



Rapid Village Assessment in the Upper Chindwin Basin, Myanmar

Final version



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1. Introduction

1.1 Background

The Darwin Upper Chindwin Basin project aims to conserve ecosystems to support livelihoods and implement community measures for the conservation of wetlands that support and sustain resilient livelihoods in Myanmar's Upper Chindwin Basin. Biodiversity and ecosystem services assessments in the selected region will feed into Community Action Plans (CAP) developed alongside stakeholders to establish sustainable agricultural, land and water management practices. Practices will include demarcation of conservation and restoration zones, enhancing community-based natural resource management and to support just transitions.

1.2 Study Area

The Upper Chindwin River is a designated Key Biodiversity Area (KBA) since 2011 for its populations of white-winged duck (*Asarcornis scutulata*), Indian skimmer (*Rynchops albicollis*), Burmese roofed turtle (*Batagur trivittata*), and Burmese peacock softshell (*Nilssonia formosa*) among others. The Burmese narrow-headed softshell (*Chitra vandijki*) may also trigger KBA status when its conservation status has been assessed.

KBAs in the Upper Chindwin basin currently have no formal and/or legal protection. Earlier works of SEI have identified commercial mining and logging as well as unsustainable farming and overfishing as key threats to wetland habitats in the region and associated ecosystem services. Thus, it is critical to address current improper land and water management practices in the Upper Chindwin Basin with due focus on healthy and functioning wetlands. Hkamti township in the Upper Chindwin Basin is home to 38 threatened freshwater species including the critically endangered *Batagur trivittata* (Burmese roof turtle). Subsistence rice farming and fishing remain the livelihood mainstays supporting 36,819 people (including 18, 201 women) in the township. Fish provides 60% of the local population's protein intake and approximately 80% of the main household incomes are from nature-based activities.

Land use land cover (LULC) mapping (Figure 1) along the main river channel (500m) for the year 2020 indicated that forests and scrub occupy around 47.7 % of the region followed by agriculture occupying 12.47% of the total area with wetlands occupying only 2.8 km² (2.4%). Over a period of two decades from 2000 to 2020, 25% loss in wetland area has been observed with over 40% loss in forest cover within the region. A drastic increase has been observed in agriculture (+87%) as well as settlements (83%) largely at the expense of forests and wetlands. Large areas of land have been cleared for mining in the region leading to rapid increase of bare ground. Land use change has been far less severe in locations further away from the river, with the forest cover still dominating much of the valley. There has been a large area cleared along the Hkule Hka stream which is upstream of the KBA and so may affect water quality.

The LULC mapping led to the identification of several potentially interesting wetlands away from the main Chindwin River channel. Ten wetland sites were identified to carry out rapid village assessment with key focus on habitat mapping, ecosystem services assessments, threat analysis and rapid biodiversity surveys.

1.3 Survey methodology

A rapid village assessment has been conducted to help prioritise villages for the next stage of project activities, including baseline surveys and the development of Community Action Plans (CAP) to identify and establish sustainable agricultural, land, and water management

