REPORT

INDIGENOUS PEOPLES' AND LOCAL COMMUNITIES' PERSPECTIVES AND EXPERIENCES ON INVASIVE ALIEN SPECIES

An Online Webinar, 18 December 2020

Indigenous Peoples and Local Communities Perspectives and Experiences on Invasive Alien Species

First Printing: 2022

Published by:
Centres of Distinction on Indigenous and Local Knowledge and (COD-ILK) Partners for Indigenous Knowledge Philippines (PIKP)

No. 54 Evangelista St. Leonila Hill, Baguio City, Philippines
Phone no. 63 074 244 0191
Email: pikphils@gmail.com
Websites: www.cod-Indigenouslocalknowledge

With support from:
SwedBio

Authors: Joji Cariño, Florence Daguitan, Jo Ann Guillao, Preston Hardison, Levy Mangili, Onel Masardule, Gathuru Mburu, Maria Elena Regpala, Viacheslav Shadrin, Polina Shulbaeva, Prasert Trakansuphakon

Editor: Luchie Maranan
Book design and layout: Paul Michael Nera

Photo credit:

Front and back cover photos: The photo of a lady is Miss Ladda Phraicharernsri, San Dindaeng Community, Chom Thong District, Chiang Mai Province, Thailand. Other photos also taken in Sandindaeng Community, Chom thong District, Chiang Mai Province, Thailand. Photos were taken on December 15, 2020. Photo credit by Mr. Udom Charernniyomphrai. PASD Thailand.

ISBN 978-621-96453-3-1

Indigenous Peoples' and Local Communities' Perspectives and Experiences on Invasive Alien Species

By:

Joji Cariño, Florence Daguitan, Jo Ann Guillao, Preston Hardison, Levy Mangili, Onel Masardule, Gathuru Mburu, Maria Elena Regpala, Viacheslav Shadrin, Polina Shulbaeva, Prasert Trakansuphakon

Centres of Distinction on Indigenous and Local Knowledge (COD-ILK) and Partners for Indigenous Knowledge Philippines (PIKP)

2022

Acronyms

CBD	Convention on Biodiversty
COD-ILK	Centres of Distinction on Indigenous and Local Knowledge
CorDisRDS	Cordillera Disaster Response and Development Services
CSIPN	Center for Support of Indigenous Peoples of the North
CSO	Civil society organization
FPP	Forest Peoples Programme
FPCI	Fundacion para la Promocion del Conocimiento Indigena
KEFRI	*Kenya* Forestry Research Institute
IAS	Invasive Alien Species
ICE	Institute for Culture and Ecology
IPLCs	Indigenous Peoples and Local Communities
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
NAS	Newly Arrived Species
PIKP	Partners for Indigenous Knowledge Philippines
PASD	Pgakenyaw Association for Sustainable Development
spp	Is the plural form of abbreviation of species, meaning several species in biology. It is used when the actual species name cannot or is not specified.

Contents

Acronyms

Foreword 1

Introduction 3

Objectives 4

Background of the Webinar 4

SESSION I: Multiple concepts on new plants and animals or “Invasive Alien Species” 6

Presentation on Newly Arrived, Invasive Alien and Shifting Species, Indigenous Worldviews, Context and Responses 6

Reactions and Comments to the Presentation on NAS 8

SESSION II: IPLC’s concept of new plants and animals in their territories 11

IPLC’s Perspectives and Experiences on IAS - Case of Eucalyptus Species in Kenya 11

Presentation of Invasive Alien Species on the Territories of Indigenous Peoples of Russia and Arctic 14

Impact of the Lionfish Invasion in the Guna Territory, Panama 17

SESSION III: IPLC’s experiences on new plants and animals based on their categorization, worldviews and other influences. How do IPLCs manage new plants and animals? 20

IAS in Karen Community, Northern Thailand 20

Challenges of IAS: History Review and Examples of Yakutia, Russia 25

Invasive Alien Species in the Cordillera, Philippines 27

Ways Forward 31

Appendix

Agenda 32

Participants to the Webinar 35

Foreword

It is a privilege for me, an Indigenous Person who is passionate about the propagation of native species and the control of invasive alien species, to be doing the foreword for this highly important resource material. This report is an initial attempt at understanding how Indigenous Peoples and local communities interact with invasive alien species (IAS) in their territories. It highlights how IPLCs conceive IAS, some of which they refer to as 'new arrivals', how they adapt to the entry of IAS in their areas, and how they control and mitigate their impacts using indigenous and local knowledge.

IAS is a problem that has been with us since colonisation, whether introduced accidentally, intentionally with human help, or via natural processes. Fortunately, the alarming spread of IAS and the harm they cause are now getting the attention this problem deserves. It becomes even more urgent because of climate change, which abets the proliferation of many invasive alien species.

I am grateful to the Centres of Distinction on Indigenous and Local Knowledge (COD-ILK) for organizing this hopefully first of continuing dialogues on Indigenous Peoples and IAS. The report is a timely contribution to the thematic assessment being done by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) on IAS and their control.

The report opens more questions that will need further examination and research, and IPLCs and the scientific community will need to engage with each other meaningfully and continually to address a problem that has very consequential impacts on biological diversity and nature's services to people.

Prof. Wilfredo V. Alangui
College of Science
University of the Philippines Baguio
IPBES TF-ILK member (2014-2018)

Introduction

This report covers the webinar on Indigenous Peoples' and Local Communities' (IPLC) Perspectives and Experiences on Invasive Alien Species (IAS) Webinar conducted on December 18, 2020. It serves as a written record of discussions, experiences, insights, challenges and recommendations shared during the webinar. It consolidates views shared in the webinar and seeks to reflect perspectives of the participants accordingly.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is doing an assessment on IAS and has conducted activities to involve Indigenous Peoples and local communities (IPLCs) in the processes. The thematic assessment of IAS is an opportunity to document experiences of IPLCs to complement and reinforce science and policy development and reforms informed by ground data.

Indigenous Peoples have concepts of IAS that differ in many ways from dominant concepts in non-indigenous science. This begins with the concept of "species." For many Indigenous Peoples, the natural world is populated with a multitude of living entities, all standing in equal status to humans.

Indigenous Peoples have a range of reactions to the arrival of new species in their territories. Their spiritual beliefs and values affect their initial perceptions and responses that are often one of accommodation. But they are also aware of the harms that newly arrived species (NAS) can cause to their environment, their subsistence activities and livelihoods, the transmission of traditional knowledge, and. the economic and social costs. In some cases, Indigenous Peoples and local communities find uses for these new arrivals, while in other cases, expend considerable effort to control, and even eradicate them. Cultural values among IPLCs play a role in the management of new plants and animals or NAS.

The webinar showed evidence based on Indigenous Peoples' perceptions of IAS, and how they make decisions related to new plants and animals, find new uses and recognize contributions to local ecosystems such as providing habitat or nourishment to pollinators or presenting harms that are often controlled in a culturally appropriate context.

OBJECTIVES

The webinar aimed to consolidate perspectives of IPLCs about IAS in general including their strategies to manage, control or eradicate these.

Specifically, the webinar had the following objectives:

- Present Indigenous Peoples' concepts of IAS or new plants and animals in their territories in relation to their worldviews;
- Share observations and experiences of Indigenous Peoples on new plants and animals or IAS in their territories;
- Identify issues related to how IPLCs relate to these new plants and animals or IAS including discussions on the use of traditional approaches and challenges, perceptions of IPLCs on institutions like governments which are instrumental in introducing these new plants and animals or IAS; and
- Draw out ways forward/recommendations to address issues and concerns related to IAS

BACKGROUND OF THE WEBINAR

Joji Carino welcomed the participants to the webinar. She also provided a short background of the webinar.

Invasive Alien Species (IAS) as an issue has come under increased scrutiny and research in recent years, having been identified as a leading driver of biodiversity loss. It was identified by governments that are members of the Inter-governmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) as one of the themes requiring an up-to-date global assessment in its current work programme.

