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Agenda Item 28.14

# MULTIPLE SYSTEMS OF KNOWLEDGE

*(Prepared by the Scientific Council)*

Summary:

This document reports on implementation of Decision 14.9 *Participation of Non-Governmental Organizations and Other Groups in CMS Processes*. It proposes the deletion of Decision 14.9. and the adoption of new Decisions.

The document was prepared by the Scientific Council through its Working Group on Multiple Systems of Knowledge, including Traditional and Indigenous Knowledge. The Working Group also proposed amendments to Resolution 13.7 *Guidelines for Preparing and Assessing Proposals for the Amendment of CMS Appendices*, and Resolution 12.28 (Rev.COP14) *Concerted Actions*. These proposals are presented in documents UNEP/CMS/COP15/Doc.30.1 and UNEP/CMS/COP15/Doc.31.1, respectively, which therefore need to be read in conjunction with this document.

The amendments to the Resolution and the new draft Decisions would support the achievement of Targets 1.2, 1.3, 3.1 and 5.3 of the Samarkand Strategic Plan for Migratory Species 2024–2032.

This document was revised by the Scientific Council at its 8th Meeting of the Sessional Committee in December 2025.

# MULTIPLE SYSTEMS OF KNOWLEDGE

## Background

1. The 14th meeting of the Conference of the Parties (COP14, 2024) adopted Decisions 14.8–14.10 *Participation of Non-CMS Governmental Organizations and Other Groups in CMS Processes,* which, among other things, aimed at examining ways to facilitate the participation and engagement of Indigenous Peoples and local communities. This document reports on the implementation of Decision 14.9, which reads as follows:

> ***Directed to the Scientific Council***
>
> *a) assess the significance of multiple systems of knowledge and understanding, including traditional and Indigenous knowledge, for supporting effective migratory species conservation; and*
>
> *b) provide a report to COP15 with suggestions for ways in which CMS might facilitate inclusion of additional systems of knowledge and understanding for enhanced implementation of the Convention.*

2. Resolution 11.10 (Rev.COP14) *Synergies and Partnerships* reaffirmed the importance of engaging in relevant processes and cooperating with partners, including Indigenous Peoples and local communities.

## Activities

3. The 7th meeting of the Sessional Committee of the Scientific Council (ScC-SC7) established an intersessional Working Group on multiple systems of knowledge, including traditional and Indigenous knowledge, to consider this topic and provide its recommendations to ScC-SC8.

4. The intersessional Working Group met on two occasions and held additional consultations via online correspondence.

5. The Working Group reviewed challenges and opportunities relating to the integration of Indigenous and local knowledge (ILK) into CMS scientific and policy work, drawing on examples from other multilateral environmental agreements and recommendations provided in document ScC-SC7/Doc.6.1.7/Rev.1. It also examined a background document, *Multiple systems of knowledge to support effective migratory species conservation*, presented by Australia to the Working Group, which provided information on relevant terminology, examples of integration approaches under other processes, and recommendations for strengthening CMS engagement with multiple knowledge systems. This document, which was revised to incorporate the opinions of the Working Group, is presented in Annex 2 for information and for future consideration when implementing the draft Decisions proposed in Annex 1, noting that engagement of Indigenous Peoples and local communities in CMS processes is non-binding and subject to national circumstances in each Party.

## Discussion and analysis

6. Annex 2 highlights that all knowledge systems can provide distinct and valuable insights into decision-making. Providing opportunities to incorporate ILK in CMS scientific processes and assessments may give space for different worldviews about the conservation of migratory species and their linkages with people, thereby enhancing

CMS scientific assessments and conservation actions. Furthermore, the incorporation of ILK can enhance species conservation outcomes while also supporting the livelihoods of Indigenous Peoples and local communities.

7. Indigenous and local knowledge may complement or extend the information reported in scientific literature and increase the accuracy and application of the results and statistical modelling, therefore improving the knowledge overall.