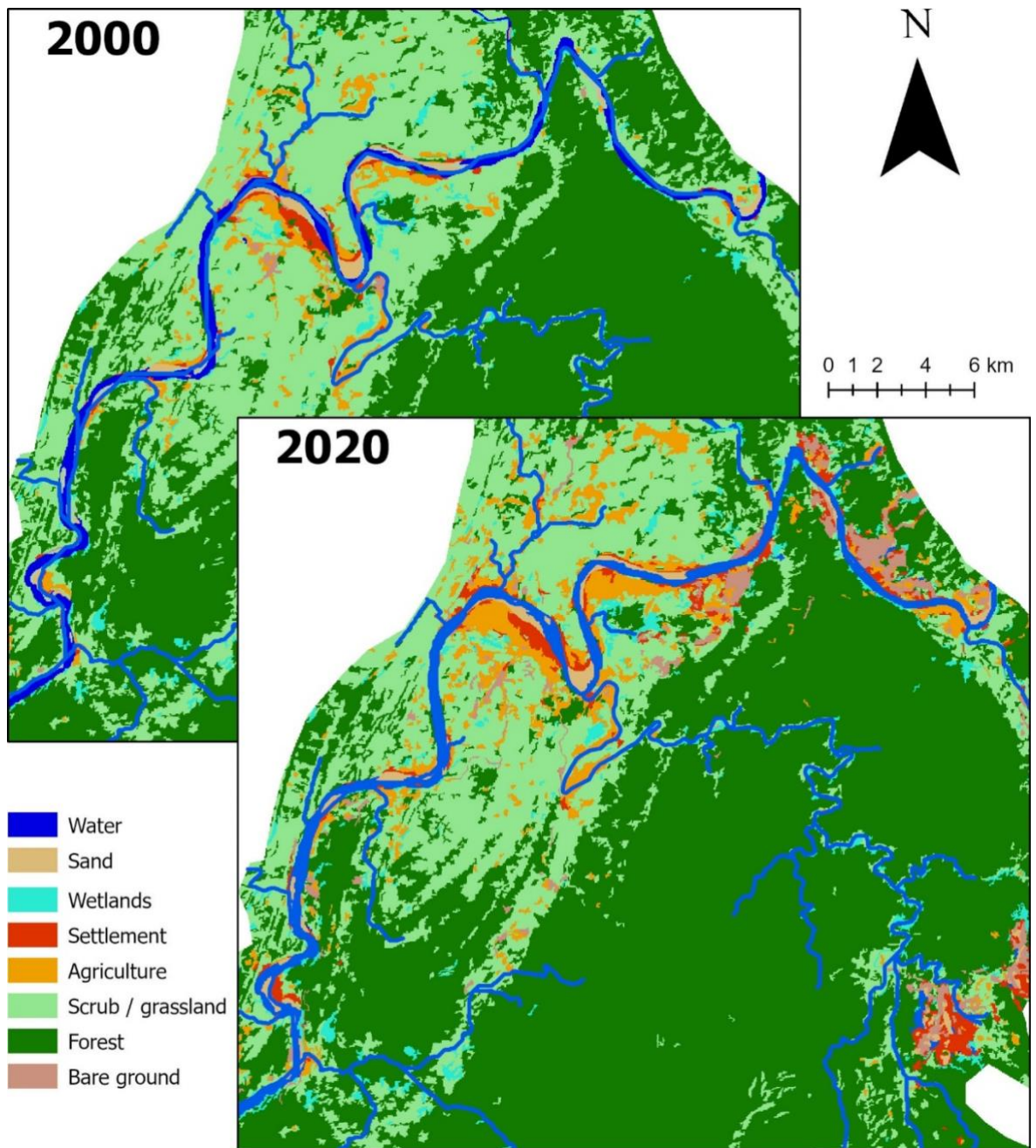


Figure 1 Land use land cover in the Upper Chindwin River KBA (Year 2000 and 2020)

practices. RVA focused on collection of field data to identify three priority wetlands for community management and to screen the wetlands against the Ramsar assessment criteria. To achieve the objective defined above, rapid village assessment relied on seven tools/methods listed in Table 1, which broadly include contextual information, village profile, wetland sketch mapping, rapid assessment of ecosystem services, threats assessment, rapid bird, and reptile survey. The assessment has been undertaken in 10 villages nearest to the priority wetlands identified using the LULC mapping Table 2.

Table 1 Summary of steps and objectives in the rapid village assessment methodology

Step #	Tool	Objective
1	Contextual Information Cover Sheet	Document the RVA process
2	Village Profile Datasheet	Gather/update basic village data
3	Sketch Mapping and Ground Truthing Transect	Gain overview of the site for reference in later steps; provide data to ground-truth the habitat map
4	Rapid Assessment of Wetland Ecosystem Services (RAWES)	Rapid assessment of ecosystems services
5	Wetland Site Threats Assessment	Identify key threats following the Ramsar standard typologies
6	Reptile interview survey checklist	Rapid Reptile survey
7	Expert field surveys	Rapid Bird survey

To help with the implementation of RVA on ground, WWT conducted a training over three half-days for the field team (including SEI, MEI and NSNO staff) to gain an understanding of the components of the RVA and ability to pilot the RVA process in the selected villages. Discussions during the training prompted the modification of two sections of the RVA, namely the definition of RAWES criteria and the conduct of sketch mapping prior to the assessment of ecosystem services.

Table 2 List of closest villages to selected wetlands chosen for RVA

Wetland	Closest Village
1	Naung Khan Inn
2	Aung Myay Village
3	Hman Pin Inn
4	Ma Kan Naung
5	Nyaung-ta-lyauk wetland
6	Bwat Lar Inn
7	Nuang Sa Pin Inn
8	Naung Taw Inn
9	Naung Lon Inn
10	Naung San Tai Inn

2. Summary of results

2.1 Key Observations

Village profile

Of the ten wetlands surveyed, it was observed that only three wetlands were greater than 50 acres in area including Naung Taw Inn (150 acres), Naung Lon Inn (50 acres) and Naung San Tai Inn (50 acres) (Figure 2). With respect to the number of households, Hman Pin Inn was largest with 138 households followed by Aung Myay Inn, Nuang Sa Pin Inn with 68 and 67 households respectively (Figure 3). Only a small proportion (~10-30%) of households in the surveyed villages are headed by women with the exception of Hman Pin Inn where ~75% of households are headed by women (Figure 4).

All ten surveyed villages are highly reliant on natural resources for local livelihoods, with 100% reliance in Naung Khan Inn and Naung Sa Pin Inn followed by Hman Pin Inn with 90% of households dependent on natural resources (Figure 5). Multiple resource systems have been observed during the field survey

with rice cultivation and livestock rearing being primary sources followed by fishing and hunting whereas some of the villagers are also involved in mining activities.

