned tiger cubs (2 females and 1 male, all around 1-2 month old).
- Case study on the active management for prey species - 19 Gaurs were translocated for the first time from Kanha TR to Bandhavgarh NP, followed by 30 more during the second round of translocation.

Nishant Verma: Status of tiger in high altitude areas



- Objective of such a conservation program is to find assistance in future planning of tiger programs and be able to find linkages between its movements. This can be done by an informed output involves GIS map and modeling, special use pattern of co-predators and prey, habitat linkages with source areas, land use changes that have affected tiger movements, and population viability, said Mr Verma.
- A pilot program for camera trap deployment in 5 sites of Uttarakhand led to a tiger being documented in Bhilangana Valley, Kedarnath. Meanwhile, a 2 year project was recently carried out in Dibang where a 336 km sq area was covered with a total trap nights of 12761. The data of this survey awaits integration and compilation with the data from Sikkim and West Bengal.

**Continued Session on High Altitude Tigers:
K Ramesh, Wildlife Institute of India**



- Tigers have been documented across all habitat diversities- from 200 masl till 4200 masl. Moreover, defining high altitude grids of 15x15 kms can lead to pinpointing larger areas of tiger presence.
- During the surveys carried out, it was also seen that factors facilitating tiger population in high altitude areas were gentle elevation, dense forest cover, good drainage, low human footprint, low temperatures and dry areas.
- Lastly, in order to lead effective studies into high altitude tigers, there is a need to build a knowledge management system, through linking of communities, NGOs, government enforcement agencies to build a network of knowledge and intelligence sharing.

James Compton, TRAFFIC International: Emerging trends in Poaching and Illegal trafficking of Big Cats



- Trends from seizure data that indicated main seizure hotspots and trafficking routes in Indo-Nepal, Southern India-Central India, Mekong-China, Indonesia-Malaysia and Russia-China.
- A multi-track approach is required to ensure GTRP success
- Key elements for protection in the GTRP should be:
Community based intelligence program, intelligence led investigations, application of financial criminal law, prohibiting wildlife trafficking online, making tiger identification databases robust, preventing illegal trade through captive facilities and enforcing of laws to deter consumers/customers.

Tilottama Varma, WCCB India: Best practices and cooperation for combatting wildlife crime



- Case study from Valmiki TR - 3 poaching cases occurred in a matter of 3 months in 2015. Through better cooperation, intelligence sharing, centralised database and speedy conviction

- Moreover, realizing the importance of technology, bringing the WCCB database online has been a big step, as today a total of 1882 profiles of criminals/poachers are present online.
- TRCs should not only be looking at doubling tigers, but also at reducing and finally cutting off the demand/supply of tigers and tiger derivatives.

S.P. Yadav, U.P. Biodiversity Board: Security Audit Protocol for Tiger Range States



- The process of security audit is necessary in purview of tiger conservation and recovery. The evaluation of any TR is done on the basis of: no. of vital corridors, human habitations in and around the area, habitations of traditional hunting communities, assessing areas of past history of poaching and areas with past history of conflict.
- The next part of the audit is the protection assessment, before reaching its completion once the post crime handling procedures are assessed.

Conservation Assured Tiger Standards – Global Status and CA|TS Lite Assessment: Bhutan



- Provided an update on the CA|TS assessment across tiger range countries and its importance in the present scenario.
- With 7 national/ provincial/ jurisdictional committees, 65 registered sites and 4 approved CA|TS sites. CA|TS is not an individual entity, but a council of 7 countries, with an alphabetically revolving chair, with Bhutan being the current one.

B.S. Bonal, GTF: Conservation Assured Tiger Standards – Global Status and CA|TS Lite Assessment: India



- GTF is working with partners towards securing tiger recovery across TRCs. GTF plays a pivotal role as a member of International Steering Committee of CA|TS, and as for India the leadership role in CA|TS was taken up by GTF in partnership with WWF India.
- CA|TS serves as an overarching tool for assessing and monitoring the work in TRCs and get subsequent fundings from international and national links. Currently, there are 41 registered CA|TS sites in India across 5 states with 2 accredited sites- Lansdowne and Ramanagar Forest Divisions.

Dipankar Ghose, WWF India: Innovative approaches for managing Human Wildlife Conflict (HWC)



- Active management of animals which often misses out on the main prerogative of active management of communities.
- SAFE system - the idea of making area safe along with people and animals by mapping different risk areas to know the risks occurring out of HWC.
- Need for better monitoring and data collection systems along with technological interventions reaching out to mitigate HWC.
- The issue of farmland tigers creating isolated breeding systems - there is a need for enhanced response systems, reporting mechanisms, robust on ground communication along mitigation measures.

Milind Pariwakam, WCT: Connectivity and Smart Green Linear Infrastructure



- Connectivity Conservation: key tenet of Project Tiger since inception
- Recovery at source sites: key strategy for achieving tiger numbers
- Linear Infrastructure: leads to fragmentation of natural landscapes severing habitat connectivity, proving to be single largest threat to genetic viability of tigers and other endangered species.

