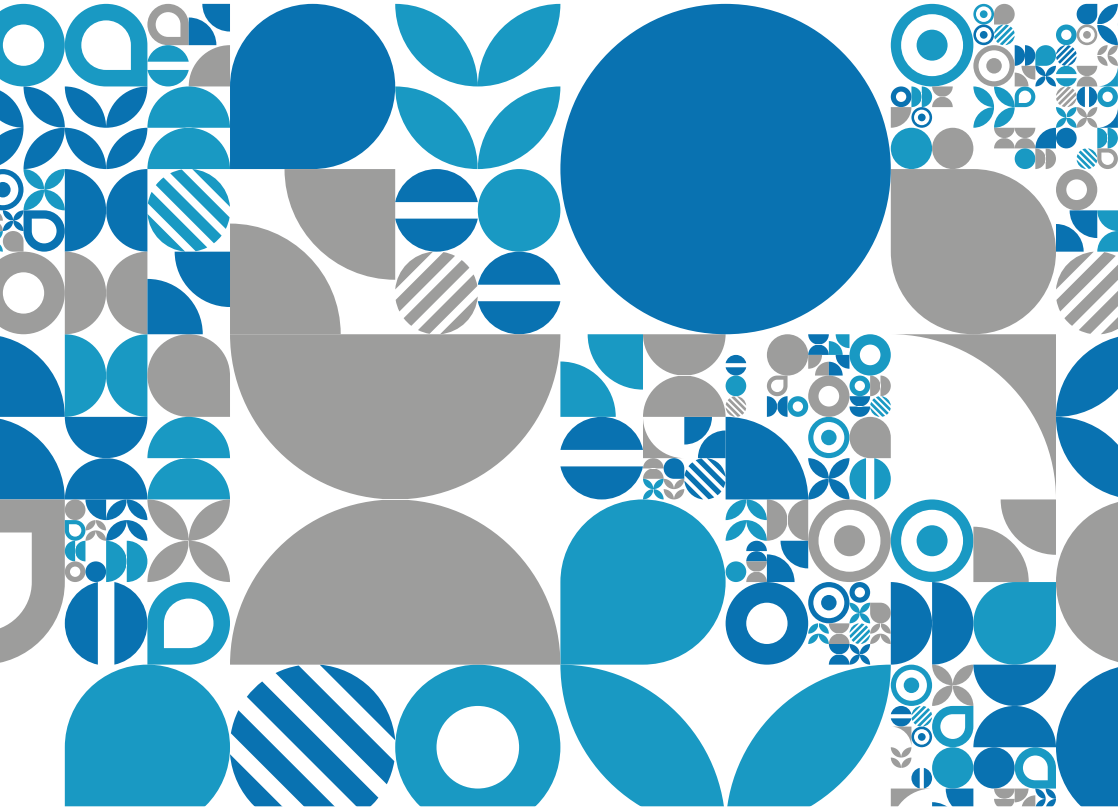
METHODS MANUAL

Documenting Traditional Knowledge of Aquatic Resources in North-East India



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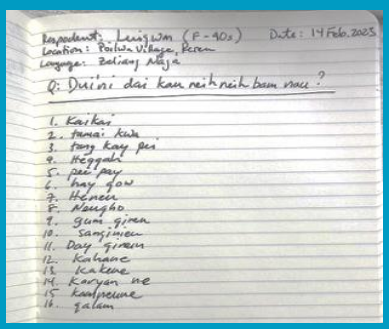
I. A QUICK CHECKLIST FOR DOCUMENTING TRADITIONAL KNOWLEDGE OF AQUATIC RESOURCES IN NE INDIA

1. **Planning Meetings:** Agree a plan with knowledge-holders, on what knowledge to collect, how to collect it and what to do with it. Follow FPIC process at all times. (See Annex 1, 2)

2. **What Aquatic resources are known?** Use local language to gather ***freelists*** from a wide sample of knowledge holders on the kinds of aquatic resources *known* in that community. *Option: Can include step 4 in same interview*

3. **Local classification**: With individuals or groups, sort the items freelisted into piles (**pilesorts**), to discover how items are similar or different from each other, and note the criteria used to group them. Note any new items that are mentioned. *Option: Can include step 4 in same interview.*

4. **Interview 1:** Interview a representative sample of people, on what they know about each of the items freelisted; on characteristics of morphology, habitat, behaviour, use, trends in size and abundance, etc. Ask for stories, poems, songs, or sayings, etc., where the item is mentioned. *Option: Invite school children to interview their elders and collect stories and other knowledge about AR, and the use of AR in the past. (See Annex5)*



5. **Specimen Identification**: Collect specimens of all items listed, and then ask individuals or groups to identify them by local names, and state criteria used to identify them. *Option 1: Can follow up with steps 3 or 4. Option 2: Send voucher specimens to institutions for scientific identification.*

6. **Spatial Resource Mapping:** With individuals or groups, map the area used by the community, naming landmarks and features of land use and land cover, indicating where (and when) resources can be found and are taken, and any areas that have rules for use/or not of AR. *Option 1: Can use this exercise as an icebreaker, prior to steps 2 and 3. Option 2: Map the same features 10 or 20 years ago for an historical perspective. Option 3: Post compiled data in public place and invite people to add to the data, or comment.*

7. **Temporal Resource Mapping:** With individuals or groups, create seasonal calendars and historical timeline to document variation in size, abundance or behaviour of AR, and patterns of human use, over time. *Option: post compiled data in public place and invite people to add to the data, or comment.*

8. **Practices**: Observe and participate in any activities involving AR; use audio and visual technologies to document these activities. *Option: Ask for demonstrations of activities if none are taking place at the time.*

9. **Interview 2:** Ask participants and others about the knowledge and skills used in these activities, and their explanations for why these take place when and where they do, and in the form they occur in. *Option: use recorded video or pictures as prompts for these interviews*

10. **Feedback:** With individuals or groups, feedback what has been found to corroborate findings, collect additional information, achieve consensus, and to discuss next steps.

11. **Archiving**: Develop means for presenting, storing and accessing documented traditional knowledge.

The sections below describe in greater detail these 11 steps, and offer examples taken from recent studies of the traditional knowledge of aquatic resources in Northeast India.

II. INTRODUCTION

This methods manual is designed for knowledge-holders, and their communities, who would like to *document* their *traditional knowledge of aquatic resources and their uses,* as well as those who are working with these communities to do so, such as local Biodiversity Management Committees (BMCs), NGOs and Universities. All of the methods are also applicable to *research aims* that may accompany knowledge documentation efforts, and so where relevant we mention and expand on these applications in shaded boxes. The annexes present greater detail on particular techniques, such as gaining consent, collecting specimens and tips for interviewing.

The manual is organised in 11 sections that expand on the steps outlined in the preface. Examples are drawn from a training course in TK documentation held in Nagaland in 2023, as well as published studies on fish and fishing in NE India. As TK documentation is now a global phenomenon, studies and guides from other parts of the world have also been consulted, many of which are included in Annex 6 on *Resources*. In the remainder of this introduction, we introduce key concepts and explore the characteristics of traditional knowledge systems, and then discuss the legal frameworks and ethical considerations that arise in TK documentation.

1. WHAT IS TRADITIONAL KNOWLEDGE?

i. Definitions:

A fairly straight-forward dictionary definition of *knowledge* is “acts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” (OLD 2023). What makes knowledge “traditional” is its older age and association with the past, and sometimes extinct cultural beliefs and practices, even though typically most traditional knowledge is living knowledge, relevant and used today. It is often contrasted with “modern” or “scientific” or “institutional” knowledge, though the differences are not as significant as might seem at first.

Over the years, many competing terms have been used to refer to a range of knowledge systems that are distinct from scientific knowledge, such as Indigenous knowledge (IK), Local knowledge (LK), Traditional ecological knowledge (TEK), to name but a few. Here we use traditional knowledge (TK) in its most broad sense, which encompasses all forms of non-scientific knowledge held by a particular group of people living in a particular place that has developed over time through observation, experience and even experimentation, which is used by people in all aspects of their lives. As discussed below, knowing and using aquatic resources covers many domains of knowledge, beyond their biological or ecological characteristics.

ii. Traditional knowledge is *cultural* (or a part of human culture) because it is *shared* knowledge, transmitted between generations. It is also cultural in the sense that the other aspects of a groups’ culture, such as shared worldview, values, beliefs, practices, norms and rules interact with, or are important contexts that affect the way knowledge is used. Thus, in NE India traditional knowledge needs to be considered in the context of pre-Christian religion in which it developed., and whose logic underpins its use. Attempts to validate traditional knowledge by scientists are often criticised because they extract knowledge from its cultural context, and assess it using a different set of values, thereby misunderstanding how and why it is used. “Scientific and indigenous knowledge each have their own culture-specific systems of logic. Ignoring science’s own cultural roots and assuming it can pass judgement over others hinders collaboration that could occur with indigenous knowledge systems,“ (UNESCO 2017:42).

The choice of *what* fish to catch or keep, for instance, is not just based on what species is most or least abundant, it may be based on taste preferences, the need for culturally valued dishes/recipes, religious beliefs about what is an edible fish, and rules on when, where and how to catch fish in a way considered moral or proper. For example, some fish may be considered too small or be carrying eggs (roe) or too bony or a totemic animal, so they will be returned or discarded. *One must understand the cultural context of knowledge and practices to better understand how and why aquatic resources are used in the way they are*.

iii. Knowledge comes in different forms, which are taught or learned in different ways. There is the knowledge conveyed by speech or text, which we call *verbal* or *declarative* knowledge. Formal teaching usually conveys this kind of knowledge, as do instructions, stories, songs, proverbs and other language forms. The Naga Chang have a proverb: *Meishi shishet, Ngaophok phokmai*, meaning 'loss in hunting, gain in fishing', which teaches that while hunting may not always be successful, fishing always yields a catch!

A second form is *behavioural* or *skill* knowledge, which is often learned through mimicry and practice. Baiting a hook, weaving a fish trap, throwing a net are all skills that require knowledge of how to coordinate the body in a certain way. If a knowledge-holder has difficulty telling you how to do something and has to demonstrate it, then you are witnessing behavioural knowledge.

A third form, called *performance* knowledge, is the ability to *manage* an activity such as fishing, which can be learned through stories of others, but is mostly gained through long experience. This is the "wisdom of age" that can be used to solve problems and deal with unexpected conditions as they arise, such as if the weather changes or a line or net is damaged, or fish are suddenly absent. This knowledge also includes the ability to coordinate and manage people, as in community fishing activities, and sort out any interpersonal issues. This wisdom helps to ensure some benefits are gained from efforts expended on the day, even if these are not what was planned.

All three forms of knowledge are used in any activity involving the use of aquatic resources. If you ask someone *how to fish using a fish trap*, you will likely receive a list of *tasks* or steps to follow. Each task requires different kinds of knowledge that take these different forms.