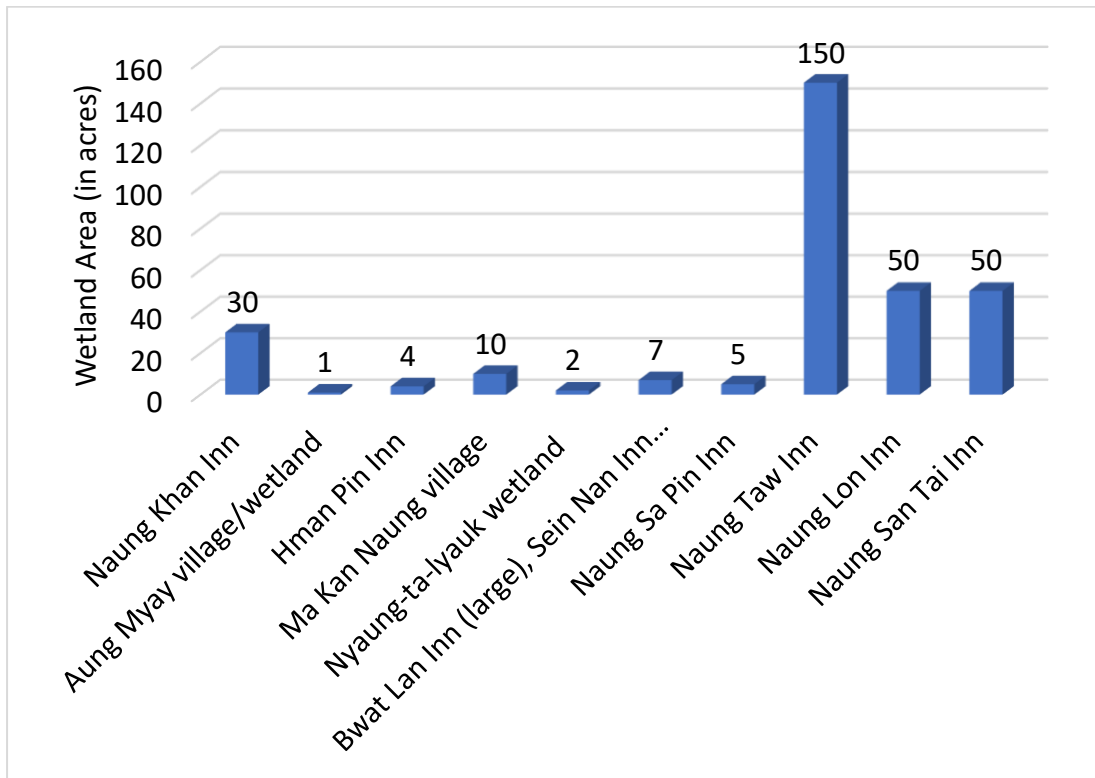


Figure 2 Variation in area of wetlands surveyed during RVA

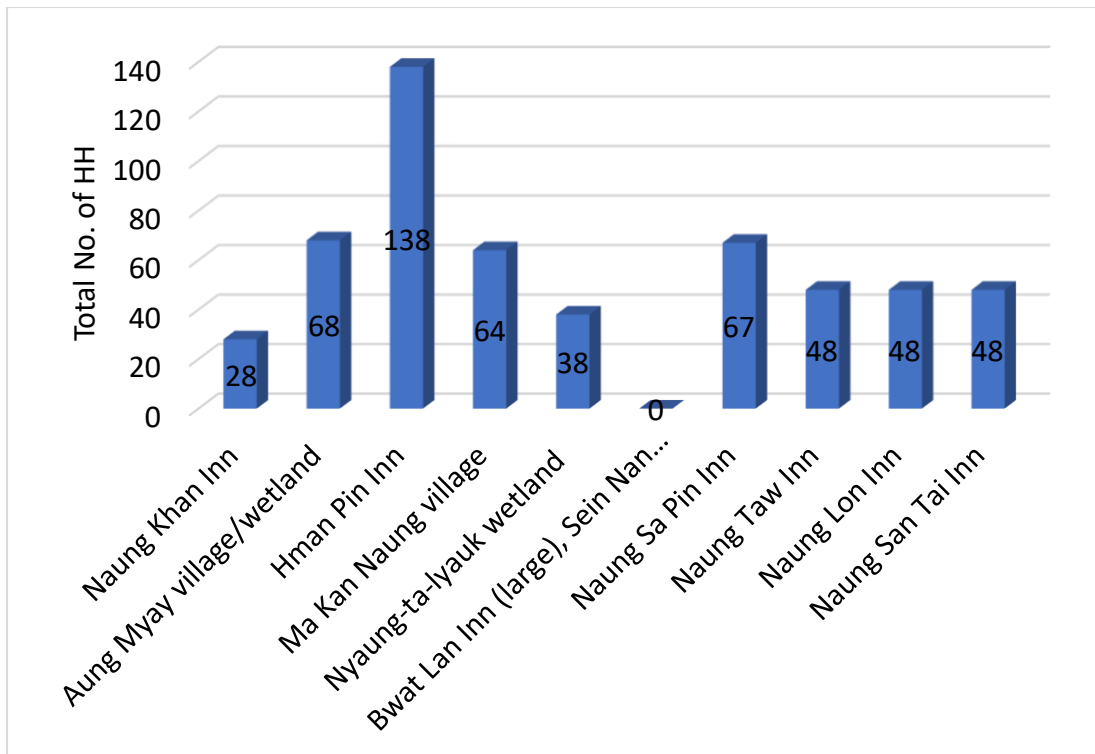


Figure 3 No. of households in the surveyed villages dependent on wetlands and natural resources