This webinar has been organised by the Centres of Distinction on Indigenous and Local Knowledge (COD-ILK), a global network of organisations of Indigenous Peoples and local communities, promoting the values and contributions of indigenous and local knowledge, to contemporary problem-solving and the renewal of cultures and nature.

Members of the COD-ILK have a long history of engaging with UN bodies, such as the Convention on Biological Diversity, including the strengthening of community-based monitoring and information systems, and contributing to global reports and strategies. They have also contributed to the 1st and 2nd editions of *Local Biodiversity Outlooks*, a complementary publication to the CBD's flagship report – *Global Biodiversity Outlook*, recently launched during the meeting of CBD's scientific body.

With the establishment of IPBES, the network recognised the importance of engaging this platform, and making visible the contributions of IPs and LCs to its work. The formal launching of the network took place during the 4th Plenary Meeting of the IPBES in Malaysia.

The global network of COD-ILK was established to strengthen collaborative actions among Indigenous Peoples and local communities with respect to indigenous and local knowledge. Priorities for collaborative work include, 1) engagement with knowledge – policy platforms at all levels (including IPBES), 2) strengthening of community participatory research, and 3) inter-generational transmission of knowledge from elders to youth and vice-versa and cultural exchanges among communities and organisations on relevant themes.

The webinar hopes to foster knowledge exchange, support community participatory research and encourage engagement with knowledge platforms like IPBES to explore and deepen our understanding of current issues affecting IPLCs.

SESSION I

Multiple concepts on new plants and animals or "Invasive Alien Species"

Facilitated by Ma. Elena Regpala, PIKP

PRESENTATION ON NEWLY ARRIVED, INVASIVE ALIEN AND SHIFTING SPECIES, INDIGENOUS WORLDVIEWS, CONTEXTS AND RESPONSES

Presented by Preston Hardison

Taking cultural sovereignty into account in discussing issues affecting Indigenous Peoples including newly arrived, invasive alien or shifting species is a relevant step to understanding context and perspectives of Indigenous Peoples. Self-determination as expressed in their worldviews, values, spirituality, traditions, beliefs, concepts, methodologies, practices and approaches is relevant to navigating their lifeworlds and in relating with nature.

Indigenous term on species is not equivalent to what biologists would call species. All species that come into their territories are considered as "new." Newly arrived species (NAS) was coined as a general term for species particularly in organizing the webinar. Indigenous Peoples have their own terms and diverse understanding on species. Essentially, Indigenous Peoples view species as relatives, kin, nations, beings, entities, communities and even embodying ancestors. These entities and beings have their own societies, organizations and have equal status with human beings.

Relationality is central in engaging with other beings. Indigenous Peoples exercise their values like respect, accountability, integrity, reciprocity, humility, acknowledgement, care, belonging, bonding, mutuality, honouring, thankfulness, and compacting, which are important in treating and relating to each other and other life forms in the planet. Indigenous Peoples work to maintain harmonious relations and balance with and among themselves and the living world. In their life ways, maintaining harmony and relationship is constantly negotiated/renegotiated through

prayers, rituals, ceremonies, acknowledgement and thankfulness for gifts that other species bring to them and goodwill they have toward each other. Failure to show respect and maintain balance can have serious consequences for many Indigenous Peoples and this relationship would have to be renewed. An example is the Annual Ceremony of a First Nations people in the Pacific Northwest where they have a serious conversation with their ancestors to demonstrate that they have been good stewards of their land.

Generally, no traditional language or concepts are equivalent to IAS, range-shifted species, planted or cultivated exotic species. They tend to be lumped into the category of "newly arrived" species. Unlike the Western world in general, Indigenous Peoples' initial attitude is "wait and see." They evaluate species that come into their territories. What gifts do they offer? Do they fit harmoniously into local order? Are they behaving badly?

If the NAS do not fit and demonstrate intent to harm humans or their relatives, Indigenous Peoples have multiple responses. They may allow the animal and plant nations and other beings to bring themselves into balance. They may intervene to restore harmony and balance, repair relationships, and reconcile conflicts with and among the resident beings and newly arrived beings. Often, Indigenous Peoples try to work out the damage or harm rather than use mechanical means. They view the issue as being imbalanced, so they need to restore relationship.

NAS may be difficult to rebalance, may have catastrophic effects, or arrived at unprecedented rates under unprecedented conditions resulting from global environmental change or climate change. Thus, under this condition, Indigenous Peoples have to devise their own methods or choose to work with others to take more drastic measures. An example is what happened in the 1970s when the Makah Tribes had to poison a segment of their river to eliminate a disease of salmon. The Makah people knew that everything in the river will be killed but they did not worry because they believed that these can be restored. The measure was successful.

However, controlled species may be as harmful as NAS. In the 1990s, women basket weavers in Northern California were being harmed because the grasses they were collecting from federal ground for making baskets were sprayed with chemicals. Apparently, the spraying was done by local authorities to control the spread of grasses. The basket weavers usually put these grasses on their mouth when they make baskets unknowing that these were causing them harm. They were experiencing miscarriages, and some suffered from cancer and other health damaging effects.

Again, it is important to be reminded of the following important messages when dealing with species arriving in the territories of Indigenous Peoples and local communities.

- Respect cultural sovereignty and values in respect to IAS / range-shifting / planted and cultivated species.
- Consult Indigenous Peoples in relation to purposeful introductions (plantations, aquaculture).
- Consult Indigenous Peoples in all control measures.
- Avoid harms to direct uses of NAS.

- Avoid harms of indirect values of NAS. So, it is important to consider if Indigenous Peoples use a species to substitute lost species. Science is now recognizing that there are species that can provide benefits or have good impacts.
- Avoid harms from control measures that Indigenous Peoples need to be involved (pesticides, mechanical control).

REACTIONS AND COMMENTS TO THE PRESENTATION ON NAS

Viacheslav Shadrin, CSIPN, Russia

It is clear that we have very close relationship with nature because our people believe that we are part of nature. We have a saying that goes, "We are needle of the land." According to a legend, a tree sprouted a needle on the ground then people appeared. So we say, we are children of the land.

According to our beliefs, everything has a soul. Some have one soul, two or three souls. Each person has three souls: 1) the head soul responsible for thoughts and dreams, 2) the heart soul responsible for body and physical existence, and 3) another soul which is like a shadow, responsible for our ability to move. Animals have movement so they have three souls. Plants do not move but they can change so they have two souls. Stones which do not move and change have only one soul.

We believe that our soul can return to our children or animals or plants. Thus, we should care about our animals and plants because they have souls. We also believe that people are connected to animals. For example, my name means that I am connected to a bear. My nickname means "son of a bear." Everything that happens in our world has connections.

An example is climate change which is happening, and people believe that we are to be blamed for this because we stopped respecting nature. Our ability to adapt is reduced as well. So when new plants and animals or species arrive, people try to think why it happened. They think that these appearances are a result of something, and they do not necessarily struggle with these when it is their duty to understand and evaluate the situation.

Gathuru Mburu, ICE, Kenya

Indigenous Peoples have acquired knowledge through years of interaction with nature and have downloaded these knowledge systems to the next generation. This is a very important phenomenon because traditional communities are not used to writing but have recorded these knowledge systems by sharing these to younger generations. So they find it very difficult to address when new species come to their territory, or when new life forms come. This is an important aspect because we have seen how new species have caused chaos in the "host" community being experienced by Indigenous Peoples.

Evaluating IAS is important so we can learn how to live with these. Time is needed to understand these species that is why chaos erupts when there is not enough time to deal with new species. Once nature is disturbed or replaced by alien species, traditional knowledge, which is usually kept by day to day interaction with nature, disappears. The loss of traditional knowledge causes imbalance or disharmony within that community.

It takes time to bring back this harmony. It will take time for people to rejuvenate indigenous life forms. Indigenous Peoples try their best to respond to these IAS based on their experiences by assigning terms to define or explain how they dealt with the IAS.