- Connectivity in Central Indian and Eastern Ghats tiger landscape uses extensive data on tiger presence, existing and proposed roads, railways and canals.
- Incorporating 'smart' and 'green' measures, addressing needs of development and wildlife movement, in the planning stage of linear infrastructure projects itself, results in reducing time and cost over-runs in infrastructure project implementation.

Samir Sinha: Wildlife Trust of India: Managing Human Wildlife Conflict



- WTI's work focused in Uttar Pradesh state of India, across 4 protected areas, with special focus on Dudhwa NP and Pilibhit TR.
- Over 5000 settlements between Pilibhit and Dudhwa are deriving the major chunk of their livelihood from sugarcane farming. With sugarcane cultivation being close to forested habitats of protected areas, big cats like tigers and leopards have often been documented using dense fields as secondary habitats.
- Since 2012, the focus of the efforts have shifted from a reactive to preventive approach, including the Rapid Response Team - a holistic integrative model with an extended intervention of PRT or Primary Response Team (an important part of RRT).

Sugoto Roy, IUCN: Integrated Tiger Habitat Conservation Programme



- The support provided by KfW as part of the ITHCP to the tune of 20 million euros has resulted in sanctioning of 6 projects. The project objectives are achieved through a diverse set of interventions, like distribution of LPG connections, installing solar lights in tea estates, collaborating with the Nepal army for monitoring, among many others.
- ITHCP organizes various learning workshops for information sharing and fruitful discussions. Also, the ITHCP is focusing on a portfolio synthesis for HWC and managing high altitude corridors of Bhutan, Nepal and India.
- Species conservation is a vital lens for broader goals of sustainable development.

Keshav Varma, GTIC and Rajesh Gopal, GTF: Summing up, next steps and planning for 2022



The CEO and Executive Director, GTI Council, reiterated the commitment made by the range countries, and called for a differentiated strategy across Tiger Range Countries. There needs to be a strong commitment on reducing demand for tiger body parts and derivatives, tiger and prey recovery, and addressing human tiger interface issues. The range countries should devise a regional programme and site specific projects based on the priorities identified in the NTRP for international financial institutions. The GTI Council in its new form, and with GTF as its implementing arm for Tiger agenda will continue its role in coordination, monitoring and assisting range countries in the GTRP process.

Dr. Rajesh Gopal presented the draft recommendations based on the inputs from range countries and deliberations with conservation partners. The recommendations were shared with TRCs for further review, and the final version has been incorporated in this report.

Side Events

Day 1

1. Subcontinent level Tiger Estimation (Status review – Bangladesh, Bhutan, India and Nepal) – Moderated by NTCA
2. Partnerships for Tiger Conservation: How to maximize synergies – Moderated by GTIC and WWF

Day 2

1. Contours of strategy for conventions (CITES) – Moderated by NTCA
2. Combatting Wildlife Trafficking: Issues Pertaining to Asian Big Cats – Moderated by WCCB and TRAFFIC

RECOMMENDATIONS

Towards 2022

Tiger Range Countries (TRCs) made a commitment to double tiger numbers by 2022. This is the last stocktaking meeting before that deadline. In order to ensure that TRCs are moving towards the target they had set for themselves some critical actions need to be put into place immediately.

Habitats

While several TRCs have been able to secure additional habitat for tigers, forest loss and fragmentation continues to be a concern in many TRCs. Linear infrastructure is one of the main factors leading to fragmentation.

Therefore, we propose that

- TRCs should work towards ensuring 'zero habitat loss' in tiger bearing areas

- Corridor protection and management should be given the highest priority
- Lessons from 'green' infrastructure development through tiger habitats should be widely shared and implemented across TRCs

Tiger Population Assessment

While the methodology for tiger estimation is being implemented by several TRCs, there is a need to implement the countrywide assessment protocol for a more realistic assessment of tiger status where it has not been done yet.

Therefore, we propose that

- TRCs need to update the status of tiger population using state of the art estimation methods to monitor the status of tiger for supporting management inputs and identifying realistic site-specific gaps

Prey

Adequate prey is key to tiger recovery. In many TRCs, this is the highest priority but assessing and augmenting the prey base is still lagging behind.

Therefore, we propose that

- Simple & robust approaches for assessing prey abundance and occupancy need to be developed and systematically applied in TRCs
- Development and implementation of prey recovery and management plans should be a priority

Protection & Management

Many TRCs are now implementing SMART/MSTrIPES and other Law Enforcement Monitoring approaches although capacity for protection on the ground remains a critical gap in most TRCs.

Therefore, we propose that

- TRCs should prioritise sites with greatest recovery potential and focus efforts in key sites to get them to a minimal level of protection and management
- TRCs should aim to enhance prosecution rates for wildlife crime as a strong deterrent

Policies & Land use

Most TRCs have legal protection for tigers and habitats. However, the implementation of these policies remains weak. In addition, tigers in some TRCs are moving beyond PA boundaries and these populations need targeted policies.

Therefore, we propose that

- TRCs should work towards synergising broader land use and specific tiger conservation laws and policies
- TRCs should ensure that existing policies for conservation of tigers and their habitats are effectively implemented

Human Tiger Conflict

Some TRCs are facing a high level of conflict and are implementing a range of measures to address this. At the same time, TRCs with low tiger numbers or those planning reintroductions need to prepare for potential conflict. Unaddressed HTC can lead to both loss of tigers and loss of support for tiger conservation.

