

EVERYTHING EXCEPT THE SOIL

Understanding wild food consumption during the lean season in South Sudan

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Doum fruit, Ganyel, Panyijar, 2016. Photo credit: Elizabeth White.

Wild plants are a critical part of the regular South Sudanese diet and become even more important during the lean season. This paper explores seasonal consumption patterns and recent significant changes in those patterns in Panyijar County, Unity State during the acute food crisis in 2017. It provides information on local preferences and health perceptions of wild foods, and reconsiders the idea that wild food consumption is primarily a coping strategy.

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GLOSSARY

A-OK	Area of knowledge
EFSVL	Emergency Food Security and Vulnerable Livelihoods
FGD	Focus group discussion
IDP	Internally displaced person
IWFP	Indigenous wild food plants
KII	Key informant interview
ROSS	Relief Organisation for South Sudan
SGBV	Sexual and gender-based violence
SSP	South Sudanese pound
WF	Wild food
WFP	World Food Programme

EXECUTIVE SUMMARY

Wild foods constitute most of the household food basket for both island and mainland communities in Nyal, Panyijar County, Unity State during the lean season (April to August), and include plants found in the forest, on the islands, and in the swamp waters around Nyal. Nyal's waterways also provide river fish and other edible aquatic life for the local population.

The research contained in this report revealed differences in the quantities and frequency of certain wild foods being eaten, which was indicative of limited or no availability of other (usually preferred) foods. The less preferred wild foods were also being eaten by **all** households (100 percent) on the islands and on the mainland, whereas *normally* 60–70 percent of households would require these less preferred foods in June/July only. As expressed by one FGD participant, 'we are eating everything except the soil' (FGD package 4, Nyijam).

Most households will add some wild foods to their diets before and for the full duration of the lean season while other wild foods such as lily roots, *guan* and *lew* are usually only eaten in June or July. However, respondents noted that, '**This year we began to eat [these] in April compared to last year when we ate them in June**' (FGD package 11, Ngop 1).

With the overall reduction in the amount of World Food Programme (WFP) rations being delivered in Nyal – as well as frequent long gaps between distributions – the majority of households were relying almost exclusively on wild foods and had been since April/May 2017. Based on the quantities and types of wild foods being consumed, it was assumed that people are eating less than 50 percent of their minimum daily caloric needs, with the majority coming from 'empty' starchy carbohydrates.

In a normal year, indigenous wild food plants (IWFPs) might make up about 50 percent of a food plate and contain mostly coconut, water lily and its root. This year, the food security situation in Nyal was deemed to be worse than in previous years because of a combination of factors including the compounding impacts of the conflict, subsequent reduced ability to plant key crops (more of an issue on the mainland), and the biometric registration process conducted by the International Organization for Migration (IOM) and the WFP. The most significant findings were that **the reliance on consuming less preferred wild foods (such as *guan* and *lew*) had increased overall among the general population** (more of those were being eaten each day) and that most households had also **started eating those less preferred foods earlier in the year** (i.e. April). The third finding was that the **number of types of wild foods normally consumed (both preferred and less preferred) increased overall as households struggled to fill their food gap.**

Ultimately, wild food consumption is not in itself a negative coping mechanism, but the consumption of less preferred and 'higher-risk' wild foods (in terms of collection and health effects) is a signal of an increase in household food insecurity – particularly if it occurs outside of a normal point in the year and if it constitutes more than 40 percent of a daily (or weekly) food plate. This information can be used as an additional inferred indicator of the level of food insecurity and/or as an 'early warning' factor.

IWFPs and river fish are an integral part of the diet of Nyal-ese year-round. This research seeks to understand how and when the use of IWFPs can be enhanced for the populations that rely on them. At the same time, the research takes into account the current near-total dependence on and preference for WFP food rations which, for most households, provide the only available staple pulses in the household diet. Therefore, the recommendations skew towards exploring

smaller opportunities to buttress food security and nutrition programming in a way that is more responsive to the local context:

1. Humanitarian actors, the government and the UN (WFP/FAO) should increase the frequency of food assistance plus buffer stocks, *especially around the lean season*: households are falling well below the SPHERE standard of 2100kcal/pp/day.
2. Humanitarian actors and the UN should consider developing sensitization messages related to pairing food assistance with IWFPs.
3. Humanitarian actors and the UN should consider repeating this exercise in other counties of South Sudan to identify and catalogue the most preferred and least preferred IWFPs, and the usual seasonal timing of their consumption
4. Humanitarian agencies and the UN should include the most preferred and least preferred IWFPs and the usual seasonal timing of their consumption in EFSVL/joint assessments.
 - Incorporate protection analysis/considerations in order to understand access and risk patterns related to IWFP collection and preparation
5. Humanitarian agencies and the UN in Nyal should analyse the main lean season IWFPs (water lily flower, water lily root, *guan, kudra, thor, lew*) for nutritional content information through lab-based testing.
 - Quantify kcals consumed/day/pp during lean season peak from IWFPs.
 - Utilize information to develop awareness sessions for communities about nutritional value of IWFPs.
 - If possible, identify combinations of IWFPs that might reduce side effects such as stomach pains (include in sensitization messages as listed above).
6. Humanitarian agencies and the UN in Nyal should discuss with communities and other agencies the current approaches to and challenges around seed distribution and household production: what are the constraints? What are the preferences for seed types? If sorghum is preferred, can it be grown on the islands and on the immediate mainland?
 - Develop joint-awareness session about eating treated seeds, what to do with 'excess' seeds and food storage.
7. In Nyal, advocate for a verification of the biometric registration in the Nyal area by WFP/IOM.

1 INTRODUCTION

Indigenous wild food plants (IWFPs)¹ are a common part of the South Sudanese diet, and vary considerably between states, counties, ethnic groups, and of course seasons. Many IWFPs are consumed throughout the year. However, there are particular varieties known as ‘hunger foods’ that will only be eaten during (extreme) food shortage periods. The interplay between seasonality and conflict, as well as the limitations of humanitarian assistance, mean that in certain areas these IWFPs are the only sources of food available for entire communities at particular times of the year.

During this current food insecurity crisis, IWFPs have been the ‘staple’ food(s) for many households, despite there being little outside understanding of their use and value. More than 5.2 million people (50 percent of the population) experienced severe food insecurity (IPC 3/4/5)² in June–July 2017 – the height of a typical lean season.

Oxfam has an operational presence across South Sudan, having worked in 17 of the 32 states in the past 12 months. The community of Nyal in Panyijar county, Unity State, was selected as the area of research, given its unique topography of swamps, numerous (33) small inhabited islands, and a mainland area with intermittent access to three larger markets. UN and other agency actors are present,³ as well as the local authority’s Relief Organization for South Sudan (ROSS) administrative bureau. Health services are provided by the medical NGOs. The total population of Nyal is approximately 560 households on the many islands and 750–900 on the mainland (with an estimated total population of 16,299 people). The major sources of income are fishing or the sale of livestock and the primary crop of maize. Nyal has not been directly affected by fighting this year but the neighbouring counties of Leer and Mayendit have experienced more upheaval, resulting in some arrivals of internally displaced persons (IDPs) on the islands from February and March onwards. WFP also delivers food rations in Nyal, which currently amount to 15 days’ worth of food per registered household per month. In April this year, it introduced biometric registration, which despite providing more accurate registration data have also had an impact on the total amount of food distributed in Nyal. In addition it has created increased complexity in terms of the ability of the system to handle population movements and displacements. The challenge of transportation and movement around Nyal is acknowledged as a serious constraint; however, it is not explored in depth here.



