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LOBI YU LIBI, WROKO KRIN GOWTU

# Rapid Biodiversity Assessment Compagniekreek

**February 2025**

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**PUBLISHED BY:**

Improving Environmental Management in the Mining Sector of Suriname,
with Emphasis on Artisanal and Small-Scale Gold Mining (EMSAGS Project)

**Supported by:**

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Paramaribo, Suriname
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**PLEASE CITE AS FOLLOWS:**
EMSAGS Project (2025). Rapid Biodiversity Assessment Compagniekreek. Paramaribo, Suriname.

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# ABSTRACT

The Rapid Biodiversity Assessment for Compagniekreek was carried out in disturbed and undisturbed areas in 2023 and 2024 in the wet and dry season for water quality, flora, fauna, and ecosystem services followed by an impact assessment and proposed mitigation measures.

*Water quality*

In the wet season a clear difference in water quality parameters between the disturbed and the undisturbed sample locations was measured, such as conductivity, turbidity, total dissolved solids, total suspended solids, chemical oxygen demand (COD), alkalinity, ammonia, silica and aluminum. Mercury concentrations were also high in the waterways of the disturbed area. In the dry season it was difficult to find differences between the undisturbed and disturbed sites. Significant differences were only found between the disturbed and the undisturbed sample locations for turbidity, total suspended solids and alkalinity. It is to be noted that in the dry season, the gold mining activities remained active, which led to extensive amounts of sediments discharge in the waterways, elevating the levels of sediments in these waterways. Remarkably are the high levels of mercury found in both sediment and fish samples in the undisturbed sample sites. It is possible that the aquatic systems in the area are polluted by atmospheric deposition of mercury. This can result in the deposition of mercury in the undisturbed areas within the Compagnie Creek catchment area.

*Flora*

Within the flora plots a total of 181 species were encountered of which 96 species were trees and palms. Comparing disturbed and undisturbed forest shows that plots vary with differences and similarities among species. The tree species diversity in the undisturbed forest shows less pioneer species in its composition. Non-metric multidimensional scaling (NMDS) analysis grouped the two disturbed plots into a single quadrant, while the remaining plots were allocated to separate quadrants. Based on prior knowledge, it was anticipated that the CK2 and CK4 plots would cluster together. However, this did not occur, likely due to a canopy gap in CK2 because of a large treefall and because *Eperua falcata* (walaba) trees have been havested. Canopy gaps resulting from treefalls or timber harvesting facilitate the establishment of pioneer species, which can subsequently influence the outcomes of the NMDS analysis. It is reasonable to expect that CK1 would be positioned in a separate quadrant, as its habitat differs from that of the high dryland and secondary forests. Two species within the plots are protected. According to the Forest Management Law hoepelhout (*Copaifera guyanensis*) is prohibited for logging. According to the IUCN Red List bruinhart (*Vouacapoua americana*) is critically endangered. All other species are of “Least concern” according to the IUCN Red List.

*Fauna*

In total 53 triggers on the camera traps were found for terrestrial vertebrates in the wet season, from which 39 triggers for terrestrial vertebrates were found in the undisturbed sites and 33 triggers for terrestrial vertebrates were found in the disturbed sites. In the dry season a total of 43 triggers on the camera traps were found from which 32 triggers on the camera traps in undisturbed sites and 20 in disturbed sites. Overall, there were no species that are specifically only found in undisturbed forests. Species found on camera traps and during the surveys can be found in both undisturbed forest and forest with a minimal level of disturbance. In the wet season the Shannon diversity index did not differ between the disturbed and undisturbed sites for the observed terrestrial vertebrates, with an average of 1.9 for both sites, but in the dry season the Shannon diversity index was on average slightly higher in the undisturbed sites (1.8±0.24), compared to the disturbed sites (1.5±0.44). The Simpsons diversity index did not differ between the disturbed and the undisturbed sites for both the wet and the dry season. Based on the Game Law, all the assessed big cats *Leopardus pardalis* (ocelot), *Panthera onca* (jaguar) and the *Puma concolor* (puma)are protected species in Suriname; furthermore, also the *Speothos venaticus* (bushdog) is a protected species in Suriname. Most species are characterized as 'Least Concern' according to the IUCN conservation status and extinction risk, except the species *Panthera onca (jaguar)* (Near threatened), *Tayassu pecari* (pingo)(Vulnerable) and *Tapirus terrestris* (Vulnerable). None of the assessed species can be categorized as Restricted Range Endemics. A total of 35 fish species were caught at the aquatic sites of the undisturbed areas, while 26 fish species were caught at the aquatic sites of the disturbed areas. No difference in the Shannon diversity index was found between the undisturbed and disturbed areas for both the wet and the dry season. The low number of fish species found in the disturbed sites, revealed the negative effects of the gold mining activities on the aquatic ecosystems in those areas. The sediment discharge from the ore processing destroyed fish habitat, causing species that cannot cope with the changed environment, to be filtered out from the fish community. None of the assessed fish species are protected by national law. Assessed species are either characterized as 'Least Concern' or are not on the IUCN Red List. In the wet season 205 terrestrial invertebrates were caught during sampling in the undisturbed areas, while in the disturbed areas 158 terrestrial invertebrates were sampled. During the dry season surveys 213 terrestrial invertebrates were caught during sampling in the undisturbed areas, while in the disturbed areas 136 terrestrial invertebrates were sampled. No differences in species diversity indices were found between the undisturbed and the disturbed sites for both wet and dry seasons. In the wet season 22 aquatic invertebrate species were caught during sampling in the undisturbed creeks, while in the disturbed creeks only 12 species were sampled. During the dry season surveys 14 aquatic invertebrates were caught during sampling in the undisturbed creeks, while in the disturbed creeks only five aquatic invertebrate species were sampled. In the wet season

the species diversity for the aquatic invertebrates in the undisturbed areas was significantly higher (p=0.004) than the species diversity for the disturbed areas. The abundances caught and the species diversity indices calculated, makes it clear that the aquatic invertebrate diversity is poorer in the disturbed area than the undisturbed areas.

*Ecosystem services*

Most of the ecosystem services are provided at present, with crops from agricultural land, game meat and plants for steam baths, ornamental and medicine mentioned by all focus groups. The number of provisioning ecosystem services is the highest, followed by cultural and regulating services. No supporting ecosystem services were mentioned by the several focus groups. From the assessment it can be concluded that provisioning services comprise mostly what the villagers need for consumption and overall wellbeing. Harvesting of NTFPs from the forest and hunting of meat is done for villagers' sustenance. The villagers did not mention any large-scale sale in NTFPs and bush meat, which should result in low pressure on ecosystem services provided by fauna and flora species. In combination with other activities, such as gold mining, this pressure may increase, resulting in overharvesting of species, especially in the gold mining areas.

*Impact assessment*

The gold mining activities are active from the most upstream part of the Compagnie kreek to the downstream parts of the creek, downstream from the village Compagniekreek to the Tapoeripa area, except near the Avobaka weg (on both sides of the road). The goldmining activities started in the '80s and are continuing to date. The estimated loss of forested area since 1970 is 550.25 ha. It should be noted that beside the pressure of the gold mining activities, there is also seasonal pressure, which affects the presence of species in the disturbed area, since the forest has been removed/disturbed in many places. Since gold mining is the major income source for the Compagniekreek community, the mining activities are continuous.

*Mitigation measures*

Awareness should be raised among the community about the negative effects of gold mining to date, especially among young people (18 to 30 years) with a focus on responsible mining or alternative livelihoods. There must be at least one alternative source of income to reduce pressure on the environment, e.g. agriculture, commercial tree planting and sustainable tourism. Furthermore, there must be a clear zoning of the area for the various economic activities. Rehabilitation of disturbed areas and protection of critical areas that are still intact, such as swamp and riparian forest, should be considered.

**Dutch**

De Biodiversiteitsstudie voor Compagniekreek is uitgevoerd in verstoorde en onverstoorde gebieden in 2023 en 2024 in de droge en regentijd voor waterkwaliteit, flora, fauna en ecosysteemdiensten, gevolgd door een effectbeoordeling en voorgestelde mitigatiemaatregelen.

*Waterkwaliteit*

In de regentijd werd een duidelijk verschil in waterkwaliteitsparameters gemeten tussen de verstoorde en de onverstoorde bemonstering locaties, zoals geleidbaarheid, troebelheid, totaal opgeloste vaste stoffen, totaal gesuspendeerde vaste stoffen, chemisch zuurstofverbruik (CZV), alkaliteit, ammoniak, silica en aluminium. Ook in de waterwegen van het verstoorde gebied waren de kwikconcentraties hoog. In de droge tijd was het moeilijk om verschillen te vinden tussen de onverstoorde en verstoorde locaties. Er werden alleen significante verschillen gevonden tussen de verstoorde en de onverstoorde bemonstering locaties voor troebelheid, totaal gehalte aan zwevende stoffen en alkaliteit. Opgemerkt moet worden dat in de droge tijd de goudwinningsactiviteiten actief bleven, wat leidde tot grote hoeveelheden sedimenten die in de waterwegen terecht kwamen, waardoor de niveaus van sedimenten in deze waterwegen omhoog gingen. Opmerkelijk is het hoge kwikgehalte dat wordt aangetroffen in zowel sediment- als vismonsters op de onverstoorde bemonsteringslocaties. Het is mogelijk dat de aquatische systemen in het gebied vervuild zijn door atmosferische depositie van kwik. Dit kan resulteren in de afzetting van kwik in de onverstoorde gebieden binnen het stroomgebied van de Compagniekreek.

*Flora*

Binnen de flora plots werden in totaal 181 soorten aangetroffen, waarvan 96 soorten bomen en palmen. Een vergelijking van verstoord en onverstoord bos laat zien dat plots variëren met verschillen en overeenkomsten tussen soorten. De diversiteit aan boomsoorten in het onverstoorde bos vertoont in de samenstelling minder pioniersoorten. Bij niet-metrische multidimensionale schalingsanalyse (NMDS) werden de twee verstoorde plots in één kwadrant gegroepeerd, terwijl de overige plots werden toegewezen aan afzonderlijke kwadranten. Op basis van voorkennis werd verwacht dat de CK2- en CK4-plots samen zouden clusteren. Dit gebeurde echter niet, waarschijnlijk als gevolg van een opening in het bladerdak in CK2 als gevolg van een grote boomval en omdat *Eperua falcata* (walaba)-bomen zijn geoogst. Openingen in het bladerdak als gevolg van boomval of houtoogst vergemakkelijken de vestiging van pioniersoorten, die vervolgens de uitkomsten van de MMD-analyse kunnen beïnvloeden. Het is redelijk om te verwachten dat CK1 in een apart kwadrant zou worden geplaatst, omdat zijn habitat verschilt van die van de hoge droge gebieden en secundaire bossen. Twee soorten binnen de plots zijn beschermd. Volgens de Wet Bosbeheer is hoepelhout (*Copaifera*

*guyanensis*) verboden om te kappen. Volgens de Rode Lijst van de IUCN wordt bruinhart (*Vouacapoua americana*) ernstig bedreigd. Alle andere soorten zijn volgens de Rode Lijst van de IUCN het minst zorgwekkend.

*Fauna*

In totaal werden 53 triggers op de cameravallen gevonden voor gewervelde landdieren in de regentijd, waarvan 39 triggers voor gewervelde landdieren op de onverstoorde locaties en 33 triggers voor gewervelde landdieren op de verstoorde locaties. In de droge tijd werden in totaal 43 triggers op de cameravallen gevonden, waarvan 32 triggers op de cameravallen op onverstoorde locaties en 20 op verstoorde locaties. Over het geheel genomen waren er geen soorten die specifiek alleen in ongestoorde bossen voorkomen. Soorten die op cameravallen en tijdens de onderzoeken worden aangetroffen, kunnen zowel in verstoord bos als in onverstoord bos met een minimaal niveau van verstoring worden aangetroffen. In de regentijd verschilde de Shannon-diversiteitsindex niet tussen de verstoorde en onverstoorde locaties voor de waargenomen gewervelde landdieren, met een gemiddelde van 1,9 voor beide locaties, maar in het droge seizoen was de Shannon-diversiteitsindex gemiddeld iets hoger in de onverstoorde locaties (1,8±0,24), vergeleken met de verstoorde locaties (1,5±0,44). De diversiteitsindex van Simpsons verschilde niet tussen de verstoorde en de onverstoorde locaties voor zowel het natte als het droge seizoen. Op grond van de Jachtwet zijn alle waargenomen grote katten *Leopardus pardalis* (ocelot), *Panthera onca* (jaguar) en de *Puma concolor* (poema) beschermde soorten in Suriname; bovendien is ook de *Speothos venaticus* (bushdog) een beschermde soort in Suriname. De meeste soorten worden gekarakteriseerd als ‘minst zorgwekkend’ volgens de staat van instandhouding en het uitstervingsrisico van de IUCN, met uitzondering van de soorten *Panthera onca* (jaguar) (bijna bedreigd), *Tayassu pecari* (pingo) (kwetsbaar) en *Tapirus terrestris* (kwetsbaar). Geen van de waargenomen soorten kan worden gecategoriseerd als Endemisch in de Restricted Range. Er werden in totaal 35 vissoorten gevangen in de onverstoorde gebieden, terwijl 26 vissoorten werden gevangen in de verstoorde gebieden. Er werd geen verschil gevonden in de Shannon-diversiteitsindex tussen de onverstoorde en verstoorde gebieden voor zowel het natte als het droge seizoen. Het lage aantal vissoorten dat in de verstoorde gebieden werd aangetroffen, toonde de negatieve effecten aan van de goudwinningsactiviteiten op de aquatische ecosystemen in die gebieden. De sedimentafvoer uit de ertsverwerking vernietigde het leefgebied van vissen, waardoor soorten die de veranderde omgeving niet aankunnen, uit de visgemeenschap worden gefilterd. Geen van de waargenomen vissoorten wordt beschermd door de nationale wetgeving. Waargenomen soorten worden gekarakteriseerd als ‘minst zorgwekkend’ of staan niet op de rode lijst van de IUCN. In het natte seizoen werden tijdens de bemonstering in de ongestoorde gebieden 205 ongewervelde landdieren gevangen, terwijl in de verstoorde gebieden 158 ongewervelde landdieren werden bemonsterd.

Tijdens de onderzoeken in het droge seizoen werden 213 ongewervelde landdieren gevangen tijdens de bemonstering in de onverstoorde gebieden, terwijl in de verstoorde gebieden 136 ongewervelde landdieren werden bemonsterd. Er werden geen verschillen in soortendiversiteitsindices gevonden tussen de ongestoorde en de verstoorde locaties voor zowel het natte als het droge seizoen. In het natte seizoen werden tijdens de bemonstering in de onverstoorde kreken 22 soorten ongewervelde waterdieren gevangen, terwijl in de verstoorde kreken slechts 12 soorten werden bemonsterd. Tijdens de metingen in het droge seizoen werden 14 ongewervelde waterdieren gevangen in de onverstoorde kreken, terwijl in de verstoorde kreken slechts vijf soorten ongewervelde waterdieren werden bemonsterd. In het natte seizoen was de soortendiversiteit voor de ongewervelde waterdieren in de ongestoorde gebieden significant hoger ($p=0,004$) dan de soortendiversiteit voor de verstoorde gebieden. De gevangen hoeveelheden en de berekende soortendiversiteitsindexen maken duidelijk dat de diversiteit van ongewervelde waterdieren in het verstoorde gebied lager is dan in de onverstoorde gebieden.

*Ecosysteemdiensten*

De meeste ecosysteemdiensten die genoemd zijn worden momenteel geleverd, waarbij kostgrondgewassen, wildvlees en planten voor stoombaden, sierplanten en medicijnen door alle focusgroepen worden genoemd. Het aantal voorzienende ecosysteemdiensten is het hoogst, gevolgd door culturele en regulerende diensten. Er werden door de verschillende focusgroepen geen ondersteunende ecosysteemdiensten genoemd. Uit de beoordeling kan worden geconcludeerd dat de voorzieningen grotendeels omvatten wat de dorpelingen nodig hebben voor consumptie en algemeen welzijn. Het oogsten van NTFP's uit het bos en het jagen op vlees wordt gedaan voor het levensonderhoud van de dorpelingen. De dorpelingen maakten geen melding van een grootschalige verkoop van NTFP's en wildvlees, wat zou moeten resulteren in een lage druk op de ecosysteemdiensten die door fauna- en florasoorten worden geleverd. In combinatie met andere activiteiten, zoals goudwinning, kan deze druk toenemen, wat resulteert in overbevissing van soorten, vooral in de goudwinningsgebieden.

*Effectbeoordeling*

De goudwinningsactiviteiten zijn actief vanaf het meest stroomopwaartse deel van de Compagniekreek tot de stroomafwaartse delen van de kreek, alsook stroomafwaarts van het dorp Compagniekreek tot het Tapoeripa-gebied, behalve nabij de Avobakaweg (aan beide zijden van de weg). De goudwinningsactiviteiten begonnen in de jaren '80 en gaan nog steeds door. Het geschatte verlies aan bosgebied sinds 1970 bedraagt 550,25 ha. Opgemerkt moet worden dat er naast de druk van de goudwinningsactiviteiten ook sprake is van seizoensdruk, die invloed heeft op de aanwezigheid van soorten in het verstoorde gebied, aangezien het bos op veel plaatsen is verwijderd/verstoord. Omdat goudwinning

de belangrijkste inkomstenbron is voor de Compagniekreekgemeenschap, zijn de mijnbouwactiviteiten continu.

*Mitigerende maatregelen*

Er moet bewustzijn worden gecreëerd onder de gemeenschap over de negatieve effecten van de goudwinning tot nu toe, vooral onder jongeren (18 tot 30 jaar) met de nadruk op verantwoorde mijnbouw of alternatieve bestaansmiddelen. Er moet minimaal één alternatieve inkomstenbron zijn om de druk op het milieu te verminderen, bijv. landbouw, commerciële boomplanting en duurzaam toerisme. Bovendien moet er sprake zijn van een duidelijke zonering van het gebied voor de verschillende economische activiteiten. Herstel van verstoorde gebieden en bescherming van kritieke gebieden die nog intact zijn, zoals moeras- en oeverbossen, moeten worden overwogen.

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# 1 INTRODUCTION

Compagniekreek (5°04'29''N; 55°01'27''W) is a Maroon village (Samaaka tribe) in the Brokopondo District. The village is a transmigration village, originating from the Brokopondo lake that was flooded in the '60s to create the Brokopondo hydro lake. The village consists of around a thousand inhabitants and the main economic activity and income source now is from the small-and medium scale gold mining. Before the interior war the villagers were employed by the government, the Suralco Company, Victoria (obé/palm oil project) and the walaba industry. Gold mining activities started in the '80s during the interior war when areas in the interior were isolated from the capital and other areas. Gold mining first started in the Compagnie Creek, which is the main creek that flows through the village. Since then, the gold mining activities have expanded in and around the village, mining also the tributaries of the Compagnie Creek upstream and downstream.

With the Project "*Improving Environmental Management in the Mining Sector of Suriname, with Emphasis on Artisanal and Small-Scale Gold Mining",* (EMSAGS Project), responsible mining in this area is being stimulated. Since gold mining is the largest driver of deforestation in Suriname and contributes to biodiversity loss (through habitat degradation and pollution), climate change (through deforestation) and unsustainable land, water and forest management, this project addresses policy and institutional constraints to improve the management of the Artisanal and Small-Scale Gold Mining (ASGM) sector as well as to create an enabling environment for the dissemination of environmentally responsible mining practices.

Furthermore, the EMSAGS project aims to build a stronger knowledge base on forests, land use and land use change to inform better policy planning and enforcement for ASGM. To contribute to this knowledge base, a rapid fauna and flora biodiversity assessment including water quality and ecosystem services assessment was done in the Compagniekreek area by the National Zoological Collection of Suriname/Center for Environmental Research (NZCS/CMO) and the National Herbarium of Suriname (BBS). According to the assignment, the rapid assessment should be conducted in the wet and dry season of 2023 and repeated in 2024 to see if management measures could result in changes in the biodiversity. Since management measures were not visible in the gold mining activities during the implementation of the project and the project team did not expect to see the effect of management measures translated in ecosystem and biodiversity changes on such a short term it was decided to conduct the assessment as much as possible according to the available seasons (long wet season (2023), long dry season (2023), short dry season (2024) and long wet season (2024). An ecosystem services assessment was solely conducted in 2024.

This report includes the results of the fauna, flora, water quality and ecosystem services assessments conducted over the two years, along with impact assessments analyses, and mitigation measures to minimize the impact in the future.

# 2 METHODS

## 2.1 Study area

The study was conducted in the catchment area of the Compagnie Creek and some of its tributaries and smaller creeks in the area (see Figure 2-1), starting from the most upstream part of the Creek ascending to the downstream part. Sample points, transects and plots were chosen to make a comparison between disturbed and undisturbed areas possible and where needed to make comparison between the different forest types possible. Unfortunately, it was very difficult to find areas that are not disturbed and or influenced by gold mining activities. Therefore, areas were chosen that were relatively less disturbed. During the study period, the gold mining activities remained active in the area, which in some cases affected the established sample points and had to be replaced during the study.

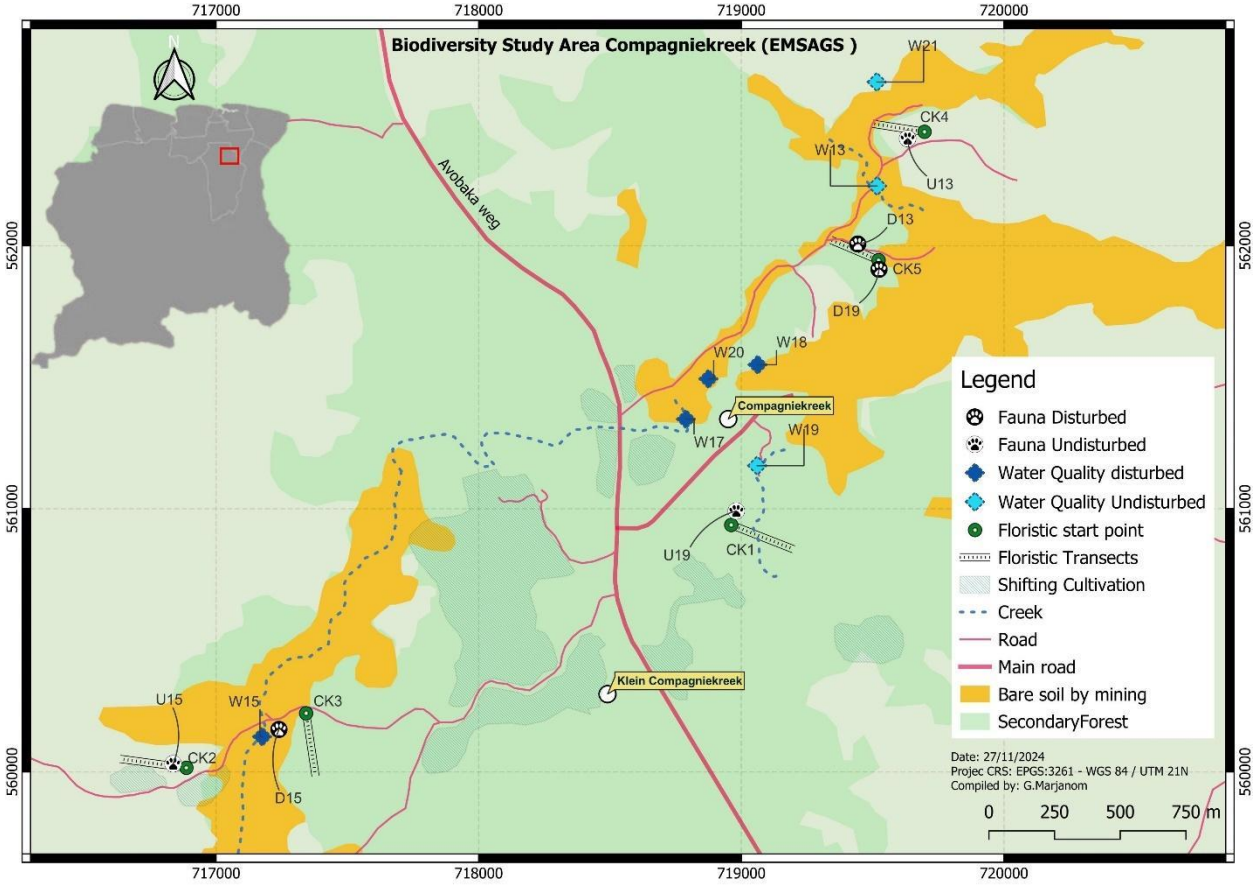


Figure 2-1 Study area with the sample sites for water quality (light and dark blue triangles), flora trails (black trails), vertebrates and invertebrates survey trails (animal tracks)

## 2.2 Field assessments

### 2.2.1 Water quality

Water quality was assessed in the following undisturbed areas (see also Figure 2-1):

- the most upstream part of the Pitieteng Creek (W21); northern from the Compagnie Creek; clear water creek, shallow in some parts of the creek (< 20 cm), width of 1-2 meters; originates from a swamp upstream; riparian vegetation along the creek.
- the Pitieteng Creek (W13); northern from the Compagnie Creek; downstream W21; clear water creek, shallow in most parts of the creek (< 20 cm); width of 1-2 meters, in some areas no vegetation along the creek, otherwise riparian vegetation along the creek.
- a tributary of the Compagnie Creek which flows behind the village (W19); this creek has a width of maximum 5 meters, has a slow current and is used for the water distribution through the village and is also the bathing and washing place for villagers; riparian vegetation along the creek.

Furthermore, water quality was assessed in the following disturbed areas:

- upstream Compagnie Creek (W15); part of the creek that comes directly from the gold mining area; at the sample point, shallow creek flowing through disturbed open landscape; 1-2 m width; vegetation mostly grasses in and along the creek.
- downstream Compagnie Creek, where the creek flows through the village (W17 and W20); some parts of the creek have steep walls; high dryland forest; some parts are used as bathing areas for the villagers; 3-5 m width.
- downstream Compagnie Creek, downstream the village (W18); creek flowing through a landscape of gold mining pits and active gold mining activities, scarce vegetation, mostly grasses; water depth and width irregular due to gold mining activities.

At each sample point, the following parameters were assessed: temperature, dissolved oxygen, pH, conductivity, turbidity, total dissolved solids, salinity, transparency and depth; all these parameters were measured with field hand held meters (brands HACH, Oakton). Furthermore, water samples were taken for the following parameters to be analyzed in the (field) laboratory: for the colorimetric analyses: nitrate, nitrite, ammonia, orthophosphate, total phosphate, silica, sulfate, total aluminum, total iron, chemical oxygen demand; for the titrimetric analysis: total hardness, calcium hardness, alkalinity, chloride; for the spectrophotometric analysis: bacteria, mercury. Measurements were done in duplo and noted in a (field) notebook. For mercury analyses, soil samples were collected at each sampling point and where possible, fishes (piscivorous fish preferably) were caught, from which tissue samples were taken to be analyzed in the Environmental Laboratory of the NZCS/CMO using a Bacharach Mercury Analyzer.

### 2.2.2 Flora

Data collecting for flora was carried out in the wet and dry seasons in 2023 and repeated in the dry and wet season in 2024. During the first assessment in the wet season in August 2023, five (5) plots were established of 0.1 ha at various locations. Three plots had a dimension of 250 x 4 m and 2 plots had a dimension of 200 x 5 m. The two plots were different in dimension because the required length of 250 m was not available at these specific locations. Even though the required length was not reached, an assessment was carried out over the same surface area by increasing the width of the plot with 1 m. The start point, endpoint, and elevation for every plot was measured with high accuracy through the use of the Waypoint Averaging function of a Garmin GPSMAP 65s unit. In Table 2-1, the metadata for flora transects are presented and in Figure 2-1 these are depicted. The direction of the plots is variable and was based on the suitability of the available vegetation in that specific area, also considering avoidance of old roads and recent disturbances. A team of four people established the center line and the boundaries of each plot with the use of a compass, measuring tape, poles, and flagging tape.

In wet season 1 at plot level, the flora team documented all woody plants and palms with stems > 10 cm DBH in the plot at large. The plant habit (e.g. tree, liana, palm) was recorded, the stem diameter, tree height, and a preliminary identification was made (local or Latin name) of all individual woody or palm stems > 10 cm diameter throughout the plot. If the trunk forks below 1.3 m, the height of the fork was recorded and the diameter was measured below the forking. The diameter was measured at breast height for all individual trees or palms that comply with the above-mentioned criteria. Where the tree forked below breast height, the diameter was recorded below the fork and the height was noted. Total tree height (from ground level to the highest point of the crown) per individual was estimated. The team entered the data directly with a structured datasheet using Open Data Kit (ODK) collect v2022.4.4 installed on a smartphone. Throughout the plot, the ground cover of plants < 10 cm DBH was recorded, along with which plants were most abundant, based on a scale of 1 to 5.

In October 2024 a Canopy openness measurement was conducted with a densiometer in all 5 plots to measure the amount of light that penetrates the canopy and reaches the forest floor. The measurements were taken at the four cardinal points (North, South, East and West) and the estimated percentage value of the canopy openness was calculated from the averaged readings of each site. This data will be analyzed statistically in SPSS to compare disturbed and undisturbed plots. It is hypothesized that differences will be observed, as disturbed areas typically exhibit numerous canopy gaps, resulting in a higher percentage of light penetration within the forest.In addition to collecting the floral plot data, random sampling was also conducted. This gave a general idea of plants that occur in the Compagnie Creek area. Plants were identified in the field and voucher

specimens of the plants that are flowering and or fruiting were collected. These plant specimens were then accurately identified in the herbarium after the sampling campaign and stored as dried specimens in the herbarium collection. The dried herbarium specimens in storage may be useful in future studies. During the fieldwork, all team members took pictures and videos of the landscape, conditions, disturbances, trees, and plants to keep track of environmental changes over time and to visualize the differences in forest types.

The plots were revisited in dry season 1 (November 2023), dry season 2 (March 2024) and wet season 2 (June 2024) and our team walked and looked for environmental changes and phenology of the plants in the plots.