Therefore, we propose that

- TRCs with high levels of conflict need to move from reactive mode to implementing proactive, systemic and scalable solutions to conflict management
- TRCs with currently low levels of conflict that are aiming for tiger recovery need to act proactively to prevent conflict from becoming a problem

Poaching & Illegal Wildlife Trade

The demand from consumers in global market is a continuing concern. This is exacerbated by the fact that transnational organised syndicates are involved in poaching & trafficking.

Therefore, we propose that

- TRCs should prohibit all trade, including domestic trade, in tiger parts including from captive bred sources and amend legislation to prohibit captive breeding of tigers for commercial purpose.
- TRCs should share actionable information on individuals and networks involved in trafficking with law enforcement agencies in relevant TRCs and transit countries

Investment

While some TRCs have stepped up investment for tiger conservation, funding remains a critical gap for many countries. Additional funding may be needed when taking a landscape conservation approach into account.

Therefore, we propose that

- Agencies need to step up funding for tiger and other endangered species conservation particularly for critical sites/countries with potential for recovery
- TRCs need to re-assess funding requirements for tiger conservation, considering funding required for tiger landscapes and the possibility of leveraging new synergistic sources of funding
- The international community further supports tiger conservation in developing countries

Supporting Recovery Efforts in South East Asia

While populations seem to be going well in some TRCs, mainly South Asia and Russia, tiger populations in other regions need to strengthen tiger recovery efforts.

Therefore, we propose that

- TRCs and partners should set up and fund a 'South East Asia Tiger Revival Consortium' consisting of donors, technical experts, NGOs, and governments to develop and implement a Tiger Recovery Masterplan to put these tiger populations on a recovery path
- South East Asian countries should, with support from partners, immediately prioritize recovery/protection efforts, and get political support for restoring their tiger populations.

“GTRP score”: A tool for Strategic Approach for tiger conservation planning in Tiger Range Countries

(Ridhima Solanki*, Hrishita Negi*, Arun Kumar*, Mohnish Kapoor* and Rajesh Gopal*)

ABSTRACT

The Global Tiger Forum, as the only intergovernmental, international organization for tiger is mandated to implement and monitor the Global Tiger Recovery Programme (GTRP). The said programme was launched under the aegis of the Global Tiger Initiative of the World Bank, with commitment from Tiger Range Countries for its implementation in 2010 at the St. Petersburg Summit, vis-à-vis the goal for doubling wild tiger numbers (Tx2) by 2022. The GTRP is a composite portfolio of actions at several levels viz. tiger source area, national and transnational, for strengthening and fostering wild tigers across its natural range in sovereign Tiger Range Countries. The status of wild tiger continues to remain endangered globally, with its population reaching sub-optimal levels in several areas. The Key Performance Indicators (KPI) of the GTRP have been scored, while qualitatively factoring the outcome from the score in the Population Habitat Viability Analysis (PHVA) for generating futuristic scenarios towards highlighting the extant vulnerability of tiger populations, along with broad suggestions for a future roadmap towards tiger recovery.

Introduction

The Tiger evolution in Asia goes back to the Pleistocene geological timescale (Brongersma, 1937, Mazák, 2006) [around 1.8 million to 11,000 years ago], and gradually had a widespread distribution in the said continent, ranging from Caspian area to central China, Russia, and countries of Southern as well as South East Asia (Mazák, 1981). However, the present-day distribution is restricted to only 13 range countries, viz. Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Russian Federation, Thailand, and Vietnam (Luo et al 2004). The global population of wild tiger is around 3890 (GTF and WWF 2016).



Fig 1: Global Tiger Status (GTF and WWF 2016)

* Global Tiger Forum Secretariat

The wild tiger status continues to remain endangered across its range owing to several causatives (Goodrich et al 2015, Nowell et al 1996, Dinerstein et al 1997), which are overarching to all TRCs, viz. poaching for consumptive use of body parts and derivatives, loss of prey owing to habitat fragmentation, low density of prey base and tiger owing to anthropogenic causes, restricted tiger movement across its landscape owing to loss of corridor linkages, targeted killing owing to sensitive human tiger interface, mortality on account of surface/rail transport, lack of desired field actions owing to paucity of resources (funding and frontline) and priority for development, while viewing tiger as a drag on such initiatives.

The TRCs do have their sovereign tiger agenda with country level action plan. Over the years, collaboration with conservation partners is discernible in several TRCs on the tiger front. The Global Tiger Forum (GTF), as the only inter-governmental body of TRCs, since its formation in early 90s has been engaging with TRCs for handholding on several fronts, with more focus on capacity building. The said forum has also subsequently initiated the compilation of Tiger Action Plans of individual range countries.