There are tasks starting with the collection and processing of bamboo and the weaving and construction of a basket trap; then there are the tasks of placing the trap in the river, which requires knowledge of the river, of the fish, of the trap itself, and how all these vary under seasonal and daily weather conditions; then there is the knowledge of harvesting, processing, and cooking caught fish, etc. *Observing and participating in these tasks, and questioning afterwards, is an excellent way to discover traditional knowledge in action, because knowledge is embedded in livelihood activities, and it may be easier for knowledge-holders to identify and discuss traditional knowledge in these contexts.*

Finally, there is an important distinction to be made between knowledge that is known and knowledge that is used. For instance, it may be known that a local snail can be used to make a medicine for cough, but no one knows how to make this medicine anymore, so the knowledge is now only *theoretical*. Similarly, many more aquatic resources may be known (in a verbal sense) than are actually found in a location and used by a group of people, because either the resource has disappeared (for whatever reason) or it is no longer valued and used, or knowledge of how to use it has disappeared. Whatever the case, there is an important story to be discovered about what has happened to this resource and knowledge about it. *The lesson here is that we should always first ask our knowledge-holders about the aquatic resources they know rather than use.*

iv. Traditional knowledge is organised in people's minds in *domains*, which are categories containing a number of elements or *items* that are organized according to rules or criteria that are culturally determined and may be culturally specific. 'Aquatic resources' is the relevant domain here, though there are subdomains and many related domains, such as the fishing practices described earlier. Table 1 lists the domains that might be relevant in documenting traditional knowledge of aquatic resources and their uses. *In other words, what do people know about aquatic resources and their use?*

Table 1. Domains of traditional knowledge associated with aquatic resources

• Kinds of aquatic resources
  • Basic anatomy and physiology
  • Taxonomic relationships to other AR
  • Fish lifecycles: spawning, birth, migration, death
  • Feeding and habitat preferences
  • Enemies and friends (ecological communities)
  • Changes/dynamics of AR populations
  • Where they come from (origin myths)
  • What they mean (symbolically)
  • Rules for use (taboos, prohibitions

• How to collect or catch AR:
  • Tasks: communicating, baiting, setting, casting, throwing, waiting, harvesting, transporting, cleaning, storing, distributing, reflecting
  • Where and when to catch, under varying ecological and climatic conditions
  • Hydrology and river/stream/pond/paddy characteristics
  • Tools: Traps, nets, spears, lines and hooks, bait, poisons, dams and weirs, etc.
  • How to manage fish, people and habitats
  • Rules for distribution/sharing

• Processing AR:
  • Preparing
  • Cooking, Cooking recipes
  • Marketing
  • Storage

• Managing fish
  • Hatcheries
  • Protecting spawning sites
  • Moving spawn/eggs
  • Feeding

• Managing environments
  • Controlling pollution, erosion, vegetation
  • Earth/River works: dams, canals, ponds

• Managing people
  • Belief systems
  • Norms and values
  • Rules in use, sanctions
  • Access: Outsiders
  • Hierarchies of control: validation of local rules

v. Traditional knowledge varies in many ways, between language groups and communities, but also within them. No one person knows everything about AR, and what is known by a group is distributed among many people; different groups of people share different

traditional knowledge. There may be differences because there are *specialists* that have expert knowledge and long experience because it's their occupation, or they may have a love of that activity and be very good at it, and these people will be known by the general populace. Men and women will also vary in which AR and practices they know and use. You can expect that older people know more than younger ones, but it's also true that children may know different kinds of AR better than their elders, and older school children may know less than their peers not in school. Social class or caste can also impact knowledge of AR, as can religious affiliation. Linguistically, one can also expect variation in the pronunciation of names, in the spelling, in slang names or contractions, plus there may be more than one legitimate name (synonyms) for any local AR. People also may speak more than one language and so have varying names and knowledge from those languages. Finally, there are many ways to do things, so expect variation in fishing and other livelihood practices with AR. *The lesson here is to expect and accept variation, and insure you speak to knowledge-holders from all sub-groups in a community to comprehensively document their traditional knowledge.*

vi. Knowledge is not static, it does change, though which parts and how does vary. Despite being "traditional" there are ways that even TK does change and evolve. Knowledge may change with the generations as environments, livelihoods, technologies, and cultures change, as elders die, and children take new paths in life. There are also changes due to introductions and local extinctions of AR, new ideas and knowledge borrowed from neighbours, books, social media and the internet, and innovations by creative and problem-solving persons. Adaptation to change through such innovations, building on or revitalising traditional knowledge, is a normal human process, and does not make knowledge any less traditional or less valuable. *Indeed, one of the main reasons for documenting traditional knowledge is as a resource for future adaptation.*

Founders of the *World Oral Literature Project*, George and Laura Appell, write eloquently of the reasons for preserving traditional knowledge and culture:

"If a people have access to their cultural traditions and are able to evaluate them positively, they have the resources to cope creatively with the social change and move into the future without apprehension. Otherwise, the threat of change can overwhelm, and apathy can set in. Thus, a people without a past, without a tradition, is like an amnesiac who cannot come to terms with the future until he has discovered who he is" (Appell 1978: 18).

vii. Traditional knowledge is taught and learned, or transmitted, in several ways. Elders may teach children and children may mimic adults, but equally important, children (and adults) may learn from each other. Learning can be casual and informal, usually while experiencing activities, or perhaps through story telling; or it can be formal, as in schools or religious rituals, such as coming of age rituals. Observation and participation in such activities is a way to learn and document traditional knowledge. The loss of opportunities for knowledge transmission, due to the death of elders, the extinction of experiences to learn, livelihood changes, or lack of interest, is responsible for the decline in traditional knowledge in communities. *Documenting traditional knowledge may help preserve knowledge, but doing so using ways to promote transmission will help to keep it a living tradition. Involving school children in documenting the knowledge of their elders is one way to do both.*

viii. Conventions for reporting traditional knowledge in documents and archives are important to clearly distinguish multiple knowledge systems. Local names, or any other verbal knowledge in local languages, must be identified as coming from a specific language, as in Table 2. Names or phrases not in English should always be *italicised*, including scientific names in Latin. English common names are in 'single quotes' or (parentheses), as are translations of names, which are always important to try and understand, as traditional knowledge may be embedded in the names of ARs and places where they are found.

Table 2. Conventions for writing ethnobiological names

Local name *or Local name*	***kahane***
(Language or abbrev.)	(Zeliang Naga)
'english common name or gloss' or (english gloss)	'snowtrout'
Scientific name (*Genera species* (plus author first time))	*Schizothorax richardsonii* Gray
FAMILY	CYPRINIDAE

Source: Based on Berlin 1992

2. LEGAL AND ETHICAL ASPECTS OF TK DOCUMENTATION

i. Legal frameworks

The initial stages of a documentation project must include a review of the relevant legal frameworks, which can occur at all scales, local to international. Legal issues surround both the *preservation* activities of documentation for the maintenance or viability of tradition knowledge, and *protection* activities that seek to control access to traditional knowledge and reduce vulnerability to unauthorized or inappropriate uses (WIPO 2017: 11).

The first step is getting formal permission from the community or groups whose knowledge will be documented and preserved. There may be local processes already in place to do so (tribal council, village council, etc). The initiative for a documentation project may not come from the leadership, and so it's important that local procedures or customs are followed to gain approval and, consequently, support. This is likely to increase the participation of residents, though it's quite usual that not everyone will want to participate at first, or ever, and some may actively oppose it. The internal consultation among knowledge-holders themselves is important to secure agreement as to how the project will proceed, who will be involved, what information will be documented and how, and what will happen to it (see Step 1 below).

Coordinating documentation efforts with other local or national institutional projects, such as People's Biodiversity Registers (PBR), and other groups, such as Biodiversity Management Committees (BMC), Village Development groups, Church Committees, Schools, etc., with an obvious interest is also necessary at this stage, to gain participants, enhance the potential impact, and prevent the duplication of efforts.

These decisions should be written up as an *agreement* that might be signed by project leaders at least, if not all participants, if this is appropriate. In some cases, video agreements have been used as an alternative. A simple verbal agreement, and the posting of the documentation plan in public with an invitation to comment, may serve a similar purpose.

While communities do not need permission to document their own knowledge, involving outsiders from universities, government or non-governmental organisations, and the private sector, may

require that these participants are vetted locally and have proper permits to work in the area, especially if they are from overseas. If the community wants to make their documented knowledge public, in books or an online archive, then there may be national regulations designed to protect this information from unauthorized or inappropriate use by third parties. In India, the *Traditional Knowledge Digital Library* is an example of a register designed to compile and thus protect from biopiracy and patent violations knowledge of medicinal plants and their formulations found in ancient texts of Indian systems of medicine (TKDL).

The Nagoya Protocol for Access and Benefit Sharing of Genetic Resources, a 2014 amendment to the Convention on Biological Diversity of 1993, provides a legal framework for countries to register research and development of genetic resources and the associated traditional knowledge that informs their use, such as plants and animals used in medicines, and aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way (CBD- ABS; Laird & Wynberg 2012). In India, the *National Biodiversity Authority* implements the Nagoya Protocol (NBA). Online ABS applications are open to any individual or institution wanting to access biological resources and/or associated knowledge occurring in India for research, bio-survey and bio-utilization, and for commercial utilization as per the Biological Diversity Act of 2002.

In Step 11 below, we discuss ways to preserve and protect traditional knowledge that has been documented by knowledge-holders and their communities.

ii. Ethics and ethical issues are an essential consideration in documenting traditional knowledge, even when knowledge-holders themselves are initiating and leading the project. For outsiders working with communities, it's even more important. Borrowing from research in ethnobiology (and before that Hippocrates), that has been developing a code of ethics since 1988 precisely for the study and documentation of local and indigenous knowledge systems (*See Annex 1 ISE Code of Ethics*), we should think of the underlying principle and goal of ethics in this context as "do no harm", and "mindfulness" as the way to achieve this. Simple as this may sound, it takes some forethought and imagination to think of all the ways that a project might cause harm and how to prevent it, not just in the present and through the processes of documentation, but also far into the future. Even with

a well-thought-out plan, the documentation experience will throw up numerous ethical questions that were not imagined, so one also has to be ready to adapt procedures to changing circumstances.

The main mechanism to ensure an ethical approach, is a consent process known as FPIC, or *free, prior, and informed consent*. FPIC needs to begin at the very start of the conceptualisation of a documentation project *before* agreements are written up and signed. It might involve the collection and dissemination of relevant information, and discussions with a wide range of people, some of whom may have participated in, or studied, similar projects elsewhere and can share experiences. Even after consent is freely given via a written agreement, it should be sought again with each interview, with each focus group and every community meeting, and there must be no pressure applied to participate, that is to share knowledge, if someone does not want to *(See Annex 2).*

Traditional knowledge may be shared, but it is usually held by individual persons, and so some of it is personal and unique, and may even be considered private and "theirs". Why should an expert fisher share their knowledge of fish traps or piscicides? Or the tricks they have learned from generations of women to propagate fish in ponds or rice paddy? Knowledge may give people and their families a competitive advantage in their livelihood activities, so they may be less willing to contribute to a cause that essentially publicises their hard-won secrets. Many lessons are learned because of mistakes made in the past, but these stories might also be embarrassing for the protagonists and their descendants. Most people are humble and think they do not know anything of value to researchers. Others may see the data collection exercise as a "test" of their knowledge, and therefore disrespectful. Of course, people are also busy with work and other responsibilities and may feel that they have no time or energy for such work; others may expect compensation for their participation. All these cases, then, present reasonable explanations for knowledge-holders not participating and must be respected as part of ethical documentation work.

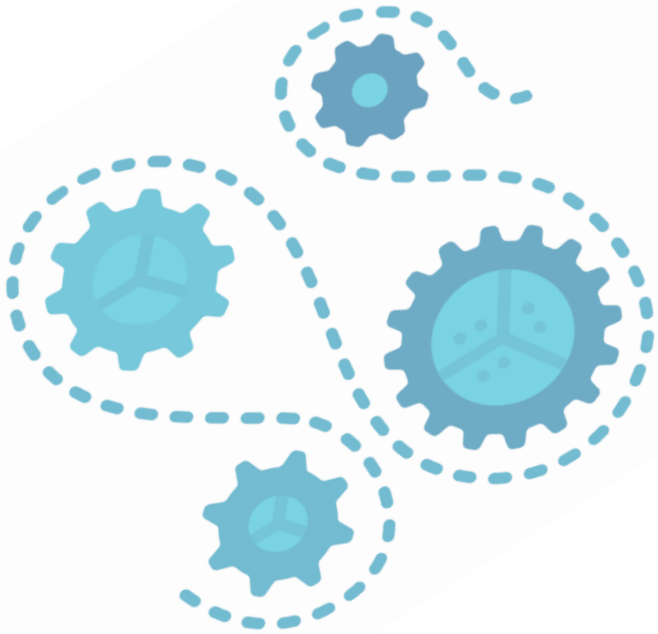
These examples also beg the question of how to encourage participation without infringing on rights not to participate? Encouraging knowledge-holders to ask questions and having thoughtful answers to the above barriers (during initial meetings and the FPIC process), is essential to encourage participation. It is

often the case that some people will want to participate from the start, while others will join at a later time once the project is underway, and word gets around about what is required and the good experiences of others. Periodic reporting on the results of the work, either through oral reports in public meetings, or posters/pictures in public areas, may also generate new interest. Involving school children in learning traditional knowledge from their elders may also encourage parents and grandparents to participate. Be patient and give time for people to decide to join the project.