8. Experiences in other intergovernmental and national forums to date have highlighted four main practices for enhancing ILK holder involvement in decision-making: (1) respecting rights, (2) supporting care and mutuality, (3) strengthening Indigenous Peoples and local communities and their knowledge systems, and (4) supporting knowledge exchange laws. Working with existing organizations and networks of ILK holders (such as those listed in Annex 2) should be considered a priority.

9. In practice, engaging multiple ILK groups has usually taken place by consulting each relevant Indigenous or local community group throughout the process, and providing opportunity for ILK holders to take part in research, monitoring and/or restoration efforts. Successful integration of multiple systems of knowledge may also occur at the national level. For example, on Australia's Great Barrier Reef, scientists from Southern Cross University engaged individuals from various Indigenous groups to conduct research on inshore dolphins. Consultation on Country[1] occurred over a period of 22 months to seek free, prior and informed consent (FPIC). FPIC is a specific right pertaining to Indigenous Peoples to give or withhold consent to a project affecting them and their territories, along with the ability to negotiate conditions of the project. Two representatives from 12 Indigenous groups took part in a two-month survey and monitoring programme, where they were able to survey their Sea Country. Through this collaboration, the project addressed critical data and knowledge gaps on the Australian Snubfin dolphin (*Orcaella heinsohni*) and Australian humpback dolphin (*Sousa sahulensis*). In this particular case, engaging Indigenous Peoples through all stages of the research project ensured that cultural sensitivities were recognized, adhered to, and allowed for the sharing of knowledge between all parties. This project demonstrates how collaboration with ILK holders can succeed by ensuring FPIC, engaging Indigenous representatives throughout all stages, and integrating ILK with scientific research. This approach not only respects cultural sensitivities but also fills critical knowledge gaps, creating mutually beneficial outcomes.

10. To facilitate the acknowledgement and inclusion of multiple systems of knowledge in CMS scientific processes, the Working Group focused its discussion on draft Decisions 15.AA and 15.BB, possible amendments to Resolution 13.7 *Guidelines for Preparing and Assessing Proposals for the Amendment of CMS Appendices,* and possible amendments to Resolution 12.28 (Rev.COP14) *Concerted Actions*.

11. The Working Group proposed amendments to Resolution 13.7 *Guidelines for Preparing and Assessing Proposals for the Amendment of CMS Appendices*, encouraging inclusion of information sourced from multiple systems of knowledge in proposals to amend CMS Appendices, while recognizing the need to follow principles for inclusion of ILK when that is not freely available. These proposed amendments are presented as document UNEP/CMS/COP15/Doc.30.1. *Guidelines for preparing and assessing proposals for the amendment of CMS Appendices*.

[1] For Indigenous Peoples across Australia, 'Country' denotes all aspects of the environment, as well the knowledge, cultural and spiritual practices, and responsibilities that are linked to traditional territories. 'Sea Country' (below) refers to the marine environment.

12. Changes to Resolution 12.28 (Rev.COP14) *Concerted Actions* were also proposed. The Working Group suggested inserting a new paragraph 3 in Annex I, encouraging proponents to include Indigenous and/or local knowledge known about the species when preparing Concerted Actions, to improve the conservation status of the target species. These proposed amendments are presented in document UNEP/CMS/COP15/Doc.31.1 *Concerted Actions*.

13. The Working Group also proposed draft Decisions directed to both the Standing Committee and the Secretariat, as per Annex 1. Draft Decision 15.AA requests the Standing Committee to identify areas other than scientific and technical processes, in which information from multiple systems of knowledge can be incorporated in CMS processes. Draft Decision 15.BB requests the Secretariat to include Indigenous and/or local knowledge holders in their outreach, and make relevant information available on the CMS website.

14. Based on these outcomes, the Secretariat considers that Decision 14.9 *Participation of Non-Governmental Organizations and Other Groups in CMS Processes* has been implemented and should be deleted.

Recommended actions

15. The Conference of the Parties is recommended to:

    a) note the report contained in Annex 2 of this document;

    b) adopt the draft Decisions contained in Annex 1 of this document; and

    c) delete Decision 14.9.