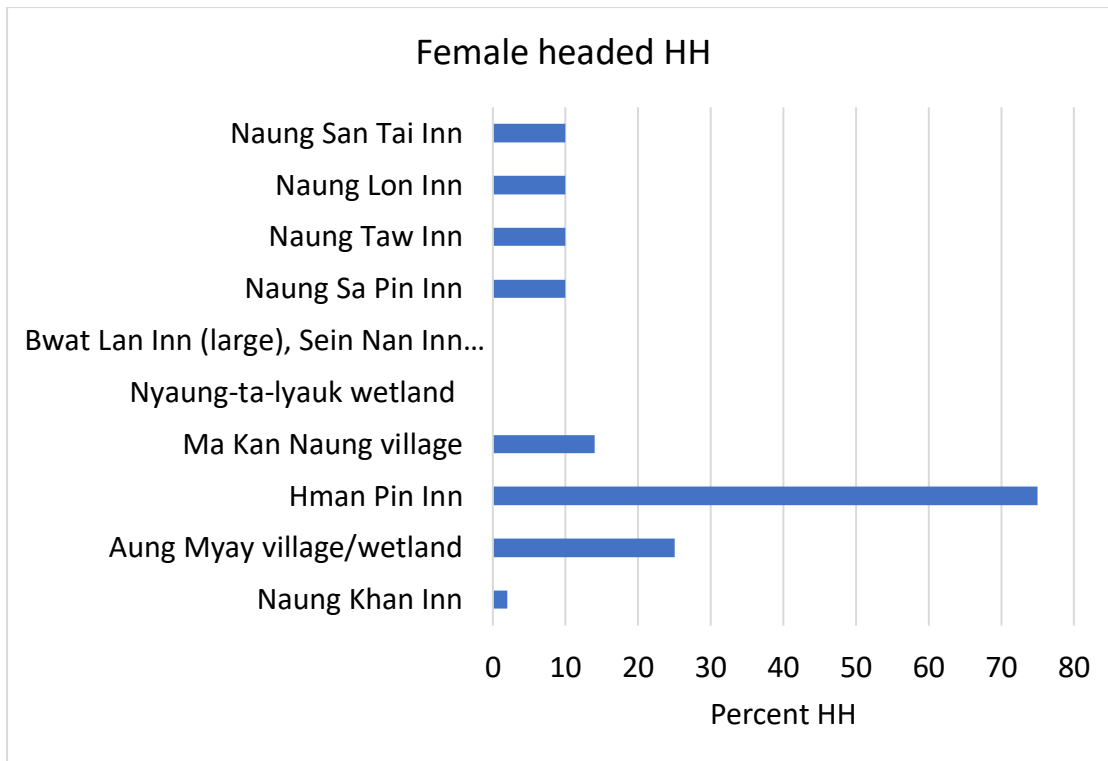


Figure 4 Proportion of village households headed by females

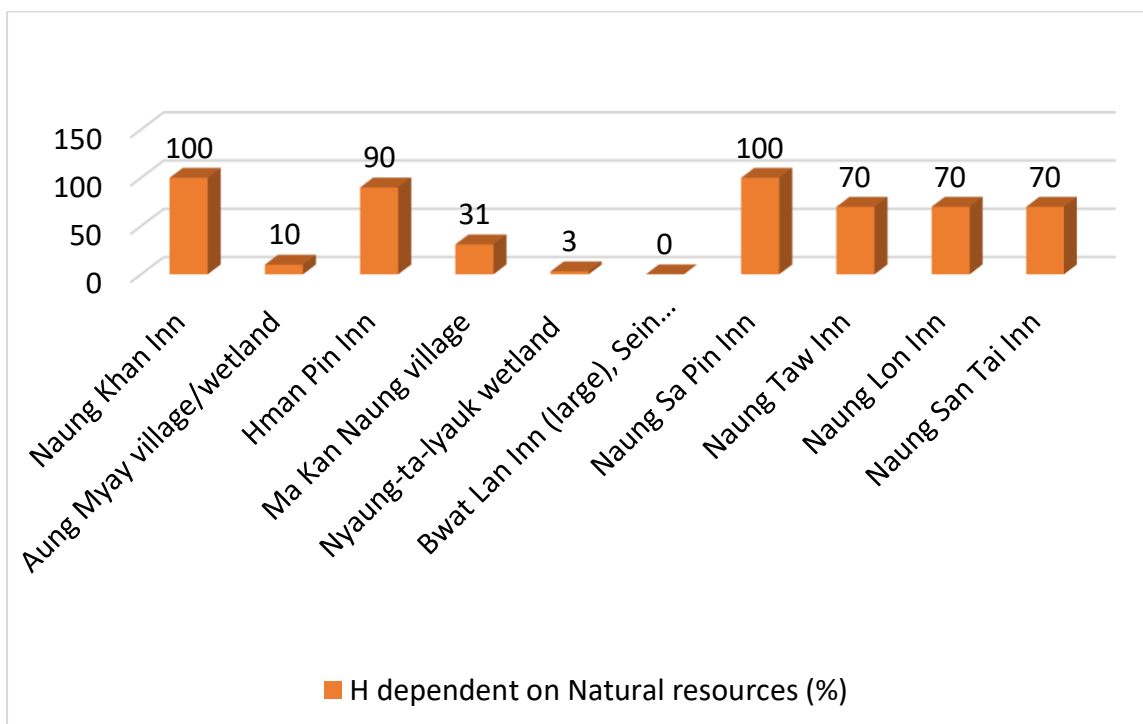


Figure 5 Percent households dependent on natural resources

Ecosystem services

Based on ecosystem services index (ESI), regulating ecosystem services were identified as prominent services provided by the surveyed wetlands. Highest regulating service value has been perceived by the villagers for Bwat Lar Inn and Naung Sa Pin Inn (Figure 6). Cumulative ESI developed for surveyed

villages highlighted that Naung Sa Pin Inn and Bwat Lar Inn had the highest ecosystem services value associated with them whereas wetlands such as Naung Sa Lyauk, Ma Kan Naung and Aung Myay had low value of ecosystem services perceived by the local community (Figure 7).