The Global Tiger Initiative (GTI) was launched by the World Bank during 2008. The convening power and the presence of the bank facilitated the evolution of a Global Tiger Recovery Program (GTRP), which was endorsed by all TRCs in the St. Petersburg Summit during 2010, with a goal to double the wild tiger population ($T \times 2$) by 2022. This has been subsequently ratified in several conclaves, including a ministerial meeting held in New Delhi in April 2016. With the phasing out of the GTI by the World Bank, and the subsequent creation of the Global Tiger Initiative Council (GTIC) in 2015, the GTF has been mandated as the implementing arm for the tiger agenda in the new dispensation. Thus, the GTF has been monitoring the GTRP performance by TRCs through several Key Performance Indicators (KPIs).

The GTRP is a composite portfolio involving actions at three levels, viz. field formations, national and international. A good GTRP performance results in more assured status for the wild tiger. The GTF missions have visited many TRCs in the South and South-East Asian region, which includes field visits and interaction with senior officials. Based on the same, it can be broadly stated that the global status of wild tiger categorized as optimal and suboptimal, the latter including most of TRCs from South-East Asia, including China. In the recent past, tigers are locally extinct in large portions of Cambodia, Lao PDR, Vietnam and China; the density status is very low in Myanmar along with paucity of wild prey (Lynam, 2010). Thailand and Indonesia have a comparatively better tiger status, followed by Malaysia. Hence, the need was felt for scoring the GTRP performance while factoring the same in the PHVA of select sites in several countries of the South-East Asian region for flagging the urgency towards immediate actions. Three scenario simulations have been attempted in the PHVA process: an optimal situation with satisfactory implementation of GTRP, along with two suboptimal situations of low GTRP performance and varied values of initial population and habitat carrying capacity.

Table 1: The GTRP matrix for scoring

S No.	KPI Criteria	Normative Standards
1	Enabling Law	Dedicated legislation
2	Enabling Policy for National Funding	Committed sovereign allocation and budgetary provision
3	Policy on Donor Support	Dedicated externally aided project for tiger/protection
4	National Resolution/Policy on Corridor/SGI	Identification of corridors and resolution on SGI
5	Resolution on inclusive agenda for people	Commitment for PES, livelihood options
6	Frontline staff	Staff deployment per unit area/and salary support
7	Action Plan	Approved National Action Plan
8	Tiger Monitoring	Use of modern protocol (camera traps and GIS based inference)
9	Tiger Management Plan	Exclusive tiger plan for the site in tune with action plan
10	Use of technology	Support for technological inputs
11	Smart Patrol and Monitoring	SOP and Protocols in place
12	Protection Infrastructure	Range Stations/barriers/communication network etc.
13	Antipoaching/tiger/other wildlife body parts trafficking prevention	Effective surveillance, intelligence-based enforcement, high prosecution and conviction rates
14	In-situ prey/predator build-up and securing inviolate space	Protocols and field action ongoing
15	Human-Wildlife Interface	SOP and Compensation regime defined
16	Assessment (MEE/CA TS)	Protocols and directives in place
17	Transnational Actions	Ongoing bilateral engagement

GTRP scoring and PHVA computation

The GTRP status of 13 TRCs, based on a combination of management scenarios, ecological status and poaching has not been compiled earlier. In addition to overarching constraints which are common to TRCs, there are country, as well as site specific issues warranting a “differentiated” approach. The GTRP score for each indicator was done by the same team on a 0 to 1 scale, vis-à-vis normatives, based on updated information contained in Tiger Action Plans of individual TRCs and KPI of the GTRP, as provided to the GTF. In the context, information from China and Indonesia, was obtained from respective action plans, and earlier updates provided in the ministerial meeting (2016). Related information was also from literature review, poaching data and reports of Conservation Assured Tiger Standards (CA|TS).

Various ethological aspects of tiger and decimating factors (poaching, habitat degradation and the like) have been documented in the context of some TRCs (TRAFFIC 2016, EIA 2018, Duckworth 1998, WWF 2017). An attempt has been done to incorporate such information into the PHVA process for long-term tiger sustainability in the region. The key priority sites of the TRCs were considered to compute the habitat carrying capacity for tiger, vis-à-vis the latest population figures (considered as founders for PHVA) (Simcharoen et al, 2007,2014, Kawanishi & Sunquist 2004, Lenkie 2005,

Sukmasua et al 2001). The area of key priority sites in the region range from 2000 to 14000 sq km, viz. Kerinci Seblat: 13,791 sq km (Indonesia); HKK: 2,780 sq km (Thailand); Taman Negara: 4,343 sq km (Malaysia); Htamanthi: 2,150 sq km, and Hukaung Valley; 11,519 sq km (Myanmar). The computed carrying capacity ranged from 60 to 420 tigers, vis-à-vis initial populations ranging from 8 to 136 (Lenkie 2005, Simcharoen et al 2007). Large patches were not considered for computation for want of active corridor management along linkages between source sites within a landscape. (ex: Hukaung Valley - Htamanthi).

The 17 GTRP KPI foster in-situ protection resulting in conservation of the endangered tiger in source areas across its natural range. The global experience indicates that tiger responds quickly to protection [Project Tiger in India] (Jhala et al 2014, WWF 2017). In the context of tiger, “protection” has an umbrella connotation since a tiger population in its source area requires protection from several decimating factors: poaching, loss of habitat, paucity of prey base, poor habitat quality, rampant fire, forest resource dependency of people, interface problems and revenge killings.