**ANNEX 1**

DRAFT DECISIONS

**MULTIPLE SYSTEMS OF KNOWLEDGE**

***Directed to the Standing Committee***

15.AA The Standing Committee is requested, subject to the availability of resources, and as appropriate to:

a) consider the information provided in document UNEP/CMS/COP15/Doc.28.14 regarding the benefits of multiple systems of knowledge to the conservation of migratory species; and

b) identify whether there are areas where there may be opportunities to incorporate multiple systems of knowledge, including Indigenous and local knowledge, in areas other than scientific and technical processes operating under the Convention.

***Directed to the Secretariat***

15.BB The Secretariat shall, subject to the availability of resources:

a) when undertaking outreach to stakeholders, where appropriate and feasible, include organizations or networks of Indigenous and/or local knowledge holders of relevance to the United Nations, recognizing that exploration of different communication techniques may be required to effectively reach target audiences; and

b) add a section on how Indigenous and local knowledge holders can contribute to CMS key topics on the CMS website, for example under the *Community Participation and Livelihoods* tab.

**ANNEX 2**

## MULTIPLE SYSTEMS OF KNOWLEDGE TO SUPPORT EFFECTIVE MIGRATORY SPECIES CONSERVATION

Background

1. COP14 mandated the Scientific Council to assess the significance of multiple systems of knowledge and understanding for supporting effective migratory species conservation. This document focuses on traditional and Indigenous knowledge, which is currently underrepresented in CMS processes.

2. The term *Indigenous and local knowledge*[2] (ILK) also encompasses traditional knowledge and is commonly used in other environmental conventions, such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). The contribution of ILK holders has recently gained increased recognition in various international forums and is also emphasized in the Kunming-Montreal Global Biodiversity Framework. As such, this paper will use ILK as a placeholder for traditional and Indigenous knowledge.

3. Indigenous Peoples include communities, tribal groups and nations who self-identify as Indigenous to the territories they occupy, and whose organization is based fully or partially on their own customs, traditions and laws (Hill et al., 2020). Local communities are defined as groups of people who maintain inter-generational connection to place and nature through livelihood, cultural identity, worldviews, institutions and ecological knowledge (Hill et al., 2020).

4. Currently, Indigenous Peoples and local communities can engage with CMS by registering as observers or through participating in a Party delegation. They may also join working groups by invitation of the Chair and Party delegations. Community-based conservation efforts have been facilitated through various CMS Agreements, including the Gorilla Agreement and the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA).

5. There are moral and practical reasons why the Convention should consider embedding ILK in decision-making processes. Indigenous and local knowledge can offer valuable information on methodologies, theories and practices for sustainable ecosystem management (IPBES, 2022). The diversity of ILK offers a unique source of information on species use, management and conservation, which may be used to enhance decision-making and policymaking processes. Policy decisions that are informed by multiple systems of knowledge may address local and global threats more effectively, as ILK may convey place-based information on environmental changes over generations, which may inform novel hypotheses for defining management actions. Bringing together multiple systems of knowledge promotes just, equitable and ecologically sustainable governance of ecosystems (Muhl et al. 2023; Norström et al. 2020).

[2] *Indigenous and local knowledge* refers to “dynamic bodies of integrated, holistic, social and ecological knowledge, practices and beliefs pertaining to the relationship of living beings, including people, with one another and with their environments” (IPBES, 2022).

6. Indigenous and local knowledge is usually transferred in social and cultural mediums, which communicate both content and cultural context; whereas conventional science[3] is heavily focused on content. Indigenous and local knowledge may also be used to validate the results of conventional science and integrate the different views of various actors by following a collective approach. Furthermore, contradictions or incompatibilities across both systems of knowledge may help identify weaknesses and required actions for strengthened approaches. Incorporating both ILK and conventional science may therefore result in stronger outcomes for species conservation.

Benefits to integrating multiple systems of knowledge in CMS processes

7. Each system of knowledge provides valuable and unique information for decision-making processes (see Figure 1). Successful migratory species conservation requires that actors from various jurisdictions and other sectors work together in an equitable manner, which is known as knowledge co-production. The aim of knowledge co-production is to support the implementation of actions, and improved policies and legislation for sustainably managing species and ecosystems.