Table 2-1 Metadata of Plots established at Compagnie Creek area

| Plot | UTM coordinates (WGS84) | Elevation (meter) | Direction | Forest Type |
|---|---|---|---|---|
| CK1 BEGIN | 21N 560920.033 718987.150 | 27 | SE 140° | Marsh/Riparian |
| CK1 END | 21N 560828.513 719203.080 | 32 | | |
| CK2 BEGIN | 21N 559991.980 716895.021 | 52 | NW 295° | High dryland |
| CK2 END | 21N 560021.963 716648.470 | 48 | | |
| CK3 BEGIN | 21N 560208.442 717356.491 | 35 | SE 207° | Secondary |
| CK3 END | 21N 559962.754 717388.033 | 34 | | |
| CK4 BEGIN | 21N 562427.737 719721.916 | 60 | NW 305° | High dryland |
| CK4 END | 21N 562457.802 719506.177 | 37 | | |
| CK5 BEGIN | 21N 561935.590 719538.586 | 39 | NW 320° | Secondary |
| CK5 END | 21N 561996.476 719353.551 | 47 | | |

### 2.2.3 Fauna

#### 2.2.3.1 Terrestrial vertebrates

For the assessment of the terrestrial vertebrates, 500 m line transects (6) in the forest were made, three in the disturbed gold mining areas, and three in undisturbed forests. Methods that were used for the terrestrial vertebrate assessments were:

- Camera traps

To get an overview of the mammals in the area, camera traps were placed. In each line transect, two camera traps (brand: Reconyx or Bushnell), approximately 45 to 70 cm above soil level were placed opposite each other to facilitate the recognition of animals. For each camera trap, the location was numbered and GPS coordinates recorded. All camera traps were serviced and checked once per month. During each service, cameras were taken down to replace the batteries and the SD cards. At the NZCS/CMO, pictures were downloaded from the SD cards and from the pictures, species were identified. During the implementation of the field assessments, two camera traps were stolen.

- Active surveys

The 500 m line transects in the forest were also used for active surveys for the assessments of amphibians, reptiles and mammals. Surveys were conducted two times in the day: in the morning (07:30h) and in the evening (19:00 h). During the active surveys, line transects were walked, searching for animals. For each encountered animal, the species was identified and noted. If the species could not be identified in the field, the species was caught and brought back to the field camp or to the NZCS/CMO laboratory for identification.

#### 2.2.3.2 Fish

For the assessment of the fish diversity, gill nets, D-frame nets and an 80 x 50 cm metal frame net were used. Unfortunately, suitable and safe sample points were limited and could not be done for all locations and seasons. In the first wet season survey, extreme high-water levels made it impossible to conduct the fish surveys. Smaller fishes were assessed during the macro-invertebrate assessments at all locations.

#### 2.2.3.3 Terrestrial invertebrates

The same line transects that were used for the vertebrate surveys (Figure 2-1), were also used for the invertebrate surveys, but only 200 meters. Transects in the undisturbed areas were not always totally undisturbed at the entrance or at the end. Due to this situation, the transects going through the undisturbed areas were only usable for invertebrates for a distance of 150 meters leaving out some 25 meters at both ends. In each transect, three sampling points were chosen, where traps were placed at approximately 50 meters from each other.

The following standardized trap types were arranged at each sampling point: Yellow Pan (YP), Pitfall (PF), Treefall (TF), and butterfly traps (BT). The YP, PF and TF traps were set up and left for a maximum of 36 hours, after which retrieval took place. BT were checked once during the same day and removed the following day.
PF, YP and TF consisted of one liter open round yellow plastic containers. The PF traps were cut to one third, because of lateritic soil conditions, which made it difficult to bury the traps.
PF traps collect ground dwelling insects. Placing the PF traps was done by digging a shallow hole in the ground and placing one container into that hole, just deep enough for the rim of the container to be at equal height of the surrounding soil. The ground area around the containers had to be compacted and smoothed out, with the least disturbance, in order to stay accessible for the occurring ground- crawling insects.
YP traps were simply placed on the soil, preferably in an open area where the ground was less steep.
TF traps were hung at an ideal spot on the branches at a height of approximately 1.5 to 2 meters above soil level, making sure the trap did not glide or hit other branches, so as to avoid spilling the preservative liquid. The yellow color attracts many day-active insects and upon reaching the preservative, they drown and stay conserved. Propylene glycol (PG) was filled for 25% in the traps as preservative.
After the working period of 36 hours, the results from the PF, TF and YP traps were each filtered through a sieve, where after the content on the sieve was transferred to ziplock plastic bags. PG, where possible, was re-collected from the traps for future use. All material was labeled in correspondence with their trap type and number. Data was recorded in a notebook. In the laboratory, the contents were sorted out and all relevant taxa of invertebrates were identified as much as possible down to the species level and placed into vials with 90% ethanol, labeled accordingly.

Butterflies (*Lepidoptera*) were collected with BT. The BT consisted of a self-made vertical cylinder covered around and on top with mesh cloth and having a rope on top to tie it to branches. On the underside of the cylinder, a yellow tray was fixed as a platform to the sides. On this yellow tray, fermented fruits (banana and orange) were placed to serve as bait to lure butterflies.
These traps had to be monitored the same day, after two to three hours of placement, to see if there were already butterflies caught in the traps. If there were butterflies present in the traps, they had to be collected to prevent them from escaping. In the afternoon of the following day, the next group of butterflies were collected from the BT, before removing it.
Besides the passive sampling, using BT, butterflies were also actively collected by walking through the same transects and in the area close to each transect, searching for butterflies and catching them with an insect net. Because the exact proportions of the

areas for actively sampling butterflies were unknown, timing the effort was used as a standardization factor to ensure consistency of the collected data. The effort used for actively collecting butterflies consisted of 5 series of 30 seconds.
All collected butterflies were killed by pressing the thorax between the index finger and thumb, breaking the muscles responsible for flying. With as possible wings open, they were placed in glassine paper envelopes. Information regarding the specimen was written on these envelopes and kept together in separate plastic bags for each transect area, which were then stored in the freezer in the field.
Dragonflies and damselflies (Odonata) were also actively collected with the insect net, using the same method as mentioned above for butterflies. Collected Odonata were placed with folded wings in glassine envelopes, separated in plastic bags for each transect area and labeled accordingly. Specimens were stored in the freezer in the field.

Stingless bees (Apidae, Meliponinae) were also actively collected on all flowering plants and other attractive resources along the road or frequently used paths near the transects using an insect net. The transects laid out for the treefall, pitfall and yellow pan traps were not used for the bees, as there were no flowering plants available in the closed canopy areas. The same effort that was used for actively sampling Lepidoptera and Odonata, namely 5 series of 30 seconds, was used when actively sampling Apidae. Depending on the quantity, collected bees were either placed in Eppendorf vials or ziplock bags and provided with a field code. At the basecamp, all bee samples were stored in the freezer for killing them humanely. Processing of the bee samples was on the same night, providing 90% ethanol to the tubes and bags and stored away for further processing in the laboratory.

#### 2.2.3.4 Aquatic invertebrates

Aquatic sampling took place within the areas of the transect lines, where water was available, or at the water quality sampling points (see Figure 2-1). For the sampling effort, three series of 30 seconds were used. Aquatic invertebrates were sampled using a metal frame net of 80 cm x 50 cm and two standard D-Frame nets, sweeping the vegetation in the water along the shore up to 1 meter off shore in the water. All specimens collected in these nets were collected with a soft tweezer and transferred to a vial containing 90% ethanol. The vials containing the specimens were labelled accordingly and stored away for further processing in the laboratory.

## 2.3. Ecosystem services assessment

### 2.3.1 Introduction

According to the Convention on Biological Diversity the definition of Ecosystem Services is “...benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits” (CBD Technical Series No. 73, 2012).

### 2.3.2 Method

In order to assess the ecosystem services used by the community in the past and at present in the Compagniekreek area, focus group meetings were held in the village. With the village Head (Kapitein Pina) five groups were formed, consisting of men (age 30 years and older), the members of the traditional authority, elderly men and women (age 60 years and older), women (age 30 years and older) and youth (age 15 – 20 years). The village Head mobilized the participants for each session.
During each session the methods and results of the flora and fauna assessments were presented to confirm what species are present in the study area, whereafter the purpose of the session and some examples of ecosystem services were presented on a poster. The participants were asked to name the ecosystem services they used in the past and those used at present. These were listed and recorded after which the services mentioned were placed on the map of the study area. The colors indicate the different categories of ecosystem services and the two shapes, rectangle and circle, indicate the present and the past. This method is depicted in the following Figure 2-2.

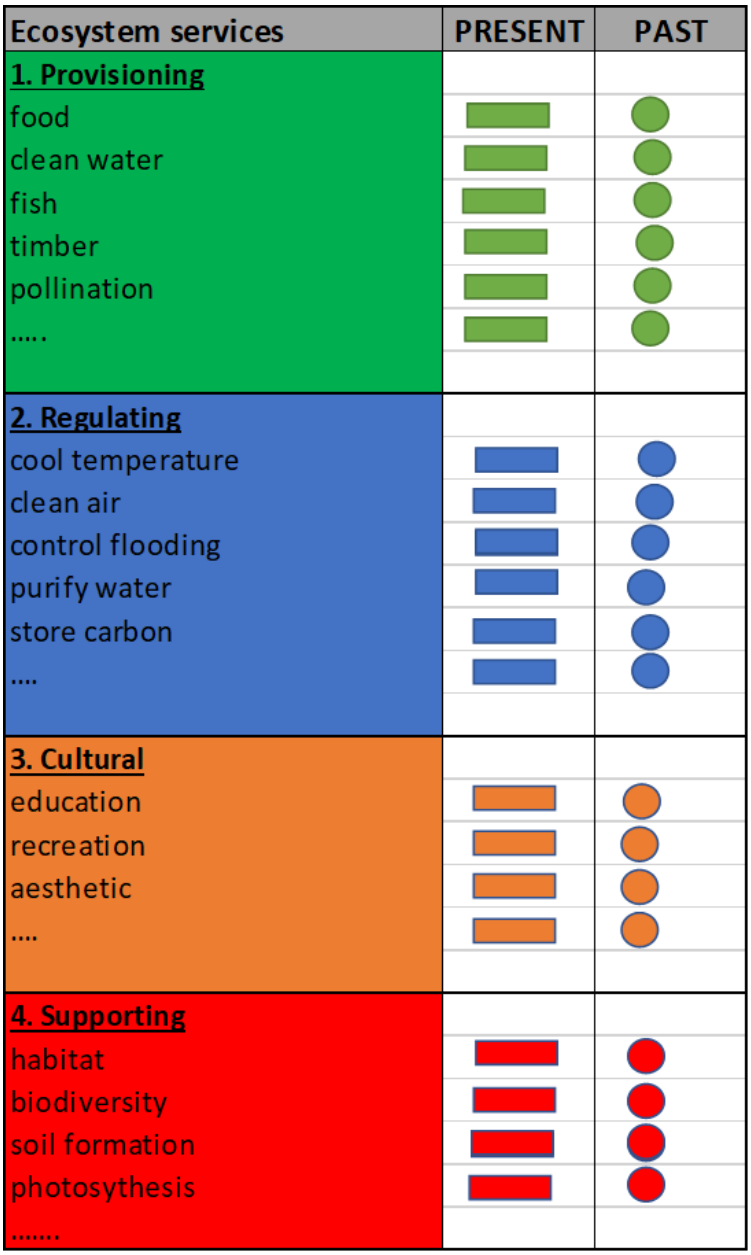

Figure 2-2 Poster with examples of ecosystem services during the interviews

## 2.4 Data processing

*Water quality*

During data processing, duplo values for measurements were averaged for the disturbed and the undisturbed sites. Matrices of the water quality data were developed for the statistical analyses.

*Flora*

Matrices were developed for the number of all plant species measured in the assessments. The most abundant tree and palm species encountered were identified. All data of the disturbed and undisturbed plots were pooled to show a comparison between most abundant species in Secondary and High dryland forest.

*Fauna*

Species lists were compiled from data gathered during active transect sampling, the traps and the camera traps pictures. Species activity from camera traps were standardized for the calculations of the Relative Abundance Index (RAI). From the species abundance, species-sites matrices were compiled for further data analyses.

## 2.5 Data analyses and impact assessment

*Data analyses*

The data analysis was focused on determining the effect of the gold mining activities on assessed water quality and biodiversity parameters by comparing these aspects in both disturbed and undisturbed sites. Differences between undisturbed and disturbed sites, and different forest types were analyzed using both univariate and multivariate statistical methods on direct measurements (water quality measurements and species abundances of fauna and flora assessed) and on compiled species diversity indices (RAI, Shannon Wiener and Simpson). Species diversity indices (Shannon Wiener and Simpson) were calculated separately for both terrestrial and aquatic species. This was done separately to emphasize the effect of the gold mining activities on the aquatic and the terrestrial ecosystems. Species accumulation curves were compiled to get an overview of the effort for assessing the whole fauna community in the study area. Statistical analyses were performed with the softwares IBM SPSS version 26 and R version 3.4.0 (R Development Core Team, 2014), using the packages vegan.

*Conservation status*

Beside the field assessment, the conservation status and or extinction risk of the species encountered in the area were assessed. For this, the IUCN red list and the Restricted Range Endemics (RRE) statuses were checked for each species. Furthermore, species were also checked according to the national Game Law (Jachtwet, 1954) and the Forest Management Law (Wet Bosbeheer, 1992) as either game, protected or no national conservation status.

*Biodiversity impact assessment*

Although criterion for Biodiversity Impact Assessment is mainly developed to assess the feasibility of a proposed project, they are also useful to assess/monitor the impacts for projects in implementation and so Biodiversity Impact Assessment Guidelines were used to assess the effect of the gold mining activity on biodiversity and ecosystems. Three main categories of impacts have been identified, namely environmental impacts, ecosystem impacts and organismal impacts. Table 2-2 gives an overview of the types of impacts identified and the indicators used to assess these impacts.

Table 2-2 Identified impacts from the gold mining activities at Compagniekreek and indicators

| **Environmental impact** |
|---|
| Change in water quality |
| Change in hydrology |
| Increased sedimentation |
| **Ecosystem impact** |
| Loss of flora |
| Loss of fauna |
| Loss of ecosystem functioning |
| Loss of ecosystem services |
| Habitat loss |
| Habitat degradation |
| Habitat fragmentation |
| **Organismal impact** |
| Loss of food and shelter |
| Reduced population size |
| Increased human-wildlife conflict |

For the classification of the impacts the classification scheme in Table 2-3 is used, which considers the intensity of the impact (National Parks Board, 2024).

Table 2-3 Impact classification scale used for the gold mining activities at Compagniekreek

| Classification | Description |
|---|---|
| Negligible | Changes are significantly below physical detection level, or with no to very minor loss to the quality and/or functionality of the receptor |
| Minor | Short term, minor changes in quality and/or functionality of the receptor |
| Moderate | Loss of resource, moderate changes in quality and/or functionality of the receptor |
| Major | Large scale loss of resource, large changes in quality and/or functionality of the receptor |

For the impact classification the results and conclusions of the data analyses of the field surveys data were used. The impact classification is done separately for the three impact categories mentioned in Table 2-2.

# 3 RESULTS

## 3.1. Water quality

Tables 3.1. and 3.2 give the averages of the water quality measurements done in the wet and dry seasons. Annex 1 gives the results of the water quality assessments of the four assessment periods.

Table 3-1. Water quality averages and standard deviation for the wet season measured in disturbed and undisturbed areas in Compagniekreek, including the results for the difference test between disturbed and undisturbed sites. NS= non-significant for p> 0.05.

| Parameter | Disturbed sites (average) | Undisturbed sites (average) | p |
|---|---|---|---|
| Dissolved oxygen | 6.3±0.44 mg/L | 4.3±0.88 mg/L | p=0.001 |
| Dissolved oxygen saturation | 81.9±7.94 % | 54.8±11.42 % | p=0.001 |
| pH | 5.8±0.13 | 5.9±0.24 | NS |
| Conductivity | 26.3±6.84 uS/cm | 36.1±1.84 uS/cm | p=0.01 |
| Turbidity | 695.2±759.17 NTU | 14.2±4.55 NTU | p =0.002 |
| Total dissolved solids | 19.1±4.43 mg/L | 25.7±1.22 mg/L | p =0.006 |
| Total suspended solids | 484.2±613.38 mg/L | 5.0±2.43 mg/L | p =0.004 |
| Salinity | 21.7±2.35 mg/L | 25.1±0.82 mg/L | p =0.01 |
| Orthophosphate | 0.0±0.02 mg/L | 0.0±0.00 mg/L | NS |
| Total phosphate | 0.2±0.06 mg/L | 0.2±0.09 mg/L | NS |
| Nitrate | 0.0±0.00 mg/L | 0.0±0.01 mg/L | NS |
| Nitrite | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Ammonia | 0.4±0.09 mg/L | 0.1±0.06 mg/L | NS |
| COD | 54.7±50.00 mg/L | 21.4±23.35 mg/L | p =0.05 |
| Calcium hardness | 2.5±2.05 mg/L | 3.3±1.21 mg/L | NS |
| Total hardness | 7.7±2.00 mg/L | 9.7±2.22 mg/L | NS |
| Alkalinity | 6.0±1.18 mg/L | 9.0±0.71 mg/L | p =0.003 |
| Chloride | 6.8±0.85 mg/L | 6.9±0.56 mg/L | NS |
| Sulfaat | 1.2±0.76 mg/L | 0.0±0.00 mg/L | p =0.05 |
| Silica | 2.2±1.40 mg/L | 6.0±0.51 mg/L | p =0.001 |

| Parameter | Disturbed sites (average) | Undisturbed sites (average) | p |
|---|---|---|---|
| Iron | 4.8±3.46 mg/L | 2.5±0.83 mg/L | NS |
| Aluminum | 1.0±0.99 mg/L | 0.1±0.03 mg/L | p =0.004 |
| Mercury (water) | 0.2±0.24 µg/L | 0.0±0.03 µg/L | p =0.05 |
| Mercury (sediment) | 0.2±0.06 µg/g | 0.3±0.1 µg/g | NS |
| Mercury (fish) | -* | 1.18 µg/g | |

*No fishes were caught in the disturbed area during the wet season

Table 3-2. Water quality averages and standard deviation for the dry season measured in disturbed and undisturbed areas in Compagniekreek, including the results for the difference test between disturbed and undisturbed sites. NS= non-significant for p> 0.05.

| Parameter | Disturbed sites (average) | Undisturbed sites (average) | p |
|---|---|---|---|
| Dissolved oxygen | 4.7±0.80 mg/L | 3.7±2.00 mg/L | NS |
| Dissolved oxygen saturation | 66.5±16.00% | 49.2±26.56% | NS |
| pH | 6.5±0.22 | 6.2±0.32 | NS |
| Conductivity | 49.1±5.65 uS/cm | 42.2±3.17 uS/cm | NS |
| Turbidity | 1720.1±2859.24 | 11.7±5.23 | p=0.05 |
| Total dissolved solids | 34.8±4.07 mg/L | 30.0±2.20 mg/L | NS |
| Total suspended solids | 777.8±1580.00 mg/L | 82.4±188.13 mg/L | p=0.04 |
| Salinity | 31.5±1.59 mg/L | 28.0±1.12 mg/L | p=0.001 |
| Orthophosphate | 0.1±0.04 mg/L | 0.0±0.01 mg/L | NS |
| Nitrate | 0.0±0.01 mg/L | 0.0±0.00 mg/L | NS |
| Nitrite | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Ammonia | 0.7±0.69 mg/L | 0.1±0.08 mg/L | p=0.02 |
| Calcium hardness | 5.6±1.28 mg/L | 4.5±1.00 mg/L | NS |
| Total hardness | 15.7±0.82 mg/L | 11.2±1.82 mg/L | p=0.001 |
| Alkalinity | 12.5±2.68 mg/L | 10.9±0.94 mg/L | NS |
| Chloride | 10.3±2.35 mg/L | 8.5±0.57 mg/L | NS |
| Sulfaat | 0.8±1.30 mg/L | 0.0±0.00 mg/L | NS |

| Parameter | Disturbed sites (average) | Undisturbed sites (average) | p |
|---|---|---|---|
| Silica | 4.8±2.75 mg/L | 7.5±0.67 mg/L | p=0.01 |
| Iron | 2.3±1.02 mg/L | 1.8±1.83 mg/L | NS |
| Aluminum | 0.5±0.44 mg/L | 0.3±0.32 mg/L | NS |
| Mercury (water) | 0.1±0.17 µg/L | 0.1±0.06 µg/L | NS |
| Mercury (sediment) | 0.2±0.05 µg/g | 0.2±0.11 µg/g | NS |
| Mercury (fish) | -* | 1.48 µg/g | - |

*No fishes were caught in the disturbed area during the dry season

It was a challenge to find suitable sampling points for water quality, since the largest part of the main Compagnie Creek has been mined. For the control sites, creeks not connected to the Compagnie Creek were selected, but also these were scarce in the nearby area of the village.

The gold mining activities lead to the clearance of the forest, the diversion of the hydrology of the creek, the establishment of water pits, and discharge of sediments in the creek during the ore processing. These activities resulted in the increased discharge of vegetative material and sediment into the creek and thus higher levels of turbidity, suspended and dissolved solids and metal concentrations in the water. In the wet season this resulted in a clear difference in water quality parameters between the disturbed and the undisturbed sample locations, such as conductivity, turbidity, total dissolved solids, total suspended solids, chemical oxygen demand (COD), alkalinity, ammonia, silica and aluminum. Mercury concentrations were also high in the waterways of the disturbed area (see Table 3-1 and Annex 1).
In the dry season most creeks, especially in the disturbed area, had almost no water and were loaded with discharged sediment from the mining area. Since there was overall less water in all waterways sampled, it was difficult to find differences between the undisturbed and disturbed sites. Significant differences were only found between the disturbed and the undisturbed sample locations for turbidity, total suspended solids and alkalinity. It is to be noted that in the dry season, the gold mining activities remained active, which led to extensive amounts of sediments discharge in the waterways, elevating the levels of sediments in these waterways (see Table 3-2 and Annex 1).
Remarkably are the high levels of mercury found in both sediment and fish samples in the undisturbed sample sites. Since it is not known from the geological formations in this area (Marowijne group: Paramaka, Rosebel and Armina geological formations) to contain mercury, it is possible that the aquatic systems in the area are polluted by atmospheric deposition of mercury. This pattern is also observed in undisturbed areas in South-West

Suriname (Ouboter et al., 2012). With the North-East current wind, mercury is being transported inland in the South-East direction, whereby deposition is stimulated in hilly areas. This can result in the deposition of mercury in the undisturbed areas within the Compagnie Creek catchment area.

On request of the local community, samples for microbiological analyses were taken from the sampling area in the dry season. The results can be found in Annex 1. The results of the microbiological parameters showed that all assessed sample points contain fecal coliforms including *E-coli*. The highest concentrations of *E-coli* were found in the undisturbed creek at sample point W19, the disturbed Compagnie Creek downstream the village, and also at the sample point behind the school; all locations that are being used by villagers for bathing and washing. These levels of *E-coli* found at these sites, might pose health risks for the villagers, who make use of these waters.

Furthermore, at location W19, an oil film was detected on the water surface, probably as a result of an oil spill from the water pump, which distributes water through the village, and is located upstream of the creek. Oil also contains mercury, which can result in the pollution of the undisturbed creek leading to higher levels of mercury found in sediment samples at this sample point.

## 3.2 Flora

### 3.2.1 Results field assessments

Through observation it was clear that the plot in Secondary Forest has been disturbed by logging or gold mining activities. The list of 181 species encountered within the flora plots can be found in Table 3-3. For a complete list of trees and palms encountered within the plots numbered CK1 to CK5 with both local and scientific names with corresponding family names, diameter at breast height (DBH), habitus and forest type see Annex 3 Table A3-1.

Table 3-3 List of plant species within the flora plots

| Local name | Scientific name |
|---|---|
| abrasa | *Clusia platystigma* Eyma |
| agrobigi, grootbloemig | *Parkia nitida* Miq. |
| agwago maka | *Smilax siphilitica* Humb. & Bonpl. ex Willd. |
| anawra, hoogland | *Couepia guianensis* Aubl. |
| ayo-ayo | *Hieronyma alchorneoides* Allemão |
| babunnefi | *Scleria secans* Urb. |
| babunnefi | *Scleria stipularis* Nees |
| bactris | *Bactris gastoniana* Barb.Rodr. |
| bambamaka | *Desmoncus polyacanthos* Mart. |
| bamboe gras | *Pariana radiciflora Sagot ex Döll* |
| basralokus | *Dicorynia guianensis* Amshoff |
| behaarde psychotria | *Palicourea sp.* |
| bergibita | *Geissospermum sericeum* Benth. & Hook.f. ex Miers |
| bofrukasaba | *Palicourea apoda (Steyerm.)* Delprete & J.H.Kirkbr. |
| bofrukasaba | *Palicourea tomentosa* (Aubl.) Borhidi |
| boletri, basra | *Manilkara huberi* Standl. |
| bosdruif | *Heisteria cauliflora* Sm. |
| bosknepa, eetbare | *Talisia megaphylla* Sagot |
| boskoffie | *Faramea guianensis* (Aubl.) Bremek. |
| boskusuwe | *Sloanea grandiflora* Sm. |
| bospapaya, 3 vinger | *Cecropia sp.* |
| bospapaya, uma | *Cecropia obtusa* Trécul |
| boszuurzak, kapuweri | *Annona sericea* Dunal |
| boszuurzak, langbladige | *Annona densicoma* Mart. |
| bromelia | *Disteganthus gracieae* Aguirre-Santoro & Michelang |
| bruduwiri | *Dianthera secunda* Griseb. |
| bruinhart | *Vouacapoua americana* Aubl. |
| bugrumaka | *Astrocaryum sciophilum* Pulle |
| busikandra | *Palicourea croceoides* Ham. |

| Local name | Scientific name |
|---|---|
| calyptro gras | *Calyptrocarya glomerulata* Urb. |
| cyper gras | *Becquerelia cymosa* Brongn. |
| diatitei | *Davilla kunthii* A.St.-Hil. |
| donke | *Dieffenbachia seguine* Schott |
| dyadidya | *Tachigali melinonii* (Harms) Zarucchi & Herend. |
| dyebri-babunefi, kaimangrasi | *Diplasia karatifolia* Rich. |
| dyedu, rode, kleinbladige | *Tachigali albiflora* (Benoist) Zarucchi & Herend. |
| foman | *Chaetocarpus schomburgkianus* (Kuntze) Pax & K.Hoffm |
| fungu, zwarte | *Licania sp.* |
| gandu | *Swartzia panacoco* (Aubl.) Cowan |
| gawtri, hoogbos | *Cupania scrobiculata* Rich. |
| geri-udu | *Pogonophora schomburgkiana* Miers ex Benth. |
| granbusi palulu (reuze palulu) | *Phenakospermum guyannense* (A.Rich.) Endl. ex Miq. |
| granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. |
| gronfolo, laagland | *Qualea coerulea* Aubl. |
| gubaya | *Jacaranda copaia* (Aubl.) D.Don |
| hoepelhout | *Copaifera guyanensis* Desf. |
| ijzerhart | *Bocoa prouacensis* Aubl. |
| ingipipa, grootbladig | *Couratari guianensis* Aubl. |
| ingipipa, kleinbaldig | *Couratari multiflora* (Sm.) Eyma |
| jankrappa | *Talisia mollis* Cambess. |
| kabbes, zwarte | *Diplotropis purpurea* (Rich.) Amshoff |
| kaimangrasi | *Diplasia karatifolia* Rich. |
| kaiman-udu | *Laetia procera* (Poepp.) Eichler |
| kandra-udu | *Palicourea longiflora* DC. |
| kankan-udu | *Apeiba petoumo* Aubl. |
| kersi, sekrepatu | *Eugenia patrisii* Vahl |
| keskesmaka | *Bactris sp.* |
| keskesmaka | *Bactris oligocarpa* Barb.Rodr. |
| kleine anansi- wawai | *Spathanthus unilateralis* (Rudge) Desv. |
| kleine anansi- wawai | *Rapatea paludosa* Aubl. |
| Kleine bambu gras | *Piresia goeldii* Swallen |
| konkoni-udu, hoogland | *Gustavia hexapetala* Sm. |
| kopi | *Goupia glabra* Aubl. |
| kopkopi | *Trema micrantha* (L.) Blume |
| kototiki | *Mabea piriri* Aubl. |
| krapa, witte | *Carapa procera* DC. |
| kromantikopi | *Aspidosperma sp.* |

| Local name | Scientific name |
|---|---|
| kumbu | *Oenocarpus bacaba* Mart. |
| kwari, wana | *Vochysia tomentosa* (G.Mey.) DC. |
| Lele-tiki | *Simaba guianensis* Aubl. |
| lika-udu | *Antonia ovata* Pohl |
| lontukasi, geelbloemige | *Byrsonima crassifolia* Kunt |
| manaritiki | *Rinorea pubiflora* Sprague & Sandwith |
| manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori |
| manpikapika | *Ephedranthus guianensis* R.E.Fr. |
| mapa, kleinbladige | *Parahancornia fasciculata* (Poir.) Benoist |
| maripa | *Attalea maripa* Mart. |
| maripa, bergi | *Attalea sp.* |
| melisali | *Trichilia quadrijuga* Kunth |
| merkitiki | *Tabernaemontana undulata* Vahl |
| miconia | *Miconia ciliata* (Rich.) DC. |
| miconia | *Miconia racemosa* (Aubl.) DC. |
| mispel | *Miconia sp.* |
| mispel | *Miconia cf. dependens* |
| mispel, eetbare | *Bellucia grossularioides* (L.) Triana |
| mispel, kanker | *Henriettea multiflora* Naudin |
| mispel, pari-udu | *Miconia alata* (Aubl.) DC. |
| neku-udu | *Alexa wachenheimii* Benoist |
| okerhout | *Sterculia pruriens* (Aubl.) K.Schum |
| orchidee | *Palmorchis pabstii* Veyret |
| orchidee | *Scaphyglottis modesta* (Rchb.f.) Schltr. |
| orchidee | *Notylia sagittifera* (Kunth) Link, Klotzsch & Otto |
| orchidee | *Dichaea picta* Rchb.f. |
| orchidee | *Stelis argentata* Lindl. |
| orchidee | *Pleurothallis sp* |
| orchidee | *Maxillaria lutescens* Scheidw. |
| orchidee | *Epidendrum nocturnum* Jacq. |
| orchidee | *Andreettaea semperflorens* (Lindl.) A.Doucette |
| orchidee | *Maxillaria subrepens* (Rolfe) Schuit. & M.W.Chase |
| orchidee | *Anathallis polygonoides* (Griseb.) Pridgeon & M.W.Chase |
| orchidee | *Cochleanthes flabelliformis* (Sw.) R.E.Schult. & Garay |
| orchidee vanilla | *Vanilla planifolia* Andrews |
| orchidee waaier | *Ornithocephalus ciliatus* Lindl. |
| pangapanga | *Palicourea guianensis* Aubl. |
| paramaka | *Astrocaryum paramaca* Mart. |
| passiflora, markoesa | *Passiflora glandulosa* Cav. |