Poaching is a serious threat for tiger conservation (Galster & Vand Elliot 1999, Check 2006, Jhala et al 2008, Wikramanayake et al 2011) and has been investigated for incorporating policy actions (Kenny et al 1999). Law enforcement, frontline training and capacity building, national enabling policies and transnational actions are important for long-term survival of tiger population. However, in a large number of researches, often the focus has been on habitat restoration, corridor connectivity and maintenance of prey density (Miquelle et al 2005), vis-à-vis tiger resilience and low rate of extinction. It is observed that in the event of paucity of tiger population data, selective harvesting (poaching/targeted killing) of tiger population, conflict and mortality of dispersing tiger in a fragmented habitat, negative effect due to cultural dependency on forest and ethical unrest are not given enough weightage to plan conservation policies. In such scenarios, often the data is substituted and quoted from another study site and conservation policies are brought into effect after generalization.

Anti-poaching was one of the indicators for assessing the TRCs based on their acquired GTRP Score. For obtaining tiger numbers, individualistic body parts from seizures were considered, viz.: full skeleton, skin, carcass, taxidermy mount, skull and live animal akin to procedure followed in TRAFFIC as indicated below:

Table 2: Tiger poaching across South East Asian TRC.

YEARS	THAILAND	MALAYSIA	INDONESIA	MYANMAR	LAOS	VIETNAM	CAMBODIA
1	10	12	4	1	3	5	7
2	6	7	26	1	5	18	1
3	50	26	10	1	3	7	
4	2	1	9		17	6	
5	12	1	34		11	3	
AVERAGE	16	9.4	16.6	1	7.8	7.8	4

(TRAFFIC's 2016 Report- Reduced to Skin and Bones, re-examined)

In view of local extinctions of Tiger in the South-East region, the survival probability assumes importance, vis-à-vis the GTRP score. Hence, priority sites of some TRCs within the region were considered for PHVA (Vortex 10 [Version 10.8.2.0] (Lacy et al 2017), which evaluates the likelihood of species persistence for a given period into the future. The simulation was done with inputs from well-known findings on tiger ecology, mating, reproduction, mortality, immigration and harvesting. The PHVA process projects the survival chances over a period of 100 years by describing the years to extinction. Based on empirical data, it has been found that a viable population of tiger 20 breeding tigresses requires an inviolate space of 800-1000 sq km, with a buffer of 1000-3000 sq km. Given the land tenure dynamics, source-sink interactions, internecine attributes and sex-ratio of tiger, the above dispensation would result in a tiger population of 85-90 individuals within an area of 3000 sq km (Guidelines of Tiger Conservation Plan, NTCA, 2006). Keeping in mind the PHVA process (Vortex analysis), three scenarios have been depicted in the context of GTRP, viz. scenario 1 presenting an optimal situation, scenario 2 and 3 depicting suboptimal situations with different values of initial populations and habitat carrying capacity for the tiger. The instant approach of factoring GTRP scores in a PHVA has been done for the first time for stepping up managerial efforts on a priority basis.

The life history data used for Vortex modelling was based on published literature (Mazak 1981, Sunquist & Sunquist 2002, Gopal 1992) as provided in table 2. The natural disasters have not been taken into account in the PHVA process.

Table 3: Inputs for PHVA (Vortex 10 [Version 10.8.2.0])

Vortex parameters	Classical	GTRP approach	
	Scenario 1	Scenario 2	Scenario 3
Age of first offspring female breeding	3	3	3
Age of first offspring male breeding	4	4	4
Maximum life span	15	15	15
Maximum number of brood/years	1	1	1
Maximum number of progeny/broods	3	3	3
Sex ratio at birth-in %males	50	50	50
Maximum age of male and female reproduction	15	15	15
% Adult female breeding	50*	40	50
%Male in breeding pool	50	60	50
%Mortality from age 0-1	50	50	50
%Mortality from age 1-2	30	30	30
%Mortality from age 2-3	5*	20	20
%Mortality after age 3	5*	20	20
First year of harvest	1	1	1
Last year of Harvest	100	100	100
Interval between harvest (poaching/targeted killing)	5	1	1
Number of females harvest after age 3	1	2	1
Number of males harvest after age 3	1	1	1
Supplementation of individual (number)	2	1	-
Supplementation year interval	5	5	-

Assumptions

For **scenario 1**, the habitat carrying capacity computation for tiger was based on an average from highly productive tiger source areas in India (large number of births and deaths, with the former exceeding the latter) like Kanha (area 2051 sq km), Tadoba (area 1728 sq km) and Corbett (area 1288

sq km). As stated earlier, based on empirical data, it has been found that a viable population of tiger 20 breeding tigresses requires an inviolate space of 800-1000 sq km, with a buffer of 1000-3000 sq km. Given the land tenure dynamics, source-sink interactions, internecine attributes and sex-ratio of tiger, the above dispensation would result in a tiger population of 85-90 individuals within an area of 3000 sq km (Guidelines of Tiger Conservation Plan, NTCA, 2006). Based on the same, the average carrying capacity for tiger, vis-à-vis area works out to 30, which has been considered as the initial population.