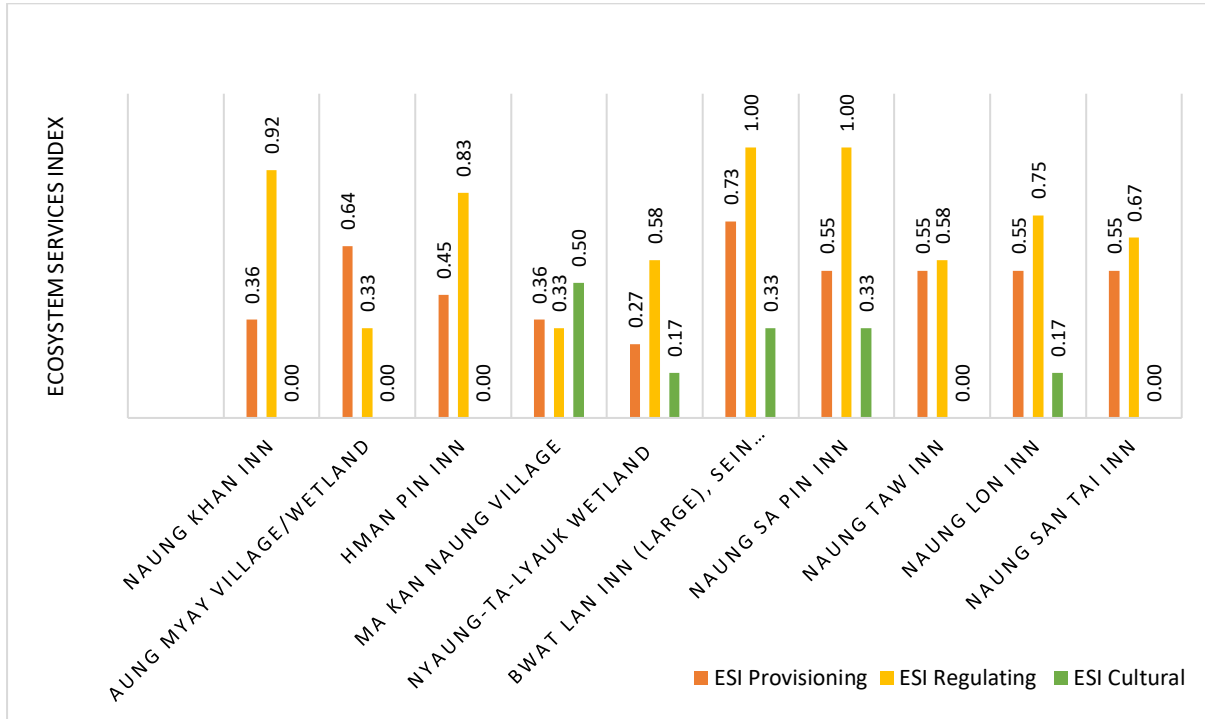


Figure 6 Variation in ESI observed across surveyed villages

Cultural services were least valued by the local community for all the surveyed wetlands. Provisioning services including water, food, fish, fibre, and fuel were moderately valued by the local community with highest value associated with Bwat lar inn and Aung Myay Inn.

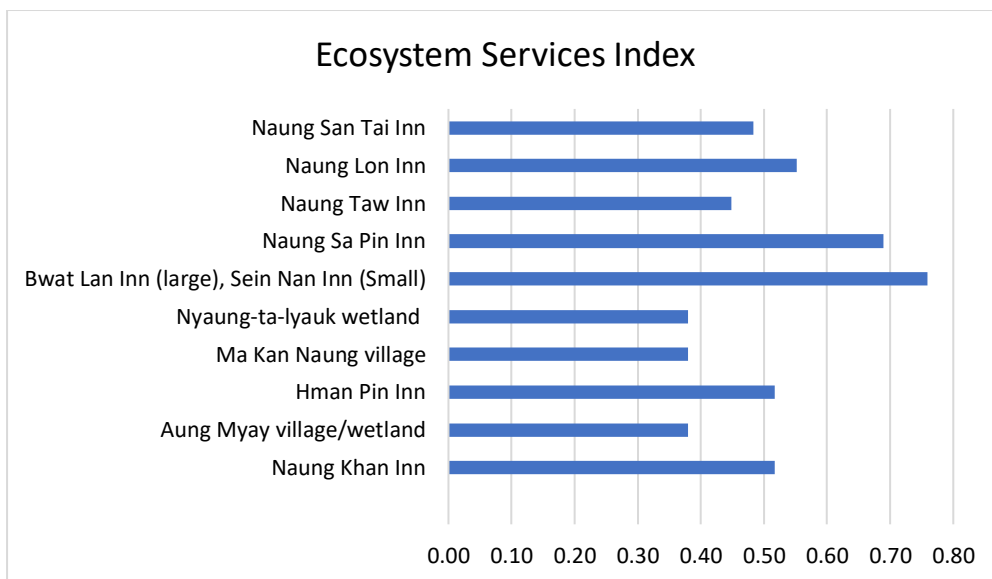


Figure 7 Variation in cumulative ESI observed across surveyed villages

Threat analysis

Local communities at surveyed villages ranked threats faced by the wetland ecosystem which are directly affecting the functioning and ecosystem service delivery of the wetlands. Of all, logging, and wood harvesting; fishing, killing, and harvesting aquatic resources and livestock farming and grazing were the most prevalent and highly ranked threats across the surveyed villages (Figure 8).