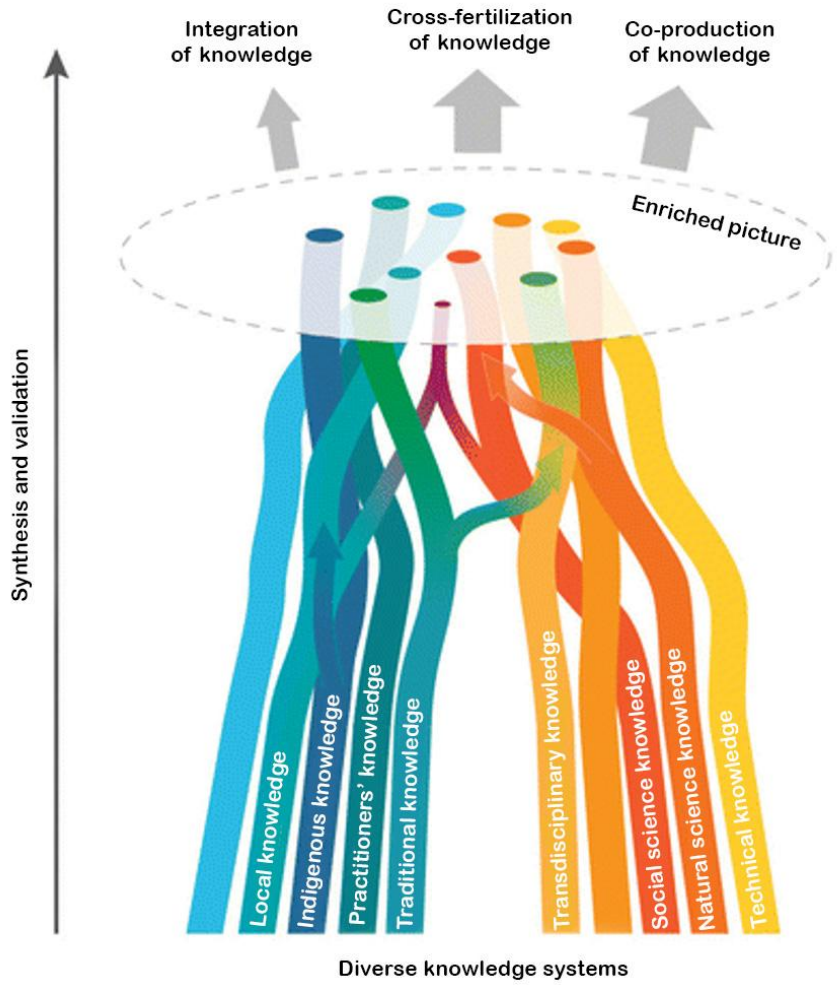


**Figure 1**. An illustration of a multiple evidence base approach, where diverse knowledge systems can support further analysis and knowledge generation. Sourced from Tengö, M. et al. (2014) Connecting Diverse Knowledge Systems for Enhanced Ecosystem Governance: The Multiple Evidence Base Approach. AMBIO 43, 579–591. p. 4. doi:10.1007/s13280-014-0501-3.

[3] *Conventional science* is defined as "systematized knowledge that can be replicated and is validated through a process of academic peer review by an established community of recognized experts in formal research institutions" (Millennium Ecosystem Assessment, 2005).

8. It is important to avoid the assumption that engagement alone guarantees adherence to cultural sensitivities. Such adherence is ensured by the combination of engagement and deliberate efforts to address these sensitivities. Furthermore, the provision of a collaborative engagement process does not inherently lead to the sharing of all relevant knowledge. Some ILK is governed by cultural norms and codes that restrict its dissemination. These restrictions may be due to the privileged holding of knowledge by elders, sacred or mystical reasons for secrecy, or specific ritual conditions required for sharing. Indigenous and local knowledge holders have rights to participate in decision-making about issues that affect their livelihoods. As such, the UN Declaration on the Rights of Indigenous Peoples calls on states to obtain free, prior and informed Consent (FPIC) of Indigenous Peoples before adopting legislative or administrative measures.

