

## TERM OF REFERENCE

### Vietnam Mekong Delta freshwater biodiversity assessment using eDNA

**Tender Ref.:** FY22/0817

**Summary:** WWF invites proposals from experts for the delivery of eDNA project to study freshwater biodiversity in the Mekong Delta, Vietnam

**Start date:** from 22<sup>nd</sup> February 2022

**End date:** before 31<sup>st</sup> January 2023

**Proposal deadline:** 11:30 ICT, 11<sup>th</sup> February 2022

#### 1. Project background

The Mekong Delta Landscape (MDL) (40,500km<sup>2</sup>, 17million inhabitants) lies at the lower end of the Mekong River, comprising 12 provinces and one central city. The landscape is of great economic importance, contributing to 50% of rice production, 65% of aquaculture production, and 70% of fruits of the country; 95% of export rice and 60% of exported fish; Its location is convenient for trading with other ASEAN countries and the Greater Mekong Sub-region (*Government Resolution 120/NQ-CP*)<sup>1</sup>. The productivity and economic contribution of the Mekong Delta (MD) depend very much on its natural ecosystems. The delta is home to a highly diverse fauna including mammals, birds, fish, reptiles, and amphibians – and in a range of habitats including rivers, coastal mudflats, and mangroves, seasonally flooded grassland and Melaleuca Forest, open swamps, and agricultural land. Many of the Delta's wildlife species are listed in the IUCN Red List of Threatened Species, including the Mekong Giant Catfish, Giant Carp, Sarus Crane, Asian Dowitcher, China Egret, Painted Stork, Hairy-nosed Otter, etc. However, the fauna of the area has been severely depleted because of habitat loss and degradation due to the expansion and unsustainable of agriculture and aquaculture production, the increase in the human population, and climate change. The Delta is also particularly vulnerable to climate change and its impacts on hydrology.

The Mekong system is also an international 'hotspot' of unusually high biodiversity. As a matter of fact, species richness, wetlands, and fish migrations characterize aquatic ecology in the Lower Mekong Basin. The fish species richness of this system is especially a topic of particular interest, given the importance of fisheries to the Mekong people and should be given a high priority in conservation. Despite its conservation and economic importance, the freshwater biodiversity of the Mekong, in particular, threatened Mekong fishes are increasingly under pressure from a wide array of impacts from basin development and climate

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<sup>1</sup> Government Resolution 120 /NQ-CP on Sustainable and Climate-Resilient Development of the Mekong Delta of Viet Nam dated November 17, 2017.

change. Such impacts, many of them negative, stem from the construction of hydropower dams, expansion of irrigated agriculture, flood control, and protection infrastructure, and other water resources development projects as well as invasive non-native species.

In the main rivers, several large fish species have declined greatly, such as Giant freshwater whipray (*Himantura chaophraya*), Mekong giant catfish (*Pangasianodon gigas*), Giant pangasius (*Giant pangasius*), etc.

WWF-Viet Nam has implemented a range of interventions for more than a decade now in MDL, focusing on ensuring rivers flow more naturally, reducing pollution, protecting critical wetland habitats, ending overfishing and unsustainable sand mining in rivers, and lakes, controlling invasive species, safeguarding and restoring river connectivity.

To support adaptive management and evaluation of the aforesaid interventions, it is essential to have updated scientific data on our conservation targets. However, in biodiversity hotspot areas, e.g. critical wetlands, biodiversity data from the protected areas are often outdated and incomplete. Furthermore, biodiversity inventory is usually costly. As a result, this consultancy service is designed to help fill this gap and support conservationists with a better understanding of the freshwater biodiversity present across the Mekong Delta. This will contribute to filling the gap in our understanding of freshwater biodiversity present within the Greater Mekong and to setting a baseline from which to move forward, and also increase our understanding of other key information such as presence of invasive non-native species and harvested species within the Greater Mekong.

## 2. Goal and objectives

### 2.1. Goal

By 2023, the presence and distribution of threatened freshwater biodiversity in the MDL will be better understood, thereby contributing to better-informed species conservation in MDL.

### 2.2. Objectives

- To detect, map and catalogue the presence of species in targeted sites (main Mekong River, Bassac River, and in the core zone of Tram Chim National Park (NP) and Lang Sen Wetland Reserve (WR)),
- To identify the presence of threatened (in particular Asian Species Action Partnership (ASAP)) species,
- To identify presence of invasive non-native species
- To identify gaps and limitations from eDNA analysis as well as recommendations to address any identified gaps that can inform future monitoring of freshwater biodiversity in the MD.

### 3. Activities and deliverables

- **Inception meeting with WWF:** to discuss project aims, ambitions, and constraints, and to agree with ways of working throughout the project period.
- **Together with local consultant to discuss on sampling design and monitoring plan:** monitoring aims (listed above), monitoring protocol (sites, sampling locations, and effort), and efficiency.
- **Sampling training:** training to project partners to undertake sampling in the field. Due to COVID travel restrictions, this training can also be considered via Zoom.
- **Sampling equipment.** To be provided to the WWF team to undertake the sampling plan.
- **Analysis of eDNA samples:** for all taxa including mammals, birds, reptiles, amphibians, and fishes.
- **Survey outputs:** to be provided following each survey effort, at a minimum to include a list of taxa.
- **Survey report:** to be provided at the beginning of 2023 to include interpretation of results. The report will include but is not limited to the following:
  - Stating most present species and any other important species of note (such as red-listed, commercial, or invasive species); species richness by samples and frequency of occurrence. This will specifically identify threatened, and ASAP species, and also provide a list of non-native species found. Where undescribed species are found, these will be noted (in number).
  - Discussing data gaps and limitations as well as recommendations to address any identified gaps that can inform future monitoring.
- **Presentation of results to WWF.**

### 4. Timeframe

Start date: from 22<sup>nd</sup> February, 2022

End date: before 31<sup>st</sup> January 2023

### 5. Budget

Total budget for the consultancy service is 12,500 USD (Estimated) (VAT included).

### 6. Applications

Please submit your proposal via email to: [giang.hoang@wwf.org.vn](mailto:giang.hoang@wwf.org.vn), cc: [long.trinhthi@wwf.org.vn](mailto:long.trinhthi@wwf.org.vn) by **11:30 ICT, Friday 11<sup>th</sup> February 2022**. Your e-mail must have the subject heading as “**Tender Ref FY22/0817 – “Consultancy service to assess freshwater biodiversity using eDNA in the Mekong Delta, Vietnam”**” (or Vietnamese title: **HSQT-[tên nhà**

**thầu]-GT số Gói thầu số FY22/0817 “Consultancy service to assess freshwater biodiversity using eDNA in the Mekong Delta, Vietnam”) detailing:**

- Your research proposal and approach.
- Technical expertise within the subject area.
- Providing sampling kits (tools and equipment to take samples).
- Experienced eDNA analysis service provider. WWF will encourage the consortium of international consultant firms/ team with Vietnamese researcher as it will help with training. The consultants will be encouraged aim to have an eDNA analysis with new barcode references for key species that may be missing from the publicly available GenBank database reference libraries.
- Knowledge about WWF’s safeguards.
- Your proposed sampling effort for the proposed budget and proposed sites.
- Your proposed budget overall.