| Local name | Scientific name |
|---|---|
| pedreku, rode | *Xylopia discreta* Sprague & Hutch |
| pedrekupisi, wit | *Xylopia nitida* Dunal |
| peritiki | *Heisteria densifrons* Engl. |
| petrea | *Petrea volubilis L.* |
| pikinmiski | *Pseudopiptadenia suaveolens* (Miq.) J.W.Grimes |
| pina | *Euterpe oleracea* Mart. |
| pina, monki-monki | *Euterpe precatoria* Mart. |
| Pingo palulu | *Heliconia acuminata* A.Rich. |
| pingping | *Parodiolyra micrantha* (Kunth) Davidse & Zuloaga |
| pintolokus, witte | *Martiodendron parviflorum* (Amshoff) Köppen |
| pinya, man | *Vismia macrophylla* Kunth |
| pinya, uma | *Vismia guianensis* (Aubl.) Pers. |
| pisi, wana | *Ocotea splendens* (Meisn.) Baill. |
| pisi, witte | *Ocotea petalanthera* (Meisn.) Mez |
| pokai tongo | *Heliconia richardiana* Miq. |
| prokoni, rode | *Inga alba* (Sw.) Willd. |
| prokoni, tamarin | *Balizia pedicellaris* (DC.) Barneby & J.W.Grimes |
| purperhart | *Peltogyne venosa* (Vahl) Benth. |
| rafrunyangnyang, middenblad | *Sloanea sp.* |
| redi udu | Casearia arborea (Rich.) Urb. |
| sangrafu | *Costus scabe*r Ruiz & Pav. |
| sekrepatu trapu | *Bauhinia sp.* |
| snekitaya | *Dracontium asperum* K.Koch |
| sopo-udu | *Jupunba trapezifolia* (Benth.) M.V.B.Soares, M.P.Morim & Iganci |
| spikri udu | *Mouriri crassifolia* Sagot |
| switbonki, kapuweri | *Inga disticha* Benth. |
| switbonki, kleinbaldige | *Inga heterophylla* Willd. |
| switbonki, kokobeman-anu | *Zygia latifolia* (L.) Fawc. & Rendle |
| switbonki, rode bast | *Inga pezizifera* Benth. |
| switbonki, witte bast | *Inga alata* Benoist |
| tabakabron | *Croton matourensis* Aubl. |
| tafrabon, hoogbos | *Cordia sagotii* I.M.Johnst. |
| tafrabon, knopo | *Cordia nodosa* Lam. |
| tasi, man | *Geonoma deversa* Kunth |
| taya-udu, geelbloemige | *Paypayrola guianensis* Aubl. |
| tete-udu, gele bast | *Lecythis poiteaui* O.Berg |
| tingimoni, rode bast | *Protium polybotryum* Engl. |
| tingimonisali | *Tetragastris panamensis* (Engl.) Kuntze |
| tonka | *Dipteryx odorata* (Aubl.) Willd. |

| Local name | Scientific name |
|---|---|
| umabarblak | *Eschweilera congestiflora* (Benoist) Eyma |
| umabarblak, bergi | *Eschweilera ovata* Mart. ex Miers |
| varen | *Adiantum fuliginosum* Fée |
| varen | *Trichomanes pinnatum* Hedw. |
| varen | *Metaxya scalaris* Tuomisto & G.G.Cárdenas |
| varen | *Adiantum fuliginosum* Fée |
| walaba | *Eperua falcata* Aubl. |
| warimbo, echte | *Ischnosiphon arouma (*Aubl.) Körn. |
| warimbo, echte | *Ischnosiphon obliquus* (Rudge) Körn |
| warimbo, kleine | *Monotagma plurispicatum* K.Schum. |
| warimbo, knopo | *Ischnosiphon gracilis* Körn. |
| waterlelie | *Crinum erubescens* L.f. |
| watrabiri, hoogland | *Macrolobium sp.* |
| watramamabobi | *Gustavia augusta* L. |
| watratitei | *Doliocarpus sp.* |
| weti-udu | *Tapirira guianensis* Aubl. |
| yakanta, gele bast | *Poraqueiba guianensis* Aubl. |
| yakanta, rode bast | *Dendrobangia boliviana* Rusby |
| yamboka, rode | *Pouteria guianensis* Griseb. |
| yamboka, zwarte | *Pouteria melanopoda* Eyma |
| yariyari, gelebast | *Duguetia sp.* |
| | *Aeschynomene indica* L. |
| | *Bisboeckelera microcephala* (Boeckeler) T.Koyama |
| | *Calathea sp.* |
| | *Calyptrocarya glomerulata* Urb. |
| | *Echinolaena inflexa* (Poir.) Chase |
| | *Gesneria sp.* |
| | *Lepidagathis alopecuroidea* (Vahl) R. Br. ex Griseb. |
| | *Macherium sp.* |
| | *Mapania macrophylla* (Böck.) H. Pfeiff. |
| | *Olyra obliquifolia* Steud. |
| | *Psychotria sp.* |
| | *Rolandra fruticosa* (L.) Kuntze |
| | *Sauvagesia erecta* L. |
| | *Tetrapterys sp.* |
| | *Voyria caerulea* Aubl. |

During the flora assessment 317 tree stems were measured from 96 species. The most abundant tree species is *Inga pezizifera* with 46 individuals in the plots CK1, CK3, CK4 and CK5. From the 13 most abundant trees the family Fabaceae is the most abundant.

*Euterpe oleracea* and *Eschweilera congestiflora* are the second and third most observed species of trees measured within the plots.

All data of the two disturbed (CK3 and CK5) and two undisturbed (CK2 and CK4) plots were pooled to show a comparison between the top tree species in Secondary and High dryland forest. The top three tree species for disturbed forest are all pioneer and secondary forest species. *Inga pizizifera* (40), *Tapirira guianensis* (13) and *Goupia glabra* (8). Comparing disturbed and undisturbed forest shows that plots vary with differences and similarities among species. The tree species diversity in the undisturbed forest shows fewer pioneer species in its composition.

It was observed in dry season 1 (November 15-17, 2023) that plot CK1 with Marsh/Riparian forest was dry and the water level of the creek was low. This plot had a total of 30 families and 60 species of which 17 species are trees. *Eschweilera congestiflora* (umabarklak) was flowering and many epiphytes were noticeable close to the creek. CK2 with High dryland forest was also very dry. This plot had a total of 25 families and 46 species of which 26 species were trees. The trail was intact but around 50 m from the trail the locals cut down the forest and burned it for growing crops. Even though this forest was classified as non-disturbed, *Eperua falcata* (walaba) has been harvested from this forest. Remains of the trunks are still visible. *Eperua falcata* (walaba) and *Eschweilera ovata* (manbarklak) were flowering at the time of the assessment in dry season 1. The bark of *Geissospermum sericeum* (bergibita) was harvested close to the plot. CK3 with secondary forest was overall dry. This plot had a total of 27 families and 43 species of which 21 were trees. *Attalea maripa* (maripa) was flowering at the time of the assessment. CK4 with High dryland forest was also very dry. This plot had a total of 29 families and 59 species of which 37 were trees. *Eschweilera ovata* (manbarklak)*, E. congestiflora* (umabarklak) and *Couratari multiflora* (kleinbladige ingipipa) were flowering at the time of the assessment. Flowers were observed on the forest floor. In CK5 with Secondary forest no noticeable observations were made. This plot had a total of 27 families and 40 species of which 22 were trees.

During the second dry season census, conducted from March 18 to 20, 2024, plot CK1 was notably less dry compared to November 2023, with the creek water level rising approximately 20 cm. Within the transect, the team observed that *Spathanthus unilateralis* (kleine anansi-wawai) had finished flowering, whereas *Heliconia richardiana* (pokaitongo) was in bloom. Additionally, *Costus scaber* (sangrafu) and *Dianthera secunda* (brudu wiwiri) were both flowering. In the undisturbed transect CK2, *Heisteria cauliflora* (bosdruif) was observed to be in flower, and *Astrocaryum paramaca (pramakka)* fruits were beginning to open. *Maxillaria lutescens*, a common orchid, was found on a decayed fallen tree, and old *Clusia grandiflora (abrasa)* flowers were spotted on the forest floor. In transect CK3 (secondary forest), no significant observations were made.

However, in CK4 (high dryland forest), numerous *Heisteria cauliflora* treelets were flowering, while *Geissospermum sericeum* (bergi bita) displayed developing fruits. At the beginning of transect CK5 (secondary forest), a substantial number of *Heliconia acuminata* (pokaitongo) plants were observed, many of which were in bloom.

During the second wet season and final census, conducted from June 26 to 28, 2024, plot CK1 experienced localized flooding due to heavy rainfall, which caused the creek water level to rise above its banks. As a result, several areas were inundated. Observations indicated that *Euterpe oleracea* (pina) was producing new roots, although some palms had been felled for fruit harvesting. Both *Monotagma plurispicatum* (warimbo) and *Costus scaber* (sangrafu) were in flower. In CK2 (high dryland forest), *Bisboeckelera microcephala* was found to be in bloom, and some *Astrocaryum paramaca* had developing fruits. The forest floor and the surrounding habitat were notably wet, facilitating the growth of various fungi, such as *Cookeina tricholoma (bristly tropical cup)* and *Marasmius sp*. In CK3 (secondary forest), *Scleria stipularis* (babun nefi) was observed in both flower and fruit, while *Cookeina tricholoma* was also present. Additionally, *Palicourea apoda* (bofru kasaba) was in flower. In CK4 (second high dryland forest), old fruits of *Couratari guianensis* (ingipipa) were found on the forest floor, and *Petrea volubilis* (petrea) was seen in full bloom at the end of the transect. In CK5 (secondary forest), *Cookeina tricholoma* appeared on a decayed branch. At the transect's conclusion, a large tree fall obstructed the last 50 meters, making it inaccessible. *Scleria secans* (babun nefi) had overtaken the remaining section of the transect.

The canopy openness data are presented in Table 3-4. In CK2, one measurement (center) is notably higher than the two other measurements (beginning and end) within the same plot. This discrepancy can be attributed to a treefall in the center of the plot, which created a gap in the canopy and resulted in a higher openness measurement than anticipated. The distribution of the collected data did not meet the assumptions of normality. Consequently, a Mann-Whitney U statistical analysis was conducted. The results indicate a significant difference in canopy openness between the secondary forest (8.4 ± 6.77%) and the high dryland and riparian forests (3.1 ± 0.78%; $p = 0.002$).

Table 3-4 Canopy openness (%) results for a all 5 plots at Compagniecreek

| Plot | Forest type | Measurement begin | Measurement center | Measurement end |
|---|---|---|---|---|
| **CK1** | Riparian/Marsh | 3.90 | 2.34 | 3.12 |
| **CK2** | High dryland | 2.60 | 4.42 | 2.86 |
| **CK3** | Secondary | 6.76 | 4.42 | 5.60 |
| **CK4** | High dryland | 3.64 | 2.08 | 2.60 |
| **CK5** | Secondary | 4.94 | 6.76 | 22.1 |

Non-metric multidimensional scaling (NMDS) was employed to assess potential significant differences among the Riparian/Marsh forest plot (CK1), the two undisturbed plots (CK2 and CK4), and the two disturbed plots (CK3 and CK5). The NMDS analysis grouped the two disturbed plots into a single quadrant, while the remaining plots were allocated to separate quadrants (see Figure 3-1). Based on prior knowledge, it was anticipated that the CK2 and CK4 plots would cluster together. However, this did not occur, likely due to a canopy gap in CK2 because of a large treefall and because *Eperua falcata* (walaba) trees have been havested. Canopy gaps resulting from treefalls or timber harvesting facilitate the establishment of pioneer species, which can subsequently influence the outcomes of the NMDS analysis. It is reasonable to expect that CK1 would be positioned in a separate quadrant, as its habitat differs from that of the high dryland and secondary forests.

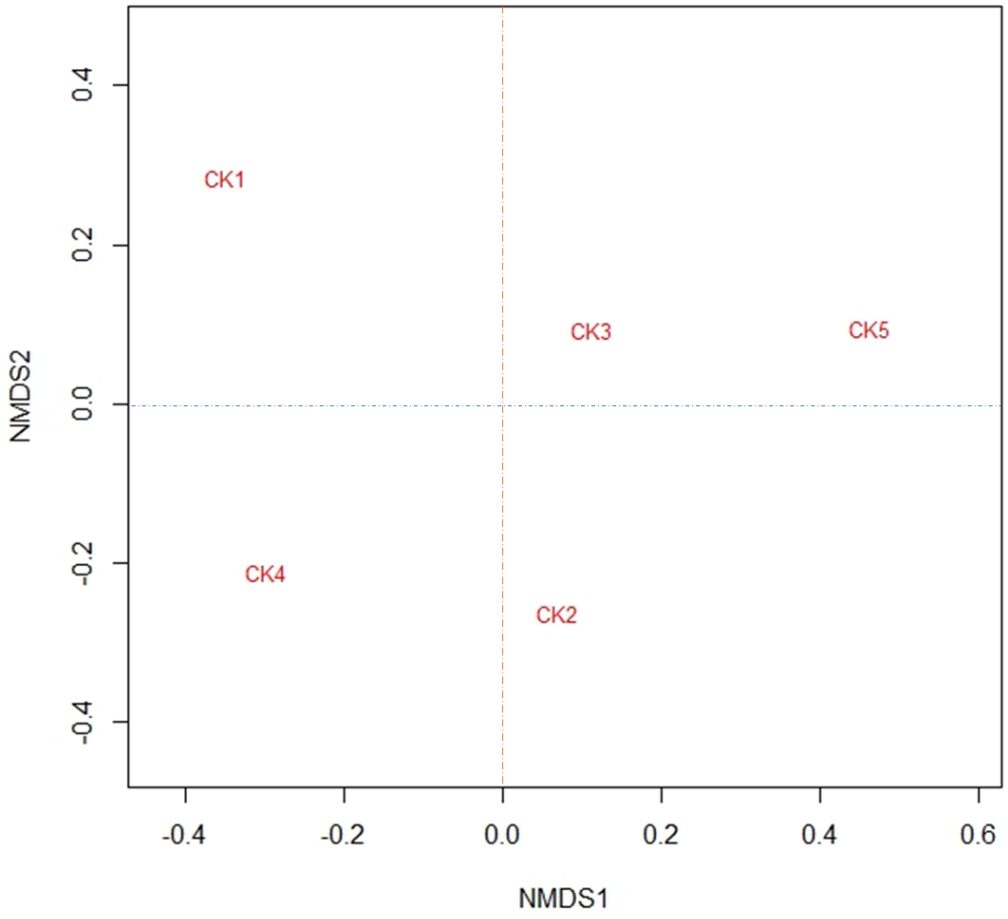


Figure 3-1 Non-metric dimensional scaling for the 5 flora plots. CK1) Marsh/Riparian forest, CK2&CK4) High dryland forest and CK3&CK5) Secondary forest.

Field observations and comparison of disturbed and undisturbed plots, show that less pioneer trees are present in the undisturbed plots. In the disturbed plots many pioneer species were observed but also a dominance of *Scleria secans* (babun-nefi). In the Marsh forest many epiphytes (13 species of orchids) and water loving plants occur such as *Spathanthus unilateralis, Monotagma plurispicatum* and *Ischnosiphon gracilis*. Common in the creek and swamp environment is *Euterpe oleracea* (podosiri/pina). The marsh forest is a location where locals use water for bathing, drinking and cooking. Because of this status this area has been preserved and protected from gold mining activities. Overall, the field observations in dry season 1 showed that the forest was dry as a result of an extreme dry season. Even though it was very dry, certain tree species in the non-disturbed forest such as *Eschweilera ovata* (manbarklak)*, E. congestiflora* (umabarklak)*, Couratari multiflora* (kleinbladige ingipipa) and *Eperua falcata* (walaba) were flowering. This was not the case in disturbed forest due to the lack of large tree species.

### 3.2.2 Conservation status

The assessed plant species were characterized by their conservation status stated in the national law (Forest Management Law 1992) and according to the IUCN Red List. According to the Forest Management Law hoepelhout (*Copaifera guyanensis*) is prohibited for logging because of its non-timber forest value. The sap from the bark is extracted and is being used as oil for medicinal and cosmetic purposes. According to the IUCN Red List bruinhart (*Vouacapoua americana*) is critically endangered. Although it is not protected by the national law bruinhart poles are known to be used as electrical posts throughout the country. All other species are of “Least concern” according to the IUCN Red List.

### 3.3 Fauna

### 3.3.1 Terrestrial vertebrates

#### 3.3.1.1 Results field assessments

Tables 3-5 and 3-6 give an overview of the terrestrial vertebrate species observed in the wet and dry season.

Table 3-5 Overview of the terrestrial vertebrate species observed during the wet season

| Species | Local name | Disturbed areas | Undisturbed areas |
|---|---|---|---|
| **Mammals** | | | |
| *Crypturellus cinereus* | Anamu | | X |
| *Didelphis imperfecta* | Busi – awari | | X |
| *Eira barbara* | Ayra | | X |
| *Leopardus pardalis* | Heytigrikati/Ocelot | | X |
| *Dasypus novemcinctus* | Negi Banti Kapasi/negenbandig gordeldier | X | X |
| *Tamandua tetradactyla* | Mirafroiti/Boommiereneter | X | |
| *Panthera onca* | Penitigri | X | |
| *Tayassu pecari* | Pingo/Witlip Pekarie | | X |
| *Nasua nasua* | Kwasi kwasi/Rode Neusbeer | X | X |
| *Cuniculus paca* | Hey | X | X |
| *Dasyprocta agouti* | Konkoni | X | X |
| *Sciurus aestuans* | Bonboni/Surinaamse Eekhoorn | X | |
| *Sciurus pusillus* | Bonboni/Kleine Surinaamse Eekhoorn | X | |
| **Amphibians** | | | |
| *Physalaemus ephippifer* | Pulehpuleh/Surinaamse Rooddij Kikker | X | X |
| *Pristimantes zeuctotylus* | Totori/Bruine Boskikker | | X |
| *Phylomedusa hypochondrialis* | Loboso-Todo/Zuid-Amerikaanse Makikikker | X | |
| *Boana fasciata* | Gestreepte boomkikker | | X |
| *Boana boans* | Plaktodo/Reuzenboomkikker | X | X |
| *Boana xerophylla* | Groene boomkikker | X | |
| *Boana multifasciata* | Gestreepte boomkikker | X | |
| *Osteocephalus cabrerai* | Boomkikker | | X |

| Species | Local name | Disturbed areas | Undisturbed areas |
|---|---|---|---|
| *Ameerega trivittata* | Tidetide/Groengestreepte gifkikker | X | X |
| *Leptodactylus guianensis* | Guiana fluitkikker | X | X |
| *Leptodactylus mystaceus* | Snorkikker | | X |
| *Leptodactylus sp.* | Fluitkikker | | X |
| *Rhinella martyi* | Kuifpad | X | X |
| *Anomaloglossus surinamensis* | Surinaamse Dwerggifkikker | X | |
| *Scinax ruber* | Papitodo/Badkamer Kikker | X | X |
| *Microcaecilia unicolor* | Wormsalamander | X | |
| *Allobates femoralis* | Tidetide/Grote dijvlekgifkikker | X | |
| *Anomaloglossus stephani* | Stephens's raketkikker | X | X |
| *Dendropsophus minitus* | Gestreepte Bruine Boomkikker | X | |
| *Rhinella granulosa* | Todo/Korreligpad | X | |
| *Adinomera andreae* | Grondkikker | X | X |
| *Rhinella marina* | Bigitodo/Reuzenpad | | X |
| *Osteocephalus taurinus* | Slankpotige Boomkikker | X | X |
| *Chiasmocleis shudikarensis* | Grondkikker | X | X |
| **Reptiles** | | | |
| *Kentropyx calcarata* | Hagedis | X | X |
| *Chatogekko amazonicus* | Gecko | X | X |
| *Arthrosaura kockii* | Grondhagedis | | X |
| *Dipsas pavonina* | Slakkeneter | | X |
| *Gonatodes humeralis* | Hagedis | X | X |
| *Cercosaura ocellata* | Oogvlekhagedis | X | X |
| *Plica umbra* | Agama/Schubbenhagedis | X | X |
| *Paleosuchus trigonatus* | Wigkopkaaiman | | X |
| *Leposoma guianense* | Grondhagedis | X | X |
| *Anolis nitens* | Anolis/kleine boomhagedis | | X |
| *Ameiva ameiva* | Lagadisa/Tuinhagedis | | X |
| *Gymnophthalmus underwoodi* | Schubbenhagedis | | X |
| *Bothrops bilineatus* | Pokaisneki/papegaaislang | | X |
| *Gonatodes annularis* | Bosgekko | | X |

Table 3-6 Overview of the terrestrial vertebrate species observed during the dry season

| Species | Local names | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| **Mammals** | | | |
| *Sciurillus pusillus* | Bonboni/eekhoorn | X | X |
| *Sciurus aesutuans* | Bonboni/eekhoorn | | X |
| *Dasyprocta agouti* | Agouti/Konkoni | | X |
| *Cuniculis paca* | Hei | X | X |
| *Tayassu pecari* | Pingo/Witlip Pekarie | X | |
| *Panthera onca* | Penitigri/Jaguar | X | |
| *Puma concolor* | Redi tigri/Puma | X | |
| *Opposum* | Awari | | X |
| *Dasypus novemcinctus* | Negi Banti Kapasi/Negenbandig Gordeldier | X | X |
| *Tamandua tetradactyla* | Mirafroiti/Boommierenet er | X | X |
| *Nasua nasua* | Kwasi kwasi/Rode neusbeer | X | |
| *Tapirus terrestris* | Bofru/Zuid-Amerikaanse Tapir | X | |
| *Speothos venaticus* | Busidagu/Boshond | | X |
| *Eira barbara* | Ayra | | X |
| *Leopardus pardalis* | Heytigrikati/Ocelot | X | |
| **Amphibians** | | | |
| *Ameerega trivitatta* | Tidetide/Groengestreept e Gifkikker | X | X |
| *Allobates femoralis* | Tidetide/Grote dijvlekgifkikker | X | |
| *Adinomera andreae* | Grondkikker | X | X |
| *Boana xerophylla* | Groene boomkikker | X | |
| *Anomaloglossus surinamensis* | Surinaamse Dwerggifkikker | X | |
| *Boana multifasciatus* | Gestreepte boomkikker | X | X |
| *Osteocephalus taurinus* | Slankpotige Boomkikker | X | |
| *Pristimantes zeuctotylus* | Totori/Bruine Boskikker | X | |
| *Physalaemus ephippifer* | Pulehpuleh/Surinaamse Rooddij Kikker | X | |
| *Chiasmocleis shudikarensis* | Grondkikker | X | X |
| *Boana boans* | Plaktodo/Reuzenboomki kker | X | X |
| *Rhinella margaritifera* | Koprichel Pad | X | |
| *Rhinella marina* | Bigitodo/Reuzenpad | X | |

| Species | Local names | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| *Leptodactylus pentadactylus* | Todo/Reuzenfluitkikker | X | |
| *Boana fasciata* | Gestreepte boomkikker | X | |
| *Trachycephalus resinifictrix* | Merkitodo/Melkboomkikker | X | |
| *Scinax ruber* | Papitodo/Badkamer Kikker | | X |
| *Phylomedusa hypochondriali* | Loboso-Todo/Zuid-Amerikaanse Makikikker | | X |
| **Reptiles** | | | |
| *Chatogekko amazonicus* | Gekko | X | X |
| *Kentropix calcaratus* | Hagedis | X | |
| *Tecadactylus rapicauda* | Kwakwa Sneki/Gekko | X | |
| *Anolis arautus* | Hagedis | X | |
| *Bothrops bilineatus* | Pokai Sneki/ Papegaaislang | | X |
| *Gonatodes humeralis* | Bosgekko | | X |
| *Leposoma guanensis* | Grondhagedis | X | X |
| *Plica umbra ochrocollaris* | Agama/ Hagedis | X | |

In the wet season, eight mammal species were found on the camera traps in the disturbed sites and nine mammal species on the camera traps in the undisturbed sites. In the dry season nine mammal species were found on the camera traps in the disturbed sites and ten mammal species on the camera traps of the undisturbed sites.
During the transect surveys in the wet season, 18 amphibian species were found on the transects in the disturbed sites and 16 amphibian species were found on the transects in the undisturbed sites. In the dry season, 16 amphibian species were found in the undisturbed sites, while only seven species were found in the disturbed sites.
In the wet season, six reptile species were found in the disturbed sites, while 14 reptile species were found in the undisturbed sites. In the dry season, four reptile species were found in the disturbed sites and six reptile species were found in the undisturbed sites.
In total 53 trigger on the camera traps were found for terrestrial vertebrates were found in the wet season, from which 39 triggers for terrestrial vertebrates were found in the undisturbed sites and 33 trigger for terrestrial vertebartes were found in the disturbed sites. In the dry season a total of 43 triggers on the camera traps were found from which 32 triggers on the camera traps in undisturbed sites and 20 in disturbed sites (see Table 3-5 and 3-6). Overall, there were no species that are specifically only found in undisturbed forests. Species found on camera traps and during the surveys can be found in both undisturbed forest and forest with a minimal level of disturbance.
In the wet season the Shannon diversity index did not differ between the disturbed and undisturbed sites for the observed terrestrial vertebrates, with an average of 1.9 for both sites, but in the dry season the Shannon diversity index was on average slightly higher in the undisturbed sites (1.8±0.24), compared to the disturbed sites (1.5±0.44). The

Simpsons diversity index did not differ between the disturbed and the undisturbed sites for both the wet and the dry season (see Table 3-7).
For the mammals detected on the camera traps the Relative Abundance Index (RAI) was calculated. During the wet season, only one camera in the disturbed area had animal pictures, which resulted in only one figure for the RAI (0.6), see Table 3-8. Unfortunately, two camera traps were stolen during the study in the disturbed area.
With only this figure, it was not possible to test for a significant difference between the disturbed and undisturbed sites for the wet season, but on average the RAI calculated for the undisturbed sites was higher (3.1) than the RAI calculated for the disturbed sites (0.6).
During the dry season, the highest RAI figures were also calculated for the undisturbed sites, but because of also low figures calculated for some cameras in the undisturbed sites, no significant difference was found in RAI between the disturbed and undisturbed sites (see Table 3-8).
Finding undisturbed forest in the area was a challenge for the terrestrial surveys, because even in areas where there is no gold mining activity, other (past) anthropogenic activities such as logging were found. Forests in these areas also showed to have secondary vegetation and elements such as roads and trails. Also, these areas are being used as the hunting areas for the local community. Especially for the mammals, this resulted in lower species diversity in these areas. The non-metric dimensional scaling (NMDS) therefore did not detect a division of terrestrial vertebrate abundance between undisturbed and disturbed areas (see Figure 3-2).
The species accumulation curves for all taxa showed that with this study, not all terrestrial vertebrates in the area were assessed and that additional surveys are needed to do this (see Figure 3-3).