The names given by Indigenous Peoples indicate their interactions with these species. Local people barely have spiritual attachment with the new life forms. The influence of the species is more on livelihood and sadly, not on the spiritual realm. An example is the Eucalyptus tree when it was introduced in the 1970s. We used to have sacred sites but when the Eucalyptus arrived, it destroyed our traditional species and our sacred sites. This new species cannot replace our sacred sites. So it is very important to understand this relationship that people have with nature. Striking a balance between positive and negative impacts of species is a real challenge.

Prasert Trakansuphakon, PASD, Thailand

We start with the philosophy that nature has a spirit and that we respect nature because of the belief that we also come from nature. We, Karen people believe that our ancestors are from the Banyan tree. Every Karen mother goes to the Banyan tree before giving birth. When Karen people die, they return to the mother tree. Karen people also believe that they have 37 souls- five souls are with human beings and the 32 are with animals and plants and other beings.

New species or IAS are really new to Karen people. They need to be careful and understand these alien or new species. The initial reaction is to observe, then carefully study the negative and positive impacts of these species' arrival.

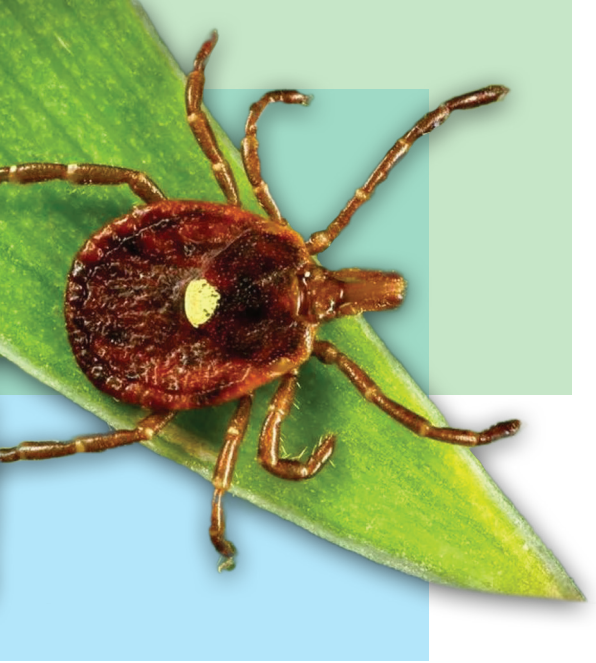
Many varieties are known and noted by scientists as alien species but some of these species are already part of the environment of local communities. This discrepancy of information reinforces the conduct of further studies on these species. If people have good relations with these species, then these are good to keep. But if there are negative impacts, then these need to be addressed. Young people need to also understand these issues on new species. There is a need for further studies of species which should involve both scientists and communities in the process.

Q and A

Do you believe that NAS inhabited indigenous territories millennia ago but which are being introduced by the government nowadays and may force out indigenous species?

Some pieces of evidence show the existence of horses in North America. The claim is that they have been present even before the arrival of colonists or of Spaniards. In the Indigenous Peoples' beliefs, horses never went extinct in North America. They may have diminished in their areas but they were around. The point is that there are many traditions, whether these historically existed or not, but conversation needs to happen between the people and the local government. Indigenous Peoples need to be engaged if there are species to be introduced in their territories. In New Zealand, they talked about cultural cascade. Also with climate change, it can lead from one impact to another, and so on. We have heard from Prasert how changes can lead to the loss of traditional knowledge and traditional culture. Then this can disrupt the situation. Again, this is a conversation that Indigenous Peoples need to have with scientists and governments.

One last point is on shifting species. Biologists tend to put these shifting species as kind of benign. But there is now scientific research saying that shifting species can have the same problems like what scientists know as IAS. Again, Indigenous Peoples need to engage in the process to deal with these shifting species.



SESSION II

IPLC's concepts of new plants and animals in their territories

Facilitated by Florence Daguitan

IPLC'S PERSPECTIVES AND EXPERIENCES ON IAS – CASE OF EUCALYPTUS SPECIES IN KENYA

Presented by Gathuru Mburu

The presentation is the case of Eucalyptus species, introduced around 1902 in Kenya. Eucalyptus is an evergreen flowering tree and shrub native to Australia. The community, after interacting with this tree species for a period of time, realized that this species takes in a lot of water. The tree, known in Gikuyu as munyua mai, (the water guzzler) suggests a not so favourable impact because it takes in so much water. After sometime, the people realized the economic benefits of the tree which led to the name Mucibau – mti mbao – or wood tree which implies wood-based benefits. On one hand, it is unpopular because of its impact to the environment but on the other hand, it is popular because of the economic benefits derived from it.

The Eucalyptus species is a fast growing tree, very economical on investment, and offers a wide range of products (firewood, charcoal, building materials, pulp, fencing posts, transmission poles, timber, etc.). It has the capacity to adjust and regulate water consumption so that when it is planted in an area with a lot of water, it absorbs a great amount, yet consumes little when it is planted in areas with little water.

The species was intended to provide energy for locomotives but it was also observed to have other benefits. Eucalyptus trees were planted in marshy areas and drained the area, therefore it was considered as a good effect. They were later used to reclaim marshlands such as Karen in Nairobi, and Kwamathore Marshes in Nyandarua. Now, the government is supported by agencies such as Kenya Forest Reserve Institute (KEFRI) and KFS, and private companies to continue planting Eucalyptus. Individual farmers were also motivated by financial gains from sales of Eucalyptus

products. Some positive impacts of the Eucalyptus plant include the following: 1) used as timber, plywood, firewood, transmission poles, pulp, building materials, fencing posts, windbreaks, ornamentals, environmental enhancement, 2) medicinal value, 3) industrial production of wrapping paper, cardboards, pulp, transmission posts, and 4) easing pressure on forests due to provision of alternative source of wood for fuel and timber.

Figure 1. Source of Rairu River, where water volumes reduced significantly. *(Source: Gathuru Mburu. 2020. IPLC's Perspectives and Experiences on IAS - Case of Eucalyptus Species in Kenya. Powerpoint presentation.)*

Some negative impacts were also noted such as: 1) huge tracts of indigenous forest felled to pave way for Eucalyptus tree plantation established by the colonial government as in the case of Thogoto forest where out of 760 hectares, only 52 hectares were left. Sacred sites were destroyed and sacred trees were removed, then water disappeared; 2) Eucalyptus tree consumes significant amounts of water from below the ground, providing huge competition with animals and humans as well, to the extent that rivers and shallow wells dry up; 3) the tree quickly reduces soil moisture compared to indigenous trees; 4) in areas where Eucalyptus has been introduced, no other spp can do well (said to be allelopathic – produces chemicals that inhibit growth of other spp), 5) their introduction depleted food and shelter for animals and birds, 6) they have adverse effects on humus soil, 7) inability to prevent soil erosion, 8) the tree has negatively impacted on the way people interact with land, especially as Eucalyptus trees are planted for economic gains.

Management of Eucalyptus trees in Kenya is basically happening through policy development and government directives. There are national and county government directives not to plant Eucalyptus in the forests. The government has also issued policies on its removal from riparian reserves. KEFRI issued guidelines on different types of Eucalyptus trees and where to plant these, as well as planting guidelines. There were individual initiatives of removing Eucalyptus trees from

farms and instead planting them either on woodlots or along fences. Civil societies advocate for the removal of Eucalyptus from water sources/water towers/wetlands and riparian reserves. There are efforts to properly locate or designate areas not suited for Eucalyptus and these are enforced through expert advice and government directives. The areas are wetlands and marshy areas, riparian areas, along rivers,* areas around lakes, ponds, swamps, estuary and any other body of standing water, irrigated farm lands, areas with less than 400mm of rainfall.

In farms next to water sources, planting should be minimized by inter-planting with indigenous tree species or in mosaic plantations between indigenous trees with the latter occupying a greater percentage or strip planting of eucalyptus with natural vegetation.