Ethical issues will also arise in considering storage and dissemination of documented knowledge. Part of the FPIC and planning phase should address these issues, and time given for knowledge holders to decide how they want to proceed. Knowledge-holders should always have the right to change their decisions too. To facilitate this process, the documenters should have options for communities to consider, which might include reference to the following factors:

- Support for existing/new oral transmission means
- Language(s) to be used in documentation
- Location of documents/video/audio/material culture
- Hard copy versus digital storage
- Short-term versus long term storage
- Gender preferences (content and access)
- Private versus public access, per domain

These are discussed in greater detail in Step 11 below. Annex 1 presents the ISE Code of Ethics as a guideline for researchers and documenters, while Annex 2 describes the FPIC process.



- Planning Meetings
- What Aquatic resources are known?
- Local classification
- Interview 1
- Specimen Identification
- Spatial Resource Mapping
- Temporal Resource Mapping
- Practices
- Interview 2
- Feedback
- Archiving

III. STEPS FOR THE DOCUMENTATION OF TRADITIONAL KNOWLEDGE

1. PLANNING MEETINGS:

Agree a plan with knowledge holders, on what knowledge to collect, how to collect it and what to do with it. Follow FPIC process at all times (See Annexes 1, 2).

i. How do you organise a meeting?

a. Start this process as soon as you can, with someone from the group to introduce you, if you are an outsider.
b. Arrange a meeting with knowledge holders or members of the group or community in a large meeting hall/school/church. Evening is best or Sunday.
c. Bring appropriate refreshments. Need a good facilitator(s). Need a record of the meeting; appoint a secretary to take notes or audio record/video.
d. Invite a broad representation from all sub groups (and not just leaders), such as: Men and Women; Elders, Adults, Teens, Children; all occupations, such as school teachers, govt officials, religious leaders,

business owners, migrant workers, students, locally recognised experts (ex. fishing, aquaculture).

ii. What happens in the meeting?

a. Present basic idea, (can use PowerPoint or posters to illustrate); show or give examples from similar documentation projects (show books, maps, film, or websites).
b. Ask for questions and have a general discussion about:

    - Do we want to document traditional knowledge and use (of aquatic resources, for example?) Why?
    - Is there anything in particular that should be documented? Rare or endangered knowledge or practices? Key informants?

c. Break into smaller interest groups (ex. men, women, students, leaders) to have more intimate discussions about:

    - What could be documented? What not?
    - How to do this? By whom? Restrictions or rules.
    - What would we do with the information collected? Access?

d. Break out groups report back; notes taken and discussion.
e. In line with FPIC; explain ramifications of documentation (storage; for use by community and outsiders?); rights to control IP.
f. Write up agreement document that summarises discussions and decisions and circulate for corrections and comments.
g. Might need more than one or two meetings.
h. Invite volunteers who would like to participate as documenters, interviewees, or other positions.

2. WHAT AQUATIC RESOURCES ARE KNOWN?

Use local language to gather ***freelists*** from a wide sample of knowledge holders on the kinds of aquatic resources *known* in that community.
Option: Can include step 4. in same interview

i. What is Freelisting?

a. This is a technique used in the course of an interview with an individual to elicit the *items* of a domain, such as 'aquatic resources'.
b. It is used to check whether the domain is locally meaningful, which items are included and which of the items is most salient.
c. Freelists can be analysed to compare informants' perceptions of what items are important, determine a consensus of what the domain consists of, and critically, identify potential experts (Puri 2010a).

ii. When do we use it?

a. Usually at the start of a study, after you have gotten to know someone.
b. At certain times of the year certain domains are going to be more relevant than others. For instance, 'fish' may be on people's minds during the dry season, and their answers may be conditioned by recent events such as catching a particular fish. It may be critical to repeat the exercise at different times of the year to see if the freelist changes. This is also the reason that the exercise should be done with one individual at a time.

iii. How do we collect a freelist?

a. You first need to determine what the domain is and whether it is a recognized and important domain for the people you are working with. Collecting wordlists in order to study the local language is a good starting point.
b. You need to check your domain with several people to make sure it makes sense. The domain of 'aquatic resources' may not be very salient to desert dwelling Kalahari San, and 'cacti' may be irrelevant to Northeast Indian rice farmers.
c. You need to pick a sample of informants that will represent all the various subgroups in the study community.
d. Arrange an interview, come prepared with notebook, pen, tape-recorder (or your phone). A translator or local researcher that has been well trained can also be of assistance. Ask for consent to record and use their information, you may have to explain the purpose of the project or study; they don't have to participate (see Annex 1).

e. Ask the same question to all informants: Please tell me (or write down) as many aquatic resources as you can think of. (alt.: Please tell me all the aquatic resources you know). Learn how to ask the freelist question in local language, practice on several people to make sure it is understood. This question could give you a very long list for some domains. But this is the way to find out all the items, especially those no longer used or found in the area.

f. Write down or record answers in the order they are given in the language to be investigated, exactly as they are spoken (this is where the translator may help). You should number the answers (1, 2, 3). Tape recordings allow you to check your transcriptions. Do not "correct" the list! You must do that with informants in a structured way.

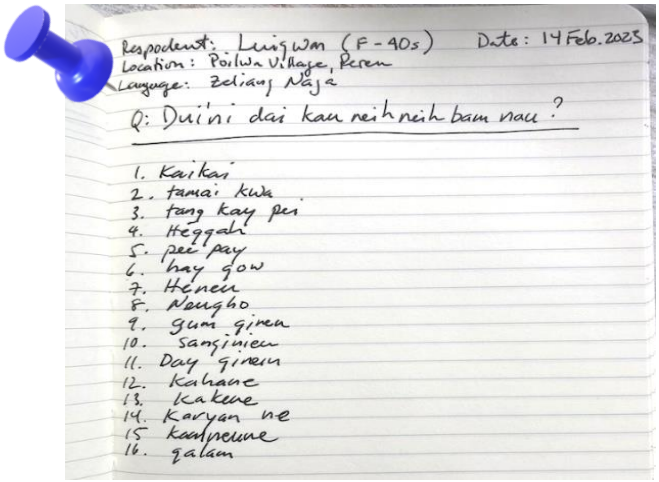


Figure 1: Freelist data sheet. Question is "please tell me all the aquatic resources you know." Note biographical data included.

g. If you are after an exhaustive list, then you may have to wait for respondents to remember more items. Be patient. If you go over the list with them slowly that may trigger remembrance of other items.

h. Option 1: if the list is short or the respondent is willing to continue (tea break may be in order), then move to step d, and for each item listed, ask about its characteristics, and any stories, proverbs or other references to the item in language or culture. (See Step 4.)

iv. How do we analyse the freelists?

a. Compile all the freelists in an excel spreadsheet, one column for each list (Figure 2). You can see who has listed most, who has listed least, what items are listed frequently, and how the items vary in the order they were listed (known as *rank*). However, you'll note varying spellings, singular and

plural forms, more general names (eg., ‘fish’) and more specific (‘blue king fish’), and perhaps items in more than one language.

b. Create a new copy, where you can make edits to standardize spellings (Figure 3). Save the original data (Figure 1) in a safe place.

KP	LU	NK	RL	HL
Tangkietpe	Kakai	Tangnaikwa	Kahane	Kahane
Tangnwa	Tangneikwa	Kakai	Kahang	takene
Hekareu	Tangkietpe	Heka	Kakiene	Kolino
Ketone	Hega	Kakiene	Karietne	kapane
Hega	Pipe	Kahang	Kapane	Kapane
Galam	Hegau	kahane	Kakeune	Tsurino
Ganone/Ganowa	Heneu	kaneune	Kaneune	Kaneune
Gatsuni	Neugho	Karietne	Hegau	Kahang
Gatsang	Gumgineu	Kakeune	Gaukwa	Kakeune
Hedeuga	Sangineu	kapane	Gautang	Galam
Pingbe	Diagineu	Hega	Gauroine	Galiane
Kaneune	Kahane	Hekareu	Gauza	Radiuka
Kapane	Kakiene	Hegau	Heugumgau	Gatsang
karietne	karietne	pingbe	Hega	Tangkietpe

Figure 2: Excel sheet with freelist data from 5 respondents

c. Ask a small group of elders (men and women, or known experts, and a local schoolteacher) to go through the master list to confirm that these items are indeed members of the domain, and to help standardise spellings (Figure 3). They will also be able to identify synonyms and names in different languages and translate the names where they have meanings (Figure 6). This master list is then the basis for the following documentation steps.

KP	LU	NK	RL	HL
Tongkepe	Kaikai	Tangnaikwa	Kahane	Kahani
Tangnau	Tamai kwa	Kakai	Kahang	Takeni
Hekareu	Tang kay pei	Heka	Kakieni	Kolino
Ketone	Heggah	Kakeni	Karietne	Kapami
Hega	Pee pay	Kahang	Kapanne	Kapani
Gabam	Hay gow	Keheni	Kakeune	Tsurino
Ganone/Ganowa	Heneu	Kanuini	Kaningne	Kaningray
Gatsuni	Neugho	Kareini	Hegau	Kahang
Gatsang	Gumgineu	Kakeune	Gaukwa	Kakuini
Hedeuga	Sangineiu	Kapanne	Gaudang	Galam
Pingbe	Day gineu	Hega	Gauroine	Galiani
Kaneune	Kahane	Hekareu	Gauza	Radiuka
Kapani	Kakene	Hegau	Heugumgau	Gatsang
Karini	Karyan ne	Pinkbe	Hega	Takepi
Kajine	Kamneune	Tangkepei	Galam	Tapsekau
Kahane	Galam	Tangdoinei	Galang	Keitoni
Kahang		Tangnwa	Hedeuga	Pingui
Kekeune			Ganwapne	Tampani
Kakene			Tangnainkwa	Karei
Gauranei			Tangkiatpe	Khokhe
Gaukua			Pingbe	Gurouni
Gauza			Tangmwa	Tanakua
Kakai			Chakwap	Nharegi
Tanengkua			Heneu	
Zanengkua			Tangwane	
pipei-hebungbei			Heneuuka	
neutonei			Duipwenge	
tamrapei			Herarui neu	
tambani			Heurem	
hetzokop			Reuiregwang	
duikobei			Duipa	

Figure 3: Modified freelists, with standardised spelling agreed by Focus group of local experts

Research Note: Freelists can be used as a proxy for "knowledge"; where longer freelists may indicate more knowledge. Choose a sample of respondents strategically to allow you to test hypotheses, such as men and women differ in their 'aquatic resources' domain, or old and young differ, or urban and rural differ, etc. Make sure you get the relevant biographical details in order to be able to analyze the data. (Name, age, birth-place, sex, language group, occupation, years at school, etc). Two variables can be measured for each item: its *frequency* (number of times mentioned divided by the total number of respondents) and its *average rank* (the average place in the list (1st, 2nd, 3rd) only for those respondents that mentioned it). You can plot *average rank* (y axis) by *frequency* (x axis) and see which items are most salient (lower right) and which are less so (upper left). Single mentions are worth exploring: they may not be members of the domain, or listed in a different language, extinct or rare. (See Puri 2010a.)

3. LOCAL CLASSIFICATION

With individuals or groups, sort the items freelisted into piles (pilesorts), to discover how items are similar or different from each other, and note the criteria used to group them. Note any new items that are mentioned.

Option: Can include step 4 in same interview.

i. What are Pilesorts?

a. This exercise is for large sets of items, collected in freelists, when you want to discover how a domain is structured and by what criteria.
b. This is a way to reveal the local classification system for the domain being documented, which is, in itself, a form of traditional knowledge that needs to be recorded.
c. Embedded in the classification are the criteria that are used to differentiate the folk taxa, which may be a window into local beliefs, values, and knowledge of morphology, habitat, use and techniques for capture.
d. Certain taxa may be ambiguous with regard to their classification, and these may be culturally marked and prohibited or venerated (e.g., bats are often not birds and not mice either, and their strangeness means they have been given significant symbolic power).
e. The exercise may also generate other items not listed, and you might also find local experts through this exercise.

ii. How do we do Pilesorts?

a. In interviews with one or more respondents. Collect biographical data of the respondents. Useful to have men and women, and old and young, in separate groups to compare.
b. Put names of items onto scraps of paper or ‘slips’; or paste pictures or drawings onto stiff paper. Can create a code for each item, and label the front of the slip or card with the code.

c. Ask respondents: *Please can you make piles of similar items?* Careful how you translate “similar” and ask this question, always test your question with several respondents to make sure it is understood as you’d like it to be. You may have a pile of one (Figures 4 and 5).