Table 3-7 Overview of the average species diversity indices for the species observations for the wet and dry seasons and the results for the test of difference between the disturbed and undisturbed sites.

| | **Shannon diversity index (average)** | | | **Simpson diversity index (average)** | | |
|---|---|---|---|---|---|---|
| | **Disturbed sites** | **Undisturbed sites** | **p** | **Disturbed sites** | **Undisturbed sites** | **p** |
| Wet season | 1.9±0.42 | 1.9±0.40 | NS | 0.8±0.08 | 0.8±0.06 | NS |
| Dry season | 1.5±0.44 | 1.8±0.24 | P=0.05 | 0.7±0.12 | 0.8±0.03 | NS |

Table 3-8 Overview of the Relative Abundance Index (RAI) for the species found on the camera traps for the wet and dry seasons and the results for the test of difference between the disturbed and undisturbed sites.

| | **Relative abundance index (RAI)** | | **p** |
|---|---|---|---|
| | **Disturbed sites** | **Undisturbed sites** | |
| Wet season | 0.6 | 3.1 (average) | - |
| Dry season | 0.5±0.59 | 2.0±1.72 | NS |

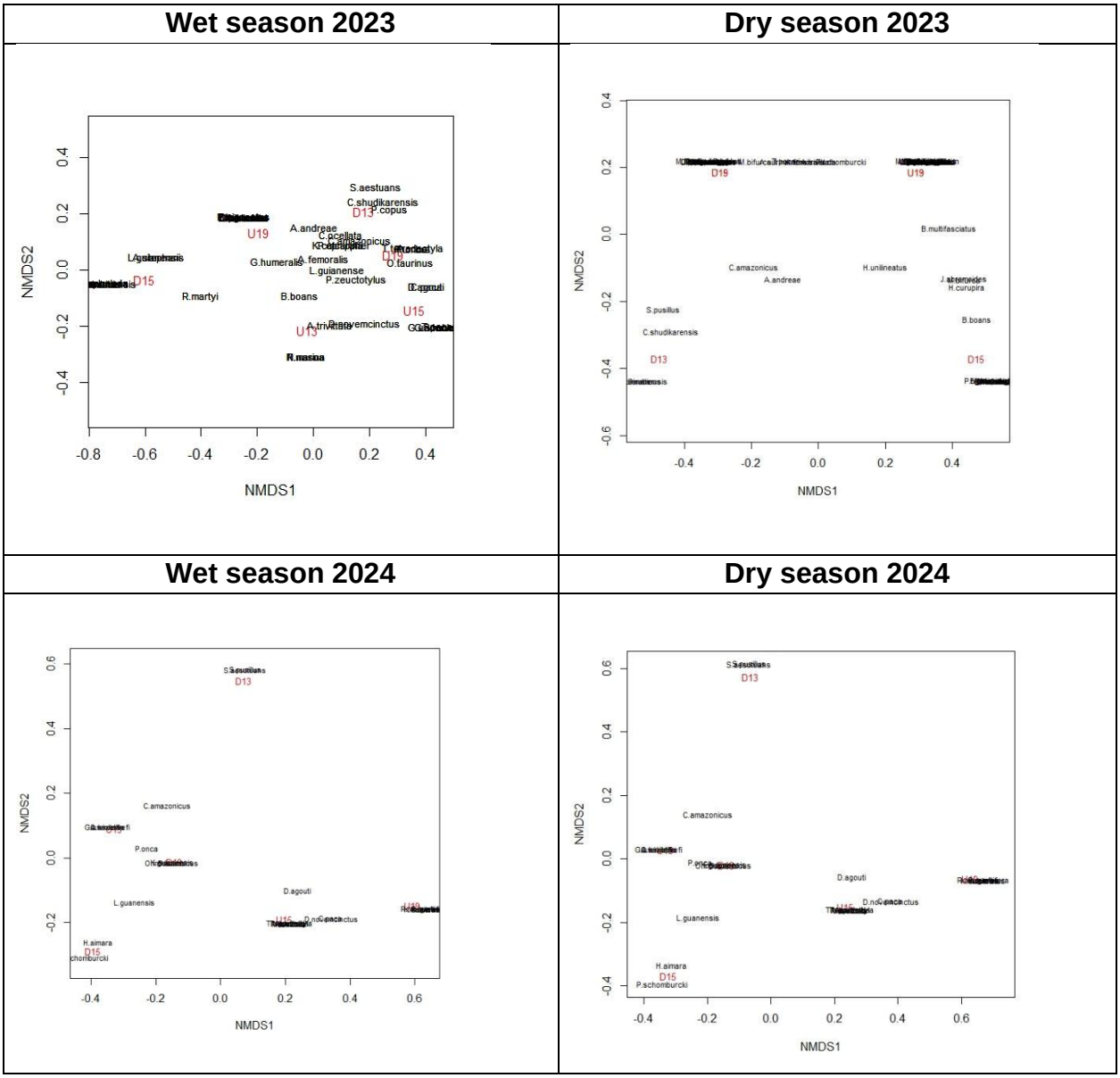


Figure 3-2 Non-metric dimensional scaling for the terrestrial vertebrates for the four assessed seasons. U= undisturbed transects; D=Disturbed transects

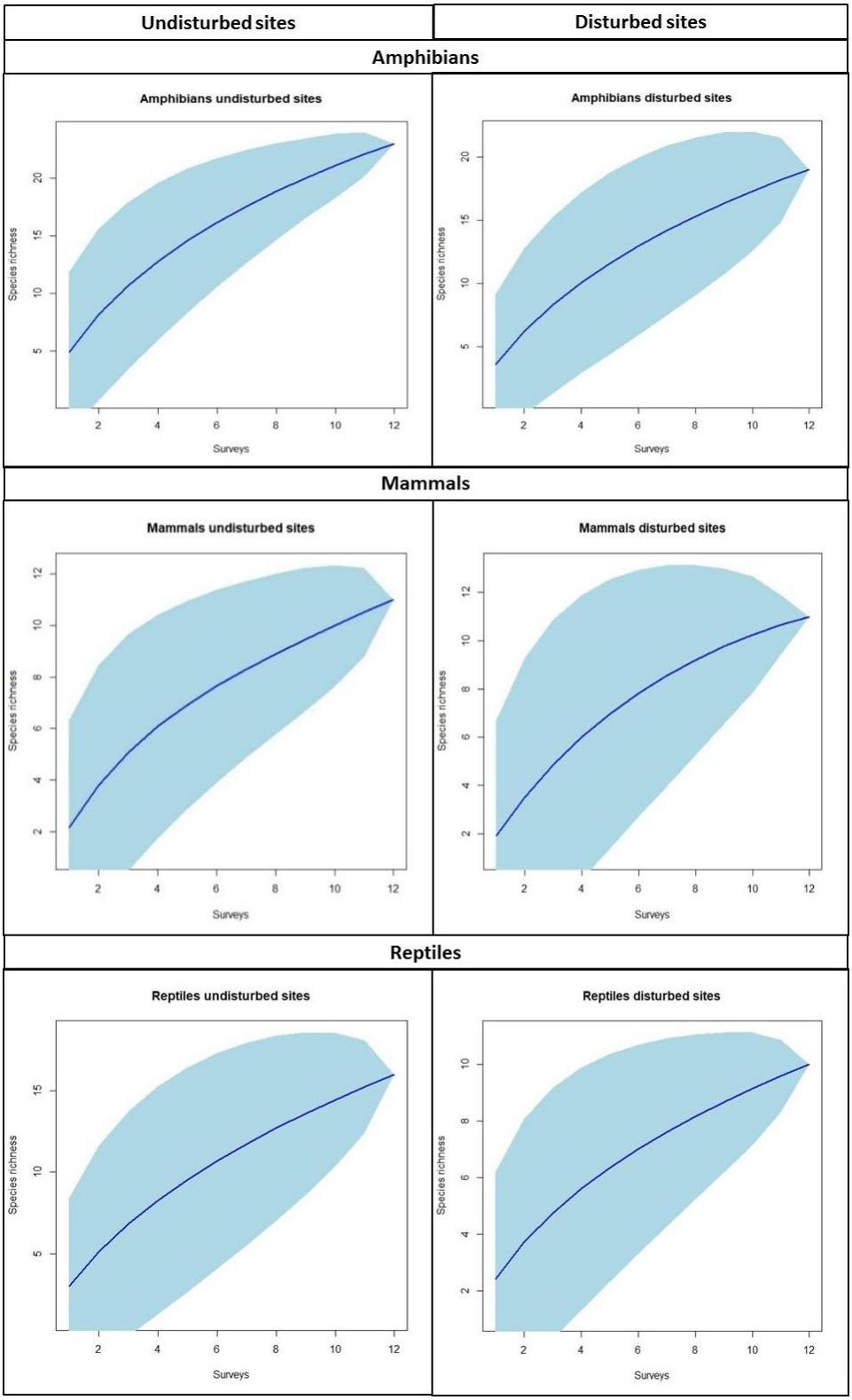


Figure 3-3 Species accumulation curves for amphibians, reptiles and mammals in the assessed disturbed and undisturbed sites of the Compagniekreek study area.

#### 3.3.1.2 Conservation status

The assessed vertebrate species were characterized by their conservation status stated in the national law (Game Law, 1954) and according to the IUCN Red List. According to the Game Law (1954), article 1, all wildlife species are protected, except when they are characterized as ‘jachtwild’ (game species) and ‘kooidiersoorten’ (caged animal species). Based on the Game Law, all the assessed big cats (*Leopardus pardalis* (ocelot), *Panthera onca* (jaguar) and the *Puma concolor* (puma)are protected species in Suriname; furthermore, also the *Speothos venaticus* (bushdog) is a protected species in Suriname. Most species are characterized as ‘Least Concern’ according to the IUCN conservation status and extinction risk, except the species *Panthera onca (jaguar)* (Near threatened), *Tayassu pecari* (pingo)(Vulnerable) and *Tapirus terrestris* (Vulnerable). According to the community of Compagniekreek, the big cats are not being hunted for their meat, but are mostly killed out of fear when they encounter them. During this study it was mentioned once that a jaguar was killed in the area. *Tayassu pecari* (pingo) and *Tapirus terrestris* are game species, but are being hunted for their meat. The *Speothos venaticus* (bushdog) is not often seen by the community. None of the assessed species can be categorized as Restricted Range Endemics.

### 3.3.2 Fish

#### 3.3.2.1 Results field assessments

Tables 3-9 and 3-10 give an overview of the fish species caught in the wet and dry season.

Table 3-9 Overview of the fish species caught during the wet season

| Species | Local names | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| *Hoplias malabaricus* | Pataka | X | |
| *Polycentrus schomburckii* | Kala/bladvis | X | X |
| *Acestrorhynchus falcatus* | Dagufisi | X | |
| *Pachymetopon blochii* | Kaweri | | X |
| *Corydoras punctatus* | Seseiguse | | X |
| *Crenicichla saxatilis* | Datrafisi | | X |
| *Krobia guianensis* | Krobia | X | X |
| *Eigenmania sp.* | Mesvis | | X |
| *Pyrrhulina filamentosa* | Matoeli | | X |
| *Giuanacara owroewefi* | Krobia/ owroewefi | X | |
| *Hemigrammus boesemani* | - | X | X |
| *Moenkhausia hemigrammoides* | Sriba | X | X |

Table 3-10 Overview of the fish species caught during the dry season

| Species | Local names | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| *Acestrorhyncgus microlepis* | Dagufisi | | X |
| *Anostomus ternetzi* | - | X | |
| *Astyanax bimaculatus* | Sriba | X | |
| *Bryconops melanurus* | Nyanga - nyanga | X | |
| *Cichlasoma bimaculatum* | Krobia | X | |
| *Crenicichla saxatilis* | Datrafisi | X | |
| *Eigenmani sp.* | Mesvis/logo -logo | | X |
| *Gasteropelectus sternicla* | Banketman | | X |
| *Giuanacara owroewefi* | Krobia/owro ewefi | X | |
| *Helogenes marmoratus* | - | X | |
| *Hemigrammus unilineatus* | - | X | X |
| *Hoplias aimara* | Anyumara | | X |
| *Hoplias curupira* | - | X | X |

| Species | Local names | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| *Hoplias malabaricus* | Pataka | X | |
| *Hyphessobrycon simulatus* | - | X | |
| *Jupiaba abramoides* | Sriba | X | X |
| *Jupiaba keithi* | Sriba | X | |
| *Krobia guianensis* | Krobia | X | X |
| *Laimosemion agilae* | - | X | |
| *Leporinus arcus* | - | X | |
| *Lorichariichthys cataphracta* | basyafisi | X | |
| *Melanocharacidium cf. melanopteron* | - | X | |
| *Micropoecila bifurca* | Todobere | X | X |
| *Moenkhausia colleti* | Sriba | X | |
| *Moenkhausia grandisquamis* | Sriba | X | |
| *Moenkhausia hemigrammoides* | Sriba | | X |
| *Moenkhausia lepidura* | Sriba | | X |
| *Moenkhausia surinamensis* | Sriba | | X |
| *Pimelodella cristata* | Dyaki | | X |
| *Polycentrus schomburcki* | Kala/bladvis | X | X |
| *Pristella maxillaris* | Reditere sriba | X | |
| *Pyrrhulina filamentosa* | - | X | |
| *Rhamdia quelen* | Dyaki | X | |
| *Rineloricaria fallax* | - | | X |
| *Rivulus lungi* | - | X | |

Due to extreme levels of high water, it was not possible to set up gill nets in the wet season of 2023. Fish surveys started in the long dry season of 2023. During the dry season surveys, 26 fish species were caught at the aquatic sites of the undisturbed areas, while only 15 fish species were caught at the aquatic sites of the disturbed areas. During the survey of the wet season of 2024, seven fish species were caught in the undisturbed areas, while nine fish species were caught in de disturbed areas.

No difference in the Shannon diversity index was found between the undisturbed and disturbed areas for both the wet and the dry season (Table 3-11). In the wet season some of the fish species caught, are typically found in undisturbed clear water, such as the *Hoplias malabaricus* (pataka), while there are also fish species that are typically found in turbid waters of the disturbed areas, such as the *Eigenmani sp.* (logo-logo).

In the dry season most of the aquatic sites had less to no waters, which was a challenge for the fish assessments. In the dry season there was a dominance of *Micropoecila bifurca* in the aquatic ecosystems of the disturbed areas. In the undisturbed areas a dominance

of *Giuanacara owroewefi* was found, where they could feed on aquatic invertebrates (Keith et al., 2000).

The low number of fish species found in the disturbed sites, showed the negative effects of the gold mining activities on the aquatic ecosystems in those areas. The sediment discharge from the ore processing destroyed fish habitat, causing species that cannot cope with the changed environment, to be filtered out from the fish community.

With the low abundance of species found during the aquatic assessments and some species found exclusively in the undisturbed or disturbed sites, it was not possible for the NMDS to distinguish the areas based on disturbance (see Figure 3-4). Also, the low numbers and abundances of species found over the period of this rapid assessment made it impossible for the species accumulation curves to reach their stability (see Figure 3-5).

Table 3-11 Overview of the average species diversity indices for fish for the wet and dry seasons and the results for the test of difference between the disturbed and undisturbed sites.

| | **Shannon diversity index (average)** | | | **Simpson diversity index (average)** | | |
|---|---|---|---|---|---|---|
| | **Disturbed sites** | **Undisturbed sites** | **p** | **Disturbed sites** | **Undisturbed sites** | **p** |
| Wet season | 1.5±0.29 | 0.6±0.61 | NS | 0.7±0.09 | 0.8±0.79 | NS |
| Dry season | 0.8±0.79 | 1.1±1.05 | NS | 0.6±0.32 | 0.6±0.38 | NS |

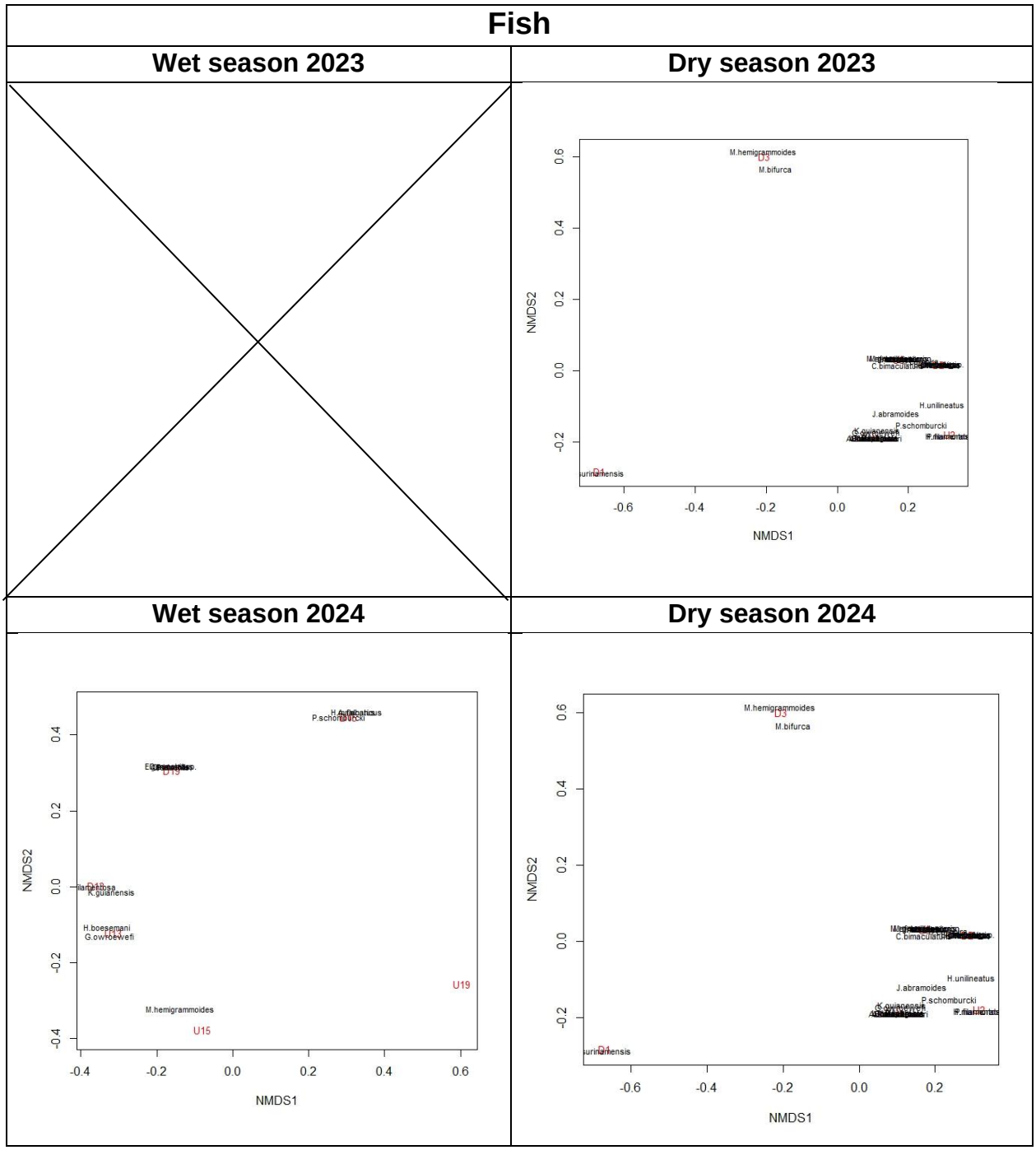


Figure 3-4 Non-metric dimensional scaling for fish of the three assessed seasons. U= undisturbed transects; D=Disturbed transects

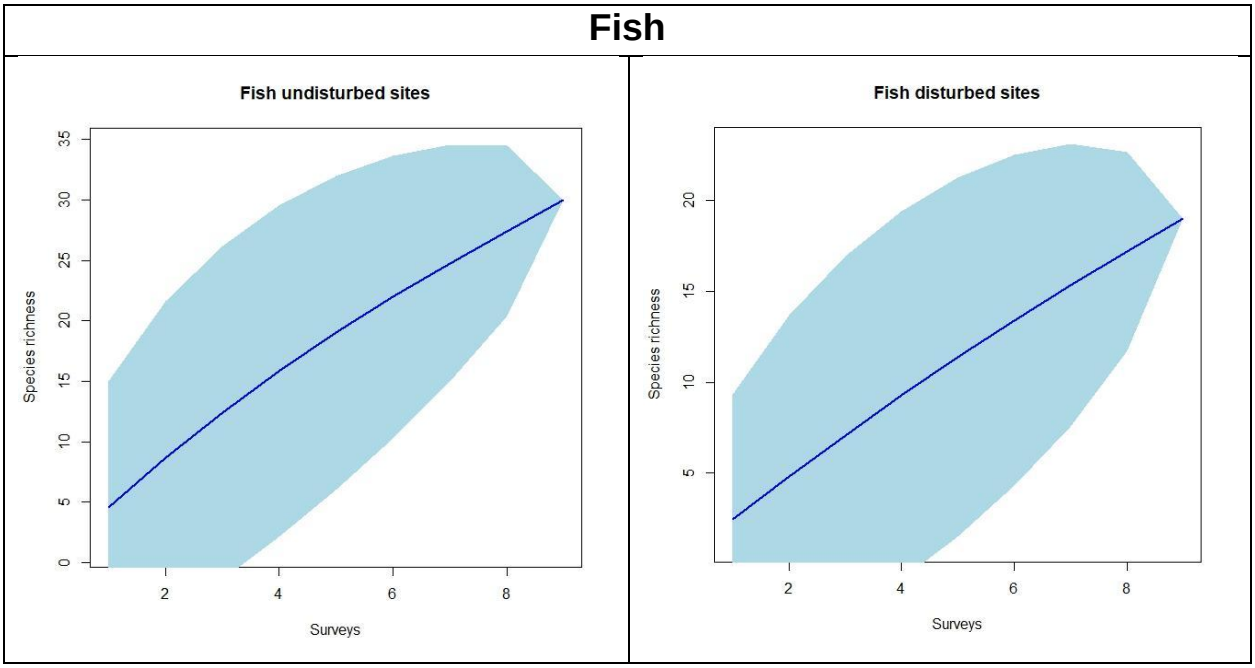

Figure 3-5 Species accumulation curves for fish in the assessed disturbed and undisturbed sites of the Compagniekreek study area.

### 3.3.2.2 Conservation status

None of the assessed fish species are protected by national law. Assessed species are either characterized as ‘Least Concern’ or are not on the IUCN Red List. No Restricted Range Endemics for fishes were found for the study area.

### 3.3.3 Terrestrial invertebrates

#### 3.3.3.1 Results field assessments

Tables 3-12 en 3-13 give an overview of the terrestrial invertebrates observed in the wet and dry season

Table 3-12 Sampled terrestrial invertebrates in the disturbed and undisturbed areas during the wet season

| Family | Species | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| | *Blattaria sp.1* | X | X |
| | *Blattaria sp.2* | X | |
| **Anobiidae** | *Anobiidae sp.1* | | X |
| **Cantharidae** | *Cantharidae sp.1* | X | X |
| **Carabidae** | *Carabidae sp.1* | | X |
| **Chrysomelidae** | *Alticinae sp.1* | X | X |
| | *Alticinae sp.2* | X | |
| | *Alticinae sp.3* | X | |
| | *Gallerucinae sp.1* | X | X |
| | *Gallerucinae sp.2* | X | X |
| | *Gallerucinae sp.3* | X | X |
| | *Chrysomelidae sp.1* | | X |
| | *Chrysomelidae sp.2* | | X |
| | *Chrysomelidae sp.3* | | X |
| | *Eumolpinae sp.1* | X | |
| **Cicindelidae** | *Cicindelidae sp.1* | | X |
| **Curculionidae** | *Curculionidae sp.1* | X | X |
| | *Scolytinae sp.1* | X | X |
| **Dytiscidae** | *Dytiscidae sp.1* | | X |
| | *Dytiscidae sp.2* | X | X |
| **Elateridae** | *Elateridae sp.1* | X | X |
| **Histeridae** | *Histeridae sp.1* | | X |
| **Lymexilidae** | *Lymexilidae sp.1* | | X |
| **Nitudilidae** | *Nitudilidae sp.1* | X | X |
| | *Nitudilidae sp.2* | | X |
| **Scarabaeidae** | *Ateuchus murrayi* | X | |
| | *Canthidium sp.* | X | |
| | *Canthon triangularis* | X | |
| | *Scarabaeidae sp.1* | X | |
| | *Trichocanthon sordidus* | X | X |
| **Scolytidae** | *Scolytidae sp.1* | X | X |

| Family | Species | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| **Staphylinidae** | *Staphylinidae sp.1* | X | X |
| | *Staphylinidae sp.2* | X | X |
| | *Staphylinidae sp.3* | X | X |
| | *Staphylinidae sp.4* | X | X |
| | *Staphylinidae sp.5* | | X |
| **Carcinophoridae** | *Carcinophoridae sp.1* | | X |
| **Agromyzidae** | *Agromyzidae sp.1* | X | |
| **Assiliidae** | *Assiliidae sp.1* | | X |
| **Ceccidomyidae** | *Ceccidomyidae sp.1* | X | X |
| **Ceratopogonidae** | *Ceratopogonidae sp.1* | X | X |
| | *Ceratopogonidae sp.2* | X | X |
| | *Ceratopogonidae sp.3* | X | X |
| **Chironomidae** | *Chironomidae sp.1* | X | |
| **Dolichopodidae** | *Dolichopodidae sp.1* | X | |
| | *Dolichopodidae sp.2* | X | |
| | *Dolichopodidae sp.3* | X | X |
| | *Dolichopodidae sp.4* | X | X |
| **Drosophilidae** | *Drosophilidae sp.1* | X | |
| | *Drosophilidae sp.2* | X | |
| | *Drosophilidae sp.3* | | X |
| **Lonchaeidae** | *Lonchaeidae sp.1* | | X |
| **Micropezidae** | *Micropezidae sp.1* | | X |
| **Muscidae** | *Muscidae sp.1* | X | X |
| | *Muscidae sp.2* | X | |
| **Phoridae** | *Phoridae sp.1* | X | X |
| | *Phoridae sp.2* | X | X |
| | *Phoridae sp.3* | X | |
| **Tachinidae** | *Tachinidae sp.1* | | X |
| **Tephritidae** | *Tephritidae sp.1* | X | X |
| **Tipulidae** | *Tipulidae sp.1* | | X |
| **Dipsocoridae** | *Dipsocoridae sp.1* | X | X |
| | *Dipsocoridae sp.2* | | X |
| | *Dipsocoridae sp.3* | | X |
| **Pentatomidae** | *Edessa sp.1* | X | |
| **Scutelleridae** | *Scutelleridae sp.1* | X | X |
| **Auchenorrhyncha** | *Auchenorrhyncha sp.1* | X | X |
| | *Auchenorrhyncha sp.2* | X | |
| **Cicadellidae** | *Cicadellidae sp.1* | X | |

| Family | Species | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| | *Cicadellidae sp.2* | | X |
| | *Cicadellidae sp.3* | X | X |
| | *Cicadellidae sp.4* | X | X |
| **Flatidae** | *Flatidae sp.1* | | X |
| | *Flatidae sp.2* | | X |
| **Lygaeidaee** | *Lygaeidae sp.1* | | X |
| **Membracidae** | *Membracidae sp.1* | X | X |
| | *Membracidae sp.2* | X | X |
| | *Membracidae sp.3* | X | |
| | *Membracidae sp.4* | X | |
| | *Membracidae sp.5* | X | X |
| | *Membracidae sp.6* | | X |
| **Fulgoridae** | *Cathedra serrata* | | |
| **Anthophoridae** | *Anthophoridae sp.1* | X | X |
| **Apidae** | *Apis mellifera* | X | |
| | *Frieseomelitta sp.* | X | |
| | *Melipona fulva* | X | X |
| | *Melipona lateralis* | X | X |
| | *Melipona rufiventris* | X | X |
| | *Melipona sp.1* | X | |
| | *Melipona interrupta* | X | |
| | *Paratrigona impunctata* | X | |
| | *Paratrigona sp.2* | X | |
| | *Partamona testacea* | X | |
| | *Tetragona beebei* | X | X |
| | *Tetragona clavipes* | X | X |
| | *Tetragonisca sp.1* | X | |
| | *Trigona branneri* | | X |
| | *Trigona dallatorreana* | X | X |
| | *Trigona fulviventris* | X | X |
| | *Trigona fuscipennis* | X | X |
| | *Trigona longipennis* | X | |
| | *Trigona pallens* | X | |
| | *Trigona williana* | X | |
| | *Trigona sp.1* | X | |
| | *Trigonisca sp.* | X | |
| **Braconidae** | *Braconidae sp.1* | | X |
| | *Braconidae sp.2* | | X |

| Family | Species | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| | *Braconidae sp.3* | | X |
| **Chalcidoidea** | *Chalcidoidea sp.1* | X | |
| | *Chalcidoidea sp.2* | X | X |
| | *Chalcidoidea sp.3* | X | X |
| | *Chalcidoidea sp.4* | X | X |
| | *Chalcidoidea sp.5* | X | X |
| | *Chalcidoidea sp.6* | | X |
| **Dyapriidae** | *Dyapriidae sp.1* | X | X |
| | *Dyapriidae sp.2* | X | X |
| | *Dyapriidae sp.3* | X | X |
| | *Dyapriidae sp.4* | X | X |
| | *Dyapriidae sp.5* | X | X |
| | *Dyapriidae sp.6* | X | X |
| | *Dyapriidae sp.7* | X | |
| **Formicidae** | *Atta sp.1* | X | |
| | *Camponotus sp.1* | | X |
| | *Cephalotus sp.1* | X | |
| | *Crematogaster sp.1* | X | X |
| | *Formicinae sp.1* | X | X |
| | *Formicinae sp.2* | X | X |
| | *Formicinae sp.3* | | X |
| | *Formicinae sp.4* | | X |
| | *Monomorium sp.1* | X | |
| | *Myrmicinae sp.1* | X | |
| | *Myrmicinae sp.2* | X | |
| | *Pheidole sp.1* | X | X |
| | *Ponerinae sp.1* | X | X |
| | *Ponerinae sp.2* | | |
| | *Solenopsis sp.1* | X | X |
| **Halictidae** | *Halictidae sp.1* | X | |
| **Ichneumonidae** | *Ichneumonidae sp.1* | X | |
| | *Ichneumonidae sp.2* | X | X |
| | *Ichneumonidae sp.3* | X | X |
| | *Ichneumonidae sp.4* | | X |
| | *Ichneumonidae sp.5* | | X |
| **Pompilidae** | *Pompilidae sp.1* | | |
| **Scelionidae** | *Scelionidae sp.1* | X | |
| | *Scelionidae sp.2* | X | |

| Family | Species | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| | *Scelionidae sp.3* | X | |
| **Symphyta** | *Symphyta sp.1* | | X |
| **Vespidae** | *Vespidae sp.1* | X | X |
| | *Vespidae sp.2* | X | |
| | *Vespidae sp.3* | | X |
| **Hesperiidae** | *Artines aepitus* | X | |
| | *Cecropterus sp.1* | X | |
| | *Epargyreus sp.1* | | X |
| | *Heliopetes arsalte* | X | |
| | *Hesperiidae sp.1* | X | X |
| | *Hesperiidae sp.2* | X | X |
| | *Hesperiidae sp.5* | X | |
| | *Hespriinae sp.1* | X | X |
| | *Pyrgus orcus* | X | X |
| | *Pyrrhopyge sp.* | | X |
| | *Pythonides sp.* | | X |
| | *Leptotes sp.1* | X | |
| | *Theclopsis lydus* | X | |
| | *Theritas crines* | X | |
| | *Theritas hemon* | | X |
| **Nymphalidae** | *Adelpha cytherea cytherea* | X | X |
| | *Adelpha plesaure phliassa* | | |
| | *Agraulus vanillae vanillae* | X | X |
| | *Anartia jatrophae jatrophae* | X | |
| | *Archaeoprepona demophon demophon* | X | X |
| | *Bia actorion actorion* | X | X |
| | *Caeruleuptychia urania* | X | |
| | *Caligo teucer teucer* | | X |
| | *Callizona acesta* | X | X |
| | *Catoblepia berecynthia* | | X |
| | *Catonephele acontius acontius* | X | X |
| | *Cepheuptychia cephus* | X | |
| | *Ceratinia neso nisea* | X | |
| | *Ceratinia sp.* | X | |
| | *Cissia sp.1* | X | X |
| | *Chloreuptychia arnaca* | X | X |

| Family | Species | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| | *Chloreuptychia chlorimene* | X | X |
| | *Chloreuptychia hewitsonii* | X | |
| | *Colobura dirce dirce* | X | |
| | *Dryadula phaetusa* | X | |
| | *Dynamine athemon athemon* | X | |
| | *Dynamine postverta postverta* | X | |
| | *Emeryus argulus* | | X |
| | *Heliconius erato erato* | X | X |
| | *Heliconius melpomene meriana* | X | |
| | *Heliconius melpomene thelxiopeia* | X | X |
| | *Heliconius melpomene sp.2* | X | |
| | *Heliconius numata sp.* | | X |
| | *Heliconius wallacei flavescens* | X | X |
| | *Hermeuptychia hermes* | X | X |
| | *Haetera piera piera* | X | |
| | *Junonia evarete dougueti* | X | |
| | *Junonia genoveva genoveva* | X | |
| | *Marpesia orsilochus* | X | |
| | *Mechanitis polymnia polymnia* | X | |
| | *Morpho helenor helenor* | X | X |
| | *Napeogenes rhezia* | X | |
| | *Nessaea batesii magniplaga* | X | X |
| | *Oleria aegle aegle* | X | |
| | *Opsiphanes cassina merianae* | X | X |
| | *Orthilia liriope* | X | |
| | *Pareuptychia hesionides deviae* | X | |
| | *Pareuptychia ocirrhoe ocirrhoe* | X | X |
| | *Prepona pheridamas* | X | |
| | *Pierella hyalinus hyalinus* | X | X |
| | *Pierella lena lena* | X | X |

| Family | Species | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| | *Taygetis thamyra* | X | |
| | *Taygetis zippora* | | X |
| **Papilionidae** | *Parides lysander lysander* | X | |
| **Pieridae** | *Aphrissa statira statira* | X | |
| | *Glutophrissa drusilla drusilla* | X | X |
| | *Eurema albula albula* | X | |
| | *Leucidia brephos* | X | |
| | *Pyrisitia venusta venusta* | X | X |
| **Riodinidae** | *Calospila emylius emylius* | X | |
| | *Emesis sp.* | | X |
| | *Eurybia cyclopia* | X | |
| | *Euselasia bilineata* | X | |
| | *Mesosemia metope* | X | |
| | *Nymphidium caricae caricae* | X | X |
| | *Riodinidae alesa sp.1* | X | |
| | *Riodinidae alesa sp.2* | X | |
| | *Riodinidae sp.1* | X | |
| | *Stalachtis phlegia* | X | |
| | *Thisbe molela* | X | |
| **Mot** | *Ascalapha odorata* | | X |
| | *Feigeria scops* | | X |
| | *Hemeroblemma dolosa* | | X |
| | *Letis marmorides* | | X |
| | *Mot sp.1* | X | |
| | *Mot sp.2* | | X |
| | *Mot sp.3* | X | X |
| | *Mot sp.4* | X | |
| **Myrmeleontidae** | *Myrmeleontidae sp.1* | X | |
| **Aeshnidae** | *Triacanthagyna septima* | X | X |
| **Libellulidae** | *Dasythemis esmeralda* | X | |
| | *Elasmothemis williamsoni* | | X |
| | *Erythrodiplax basalis* | X | X |
| | *Erythrodiplax famula* | X | X |
| | *Erythrodiplax fusca* | X | X |
| | *Erythrodiplax sp.* | X | X |
| | *Erythrodiplax umbrata* | | X |
| | *Gynothemis pumila* | X | |
| | *Idiataphe batesi* | X | |

| Family | Species | Undisturbed areas | Disturbed areas |
|---|---|---|---|
| | *Macrothemis sp.* | X | |
| | *Micrathyria sp.* | X | |
| | *Oligoclada abbreviata* | X | |
| | *Oligoclada pachystigma* | X | |
| | *Oligoclada sp.1* | X | |
| | *Orthemis cultriformis* | X | |
| | *Orthemis discolor* | X | |
| | *Orthemis sulphurata* | | X |
| | *Pantala flavescens* | X | |
| | *Rhodopygia pruinosa* | | X |
| | *Uracis fastigiata* | X | |
| | *Uracis imbuta* | X | |
| **Protoneuridae** | *Neoneura myrthea* | | X |
| | *Zygoptera sp.1* | | X |
| **Gryllidae** | *Gryllidae sp.1* | X | X |
| | *Gryllidae sp.2* | X | X |
| | *Orthoptera sp.1* | | X |
| | *Orthoptera sp.2* | | X |
| | *Psocoptera sp.1* | X | |
| | *Scorpiones sp1* | X | |
| | *Diplopoda sp.2* | | X |