There are various effects of management of the Eucalyptus trees. Some scientists argue that eucalyptus trees do not take so much water but some communities' experience proves otherwise. Sometimes, some scientific research studies are misleading. Based on the actual experiences of some Indigenous Peoples in Kenya, good results were observed when Eucalyptus trees were removed. Some wetlands which had previously dried up are coming back to life, and rivers are coming back where Eucalyptus spp had been removed on riparian reserves.

Some challenges are likewise observed. When the government developed policies, these were not immediately implemented. Also, there are different government departments and they have not harmonized their messages about Eucalyptus management. Furthermore, government pronouncements do not match with their actions about Eucalyptus management, slowing down the enforcement of directives. High economic returns inhibit consideration of ecological benefits of removing Eucalyptus.

Currently, while research is ongoing, areas in Kenya planted with Eucalyptus are about 100,000 ha (15,000 ha in gazetted forests, 35,000 ha by private companies, and 50,000 ha on farms). KEFRI continues to undertake research on Eucalyptus and has produced a management guide. Some counties have developed management strategies while some are contemplating banning the planting of eucalyptus altogether.

One key driver is so called tree biotechnology, which has enabled development of high-yielding and shorter-rotation varieties which has been promoted widely in Kenya between 1997 and 2003.

The following recommendations were forwarded by the community to the government:

- Researchers to provide more balanced information supported by bold and impartial research, and government to address issues on forests;
- Researchers to continue searching for potential alternatives with related economic gains but restorative ecological impacts (especially indigenous spp);
- Using available information and policy instruments, IPLCs to remove Eucalyptus trees from riparian areas, while using given guidelines when planting on woodlots;
- Government to follow expert guidelines and purposefully remove all Eucalyptus spp from wetlands, riparian reserves and water sources;

* Reserve not less than 30 meters as stipulated in the Survey Act Cap 299 of the Laws of Kenya. In addition, allow for an extra 20 meters to ensure that the trees do not adversely interfere with the water source.

- National and County governments to implement existing directives around management of Eucalyptus spp (2009, 2019, 2020);
- Given the existing controversy surrounding Eucalyptus spp, the national and county governments to develop policies specific for the management of Eucalyptus species and to enforce them.

PRESENTATION ON INVASIVE ALIEN SPECIES ON THE TERRITORIES OF INDIGENOUS PEOPLES OF RUSSIA AND ARCTIC

Presented by Polina Shulbaeva, (CSIPN)

The presentation tackled three issues affecting Indigenous Peoples in Russia and the Arctic Region.

Sosnowski Hogweed

The plant species Sosnowski Hogweed, which is extremely dangerous especially after flowering, is a big problem for Indigenous Peoples not only in Russia but in the Arctic Region as well. It causes a lot of problems such as skin diseases, ailments and even blindness when the plant gets into the eyes. This species grows fast and spreads quickly. It changes flora and fauna but can be in the ground for 5-7 years. It is important to destroy the seedlings before flowering because the plant has extraordinary seed counts of up to 100,000 per plant. Few Indigenous Peoples in the Arctic region know about the dangers of the plant.

The following control measures are being recommended to control the Hogweed: 1) destroy the seedlings before flowering, otherwise the weed will not stop with its extraordinary seed counts, 2) provide information, capacity building and CEPA events for IPLCs, 3) conduct annual monitoring of the places, 4) remove the root of the Hogweed, 5) coordinate with local and regional authorities about regulation of this species, 6) initiate state and municipal measures to control Hogweed, and 7) allocate state and municipal budget for Hogweed control programs, including for IPLCs territories to enable them to control Hogweed.

Tick-borne encephalitis

The species is small but dangerous and its population increases every year. The distribution is now moving from North to Arctic zone. Encephalitis and borreliosis (Lyme disease) are the main diseases that can be transmitted by ticks. People who get contacted by ticks suffer severe illness including damage to various parts of the nervous system, which can lead to irreversible changes in the form of paralysis, and can even lead to death.

The Tomsk region where five nations live has the highest number of ticks in Russia. These nations of Indigenous Peoples have been dependent on forests for hunting, fishing, and gathering wild plants, among others. The ticks which are often found in the forests pose a big risk for Indigenous Peoples who do their daily activities because ticks may attack them.

It is not possible for Indigenous Peoples to control the spread of ticks but they are carrying out preventive measures: 1) pre-vaccination especially in the remote areas, 2) maximum protection of all body parts by clothing, hats, closed shoes, 3) treat clothing, especially in the joints and use insect repellants, 4) after visiting the forest areas, conduct a thorough examination of all family members for bites, including the scalp, 5) if a tick is detected, it must be removed immediately, 6) undergo blood test to check for any tick-borne infections 10 days after the bite, 7) get a shot of immunoglobulin, if possible and sometimes, hunters buy these shots; and 8) disseminate information about ticks.

The problem on ticks is alarming and it is necessary to do a wider information exchange among the communities in the region. The Arctic region has not previously encountered ticks and the consequences of their bites, so it is important to keep informing the communities about this problem and find ways to better address the problem.

Figure 2. Photo indicates some rules on clothing to prevent attacks by ticks. (Source: Polina Shulbaeva (CSIPN) 2020Presentation on Invasive Alien Species on the territories of Indigenous peoples of Russia and Arctic. Powerpoint presentation.)

Other observations: non-invasive “New Forest” species bring or contribute to change in the environment

“New Forest” species are not necessarily invasive but they contribute to change in the environment and ecosystems or create new environments including species composition. A decade ago, regions in Russia, including Siberia were heavily deforested and most of them are traditional territories of Indigenous Peoples. These logged areas used to be intact or natural forests, pristine landscapes and ecosystems which are now almost impossible to restore. Indigenous Peoples living in these areas can no longer lead a traditional way of life with their practices like ceremonies because those valuable species of plants and animals are already extinct.

The traditional ecosystems of Indigenous Peoples are now evolving into “new forests” where different species are starting to thrive. The native dark coniferous forests are now being overtaken by grassy species, shrubs, birches, aspens and other light deciduous forests. The new environment now affects the life of Indigenous Peoples who need to know and understand the new or different living organisms and bio-resources in these areas. The emergence of “new forest” also entails the need for Indigenous peoples to adapt to new ways of life, where there is no assurance that they can use and practice traditional systems and practices with the current ecosystems.

While Indigenous Peoples are still coping with their changing ecosystems, the clear challenge is how to adapt and develop new capacities to survive and thrive and continue to manage new plants and animals as a result of new ecosystems or new forests. There is a need to re-study cultures, traditions and capacities while dealing with this evolving environment especially for Indigenous Peoples directly affected by these changes.