For Scenarios 2 and 3, which represent suboptimal conditions in the context of tiger status and GTRP implementation: Initial population of 136 (carrying capacity 420) and 8 (carrying capacity 60) were used in the PHVA process. In all, two key protected areas (Scenario 2 – Hua Kha Khaeng WLS, Thailand; Scenario 3 – Htamanthi WLS, Myanmar). from the South East Asian region were taken into consideration. In some sites within Malaysia, camera trapping has revealed an abnormal sex ratio (more of males and few females), which may result in local extinction. Perhaps, the pronounced site fidelity of females makes it more vulnerable for targeted killings.

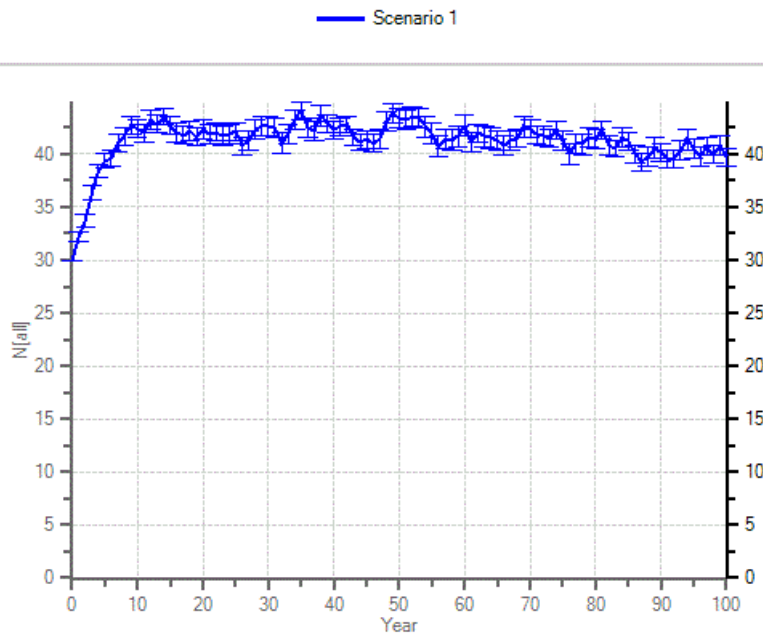
Results:

The GTRP score presented two categories of TRCs, viz. Category 1: optimal (GTRP score ≥ 0.6), and Category 2: sub-optimal (GTRP score < 0.60).

Category 1 includes TRCs, which more or less, have an optimal wild tiger status with a long-standing track record of in-situ conservation, including monitoring and country level estimations (Russia, India, Bhutan, Nepal, Bangladesh). The said countries also have source area specific tiger conservation plans, forming part of a national thought process, including macro-level mapping of habitat connectivity (corridor). Apart from such initiatives, transnational engagements with bordering TRCs are also ongoing for strengthening tiger monitoring.

Category 2 includes TRCs, with sub-optimal tiger status. However, several source areas in such countries have immense potential for harbouring viable tiger populations. Though corridor mapping and a landscape vision with initiatives for green infrastructure have been initiated in a few countries (with partial gene porosity at places) within the region, there is an urgent need for reviving several source areas with active management for protection and prey base buildup.

It is pertinent to add that countries falling within this category have not carried out a nation-wide assessment of tiger, co-predators and prey. Issues like paucity of sovereign funding, frontline staff and protection infrastructure have slowed down the GTRP implementation.



Scenario 1 Vortex result: The probability of extinction is nil for optimal TRCs as connectivity allows a minimum of 2 individual immigration at every 5-year interval, harvesting (poaching/targeted killing) of 2 individuals at every 5-year interval, no skewed sex ratio, population below carrying capacity.