**DURING THIS CURRENT
FOOD INSECURITY CRISIS
IWFPs HAVE BEEN THE
‘STAPLE’ FOOD(S) FOR
MANY HOUSEHOLDS.**

Water lily bulbs, or ‘keay’

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2 RESEARCH OBJECTIVES

Overall, the objective of this paper is help clarify the importance and value of ‘hunger’ IWFPs and to improve the ability to integrate (knowledge of) wild food use in emergency food security and nutrition assessments, categorizations, and responses that reflect the local context, based on the following avenues of inquiry:

- **First**, to confirm the concept of wild ‘hunger’ foods as understood at the community level, including the cultural beliefs/perceptions about ‘hunger’ IWFPs and then to categorize those foods based on their a) severity as a coping strategy; b) availability; c) nutritional value.
- **Second**, to promote an improved understanding within the humanitarian community around wild ‘hunger’ food usage, its implications, and what specific IWFP-related coping strategies highlight or indicate by proxy for the food security and nutritional status of communities. The impacts of humanitarian assistance (with emphasis on food aid) on the reliance/consumption patterns of IWFPs are also considered.
- **Third**, to assess risks and differences by gender and age to understand the nutritional, social and intra-household patterns linked to food consumption in general and to ‘hunger’ IWFPs specifically in times of extreme food scarcity.

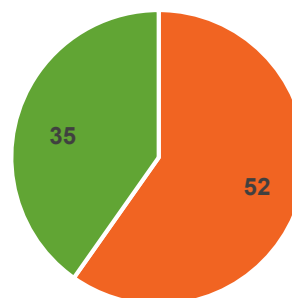
Note to the reader:

Please note that the phrasing ‘severity as a coping strategy’ does not properly reflect the context or normal habits of the population surveyed, given the high levels of IWFP usage in the normal diet throughout the year. Therefore, in this paper ‘severity’ is instead reflected upon as the most significant change(s) and what can be inferred from those changes about the severity of the overall food insecurity situation.

3 METHODOLOGY

Six islands and two mainland blocks were covered, with 15 focus group discussions (FGDs) conducted, featuring 72 participants (72 households represented). The group sizes ranged from three to eight (the average size was four). 48 of the participants were female (67 percent) and 24 were male (33 percent). The average age of the participants was 40, with an average household size of 8.6 people; 39 respondent households (54 percent) indicated they were female-headed households.⁴

Number of FGD + KII participants



■ Female ■ Male

The research took place in Nyal from 30 June to 12 July 2017, with two weeks of literature review in total. Enumerators received a one-day training course on how to conduct an FGD and on the FGD questionnaire; the initial FGDs were conducted with the participation of the research team and the supervisors. FGD questionnaires were structured by 'section', with two to four key questions per section. Each FGD session included a seasonal calendar exercise, a proportional piling exercise⁵ related to coping strategies, and a 'food insecurity spectrum' to assist in identifying the local definitions of stages of hunger. The supervisors were responsible for conducting the key informant interviews (KIIs), which used the same segmented structure; the KIIs did not include the other interactive exercises.

The number of IDP households represented was 20 percent, with host communities making up the remaining 80 percent. It should be noted that the terminology 'host' would be applied in some areas to refer to mainlanders who regularly relocate to the islands during the lean season.

In the targeted FGD communities 11 KIIs were conducted, including four female respondents. The KIIs included block leaders, deputy block leaders, a ROSS secretary, a youth leader, a natural resource manager and block representatives.

Four quantitative questions were added to REACH's monthly multi-sectoral area of knowledge (A-oK)⁶ survey to attempt to gather additional data in support of the qualitative research findings. The data, which is based on 77 interviews with newly arrived IDPs (50 females, 27 males) in Nyal in August 2017, is included in the narrative below.

Note that this research took place at the height of the typical lean season (July) and after a three-month gap between WFP general food distributions (GFDs).

LOCAL DEFINITIONS OF WILD FOODS, FOOD INSECURITY AND HUNGER

Nyal communities define wild foods as plant and animal resources that are not domesticated but gathered and hunted from the forests and waterways for human consumption. People made a distinction between wild fruits/IWFs (i.e. coconut) and wild foods (i.e. fish). For the purposes of this paper, 'wild foods' references fruits, roots, vegetables, leaves and fish together unless otherwise specified. An important note is that, given this wide definition, a number of foods that may seem typical (for example fish) are often considered as wild foods within the context.

FGD participants were asked to define severity levels of food insecurity using a graphic similar to Figure 1 below. They completed the boxes accordingly:

- Food shortage is at household level, where households can face a gap outside of the lean season.
- A hunger period reflects a typical lean season, where multiple households suffer from food shortages.
- An extreme hunger period was understood as the most severe with several respondents equating it with famine.⁷

A **food shortage** reflected the most common food rationing strategies, including skipping meals and reducing portion sizes, as reported by all respondents. The introduction of wild foods into daily diets was included in this definition, with frequent mention of eating water lily flower (yiel) during this period to cover **minimal** food gaps.

Figure 1: Food insecurity spectrum



Respondents described a **hunger period** as a critical situation where more detrimental or irreversible coping strategies are applied on top of rationing. This included the sale or slaughter of key livestock as well as heightened concerns about the health of the household, particularly that of children. The reliance on a wider range and quantities of wild foods increases during a hunger period. Around Nyal, this includes river fish (*rec*) as a critical part of the overall diet, for both island dwellers and mainlanders.

An **extreme hunger period** reflected the most severe coping strategies, including eating least preferred wild foods such as *guan* (a local sweet potato) and *lew* (a bitter leaf) daily. The most commonly cited behaviour was migration in search of food, mentioned by all respondents as a last resort activity outside of the normal times of year when migration for labour and/or agricultural production takes place.

Most respondents classified their current situation as being on the 'high end' of the hunger period, though many households also reported earlier and/or increased migration, which was associated with the extreme hunger period.

4 SUMMARY OF FINDINGS

Critical food sources other than IWFPs and fish include WFP food baskets and imported pulses such as sorghum and maize. Most sorghum is grown in the highland areas outside of Nyal while the sorghum provided by WFP is imported from Uganda. The bulk of the market supply of locally grown (county or state level) came primarily from Leer by canoe via Meer Island. The available quantities have dropped precipitously this year, due mainly to insecurity and a correlated loss of production in that area. As a result, the price of sorghum has also risen, making it unaffordable for most households in Nyal: previously, a 2kg bag would have cost 200 South Sudanese Pounds (SSP) and this is now 600 SSP.