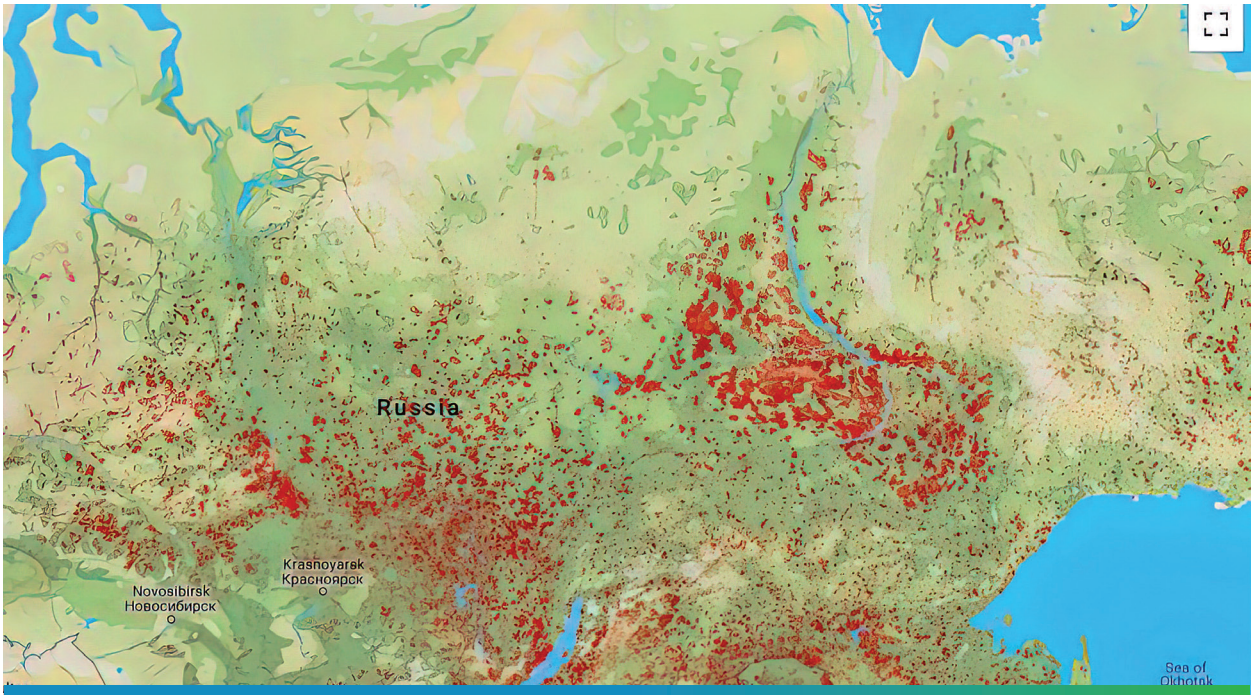


Figure 3. shows the map of Siberia. The red colors indicate the deforested areas since 2002 to 2018 where most Indigenous Peoples live. The deforested areas are also the “empty spaces” that will be filled with “new environment”. (Source: Polina Shulbaeva (CSIPN) 2020. Presentation on Invasive Alien Species on the territories of Indigenous peoples of Russia and Arctic. Powerpoint presentation.)

IMPACT OF THE LIONFISH INVASION IN THE GUNA TERRITORY, PANAMA

Presented by Onel Masardule

We, Kuna people are fishermen and we depend on water resources. We are Indigenous Peoples who have the same vision as others who regard mankind as members of nature and not the owners of it, and everyone plays a specific role. In the creation of the Kuna world, the Creator gave us the calling of being good stewards to guard, sustain, and manage these resources.

Different places have different resources and Kuna people know that species are a given in specific places. We know that we were created to be in a given place and not to be invading other ecosystems. Since 2009, we had observed that a new species was coming into our territories and in 2010, the Kuna Yala people decided to conduct a study on the impacts of the lionfish due to accidents that happened among fishermen.

There have been some dangerous impacts of new invasive species to our native species in the territories of Kuna people. Tilapia was introduced 40 years ago and they are thriving in the river where the first hydroelectric dam was built. After more than 40 years, there has been no other fish in the region except tilapia. The same thing happened with another animal in the area and this impact is really dangerous.

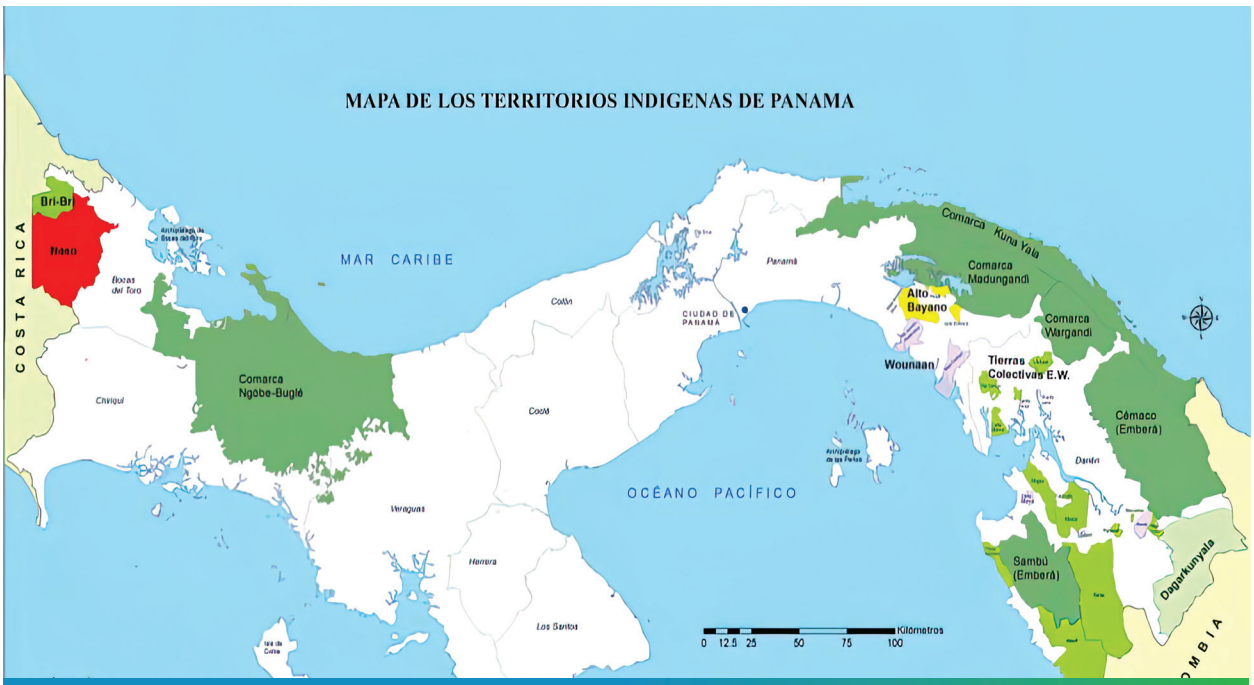


Figure 4. Map1 above shows the location of Panama and the Kuna Yala people. *(Source: Onel Masardule. 2020. Impact of the Lionfish Invasion in the Guna Territory, Panama. Powerpoint presentation.)*

Figure 5. Map 2 above with red mark shows the territories of Kuna Yala and where monitoring of lionfish is being conducted. *(Source: Onel Masardule. 2020. Impact of the Lionfish Invasion in the Guna Territory, Panama. Powerpoint presentation.)*