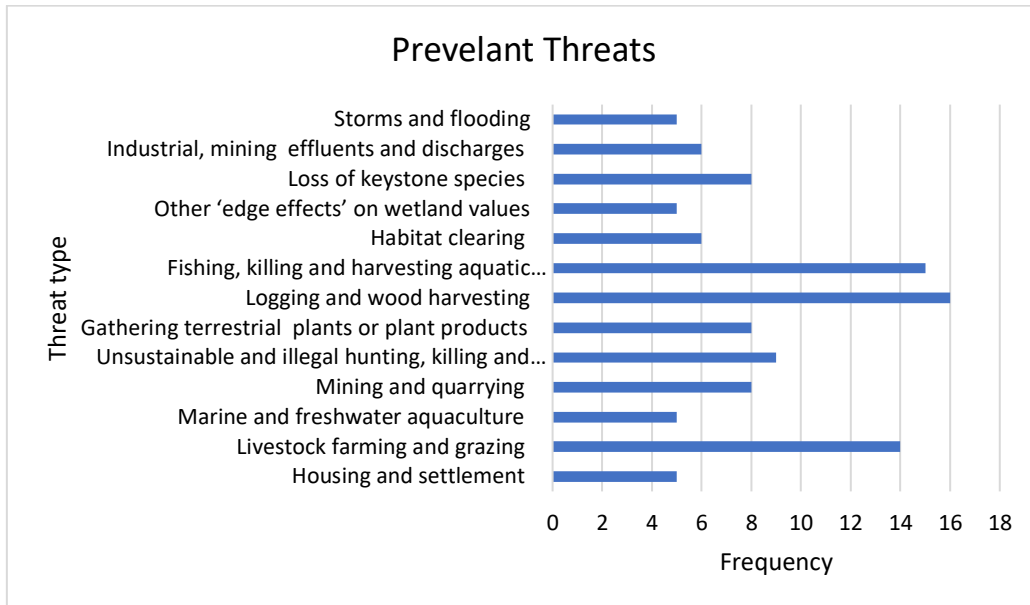


Figure 8 Most prevalent threats across surveyed villages

A threat index was developed to identify the wetlands considered as highly prone to ecosystem degradation and loss of biodiversity and ecosystem services. Based on the threat index, four wetlands including Nyang Ta Lyauk, Ma Kan Naung, Aung Myay and Bwat lar Inn were associated with higher risks of adverse change in wetlands structure and functioning. Lowest risk levels were associated with Hman Pin Inn, Nuang Taw inn, Nuang Lon inn and Naung San tai inn largely attributable to low population size dependent on them.

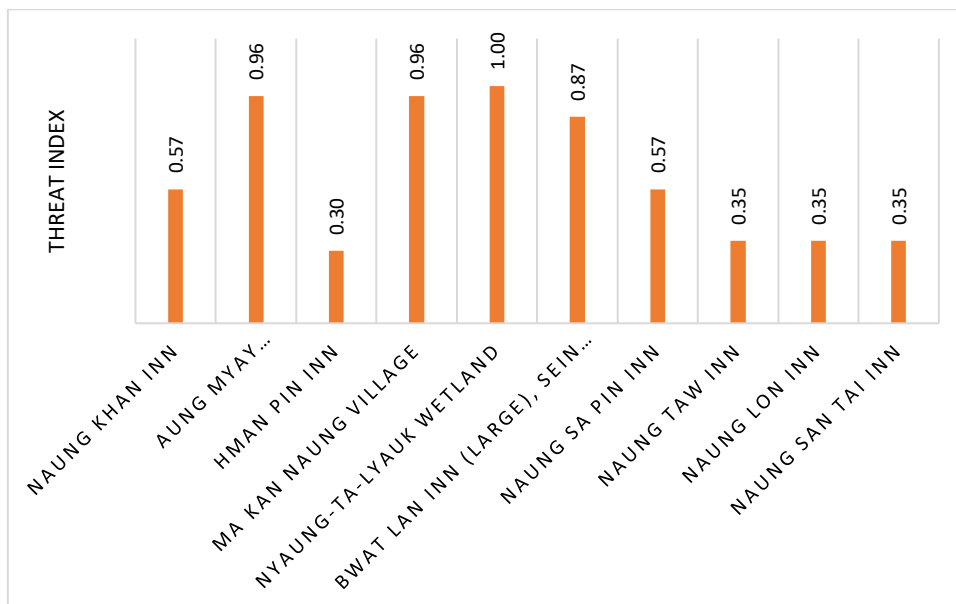


Figure 9 Variation in threats perceived at surveyed wetlands

Wetland Biodiversity

Based on the rapid bird survey conducted by the MEI team onsite, maximum no. of bird species were observed at Naung San Tai Inn (16 species) and Naung Taw Inn (14 species) followed by Naung Lon Inn and Hman Pin Inn (8 species each).