Figure 4: A group sorting slips for a pilesort.

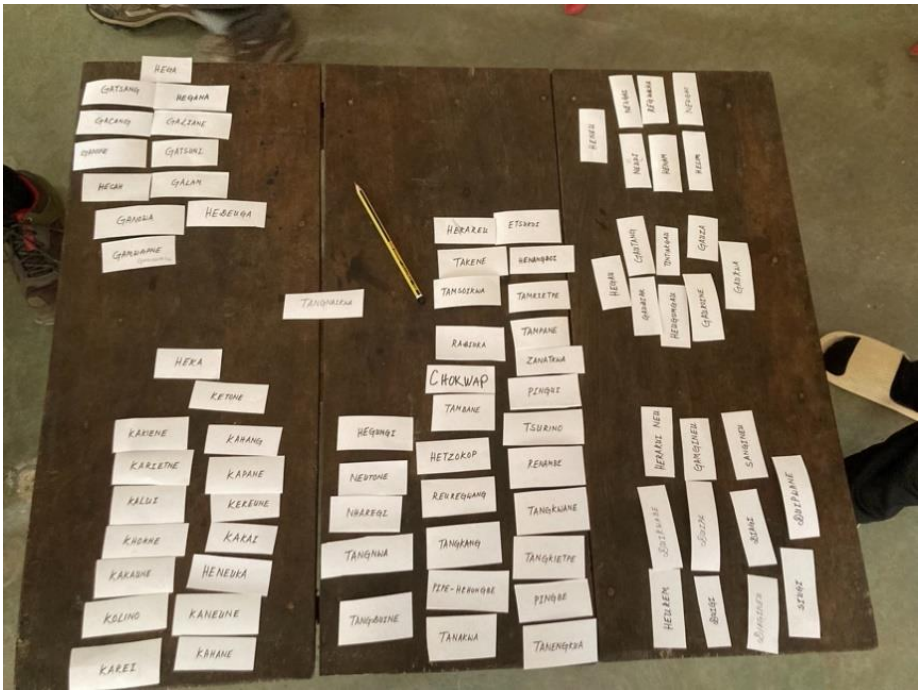


Figure 5: Results of a pilesort exercise with 81 folk taxa collected in freelists. There are 6 main piles and one item not sorted (tangnaikwa)

d. Each pile can be thought of as an inclusive category. Record the items in each pile, (use numbers), and ask if the pile (category) has a name, and why these items are included in it. Ask about the meaning of category labels. (Example: Hega, top left in Figure 5: he 'living creatures?' + ga 'crabs') (see Figure 6). For each pile, record the criteria used to group items. You can also ask if there are other items not listed that should be included.

He = 'living thing' (?)
Ka = 'fish'
Ga = 'crabs'
Gau = 'frogs'
Neu = 'snakes'
-Gi = 'plant'
Kwa = 'snails' (lit. 'shell')
Tam = 'insects'
Tzo = 'insects'
Tang = 'worm' (?)

Figure 6: List of lexical affixes in Zeliang Naga language that indicate more inclusive lifeform categories in the names of aquatic resources.

e. You may use unconstrained or constrained pilesorts. Unconstrained means you give no instructions as to what criteria to use. Constrained means you might ask informants to sort by some criteria (use, morphology, habitat, technique for harvesting, etc). For the latter, the question to ask would be: Please sort these items into piles according to “how they are used” or “what they look like” or “where they are found” or “how they are caught”.
f. A successive pilesort is when you ask respondents to break down their first piles into smaller ones to see if there are any sub-categories; or you can ask them to combine piles into larger ones, if this makes sense to them. Presumably smaller or bigger piles will have a name (but not always), and again you can ask about the criteria for these categories.
g. Do the exercise with children and adults and encourage the children to ask questions; record adult explanations for why items are similar or different from each other. You can ask too, about items or piles: “How many kinds of X are there?” or “Is X a kind of Y?” or “How is X different from Y?” Record any stories that emerge.
h. For all kinds of pilesorts, you simply record the items in each pile; the name of the pile (if there is one), and the criteria for grouping them together. You will be analysing how many times each item is grouped together with every other item, as well as variation in criteria given for the categories.

iii. How do we analyse pilesort data?

a. Create a table that shows how often any two items are grouped together (this may vary from person to person or group to group).

	a. Kahane	b. Kahang	c. Hekareu	d. Tanakwa	e. Tangnaikwa
a. Kahane	-	5/5	1/5	0/5	0/5
b. Kahang		-	1/5	0/5	0/5
c. Hekareu			-	4/5	0/5
d. Tanakwa				-	1/5
e. Tangnaikwa					-

Figure 7. Similarity table for 5 aquatic resources, sorted once by 5 people. The ratio is the number of piles where both items were together, out of the total number of pilesorts (5 in this case).

b. Some items will always be grouped together (meaning they are very similar), others may be harder to classify for respondents (see tangnaikwa in Figures 5 and 7).
c. Create a venn diagram or tree diagram to show the relationships between items (Figure 8 and Figure 9). If you have variation in respondents' pilesorts, you will need more than one diagram (as in Figure 8). Can also include characteristics of each branch (or subcategory) on the figure itself, or in an accompanying table.
d. Hints: Once you have completed a pilesort exercise, photograph the results for records, and then transfer to poster-sized paper in public space for use in interviews or groups discussions.

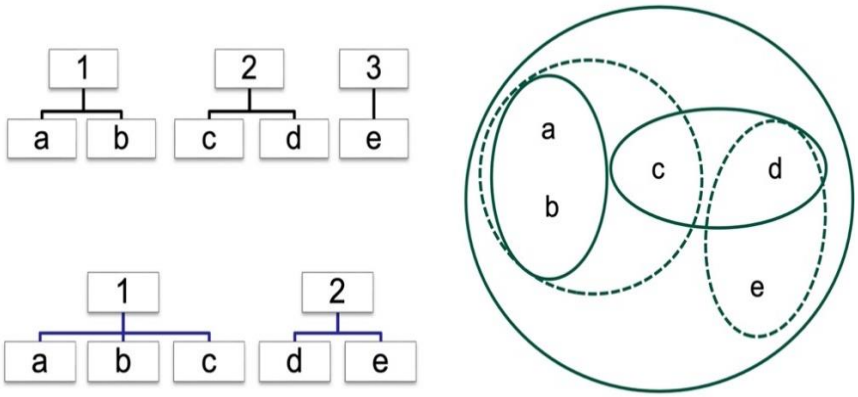


Figure 8: Tree and Venn diagrams showing two different pilesorts for 5 items in Figure 7. Solid line ovals show Pilesort 1 (top left tree diagram), dotted line ovals show piles sort 2 (bottom left tree diagram)

.

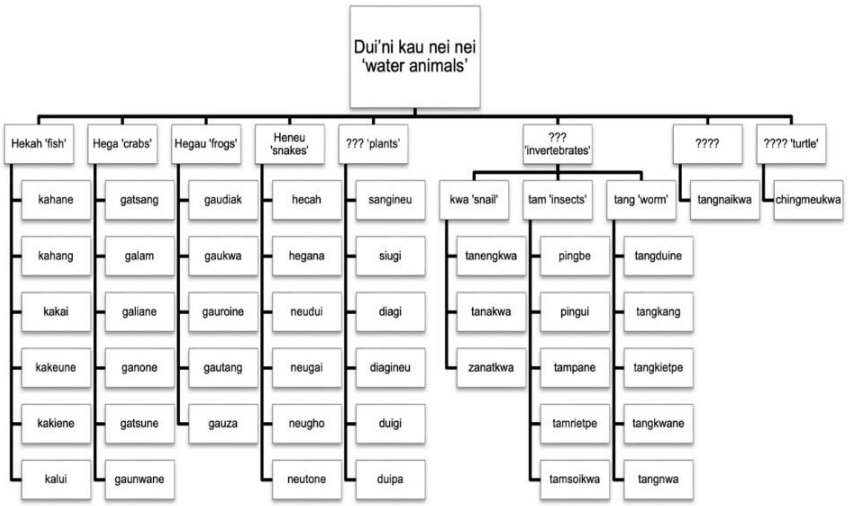


Figure 9. Tree diagram of pilesort in Figure 5, partial. Note categories labelled with unknown or no name.

Research Note: Use software package (e.g., SPSS, R, ANTHROPAC) to compare respondents' pilesorts, and create cluster diagrams to show the relationships of items, which can be thought of as a representation of the folk classification of the domain.

4. INTERVIEW 1

Interview a representative sample of people, individually or in focus groups, on what they know about each of the items listed; on characteristics of morphology, habitat, behaviour, use, trends in size and abundance, etc. Ask for stories, poems, songs, or sayings, etc., where the item is mentioned. (See Annex 5 for Interview tips).

Option: Invite school children to interview their elders and collect stories and other knowledge about AR, and the use of AR in the past.

i. What is an interview?

a. There are several types of interviews that can be used to collect information from knowledge holders, from casual conversation to structured questionnaires. The type used depends on the context and the goals of the documentation.

Interview types

1. Informal interview
    a. casual conversation, chatting
    b. total lack of structured control
    c. grand tour question: ‘’get people onto a topic and get out of the way“
2. Unstructured interview
    a. Clear plan but minimum control
3. Semi-structured interview
    a. Use a script, interview guide, or list of topics, but open-ended
4. Structured interview
    a. People respond to a nearly identical set of stimuli
    b. Questionnaire (online)
    c. Freelist, pilesort, rating, ranking, etc.

b. Researchers may prefer impersonal structured questionnaires to standardise stimuli across all respondents (this reduces bias introduced by the interviewer). However, in a knowledge documentation project this is less important, and one can adapt the style to different situations and different respondents.

c. In this Methods Manual many of the interviews are structured – freelists, pilesorts – but are flexible in how they are conducted. For these interviews, which appear to be fairly uniform, a semi-structured approach works well; it would be ideal to have a spreadsheet of information about all aquatic resources from each knowledge holder, but realistically, the order in which information is provided and the time required will vary as need be.

ii. How to do it?

a. Make sure to include local research assistants, and children, and to record the interviews, asking for consent beforehand.
b. There are several ways proceed here. Show a slip/picture or mention an AR from the master freelist, and ask very generally, “what can you tell me about X?” Record their answer, and then follow up with additional questions to cover the topics listed. This may be a good way to proceed with individual elders. Or just start with specific questions below, which works well with a focus group where you can facilitate an inclusive discussion.
c. Using the slips produced for Step 3, go through each item with your knowledge holders, asking for information on (and recording or filling in a data collection form; see Figure 10 below):

    1. How does it look or appear? Are there any notable characteristics of its appearance? Does it change its appearance over time (seasonal, annual, life time)?
    2. Where does it live? Are there specific habitat requirements it needs (prompts: soil, water flow, shade, nutrients). Does it migrate, or change location during the year?
    3. Do you know about its life cycle? (prompts: birth, growth, migration, mating, spawning, death).
    4. Is it abundant or rare? What is the trend over your lifetime?
    5. Do you know what it eats? When and where?
    6. Does it have a use for people? (prompts: food, medicine, material, ornament, commerce, recreation, ritual, other?) Other uses not for people? (food for other ARs?).
    7. How do you collect/harvest/catch it?? What steps/tasks are needed? Describe or demonstrate the technique? (Use photos or video to capture this knowledge.) What tools or other materials (bait) are needed? Who tends to use this (everyone, men, women, specialists)?
    8. What rules/ practices must be followed to collect and use this item? Are there any religious rituals required? Were they any prior to Christianity? What happens if someone does not follow the rules? Actual examples?
    9. Are there are any sayings (proverbs, aphorisms), songs, prayers or stories that mention/include the item?

d. Considering you might have 50 or more items to go through, this can take some time, but it does produce a significant amount of information and TK, so plan for it, make sure your respondents understand this, and spread over several sessions.

e. Transfer data to an Excel spreadsheet, or transcribe recordings and fill in excel spreadsheet, including biographical details of respondents. Store in a safe place all original data collection sheets or audio and visual recordings (make back-up copies as soon as possible).