Fig 2: Vortex scenario 1 output graph

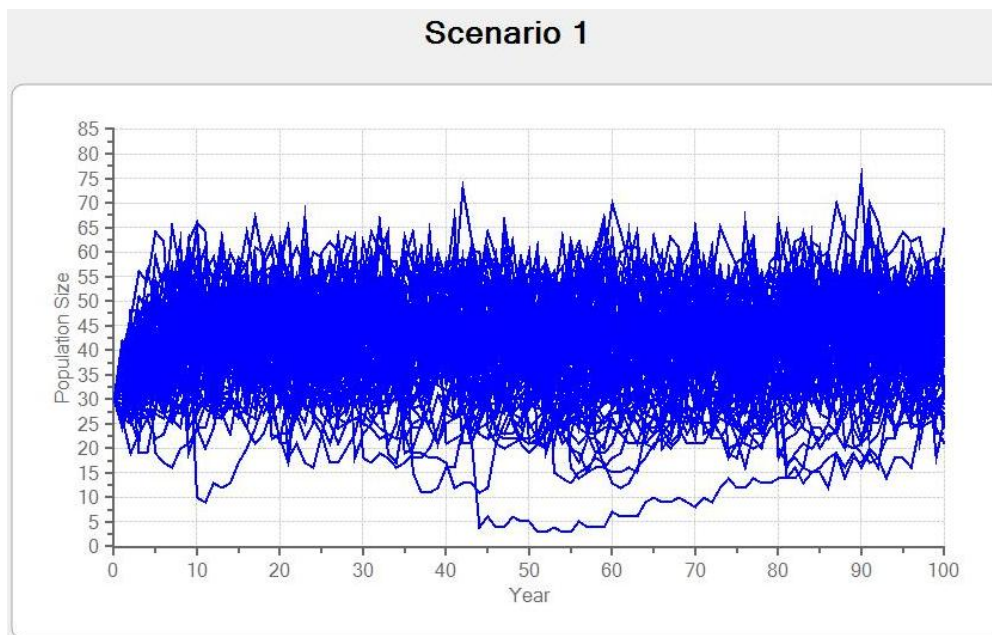


Fig 3: Vortex scenario 1 simulation

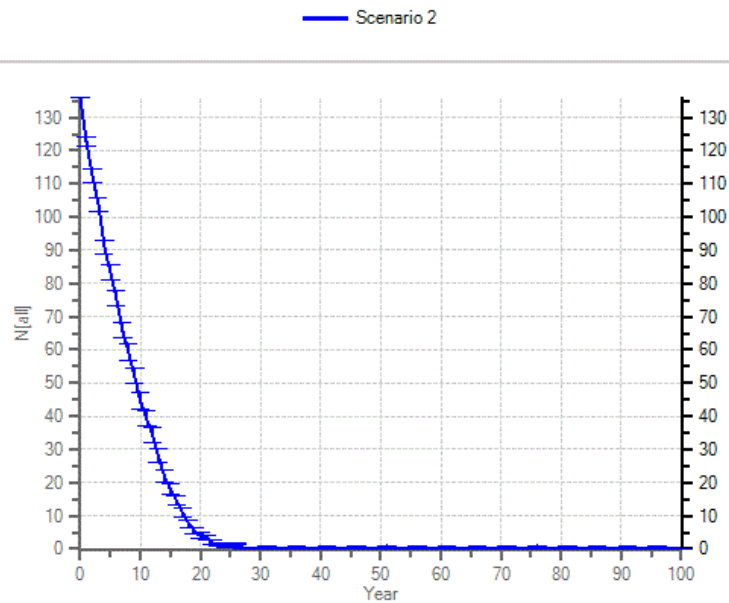


Fig 4: Vortex scenario 2 output graph

Scenario 2 Vortex result: Large forests with high initial tiger population. The probability of extinction is high (extinction in 26 years) for sub-optimal TRCs as partly functional connectivity was taken into consideration hence supplementation of 1 adult male (after 4 year of age) individual at 5-year interval. Harvesting (poaching/targeted killing) of 3 individuals (2 females and 1 male after age 3) at every 1-year interval, **skewed sex ratio** resulted in less breeding females in the population, and high mortality of dispersing tigers.