9. Incorporating ILK not only has the potential to improve the conservation of a species but to also improve the livelihoods of Indigenous Peoples and local communities.

10. One such example is the management of the Pirarucu fish (*Arapaima gigas*) in Brazil. The Pirarucu, known as the largest freshwater fish on the planet, almost went extinct in the 1980s due to unsustainable fishing. Through the implementation of ILK alongside conventional science, the species was able to recover and become sustainably managed. Communities were involved in both monitoring and the participatory development of local rules around resource access. Experienced local fishers can detect the subtle visual and auditory cues Pirarucu emit when they are surfacing. This allowed the fishing community to successfully count the fish population. The installation of floating guard boats managed by the local communities, as well as zoning different parts of the lake, allowed the Pirarucu population to rebound. This enabled local communities to regain food security and improve their livelihoods through sustainable harvesting (Correia de Mello et al., 2019).

11. Recognizing culturally significant species could further leverage traditional conservation practices. Indigenous Peoples and local communities may protect species due to spiritual beliefs, taboos or customary laws. This would also partially address Decision 14.10.

12. For example, the snow leopard (*Uncia uncia*) is central to the cultures of Indigenous Peoples and local communities across Russia, Tajikistan, Mongolia and Kyrgyzstan. Various communities have even founded initiatives – such as *the Land of the Snow Leopard* – to integrate Indigenous cultural practitioners into conservation efforts, simultaneously recognizing the species' spiritual significance and promoting their coexistence. Other examples include the saiga antelope (*Saiga tatarica*), argali sheep (*Ovia ammon*), Bukhara deer (*Cervus elaphus yarkandensis*) and Egyptian vulture (*Neophron percnopterus*).

13. The integration of representatives of Indigenous Peoples and local communities into relevant working groups and task forces may introduce novel insights and perspectives to the Convention. While CMS working groups and task forces have the potential to incorporate ILK holders and experts, depending on their terms of reference, those with pertinent expertise may be unaware of the opportunity to contribute. In those cases, the Scientific Council and/or Secretariat could consider reaching out to established organizations or networks that may notify ILK holders about these opportunities.

Approaches for creating synergies between multiple systems of knowledge

14. Indigenous and local knowledge and conventional science all exhibit similarities and differences in the environmental context. While the methods to gather information may vary, all aim to comprehend and elucidate the functioning of the natural world. Conventional science adheres to a systematic, evidence-based methodology. In contrast, ILK utilizes a diverse array of methods, including written, oral, visual, tacit, gendered, practical and scientific forms. Additionally, ILK is often communicated through cultural expressions such as songs, dances, rituals, ceremonies and artworks (IUCN, 2022). The cultural context should therefore be well understood before collecting knowledge. Understanding language and culture, and knowing how to explore sensitive issues by following specialised methods, is also beneficial (CITES, 2023).

15. Document ScC-SC7/Doc.6.1.7/Rev.1, presented at the 7th meeting of the Sessional Committee of the CMS Scientific Council (ScC-SC7, Bonn, 17-20 September 2024), provides an overview of the methods used by other conventions to include ILK in their scientific and decision-making processes. It reports on common practices for integrating multiple systems of knowledge, challenges, and tips for successful engagement.

16. The conventions examined in document ScC-SC7/Doc.6.1.7/Rev.1 facilitated the inclusion of ILK through various mechanisms, such as by establishing dedicated working groups, task forces or platforms, regularly inviting ILK holders to participate as observers, creating distinct membership categories, and explicitly recognizing subsistence use.

17. Challenges reported by various conventions included lack of capacity and financial resources, engagement barriers, the need for capacity-building on environmental legal instruments among governments and Indigenous Peoples and local communities, and knowledge gaps and technical capabilities that hinder effective participation. Indigenous Peoples and local communities are highly diverse. Creating culturally tailored approaches to respectfully integrate ILK into conservation efforts may therefore take considerable time and effort. A significant barrier to engagement arises from the perception among Indigenous groups that global governance frameworks often regard them as a homogenous entity. This perception undermines the recognition and respect of distinct identities. Consequently, the implementation of cultural diversity agendas, such as the Intangible Cultural Heritage Convention and the Convention on the Protection and Promotion of the Diversity of Cultural Expressions, can play a pivotal role in addressing this issue.