Interview 1										
Date	Data recorder									
Location	Informant:		Age:		Gender:		Ethnicity:		Language:	
Aquatic resource (ID no.)	Appearance	Habitat	Lifecycle	Abundance (Trend?)	Food preferences	Human Uses	Capture techniques	Rules in use (sanctions?)	Beliefs (pre-Christian)	Oral literature
1										
2										
3										

Figure 10. Data collection form for Interview on characteristics of known aquatic resources.

5. SPECIMEN IDENTIFICATION

Collect specimens of all items listed, and then ask individuals or groups to identify them by local names, and state criteria used to identify them.

Option 1: Can follow up with steps 3 or 4.

Option 2: Send voucher specimens to institutions for scientific identification.

This step can be a stand-alone exercise or can be interspersed throughout a documentation project as and when it is relevant and possible.

i. How do you do a specimen identification exercise?

a. You can ask community members to collect samples of all the items on the master freelist or alert you when they have obtained them. These can be stored in jars, or if plants, dried and pressed (Annex 3, 4). It's possible to use these specimens to develop a local museum or add to a library or visitor centre.

Figure 11. A fisherman's catch, which can be stored in containers for use in an identification exercise

b. You should also build up a collection of photographs, from field guides and other publications, to be used for the same purpose, as some items will be difficult or impossible to collect in the field (out of season, or locally extinct).

c. Set up an identification task in a meeting hall, or school, placing the items on tables, you can label them with numbers (Figure 12).

Figure 12. A specimen identification task for fruits and vegetables. Note that the respondents are filling out their own data sheets, it may be necessary for you to do this for knowledge holders.

d. Take individuals through the collection, one by one, asking them for the name(s) of each item, and which language it is from. You may ask them how they know what it is (identification criteria), and ask any other TK documentation questions as listed in step d. Don't forget to collect biographical data from the respondents, (Figure 13).

Specimen ID Task					
Date	Data recorder				
Location	Informant:	Age:	Gender:	Ethnicity:	Language:
Specimen No.	Local Name 1 (Lang)	Local Name 2 (Lang)	ID Criteria	Other questions:	Notes

Figure 13. Specimen Identification data collection sheet, example.

e. Leave enough space on your data collection sheet for long answers (try using columns without rows – see Figure 13); or record the interview. Be aware that in some cultures it may be taboo to speak the names of certain taxa (totemic, or ancestor spirit). Test to see how many can be done before people get tired or lose interest.
f. Invite scientific experts to identify specimens, either from collections or photographs. It may be possible to use DNA fingerprinting to identify specimens, but check with analytic labs for the proper way to collect samples. Scientific identification opens up the possibilities to find out more about these taxa, compare your TK with that from other locations (local and global), and to contribute to other efforts to document and share information. However, the knowledge-holders may

not want to share their TK in public databases, so this step needs discussion and consent.

ii. How do you analyse specimen ID data?

a. Create a spreadsheet with the specimen ID numbers in the columns and the respondents in the rows. Input their answers (Figure 14). You can simply go down each column to see the variation in answers and the degree of agreement (or consensus). It can be difficult to determine the "correct" answer, if there is a slight or no majority.
b. Even if you gather a focus group of experts together to decide who is right, you may have to accept that some specimens have more than one name, and also the possibility that knowledge has been lost (or never was) about that item. Rare taxa, and new introductions, may not have local names.

Respondent	Specimen 1	2	3	4
JM	Acer sp	Hiedra	abedul	holly
KH	ahorn	ivy	birke	holly
NL	maple (sugar)	creeping ivy	white birch	holly
LL	norway maple	ivy	birch	holly
JS	sycamore	ivy	silver birch	holly
CA	maple	ivy	birch	holly
IP	not known	not known	eucalyptus	holly
NE	sycamore	ivy	silver birch	holly
IK	not known	ivy	beech	holly
SD	sycamore	ivy	silver birch	holly
IM	samara	ivy	silver birch	holly

Figure 14. Data table for specimen identification of four British plants by students from a variety of countries and languages. Specimen 1 is sycamore for UK students, and Norway maple for USA students. Note in specimen 2, generic (birch) and specific names (silver birch) are also technically correct, while birke is also right but in German.

Research Note: The data derived from this exercise can also be used to test hypotheses about variation and change in traditional knowledge. You can develop a scoring method to see how many items are known by each respondent, but this requires determining the "correct" answer, which is not so straight forward as even experts may differ in identifying specimens, especially if they are rare or from photographs. Once determined, scores of knowledge holders can be correlated to age, sex, occupation, education and other factors. One can also examine which plants, and which kinds of plants, are less well known to informants. You can also examine the patterns of agreement among respondents without needing to know the correct answers; statistical software can be used to create similarity tables and from them tree diagrams or venn diagrams to graphically display the variation in responses. This exercise can also identify experts that you might want to interview at length at a later date or hire as field research assistants.

6. SPATIAL RESOURCE MAPPING

With individuals or groups, map the area used by the community, naming landmarks and features of land use and land cover, indicating where (and when) resources can be found and are taken, and any areas that have rules for use/or not of AR.

Option 1: Can use this exercise as an icebreaker, prior to steps 2 and 3.

Option 2: Map the same features 10 or 20 years ago for an historical perspective.

Option 3: post compiled maps in public place and invite people to add to the maps, or comment.

Also referred to as *community mapping* or *participatory mapping*, this technique is described here with specific reference to the biogeography, management, and conservation of aquatic resources.

i. How do you do a mapping exercise?

a. In a community meeting, community members are divided into groups (according to age, ethnicity and gender) who, under the guidance of a facilitator, are encouraged to illustrate their aquatic resources on pre-drawn base maps.
b. These base maps, as far as possible, should show major rivers, roads, village locations, and mountain ridges, though they may be limited by the unavailability of general geographic information.
c. The exercise may help to identify experts, and also serve as a means for community members to exchange knowledge and teach younger members.
d. It may be possible to arrange for this activity earlier in the documentation process (after Step 1), and so provide additional taxa for the master list of aquatic resources, and also additional information on folk classification.

ii. Guidelines for preparing a base map

a. Collect and compile suitable information from all available maps of the area (major features, particularly rivers, roads, villages, paddy fields and peaks).
b. With local informants and a basic map, begin to collect and check location names around the village, at forks of main tributaries, and at road intersections. If possible,

create a global positioning system (GPS) database of these points. Add these to the base map.

c. Prepare a simple map of the main rivers, tributaries, location of present villages and landmarks, with the local names as provided by informants.
d. Make sufficient copies for the community meeting on large paper (A1 or A0).

iii. Mapping meeting instructions

a. Explain the process of mapping to the participants. It should take a session of 2–3 hours, but they may need longer, so plan for a second session if needed. Schedule your time.
b. Divide participants into groups. . Make sure there is a facilitator/secretary for each group who is responsible for writing things down. Ensure each group includes someone who speaks the local language and English and is willing to help explain and answer questions as they arise. Arrange for other documentation members to circulate or sit with a group and help them as needed.
c. Encourage participants to list and name:
· Types of land/water use – example: forests, jhum, paddy fields, gardens, fishponds, streams, rivers, lakes, springs
· Types of aquatic resources and related natural resources (bamboo, plants used for piscicides, sand, etc)
· Special features, natural and anthropogenic – suggest spawning sites, areas with protection or prohibitions, sacred sites, areas used for communal fishing, trapping, sand mining (see Figure 15).

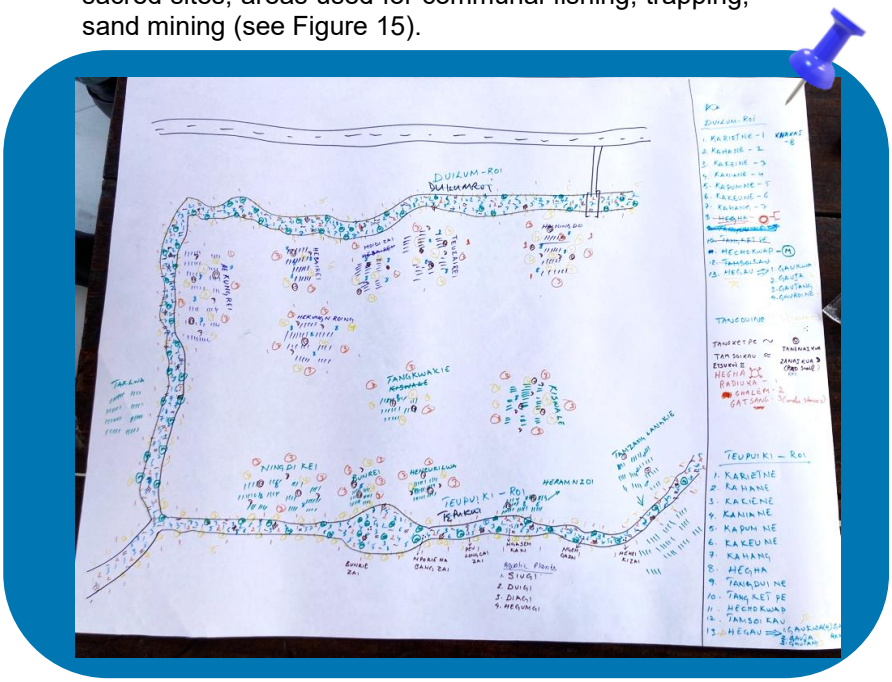


Figure 15. Map of aquatic resource locations made by a group of women. Note the map legend on the right, where they have listed all the AR to be mapped, some with icons.

d. Ask the group to start drawing the map: first, put in the locations of hamlets, fields, stream and river locations, ponds, paths, bridges, and other landmarks. Add the locations where aquatic resources are found, or particular techniques are used. Denote areas with special status as protected areas (fish sanctuaries) (see Figure 16 below).

e. *Good opportunity to collect information about the rules and sanctions associated with these areas, historically and currently.*

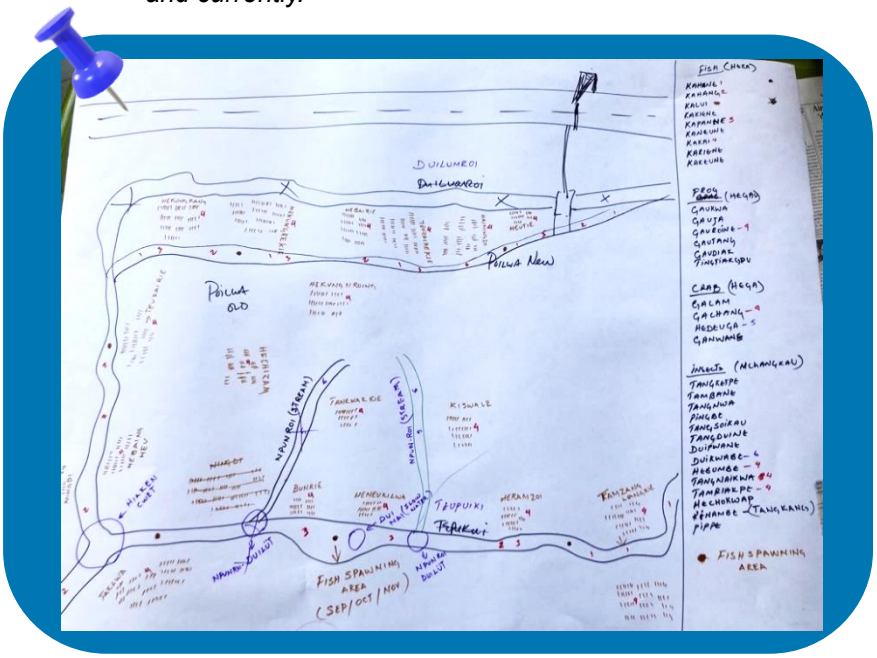


Figure 16. Map made by a group of men. The legend on right lists aquatic resources by generic categories (duplicating freelist and pilesort data). They have corrected the base map, and also added fish spawning areas and areas with regulated fishing.

f. The documentation team then compiles all maps drawn during the community meeting into one or more 'master maps'. You may want to keep separate maps for men, women, and youth. These maps should be pinned up on a wall where they can be viewed by community and documentation members and updated as needed. As the rest of the documentation proceeds, there will be additional people participating, observations from events and stories, that will provide new information for the map.

g. Can repeat the exercise asking knowledge holders to redo the map as if 20 years ago, to explore changes in the biogeography of aquatic resources, land use, and livelihoods.

h. Before leaving the village, copies of all maps should be neatly redrawn and combined and clear copies left with the village leaders. Copies for online and paper archives should also be made.

iv. How to analyse maps?

a. The mapping exercise itself will generate discussion, stories and TK about aquatic resources and their characteristics, regular and historical events, changes in water/land cover and water/land use, and the rules and regulations of resource use. It is important to listen, take notes, and if possible, to record these discussions (see Figure 17).
b. Men, women, and youth are likely to know and use their territory in different ways, so you should expect their maps to differ. A simple comparison of the information provided will be important for documentation of variation in TK.
c. Maps may provide the locations for visits for further documentation and/or collection of specimens.