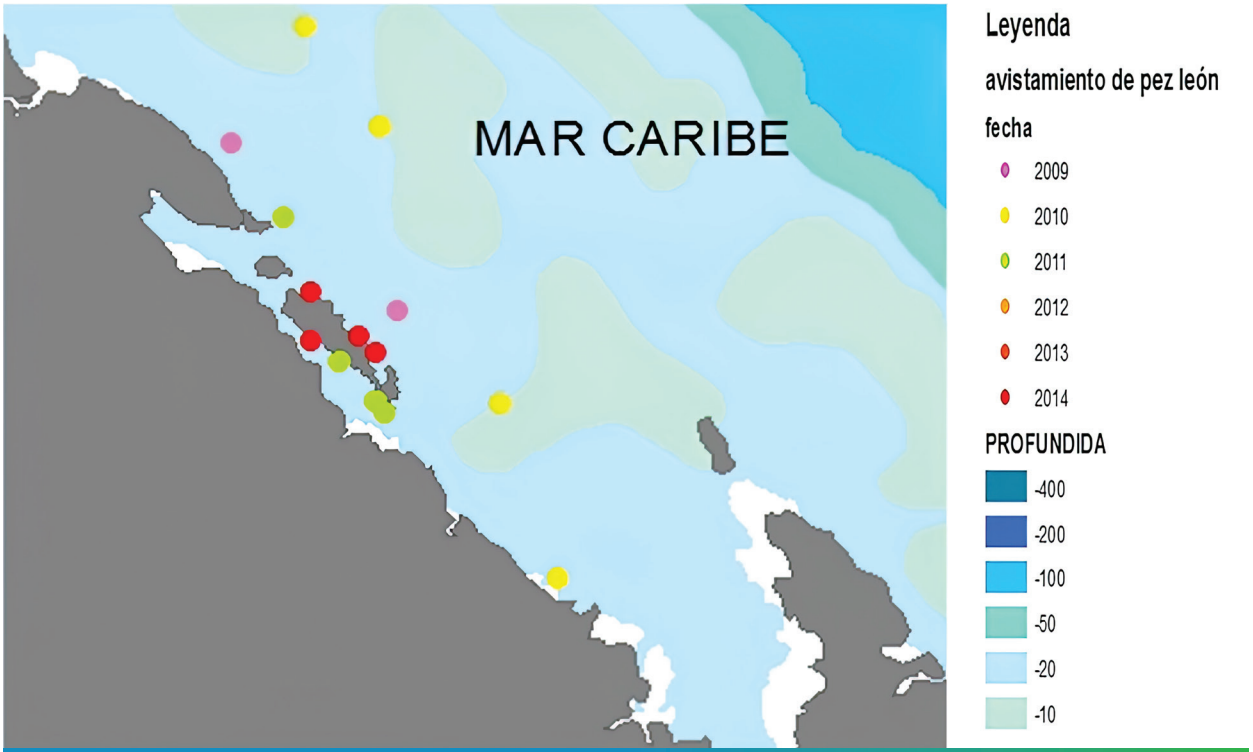


Figure 6. Map 3 shows the Lionfish distribution in the seas of Usdub, Guanyala Comarca.Information is being updated by the community as well. *(Source: Onel Masardule. 2020. Impact of the Lionfish Invasion in the Guna Territory, Panama. Powerpoint presentation.)*

In our worldview, we have a close relationship with nature and we are not ready to face IAS. In the food chain, we know that we need species to control other species to keep the balance in the ecosystem. Study indicates that there is a large threat to the food chain from these IAS.

We know that species, animals or plants in our ecosystem have their respective roles. Some fish species are part of our diet and other species are for other purposes like traditional practices and spirituality. An example is the octopus which we do not eat for cultural reasons because we believe that they are there for other animals. However, due to their exposure to other cities, young people nowadays have been influenced to eat octopus. The metaphor of eating octopus as already prohibited in our culture suggests that if it is an invasive species, it is even worse. Many times, we eat based on what we see. If the appearance is not appealing, then we opt not to eat.

Also, if alien species appear in our sacred areas, we need to study and understand these new species. Loss of knowledge is another important impact of alien species, which is the case of our other fish species when tilapia was introduced before. The young generation now did not get to see the lost species. If we lose native species, then we also lose traditional knowledge.

There are many challenges including mitigation. We are currently finding alternative uses for lion fish. In other places where they are addressing the presence of lionfish, they are promoting this as part of their diet, but not for Kuna people. We can explore that possibility, and offer it instead as a gourmet food for tourists.

In relation to management, we need to have the proper technology to monitor new species besides the lionfish. It is likely that more than 200 years ago or during the Spanish period, there were species introduced or which arrived in our territories. An example is the coconut which was an introduced plant in our territories which we have adapted to and has become a part of our diet. This is knowledge that we have inherited, and before we further lose our traditional or indigenous knowledge, these should be recovered or protected and be transmitted to the younger generation.

In conclusion, it is urgent to find management actions for the lionfish in the Guna region where the people's main livelihood is. We must put special attention to coral reef ecosystems because a change in the population dynamics of herbivores, for example, parrotfish, could undermine coral reef ecosystems and in the same way, the culture and diet of the Guna population. Parrotfish are important for the preservation of coral reef ecosystems.

Q and A

What actions are being taken by the government to stop such invasion in your land or communities?

Unfortunately, there has been no single action to address this issue perhaps, because our region is not important for them. We are creating partnership with the Ministry of Environment. We are planning some joint actions to address this.

Species causing impacts on other species also result in food loss.

SESSION III

IPLCs' experiences on new plants and animals based on their categorization, worldviews and other influences. How do IPLCs manage new plants and animals?

Facilitated by Florence Daguitan

IAS IN KAREN COMMUNITY, NORTHERN THAILAND

Presentation by Prasert Trakansuphakon, PASD Thailand

We share the lessons of the past or previous experiences of Thailand in the 1970s to the 1990s. Since the 1970s, there have been projects that were implemented in the lands of Indigenous Peoples. One was the Thai-Denmark reforestation project which initiated the introduction of pine trees that were considered as IAS. The indigenous Karen people were not successful in their refusal to plant this species in their rotational farms. True enough, the planting of pine trees in the watershed and mountainous areas replaced the native species thriving in the area and eventually, the Indigenous Peoples lost their customary lands and farmlands, like the case of Mae Lan Kham river basin where the Karen communities are. The Indigenous People also can no longer graze their animals in the area.

Other projects like the Highland Development Project (Opium Replacement Project and Royal Project) brought in temperate plants like coffee (Arabica), persimmon, and red beans. With the introduction of these species, the following impacts were experienced: 1) traditional agriculture (rotational farming) was stopped, 2) increased use of chemicals as fertilizers, pesticides and herbicides which also resulted in water pollution and soil erosion, 3) decreased use of native seeds and plants and increased dependence on seeds from outside the community, 4) due to new knowledge, there is observed decline in traditional knowledge, 5) choices of indigenous

crops became limited, and 6) grazing areas decreased. On the other hand, some positive impacts were noted as follows: 1) increased income from the sales of produce, 2) enhanced tourism experience, 3) new species became part of communities' livelihood like Hpau hpav dof (Marigold Tree or Maxican Sunflower) [Tithonia diversifolia (Hemsl. A.Gray)] from Mexico, Hsau hpo kweiv (Chromolaena odorata) (Eupatorium conyzoides) Vahl and K' hi (Imperata cylindrica) (Imperata cylindrica Beauv).

There are other IAS found in the communities and these were given names based on the perceived characteristics of these plants (see photos below, Figure 7-20). Said plants have impacted the Karen people negatively. Their introduction replaced the traditional varieties that Indigenous Peoples used to plant and consume in their territories. This also affects traditional farming because indigenous species are being eliminated. These IAS also affect the community's food supply because these new plants are poisonous and inedible.

The management of these IAS is still at the individual level, thus collective management of these species needs to be strengthened as most of the people in the community have not initiated actions collectively. Farmers in the community also demand more information opportunities to further learn about IAS and ways to control them.

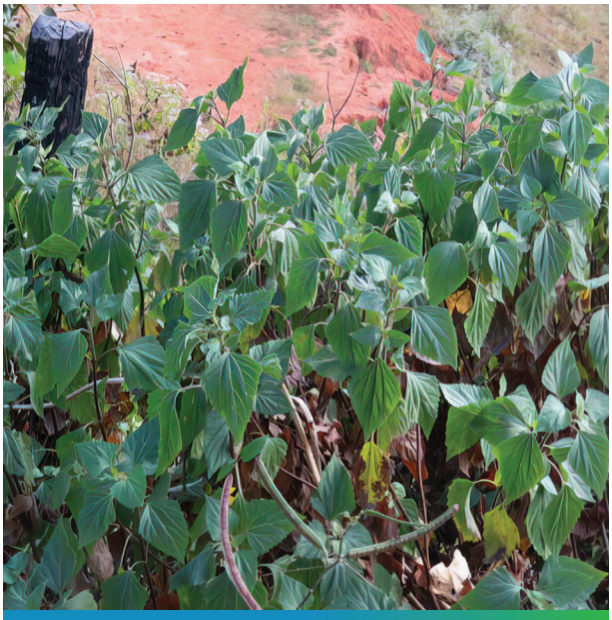


Figure 7. eupatory, sticky snakeroot, corfton weed and mexican devil (nauf hkau ma niv)

Figure 8. nauf mi hkei hai sau

Source of photos on this page: Prasert Trakansuphakon. 2020. IAS in Karen Community, Northern Thailand. Powerpoint presentation.