18. Adopting a multiple evidence base approach recognizes the complementary nature of different knowledge systems by allowing each system to express itself within its own context, without designating any single system as the external validator.

19. A multiple evidence base approach analyses the entire picture by assessing complementarities, synergies and contradictions across multiple systems of knowledge to enhance the understanding of the environment (Figure 1; Tengö et al., 2014). The aim of the approach is to co-produce knowledge by considering various perspectives on a shared issue, therefore contributing to an enriched picture (Tengö et al., 2014; IUCN, 2022).

20. Figure 1 (above) illustrates a multiple evidence base approach where multiple systems of knowledge have been integrated to enhance the comprehension of a subject matter and generate novel insights. This approach suggests that employing diverse methods and perspectives enhances understanding by integrating, cross-fertilizing and co-producing knowledge (Tengö et al., 2014).

21. The integration of ILK should be part of a collaborative process within empowered and respectful partnerships. Similarities, complementarities and contradictions across knowledge systems should be evaluated and discussed and used to inform any final recommendations (Tengö et al., 2014). The integration of multiple knowledge systems requires a collective approach that is equitable and empowering for all knowledge holders involved.

22. The integration of ILK may be approached through extractive or participatory methods. Extractive methods, such as pre-planned questionnaire surveys and interviews, are often quicker but may not be as favourable to ILK holders. These methods tend to limit the influence of ILK holders and increase the risk of their information being misinterpreted, misappropriated or tokenized (CITES, 2023). In contrast, participatory methods, including workshops, dialogues, focus groups, participatory monitoring and participatory mapping, offer ILK holders greater opportunities to shape the direction of interviews and discussions. These methods frequently employ visual or interactive formats.

23. Participatory methods are more likely to empower ILK holders, as they integrate local perspectives and values into conservation planning and decision-making (IPBES, 2022). However, these methods can be time-consuming, culturally and socially intricate, and may lead to the emergence of unexpected topics and issues (CITES, 2023). To achieve successful collaboration, mutual trust and confidence need to be built through regular and transparent communication. Creating a safe space for experimentation without fear of blame further encourages innovation and learning from mistakes. Additionally, understanding and addressing diverse worldviews and value systems helps to leverage different perspectives for better decision-making and comprehensive solutions. By focusing on these key areas, knowledge holders can work more effectively towards common goals.

24. The degree of involvement of ILK holders and the role of external scientists may vary depending on the participatory method employed. The selected method or combination of methods should adopt a place-based approach, tailored to the specific information required and what is most acceptable within the social and cultural context. As an example, Table 1 outlines the various options for participatory methods in species monitoring.

**Table 1**. Types of participatory methods and associated roles. Adapted from CITES (2023). Module 3: Incorporation of Local and Traditional Knowledge and Participatory Species Monitoring. Convention on International Trade in Endangered Species of Wild Fauna and Flora. https://cites.org/eng/node/138336

| Type of participatory mechanism | Role of Indigenous and local knowledge holders | Role of external scientists |
|---|---|---|
| **Externally driven monitoring with local data collectors** | • Collect data | • Design monitoring scheme<br>• Conduct data analysis |
| **Collaborative monitoring with external data interpretation** | • Collect data<br>• Use data in management decisions | • Design monitoring scheme<br>• Conduct data analysis |
| **Collaborative monitoring with local data interpretation** | Involvement in:<br>• data collection<br>• data analysis<br>• management decision-making | • Provide training and advice |
| **Local monitoring, interpretation and use of data** | Conduct:<br>• study design<br>• data collection<br>• data analysis<br>• decision-making | • Nil |

25. A compilation of case studies that feature participatory methods and community involvement are detailed in the CMS technical report, *Community Participation and Livelihoods*. This report aims to further understand the role of community-based conservation in the conservation of CMS-listed migratory species. The report introduces existing principles for successful community involvement in conservation, and outlines the challenges experienced for community conservation of migratory species, providing a series of case studies and guiding principles for consideration in future involvement of Indigenous Peoples and local communities in migratory species conservation.