Furthermore, WFP performs an annual registration exercise in targeted areas. This year, WFP and the IOM adopted a biometric registration process with a result that the *targeted population was reduced by roughly 55 percent*.⁸ This reduction is due in part to an assumption of historic double-registration and population shifts, but also the timing of the registration itself, which was conducted in March when many households (or household members) were reportedly working elsewhere and were not present for the registration. At the time of research, WFP had not returned to conduct a verification exercise, nor to include new arrivals/IDPs. This registration impacted the ration delivery as of April 2017 and the loss of 55 percent food rations overall has had a significant impact on the amount of food available for the broader community because households share their goods with unregistered households and/or those most in need. They are now no longer able to do so and all **households had increased their rationing strategies since April, which, at the time the research was conducted, was the last time there was a WFP food drop.**

Wild foods constitute most of the household food basket for both island and mainland communities in Nyal during the lean season (April to August). Access to the various wild foods was roughly consistent between the two 'geographic' groups of islands and mainland, though islanders needed more time to forage for forest fruits and mainlanders did not travel to the farther-flung islands.⁹ Mainlanders who would not normally migrate to the islands during the lean season¹⁰ also reported having lower confidence in their knowledge of wild plants and opted to rely on fewer different types of wild plants, even during the most severe period of the lean season. This makes them vulnerable in comparison to islanders, who have a better knowledge of available wild foods if they are displaced.



WILD FOODS CONSTITUTE MOST OF THE HOUSEHOLD FOOD BASKET FOR BOTH ISLAND AND MAINLAND COMMUNITIES IN NYAL DURING THE LEAN SEASON.

A man prepares ngata leaves, Kaikuny village, South Sudan

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IWFP SEASONALITY, RELIANCE, AND MOST SIGNIFICANT CHANGES

The research aimed to catalogue seasonal patterns of IWFP consumption to understand availability and reliance, as well as which IWFPs were the most and least preferred; all of this is linked to timing and frequency of their use. These layers support the identification of any significant changes to normal IWFP consumption and contribute to the understanding of those changes according to the most appropriate driving factor (see Notes for regular seasonal calendar).

Seasonality (normal lean season)

The seasonal calendar exercise aimed to confirm/identify the timing of different seasons for local communities (rainy, lean, dry, and any other pivotal points); create a catalogue of wild foods that might typically be eaten during a lean season and when they would be eaten. This provided a wide variety of potential IWFPs that could/would be consumed during the regular lean season. Figure 2 illustrates the normal seasonal timing (row 2) and the wild foods plus seed stocks (row 3) that are normally available and consumed in each corresponding month/period.

Figure 2: Composite seasonal calendar for IWFP availability and consumption (Nyal)
R = rainy season, D = dry season, L = lean season
Red line = annual wild food consumption pattern in approximated usage rates

WF use	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Seasons	R L	R	R	R	R	D	D	D	D	R	R L	R L
Lean season Wild Foods	Seed stock eating Koch, path, cuem, lew, water lily, lily root	Makating, yiel, richla, yiAl, jew melonf	Yiel, key, nor, tuok, koch	Yiel, key, tuok, koch	Yiel, key, koch	Lalope, kot, bd cuom, lew, jod yiel	Lew, joch, ko guan, cuom,	Lalope, lew, toch, guan,	Lalope, lew, toch, guan, yiel	Seed stock Lalope, lew, toch, yiel	Seed stock kach, path, guan lew, yiel, keey	Seed stock yiel, keey, nor tuok, kumbel koch

During a typical lean season, people would normally choose to eat water lily flower (also eaten year-round/throughout the rainy season), water lily root (considered a hunger IWFP) and fish as the main 'staples'. Other common preferred wild foods were *kodra* (green leaves) and *nor* (coconut). Together, these were the most preferred IWFPs, in addition to river fish, and are added to the daily diet around March/April (see Table 1). REACH data indicated that 69 percent of IDPs who arrived in Nyal from Ayod, Mayendit, Koch and Leer counties in July/August said they did not eat the same wild foods every day¹¹, highlighting the dependence on a variety of different wild foods for IDP populations in particular.¹²

Table 1: Most commonly consumed and *most preferred* lean season wild foods

Wild food name	Type and taste	When available	Preparation	How it is eaten	Availability
<ul style="list-style-type: none"> Water lily flower (<i>yiel</i>) 	<ul style="list-style-type: none"> Root/tuber 	<ul style="list-style-type: none"> Rainy season 	<ul style="list-style-type: none"> Pounded into flour Cooked with water into porridge 	<ul style="list-style-type: none"> Alone or mixed 	<ul style="list-style-type: none"> Common
<ul style="list-style-type: none"> Water lily root (<i>key</i>) 	<ul style="list-style-type: none"> Root/tuber 	<ul style="list-style-type: none"> Rainy season 	<ul style="list-style-type: none"> Cover removed Dried for 2–3 days Eaten raw or pounded into powder 	<ul style="list-style-type: none"> Alone or mixed 	<ul style="list-style-type: none"> Common
<ul style="list-style-type: none"> <i>Lalope</i> 	<ul style="list-style-type: none"> Skin of fruit, fruit leaf, seed Seed is bitter, fruit is sweet 	<ul style="list-style-type: none"> Nov–Apr 	<ul style="list-style-type: none"> Skin pounded into powder Seed boiled for 4 hours 	<ul style="list-style-type: none"> Is eaten with grain or other foods directly Eaten even if other food exists 	<ul style="list-style-type: none"> Common
<ul style="list-style-type: none"> <i>Kudra</i> (<i>kudera</i>) 	<ul style="list-style-type: none"> Leaves Mildly bitter 	<ul style="list-style-type: none"> Rainy season 	<ul style="list-style-type: none"> Boiled 	<ul style="list-style-type: none"> Eaten with other foods 	<ul style="list-style-type: none"> Common
<ul style="list-style-type: none"> Coconut (<i>nor</i>) 	<ul style="list-style-type: none"> Yellow orange fruit Sweet 	<ul style="list-style-type: none"> Rainy season 	<ul style="list-style-type: none"> Break outer shell Eat inner flesh and throw away the seed 	<ul style="list-style-type: none"> Alone or mixed 	<ul style="list-style-type: none"> Relatively common especially on islands

Source: Indigenous Solutions to Food Insecurity – Wild Food Plants of South Sudan, Oxfam, 2015

Conversely, *lew* (root), *paath* (swamp grasses/reeds), *guan* (wild yam) and *kumbel* (leaves) are all difficult to collect, difficult to prepare, have a terrible taste, and are more likely to cause physical pain/health issues after eating, such as stomach pains and diarrhoea. These were the ‘top-rated’ less preferred IWFPs (those that households only select in times of serious food insecurity) available in and around Nyal, in addition to *muokading*, *ngop*, and *neem*. These will mostly be eaten in June and July as the lean season ends (see Table 2).