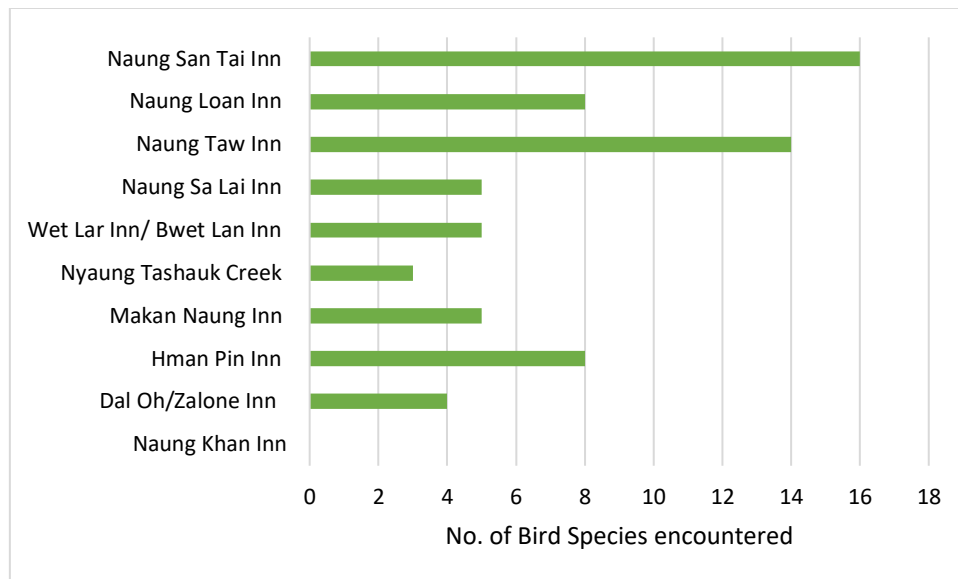


Figure 10 No. of bird species observed at surveyed wetlands

A biodiversity indicator was developed to analyze the variation in biodiversity supported by the surveyed wetlands. This indicator was developed based on the no. of birds observed during the survey, presence, or absence of turtle species with high conservation significance and collection/ consumption of turtles at these wetlands. The results showed that highest biodiversity value is associated with wetlands Bwat Lar inn, Naung Sa Lai Inn and Aung May Inn.

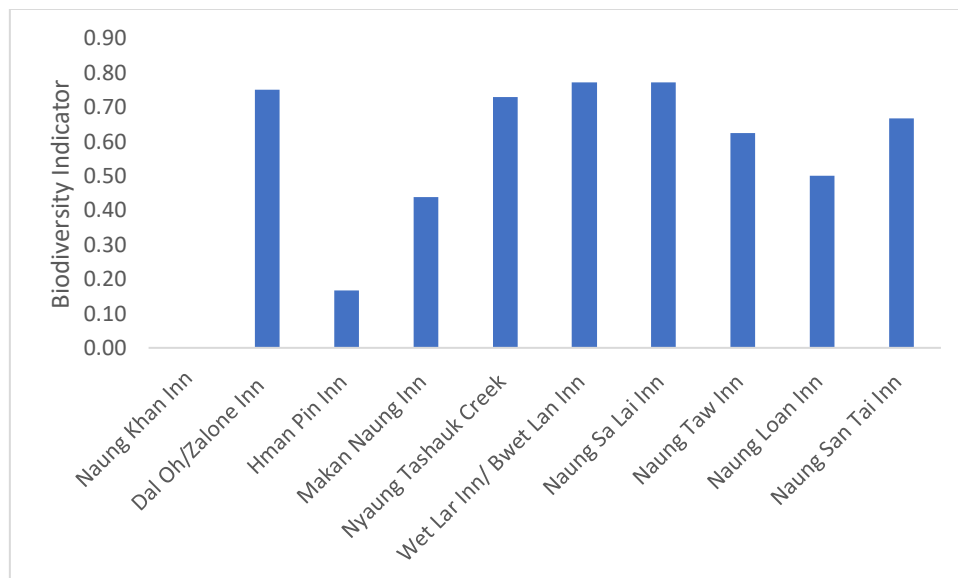


Figure 11 Variation in biodiversity indicator scores of the surveyed wetlands

2.2 Wetland prioritization criteria

In order to identify the priority wetlands and/or villages based on the observations made during the rapid village assessment, development of a wetland's prioritization criteria was considered. This prioritization criteria served as the basis of identifying three- five wetlands of higher priority for

conservation of biodiversity and enhanced livelihood support. Taking into consideration different aspects on which information was gathered during the RVA a comprehensive index has been developed.

2.3 Developing prioritization criteria

To develop a comprehensive prioritization criterion, eleven sub-indicators were identified which included number of households, wetland area, reliance on natural resources, households headed by women, ESI provisioning, ESI regulating, ESI cultural, cumulative ESI, threat index, modified threat index and biodiversity index. Out of all the sub-indicators, wetland area was assigned a higher weightage as it directly reflects the functioning capacity and ecosystem services delivery. The surveyed wetlands were then ranked on the basis of the score obtained which represented the normalized sum of all sub-indicators.

2.4 Identifying priority wetlands

Based on the prioritization criteria, five wetlands have been identified as the priority wetlands for conservation in the region. Priority wetlands are shown in Figure 12 and include Bwat Lar Inn, Nuang Taw Inn, Naung Sa Pin Inn, Hman Pin Inn, and Naung Lon Inn. Further conservation actions and awareness building activities will be conducted in the villages dependent on these selected wetlands.