Table 3-13 Sampled terrestrial invertebrates in the disturbed and undisturbed areas during the dry season

| Family | Species | Undisturbed | Disturbed |
|---|---|---|---|
| | *Blattaria sp.1* | X | X |
| | *Blattaria sp.2* | X | X |
| **Anobiidae** | *Anobiidae sp.1* | | X |
| **Buprestidae** | *Buprestidae sp.1* | | X |
| **Cantharidae** | *Cantharidae sp.1* | X | |
| **Carabidae** | *Carabidae sp.1* | | X |
| **Chrysomelidae** | *Cassidinae sp.1* | X | X |
| | *Alticinae sp.1* | | X |
| | *Alticinae sp.2* | X | X |
| | *Alticinae sp.3* | | X |
| | *Gallerucinae sp.1* | X | |
| | *Gallerucinae sp.2* | X | |
| | *Gallerucinae sp.3* | X | |
| | *Chrysomelidae sp.1* | | X |
| | *Chrysomelidae sp.2* | | X |
| | *Chrysomelidae sp.3* | | X |
| **Cicindelidae** | *Cicindelidae sp.1* | | X |
| **Curculionidae** | *Curculionidae sp.1* | X | |
| **Elateridae** | *Elateridae sp.1* | X | X |
| **Erotylidae** | *Erotylidae sp.1* | | X |
| **Histeridae** | *Histeridae sp.1* | X | |
| **Hydrophylidae** | *Hydrophylidae sp.1* | | X |
| **Lymexilidae** | *Lymexilidae sp.1* | | X |
| | *Lymexilidae sp.2* | X | |
| **Nitudilidae** | *Nitudilidae sp.1* | X | X |
| | *Nitudilidae sp.2* | X | X |
| | *Nitudilidae sp.3* | | X |
| **Scarabaeidae** | *Ateuchus murrayi* | X | |
| | *Canthon triangularis* | X | |
| | *Trichocanthon sordidus* | X | X |
| | *Dichotomius lucasi* | X | |
| **Scolytidae** | *Scolytidae sp.1* | X | X |
| **Staphylinidae** | *Staphylinidae sp.1* | X | X |
| | *Staphylinidae sp.2* | | X |
| | *Staphylinidae sp.3* | X | X |
| | *Staphylinidae sp.4* | X | X |
| | *Staphylinidae sp.5* | X | X |
| **Sylphidae** | *Sylphidae sp.1* | X | |

| Family | Species | Undisturbed | Disturbed |
|---|---|---|---|
| **Meloidea** | *Meloidea sp.1* | | X |
| **Carcinophoridae** | *Carcinophoridae sp.1* | X | X |
| **Agromyzidae** | *Agromyzidae sp.1* | X | X |
| **Assiliidae** | *Assiliidae sp.1* | | X |
| **Ceccidomyidae** | *Ceccidomyidae sp.1* | X | X |
| **Ceratopogonidae** | *Ceratopogonidae sp.1* | | X |
| | *Ceratopogonidae sp.2* | X | X |
| | *Ceratopogonidae sp.3* | X | X |
| **Dolichopodidae** | *Dolichopodidae sp.1* | | X |
| | *Dolichopodidae sp.2* | | X |
| | *Dolichopodidae sp.3* | X | X |
| | *Dolichopodidae sp.4* | X | |
| **Drosophilidae** | *Drosophilidae sp.1* | X | |
| | *Drosophilidae sp.2* | | X |
| | *Drosophilidae sp.3* | | X |
| **Micropezidae** | *Micropezidae sp.1* | X | |
| **Muscidae** | *Muscidae sp.1* | | X |
| | *Muscidae sp.2* | X | X |
| **Phoridae** | *Phoridae sp.1* | X | X |
| | *Phoridae sp.2* | X | X |
| | *Phoridae sp.3* | X | X |
| **Stratiomyidae** | *Stratiomyidae sp.1* | X | |
| **Syrphidae** | *Syrphidae sp.1* | X | |
| **Tachinidae** | *Tachinidae sp.1* | X | X |
| **Tephritidae** | *Tephritidae sp.1* | X | X |
| | *Anastrepha sp.1* | | X |
| **Dipsocoridae** | *Dipsocoridae sp.1* | X | X |
| | *Dipsocoridae sp.2* | X | |
| | *Dipsocoridae sp.3* | X | |
| **Auchenorrhyncha** | *Auchenorrhyncha sp.1* | X | |
| **Cicadellidae** | *Cicadellidae sp.1* | X | X |
| | *Cicadellidae sp.2* | | X |
| | *Cicadellidae sp.3* | | X |
| | *Cicadellidae sp.4* | X | |
| **Cydnidae** | *Cydnidae sp.1* | X | |
| | *Flatidae sp.2* | X | X |
| **Membracidae** | *Membracidae sp.1* | X | X |
| | *Membracidae sp.2* | X | |

| Family | Species | Undisturbed | Disturbed |
|---|---|---|---|
| | *Membracidae sp.3* | X | |
| | *Membracidae sp.4* | X | |
| | *Membracidae sp.5* | X | |
| | *Membracidae sp.6* | | X |
| **Fulgoridae** | *Cathedra serrata* | X | |
| **Apidae** | *Melipona fulva* | X | |
| | *Melipona rufiventris* | X | |
| | *Paratrigona impunctata* | X | |
| | *Partamona nigrior* | X | |
| | *Tetragona beebei* | X | |
| | *Tetragona clavipes* | X | |
| | *Trigona dallatorreana* | X | X |
| | *Trigona fulviventris* | X | X |
| | *Trigona fuscipennis* | X | |
| | *Trigona pallens* | X | X |
| | *Trigona williana* | X | |
| | *Trigona sp.1* | X | |
| **Braconidae** | *Braconidae sp.1* | X | |
| | *Braconidae sp.2* | X | |
| **Chalcidoidea** | *Chalcidoidea sp.1* | X | X |
| | *Chalcidoidea sp.2* | X | X |
| | *Chalcidoidea sp.3* | X | X |
| | *Chalcidoidea sp.4* | X | X |
| | *Chalcidoidea sp.5* | | X |
| **Dyapriidae** | *Dyapriidae sp.1* | X | X |
| | *Dyapriidae sp.2* | | X |
| | *Dyapriidae sp.3* | X | X |
| | *Dyapriidae sp.4* | X | X |
| | *Dyapriidae sp.5* | X | X |
| | *Dyapriidae sp.6* | X | X |
| **Formicidae** | *Atta sp.1* | X | X |
| | *Camponotus sp.1* | X | X |
| | *Crematogaster sp.1* | X | X |
| | *Formicinae sp.1* | X | X |
| | *Formicinae sp.4* | X | |
| | *Monomorium sp.1* | X | X |
| | *Myrmicinae sp.1* | X | |
| | *Odontomachus sp.1* | X | X |

| Family | Species | Undisturbed | Disturbed |
|---|---|---|---|
| | *Paraponera sp.1* | X | X |
| | *Pheidole sp.1* | X | X |
| | *Ponerinae sp.1* | X | X |
| | *Ponerinae sp.2* | X | X |
| | *Solenopsis sp.1* | X | X |
| **Ichneumonidae** | *Ichneumonidae sp.1* | X | X |
| | *Ichneumonidae sp.2* | X | |
| | *Ichneumonidae sp.3* | | X |
| **Pompilidae** | *Pompilidae sp.1* | X | X |
| **Symphyta** | *Symphyta sp.1* | | X |
| | *Hesperiidae sp.1* | X | |
| | *Hesperiidae sp.3* | | X |
| | *Hesperiidae sp.4* | | X |
| | *Pyrgus orcus* | X | |
| | *Quadrus cerialis* | X | |
| | *Xeniades sp.* | X | |
| **Lycaenidae** | *Arawacus aetolus* | X | |
| | *Arcas imperialis* | X | |
| | *Nicolaea sp.* | | X |
| | *Panthiades bitias* | X | |
| **Nymphalidae** | *Adelpha cytherea cytherea* | X | X |
| | *Adelpha plesaure phliassa* | X | |
| | *Agraulus vanillae vanillae* | X | |
| | *Anartia jatrophae jatrophae* | X | X |
| | *Antirrhea ornata* | X | |
| | *Archaeoprepona demophon demophon* | X | X |
| | *Bia actorion actorion* | X | |
| | *Caeruleuptychia caerulea* | X | |
| | *Caligo teucer teucer* | | X |
| | *Callizona acesta* | X | |
| | *Catoblepia berecynthia* | X | |
| | *Catonephele acontius acontius* | X | X |
| | *Cepheuptychia cephus* | X | |
| | *Ceratinia neso nisea* | X | |
| | *Cissia penelope* | X | X |
| | *Cissia sp.1* | X | X |
| | *Cissia sp.2* | X | X |

| Family | Species | Undisturbed | Disturbed |
|---|---|---|---|
| | *Chloreuptychia arnaca* | X | |
| | *Chloreuptychia chlorimene* | X | X |
| | *Chloreuptychia tolumnia* | X | |
| | *Colobura dirce dirce* | X | X |
| | *Eueides lybia lybia* | X | |
| | *Eunica sydonia* | X | |
| | *Eryphanis automedon automedon* | | X |
| | *Hamadryas arinome arienis* | | X |
| | *Hamadryas feronia feronia* | X | |
| | *Heliconius erato erato* | X | X |
| | *Heliconius erato amalfreda* | X | |
| | *Heliconius erato sp.1* | X | |
| | *Heliconius erato sp.2* | X | |
| | *Heliconius melpomene sp.1* | X | |
| | *Heliconius melpomene sp.2* | X | |
| | *Heliconius melpomene sp.3* | X | |
| | *Heliconius numata numata* | X | |
| | *Heliconius ricini ricini* | X | |
| | *Heliconius sara sara* | X | |
| | *Heliconius wallacei flavescens* | X | X |
| | *Heliconius wallacei wallacei* | | X |
| | *Hermeuptychia hermes* | X | X |
| | *Janatella hera* | X | |
| | *Junonia evarete arenosa* | | X |
| | *Junonia evarete sp.* | X | |
| | *Junonia genoveva genoveva* | X | |
| | *Magneuptychia tricolor* | X | |
| | *Marpesia orsilochus* | X | X |
| | *Mechanitis polymnia polymnia* | X | |
| | *Melinaea ludovica ludovica* | X | |
| | *Melinaea mneme mneme* | X | |
| | *Memphis sp.* | X | |
| | *Morpho achilles achilles* | X | X |
| | *Morpho helenor helenor* | X | X |
| | *Morpho sp.* | X | |
| | *Napeogenes rhezia* | X | |

| Family | Species | Undisturbed | Disturbed |
|---|---|---|---|
| | *Nessaea batesii magniplaga* | X | X |
| | *Nymphalidae sp.1* | | X |
| | *Nymphalidae sp.2* | X | |
| | *Opsiphanes cassina merianae* | X | |
| | *Orthilia liriope* | X | |
| | *Pareuptychia ocirrhoe ocirrhoe* | X | X |
| | *Prepona omphale* | X | |
| | *Prepona pheridamas* | X | X |
| | *Pareuptychia sp.* | | X |
| | *Pierella hyalinus hyalinus* | X | X |
| | *Pierella lena lena* | X | |
| | *Taygetis thamyra* | X | |
| | *Taygetis zippora* | X | |
| | *Zaretis isidora* | | X |
| | *Zaretis itys* | X | |
| | *Ascia monuste monuste* | X | |
| | *Glutophrissa drusilla drusilla* | X | |
| | *Eurema albula albula* | X | |
| | *Eurema elathea lamasi* | X | |
| | *Phoebis sennae marcellina* | X | |
| | *Pieridae sp.1* | X | X |
| | *Pieridae sp.2* | X | |
| | *Pyrisitia venusta venusta* | X | |
| | *Pyrisitia sp.* | X | |
| | *Dachetola sp.* | | X |
| | *Detritivora smalli* | X | |
| | *Emesis sp.* | X | X |
| | *Eurybia silaceana* | X | |
| | *Juditha sp.* | | X |
| | *Lemonias sp.* | X | X |
| | *Mesene phareus* | X | |
| | *Mesosemia scotina* | X | |
| | *Mesosemia metope* | X | |
| | *Nymphidium caricae caricae* | X | |
| | *Riodinidae sp.1* | X | |
| | *Riodinidae sp.2* | | X |
| | *Riodinidae sp.3* | | X |

| Family | Species | Undisturbed | Disturbed |
|---|---|---|---|
| | *Semomesia croesus lacrimosa* | X | |
| | *Stalachtis calliope calliope* | X | |
| | *Stalachtis phaedusa zephyritis* | X | |
| | *Stalachtis phlegia* | X | X |
| | *Thenpea penthea* | X | X |
| | *Theope sp.* | X | |
| | *Coenipeta polynoe* | | X |
| | *Mot sp.2* | | X |
| | *Mot sp.3* | | |
| | *Mot sp.4* | | X |
| | *Mot sp.5* | X | |
| **Libellulidae** | *Argyrothemis argentea* | X | |
| | *Dasythemis esmeralda* | | |
| | *Dythemis sp.* | X | |
| | *Erythrodiplax basalis* | X | X |
| | *Erythrodiplax famula* | X | X |
| | *Erythrodiplax fusca* | X | |
| | *Erythrodiplax sp.2* | X | |
| | *Gynothemis sp.* | X | |
| | *Micrathyria tibialis* | X | |
| | *Orthemis aequilibris* | X | |
| | *Orthemis attenuata* | X | |
| | *Orthemis discolor* | X | X |
| | *Orthemis sp.* | X | |
| | *Pantala flavescens* | X | |
| | *Rhodopygia pruinosa* | X | |
| | *Tauriphila argo* | X | |
| | *Uracis fastigiata* | X | |
| | *Uracis imbuta* | X | X |
| | *Uracis sp.* | X | |
| | *Zenithoptera fasciata* | X | |
| **Calopterygidae** | *Hetaerina caja* | X | |
| **Coenagrionidae** | *Argia oculata* | X | |
| | *Argia sp.* | X | |
| **Pseudostigmatidae** | *Mecistogaster modesta* | | X |
| **Gryllidae** | *Gryllidae sp.1* | X | X |
| | *Gryllidae sp.2* | X | X |

| Family | Species | Undisturbed | Disturbed |
|---|---|---|---|
| | *Orthoptera sp.2* | X | X |
| | *Psocoptera sp.1* | X | X |
| | *Scorpiones sp1* | X | X |
| | *Diplopoda sp.1* | X | |

In the wet season 205 terrestrial invertebrates were caught during sampling in the undisturbed areas, while in the disturbed areas 158 terrestrial invertebrates were sampled. During the dry season surveys 214 terrestrial invertebrates were caught during sampling in the undisturbed areas, while in the disturbed areas 136 terrestrial invertebrates were sampled. No differences in species diversity indices were found between the undisturbed and the disturbed sites for both wet and dry season (see Table 3-14).

Although without baiting, some dung beetle species have been caught in the traps, especially in the undisturbed sites. These may be ecologically related to the presence of mammals occurring in the undisturbed site as dung beetles use dung to complete their life history (Bicknell et al., 2014). Dung beetles are affected by the rainfall intensity as studies have shown (Sun et al., 2023), explaining the extra species found during the rainy season.

The *Cathedra serrata* (Chainsaw headed planthopper) is a Fulgorid cicada type that was originally considered endemic to Suriname, whose records are locally known mostly from Brownsberg and Oelemarie area in the east of Suriname. They probably prefer higher altitudes and more or less high forest.

The Odonates are good indicators for habitat disturbance and are abundantly present in the undisturbed areas (Hassall, 2015; Kutcher & Bried, 2014; Osborn & Samways, 1996).

Table 3-14 Overview of the average species diversity indices for the terrestrial invertebrates for the wet and dry seasons and the results for the test of difference between the disturbed and undisturbed sites.

| | Shannon diversity index (average) | | | Simpson diversity index (average) | | |
|---|---|---|---|---|---|---|
| | **Disturbed sites** | **Undisturbed sites** | **p** | **Disturbed sites** | **Undisturbed sites** | **p** |
| Wet season | 1.7±1.03 | 2.0±0.56 | NS | 0.7±0.29 | 0.8±0.11 | NS |
| Dry season | 3.7±0.44 | 3.4±0.30 | NS | 1.0±0.02 | 1.0±0.07 | NS |

The NMDS in Figure 3-6 shows that the sampled areas that had more similar species, are closer together and, conversely, those that were more dissimilar are further apart. Figure 3-6 shows that there is no defined difference between the species found during the wet seasons, because all sites are relatively close together. In the NMDS of wet

season 2023, the sites D13 and D15 are quite similar to each other. This can be due to the common species of Coleoptera, Diptera and Formicidae that were found in these sampling areas.

There is also quite a similarity between the sites U15 and U19, probably because there were similar Coleoptera, Diptera, Hymenoptera and Odonata species that were found in these sampling areas. In the wet season of 2024, the U15 and U19 are quite similar to each other. U15 is also more similar to the disturbed sites than with the undisturbed sites. In the dry seasons of 2023 and 2024, there is a more noticeable difference between the undisturbed and the disturbed sites and the first axes of the NMDS separate the areas based on disturbance. It is to be noted that during our field visit in November 2023, the full moon was not taken into consideration. This may have affected the results of the samples as the dry season did not contain any moths in the butterfly traps. Hartland-Row (1955) and Corbet (1958) provided experimental evidence in support of the influence of lunar periodicity on insect flight with periodic fluctuations in numbers caught in light traps, and that this correlated closely with the age of the moon.

The species accumulation curves (see Figure 3-7) for the terrestrial invertebrates indicate that more surveys are needed to have a more complete overview of the terrestrial invertebrate community.

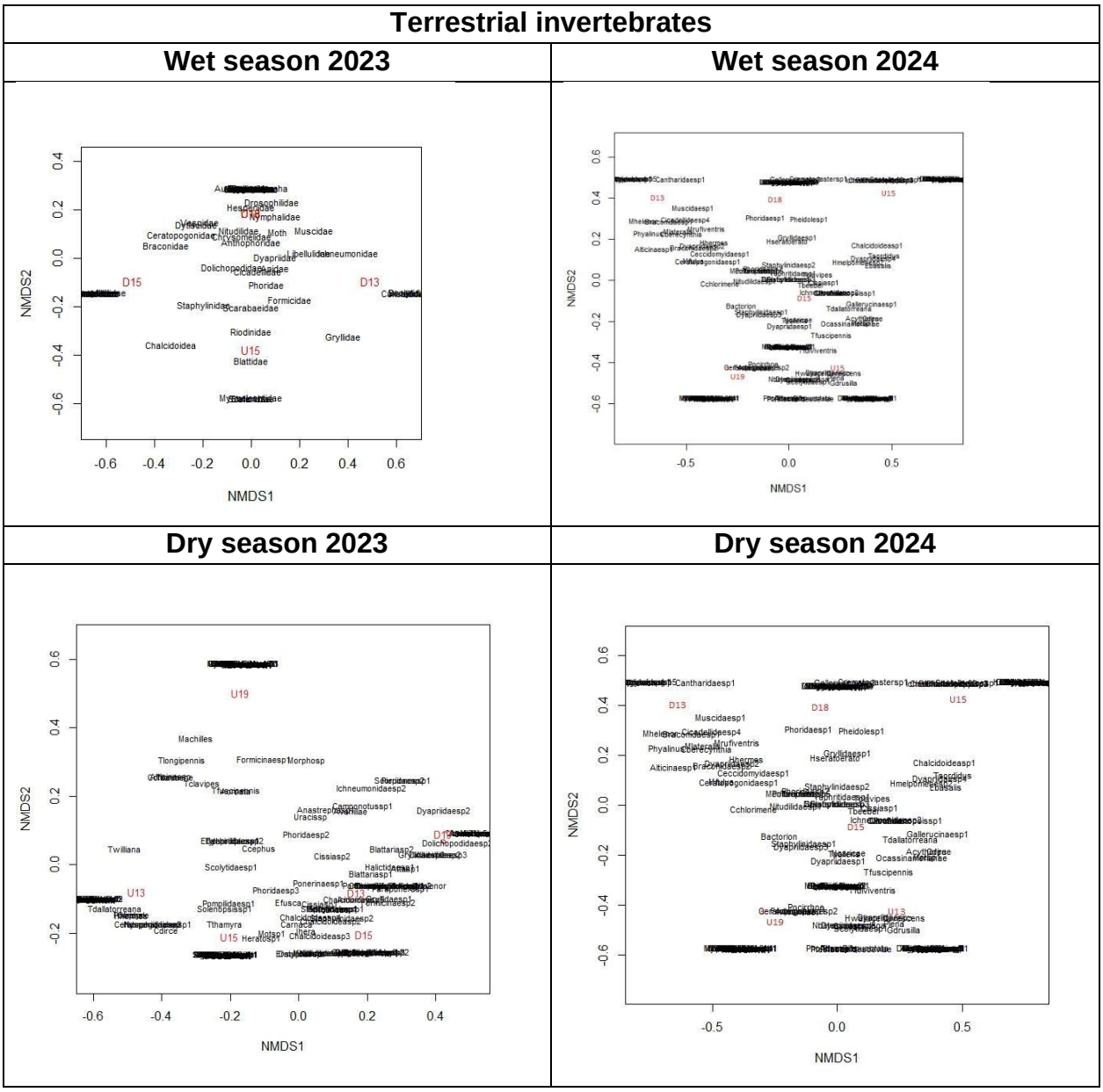


Figure 3-6 Non-metric dimensional scaling for the terrestrial invertebrates of the four assessed seasons. U= undisturbed transects; D=Disturbed transects

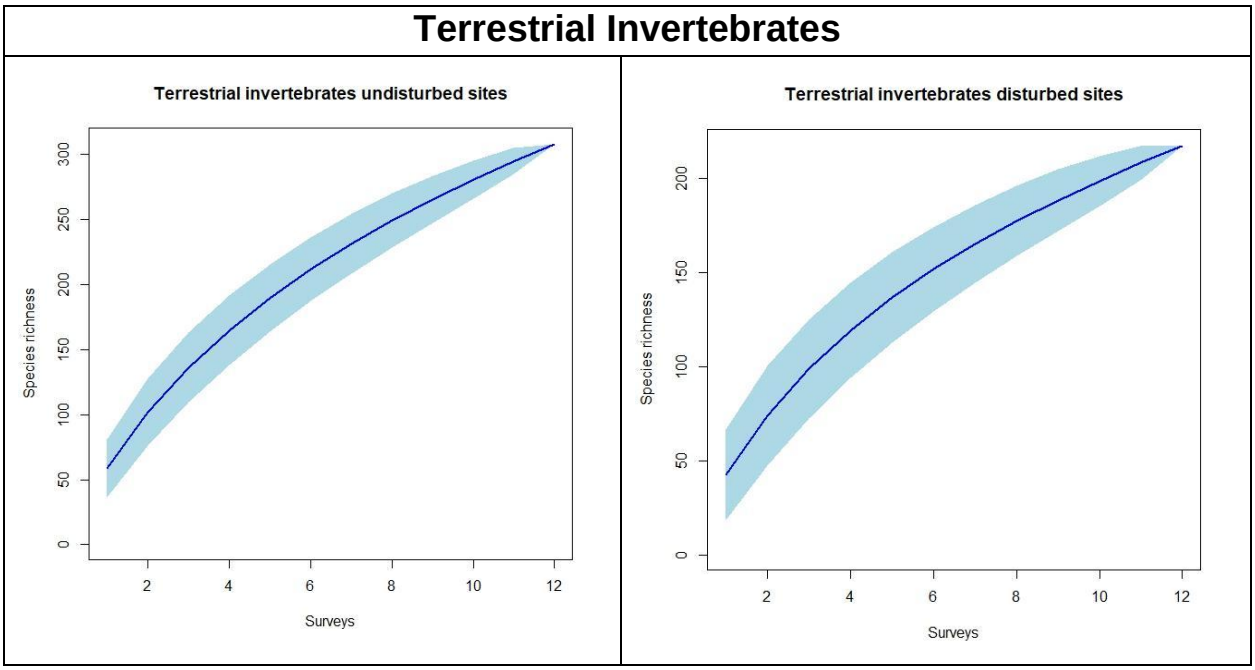


Figure 3-7 Species accumulation curves for terrestrial invertebrates in the assessed disturbed and undisturbed sites of the Compagniekreek study area.

### 3.3.3.2 Conservation status

None of the assessed invertebrates are protected by national law or on the IUCN Red List. No Restricted Range Endemics for invertebrates were found for the study area.

### 3.3.4 Aquatic invertebrates

#### 3.3.4.1 Results field assessments

Tables 3-15 and 3-16 give an overview of the aquatic invertebrates observed in the wet and dry season for both the disturbed and undisturbed areas.

Table 3-15 Sampled aquatic invertebrates in the disturbed and undisturbed areas during the wet season

| Taxon | Family | Species | Undisturbed | Disturbed |
|---|---|---|---|---|
| Crustacea | | *Isopoda_sp* | | X |
| Caridea | Euryrhinchidae | *Euryrhynchus_sp* | X | |
| Caridea | Palaemodidae | *Palaemonetes_sp* | X | X |
| Caridea | Palaemodidae | *Macrobrachium_sp* | X | X |
| Caridea | Palaemodidae | *Macrobrachium surinamicum* | X | X |
| Gastropoda | Ampullariidae | *Ampullariidae_sp* | X | X |
| Gastropoda | Hydrobiidae | *Hydrobiidae_sp* | X | |
| Gastropoda | Planorbidae | *Planorbidae_sp* | X | |
| Coleoptera | Noteridae | *Noteridae_sp* | X | |
| Diptera | Chironomidae | *Chironomidae_sp* | X | X |
| Diptera | Chironomidae | *Chironomidae_sp2* | X | |
| Diptera | Tipulidae | *Tipulidae_sp* | X | |
| Ephemeroptera | Baetidae | *Baetidae_sp* | X | |
| Ephemeroptera | Leptophlebiidae | *Leptophlebiidae_sp* | X | |
| Hemiptera | Belostomatidae | *Belostomatidae_sp* | X | X |
| Hemiptera | Gerrida | *Gerridae_sp* | X | X |
| Hemiptera | Veliidae | *Veliidae_sp* | X | |
| Odonata | Libellulidae | *Libellulidae_sp* | X | X |
| Hemiptera | Nepidae | *Nepidae_sp* | X | |
| Trichoptera | Hydropsychidae | *Hydropsychidae_sp* | X | |
| Coleoptera | Hydrophylidae | *Hydrophylidae_sp* | X | |
| Coleoptera | Dytiscidae | *Dytiscidae_sp* | X | |
| Odonata | Coenagrionidae | *Coenagrionidae_sp* | X | X |
| Gomphidae | Gomphidae | *Gomphidae_sp* | | X |
| Hemiptera | Notonectidae | *Notonectidae_sp* | | X |

Table 3-16 Sampled aquatic invertebrates in the disturbed and undisturbed areas during the dry season

| Taxon | Family | Species | Undisturbed | Disturbed |
|---|---|---|---|---|
| Caridea | Euryrhynchidae | *Euryrhynchus_sp.* | X | |
| Caridea | Palaemonidae | *Macrobrachium surinamicum* | X | X |
| Caridea | Palaemonidae | *Macrobrachium_sp* | X | X |
| Caridea | Palaemonidae | *Palaemonetes sp.* | | |
| Gastropoda | Ampullariidae | *Ampullariidae_sp.* | X | |
| Coleoptera | Dytiscidae | *Dytiscidae_sp.* | X | |
| Diptera | Chironomidae | *Chironomidae_sp.1* | X | |
| Ephemeroptera | Leptophlebiidae | *Leptophlebiidae_sp* | X | |
| Ephemeroptera | Polymitarcidae | *Polymitarcidae_sp.* | X | |
| Hemiptera | Belostomatidae | *Belostomatidae_sp.* | X | |
| Hemiptera | Notonectidae | *Notonectidae_sp.* | | X |
| Odonata | Libellulidae | *Libellulidae_sp* | X | X |
| Odonata | Aeshnidae | *Aeshnidae_sp* | X | |
| Odonata | Coenagrionidae | *Argia_sp.* | | X |
| Odonata | Gomphidae | *Gomphidae_sp.* | X | |
| Trichoptera | Hydropsychidae | *Hydropsychidae_sp.* | X | |
| Trichoptera | Hydropsychidae | Trichoptera_sp | | |
| Hemiptera | Veliidae | *Veliidae_sp.* | X | |

In the wet season 22 aquatic invertebrate species were caught during sampling in the undisturbed creeks, while in the disturbed creeks only 12 species were sampled.
During the dry season surveys 14 aquatic invertebrates were caught during sampling in the undisturbed creeks, while in the disturbed creeks only five aquatic invertebrate species were sampled. In the wet season the species diversity for the aquatic invertebrates in the undisturbed areas was significantly higher ($p=0.004$) than the species diversity for the disturbed areas. Also, in the wet season some species, such as the *Hydrobiidae sp* (snails) and the *Chironomidae sp* (midges), were more dominant ($p=0.009$) in the undisturbed areas than in the disturbed areas (see Table 3-17).

