Sovi Basin

Fund
92,350 FJD

Timeline
June-Oct 2015

Donors
The Food and Agriculture Organization (FAO)

Leading Organisation
IAS Leading & Coordinating

Partners
The Food and Agriculture Organization of the United Nations (FAO)

Electrofishing in conjunction with a beach-seine net.

Project Overview
The Food and Agriculture Organization of the United Nations approved a grant for the reassessment of the long term monitoring plots and provision of a scientific report on the current state of biological diversity within the Sovi Basin Protected Area. In 2006, the Archaeological aspect of the Sovi Basin was described with the identification of seven cultural heritage sites. The sites included five ancient settlements, an ancestral home of the deity of the Sovi Basin and a worshiping ground.

Biodiversity assessments have been carried out in different areas of the Sovi Basin by the Institute of Applied Sciences (IAS) in the years 2003, 2004 and 2006. During the 2006 survey, two long-term biological monitoring plots were established in different areas of the catchment. Nine years after the establishment of these long-term monitoring plots, the IAS team returned to the Sovi Basin in June 2015 to carry out a reassessment of the biodiversity within one of these plots.

Project Objectives
Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner.

To develop local capacity to assess, monitor and disseminate information about biodiversity conservation, i.e. to strengthen current capacity in biodiversity assessment, threat identification and monitoring, and to put in place a Monitoring + Evaluation for protected Areas in Fiji.

Entomological Para-taxonomy training at the basecamp in Sovi

The re-assessment of the Sovi Basin, in terms of the invasive species component, had 3 main objectives:

- Re-examine the presence of invasive plant species within the 50m x 50m long-term monitoring plots established in 2006
- Re-examine the presence of invasive plant species along sections of the Wainivalau Creek surveyed in 2006
- Review the methodology for monitoring invasive species, in terms of the feasibility for it being implemented by non-specialists.