Table 2: Most commonly consumed and *Less Preferred* lean season wild foods

Wild food name	Type and taste	When available	Preparation	How it is eaten	Availability
• <i>Lew (leuw, leew)</i>	• Root • Very bitter	• Rainy season	• Boiled for 12–24 hours • Poisonous if not cooked long enough	• Without other foods	• Fairly common in some areas
• <i>Thal (thial)</i>	• Leaves • Not bitter	• Rainy season	• Boiled	• Mixed with other foods or alone if necessary	• Limited
• <i>Guan</i>	• Root/tuber • Bland, mealy	• Later in the year	• Remove cover, put into water for 2 days; cook 3–5 hours • Poisonous if not cooked long enough	• Usually alone because of potential side-effects	• Common in swampy areas
• <i>Paath (bulrush)</i>	• White root • Tasteless	• Year round	• Eaten raw or cooked	• Most often freely picked and eaten	• Common in swampy areas
• <i>Muokading (amaranth, African spinach)</i>	• Leaves • Tasteless	• Rainy season	• Boiled	• Mixed with sorghum	• Relatively common

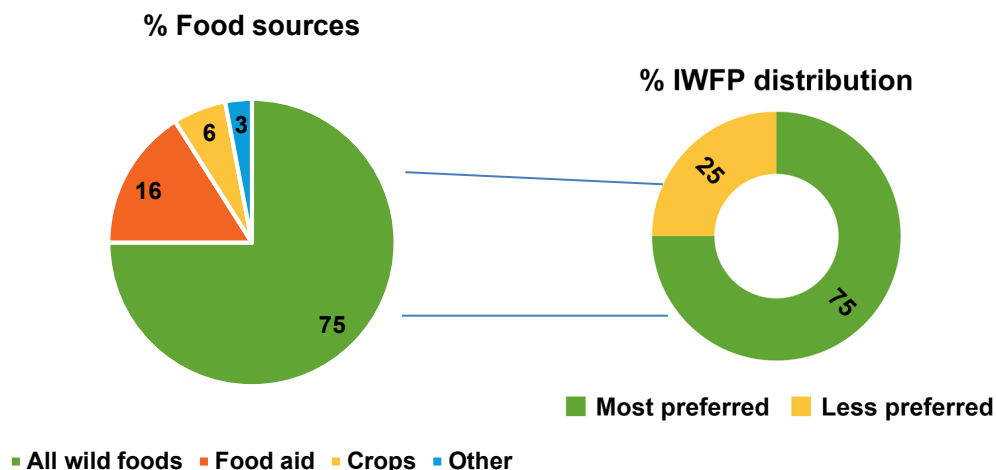
Source: *Indigenous Solutions to Food Insecurity: Wild Food Plants of South Sudan*¹³

Reliance

'Death will come when there is no wild fruit (bey nen)' (FGD package 5, Meer)

In general, all FGDs and all KIIs revealed the same stark situation regarding food sources: at the time of the research (end of June/early July), households were relying 80–100 percent on wild foods and equated wild foods with survival foods. This is corroborated by REACH data which indicated that 66 percent of IDPs who had arrived in Nyal in July/August consumed wild foods at the time of the assessment in August percent, with figures as high as 100 percent of arrivals from Ayod and Koch counties.¹⁴ While it is expected that this would be quite high in July of any year (the peak of the lean season), **100 percent reliance on foraged foods is atypical**. This reflects low levels of own production on both the islands and the mainland, with only a slightly higher percentage of hosts (42 percent) planting crops compared with IDPs (34 percent). Wild foods would normally comprise at least 85 percent of a (peak) lean season food plate but the less preferred wild foods would represent only approximately 20–25 percent out of that 85 percent, compared to a reported 40 percent at the time of research.

Figure 3: Normal lean season IWFP portions



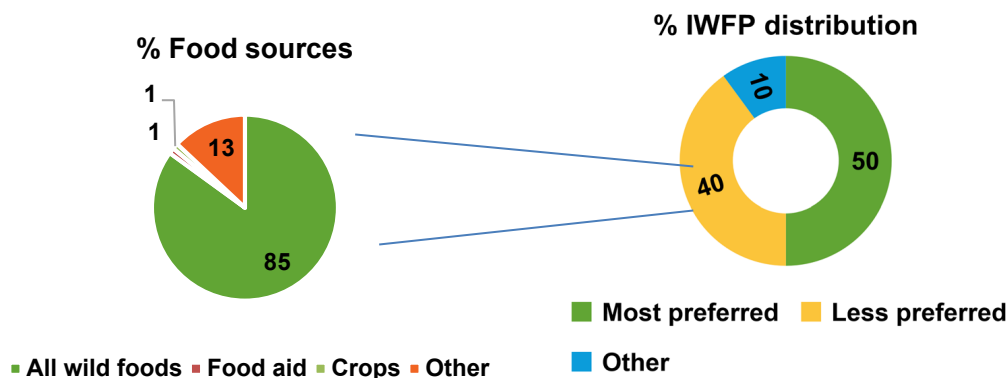
Notably, 75 percent of the FGD participants expressed a clear division in their general perception of food: wild fruits were for survival and not a ‘meal’ food, ‘not a real food’. Most of the FGDs (11 of the 15) reported that they would/do stop eating wild foods entirely once WFP rations are received because ‘food aid is the best food’. Only two FGDs expressed the opposite sentiment, that IWFPs and fish should be eaten alongside the food aid or that the food aid be stored away. None of the KII respondents provided an opinion other than to confirm that food aid is preferred to wild foods and that reliance on one food source at a time is always ‘around 90 percent’ (KII 4, Nyijam).

Most significant changes

A section was added to the seasonal calendar exercise to create a comparison chart to highlight any changes in the *timing* of consumption and/or types of wild foods that have been consumed during *this* lean season period. This demonstrated a wide variety of potential IWFPs that could/would be consumed during the lean season, both first and last choice foods. **A critical difference was in the quantities and frequency of certain less preferred wild foods being eaten. This was indicative of limited or no availability of other (usually preferred) foods, most crucially sorghum [this includes varieties that are grown (*arfa* and *gadmek*) and those received through humanitarian assistance].**

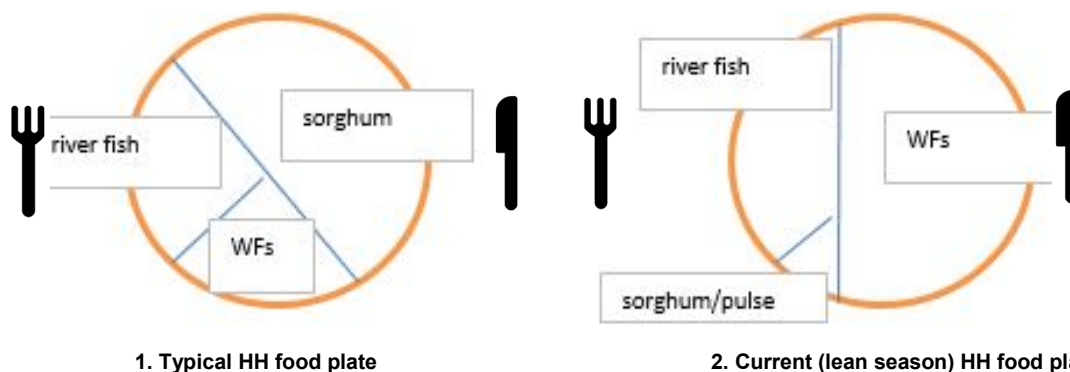
- The most preferred wild foods would make up most of the wild food portion of a food plate in July of any year and represent around 75–85 percent of all food being consumed. This year, the most preferred IWFPs account for roughly 35–50 percent of the food plate and respondents stated the decrease in the most preferred IWFPs began as early May.