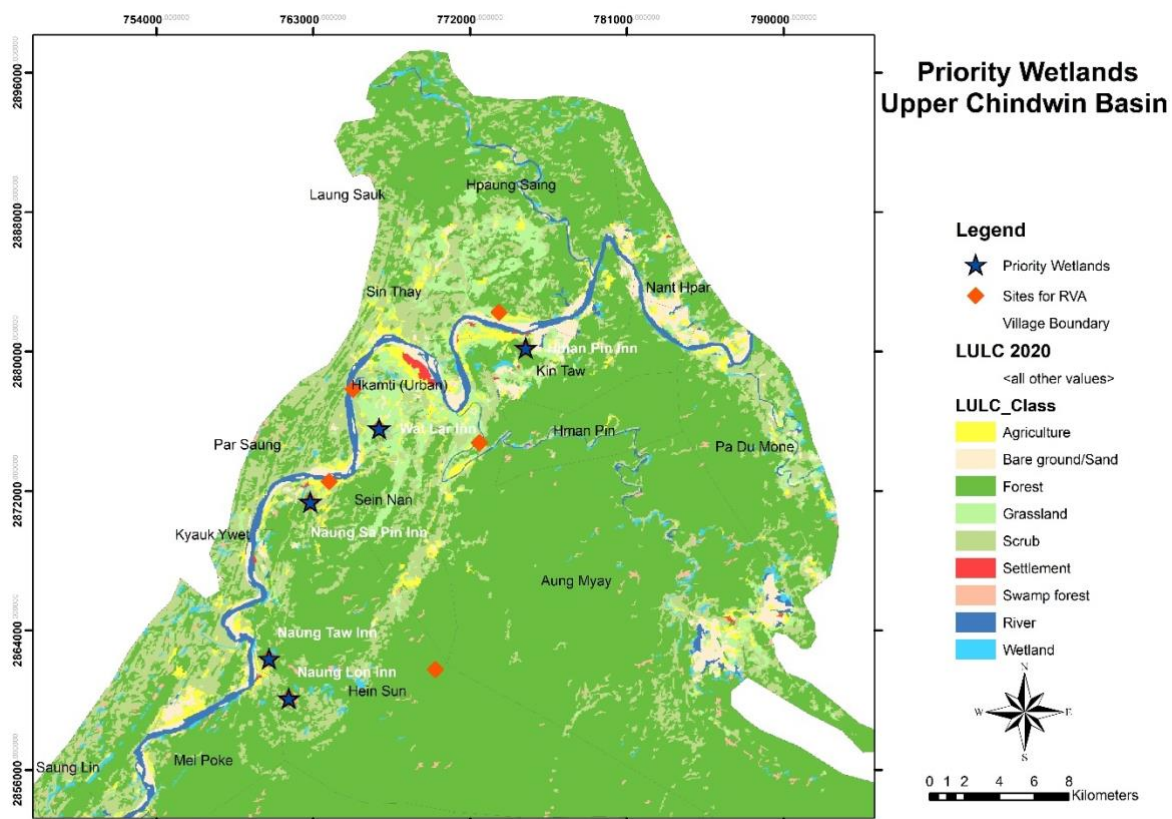


Figure 12 Map showing the priority wetlands and wetlands sites where RVA was conducted within the Upper Chindwin Basin

A threat analysis was again carried out for these priority wetlands to categorise the activities that the project needs to undertake in the region to ensure conservation of biodiversity and sustenance of livelihoods. The analysis highlighted that the priority wetlands are faced with higher risks from activities such as logging and wood harvesting and livestock farming and grazing followed by fishing,

killing, and harvesting of aquatic resources, extraction of terrestrial products along with unsustainable and illegal hunting, killing and collection of terrestrial resources.

3. Conclusions and way forward

The value of wetland ecosystems in the Upper Chindwin basin is high, both in terms of the biodiversity they support and in terms of the ecosystem services they provide. The rapid village assessment identified priority wetlands and key issues and threats that these ecosystems face, as well as the challenges that local communities face in terms of livelihood sustenance.

Moving forward, a comprehensive baseline assessment of the priority wetlands and/or villages is required in the coming months. This activity will be led by NSNO with assistance from MEI experts and will take place in May 2022. WWT and SEI will collaborate to develop a detailed questionnaire. This will also include the creation of a monitoring system and a baseline to assess the success or failure of activities to be implemented in the coming years.

For further implementation, four categories of actions have been identified.

1. **Demarcation of conservation zones** – Given the current political situation, it appears to be a difficult activity. Though an effort will be made to help the local community understand the importance of preserving fish habitats and to mutually agree on the demarcation of conservation zones.
2. **Awareness and capacity building** – A programme will be developed for the local community to ensure greater/better understanding and knowledge of wetland ecosystems, ecosystem services, land - and water management practices. The programme will cover topics such as sustainable use of wetlands, water quality monitoring, sustainable fishing, and sustainable agriculture.
3. **Promoting sustainable fishing and farming methods** – Sustainable fishing methods and seasonal fishing restrictions are thought to be some of the preliminary actions that could reduce the frequency of threats to wetlands. Controlling pesticides and fertilisers in farming activities can also help to reduce water pollution in wetland ecosystems.
4. **Habitat restoration** through plantation activities in areas where deterioration has been unprecedented. Thorough research is required to identify which species are indigenous to the region and could help control land degradation and siltation within the region.