Figure 17. Men's group discussing their map of aquatic resources

7. TEMPORAL RESOURCE MAPPING

With individuals or groups, create seasonal calendars and historical timeline to document variation in size, abundance or behaviour of AR, and patterns of human use, over time.

Option: post compiled data in public place and invite people to add to the data, or comment.

Traditional knowledge of seasonal variation, interannual weather patterns, historical events and long-term trends in the abundance and use of aquatic resources are essential aspects for TK documentation. Time itself is a cultural domain, and "temporality" encompasses the way a group conceptualises time. *Samsara*, the belief that all living things go through endless birth and rebirth, that is reincarnation, and the "wheel of karma", are expressions of Hindu and Buddhist temporality. Beliefs such as these affect perceptions of aquatic resources and underpin interpretations of animal and plant behaviours and lifecycles, and their changes over time.

Methods for mapping availability and use of aquatic resources in time include seasonal calendars, trends, and historical timelines.

i. How to make a seasonal calendar

a. A *seasonal calendar* can be constructed, with individuals or in groups, to display temporal patterns and to investigate relationships between the various annual cycles.
b. On a large piece of paper, construct a table of 13 columns and at least five rows, but leave space for more rows.
c. In the cells in the first column, list the themes and categories you wish people to describe, such as weather (rain, temperature, winds), flowering and fruiting of plants, fish and animal migrations, agricultural activities, Fishing/hunting activities, gathering activities, economic activities (e.g., markets), religious and ritual activities.
d. In the cells across the top row of the next twelve columns, put the name of the months in the local language (or whatever divisions are suitable - some societies rely on a lunar calendar, others may not even use months. You can use a *freelist* to determine these) (Figure 18).

Themes	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rain												
Temp.												
Wind												
Fish migration												
Fish spawning												
Community Fishing												
Fish traps												
Paddy fish												
Festivals												
Fish 1 availability												
Fish 2 availability												
Snail 1 availability												

Figure 18. Data collection sheet for seasonal calendar. Use local categories for seasons, months and activities.

e. Ask several key informants when the year begins; it may be at the beginning of the rains, or for many farmers the harvest festival signals the end of one year and the beginning of another.
f. Starting at the beginning of the year, for each theme or category, ask respondents to list all the general characteristics of that month, including all events that usually occur then.
g. Be careful to distinguish between unique events of the past years and generalizations about what "normally" happens.
h. Check relationships of events by moving between different categories occurring at the same time; for instance, ask What fishing activities occur just after the rains start?
i. You can also add a row for each aquatic resource of interest and ask for its availability (low, medium, high).
j. Work with several individuals or groups (especially men and women) to capture variation in activities and experience.
k. Display results publicly, get comments and feedback from other community members.
l. Before leaving the village, copies of all calendars should be neatly redrawn and combined, and clear copies left with the village leaders. Copies for online and paper archives should also be made.
m. Making a large poster of the results can make it easier to discuss this information in group settings, and the poster can be amended or added to during the documentation period.
n. It is always critical to make sure your knowledge holders understand that you are asking for generalizations of the annual calendar, though this is often risky as most respondents, including researchers, have poor memories and tend to give you idealized versions of the seasonal calendar. One strategy to increase accuracy is to ask someone to create a calendar of what they saw and experienced over the past year. Then you can ask if these were typical of all years. A conversation focused on this type of comparison is also an excellent way to collect information on *'trends'* in the environment.

ii. How to study trends

a. On large piece of paper create a matrix of columns, one for each theme to be analyed.
b. Themes could include rainfall, river levels, droughts, diseases, population (people as well as fish or animals), in-migration, agricultural productivity, fishing yields, cash

income from forest products or wage labour, forest cover, and any other topics raised by respondents (Figure 19).

Time (years ago)	Rainfall	River levels/quality	Fish population 1	Fish 2
5				
10				
20				
40				
20 years from now?				

Figure 19: Data collection sheet for Trends.

c. You may ask key informants or groups to work on one theme at a time, or on several at once.
d. The number of rows is determined by the number of years or time segments to be discussed, such as 'today', '5 years ago', '10 years ago', '20 years ago", etc.
e. To investigate local perceptions of the future, add rows for time periods in the future, such as "20 years from now" or "100 years from now".
f. Knowledge holders may use graphs, draw diagrams or maps or profiles of the landscape, or just write down text in the space for the theme.
g. Interviews using results can address what respondents consider the cause(s) of these trends, and the consequences for both environment and community life.
h. A discussion of current trends visible to community members today can easily be turned toward the subject of the future by asking people to project current trends into the future, for instance by asking them "*What will this be like in twenty years' time?" Scenario building* uses similar exercises to ask communities to consider a variety of different futures and assess their desirability and achievability given current conditions (see Wollenberg 2000).

iii. How to make a timeline

A *timeline* or community history can be used to study important events of the community and how they have influenced its development and relationship to the environment. This is a simple exercise. Often the exact year an event took place is not known, so you must find ways to help people to pin it down in history. This is done by referring to more widely known events, such as economic and political changes and natural catastrophes. Alternatively, the timing of events may be remembered with reference to some other historical event or circumstance. In Bornean farming societies,

history is often described in reference to a long lineage of village chiefs, while in many African pastoralist societies historical events are linked to successive generations of men that pass through initiation rituals at the same time.

With individuals or groups:

a. On large piece of paper, create a margin and use it to list dates from the present going back in time as far back as you or the knowledge holders wish to go. The main space to the right is used to write down events that occurred (Figure 20).

Time	Events	Impact on Community	Impact on environment	Local responses
2023				
2022				
2021				
2020				
2019				
Etc.				

Figure 20. Data collection sheet for a historical timeline

b. You can add additional columns to write down events, impacts on the community, impacts on the environment and local responses.
c. The timeline may be correlated to genealogies or outside events if dates are difficult to remember.
d. Knowledge holders may draw diagrams to represent key events.
e. Timelines can also be displayed publicly and updated during the documentation period (Figure 21).
f. Interviews based on the results can address what respondents consider to be the consequences of events for both environment and community life.

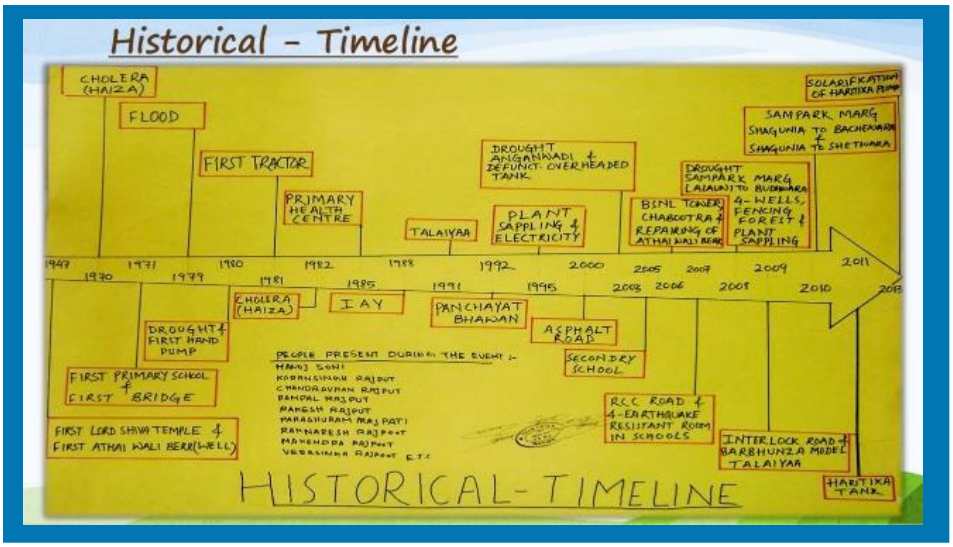


Figure 21: Historical timeline constructed with PRA exercise in India and displayed in public for comment.

8. PRACTICES

Observe and participate in any activities involving aquatic resources; use audio and visual technologies to document these activities. Interview participants during (if possible) of after these events (Step 9).

Option: *Ask for demonstrations of activities if none are taking place at the time.*

Option: Invite school children along to promote transmission of knowledge.

Option: include Step 9 where and when possible.

i. What are practices?

a. Go fishing! (Figure 22) There is a wealth of traditional knowledge used to carry out daily livelihood activities.
b. Whenever possible the documentation team should observe these activities, participate in them when possible, and record a sample of them with written descriptions, video, photographs and audio recordings (see Participant Observation box; Puri 2010b).
c. Most activities can be described as a series of *tasks*, many of which will be named in local languages by a verb: baiting (a hook), casting (a net), setting (a trap), etc. Questions for practitioners aim to elucidate the knowledge required for each task, either through verbal description or through demonstration.
d. Knowledge holders should also be asked about *why* they are doing what they are doing in these circumstances and conditions: why are you setting a fish trap this morning? And in this place?
e. Describing and understanding the environmental and socio-cultural context in which activities take place will reveal important knowledge and understanding of the rivers, ponds, weather, tools, fish, crabs, and fishers, etc., that are needed for success.
f. Trying to do these activities yourself, even badly, is an excellent way to get a feeling for what is required, and the experience of being “taught” by knowledge holders will be an opportunity to experience the transmission and use of traditional knowledge in context.

Figure 22. Observation and documentation of construction of river dam during community fishing event.

ii. How to document practices?

a. Learn when activities take place, some may be at night or very early in the morning. Ask permission to come along. You may have to wait for people to feel comfortable having someone else involved; ask others if you are turned down. Make sure to get permission to record the event.
b. Ask your knowledge holder about what to expect and what you should bring.
c. No aspect of the event is insignificant, take notes on everything.
d. Bring video camera and tripod, camera, voice recorder and notebook. A smart phone may be useful, but you might need more than one and several people, to capture more than one angle or participant. Learn how to frame a picture, use close-ups and wide-angle shots, and get the lighting and sound right; remember these are images and sounds that are to be archived, and used for teaching, so they should be aesthetically pleasing as well as technically competent (see online videos for tips).
e. If it's possible to repeat an activity so you can get a better angle or close-up to capture details, then don't be shy about asking.

Figure 23. Fisherman baiting a hook with specially prepared dough.

f. If you can talk to practitioners as they work, then have simple questions ready that require brief answers (e.g., “what do you call that?”); save the “why” questions for lunch, a longer break or afterwards (Step 9).
g. Do remember that any activity usually has pre-event tasks (collecting information, fixing tools) and post-event tasks (distribution of catch; storytelling) that may be instrumental is explaining what is going on and why.
h. Remember to collect specimens, or photographs, of plants or animals being used or caught. If you can get identifications right there, then do so, preferably from more than one informant (see specimen identification task).