Figure 4: Current IWFP portions



- The less preferred wild foods were also being eaten by **all** households (100 percent) on the islands and on the mainland, whereas *normally* 60–70 percent of households would require these less preferred foods in June/July only. As expressed by one FGD participant, **‘We are eating everything except for the soil’** (FGD package 4, Nyijam).
 - Households were eating the less preferred *lew*, *paath*, *guan*, and *kumbel* at least once per day. Most participants provided us with an answer such as, **‘We only eat *guan* and *paath* now due to the force of the food shortage; we just eat it for survival’** (FGD package 10, Ngop 1).
 - These make up a larger part of the daily diet than they normally would, even at the height of the lean season. This year, the **less preferred wild foods make up at most 40 percent of the wild foods portion of the plate.**

Figure 5: Composite comparison of household (HH) food plate/sources



- Respondents explained that the increase in the amount of less preferred wild foods being eaten was related to the limited availability of more preferred wild foods in general, more so with the increased prevalence of households relying on these, in addition to having no other viable food sources (i.e. WFP or the markets).
 - WFP rations had not arrived in Nyal since April, and significantly fewer households had received rations as compared to the distribution round prior to the biometric registration.
 - Markets were not functional in Nyal during the research, with only small amounts of local IWFPs available. Paired with inflation and a significant disruption of the cattle and other key trade markets, most households were unable to afford staple food commodities when available.
 - Fewer water lilies (flower and root) were available close to shore (both mainland shore and islands nearer to the mainland and many were only to be found in deeper waters near the islands furthest from the mainland).

- There are two different types of water lily: the smaller water lily (*kurum*) is more difficult to find than the larger water lily but is still foraged for and eaten in the same way; *kurum* was said to be available further out in the deeper waters.
- Water lilies are also available on a ‘cyclical’ basis, meaning they take at least seven days to regrow once they have been harvested. In addition, all of the island respondents indicated an informal agreement was in place between some of the neighbouring islands: island groups would alternate the weeks that water lilies in certain areas would be collected by each group to reduce the risk of over-harvesting and to ensure that different communities had roughly equitable access to the wild foods.
- Most households will add some wild foods (e.g. the most preferred, such as water lily flower) more heavily to their diet before and for the full duration of the lean season while others such as lily roots would only be eaten in June or July. However, respondents noted that, **‘This year we began to eat water lily root in April compared to last year when we ate them in June’** (FGD package 11, Ngop 1). Figure 4 below catalogues the types of IWFPs that respondents indicated were being consumed on a daily basis:

Figure 4: Types of IWFPs consumed by respondents daily

	July	August	Sept	Oct– Feb	Mar	April	May	June
Changes in Wild Foods	<i>Boch, Koch, purpur</i>	<i>Lew, yiel, key</i>	<i>Key, yiel</i>		<i>yel</i>	<i>Lew, yiel, path, key, nor, tuok, guna</i>	<i>Lew, yiel, path, key, nor, tuok, guan, muokadind, ride roots, pon poon, neem</i>	<i>Lew, key, yiel, path, nor, dolgak, ride roots, pon poon, neem</i>
	<i>Long, dolgak, lew</i>		<i>Ride roots, nor</i>					
	<i>Loch, tuok, nor, tubur</i>	<i>Nor, palm tree, tuok, ride roots</i>						
	<i>Key, path (ride roots)</i>							
	<i>Guan, lew, Koch, thial, muokading, kudra, neem</i>							

- *Guan* and *lew* were the other two main wild foods that households reported relying on earlier in the year (April/May) and relying on them to a greater extent: these IWFPs were being consumed three to four times per week per household in July, compared to one to two times per week in the same period last year.
 - FGD respondents estimated that the frequency in consumption had increased in late May/early June.
 - The relationship between wild food reliance and meal frequency is mostly inferred in terms of a) available amounts of IWFPs and b) time requirement for collection/preparation. Most households have enough food set aside for a meal in the morning of the next day but **the significant time burden for collection and preparation of IWFPs should be considered against the overall meal frequency data.**
- Based on the ‘food insecurity spectrum’ exercise, *guan* and *lew* and river grasses (reeds) are extreme hunger foods; these foods are so disliked by some households that they are also referred to as ‘famine foods’ that would only be consumed in the most serious situation. Those same households reported that they were eating these famine foods as a substantial part of their current daily diet.
- Migration was also classified as a last resort activity that will only occur in the most severe circumstances, i.e. extreme hunger: **‘They [wild fruits] are important because we eat them to survive: if there is not [wild] fruit you migrate to look for food’** (FGD package

9, Dhuoyman) and ‘hope you know what to look for when you’re there (KII 11, Block 3). While migration due to conflict brought IDPs into Nyal, no households were said to have migrated in search of food, according mostly to the ROSS representative.

- Migration from the mainland to the islands is common practice for some households (15 percent) who will shift on a yearly basis during the lean season to have better access to fish and some small planted crops (usually cassava).
- This year, there has been an increase of 10–15 percent in the number of mainland households that have a) shifted to the islands and b) shifted earlier in the year (i.e. April instead of June).¹⁵



- In general, most people indicated that the same wild foods would still be available for the next two months and did not indicate any concerns about the ‘rates of use’ i.e. over-harvesting of any plant. This was corroborated by KII respondents from four islands and from

three mainland blocks who explained that the community approach to natural resource management was widely known and followed. They felt strongly that inter-community conflict/tensions were rarely if ever based on access to wild foods.

- Respondents noted that the green harvest¹⁶ would take place in August, so the overall composition of the food plate would shift to include those crops, though this would only amount to approximately 25 percent of the plate (with or without receipt of WFP rations).
- Most respondents were waiting for green harvests of maize and cassava; very few households grow sorghum despite it being a favourite (and more nutritious) staple food.
 - Sorghum is not grown in Nyal despite having sufficient rainfall/irrigation potential; the most common response as to why it was not grown was that land was not available and that it was ‘just not grown in this area; it is mostly from the highlands’ (KII 11, Block 3). In addition, low seed quality and relatively poor agricultural practices have contributed to low local yields.
 - The WFP ration of sorghum was **not** stated as a reason for not growing sorghum in Nyal. However, in general there was a clear and common concern among respondents about whether they would continue to receive WFP rations at all or whether any discussion about food aid or their household production would impact the ration content or amount.¹⁷
- Eating seed stocks (mostly provided by NGOs though some households have a small store of seeds from their harvests) as a ‘complement’ or replacement to wild foods was generally considered as a last resort coping activity and was most widely practiced on the mainland; FGD and KII respondents from the mainland all reported knowing of at least two households that were consuming or had consumed their seeds.