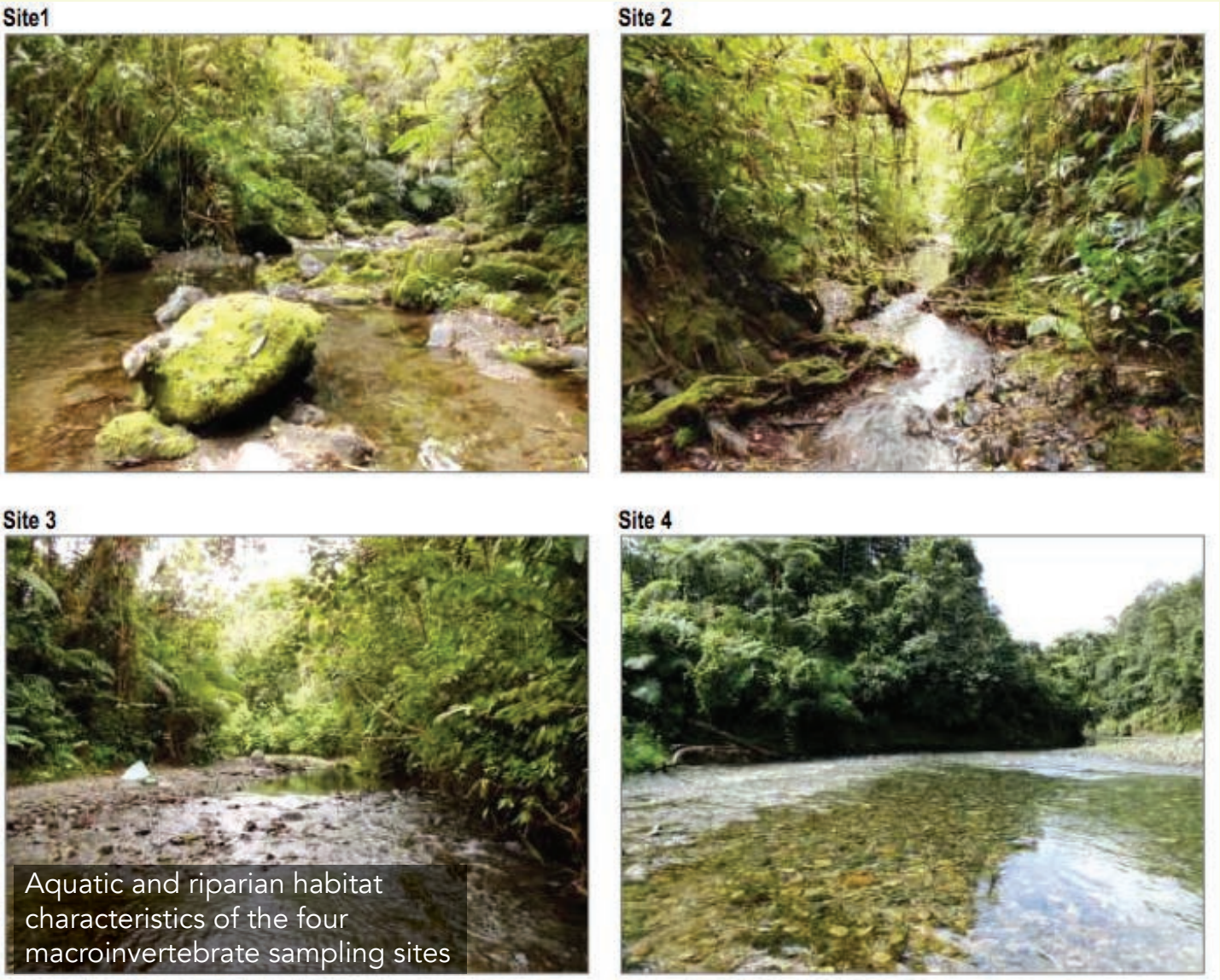
Project Outputs

Summary of Biodiversity Survey Findings

A comparison of the data collected from the three transects in 2006 and the fourth in 2015 shows an overall increase in invasive species presence . No new invasive species were recorded in the Sovi Basin in 2015, however, the increase in abundance, or the additional documented occurrences of some of these species is of concern and reaffirms the need for monitoring protocols that yield as much relevant information as possible to assist with their control.

As anticipated the abundance of African Tulip in Plot1 Sub-plot1 has increased since 2006, and the rapid growth rates highlight why this species is such a successful invader.

A total of 2667 trees (dbh>2cm) were assessed across four sub-plots within a 1000m2 area of lowland rainforest in Sovi Basin. These trees comprised 92 species including the exotic and invasive species Spathodea campunulata which had doubled in numbers. A total of ten focal tree species were selected to be used as indicator species for long term monitoring.



Aquatic and riparian habitat characteristics of the four macroinvertebrate sampling sites

31 species of birds were recorded at a total of 96 point count stations surveyed. Barking Pigeons, Fiji Bush Warblers, White & Silver Eyes, Wattled Honeyeaters and Giant Forest Honeyeaters were the most commonly encountered birds. Three threatened bird species were also recorded (Long-legged Warbler, Black-face Shrikebill and Pink-billed Parrotfinch).

Five of the seven previously-recorded herpetofauna species were encountered in this re-survey of the herpetofauna plots in the mid-reaches of the Wainivalau Creek.
The report recommends further work to build local capacity to survey and monitor herpetofauna.
A total of 32 fish were caught from spearfishing at four monitoring stations within a set time frame.
Opportunistic spearfishing at other areas of the Wainivalau catchment yielded 36 fish. The total
biomass of the combined catch was 32.76 kg of fish. Nine species from five families were documented. Eight of the species are native to Fiji and one is introduced: *Oreochromis niloticus* (tilapia).

Using four collection techniques (light trapping, leaf litter sieving, malaise trapping and active search) a total of 1706 insects were collected within the four monitoring

sub-plots. Of these, from within the focal taxa, 26 Coleopteran (beetle) families and 13 Formicidae (ant) genera were sampled.
The most abundant taxa sampled included the beetle families *Curculionidae* (weevils) *Staphylinidae* (rove beetles), *Scolytidae* (bark beetles) and *Lathridiidae* and from the Order *Hymenoptera,* Family Formicidae (ants) within the genera *Cardiocondyla, Nylanderia* and *Pheidole.*

A total of 47 freshwater macroinvertebrate taxa (9630 individuals) were collected during the survey at four sites in proximity to the four vegetation plots. Of the 47 taxa recorded, 38 belonged to Insecta group (81% of the total macroinvertebrate species recorded), five belonged to the decapod crustaceans (prawns and shrimps), two belonged to the Annelid (worm) group and one each belonged to the gastropod (snails) group and the arachnid group. The highly diverse freshwater macroinvertebrate community of the Sovi waterways showed that insects dominated the macroinvertebrate community assemblage. This is typical of the riverine system draining the primary forested highlands of Fiji. A new crane fly genus (*Eriopterini sp.*) of the family *Tipulidae,* was recorded from the Sovi Basin waterways.

Future monitoring work:

During the 2015 survey one of the old village sites was selected for reassessment and future monitoring. A monitoring protocol was designed to be carried out at 5-10 year intervals to monitor the changing cultural topography. Two additional cultural sites were also documented during the survey. Future monitoring work should use the same methodology and target a minimum of 50 point stations. We recommend that these be laid on the track from Waibasaga settlement to the Base Camp and also within the four vegetation plots.

The ability of invasive geckoes to encroach the Sovi Basin forest needs to be investigated in more detail and long-term monitoring survey transects should be established outside of the vegetation plots to assess the relationship between frog abundance and forest changes captured by the vegetation plots. The invasion of tilapia into the upper Wainivalau is also an issue of concern for the aquatic fauna of Sovi Basin.

Development of Local Capacity

A total of ten landowners, three National Trust of Fiji staff, three Forestry Department staff and three USP postgraduate students received training in carrying out biodiversity assessments including specimen collection techniques, data collection and habitat descriptions. One field guide was trained during the survey to undertake future herpetofauna monitoring.