Figure 9. nauf kau la hai sau

Figure 10. nauf kau la sau

Figure 11. nauf seif gij

Figure 12. nauf hsav hsei sau

Source of photos on this page: Prasert Trakansuphakon. 2020. IAS in Karen Community, Northern Thailand. Powerpoint presentation.

Figure 13. Miakania micrantha

Figure 14. nauf siv moj pau

Figure 15. nauf maiv taiv laiv

Figure 16. nauf hauf wau sei sau

Source of photos on this page: Prasert Trakansuphakon. 2020. IAS in Karen Community, Northern Thailand. Powerpoint presentation.

Figure 17. nauf seif gij hpo

Figure 18. nauj tej dauv hsauv

Figure 19. nauf tej dauv sau

Figure 20. hauf hpaus' yau

Source of photos on this page: Prasert Trakansuphakon. 2020. IAS in Karen Community, Northern Thailand. Powerpoint presentation.

CHALLENGES OF IAS: HISTORY REVIEW AND EXAMPLES OF YAKUTIA, RUSSIA

Presented by Shadrin Viacheslav, Yakutsk, IHRISN RAS, Vice-President, Yakut RAIPON, Chief, Council of Yukaghir Elders

The experience of Yakutia in Russia is being shared from a historical perspective. New plants and animals or invasive and alliance species are considered a problem not only of biologists but also of Indigenous Peoples. The matter of Invasive Alien Species (IAS) is one of the most pressing problems of our time because it is not only a question of biological diversity, but also of the people's survival as well. IAS which are not natural to a certain place but brought by people have positive and negative impacts.

The history of the Yukaghir people illustrates the seriousness of this concern. With the arrival of the Russian Cossacks in the 17th century, new diseases appeared that almost wiped out the Yukaghir people. At that time there were more than ten thousand Yukaghirs. Today, there are only about 1500 of them who survived the epidemic of smallpox and plague. Today, Covid-19 also poses a challenge of endangering Indigenous Peoples and their way of life.

A positive example of IAS is the introduction of sable and muskrat which helped sustainable hunting. Sable was introduced in the 1950s to make hunting profitable. People were able to adapt to this new way of hunting within 10 years. Historically, Indigenous Peoples knew how to hunt using sable in the 17th century. Hunting sable is still being done today because it gives income to the hunters.

Figure 21. sable

Figure 22. salmon

Figure 23. yak

Source of photos on this page: Viacheslav Shadrin. 2020. Challenges of IAS: History Review and Examples of Yakutia, Russia. Powerpoint presentation.

Figure 24. silkworm

Figure 25. Silkworms damage coniferous taiga or forest

A negative example of IAS is the spread of chum salmon fish. Biologists released chum salmon in the 1990s to teach people how to fish red fish which was said to be more profitable, but the people did not welcome this. The red fish is different from white salmon. If not preserved, the red fish become poisonous while the white fish can be safely stored within two days. Our traditional cuisine is based on white fish thus, the red fish is considered as tasteless.

There are other newly introduced meat but the results are unclear which is why it is important that the Indigenous Peoples' free, prior informed consent be observed even in the introduction of new species.

Another new reality is the impact of climate change, due to changing ecosystems. There is observed reduction of country zones and forest zones. Reindeers are decreasing, there are also observed changes in animal behaviour, appearances of 'new animals' like polar bears on sea coasts which is a threat to reindeer-herders and hunters, and "new" wolves are also appearing, endangering people's lives.

Even our food security is threatened because we have to adapt to new food which adversely affects our traditional livelihoods.

Another issue is the problem brought about by natural IAS. Last year, silkworms destroyed our forests. According to biologists, if these silkworms are not controlled, they can damage the forest in the Republic of Sakha (Yakutia). They can damage around 50,000 ha or about 3 million hectares of coniferous taiga. The destruction of the natural environment is a threat to traditional industries such as hunting and reindeer herding.

Source of photos on this page: Viacheslav Shadrin. 2020. Challenges of IAS: History Review and Examples of Yakutia, Russia. Powerpoint presentation.

INVASIVE ALIEN SPECIES IN THE CORDILLERA, PHILIPPINES

Presented by Levy Mangili CorDisRDS and Florence Daguitan, Tebtebba

The presentation highlighted experiences of Indigenous Peoples of the Cordillera in the north, and Palawan in the south of the Philippines. Some species such as sweet potatoes, chayote, sunflower, and lantana, among others, and animals date back to colonial times. Distribution of these species was through seed exchange, an indigenous system being practiced up to the present. There were likewise accounts of "invasion of the locusts" which disappeared and may return in 10 to 20 years. There are the harmful rats, insects and weeds which need to be controlled.

These new species were usually called 'peste' in the local language or pests. Plant species considered as pests include Chromolaena Odorata (martial law or NPA grass*), Mikania Micrantha (skylab), Gmelina, and Lantana Camara. Vertebrates and non-vertebrate IAS include golden apple snails (taiwan, kohol), Anguilli Bengalensis/ indian molted eel (torachok), mealy bug (aplat). Other IAS with questionable origin include the giant earthworm, Fusarium wilt and kabuwal (Eukerria saltensis).

Some of these were embraced and propagated by the community, then they realized later that these were invasive. For instance, the golden apple snail was introduced in the 1970s then became invasive in the 1990s. The giant earthworm, the martial law grass and the Lantana Camara were not invasive at first but their negative impacts were significantly felt in the 1990s. There were other species that were questionable in origin like the kabuwal and fusarium wilt which affect sweet potato.

Figure 26. Kabuwal: small earthworms present in rice paddies "over-till" the soil, resulting to rise of mud and kills the young rice.

Figure 27. Fusarium wilt is a fungus that causes the roots to wilt and kill the plant.

* This grass appeared during the Martial Law period in (1972-1981) the Philippines. NPA is the New People's Army, whose presence also came alongside Martial Law

Source of photos on this page: Levy Mangili and Florence Daguitan. 2020. Invasive Alen Species in the Cordillera, Philippines. Powerpoint presentation.

Torachok or indian eel was at first a 'good' species but it became too invasive. The giant earthworm has similar impact and is also considered as invasive.

Figure 27-28. Torachok (indian eel) [left] and Giant earth worm [right]: they burrow into the soil and destroy rice walls causing rice paddies to collapse.

Effects of these IAS include: 1) economic loss due to decrease of yield, thus reduced income/ savings; 2) threat to ecosystem because they cause the extinction of species or decreased biodiversity, destruction of soil structure (torachok, giant earthworm), and depletion of water (Gmelina); and 3) cultural loss of traditional and alternative food.

Community responses include the following: 1) adaptation/ maximization of potentials where the golden apple snails are used in weed control, torachok and snails are sources of food and additional income, green manure (mikania and chromoleana) and as pest control (chromoleana) which is specific in Abra province; 2) Use of botanical sprays to control IAS; 3) cultural or traditional practices in synchronized cropping, *alluyon* (shared labor in farming), use of traditional varieties resistant to pest; and 4) Community partnership with CSO, science community/academe to address the concern as in the case of fusarium wilt where the CSO partnered with Benguet State University to address the issue.

Source of photos on this page: Levy Mangili and Florence Daguitan. 2020. Invasive Alen Species in the Cordillera, Philippines. Powerpoint presentation.

Figure 29. Laboratory based production of trichoderma at the Northern Luzon Root Crops Training Center (NLRCTC) under the Benguet State University (BSU).

Figure 30. Field testing of treated planting materials.

Additionally, the Lantana Camara was used as fence in the Mountain Province. Meanwhile in Kalinga province, it was considered invasive when it turned pasturelands into lantana camara plantations and could not anymore be used as grazing areas. The Gmelina has numerous negative impacts, two of which are restraining other plants to grow, and reducing the productivity of other fruit trees. In Ifugao province, they had to revive the use of endemic trees because of the impact of Gmelina.

The experience of the organization Nagkakaisang Tribo ng Palawan demonstrated how a government project can be a driver of IAS. The former President Corazon Aquino administration allowed investors to venture into palm oil production in the region. With said project, the people observed the proliferation of pests that attacked traditional crops like coconut trees. The organization noted impacts like loss of biodiversity due to palm plantation or mono cropping.