Table 3-17 Overview of the average species diversity indices for the aquatic invertebrates for the wet and dry seasons and the results for the test of difference between the disturbed and undisturbed sites.

| | **Shannon diversity index (average)** | | | **Simpson diversity index (average)** | | |
|---|---|---|---|---|---|---|
| | **Disturbed sites** | **Undisturbed sites** | **p** | **Disturbed sites** | **Undisturbed sites** | **p** |
| Wet season | 0.6±0.34 | 1.5±0.46 | P=0.004 | 0.3±0.20 | 0.7±0.30 | P=0.009 |
| Dry season | 2.0±1.68 | 2.5±1.31 | NS | 0.7±0.15 | 0.8±0.20 | NS |

Although the *Macrobrachium* is an indicator species for clear water (Kietzka, 2019; Oertli, 2008), they are found in large quantities both in undisturbed as well as in the disturbed area. A study on the feeding behavior of the *Macrobrachium* resulted in the fact that they are better adapted to conditions of food limitation (Anger & Hayd, 2010), which usually is the case in disturbed waters. That is probably the reason why they were found in both undisturbed as well as in the disturbed areas.

The *Euryrhynchus* sp. is described as a species being restricted to submerged leaf litter in small streams as habitat (Pachelle & Tavares, 2018; Kensley & Walker, 1982; Holthuis, 1959). They may be used as an indicator species for small streams, with leaves on the bottom of the waterbody, which was exactly the habitat present at the U19 area, located behind the village of Compagniekreek.

The Notonectinae belongs to a predatory Hemiptera family usually found in slow flowing water bodies. They have the ability to fly well and disperse easily to new habitats (Triplehorn et al., 2005). The single Notonectinae found in the disturbed areas, may therefore be opportunistic. The Leptophlebiid larvae present in U13 and U21 generally cling to rocks and live in freshwater streams, eating detritus and/or algae and are often used as bioindicators in environmental studies (Azmi et al., 2018; Prommi & Payakka, 2025; Brasil et al., 2014) as they need that to survive through their life cycle. The undisturbed areas were able to provide these circumstances for them. The most species per sample were caught in the undisturbed areas at the locations U19 and U21 area.

It is to be noted that in the wet season organic material washes off from the surroundings as surface runoff into the creek, resulting in the availability of abundant food resources for microorganisms which in turn serve as food for invertebrates such as damsel and dragonfly species from the order Odonata. The Odonata are observed to be strongly seasonal (Vilela et al., 2016). This may be the reason why they are found both in undisturbed and disturbed areas in this study. Because of this pattern, where species that usually prefer undisturbed habitats are also found in the disturbed habitat in this study, it was not possible for the NMDS (Figure 3-8) to make a clear distinction between the disturbed and the undisturbed habitats. But the abundances caught and the species

diversity indices calculated, makes it clear that the aquatic invertebrate diversity is poorer in the disturbed area than the undisturbed areas.

Furthermore, the species accumulation curves (Figure 3-9) indicate that there might be a need for additional surveys to get a complete overview of the aquatic invertebrate community.

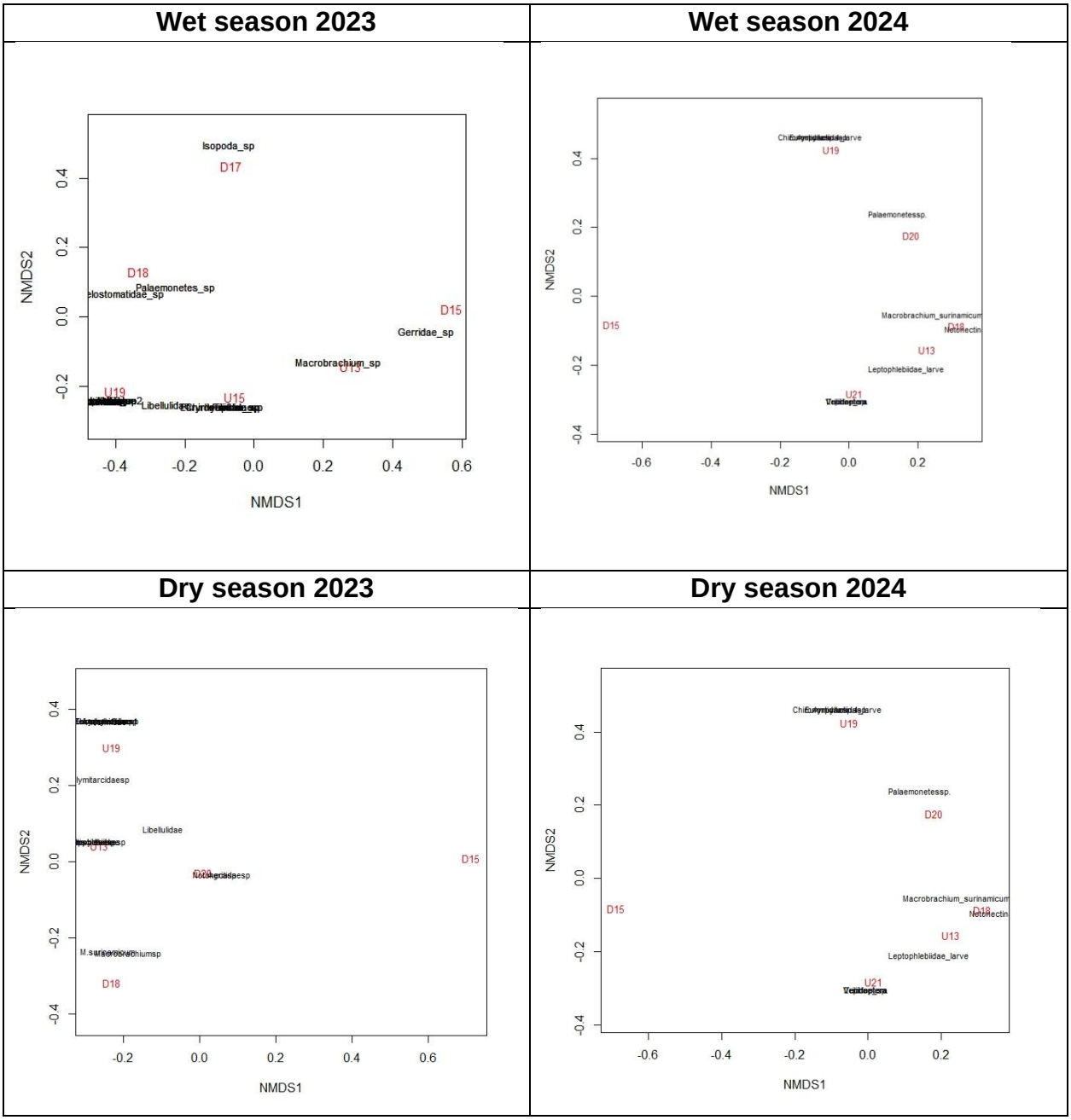


Figure 3-8 Non-metric dimensional scaling for aquatic invertebrates of the four assessed seasons. U= undisturbed areas; D=Disturbed areas

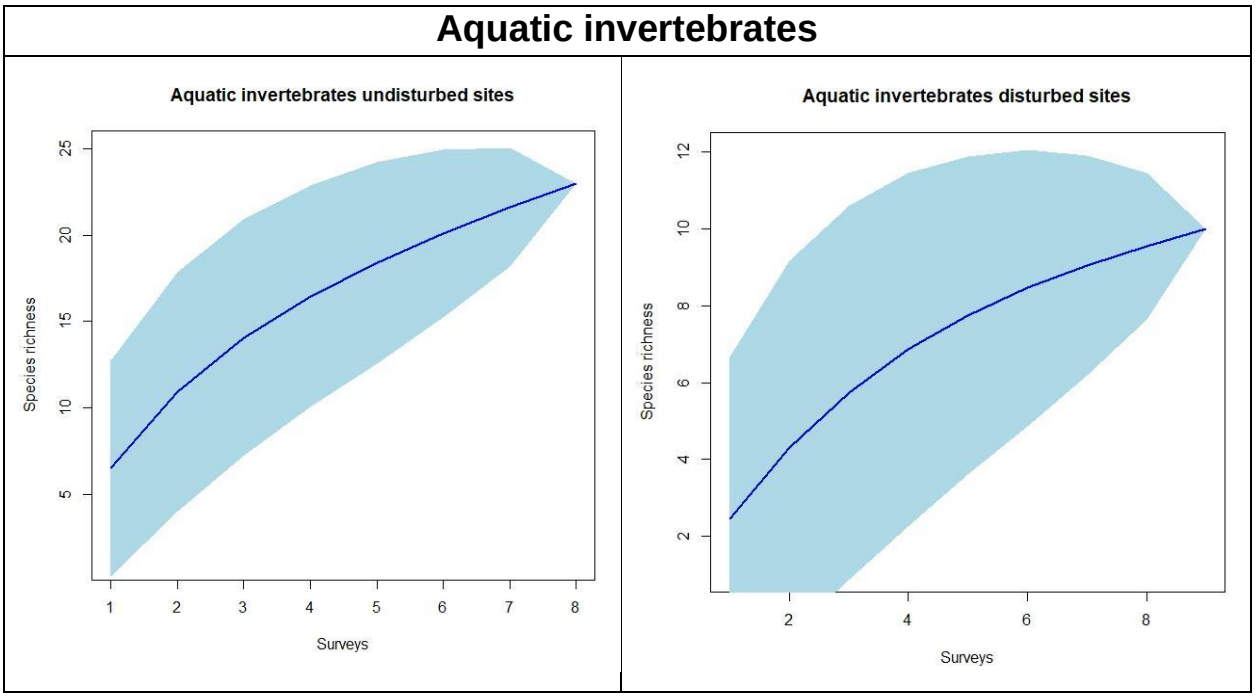

Figure 3-9 Species accumulation curves for aquatic invertebrates in the assessed disturbed and undisturbed sites of the Compagniekreek study area.

### 3.3.4.2 Conservation status

None of the assessed invertebrates are protected by national law or on the IUCN Red List. No Restricted Range Endemics for aquatic invertebrates were found for the study area.

# 4 ECOSYSTEM SERVICES ASSESSMENT

## 4.1 Results

The focus group meetings were held on April 19th, 20th and 21st, 2024. The women of the village (age 30 years and older) were not available in this period, so the meeting with this group was planned for June 21st, 2024. The availability of participants influenced the composition of the groups and during the first period meetings were held with the members of the traditional authority, the elderly (age 60 years and older), male youth (age 30 years and younger), and female youth (primarily 30 years and younger). Although the second period was focused on the women age group 30 years and older, they were still not available. A meeting was then held with a mix of male youth and men of different ages, including elderly. More detailed information about the focus groups can be found in Appendix 4.

The results of each of the five sessions is as follows:

*I.* *Date: Friday 19 April 2024 – Time: 19:00 – 21:00 – Focus Group: Members of Traditional Authority*

Ecosystem services named:
Agricultural plots are being cleared. Fruits that are harvested are: busi kasyu (*Anacardium* sp.), kumbu (*Oenocarpus* sp.), podosiri (*Euterpe oleracea*). Materials for construction are also collected from the forest. Land for housing, wood, game meat, ornamental and medicinal plants, nuts and fish are used. The elderly pass on knowledge about the use of plants to the young. Loka (*Hymenea* sp.) and bolletri[1] fruits are eaten. Wood for charcoal, especially krokro[2], cultural activities and water were also mentioned.

Input on the map:
- podosiri (*Euterpe oleracea*) is found in marsh areas
- to collect herbs and leaves villagers walk more than 2 km away from the village

[1] The local name bolletri is used for more than one species with different genera.
[2] The local name krokro is not found in botanical literature.

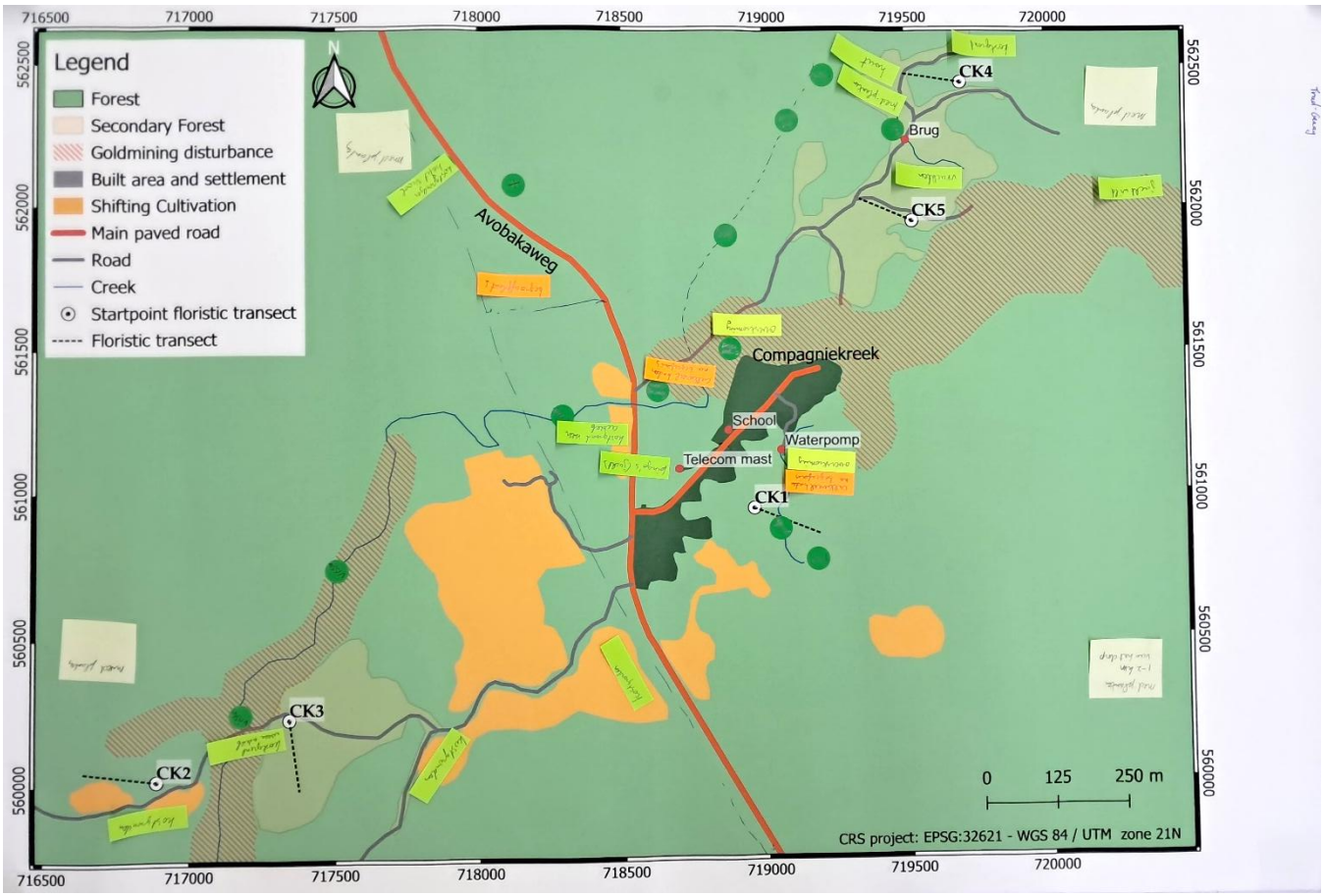

Figure 4-1 Input map of the traditional authority of Compagniekreek during the ecosystem assessment

*II.* *<u>Date: Saturday 20 April 2024 – Time: 10:00 – 12:15 – Focus Group: Elderly (age 60 years and older)</u>*

Ecosystem services named:
One respondent indicated that she used to work alone on her agricultural land. She planted cassava and used the creek when the water was still clear. That was about 20 years ago. She now lives more in the city.

Other respondents, one a construction worker by profession, indicated that the water is now used via the water pump for the household. An elderly woman no longer goes to her agricultural land because she has difficulty walking. She used to plant tayer (*Colocasia* sp.) and peanut (*Arachis hypogaea*). Konkoni (*Dasyprocta agouti*) and pingo (*Tayassu pecari*) destroyed her agricultural fields. The plants she now uses can be found in the yard at her residence, namely swit'bonki (*Inga* sp.) and soursop (*Annona* sp.). She received the knowledge of the use of plants from her ancestors and she passed it on to her descendants. She collected the plants while opening up the agricultural plot. Anjoemara (*Hoplias aimara*) could be found in the creeks. In the forest she found maripa

(*Atalea* sp.), kumbu (*Oenocarpus* sp.) and podosiri (*Euterpe oleracea*). An elderly man indicated that traditional camps are only built on agricultural plots using material from the forest, including pina (*Euterpe oleracea)* leaves. They often obtain wild meat and fish from people outside the Compagniekreek area.

Another elderly woman indicated that in the past, mutual agreements were made where people could relieve themselves. Menstruating women were not allowed to use the creek. Game meat, especially pingo (*Tayassu pecari*), comes from the area. Her agricultural land is along the Avobakaweg, where she plants cassava. Fruits of palms such as bugrumaka (*Astrocaryum sciophilum*), pikinmaka[3], maripa (*Atalea* sp.) were harvested and the seeds of maripa were processed into oil. Certain plants that she calls "uma-sma wiri" are used in steam baths. She used to plant mainly alesi[4], cassava (*Manihot esculenta*), taya (*Colocasia* sp.), karu (*Zea mays*) and pumpkin (*Cucurbita* sp.) on her agricultural land. Fish caught from the creek were krobia (*Krobia guianensis)*, pataka (*Hoplias malabaricus*), sriba (*Jupiaba sp)*, anjoemara (*Hoplias aimara*), sapapii (*Hypopomus artedi*), dyaki (*Pimeodella cristata* and *Rhamdia quelen*), kwikwi (*Hoplosternum littorale*). In the past, the creek water was used for drinking. Now she uses rainwater.

*III.* *Date: Saturday 20 April 2024 – Time: 18:00 – 19:30 – Focus Group: Male youth (age 30 years and younger)*

Ecosystem services named:
The participants mention the following:

- Collecting fruits, such as maripa (*Atalea* sp.), busimarkusa (*Passiflora* sp.), podosiri (*Euterpe oleracea*), mapa[5], daguston (*Posoqueria* sp.)
- Use of medicinal plants including duludulu (*Arrabidaea cf. bilabiate*), ayun titei[6], loango titei (*Aristolochia* sp.), dobrudua (*Strychnos* sp.)
- Logging – not only by people from the village, but also people from outside
- It is noted that it is now less cool after deforestation
- Transfer of knowledge about the forest from older people to young people
- Hunting near the active gold mine
- Fishing at the creek (clean creek) and at Papiteng creek (also called (Pitieteng creek)
- Cutting of agricultural plots for the women, usually in September
- Gold mining

[3] The local name was not found in botanical literature
[4] The local name alesi is used for several rice species with different genera, including high dryland species
[5] The local name mapa is used for several species with different genera
[6] The local name ayun titei is used for several species with different genera

- Cultural activities are carried out in certain places (behind the village), including at the cemetery and at Kleine Compagnie. Villagers take into account that no gold mining activities are carried out near these places. The kankantri (*Ceiba pentandra*) is not cut down when the tree is large; small trees are cut down if the villagers want to extract gold.
- In 2009-2010 the creek was affected and disturbed by gold mining.

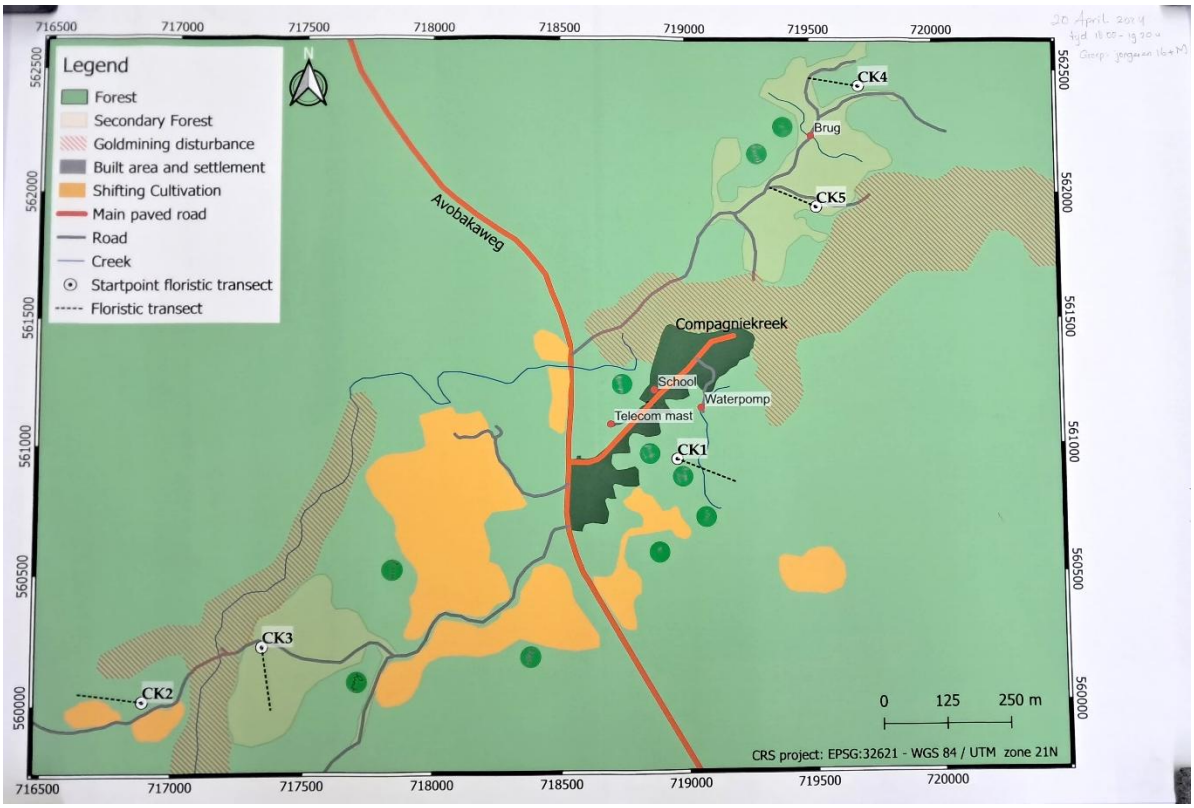

Figure 4-2 Input map of the youth male (30 years and younger) of Compagniekreek during the ecosystem assessment

*IV.* *<u>Date: Sunday 21 April 2024 – Time: 13:30 – 15:00 – Focus Group: Female (age primarily 30 years and younger)</u>*

Ecosystem services named:
From the forest the women get podosiri (*Euterpe oleracea*), kumbu (*Oenocarpus bacaba*), patawa (*Oenocarpus bataua var. bataua*), maripa (*Atalea* sp.), swit'bonki (*Inga* sp.), coconut (*Cocos nucifera*), sugar cane (*Saccharum officinarum*), kasyu (*Anacardium* sp.), forest soursop (*Annona* sp.), pineapple (*Ananas comosus*), papaya (*Carica papaya*), pepe (pepper) (*Capsicum* sp). They consume pingo (*Tayassu pecari*) and bofru (*Tapirus terrestris)* for game meat. They also consume fish. They plant kunir (*Curcuma longa*), taya (*Colocasia* sp.) and cassava (*Manihot esculenta*) on the agricultural land. Medicinal

plants[7] they use are: kon-koni kasba, gaasa, muru dresi, korsuwiri, lemmontee, trangasikiwiri, luwisawiri, anangoswiti, wasuma, singer, one-shot-will-kill-all-men. Sand from the creek is used to wash dishes.

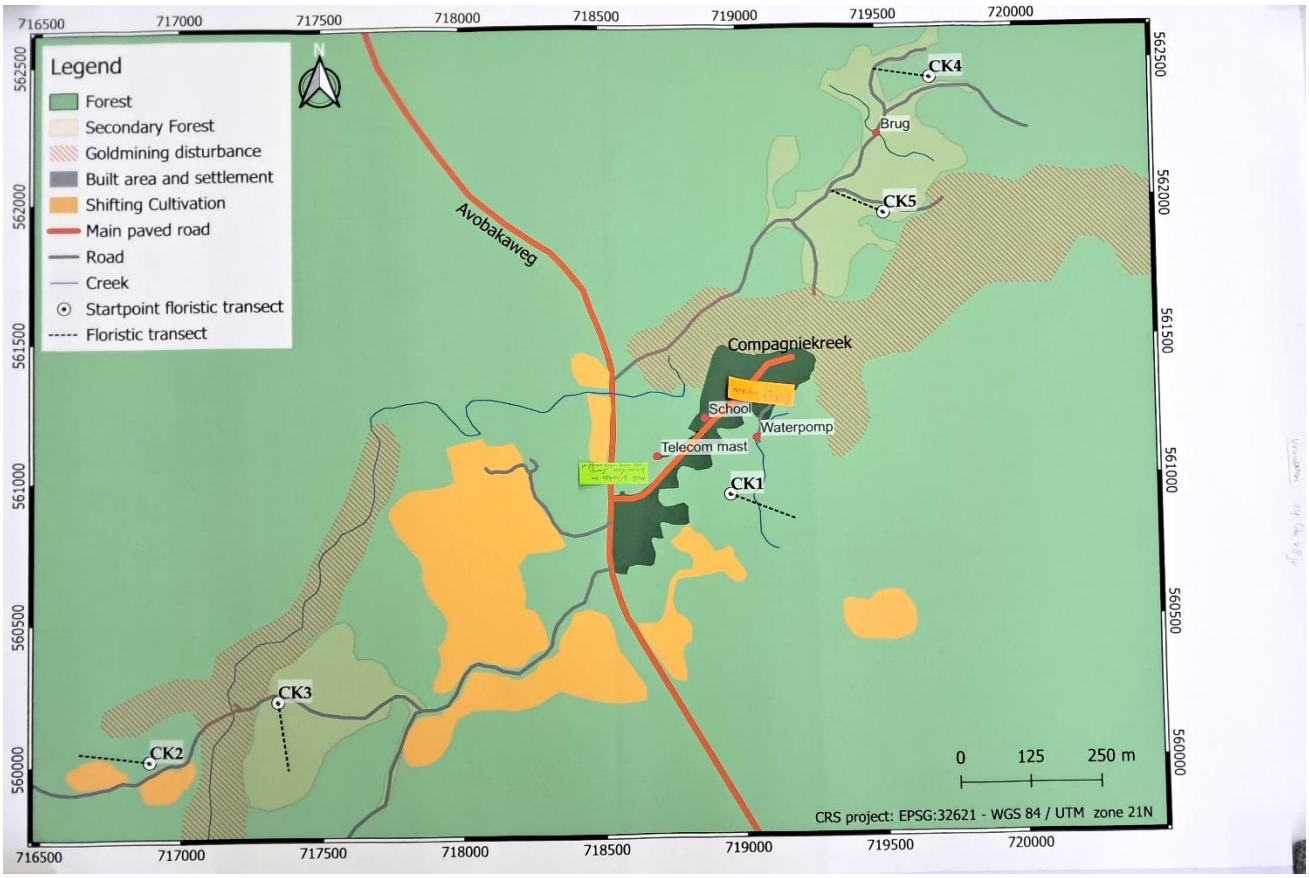


Figure 4-3 Input map of the youth women (30 years and younger) of Compagniekreek during the ecosystem assessment

*V.* *<u>Date: Friday 21 June 2024 – Time: 19:00 – 20:30 – Focus Group: Male (age 20 years and older)</u>*

Ecosystem services named:
When asked how the forest is used, the gentlemen indicate the following:
They eat konkoni (*Dasyprocta agouti*), but are not often seen. Pingo (*Tayasu pecarri*) are also eaten. The focus group expressed their fear when it was presented that there are jaguars in the areas. They fear big cats and this results in killing these species when they encounter them. During the assessments of this study, it was mentioned that a jaguar was killed.

[7] One respondent mentioned that names of medicinal plants are given by the women who collect them. In this study the species were not identified and scientific names cannot be validated.

Attendees asked questions after the water quality results were presented. They asked for help to solve the problem of high levels of fecal bacteria. The captain mentioned that people should not relieve themselves in the water and pointed out the importance of building toilets. He also explained how complex the problem is and advised people against bathing in the creek. He mentions the water supply project in Brokopondo.
Those present also indicated that there are few hunters in the village.
Wood is still obtained near Victoria Pasi; there are two camps on either side of the road. There is a small creek upstream of Pitieteng creek where people collect materials from and around the agricultural plots, including firewood. Fruits are harvested where they can find them as they walk through the forest, usually on the way to the agricultural lands and along the creeks. Rainwater is collected and the water from the Pitieteng creek is used. There is no special place for fishing and fishing is done where there are creeks.
The spiritual place is the cemetery and the cultural place is at the end of the road from the village of Compagniekreek.
Gold is the main means of livelihood. Gold is mined from the beginning of the creek (Bigi dyari, kraka) near the Brownsweg police station to Compagniekereek. The economic zone of the village is along the entire creek. Kapitein Pina states that once you start looking for gold, you do not stop. Only the availability of financial resources can be a limitation. The small creek where the villagers bathe behind the village is not used for gold mining. The remaining parts of the creek are used for gold mining. The villagers are determined that they will not stop prospecting for gold. Where small areas are cleared, they are intended for agricultural land. There is no gold to be found near Pitieteng Creek. Logging is carried out by the people of the village itself and the wood is brought to the Brownsweg. SBB had stopped this once, but the work was subsequently resumed.


Figure 4-4 Input map of the male (20 years and older) of Compagniekreek during the ecosystem assessment

The ecosystem services mentioned by each of the five groups are grouped in Table 4-1.