Figure 24. Fish being kept alive in the river in a basket.

i. Save photographs and video by downloading them and making copies (save in the cloud or on portable hard drive). These can then be used in interviews (see Step 9).

Participant Observation: This is the central method for ethnographic research pioneered by anthropologists in the early 20th century. It is a medium- to long-term enterprise, and often ethnographers spend many months, even years, carrying out participant observation in a particular social setting (e.g. a community). However, even if you only have a few weeks of fieldwork, it is still a very relevant method to use. Participant observation is a relatively unstructured, interactive method by which the researcher participates in everyday life while simultaneously observing social and cultural practices. You work, eat, drink, sleep, celebrate and, generally, share in everyday life with the community, family and individuals you are carrying out research with. In so doing, you are mindful of what people do, say, relate to each other and outsiders (especially you), what makes them happy, angry, sad, fearful, how they move through their landscape, how and why they make choices, and so on. Whenever you get a chance, write down: what you are doing and how; what people are saying – how they are describing themselves, their motivations, how they are explaining their social and cultural life to you, what they think of news, events or situations. Take especially detailed notes of events, rituals, meetings, and conversations in which you have learned a great deal about a particular issue. Habitually, ethnographers find that the end of the day is the easiest moment to write down what has happened during the day and your reflections on it (Puri 2010b).

9. INTERVIEW 2:

Interview participants and others about the knowledge and skills used in these activities, and their explanations for why these take place when and where they do, and the form they occur in.

Option: use recorded video or pictures as prompts for these interviews.

The same recommendations for Interview 1 (step 4) and tips for interviewing (Annex 5) apply for this second set of interviews.

i. What are they?

a. These are semi-structured sessions that focus on getting more information about recently observed activities, often using pictures or videos as prompts. They may also be an opportunity to ask about activities no longer occurring in the community, how they were conducted, what types of knowledge were required, and why they have ceased to be practiced.
b. Find a time and place to discuss an observed event afterwards, it could be late at night or next morning, and could be with individuals or a group, and not everyone has to have participated.
c. Start with a general question: “How do you think/feel it went yesterday?” Follow up on what is said, asking for details that touch on knowledge used.
d. You can then ask for explanations about what happened, the particulars of certain parts, and if something occurred that was unexpected.

Figure 25.. A small catch from community fishing event, begs the question of what happened?

e. Asking about what didn't happen is also very useful: "why was our catch so small?" Explanations for lack of success often reveal traditional knowledge and the importance of context in practices: for example, "the ginger chutney ritual was incomplete, so we caught very few fish."
f. Show a photograph or video clip from each 'task' of the activity. Ask knowledge holders to describe what is going on in the picture. Is it being done "correctly" or "properly"? Why not? What might the options/alternatives for the practitioner be at this point?

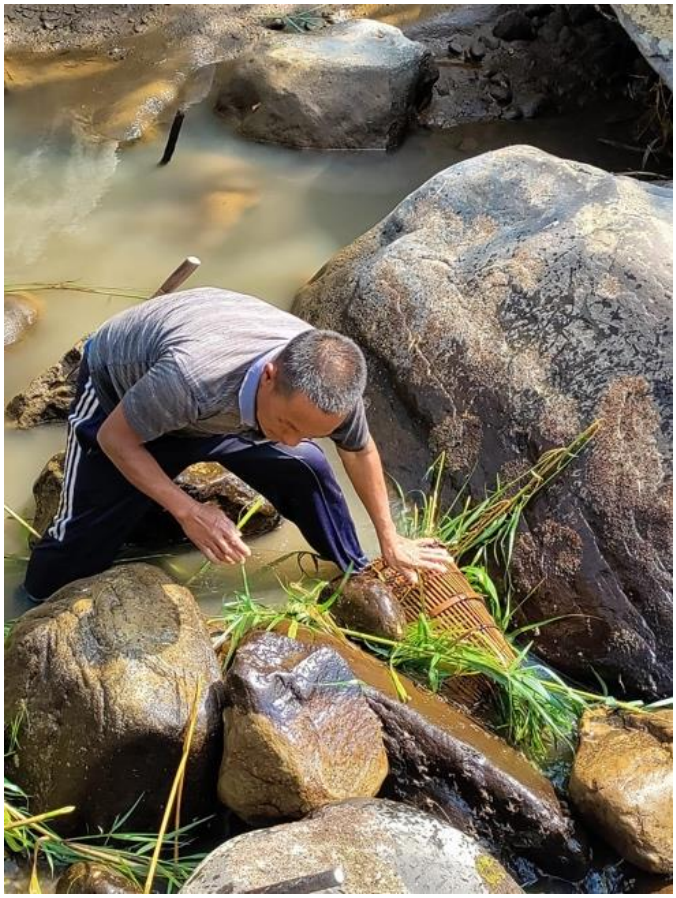


Figure 26. Setting a fish trap that caught no fish…why?

g. Ask how this task may have changed or been different in the past, or when they were growing up?

10. FEEDBACK

With individuals or groups, feedback what has been found to corroborate findings, collect additional information, achieve consensus, and to discuss next steps.

i. What is a feedback session?

a. Feedback sessions allow knowledge holders to discuss what has been found, to provide confirmation for claims, to fill in gaps and deepen understanding. They can be valuable means of transmitting knowledge between and within generations, so it's important to include a good cross section of the community.

Figure 26. Community meeting to present and discuss findings.

b. Some feedback can be obtained while documenting, through displaying findings in a public space and either providing a mean of commenting or arranged visiting times and facilitators to record feedback.
c. Displays can include outputs from the freelists, pilesorts, resource maps, seasonal calendars, timelines and even video or photographs.
d. Collected specimens and other material culture (tools, baskets, etc), are helpful for making the project more

tangible to residents and can be the basis for a small community museum or visitor interpretation centre.

Figure 27. Naga weapons on display at the State Museum of Nagaland, Kohima

e. There should also be specific feedback meetings where documentation team members discuss what they have collected so far. These can be meetings where additional information is collected, debates and disagreements are aired, and more participation is encouraged.

f. Ensure that feedback sessions are inclusive by either having separate meetings for important subgroups or having breakout groups in big meetings where voices from all parts of the community (men, women, youth, etc) can be heard.
g. Any publications or online archives should also be discussed in advance—its design, content, access rules—and feedback collected once they have been drafted or posted (see Step 11).

11. ARCHIVING

Revisit initial plans and agree a means for presenting, storing and accessing documented TK.

i. What does archiving require?

a. The form of storing, presenting and using traditional knowledge should be discussed at the initial planning meetings, but it can be expected that these plans will change once the project begins, information is collected, and more people participate in the documentation effort.
b. It is important to be flexible and open to new ideas for storing, publishing and other dissemination technologies that will become available during the course of the project.
c. There are traditional media, such as books (and libraries), museum displays, photo exhibitions and films. As an example, *Reef and Rainforest, An Environmental Encyclopedia of Marovo Lagoon*, *Solomon Islands* (https://unesdoc.unesco.org/ark:/48223/pf0000138643) is a bilingual publication and updated database of Solomon islanders local knowledge (Hviding 2005), including many chapters on the kinds of knowledge discussed in this manual.
d. State Museums in the NE will be interested in the documentation work, and may already have collections and the ability to curate exhibitions or store materials.
e. *UNESCO's LINKS* programme (https://en.unesco.org/links/transmission) and the *Indigenous Knowledge Commons* (http://indigenousknowledge.org/showcases/online-courses.html) have programmes and materials for promoting education and transmission of indigenous knowledge, to keep this knowledge vital and responsive to changing times.
f. There are also a variety of virtual or digital platforms now available, such as project websites and social media posts, online videos channels, and podcast sites, that can host and disseminate materials from the documentation. Community archives can be designed to be accessed from an App available on a smart phone. The *Electronic Cultural Atlas Initiative* (https://ecai.org//ECAIDataPortal/index.html) provides links to technologies and software to store and disseminate knowledge (such as CKAN), and links to documentation projects.
g. There are several online databases where documented knowledge can be stored and made available to the public (or restricted to designated groups). The most important in NE India are the *People's Biodiversity Registers*.

h. Digital Himalaya (http://www.digitalhimalaya.com/) is an online archive that stores books, articles and films covering anthropological research since the 19th century. *The Naga Videodisc* is an example of an archive that holds publications, notes, film clips collected by researchers in the 19th and 20th century (https://wwwe.lib.cam.ac.uk/nagas/coll/4/xintroduction/detail/all/index.html).
i. The *Ethno-ornithology World Atlas* (https://ewatlas.net/) stores community traditional knowledge about birds. This site allows for community control over access to their knowledge: “This community is for all people anywhere in the world who want to share knowledge, names, or other cultural material about birds. Everyone who registers with EWA will be automatically added to this community and to its sharing protocol. Most digital heritage here will be open & publicly shared under the protocol 'Open Sharing - Abierto a tod@s'. If you are interested in creating content with limited sharing to a particular group, please create a new EWA 'Community' with its own sharing protocols.”

IV. ANNEXES

1. ISE Code of Ethics[1]

The International Society for Ethnobiology (ISE) has developed some of the highest standards in research ethics in the form of its Code of Ethics. It is available from the website (http://ethnobiology.net/code-of-ethics/) in several languages and is in a constant process of amelioration. All social researchers, whether they use qualitative or quantitative approaches, are encouraged to adhere to these standards, which were co-drafted with members of communities that have historical experience of "being researched." The Code of Ethics proposes that all ethnobiological research should be 'collaborative'; it establishes a community-centred approach, and calls for all research to strengthen community goals.

The fundamental value underlying the ISE's Code of Ethics is the concept of **mindfulness**, which signifies "a continual willingness to evaluate one's own understandings, actions, and responsibilities to others." This value reflects the recent transformations in ethnographic practice, which require the researcher to be highly self-reflexive, flexible and politically engaged. Beyond mindfulness, the most important principles of any ethnographic research are the following (these points summarise and expand on some of the principles of the ISE Code):

1. **Recognition of rights**: This includes communities' and peoples' inalienable rights to their territories and resources, to self-determination, to their customary laws and practices, to the protection of their cultural and spiritual values, to their intellectual property and associated biological and genetic resources, and to respect as knowledge-holders and landowners. Communities are therefore the ultimate decision-makers regarding any research carried out on their lands or among their people, and their own modes of decision-making must be respected at all times.

2. **Free, prior and informed consent**: Prior to starting any research activity, communities thatare likely to be involved must be fully informed of the activities proposed and have the right to refuse the proposed activity. Should they accept the proposed research, they have the right to be involved indecision-making throughout the research cycle, and they must be active participants in any research programme. See also Box 4 on the free, prior and informed consent process.

3. **Active participation, and beyond**: People involved in the research should not only be active participants in any research

[1] Excerpted from Caruso 2015

activity carried out in their lands and communities (in its design, implementation and analysis), but ideally should be key actors in the development of research ideas. Researchers should prioritise the research needs and ideas of the communities they seek to work with, and seek to shift away from leadership of research programmes towards becoming advisors or facilitators for community-led research programmes.

4. **Trust and disclosure:** The communities participating in the research must fully understand the ultimate goal of the research and how it will be used, therefore the latter must be presented in ways that community members can understand and transmit information among themselves. Much like with Free, Prior and Informed Consent, researchers must discuss any change in the research, how data is being analysed, used and presented throughout the project cycle, and community members have the right to disagree, request changes throughout the process, or even call a halt to it in extreme circumstances.

5. **Privacy, confidentiality, and anonymity**: In the context of ethnography, these elements are particularly important. Researchers must always be mindful of issues of individual privacy in the context of the group: e.g. they should never report people's interview responses without the latter's specific consent. They must also always respect group confidentiality, which means that communities have the ultimate say regarding what information can be published or not. When publishing articles, books or reports, researchers must respect individuals' and communities' rights to remain anonymous, and if necessary, must create pseudonyms or writing styles that protect peoples' and communities' identities.

6. **Reciprocity, equitable benefit-sharing, and active support**: Social researchers increasingly seek to embrace the principle of 'do no harm' and go beyond it, aiming instead for positive and useful outcomes for their research among the communities with whom they work. Any benefits from the research must be properly shared in a way that respects community customs and decision-making processes. While always acknowledging the support and participation of community members in research processes, researchers must find ways of ensuring that they give something back to the communities and individuals they have worked with, in a form chosen by community members according to their customary decision-making processes.