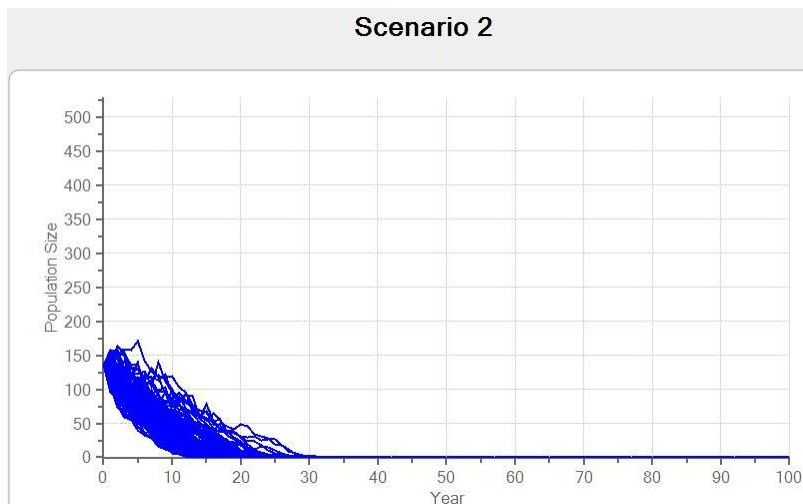


Fig 5: Vortex scenario 2 simulation

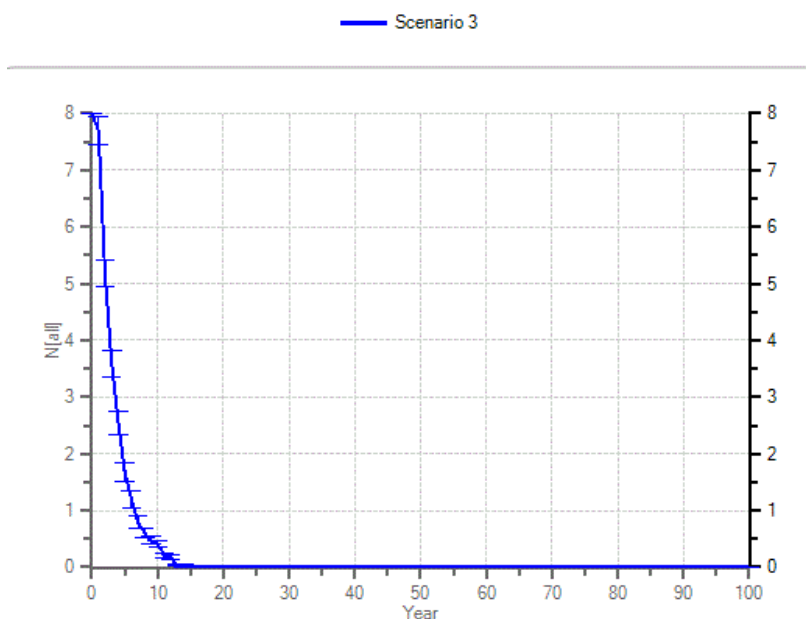


Fig 6: Vortex scenario 3 output graph

Scenario 3 Vortex result: Large forests with low initial tiger population. The probability of extinction is very high (extinction in 15 years) for sub-optimal TRCs as no connectivity was taken into consideration hence no supplementation. Harvesting of 2 individuals (1 female, 1 male after age 3) at every 1-year interval, no skewed sex ratio (50% breeding female in the population), and high mortality of dispersing tigers.

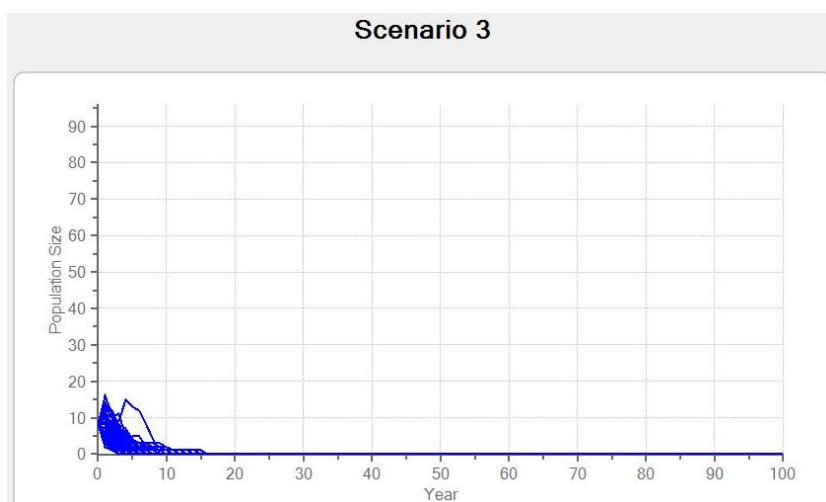


Fig 7: Vortex scenario 3 simulation

Discussion and Way Forward

The composite portfolio of GTRP involves action at several levels to strengthen the in-situ conservation of wild tiger populations across TRCs. For the first time, Key Performance Indicators of the GTRP have been scored and factored into the PHVA process of select priority sites. This becomes crucial at this juncture to garner the desired support towards resources and containing trafficking of body parts and derivatives of tiger.

The tiger source areas across TRCs falling in both categories are in varied status in the context of habitat quality, prey base and tiger density. A site which is depauperate even at the habitat level would warrant more time, effort and resources for tiger recovery. On the contrary, areas with only low tiger density for want of protection or prey revival may require less effort. Since, such conditions are resultant of a combination of factors ranging from transnational, national and site levels, a

differentiated approach is much needed for concerted time bound tiger revival. However, tiger conservation efforts with landscape approach and prey recovery would not be enough for tiger survival if the mortality exceeds 15% of the adult female population (Chapron et al 2008), which reiterates the need for security planning and protection.

Containing trafficking of body parts and derivatives of big cats, including the tiger, is an over-arching threat for all TRCs. Though much conversation and local actions have happened on this front, more are required. The demand in the said context need to be eliminated, as local extinctions of an ecological umbrella species like the tiger would usher in dismantling of ecosystem service processes and carbon sequestration in tiger bearing forests.

Tiger agenda is fortunate to have considerable commitment of TRCs and hence, the situation is not unsurmountable. The TRCs are aware of the GTRP portfolio and need to garner resources for implementing their priority actions as responded by them in the KPI review. The broad roadmap for strengthening wild tigers would involve actions at three levels, viz. tiger site, national and transnational. The urgent site actions for large habitats with very low prey density needs to include smaller focal areas in the form of “micro-cores”, facilitating concerted field actions related to protection infrastructure, communication, frontline deployment, active prey revival, followed by reintroduction of tiger. The normatives of GTRP are based on ground reality and may guide the process. Such actions need to form part of a National Tiger Action Plan complemented by an enabling policy regime. Several tiger source areas need to be fostered as a regional network merging into a national web of larger green space. This would entail a landscape approach for engaging with many owners (stakeholders) who operate in the larger landscape area but nevertheless impact the tiger source, directly or indirectly. The stakeholders bearing the brunt of direct impact (local people) need priority involvement in the tiger agenda to ensure the desired stability based on local support and ownership. An active engagement with donors and collaborators is called for at this juncture for mutually complementary actions based on regional, national and area specific projects forming part of the Tiger Action Plan.

The Global Tiger Forum is committed to assist tiger range countries in their efforts to save the endangered wild tiger.

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