Best practice considerations for engaging Indigenous and local knowledge holders in CMS processes

26. Examples of best practice ethical guidance include the International Society for Ethnobiology Code of Ethics and the CBD Mo'otz Kuxtal Voluntary Guidelines, which provide a framework for fostering positive engagement between policymakers and ILK holders.

27. Organizations or networks of ILK holders that are able to speak on behalf of the Indigenous Peoples and/or local communities they represent should be the first point of contact (IUCN, 2022; CITES, 2023). These organizations and networks will typically reach out to the community. In certain contexts, formally prescribed protocols should be adhered to when engaging with ILK holders. These protocols ensure respectful and culturally sensitive interactions. In regions where formal organizations or networks of ILK holders are absent, it is advisable to reach out to a recognized leader within the community. These representatives may then provide referrals to other ILK holders for them to share their knowledge (CITES, 2023).

28. The approach or pathway for initiating this contact warrants careful consideration and discussion. Various expectations and considerations should be examined when reaching out to ILK holders. These include etiquette, framing of the communication, appropriate language and awareness of gender roles. Additionally, cultural and agricultural calendars may influence the timing and nature of interactions. Communication methods and expected response times should also be taken into

account to ensure respectful and effective engagement. Addressing these factors may promote respectful and productive relationships with ILK holders, facilitating the sharing of valuable knowledge while honouring cultural sensitivities.

29. A selection of organizations or networks of ILK holders of relevance to the United Nations include:

- *Special Rapporteur on the Rights of Indigenous Peoples*: The Special Rapporteur carries out studies on issues of concern and provides recommendations to encourage action. The main responsibilities of the Special Rapporteur are to examine ways to overcome obstacles; gather and exchange information; make recommendations and proposals; and work in close cooperation with UN bodies and Indigenous Peoples.

- *The Expert Mechanism on the Rights of Indigenous Peoples (EMRIP)*: The Expert Mechanism was established to provide the Human Rights Council with expertise and advice on the rights of Indigenous Peoples. It also aims to lead country engagements by bringing Parties together to propose solutions for violations that Indigenous Peoples are facing, and to secure the implementation of the UN Declaration on the Rights of Indigenous Peoples. This body meets in Geneva every year.

- *Local Communities and Indigenous Peoples Platform*: The Platform has a seat on various UN Conventions, with the aim to represent people and their knowledge systems on a range of issues.

- *Indigenous Peoples Major Group on Sustainable Development (IPMG)*: The Major Group is a forum for coordination and planning. The Tebtebba Foundation and the International Indian Treaty Council act as the facilitators and co-convenors.

- *UN Voluntary Fund for Indigenous Peoples*: The UN Voluntary Fund offers financial support (grants) for Indigenous communities and organizations to participate in UN mechanisms and issues.

- *International Indigenous Forum on Biodiversity (IIFB)*: The Forum facilitates and supports the participation of Indigenous Peoples and local communities in the Convention on Biological Diversity (CBD) to ensure that their rights and contribution to nature are recognized and respected during the negotiation, adoption of the decisions of the CBD and its protocols, and its implementation.

30. The roles of these bodies and mechanisms are explained in depth through the online introductory course to Indigenous Peoples at the United Nations (produced by the United Nations Development Programme and Project Access Indigenous Partnerships).

31. Once these connections are formed, ILK holders should be able to choose how they share their knowledge. Governance sharing and intellectual property rights protection should be clearly acknowledged. In certain cases, ILK holders may not wish to share their knowledge, especially if it is sacred, sensitive or is perceived to put the community at risk of reprisals from associated institutions. Building trust and mutual understanding through participatory methods is an important step in addressing these potential challenges.