Table 4-1 Ecosystem services mentioned by the focus groups. “+” Indicates that the service was mentioned by at least one respondent from the group. “-” Indicates that the service was not mentioned by any of the respondents for that group. Yellow columns are for services that were provided in the past and green columns are for services provided at present; e.g. if services are provided in both past and present then these are indicated with “+” in both yellow and green columns.

| | | Focus group numbers | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ecosystem services* | Provided in the past | | | | | Provided at present | | | | |
| | | I | II | III | IV | V | I | II | III | IV | V |
| PROVISIONING | Crops on agricultural plots | - | + | - | - | - | + | + | + | + | + |
| | Fruits from trees and palms | - | + | - | - | - | + | - | + | + | + |
| | Materials for construction e.g. wood and palm leaves | - | - | - | - | - | + | + | - | - | - |
| | Land for housing | - | - | - | - | - | + | - | - | - | - |
| | Game meat | - | - | - | - | - | + | + | + | + | + |
| | Plants for steam baths, ornamental use and medicine | - | + | - | - | - | + | + | + | + | + |
| | Fish for consumption | - | + | - | - | - | + | - | + | + | - |
| | Wood for charcoal | - | - | - | - | - | + | - | + | - | + |
| | Rainwater and water from creeks for drinking, washing and bathing | - | + | - | - | - | + | + | - | - | + |
| | Gold mining | - | - | - | - | - | - | - | + | - | + |
| | Sand for washing dishes | - | - | - | - | - | - | - | - | + | - |
| CULTURAL | The elderly pass on knowledge about the use of plants to the young | - | + | - | - | - | + | + | + | - | - |
| | Cultural activities and rituals | - | - | - | - | - | - | - | + | - | + |
| REGULATING | Cooling of the environment | - | - | + | - | - | - | - | - | - | - |

## 4.2 Conclusions

Ecosystem services named by the focus groups can be divided in regulating, cultural and provisioning ecosystem services. No supporting ecosystem services were mentioned by the several focus groups. As a result from the focus group meetings, it is obvious that mostly the elderly mentioned the ecosystem services that were provided in the past. But also, the male youth group mentioned that they experience that the environment is less cool now than it used to be. Most of the ecosystem services are provided at present, with crops from agricultural land, game meat and plants for steam baths, ornamental and medicine mentioned by all focus groups. The number of provisioning ecosystem services is the highest, followed by cultural and regulating services.

From the assessment it can be concluded that provisioning services comprise mostly what the villagers need for consumption and overall wellbeing. Harvesting of NTFPs from the forest and hunting of meat is done for villagers' sustenance. The villagers did not mention any large-scale sale in NTFPs and bush meat, which should result in low pressure on ecosystem services provided by fauna and flora species. In combination with other activities, such as gold mining, this pressure may increase, resulting in overharvesting of species, especially in the gold mining areas.

# 5 IMPACT ASSESSMENT

Table 5-1 gives an overview of the impact classification for the three impact categories. The classification is based on the results presented in chapters 3 and 4.

The significant changes in the hydrology and water quality with increased sedimentation (see chapter 3.1) led to classify the changes on the environment as **Major**. Forest is being removed for the gold mining activities. This has resulted in major degradation of the forest and loss of the functions and services (see chapter 3.4), such as habitat services for fauna, cooling effect from vegetation through transpiration, shade and humidification, and availability of renewable resources such as timber, medicinal plants, fruits and game. The impact on the flora can be categorized as **Moderate-Major.** Fauna species are still being seen and hunted in the disturbed area, but from the assessment it is clear that the diversity is lower in the disturbed sites than in the undisturbed sites (see chapter 3.3); fortunately, there is still connectivity with other areas, so the impact on terrestrial fauna is classified as **Moderate**. The situation is different for the aquatic system, since species diversity for fish and aquatic invertebrates is low in the disturbed creeks and it seems that the fish community composition is changing (see chapter 3.3). The impact on the aquatic fauna can be classified as **Major**. Provisioning ecosystem services were most frequently mentioned during the assessments, but respondents indicated that they do not travel large distances to collect them. Along the trails to the agricultural plots and near the village the villagers collect what they find. Gold mining is an important source of income. Cultural well-being is mentioned as an important ecosystem service and deforestation might cause some disruption in the community. Therefore, the impact on ecosystem services can be categorized as **Moderate**. Habitat fragmentation as a result of gold mining activities can lead to reduced habitat area and quality, reduced genetic resources and a higher risk of extinction of species. The impact of habitat fragmentation can be classified as **Major**. The impact on ecosystems can be classified as **Moderate-Major**.

During this assessment, no studies were done on individual organisms or populations, but from the aspects assessed, it can be expected that loss of forested areas, ecosystem function and services will lead to loss of food and shelter and reduced population size. Since there is no evidence for this, the impact is categorized as **Moderate**. Furthermore, there is some pressure from hunting and NTFP harvest (see chapter 3.3 and 4) on the forest, which will hopefully have minimal effect on the species population sizes. During the Ecosystem Services Assessment it was mentioned by several respondents that game and fish are purchased from outside Compagniekreek also, namely from Brownsweg. Based on this the impact on population size can be categorized as **Moderate**. From tales of the community there is not much encounter with wildlife such as the jaguar and puma. During the assessment it was mentioned that one jaguar was killed in the area. Furthermore, there are some issues with large rodents' attacks on the agricultural fields of the women, but not serious (categorized as **Mino**r). So, the impact on organisms can be categorized as **Minor-Moderate**.

Table 5-1 Impact classification for Compagniekreek

| **Environmental impact** | **Impact classification** |
|---|---|
| Change in water quality | Major |
| Change in hydrology | Major |
| Increased sedimentation | Major |
| **Overall impact on the environment** | **Major** |
| **Ecosystem impact** | |
| Loss of flora | Moderate-Major |
| Loss of fauna | Moderate-Major |
| Loss of ecosystem functioning | Moderate |
| Loss of ecosystem services | Moderate |
| Habitat loss | Moderate |
| Habitat degradation | Major |
| Habitat fragmentation | Major |
| **Overall impact on ecosystem** | **Moderate-Major** |
| **Organismal impact** | |
| Loss of food and shelter | Moderate |
| Reduced population size | Moderate |
| Increased human-wildlife conflict | Minor |
| **Overall impact on organisms** | **Minor-Moderate** |

The impact of the gold mining activities can also be described based on:

1. **Spatial extent**

Figure 5-1 gives an overview of the areas disturbed by gold mining in the Company Creek area. The gold mining activities are active from the most upstream part of the Compagnie kreek to the downstream parts of the creek, downstream from the village Compagniekreek to the Tapoeripa area, except near the Avobaka weg (on both sides of the road). But even though there is no gold mining in this part of the creek, it is heavily affected by the discharge of upstream processed ore into the creek. The hydrology and course of the Compagnie creek have been altered in different places and riparian forest that used to be along the creek has been removed. Even forested areas are being cleared to set up camps and infrastructure for the gold mining activities. From this can be concluded that not only the Compagnie creek is affected by the gold mining activities, but its spatial extent reaches into the forested areas along the creek. Since the Compagniekreek flows downstream towards the Suriname River, even the downstream part of the Suriname River may be affected by the gold mining activities in the Compagniekreek area.

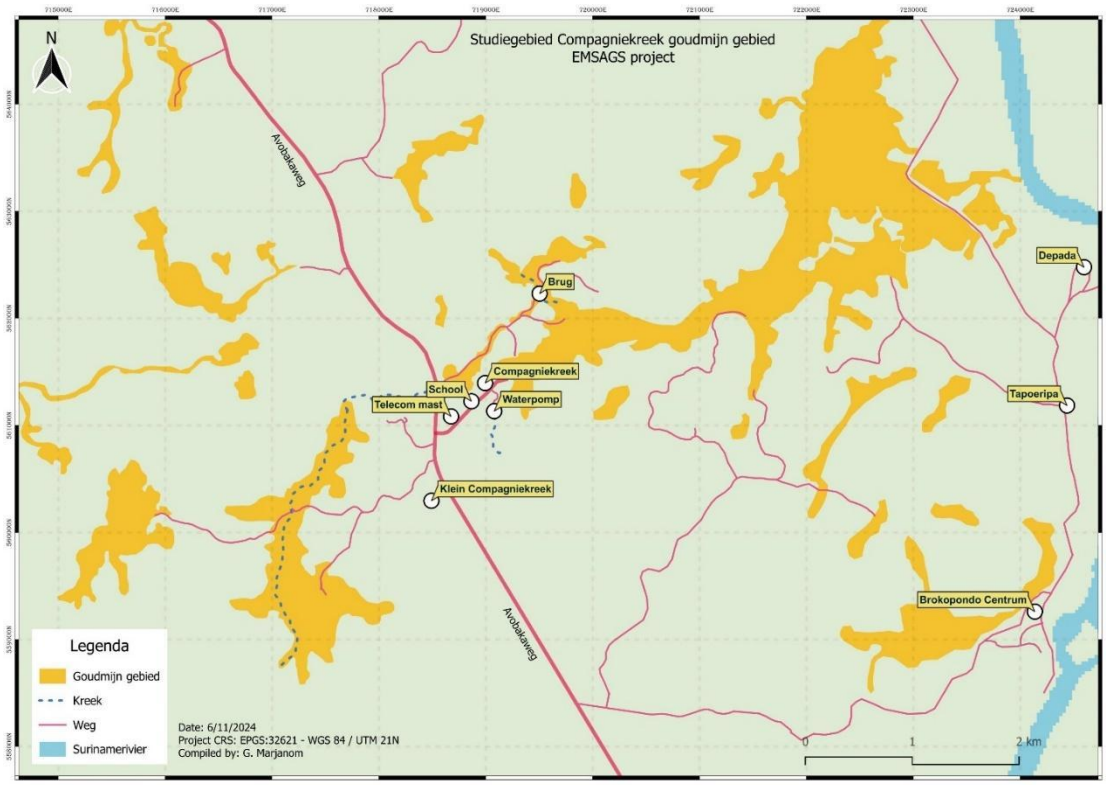


Figure 5-1 Map of the area influenced by gold mining activities in the Compagnie kreek area

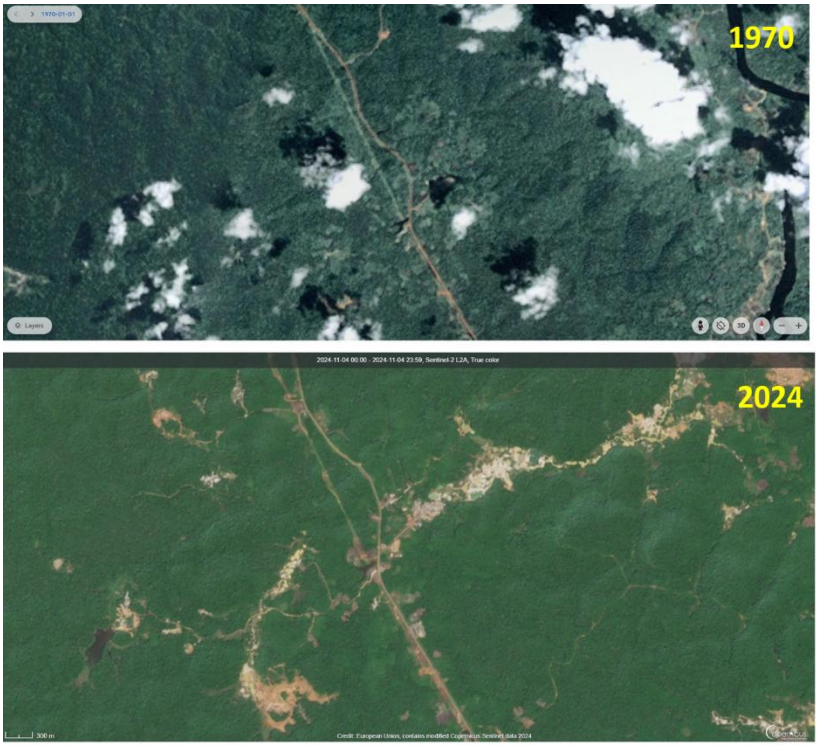


Figure 5-2 Comparison of satellite pictures from 1970 and 2024 of the Compagniekreek area

**2. Duration**

The goldmining activities started in the ‘80s and are continuing to date. In personal communication with the head of the village, Kapitein Pina, he stated that the local community has its main income from the gold mining activities and will continue to do so, as long there is investment into the gold mining sector in the area or until there is no gold left to be mined. So, it can be concluded that the duration of the activities will continue as long as this will be the major income of the community.

**3. Scale**

From the water quality surveys it can be concluded that due to the increased sedimentation in the assessed waterways, the conditions have changed in comparison to undisturbed waterways. This change is also seen in the fish diversity. Overall, less fish species was found in the disturbed waterways and carnivorous species, such as the *Hoplias aimara* (anjoemara) and *Hoplias marabaricus* (pataka) were less or not found in the disturbed waterways. This pattern was also seen in the aquatic insect community. Less aquatic insects were sampled in the disturbed area (wet season: 12; dry season: 5), compared to the undisturbed areas (wet season: 22; dry season: 14).

Figure 5-2 shows the comparison of the Compagniekreek before the gold mining activities compared to the situation anno 2024. The estimated loss of forested area since 1970 is 550.25 ha. This not only includes the loss of forested areas, but also the different ecosystem services that the forest provides for human wellbeing.

Overall, less terrestrial vertebrate species were found in the disturbed sites (wet season: disturbed sites: 33 camera trap triggers, undisturbed sites: 39 camera trap triggers; dry season: disturbed sites: 20 camera trap triggers, undisturbed sites: 32 camera trap triggers). Some amphibian species were only found in the undisturbed sites in both seasons, but overall terrestrial vertebrate species were found in both undisturbed and disturbed areas. It should be noted that beside the pressure of the gold mining activities, there is also seasonal pressure, which affects the presence of species in the disturbed area, since the forest has been removed/disturbed in many places. Hunting puts a bigger pressure on fauna diversity in both disturbed and undisturbed areas.

**4. Frequency**

Since gold mining is the major income source for the Compagniekreek community, the mining activities are continuous. During the dry season, there is a lack of water in the creek and probably for the mining activities, but the effect of the discharge of processed ore is more visual in the dry season than in the wet season on the aquatic fauna diversity. Due to changes in the hydrology of the creek, the mining activities may cause uncontrolled flooding in the area which will also affect ecosystem functioning and biodiversity.

# 6 MITIGATION MEASURES

Mitigation measures are implemented to reduce, stop or prevent the negative effects of a project. For these measures to be effective, it is important that all stakeholders agree on the approach to be taken. From the stakeholders' perspective it is important that mitigation measures reduce or stop the negative effects of the project, but that the benefits remain optimal for all parties.

In the case of Compagniekreek, it is important that the community agrees on the mitigation measures that need to be implemented to minimize and or stop the negative effects of the gold mining activities. According to the Head of the Compagniekreek village, Kapitein Pina, it is not possible to stop gold mining in the Compagniekreek area, since it is the major income for the community. The community has been living from the gold mining activities for almost two decades, which makes it difficult to just stop this way of living. But the Head of the village also recognizes that the gold mining also brings a lot of problems for the community and the environment. During the validation session of the results of this study on November 28th, 2024, the leaders of the village, including the District Commissioner, Mr. Ludwig Mendelzoon, agreed that for a positive change in the gold mining issues of the Compagniekreek area the following has to be done:

1. Awareness should be raised within the community about the negative effects of the gold mining activities as it has been done until now. The awareness should be focused especially on the next generation (young people between 18 and 30 years), who are now eager to take part in the hustle of gold mining. Increased awareness should result in a changed mindset that is focused on responsible mining activities or other less destructive activities.
2. There should be at least one alternative income source beside the gold mining, which can lead to less pressure and destruction of the environment. Opportunities are now being searched in agricultural activities. Alternatives such as tourism and planting of economically valuable trees that can be harvested in the future should also be considered. If that succeeds, the focus of the community can be moved from gold mining.

Besides these measures, some other actions are being proposed:

3. There should be a clear zoning of the area for the different economic activities in Compagniekreek area. This zoning should lead to mitigate uncontrolled expansion of the gold mining activities to undisturbed areas, such as the start of the gold mining activities at Pitieteng Creek area.
4. Restoration of disturbed areas and protection of critical areas that are still intact such as the Marsh/Riparian forest. There are initiatives of restoration in the Compagniekreek area, but restoration can only be successful if the restored area stays out of the influence of the gold mining activities. Certain areas, such as the

forest near the clean creek in the village can get a special protection status from the Compagniekreek community to ensure the certain ecosystem services remain protected in the Compagniekreek area.

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# ANNEXES

## Annex 1 Water quality data

Table A1-1 Water quality data of Wet season 2023

| Parameter | Disturbed sites (average) | Undisturbed sites (average) | p |
|---|---|---|---|
| Dissolved oxygen | 6.7±0.34 mg/L | 4.5±1.33 mg/L | NS |
| Dissolved oxygen saturation | 85.8±8.48 | 57.0±17.45 | NS |
| pH | 5.8±0.07 | 6.0±0.25 | NS |
| Conductivity | 21.0±2.24 uS/cm | 35.7±0.37 uS/cm | P<0.001 |
| Turbidity | 866.3±1019.78 NTU | 13.1±6.95 NTU | P<0.001 |
| Total dissolved solids | 15.6±0.51 mg/L | 25.4±0.25 mg/L | P=0.05 |
| Total suspended solids | 442.8±526.58 mg/L | 2.9±0.57 mg/L | P=0.014 |
| Salinity | 19.8±0.85 mg/L | 24.7±0.32 mg/L | P=0.05 |
| Orthophosphate | 0.0±0.03 mg/L | 0.0±0.00 mg/L | NS |
| Total phosphate | 0.2±0.02 mg/L | 0.2±0.05 mg/L | NS |
| Nitrate | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Nitrite | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Ammonia | 0.5±0.07 mg/L | 0.1±0.03 mg/L | P=0.001 |
| COD | 28.2±6.64 mg/L | 7±2.65 mg/L | P=0.007 |
| Calcium hardness | 1.1±0.26 mg/L | 2.2±0.12 mg/L | P=002 |
| Total hardness | 7.5±2.39 mg/L | 8.3±2.02 mg/L | NS |
| Alkalinity | 5.2±1.78 mg/L | 8.7±0.56 mg/L | P=0.03 |
| Chloride | 6.6±1.30 mg/L | 7.4±0.4 mg/L | NS |
| Silica | 2.3±2.11 mg/L | 6.4±0.43 mg/L | P=0.03 |
| Iron | 3.9±3.23 mg/L | 1.9±0.56 mg/L | NS |
| Aluminum | 1.3±1.37 mg/L | 0.1±0.05 mg/L | P=0.014 |
| Mercury (water) | 0.2±0.27 µg/L | 0.1±0.03 µg/L | NS |
| Mercury (sediment) | 0.1±0.01µg/g | 0.3±0.16 µg/g | P=0.05 |
| Mercury (fish) | - | 0.8±0.22 µg/g | - |

Table A1-2 Water quality data of Dry season 2023

| Parameter | Disturbed sites (average) | Undisturbed sites | p |
|---|---|---|---|
| Dissolved oxygen (mg/L) | 4.4±1.00 mg/L | 2.8±1.64 mg/L | NS |
| Dissolved oxygen saturation | 63.4±19.19 % | 36.9±21.16 % | NS |
| pH | 6.7±0.14 | 6.1±0.44 | NS |
| Conductivity | 48.7±5.74 uS/cm | 42.8±1.2 uS/cm | NS |
| Turbidity | 495.7±644.65 NTU | 14.5±6.69 NTU | p<0.001 |
| Total dissolved solids (mg/L) | 34.6±4.05 mg/L | 30.4±0.82 mg/L | NS |
| Total suspended solids | 222.1±343.96 mg/L | 7.1±7.74 mg/L | p<0.001 |
| Salinity | 31.6±1.82 mg/L | 28.3±0.43 mg/L | NS |
| Orthophosphate | 0.05±0.040 mg/L | 0.0±0.01 mg/L | NS |
| Nitrate | 0.0±0.00 mg/L | 0.01±0.010 mg/L | NS |
| Nitrite | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Ammonia | 0.70.0±0.82 mg/L | 0.10.0±0.11 mg/L | NS |
| Calcium hardness | 5.8±1.76 mg/L | 4.0±1.25 mg/L | NS |
| Total hardness | 16.1±0.78 mg/L | 11.0±2.30 mg/L | NS |
| Alkalinity | 12.2±3.71 mg/L | 10.6±0.4 mg/L | P=0.03 |
| Chloride | 9.5±1.01 mg/L | 8.7±0.8 mg/L | NS |
| Silica | 4.4±3.77 mg/L | 7.8±0.26 mg/L | NS |
| Iron | 2.2±0.95 mg/L | 2.6±2.48 mg/L | NS |
| Aluminum | 0.7±0.52 mg/L | 0.3±0.09 mg/L | NS |
| Mercury (water) | 0.2±0.21 µg/L | 0.0±0.03 µg/L | NS |
| Mercury (sediment) | 0.1±0.04 µg/g | 0.3±0.11 µg/g | NS |
| Mercury (fish) | - | - | |

Table A1-3 Water quality data of Dry season 2024

| Parameter | Disturbed sites (average) | Undisturbed sites (average) | p |
|---|---|---|---|
| Dissolved oxygen | 5.0±0.61 mg/L | 4.6±2.13 mg/L | NS |
| Dissolved oxygen saturation | 69.6±15.60 % | 61.5±29.37 % | NS |
| pH | 6.4±0.15 | 6.2±0.22 | NS |
| Conductivity | 49.4±6.82 uS/cm | 41.6±4.77 uS/cm | NS |
| Turbidity | 2944.5±3940.17 NYU | 9.0±1.02 NTU | P<0.001 |
| Total dissolved solids | 35.0±4.98 mg/L | 29.6±3.32 mg/L | NS |
| Total suspended solids | 1333.4±2279.47 mg/L | 157.7±267.23 mg/L | P<0.001 |
| Salinity | 31.3±1.72 mg/L | 27.7±1.64 mg/L | NS |
| Nitrate | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Nitrite | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Ammonia | 5.3±0.14 mg/L | 5.0±0.57 mg/L | NS |
| Calcium hardness | 5.3±0.14 mg/L | 5.0±0.57 mg/L | NS |
| Total hardness | 15.2±0.71 mg/L | 11.4±1.68 mg/L | NS |
| Alkalinity | 13.1±0.50 mg/L | 11.3±1.3 mg/L | NS |
| Chloride | 11.4±4.00 mg/L | 8.4±0.40 mg/L | NS |
| Sulfaat | 2.0±1.41 mg/L | 0.0±0.00 mg/L | P=0.03 |
| Silica | 5.6±0.00 mg/L | 7.2±0.91 mg/L | P<0.05 |
| Iron | 2.51±1.50 mg/L | 0.9±0.16 mg/L | P<0.05 |
| Aluminum | 0.2±0.08 mg/L | 0.4±0.49 mg/L | NS |
| Mercury (water) | 0.0±0.07 µg/L | 0.2±0.09 µg/L | NS |
| Mercury (sediment) | 0.2±0.07 µg/g | 0.2±0.09 µg/g | NS |
| Mercury (fish) | - | 1.5±0.26 µg/g | - |

Table A1-4 Water quality data of Wet season 2024

| Parameter | Disturbed sites (average) | Undisturbed sites (average) | p |
|---|---|---|---|
| Dissolved oxygen | 6.0±0.19 mg/L | 4.2±0.30 mg/L | P=0.001 |
| Dissolved oxygen saturation | 77.9±6.13% | 52.5±2.55 % | P=0.003 |
| pH | 6.0±0.10 | 5.8±0.25 | NS |
| Conductivity | 31.7±5.16 uS/cm | 36.5±2.81 uS/cm | NS |
| Turbidity | 524.0±559.47 NTU | 15.3±0.33 NTU | P=0.05 |
| Total dissolved solids | 22.5±3.61 mg/L | 26.1±1.82 mg/L | NS |
| Total suspended solids | 525.6±811.27 mg/L | 7.0±1.21 mg/L | P=0.05 |
| Salinity | 23.6±1.51 mg/L | 25.5±1.1 mg/L | NS |
| Orthophosphate | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Total phosphate | 0.2±0.09 mg/L | 0.1±0.04 mg/L | NS |
| Nitrate | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Nitrite | 0.0±0.00 mg/L | 0.0±0.00 mg/L | NS |
| Ammonia | 0.3±0.06 mg/L | 0.1±0.07 mg/L | P=0.02 |
| Calcium hardness | 3.8±2.23 mg/L | 4.4±0.25 mg/L | NS |
| Total hardness | 8.0±2.00 mg/L | 11.1±1.54 mg/L | NS |
| Alkalinity | 6.7±1.84 mg/L | 9.3±0.84 mg/L | NS |
| Chloride | 7.0±0.15 mg/L | 6.5±0.16 mg/L | P=0.02 |
| Sulfaat | 1.2±0.76 mg/L | 0.0±0.00 mg/L | P=0.05 |
| Silica | 2.1±0.66 mg/L | 5.7±0.33 mg/L | P=0.001 |
| Iron | 5.8±4.14 mg/L | 3.0±0.73 mg/L | NS |
| Aluminum | 0.7±0.60 mg/L | 0.1±0.02 mg/L | P=0.05 |
| Mercury (water) | 0.2±0.26 µg/L | 0.0±0.04 µg/L | NS |
| Mercury (sediment) | 0.2±0.07 µg/g | 0.2±0.05 µg/g | NS |
| Mercury (fish) | - | 1.18 µg/g | |

Table A1-5 Results of the microbiological analyses. Source: Bureau voor Openbare Gezondheidszorg (BOG)

| Parameter/Location | Total coliform MPN index/100 mL | Fecal coliform MPN index/100 mL | E coli |
|---|---|---|---|
| W19 (U) | 3000 | 3000 | 2300 |
| W15 (D) | 6000 | 6000 | 400 |
| W13 (U) | 2200 | 1300 | 200 |
| W18 (U) | 11000 | 11000 | 200 |
| W17 (D) | 13000 | 13000 | 800 |
| W20 (D) | 5000 | 3000 | 700 |

## Annex 2 Team members

Table A2-1 Team members

| Name | Institution |
|---|---|
| Gwendolyn Landburg | NZCS/CMO |
| Anilkoemar Gangadin | NZCS/CMO |
| Rawien Jairam | NZCS/CMO |
| Sandjieta Matai | NZCS/CMO |
| Shivara Graanoogst | NZCS/CMO |
| Shabaaz Kodan | NZCS/CMO |
| Indra Nanden | NZCS/CMO |
| Jean-Pierre Sabajo | NZCS/CMO |
| Eliza Zschuschen | BBS |
| Iwan Molgo | BBS |
| Sabitrie Jairam-Doerga | BBS |
| Gunovaino Marjanom | BBS |
| Tifany Amatali | BBS |
| Tarawatie Jadoenandansingh-Sewnath | BBS |
| Kapitein Pina | Compagnie Kreek |
| Basja Glenn Boobe | Compagnie Kreek |
| Gringo Landveld | Compagnie Kreek |
| Stephen Tanti | Compagnie Kreek |
| Mitchel | Compagnie Kreek |

## Annex 3 Flora plot data

Table A3-1 List of species in flora plots
Note: Blanc cells indicate that the information is not available or could not be measured