Based on the experiences of Cordillera and Palawan, the recommendations forwarded are: 1) strengthen and innovate IAS management based on indigenous knowledge systems and practices, and 2) foster collaborative work of communities, civil society organizations, academe and scientists to harness various knowledge systems to enable control and management.

Source of photos on this page: Levy Mangili and Florence Daguitan. 2020. Invasive Alen Species in the Cordillera, Philippines. Powerpoint presentation.

WAYS FORWARD

Facilitated by Joji Cariño, FPP

The evaluation of the discussion and feedback from participants suggest the following recommendations:

- Engagement with government and its agencies to address the harmful effects of these introduced species;
- Increase or create more platforms and venues among the government, academe, and other institutions for increasing awareness about the impacts of IAS;
- Continue mobilizing community knowledge about new plants and animals;
- Link the discussion to the development of future strategies not only limited to specific targets of CBD but to other issues like climate change. The discussion can provide valuable input not only to the national level like NBSAPs and other related and relevant plans, but also to the development of global strategies like post 2020 CBD programmes;
- Harmonize strategies in dealing with specific species or problems associated with species informed by community experiences;
- Promote partnership and linkages in order to improve coordination and develop synergies among various stakeholders;
- Plan for further collaboration to further the work on IAS;
- Develop reports to inform various global processes like the CBD and UNFCCC;
- Strengthen the use of information and application of knowledge on IAS through capacity-building activities at the community level;
- Broaden and deepen perspective on new plants and animals or IAS considering the types, the context and the scale of impacts it demonstrated at various levels.

Appendix

AGENDA

DURATION	ACTIVITY/SESSION	FACILITATORS/SPEAKERS
OPENING SESSION		
3 mins	Indigenous Prayer	Viacheslav Shadrin, Center for Support of Indigenous Peoples of the North (CSIPN)
7 mins	Welcome to all Participants Background of the Webinar	Joji Cariño, Forest Peoples Programme (FPP)
7 mins	Objectives of the Webinar	Ma. Elena Regpala, Partners for Indigenous Knowledge in the Philippines (PIKP)
1st Thematic Discussion with Q and A Multiple concepts on new plants and animals or "IAS" (indigenous and scientific) ***Facilitator: Ma. Elena Regpala, PIKP / Onel Masardule,*** *Fundacion para la Promocion del Conocimiento Indìgena (FPCI)*		
10 mins	Presentation on Diverse Worldviews on the Meanings of and Responses to Invasive Alien Species	Preston Hardison
30 mins	Reactions/Comments	Viacheslav Shadrin, Center for Support of Indigenous Peoples of the North (CSIPN) Gathuru Mburu, Institute for Culture and Ecology (ICE) Prasert Trakansuphakon, Pgakenyaw Association for Sustainable Development (PASD)

2nd Thematic Discussion with Q and A
Indigenous concepts of new plants and animals in their territories

Coverage:

A. Traditional methods of exchanging new plants and animals (e.g. crop varieties)/natural ways of integrating new plants and animals
B. Distinctions between newly arrived/IAS and shifting species
C. Species deliberately introduced by government projects, plantations, and commercial industries
D. Assisted migration/migrated species
E. Other observations: ["new forest" vs. traditional forest], not necessarily invasive but these species bring or contribute to change in the environment

Facilitator: Florence Daguitan, Tebtebba

7	Kenya	Gathuru Mburu, Institute for Culture and Ecology (ICE)
7	Russia	Polina Shulbaeva, CSIPN
7	Guna Yala, Panama	Onel Masardule, Fundacion para la Promocion del Conocimiento Indìgena (FPCI)
20	Q and A	
7	BREAK	Play Indigenous Music

3rd Thematic Discussion with Q and A
IPLCs' experiences on new plants and animals based on their categorization, worldviews and other influences. How do IPLCs manage new plants and animals?

Challenges of ILKs or traditional knowledge in managing IAS.(Experiences will range from successes, challenges, or from positive to negative impacts of IAS or new plants and animals)

Facilitator: Jo Ann L. Guillao, PIKP

7	Thailand	Prasert Trakansuphakon, (PASD)
14	Russia Philippines	Viacheslav Shadrin, CSIPN Florence Daguitan, Tebtebba and Levy Mangili, Cordillera Disaster Response and Development Services (CorDis RDS)
20	Q and A	

Ways Forward (20 mins)

Guide questions:

- How do you traditionally use, manage, control and eradicate IAS? When do you adopt new methods?
- Who and how can we collaborate to address issues surrounding IAS?
- What are community venues for sharing knowledge? What are other venues for sharing knowledge and the role of other institutions like governments, researchers, and scientific bodies?
- How to expand/strengthen ILK to address IAS?

Facilitator: Gathuru Mburu, ICE and Joji Carino, FPP

5 mins.	**Closing: Acknowledgement and Announcement**	Organizer/Host

PARTICIPANTS TO THE WEBINAR

Observers

Ana Isabel Gonzalez Martinez, CONABIO National Comission for the Knowledge and Use of Biodiversity, Mexico; IPBES IAS Assessment
Ankila Hiremath, Ashoka Trust for Research in Ecology and Environment, India; IPBES IAS Assessment
Esra Per, Gazi University, Turkey; IPBES IAS Assessment
Helen Roy, UK Centre for Ecology & Hydrology (UKCEH), United Kingdom, IPBES Invasive Alien Species Aseessment
Lou Darriet, Swebio
Pernilla Malmer, Swedbio
Peter Bates, IPBES ILK TSU
Ruth Spencer-Marine Ecosystems Protected Areas (Trust), Antigua and Barbuda
Sara Elfstrand, SwedBio
Yesenia Hernandez Marquez, Club UNESCO, Preservamb, Oaxaca, Mexico

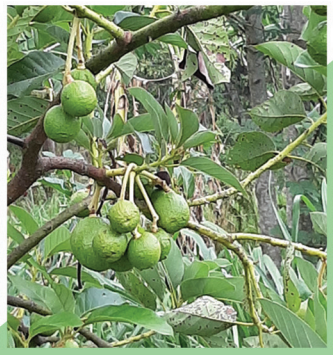
Speakers/Indigenous Peoples and Local Communities

Aaron Jones, Tulalip Tribes of Washington, USA
Florence Daguitan, Tebtebba, Philippines
Gathuru Mburu, Institute for Culture and Ecology (ICE), Kenya
Levy Mangili, Cordillera Disaster Response and Development Services (CorDis RDS), Philippines
Onel Masardule, Fundacion para la Promocion del Conocimiento Indìgena (FPCI), Panama
Polina Shulbaeva, Center for Support of Indigenous Peoples of the North (CSIPN) ILK Center
Preston Hardison, USA
Ramiro Batzin, CICA/Sotz'il Natural Resources Management Program, Central America
Stanislav Ksenofontov, Russia
Viacheslav Shadrin, Yakut Raipon; Council of Yukaghir Elders

Facilitators, Interpreters and Technical Support

Daniel F. Tamayo, Global Tradu Language Services
Daniela Guanipa, Global Tradu Language Services
Florence Daguitan, Tebtebba, Philippines
Ivan Justin Nera, Information Technology Specialist, Philippines
Jo Ann L. Guillao, Partners for Indigenous Knowledge Philippines, Philippines
Joji Cariño, Forest Peoples Programme, UK
Ma. Elena Regpala, Partners for Indigenous Knowledge Philippines, Philippines





"While indigenous peoples are still coping with their changing ecosystems, the clear challenge is how to adapt and develop new capacities to survive and thrive and continue to manage new plants and animals as a result of new ecosystems or new forests. There is a need to re-study cultures, traditions and capacities while dealing with this evolving environment especially for Indigenous Peoples directly affected by these changes."

- Polina Shulbaeva, CSIPN, Russian