2. Free Prior and Informed Consent (FPIC)[2]

Indigenous peoples benefit from the collective right to **Free, Prior and Informed Consent** (FPIC), which is enshrined in international legal instruments. [3] This right enables indigenous communities to give or withhold their permission for activities due to take place within their communities or territories, or to engage with their knowledge and resources.

Consent signifies that the community agrees to a given plan, which may have been reworked by the community in order to respect its members' aspirations. Consent is only considered acceptable if (a) all community members have been consulted, according to customary processes and (b) all problems or queries raised have been fully addressed and acceptably dealt with. The application of FPIC requires consent to be:

- **Free**: this means that it is free of pressure, manipulation, intimidation or coercion; communities are allowed to take the time they need, follow their own procedures, use their own language, and implement their own norms to carry out the process.
- **Prior**: the decision-making process necessarily must take place prior to the launch of the activity, and ample time must be given for the community to make a concerted decision.
- **Informed**: all community members must receive full information of all aspects of the proposed plan (information cannot be withheld), and outside actors should be ready to disclose and produce any item of information that the community might need to make the decision.

The process of engaging with a community must respect these four elements integrally. For example, if the community withholds consent, or demands that the plan be amended in order to give their consent, it is imperative that this wish is respected – regardless of the consequences for the outside actor (e.g. in the case that donors may retain funding for this actor if the research or intervention is unsuccessful).

[2] Excerpted from Caruso 2015

[3] The principal international instruments that explicitly recognise indigenous communities' rights to FPIC are: the United Nations Declaration on the Rights of Indigenous Peoples (2007), ILO Convention 169 (1989), General Recommendation XXIII of the United Nations Committee for the Elimination of Racial Discrimination (CERD), Decisions from the Conference of the Parties of the Convention on Biological Diversity (CBD), the Interamerican Commission for Human Rights, as well as supportive documents from numerous multilateral institutions, banks, funding agencies, etc.

3. Collecting plant and animal specimens[4]

i. Collecting a botanical voucher specimen

There are numerous excellent and detailed manuals out there explaining how to collect a botanical voucher specimen (see Annex 6). In this section we provide some tips and tricks for successful voucher specimen collection, and some comments for making ethnobotanically and ethnozoologically useful collections.

Firstly, the list of essentials to bring with you when collecting:

1. Collection book: your collection book is essential when you are in the field planning to collect a botanical voucher specimen. In the collection book, you will write down all the detail about the specimen collection:

a. Number of the plant collection
b. Name(s) of the plant: Give your specimen a name and a code and make sure that if
b. you are collecting in a plastic bag for pressing later you put a label with the same
c. code on the plastic bag. Write down the full scientific name or at least genus, if you
d. know it. If you are collecting with local residents or researchers, remember to record
e. their vernacular name(s) and the language(s) they are using; you should always
f. indicate who the informants were, perhaps using a code for local names.
g. Locality (Province, gazetteer, name, description of where in the area, GPS points,
h. altitude, etc.)
i. Habitat description
j. Plant description, including smell, colour, details of the leaves, roots, etc. Be asdetailed as possible! These should include notes on any feature of the gathering that may not be apparent from the dried specimen in years to come. Flower colour, whether annual, biennial, or perennial, height if a tree or shrub, stems erect or ascending, frequency and variability. Anything you learn from local peoples: what the plant is used for (or was used for in the past), changes in abundance, etc. You should always indicate who the informants are, perhaps using a code for their names. *Important: distinguish between the uses of the actual individual plant being sampled; and uses of the category/species in general;

[4] Excerpted from Caruso 2015

distinguish between uses by the individual respondent and uses by “people” or “community” in general.

2. Presses, straps and paper
3. Paper or envelopes for collecting seeds. This is the easiest way to collect seeds. Place the seeds in the plastic bag with the specimen.
4. Plastic bags
5. Pencils and pens
6. Labels
7. GPS
8. Map
9. Gloves and the right footwear

It is very important that you write down the plant, habitat and locality description in your collection book in great detail, as this will ensure not only that you correctly identify the specimen, but also it will be of great help for other researchers who will have access to a complete description of the specimen once it is uploaded to an online database like BRAHMS (see below).

Be aware that most common mistake made during collections is to forget to label the bag containing the specimen. Without a label, you are likely to return to the base camp or lab and find wilted, colourless, odourless plants in your plastic bags and not remember which one is which! If you press your specimens directly in the field you will avoid that pitfall. However, it is not always possible to press in the field, for example if weather conditions are poor, you are collecting in difficult terrain or if you need to collect a large number of specimens. Remember that a proper plant press is heavy and large!

Whenever possible, try to collect plants with flowers and fruits, and as much plant material as possible (roots, leaves, etc.). Also, if the species is locally abundant, it is recommended to collect more specimens (e.g. 3 or 4 duplicates) because this will allow distribution to multiple herbaria, DNA sampling and other uses. However, if the specimen is very rare, ideally you would not collect it but simply write down all of the details in the collection book, take some good photographs, and perhaps take some minor plant material if DNA research is planned.

Template for collection book
FLORA OF ….(Nagaland):
District:
Locality:
Alt F/M . Lat N/S . Long E/W.
Grid Ref.
Habitat/Soil type:
Specimen notes:
Local Name(s) (Language):
Local Uses:
Informants:
Collector(s):
No. Date:
Herb Spirit Living Seed Wood Cytol Photo Pollen

ii. Collecting a zoological voucher specimen

Firstly, the list of essentials to bring with you when collecting:

1. Collection book: your collection book is essential when you are in the field planning to collect
a zoological voucher specimen. In the collection book, you will write down all the details
surrounding the collection:

a. Number of the animal collection
b. Name(s) of the animal: Give your specimen a name and a code and make sure that if you are collecting in a plastic bag, glass/plastic jar or box, you put a label with the same code on the storage container. Write down the full scientific name or at least genus, if you know it. If you are collecting with local residents or researchers, remember to record their vernacular name(s) and the language(s) they are using; you should always indicate who the informants were, perhaps using a code for local names.
c. Locality (Province, gazetteer, name, description of where in the area, GPS points, altitude, etc.)
d. Habitat description
e. Animal description, including details of skin, fur, feathers, scales, etc. Be as detailed as possible! These should include notes on any feature of the gathering/hunting that may not be apparent from the dried /pickled specimen in years to come. Measure length of body and appendages.
f. Anything you learn from local peoples: what the animal is used for (or was used for in the past), changes in abundance, etc. You should always indicate who the informants are, perhaps using a code for their names. *Important: distinguish between the uses of the actual individual animal being sampled; and uses of the category/species in general; distinguish between uses by the individual respondent and uses by "people" or "community" in general.

2. Collection jars, tubes, boxes, plastic bags
3. Alcohol or some nontoxic preservative
4. Pencils, pens, and permanent markers
6. Labels
7. GPS
8. Map
9. Gloves and the right footwear

It is very important that you write down the animal habitat and locality description in your collection book in great detail, as this will ensure not only that you correctly identify the specimen, but also it will be of great help for other researchers who will have access to a complete

description of the specimen once it is uploaded to an online database.

Be aware that most common mistake made during collections is to forget to label the bag containing the specimen. Without a label, you are likely to return to the base camp or lab and not remember which jar contains which animal.

Template for collection book
FAUNA OF ….(Nagaland):
District:
Locality:
Alt F/M . Lat N/S . Long E/W.
Grid Ref.
Habitat:
Specimen notes:
Local Name(s) (Language):
Local Uses:
Informants:
Collector(s):
No. Date:
Fish Amph Rept Crust Insect Arach Worm

4. Collecting local knowledge during scientific surveys: with specific reference to collection of aquatic resources in NE India

Establishing correspondence between scientific and local classification systems is not straight forward; having a live specimen that both a scientist and local expert can view and identify at the same is the ideal condition.

Find at least *two* local experts who use the habitat, a male and a female, to accompany scientists in the field when collecting specimens. (Ask: who is most 'knowledgeable' about aquatic resources?)

Might also need a local data recorder/translator (e.g., high school student)

Translate all questions into local language. Data collection sheet can remain in English.

For every specimen N taken:

1. Photograph and note scientific collection number; note scientific name if known.
2. Show live specimen (N) and ask *each* informant for a local name (Ask: what do you call this?
   Or what is this?)
3. Write carefully (or audio record) *exactly* what is said. Note language/dialect used.
   (N = may be monomial or binomial) (May be *more than one* name for any N, write them all down)
4. Ask: how do you know what N is?
5. Follow up questions (if there is time):

    a. How many kinds of N are there? (Related taxa)
    b. What is N used for in this community? (asks for uses beyond the informant's use)
    c. How preferred is it? (On a scale of 1 to 5, least to most preferred)
    d. How do people here catch/collect N? When? (asks for info beyond the informant's practices)
    e. In your opinion, has abundance of N increased or decreased or stayed the same over the past (Y) years? Why?

Aquatic Resources of NE India - Local Knowledge

Date		Nearest Community		Data recorder					
Location		Ethnicity (s)		Informant 1		Age:	Gender:	Ethnicity:	Language:
Habitat		Language(s)		Informant 2		Age:	Gender:	Ethnicity:	Language:

Specimen No.	Local Name (Lang)	Related taxa	Uses	Technique/Tool	Trend	Prefer (1 to 5)	Notes

Sheet ____/_____

Aquatic Resources of NE India - Local Names

Date		Nearest Community		Data recorder					
Location		Ethnicity (s)		Informant 1		Age:	Gender:	Ethnicity:	Language:
Habitat		Language(s)		Informant 2		Age:	Gender:	Ethnicity:	Language:

Specimen No.	Scientific Name	Local Name 1 (Lang)	ID Criteria	Local Name 2 (Lang)	ID Criteria	Notes

Sheet ____/_____

5. Interview Tips

You will be interviewing knowledge-holders to document traditional knowledge, and even if there is a participatory agreement in place, not everyone will want to participate or may be shy and reluctant to speak to anyone, not just outsiders. These tips will help you to facilitate the data collection interview. Your interviewing technique will improve with practice. It is highly recommended to repeat interviews with the same people because (i) your technique (hence interviewees' understanding of your approach) improves, (ii) interviewees' answers can help you reflect on new, interesting questions to put to them and others, and (iii) it allows you to explore how their ideas evolve over time.

- You go to them;
- Try and keep interviews private and with as few people as possible, personal relationships and political powers may influence responses; (Group interviews are also useful, and encouraged, but the social dynamic will be different);
- Establish rapport, put participants at ease;
- Relax, watch posture and body language;
- Explain purpose;
- Explain confidentiality rules (are you going to use names or not? Will the data be private?);
- Lay down ground rules ("if you don't know, that's ok");
- Keep it short, watch time and watch for fidgeting, changing the subject, lack of attention. Stop or call a break if necessary;
- Be patient, easy going but serious;
- Use simple language, prepare alternate ways of asking the same thing (in different languages if necessary);
- Never lead a participant by suggesting an answer or giving your own opinion, be patient give them time to think;
- Respect local views, rules and rites if you know of them;
- Use tact, leave sensitive issues to end or in a second interview;
- Don't force them to answer;
- Allow participants to talk and even wander a little, but not for too long;
- Have props, maps or pictures to help you explain an idea;

- Activities, such as mapmaking or walks, are good for maintaining interest;
- Accept their hospitality and offer some compensation for missed work, but do not buy information;
- Don’t make promises;
- Do thank your participants, leave open the possibility that you may need to return to check information.

6. Resources for exploring more about TK Documentation

Botanical Methods
Collecting and preserving plant specimens, a manual by Tony Bean, Queensland Herbarium.
https://www.qld.gov.au/environment/assets/documents/plants-animals/herbarium/collectingmanual.pdf

Smartphone video production gear and tutorials
http://www.webvideochefs.com/mobile-gear/
http://www.mediacore.com/blog/ultimate-guide-to-smartphone-and-tablet-video
http://thenextweb.com/creativity/2014/07/27/shoot-edit-upload-movie-android-smartphone/
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