MIGRATION WAS CLASSIFIED AS A LAST RESORT ACTIVITY THAT ONLY OCCURS IN THE MOST SEVERE CIRCUMSTANCES.

THIS YEAR THERE HAS BEEN AN INCREASE OF 10–15% IN THE NUMBER OF HOUSEHOLDS MOVING TO THE ISLANDS.

A family arrives in Nyal after fleeing famine and conflict in Mayendit County

© Dorothy Sang /Oxfam 2017

- Information provided regarding the timing of the consumption of seed stocks (normal vs severe) varied considerably. Some groups indicated that seed stocks were eaten as early as March and that ‘if you have no food at all you cannot let your children die so if there is seed stock in your house you eat it’ (FGD package 2, Nyiani).
- Mainlanders repeatedly explained that neighbouring households were eating seed stock (provided by agencies) because they had been provided with ‘too much seed for their [available] land’ (FGD package 13, Block 3) and ‘would not store that type of seed’ (FGD package 10, Block 2). Those respondents further explained that they would have consumed that excess seed even if they were not facing a food shortage because they could not plant it and did not think it could be sold.

IWFPS AND HEALTH: IMPACTS AND PERCEPTIONS

Nutrition was commonly understood and explained by respondents as a physical feeling: the best foods ‘make our bodies fat’ (FGD package 6, Meer), and they ate wild foods like ‘fishes and *thow* or *lalope* to add nutrition value to our bodies’ (FGD package 2, Nyiani), while giving the feeling of energy. These beliefs also correlated closely with the taste of the wild foods, where preferred foods were deemed the best for health.

Foods thought to have no nutritional value were those that made people feel uncomfortable/ill after eating them, such as *guan* and *lew* – the less preferred IWFPS were often said to be generally unhealthy. Nevertheless, some of the less preferred IWFPS were eaten for (the perception of) providing the same feelings of fullness as compared to sorghum: ‘*Guan, lew, muakading, tamleke, yop, kuombel, nyot, thow, kuoth* [are eaten] even though they are bad but you will get a full stomach’ (package 5 Meer).

Children were reported to eat more ‘picked’ wild fruits (with more snacking behaviour than meal-based eating habits) and ate less of the less preferred foods because of their (frequently) bitter taste. None of the respondents stated or suggested that there were any major risks associated with this kind of foraging and explained that children are taught from a young age what to pick and what to avoid; this does not mean that there are no incidences of children falling ill from eating toxic fruits. However, respondents also stated that there were no alternative foods available for children or that children would willingly eat. Children had visibly less energy, and multiple FGDs and KIIs stated that ‘normally children would be out playing in the afternoons, but now they are not able to and they do not¹⁸’.

Adults were largely concerned about the general health of children and assume they will be ill more often due to ‘a lack of nutrients in their bodies since a very long time’ (FGD package 6, Meer). However, respondents



ADULTS WERE CONCERNED ABOUT THE GENERAL HEALTH OF CHILDREN AND ASSUME THEY WILL BE ILL MORE OFTEN DUE TO ‘A LACK OF NUTRIENTS IN THEIR BODIES SINCE A VERY LONG TIME’.

A child sits on his mother’s lap as health personnel take his measurements to determine his nutrition level

© Bruno Bierrenbach Feder/Oxfam 2017

also expressed that this would improve once children could start to eat sorghum again as their main staple.

IWFP NUTRITION 'PROFILE'

Most of the wild fruits consumed in the Nyal area are roots, tubers, and leaves. The roots and tubers (i.e. the plant roots and *guan*) are primarily starchy carbohydrates, while the local nuts (such as *lalope*), small 'picking' berries, and large variety of leaves (over 20 varieties were recorded) are sources of vitamins B and K. However, this combination of wild fruits has overall low nutritional value at a macro-level, comprising less than five percent protein: each individual would need to consume around 1–2kg of wild fruits per day to meet minimum caloric requirements (2100 kcal/pp/day as per SPHERE standards).¹⁹

Households reported gathering and drying 3–4kg of water lily root at one time, and that this amount would last from four to five days for a household of our average 8.6 people: taken with the maximum values, this would provide **approximately 93 grams of dried water lily root per day per person per household**.²⁰ The less preferred wild foods such as *guan* were collected in amounts closer to 10kg per household with their consumption stretched out over 10–20 days (primarily based on distance to travel to collect them in the surrounding forest areas).

The green leaves that make up the other components of the daily diet are boiled in water to make soups or thicker stews, e.g. *kodra*. These greens provide an important complement to the starch-based diet as they are a key source of vitamins (mostly A and B). However, some of the greens are cooked for an extended period e.g. three hours, which may result in significant degradation of the nutrient profile. It should be noted that respondents explained it was necessary to cook leaves for many hours to achieve the following: soften the leaf, remove a bitter taste, and/or to reduce the risk of toxicity.

The amount of leaves (here including grasses such as *paath*) eaten per day was difficult to quantify and varied per household based on location and access to income/market. Leaves such as *kodra* were available in the mainland Nyal market with three different vendors selling five to eight bunches – bunches are equivalent in size to a very small bouquet of flowers. A household in Nyal may have **around three bunches of (a variety of) leaves per day**.

Fish was consumed every day by island households and three to five times per week by mainland households. This was a significant source of protein which complemented the lack of protein in the wild fruits. The availability of river fish is relatively constant during the rainy season, which overlaps with the lean season. However, the amount of fish consumed every day is minimal as the fish most commonly eaten are (approximately) less than 0.5kg apiece, with households having an average of four small fish per day. Two islands – Ngop and Meer – had larger sized fish that were caught by men from their community using their own boats. Mainlanders relied on fish available near the shore or for sale.

Based on these rough findings, it **is assumed that everyone was consuming less than 1000kcal/day at the height of the lean season and based on a diet of 100 percent wild foods** (see Table 3 below). This had been the norm for communities in Nyal since May of this year.

Table 3: Minimum daily caloric and nutrient requirements: SPHERE vs IWFPs

Food source	Protein content	Fat content	Total kcal per person	Micro-nutrient content
<i>SPHERE standard</i>	<ul style="list-style-type: none"> • 10–12% • 50g • 252kcal 	<ul style="list-style-type: none"> • 17% • 65g • 357kcal 	<ul style="list-style-type: none"> • 2100 (including 300g carbohydrates) 	<ul style="list-style-type: none"> • Vitamin A: 5000 IU • Iron: 18mg • Iodine: 150µg • Zinc: 15mg
<i>Wild plants (considered as 100 percent of diet, without fish)</i>	<ul style="list-style-type: none"> • <5% • 25g • 105 kcal 	<ul style="list-style-type: none"> • <5% • 25g • 105 kcal 	<ul style="list-style-type: none"> • <1000 (including 300–500g carbohydrates) 	<i>Unknown – assumed passable on Vitamin A and zinc</i>
<i>Difference of wild plants from SPHERE</i>	<ul style="list-style-type: none"> • 5–7% • 25g • 147kcal 	<ul style="list-style-type: none"> • 12% • 40g • 252kcal 	<ul style="list-style-type: none"> • 1100kcal 	<i>Unknown</i>

GENDER AND INTRAHOUSEHOLD FACTORS

The findings related to gender were not surprising. The division of labour/roles and responsibilities is based on gender in every household interviewed, with clear statements that women and girls both collect and prepare all of the various wild plants while men and boys fish and hunt.