32. A migratory species' range may cover the area of multiple groups of Indigenous Peoples and local communities, either within or across national jurisdictions. In this case, ILK from multiple knowledge holders will need to be considered, and differences resolved by considering the processes, context and circumstances of each group (IUCN, 2022). This requires substantial investment of time, logistics, interpreters, preparation and participation (Tengö et al., 2014). However, such engagement will likely lead to more meaningful and reliable outcomes and may enhance the translation of monitoring results into management action (CITES, 2023).

33. Indigenous and local knowledge may complement or extend the information reported in scientific literature and increase the accuracy of the results and statistical modelling, therefore improving the science (CITES, 2023). A useful framework has been developed by IPBES, and adapted by Hill et al. (2020), to include ILK throughout the IPBES assessment process (available under https://www.sciencedirect.com/science/article/pii/S1877343519301447). This framework could serve for incorporating ILK more broadly into CMS processes.

## Attachment A: GLOSSARY

1. A **system of knowledge**, also known as knowledge type, refers to "a body of propositions that are adhered to, whether formally or informally, and are routinely used to claim truth" (Pascual et al., 2017). Definitions of the various systems of knowledge vary between sources. For the purpose of this paper, *conventional science*, *Indigenous and local knowledge*, *traditional ecological knowledge*, *local knowledge*, and *practitioners' knowledge* are defined in accordance with the definitions used by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Intergovernmental Panel on Climate Change (IPCC), and the Millennium Ecosystem Assessment.[4]

2. **Conventional science** is defined as "systematized knowledge that can be replicated and is validated through a process of academic peer review by an established community of recognized experts in formal research institutions" (Millennium Ecosystem Assessment, 2005). Conventional science employs methods of objective observation, evidence and/or experiment as benchmarks for testing hypothesis, induction, repetition, critical analysis, verification and testing (Science Council, 2015). Conventional science may also be referenced as formal science, traditional science or western science (IUCN, 2022).

3. In the environmental context, **Indigenous and local knowledge** (ILK) refers to "dynamic bodies of integrated, holistic, social and ecological knowledge, practices and beliefs pertaining to the relationship of living beings, including people, with one another and with their environments" (IPBES, 2022). Indigenous and local knowledge may also be referenced in the literature as *Traditional Knowledge*, *Traditional Ecological Knowledge*, or *Aboriginal Traditional Knowledge*. The distinguishing feature of ILK systems is that they are established, controlled and managed by Indigenous Peoples and local communities through formal and informal institutions that guide practice (Hill et al., 2020). Designated platforms for Indigenous Peoples and local communities and ILK are recommended to separate Indigenous Peoples from local communities to respect their differences and points of view.

4. **Traditional Ecological Knowledge** is defined as a "cumulative body of knowledge, practice and beliefs, evolving by adaptive processes (i.e. innovation and feed-back learning) and handed down through generations by cultural transmission" (Millennium Ecosystem Assessment, 2005). Traditional Ecological Knowledge may or may not be Indigenous, and Indigenous knowledge may or may not be traditional.

5. **Local knowledge** refers to place-based experiential knowledge; one definition describes it as knowledge which is "largely oral and practice-based in contrast to knowledge that is acquired by formal education or book-learning", noting that "local and traditional ecological knowledge is often relational, in that human qualities are attributed to aspects of the biophysical environment" (Millennium Ecosystem Assessment, 2005).

6. **Practitioners' knowledge** is defined as "pragmatic, practice-based knowledge that comes from the regular exercise of craft or professional work" (New et al., 2022).

7. For the purpose of this document, we refer to *Indigenous Peoples and local communities* and to *Indigenous and local knowledge* (*ILK*), acknowledging the differences between the two groups and using these terms as a placeholder to capture other terms, including traditional and Indigenous knowledge.

[4] The Millennium Assessments examined how changes in ecosystems affect human well-being, and provided scientific guidance for conserving and sustainably using these ecosystems. The assessments were produced from 2001-2005 following the request of the United Nations in 2000 and involved over 1,300 experts worldwide.

## Attachment B: REFERENCES


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