It was widely considered as ‘shameful’ for men to participate in the collection or preparation of wild foods based on cultural norms, though men were willing – and in some cases expected – to accompany women and girls while they collect the plants to provide protection from animal attacks (snakes and crocodiles in the water, bears and wolves and armed men/groups on land).

The collection of wild foods is an extremely labour intensive activity, taking a minimum of four hours and up to an entire day including travel, forage and returning home. Collecting on land requires a significant time investment to locate the plants and dig them up, while collecting on the water requires diving to the bottom of the waterway (anywhere from 0.5m to several metres deep) to dig up the roots of the water lily and grasses; as previously mentioned, water lily was currently more plentiful around the furthest islands, which are an eight-hour canoe trip one way and surrounded by deeper water.



COLLECTION OF WILD FOODS IS EXTREMELY LABOUR INTENSIVE, TAKING A MINIMUM OF 4 HOURS AND UP TO AN ENTIRE DAY.

WOMEN AND GIRLS MUST THEN PREPARE THE WILD FOODS, SOME OF WHICH TAKE SEVERAL DAYS TO PREPARE.

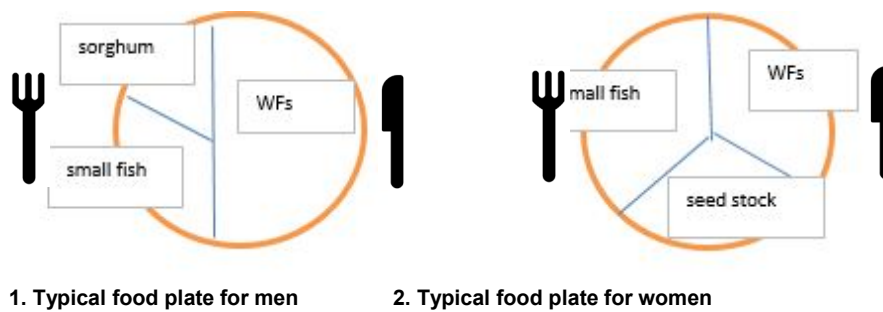
A woman prepares water lily bulbs while her child watches

© Corrie Sissons / Oxfam 2017

Women and girls must then prepare the wild foods, some of which take several days to prepare with various steps. For example, water lily root takes at least one full day to dry out before it can be cut and/or cooked; water lily must be dried and ground into an *ugali*-like paste; *guan* takes at least five hours of cooking at a constant temperature to reduce the bitter flavour and mitigate the side-effect of stomach pains from the mildly toxic skins. Women and girls thus have a significant additional care burden in relation to ensuring household food consumption overall during the lean season and during times of heavy reliance on wild foods.

All FGDs indicated that **'the men can have the most food and the young girls and boys should be second and the women would have the least food'** (FGD package 7, Dhuoyman), and that **'the food that is given to men should be bigger than other family members' food'** (FGD package 13, Block 2).

Figure 7: Gender disaggregated composite food plate



There are some wild foods that are not normally consumed by men, namely *yop* and *thal* (FGD package 11, Ngop 1). 50 percent of the FGDs and 30 percent of the KII respondents stated that women and children consumed seed stocks but men did not, even during the height of the lean season.

As would be expected, respondents from all FGDs and KIIs stated that adults will forego or reduce their own consumption so that children can eat with this responsibility falling most frequently on women in the household.

The risk factors mentioned by the respondents primarily affected women and girls, who were deemed to be at higher risk of animal attacks and health impacts linked directly to the process of collecting wild foods. Respondents did not explicitly state or suggest any SGBV issues that would correlate with IWFPs; however, the author is aware of information obtained by Oxfam's protection team that points towards the opposite.

5 CONCLUSIONS

The consumption of wild foods is common throughout the year in Nyal and many other parts of South Sudan. **Wild foods are relied on more heavily during the lean season but their use is more a normal adaptation than a coping strategy.** Therefore, the research question that aimed to explore the severity of wild food consumption as a coping strategy had to evolve during the research to better capture the reality of the situation and to define ‘coping strategies’ in an appropriate, contextualized way.

Note to the reader

Ultimately, wild food consumption is not itself a negative coping mechanism but the consumption of less preferred and ‘higher-risk’ wild foods (in terms of collection and health effects) is a signal of an increase in household food insecurity – particularly if it occurs outside of a normal point in the year and if it constitutes more than 40 percent of a daily (or weekly) food plate. This information can be used as an additional inferred indicator of the level of food insecurity and/or as an ‘early warning’ factor.

In a normal year IWFPs might make up about 50 percent of a food plate and contain mostly coconut, water lily and its root. This year, the food security situation in Nyal was deemed to be worse than in previous years because of a combination of factors including the compounding impacts of the conflict, subsequent reduced ability to plant key crops (more of an issue on the mainland), and WFP’s biometric registration process. The most significant findings were that **the reliance on consuming less preferred wild foods (such as *guan* and *lew*) had increased overall among the general population** (more of those were being eaten each day) and that most households had also **started eating those less preferred foods earlier in the year** (i.e. April). The third finding was that the **number of types of wild foods normally consumed (both preferred and less preferred) increased overall as households struggled to fill their food gap.**

100 percent of FGDs and KIIs expressed some version of the same sentiment: that they were waiting for WFP rations to arrive and that they were eating only wild foods for survival. Those two food sources are polar opposites, and the lack of a reliable (or any) ‘middle-ground’ source of food (i.e. own production and/or functional markets) is evidence of the relative failure to effectively support populations to meet their immediate needs or to develop viable approaches which complement that much-needed food assistance over the longer term. That IWFPs have most effectively sustained a population during a severe food insecurity crisis should be closely considered and integrated to strengthen the timing and the outcomes of food security responses.

6 RECOMMENDATIONS

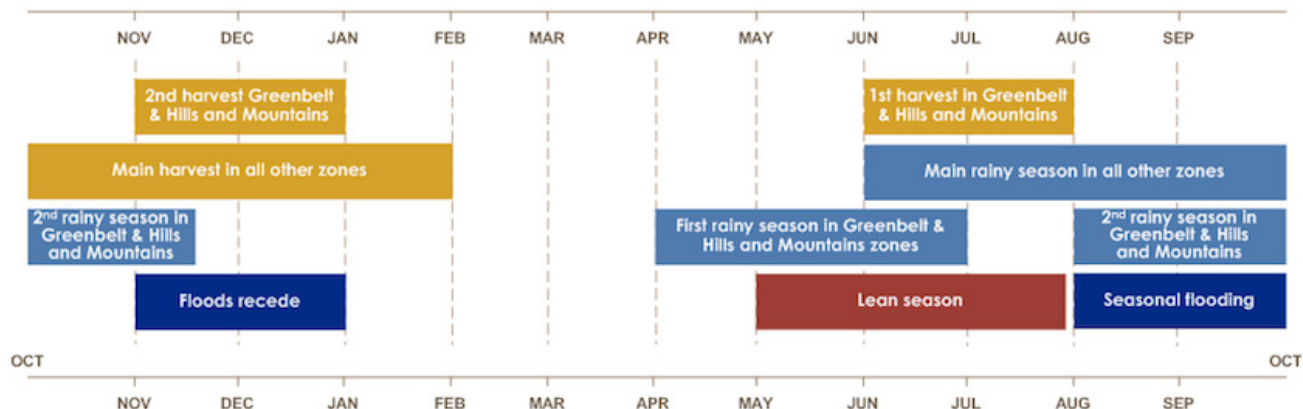
IWFPs and river fish are an integral part of the diet of Nyal-ese year-round. This research seeks to understand how and when the use of IWFPs can be enhanced for the populations that rely on them. At the same time, the research takes into account the current near-total dependence on and preference for WFP food rations which, for most households, provide the only available staple pulses in the household diet. Therefore, the recommendations skew towards exploring smaller opportunities to buttress food security and nutrition programming in a way that is more responsive to the local context:

1. Humanitarian actors, the government and the UN (WFP/FAO) should increase the frequency of food assistance plus buffer stocks, *especially around the lean season*: households are falling well below the SPHERE standard of 2100kcal/pp/day.
2. Humanitarian actors and the UN should consider developing sensitization messages related to pairing food assistance with IWFPs.
3. Humanitarian actors and the UN should consider repeating this exercise in other counties of South Sudan to identify and catalogue the most preferred and least preferred IWFPs, and the usual seasonal timing of their consumption
4. Humanitarian agencies and the UN should include the most preferred and least preferred IWFPs and the usual seasonal timing of their consumption in EFSVL/joint assessments.
 - Incorporate protection analysis/considerations in order to understand access and risk patterns related to IWFP collection and preparation
5. Humanitarian agencies and the UN in Nyal should analyse the main lean season IWFPs (water lily flower, water lily root, *guan, kudra, thor, lew*) for nutritional content information through lab-based testing.
 - Quantify kcals consumed/day/pp during lean season peak from IWFPs.
 - Utilize information to develop awareness sessions for communities about nutritional value of IWFPs.
 - If possible, identify combinations of IWFPs that might reduce side effects such as stomach pains (include in sensitization messages as listed above).
6. Humanitarian agencies and the UN in Nyal should discuss with communities and other agencies the current approaches to and challenges around seed distribution and household production: what are the constraints? What are the preferences for seed types? If sorghum is preferred, can it be grown on the islands and on the immediate mainland?
 - Develop joint-awareness session about eating treated seeds, what to do with 'excess' seeds and food storage.
7. In Nyal, advocate for a verification of the biometric registration in the Nyal area by WFP/IOM.

NOTES

Please note: The Oxfam report *Indigenous Solutions to Food Insecurity: Wild Food Plants in South Sudan*, authored by Michael Arensen in 2015, is referenced throughout.

South Sudan national seasonal calendar:



Source: FEWSNET

1 IWFPs include fruits, nuts, tubers, roots and grasses, plus the stems, leaves and skins; they can also include fish, birds, insects or game depending on the area and the community-level definition of IWFPs.

2 The (Acute) Food Insecurity Integrated Phase Classification is a global level method of identifying the scale and severity of a food crisis, based on a five-phase measurement (considering households and area-level impacts): 1 – Minimal, 2 – Stressed, 3 – Crisis, 4 – Emergency, 5 – Catastrophe/Famine.

3 IOM, Mercy Corps, IMC, IRC and Oxfam.

4 It is common that men and boys will travel/migrate to other areas of the country during the lean season in search of food for the family. Therefore, not all of the self-identified 39 FHH are female-headed throughout the entire year. The exact number of households in this type of situation was not clarified by enumerators.

5 Proportional piling involves asking a specific question and allowing community members to answer by showing the relative importance of different categorical choices through a visual aid (e.g., stones, beans) that can be translated into percentages. Participants are asked to allocate all the items to represent piles of a specific aspect of the food security assessment (e.g. different coping strategies).

6 REACH is a joint initiative of IMPACT, its sister-organization ACTED, and the United Nations Operational Satellite Applications Programme (UNOSAT). It employs its A-Ok methodology to collect relevant information in hard-to-reach and inaccessible areas to inform humanitarian planning and interventions outside formal settlement sites. Using the A-OK methodology, REACH remotely monitors needs and access to services in Greater Upper Nile, Greater Equatoria and Western Bahr el Ghazal. For more information, please contact: south.sudan@reach-initiative.org

7 Oxfam adheres to the IPC Phase Classification definition of famine at the area level (see [Guidelines on Key parameters for IPC Famine classification](#), Nov 2016). However, for the purposes of this paper, 'famine' was a term some respondents also used to refer to extreme household level hunger.

8 Panyijar Country Biometric Registration Update, IOM DTM, April 2017.

9 The furthest of Nyal's islands are an eight-hour one-way canoe ride away from the mainland.

10 Some mainland households migrate to an island on an annual basis during the lean season, estimated to be about 15 percent of mainlanders according to KII respondents.

11 This refers to interviewed IDPs who reported consuming wild foods at the time of the assessment in August 2017.

12 REACH A-OK Data (Area of Knowledge) collected in August 2017 in Nyal.

13 Arensen, M. (2015). *Indigenous Solutions to Food Insecurity: Wild Food Plants in South Sudan*. Oxfam.

14 REACH A-OK Data (Area of Knowledge) collected in August 2017 in Nyal.

15 Part of the rationale for this relates to WFP's biometric registration and the reduction in the total number of registered households to 50 percent of the previous target. Therefore, households that were excluded from the new list or missed the registration had to adopt alternative strategies to cope with their immediate and future food gaps.

16 A green harvest is a method of crop thinning or pruning that helps to manage yield and to help the remaining stems/fruits/etc. to fully ripen. The green harvest is therefore not fully ripened but edible.

17 Participants in FGDs and KIIs were explicitly told before each session that this research project had no impact whatsoever on their food assistance or other assistance and that it was unrelated to the determination or targeting of assistance.

18 In addition, kwashiorkor was observed in roughly 40 percent of the surveyed locations.

19 The Sphere Handbook, *Humanitarian Charter and Minimum Standards in Humanitarian Response*, is one of the most widely known and internationally recognized sets of common principles and universal minimum standards in life-saving areas of humanitarian response. <http://www.sphereproject.org>

20 Please consult the 'Gender and Intrahousehold Factors' section for information related to disaggregated consumption behaviours.

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