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | warimbo, knopo | *Ischnosiphon gracilis* Körn. | Maranthaceae | | | Shrub | Riparian |
| CK1 | kleine anansi- wawai | *Spathanthus unilateralis* (Rudge) Desv. | Rapateaceae | | | Herb | Riparian |
| CK1 | kaimangrasi | *Diplasia karatifolia* Rich. | Cyperaceae | | | Herb | Riparian |
| CK1 | bugrumaka | *Astrocaryum sciophilum* Pulle | Arecaceae | | | Palm | Riparian |
| CK1 | warimbo, echte | *Ischnosiphon arouma (*Aubl.) Körn. | Maranthaceae | | | Shrub | Riparian |
| CK1 | manaritiki | *Rinorea pubiflora* Sprague & Sandwith | Violaceae | | | Tree | Riparian |
| CK1 | | *Calathea sp.* | Maranthaceae | | | Herb | Riparian |
| CK1 | mispel, kanker | *Henriettea multiflora* Naudin | Melastomataceae | | | Tree | Riparian |
| CK1 | maripa | *Attalea maripa* Mart. | Arecaceae | | | Palm | Riparian |
| CK1 | rafrunyangnyang, middenblad | *Sloanea sp.* | Elaeocarpaceae | 19.5 | 16 | Tree | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | fungu, zwarte | *Licania sp.* | Chrysobalanaceae | 18.3 | 15 | Tree | Riparian |
| CK1 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 42 | 18 | Tree | Riparian |
| CK1 | yariyari, gelebast | *Duguetia sp.* | Annonaceae | 14.5 | 14 | Tree | Riparian |
| CK1 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 35.3 | 19 | Tree | Riparian |
| CK1 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | Riparian |
| CK1 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 19.5 | 13 | Tree | Riparian |
| CK1 | manpikapika | *Ephedranthus guianensis* R.E.Fr. | Annonaceae | 10.8 | 12 | Tree | Riparian |
| CK1 | warimbo, kleine | *Monotagma plurispicatum* K.Schum. | Maranthaceae | | | Shrub | Riparian |
| CK1 | bruduwiri | *Dianthera secunda* Griseb. | Acanthaceae | | | Herb | Riparian |
| CK1 | cyper | *Calyptrocarya glomerulata* Urb. | Cyperaceae | | | Herb | Riparian |
| CK1 | cyper | *Becquerelia cymosa* Brongn. | Cyperaceae | | | Herb | Riparian |
| CK1 | manpikapika | *Ephedranthus guianensis* R.E.Fr. | Annonaceae | 16.3 | 13 | Tree | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 44.4 | 20 | Tree | Riparian |
| CK1 | manaritiki | *Rinorea pubiflora* Sprague & Sandwith | Violaceae | 10.5 | 8 | Tree | Riparian |
| CK1 | purperhart | *Peltogyne venosa* (Vahl) Benth. | Fabaceae | 14.5 | 9 | Tree | Riparian |
| CK1 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 39 | 21 | Tree | Riparian |
| CK1 | gawtri, hoogbos | *Cupania scrobiculata* Rich. | Sapindaceae | 14.3 | 15 | Tree | Riparian |
| CK1 | kleine anansi- wawai | *Rapatea paludosa* Aubl. | Rapateaceae | | | Shrub | Riparian |
| CK1 | bofrukasaba | *Palicourea tomentosa* (Aubl.) Borhidi | Rubiaceae | | | Herb | Riparian |
| CK1 | warimbo, kleine | *Monotagma plurispicatum* K.Schum. | Maranthaceae | | | Shrub | Riparian |
| CK1 | warimbo, knopo | *Ischnosiphon gracilis* Körn. | Maranthaceae | | | Shrub | Riparian |
| CK1 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 15 | 14 | Tree | Riparian |
| CK1 | hoepelhout | *Copaifera guyanensis* Desf. | Fabaceae | 36.1 | 21 | Tree | Riparian |
| CK1 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 46 | 21 | Tree | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | neku-udu | *Alexa wachenheimii* Benoist | Fabaceae | 24.3 | 19 | Tree | Riparian |
| CK1 | donke | *Dieffenbachia seguine* Schott | Araceae | | | Herb | Riparian |
| CK1 | waterlelie | *Crinum erubescens* L.f. | Amaryllidaceae | | | Herb | Riparian |
| CK1 | pingping | *Parodiolyra micrantha* (Kunth) Davidse & Zuloaga | Poaceae | | | Herb | Riparian |
| CK1 | bambamaka | *Desmoncus polyacanthos* Mart. | Arecaceae | | | Palm | Riparian |
| CK1 | okerhout | *Sterculia pruriens* (Aubl.) K.Schum | Malvaceae | 45 | 23 | Tree | Riparian |
| CK1 | Boskoffie | *Faramea guianensis* (Aubl.) Bremek. | Rubiaceae | 11.5 | 6 | Tree | Riparian |
| CK1 | gawtri, hoogbos | *Cupania scrobiculata* Rich. | Sapindaceae | 13.4 | 8 | Tree | Riparian |
| CK1 | donke | *Dieffenbachia seguine* Schott | Araceae | | | Herb | Riparian |
| CK1 | switbonki, witte bast | *Inga alata* Benoist | Fabaceae | 10.5 | 8 | Tree | Riparian |
| CK1 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 25.7 | 18 | Tree | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | yamboka, zwarte | *Pouteria melanopoda* Eyma | Sapotaceae | 11.1 | 8 | Tree | Riparian |
| CK1 | gronfolo, laagland | *Qualea coerulea* Aubl. | Vochysiaceae | 54.6 | 24 | Tree | Riparian |
| CK1 | tasi, man | *Geonoma deversa* Kunth | Arecaceae | | | Palm | Riparian |
| CK1 | orchidee | *Palmorchis pabstii* Veyret | Orchidaceae | | | Orchid | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 10.7 | 7 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 14.8 | 7 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 16.5 | 7 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11.6 | 14 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11.7 | 14 | Palm | Riparian |
| CK1 | boskusuwe | *Sloanea grandiflora* Sm. | Elaeocarpaceae | 11.5 | 8 | Tree | Riparian |
| CK1 | boskusuwe | *Sloanea grandiflora* Sm. | Elaeocarpaceae | 23 | 14 | Tree | Riparian |
| CK1 | krapa, witte | *Carapa procera* DC. | Meliceae | 22.8 | 16 | Tree | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | melisali | *Trichilia quadrijuga* Kunth | Meliceae | 10.4 | 7 | Tree | Riparian |
| CK1 | kaiman-udu | *Laetia procera* (Poepp.) Eichler | Salicaceae | 42.8 | 22 | Tree | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11.8 | 12 | Palm | Riparian |
| CK1 | kwari, wana | *Vochysia tomentosa* (G.Mey.) DC. | Vochysiaceae | 79.8 | 28 | Tree | Riparian |
| CK1 | boskusuwe | *Sloanea grandiflora* Sm. | Elaeocarpaceae | 18.5 | 7 | Tree | Riparian |
| CK1 | okerhout | *Sterculia pruriens* (Aubl.) K.Schum | Malvaceae | 20.7 | 14 | Tree | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11 | 14 | Palm | Riparian |
| CK1 | yamboka, zwarte | *Pouteria melanopoda* Eyma | Sapotaceae | 15.3 | 9 | Tree | Riparian |
| CK1 | boskusuwe | *Sloanea grandiflora* Sm. | Elaeocarpaceae | 15.5 | 7 | Tree | Riparian |
| CK1 | switbonki, kokobeman-anu | *Zygia latifolia* (L.) Fawc. & Rendle | Fabaceae | 14.9 | 8 | Tree | Riparian |
| CK1 | switbonki, kokobeman-anu | *Zygia latifolia* (L.) Fawc. & Rendle | Fabaceae | 11.3 | 7 | Tree | Riparian |
| CK1 | keskesmaka | *Bactris sp.* | Arecaceae | | | Palm | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | varen | Adiantum fuliginosum Fée | Pteridaceae | | | Herb | Riparian |
| CK1 | pingping | *Parodiolyra micrantha* (Kunth) Davidse & Zuloaga | Poaceae | | | Herb | Riparian |
| CK1 | watramamabobi | *Gustavia augusta* L. | Lecythidaceae | 12 | 7 | Tree | Riparian |
| CK1 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 41 | 24 | Tree | Riparian |
| CK1 | manaritiki | *Rinorea pubiflora* Sprague & Sandwith | Violaceae | 12.5 | 6 | Tree | Riparian |
| CK1 | bamboe gras | *Pariana radiciflora Sagot ex Döll* | Poaceae | | | Herb | Riparian |
| CK1 | okerhout | *Sterculia pruriens* (Aubl.) K.Schum | Malvaceae | 50 | 23 | Tree | Riparian |
| CK1 | watramamabobi | *Gustavia augusta* L. | Lecythidaceae | 11.6 | 7 | Tree | Riparian |
| CK1 | watramamabobi | *Gustavia augusta* L. | Lecythidaceae | 11.2 | 7 | Tree | Riparian |
| CK1 | mapa, kleinbladige | *Parahancornia fasciculata* (Poir.) Benoist | Apocynaceae | 16.7 | 8 | Tree | Riparian |
| CK1 | neku-udu | *Alexa wachenheimii* Benoist | Fabaceae | 29 | 15 | Tree | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | gandu | *Swartzia panacoco* (Aubl.) Cowan | Fabaceae | 28 | 13 | Tree | Riparian |
| CK1 | tete-udu, gele bast | *Lecythis poiteaui* O.Berg | Lecythidaceae | 16.9 | 9 | Tree | Riparian |
| CK1 | tete-udu, gele bast | *Lecythis poiteaui* O.Berg | Lecythidaceae | 18.6 | 9 | Tree | Riparian |
| CK1 | neku-udu | *Alexa wachenheimii* Benoist | Fabaceae | 75 | 25 | Tree | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11.1 | 14 | Palm | Riparian |
| CK1 | | Tetrapterys sp | Malpighiaceae | | | Liana | Riparian |
| CK1 | watrabiri, hoogland | *Macrolobium sp.* | Fabaceae | 32.9 | 19 | Tree | Riparian |
| CK1 | | *Gesneria sp.* | Gesneriaceae | | | Herb | Riparian |
| CK1 | waterlelie | *Crinum erubescens* L.f. | Amaryllidaceae | | | Herb | Riparian |
| CK1 | warimbo, echte | *Ischnosiphon obliquus* (Rudge) Körn | Maranthaceae | | | Shrub | Riparian |
| CK1 | sangrafu | *Costus scabe*r Ruiz & Pav. | Costaceae | | | Shrub | Riparian |
| CK1 | varen | Adiantum fuliginosum Fée | Pteridaceae | | | Herb | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 12.9 | 13 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11 | 14 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11.3 | 13 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11.3 | 14 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11 | 13 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11.8 | 14 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 10.5 | 13 | Palm | Riparian |
| CK1 | pina | *Euterpe oleracea* Mart. | Arecaceae | 10.8 | 11 | Palm | Riparian |
| CK1 | snekitaya | *Dracontium asperum* K.Koch | Araceae | | | Herb | Riparian |
| CK1 | warimbo, kleine | *Monotagma plurispicatum* K.Schum. | Maranthaceae | | | Shrub | Riparian |
| CK1 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | Riparian |
| CK1 | dyedu, rode, kleinbladige | *Tachigali albiflora* (Benoist) Zarucchi & Herend. | Fabaceae | 30.2 | 14 | Tree | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 22.8 | 15 | Tree | Riparian |
| CK1 | dyadidya | *Tachigali melinonii* (Harms) Zarucchi & Herend. | Fabaceae | 14.8 | 14 | Tree | Riparian |
| CK1 | agrobigi, grootbloemig | *Parkia nitida* Miq. | Fabaceae | 14.2 | 13 | Tree | Riparian |
| CK1 | dyedu, rode, kleinbladige | *Tachigali albiflora* (Benoist) Zarucchi & Herend. | Fabaceae | 14.7 | 14 | Tree | Riparian |
| CK1 | pokai tongo | *Heliconia richardiana Miq.* | Heliconiaceae | | | Herb | Riparian |
| CK1 | varen | Adiantum fuliginosum Fée | Pteridaceae | | | Herb | Riparian |
| CK1 | orchid | *Scaphyglottis modesta* (Rchb.f.) Schltr. | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Notylia sagittifera* (Kunth) Link, Klotzsch & Otto | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Dichaea picta* Rchb.f. | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Stelis argentata* Lindl. | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Pleurothallis sp* | orchidaceae | | | Herb | Riparian |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK1 | orchid | *Maxillaria lutescens* Scheidw. | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Epidendrum nocturnum* Jacq. | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Andreettaea semperflorens* (Lindl.) A.Doucette | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Maxillaria subrepens* (Rolfe) Schuit. & M.W.Chase | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Anathallis polygonoides* (Griseb.) Pridgeon & M.W.Chase | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Cochleanthes flabelliformis* (Sw.) R.E.Schult. & Garay | orchidaceae | | | Herb | Riparian |
| CK1 | orchid | *Ornithocephalus ciliatus* Lindl. | orchidaceae | | | Herb | Riparian |
| CK1 | warimbo, echte | *Ischnosiphon obliquus* (Rudge) Körn | Maranthaceae | | | Shrub | Riparian |
| CK2 | umabarblak, bergi | *Eschweilera ovata* Mart. ex Miers | Lecythidaceae | 17.1 | 15 | Tree | High dryland |
| CK2 | umabarblak, bergi | *Eschweilera ovata* Mart. ex Miers | Lecythidaceae | 13.1 | 14 | Tree | High dryland |
| CK2 | maripa, bergi | *Attalea sp.* | Arecaceae | | | Palm | High dryland |
| CK2 | bosdruif | *Heisteria cauliflora Sm.* | Olacaceae | | | shrub | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK2 | | *Voyria caerulea Aubl.* | Gentianaceae | | | Herb | High dryland |
| CK2 | behaarde psychotria | *Palicourea sp.* | Rubiaceae | | | Herb | High dryland |
| CK2 | varen | *Adiantum fuliginosum* Fée | Pteridaceae | | | Fern | High dryland |
| CK2 | Boszuurzak, langbladige | *Annona densicoma* Mart. | Annonaceae | 11.3 | 12 | Tree | High dryland |
| CK2 | Bosknepa, eetbare | *Talisia megaphylla* Sagot | Sapindaceae | 11.1 | 12 | Tree | High dryland |
| CK2 | kleine anansi- wawai | *Rapatea paludosa* Aubl. | Rapateaceae | | | Shrub | High dryland |
| CK2 | varen | *Trichomanes pinnatum* Hedw. | Hymenophyllaceae | | | Fern | High dryland |
| CK2 | calyptro gras | *Calyptrocarya glomerulata* Urb. | Cyperaceae | | | Herb | High dryland |
| CK2 | cyper gras | *Becquerelia cymosa* Brongn. | Cyperaceae | | | Herb | High dryland |
| CK2 | | *Mapania macrophylla* (Böck.) H. Pfeiff. | Cyperaceae | | | Herb | High dryland |
| CK2 | bugrumaka | *Astrocaryum sciophilum* Pulle | Arecaceae | | | Palm | High dryland |
| CK2 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK2 | tingimonisali | *Tetragastris panamensis* (Engl.) Kuntze | Burseraceae | 26.3 | 22 | Tree | High dryland |
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 11 | 13 | Tree | High dryland |
| CK2 | Spikri udu | *Mouriri crassifolia* Sagot | Melastomataceae | 12.5 | 14 | Tree | High dryland |
| CK2 | taya-udu, geelbloemige | *Paypayrola guianensis* Aubl. | Violaceae | 10.7 | 8 | Tree | High dryland |
| CK2 | pisi, wana | *Ocotea splendens* (Meisn.) Baill. | Lauraceae | 33.6 | 19 | Tree | High dryland |
| CK2 | kabbes, zwarte | *Diplotropis purpurea* (Rich.) Amshoff | Fabaceae | 47.5 | 25 | Tree | High dryland |
| CK2 | pangapanga | *Palicourea guianensis* Aubl. | Rubiaceae | 11.5 | 12 | Tree | High dryland |
| CK2 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 19.5 | 12 | Tree | High dryland |
| CK2 | warimbo, echte | *Ischnosiphon obliquus* (Rudge) Körn | Maranthaceae | | | Shrub | High dryland |
| CK2 | pintolokus, witte | *Martiodendron parviflorum* (Amshoff) Köppen | Fabaceae | 11.1 | 12 | Tree | High dryland |
| CK2 | switbonki, witte bast | *Inga alata* Benoist | Fabaceae | 10.1 | 8 | Tree | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK2 | pintolokus, witte | *Martiodendron parviflorum* (Amshoff) Köppen | Fabaceae | 15 | 15 | Tree | High dryland |
| CK2 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | High dryland |
| CK2 | walaba | *Eperua falcata* Aubl. | Fabaceae | 17.8 | 15 | Tree | High dryland |
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 21 | 18 | Tree | High dryland |
| CK2 | ijzerhart | *Bocoa prouacensis* Aubl. | Fabaceae | 32.2 | 18 | Tree | High dryland |
| CK2 | | *Olyra obliquifolia* Steud. | Poaceae | | | Herb | High dryland |
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 30.5 | 21 | Tree | High dryland |
| CK2 | tingimonisali | *Tetragastris panamensis* (Engl.) Kuntze | Burseraceae | 19.1 | 17 | Tree | High dryland |
| CK2 | | *Olyra obliquifolia* Steud. | Poaceae | | | Herb | High dryland |
| CK2 | | *Diplasia karatifolia* Rich. | Poaceae | | | Herb | High dryland |
| CK2 | kleine anansi- wawai | *Rapatea paludosa* Aubl. | Rapateaceae | | | Shrub | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK2 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 21.7 | 18 | Tree | High dryland |
| CK2 | walaba | *Eperua falcata* Aubl. | Fabaceae | 24.3 | 17 | Tree | High dryland |
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 18.8 | 13 | Tree | High dryland |
| CK2 | | *Bisboeckelera microcephala* | Cyperaceae | | | Herb | High dryland |
| CK2 | Boszuurzak, langbladige | *Annona densicoma* Mart. | Annonaceae | 12 | 14 | Tree | High dryland |
| CK2 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 16 | 15 | Tree | High dryland |
| CK2 | lika-udu | *Antonia ovata* Pohl | Loganiaceae | 14.5 | 15 | Tree | High dryland |
| CK2 | umabarblak, bergi | *Eschweilera ovata* Mart. ex Miers | Lecythidaceae | 17 | 14 | Tree | High dryland |
| CK2 | walaba | *Eperua falcata* Aubl. | Fabaceae | 51.7 | 24 | Tree | High dryland |
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 11.7 | 13 | Tree | High dryland |
| CK2 | | *Bisboeckelera microcephala* | Cyperaceae | | | Herb | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK2 | | Olyra obliquifolia Steud. | Poaceae | | | Herb | High dryland |
| CK2 | | Diplasia karatifolia Rich. | Cyperaceae | | | Herb | High dryland |
| CK2 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | High dryland |
| CK2 | bugrumaka | *Astrocaryum sciophilum* Pulle | Arecaceae | | | Palm | High dryland |
| CK2 | taya-udu, geelbloemige | *Paypayrola guianensis* Aubl. | Violaceae | 10.4 | 11 | Tree | High dryland |
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 13.3 | 15 | Tree | High dryland |
| CK2 | ijzerhart | *Bocoa prouacensis* Aubl. | Fabaceae | 37.5 | 19 | Tree | High dryland |
| CK2 | walaba | *Eperua falcata* Aubl. | Fabaceae | 14.3 | 16 | Tree | High dryland |
| CK2 | kersi, sekrepatu | *Eugenia patrisii* Vahl | Myrtaceae | 12 | 13 | Tree | High dryland |
| CK2 | | *Calathea sp.* | Maranthaceae | | | Herb | High dryland |
| CK2 | tingimonisali | *Tetragastris panamensis* (Engl.) Kuntze | Burseraceae | 23.5 | 15 | Tree | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 13.1 | 4 | Tree | High dryland |
| CK2 | basralokus | *Dicorynia guianensis* Amshoff | Fabaceae | 41.5 | 22 | Tree | High dryland |
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 25.8 | 19 | Tree | High dryland |
| CK2 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 11.2 | 13 | Tree | High dryland |
| CK2 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | High dryland |
| CK2 | varen | *Metaxya scalaris* Tuomisto & G.G.Cárdenas | Metaxyaceae | | | Herb | High dryland |
| CK2 | | *Calyptrocarya glomerulata* Urb. | Cyperaceae | | | Herb | High dryland |
| CK2 | walaba | *Eperua falcata* Aubl. | Fabaceae | 10.3 | 12 | Tree | High dryland |
| CK2 | lontukasi, geelbloemige | *Byrsonima crassifolia* Kunt | Malpighiaceae | 25.5 | 18 | Tree | High dryland |
| CK2 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 11.9 | 13 | Tree | High dryland |
| CK2 | tingimoni, rode bast | *Protium polybotryum* Engl. | Burseraceae | 22.7 | 14 | Tree | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK2 | switbonki, witte bast | *Inga alata* Benoist | Fabaceae | 28.3 | 23 | Tree | High dryland |
| CK2 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 28.7 | 24 | Tree | High dryland |
| CK2 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 33.2 | 24 | Tree | High dryland |
| CK2 | pina | *Euterpe oleracea* Mart. | Arecaceae | 13 | 14 | Palm | High dryland |
| CK2 | pina | *Euterpe oleracea* Mart. | Arecaceae | 10.5 | 10 | Palm | High dryland |
| CK2 | switbonki, witte bast | *Inga alata* Benoist | Fabaceae | 14 | 13 | Tree | High dryland |
| CK2 | kankan-udu | *Apeiba petoumo* Aubl. | Malvaceae | 42.5 | 25 | Tree | High dryland |
| CK2 | walaba | *Eperua falcata* Aubl. | Fabaceae | 48.3 | 24 | Tree | High dryland |
| CK2 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 10.4 | 13 | Tree | High dryland |
| CK2 | switbonki, witte bast | *Inga alata* Benoist | Fabaceae | 14.1 | 16 | Tree | High dryland |
| CK2 | switbonki, witte bast | *Inga alata* Benoist | Fabaceae | 40 | 23 | Tree | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK2 | walaba | *Eperua falcata* Aubl. | Fabaceae | 47.5 | 24 | Tree | High dryland |
| CK2 | ingipipa, kleinbaldig | *Couratari multiflora* (Sm.) Eyma | Lecythidaceae | 23.6 | 15 | Tree | High dryland |
| CK2 | mispel, pari-udu | *Miconia alata* (Aubl.) DC. | Melastomataceae | 15.5 | 14 | Tree | High dryland |
| CK2 | granbusi palulu (bosbanaan) | *Phenakospermum guyannense* (A.Rich.) Endl. ex Miq. | Strelitziaceae | | | Herb | High dryland |
| CK2 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 10.3 | 5 | Tree | High dryland |
| CK2 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 15.6 | 13 | Tree | High dryland |
| CK2 | konkoni-udu, hoogland | *Gustavia hexapetala* Sm. | Lecythidaceae | 11.3 | 12 | Tree | High dryland |
| CK2 | orchid | *Maxillaria lutescens* Scheidw. | orchidaceae | | | Herb | High dryland |
| CK2 | Redi udu | Casearia arborea (Rich.) Urb. | Salicaceae | 13.8 | 15 | Tree | High dryland |
| CK3 | lontukasi, geelbloemige | *Byrsonima crassifolia* Kunt | Malpighiaceae | 22.8 | 14 | Tree | Secondary |
| CK3 | maripa | *Attalea maripa* Mart. | Arecaceae | 30.8 | 16 | Palm | Secondary |
| CK3 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | babunnefi | *Scleria secans* Urb. | Cyperaceae | | | Herb | Secondary |
| CK3 | babunnefi | *Scleria stipularis* Nees | Cyperaceae | | | Herb | Secondary |
| CK3 | mispel, kanker | *Henriettea multiflora* Naudin | Melastomataceae | | | Herb | Secondary |
| CK3 | | *Calyptrocarya glomerulata* Urb. | Cyperaceae | | | Herb | Secondary |
| CK3 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | Secondary |
| CK3 | pinya, man | *Vismia macrophylla* Kunth | Hypericaceae | 17.1 | 8 | Tree | Secondary |
| CK3 | maripa | *Attalea maripa* Mart. | Arecaceae | 31.2 | 13 | Palm | Secondary |
| CK3 | maripa | *Attalea maripa* Mart. | Arecaceae | 31.4 | 13 | Palm | Secondary |
| CK3 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 15 | 14 | Tree | Secondary |
| CK3 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 26 | 13 | Tree | Secondary |
| CK3 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 19.2 | 12 | Tree | Secondary |
| CK3 | watratitei | *Doliocarpus sp.* | Dilleniaceae | | | Liana | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | Secondary |
| CK3 | kandra-udu | *Palicourea longiflora* DC. | Rubiaceae | 17.4 | 12 | Tree | Secondary |
| CK3 | miconia | *Miconia ciliata* (Rich.) DC. | Melastomataceae | | | Shrub | Secondary |
| CK3 | warimbo, knopo | *Ischnosiphon gracilis* Körn. | Maranthaceae | | | Shrub | Secondary |
| CK3 | maripa, bergi | *Attalea sp.* | Arecaceae | | | Palm | Secondary |
| CK3 | | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | Secondary |
| CK3 | kleine anansi- wawai | *Rapatea paludosa* Aubl. | Rapateaceae | | | Shrub | Secondary |
| CK3 | miconia | *Miconia ciliata* (Rich.) DC. | Melastomataceae | | | Shrub | Secondary |
| CK3 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | Secondary |
| CK3 | | *Calyptrocarya glomerulata* Urb. | Cyperaceae | | | Herb | Secondary |
| CK3 | babunnefi | *Scleria stipularis* Nees | Cyperaceae | | | Herb | Secondary |
| CK3 | pinya, man | *Vismia macrophylla* Kunth | Hypericaceae | 11.5 | 7 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | pedreku, rode | *Xylopia discreta* Sprague & Hutch | Annonaceae | 11.4 | 13 | Tree | Secondary |
| CK3 | kaimangrasi | *Diplasia karatifolia* Rich. | Cyperaceae | | | Herb | Secondary |
| CK3 | pinya, uma | *Vismia guianensis* (Aubl.) Pers. | Hypericaceae | 11.6 | 11 | Tree | Secondary |
| CK3 | sangrafu | *Costus scabe*r Ruiz & Pav. | Costaceae | | | Shrub | Secondary |
| CK3 | warimbo, knopo | *Ischnosiphon gracilis* Körn. | Maranthaceae | | | Shrub | Secondary |
| CK3 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | Secondary |
| CK3 | mispel | *Miconia cf. dependens* | Melastomataceae | 13 | 9 | Tree | Secondary |
| CK3 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 14 | 13 | Tree | Secondary |
| CK3 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 10.7 | 10 | Tree | Secondary |
| CK3 | maripa | *Attalea maripa* Mart. | Arecaceae | 18.5 | 18 | Palm | Secondary |
| CK3 | | *Calyptrocarya glomerulata* Urb. | Cyperaceae | | | Herb | Secondary |
| CK3 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 11.1 | 7 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | passiflora | *Passiflora glandulosa* Cav. | Passifloracea | | | Liana | Secondary |
| CK3 | granbusi palulu (bosbanaan) | *Phenakospermum guyannense* (A.Rich.) Endl. ex Miq. | Strelitziaceae | | | Herb | Secondary |
| CK3 | miconia | *Miconia ciliata* (Rich.) DC. | Melastomataceae | | | Shrub | Secondary |
| CK3 | | *Savaugesia erecta* L. | Ochnaceae | | | Herb | Secondary |
| CK3 | | *Echinolaena inflexa* (Poir.) Chase | Poaceae | | | Herb | Secondary |
| CK3 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 13.7 | 13 | Tree | Secondary |
| CK3 | mispel, pari-udu | *Miconia alata* (Aubl.) DC. | Melastomataceae | 11 | 8 | Tree | Secondary |
| CK3 | lontukasi, geelbloemige | *Byrsonima crassifolia* Kunt | Malpighiaceae | 20.6 | 14 | Tree | Secondary |
| CK3 | pinya, man | *Vismia macrophylla* Kunth | Hypericaceae | 13.4 | 12 | Tree | Secondary |
| CK3 | sopo-udu | *Jupunba trapezifolia* (Benth.) M.V.B.Soares, M.P.Morim & Iganci | Fabaceae | 10.9 | 12 | Tree | Secondary |
| CK3 | sopo-udu | *Jupunba trapezifolia* (Benth.) M.V.B.Soares, M.P.Morim & Iganci | Fabaceae | 16.7 | 14 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | sopo-udu | *Jupunba trapezifolia* (Benth.) M.V.B.Soares, M.P.Morim & Iganci | Fabaceae | 20.7 | 14 | Tree | Secondary |
| CK3 | sopo-udu | *Jupunba trapezifolia* (Benth.) M.V.B.Soares, M.P.Morim & Iganci | Fabaceae | 23 | 15 | Tree | Secondary |
| CK3 | sopo-udu | *Jupunba trapezifolia* (Benth.) M.V.B.Soares, M.P.Morim & Iganci | Fabaceae | 13.1 | 13 | Tree | Secondary |
| CK3 | sopo-udu | *Jupunba trapezifolia* (Benth.) M.V.B.Soares, M.P.Morim & Iganci | Fabaceae | 18.4 | 15 | Tree | Secondary |
| CK3 | tabakabron | *Croton matourensis* Aubl. | Euphorbiaceae | 14 | 14 | Tree | Secondary |
| CK3 | tabakabron | *Croton matourensis* Aubl. | Euphorbiaceae | 14 | 14 | Tree | Secondary |
| CK3 | pina | *Euterpe oleracea* Mart. | Arecaceae | 12.5 | 15 | Palm | Secondary |
| CK3 | tabakabron | *Croton matourensis* Aubl. | Euphorbiaceae | 20.1 | 16 | Tree | Secondary |
| CK3 | maripa | *Attalea maripa* Mart. | Arecaceae | | | Palm | Secondary |
| CK3 | warimbo, echte | *Ischnosiphon obliquus* (Rudge) Körn | Maranthaceae | | | Shrub | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | pedrekupisi, wit | *Xylopia nitida* Dunal | Annonaceae | 25.5 | 20 | Tree | Secondary |
| CK3 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11 | 13 | Palm | Secondary |
| CK3 | pina | *Euterpe oleracea* Mart. | Arecaceae | 11.7 | 16 | Palm | Secondary |
| CK3 | pina | *Euterpe oleracea* Mart. | Arecaceae | 12.3 | 15 | Palm | Secondary |
| CK3 | granbusi palulu (bosbanaan) | *Phenakospermum guyannense* (A.Rich.) Endl. ex Miq. | Strelitziaceae | | | Herb | Secondary |
| CK3 | maripa | *Attalea maripa* Mart. | Arecaceae | | | Palm | Secondary |
| CK3 | Bosknepa, eetbare | *Talisia megaphylla* Sagot | Sapindaceae | | | Tree | Secondary |
| CK3 | busikandra | *Palicourea croceoides* Ham. | Rubiaceae | | | Herb | Secondary |
| CK3 | pina | *Euterpe oleracea* Mart. | Arecaceae | 12 | 14 | Palm | Secondary |
| CK3 | pina | *Euterpe oleracea* Mart. | Arecaceae | 10.3 | 13 | Palm | Secondary |
| CK3 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 23.7 | 13 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 16.3 | 14 | Tree | Secondary |
| CK3 | | *Calathea sp.* | Maranthaceae | | | Herb | Secondary |
| CK3 | watratitei | *Doliocarpus sp.* | Dilleniaceae | | | Liana | Secondary |
| CK3 | lontukasi, geelbloemige | *Byrsonima crassifolia* Kunt | Malpighiaceae | 12.9 | 15 | Tree | Secondary |
| CK3 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 26.2 | 16 | Tree | Secondary |
| CK3 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 17.1 | 13 | Tree | Secondary |
| CK3 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 10.1 | 9 | Tree | Secondary |
| CK3 | maripa, bergi | *Attalea sp.* | Arecaceae | | | Palm | Secondary |
| CK3 | | *Macherium sp.* | Fabaceae | | | Liana | Secondary |
| CK3 | lika-udu | *Antonia ovata* Pohl | Loganiaceae | 18.4 | 15 | Tree | Secondary |
| CK3 | Lele-tiki | *Simaba guianensis* Aubl. | Simarubaceae | | | Tree | Secondary |
| CK3 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 20.7 | 16 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 22.9 | 16 | Tree | Secondary |
| CK3 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 10.8 | 13 | Tree | Secondary |
| CK3 | granbusi palulu (bosbanaan) | *Phenakospermum guyannense* (A.Rich.) Endl. ex Miq. | Strelitziaceae | | | Herb | Secondary |
| CK3 | lika-udu | *Antonia ovata* Pohl | Loganiaceae | 16.8 | 14 | Tree | Secondary |
| CK3 | lika-udu | *Antonia ovata* Pohl | Loganiaceae | 14.3 | 14 | Tree | Secondary |
| CK3 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 21.1 | 19 | Tree | Secondary |
| CK3 | lika-udu | *Antonia ovata* Pohl | Loganiaceae | 10.9 | 13 | Tree | Secondary |
| CK3 | anawra, hoogland | *Couepia guianensis* Aubl. | Chrysobalanaceae | 10.3 | 13 | Tree | Secondary |
| CK3 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 13.4 | 15 | Tree | Secondary |
| CK3 | pedrekupisi, wit | *Xylopia nitida* Dunal | Annonaceae | 27 | 21 | Tree | Secondary |
| CK3 | lika-udu | *Antonia ovata* Pohl | Loganiaceae | 15.1 | 14 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK3 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 34.2 | 18 | Tree | Secondary |
| CK3 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | Secondary |
| CK3 | | *Calyptrocarya glomerulata* Urb. | Cyperaceae | | | Herb | Secondary |
| CK3 | foman | *Chaetocarpus schomburgkianus* (Kuntze) Pax & K.Hoffm | Peraceae | 21.8 | 16 | Tree | Secondary |
| CK3 | dyadidya | *Tachigali melinonii* (Harms) Zarucchi & Herend. | Fabaceae | 17.1 | 16 | Tree | Secondary |
| CK4 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 24.8 | 14 | Tree | High dryland |
| CK4 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | High dryland |
| CK4 | bofrukasaba | *Palicourea tomentosa* (Aubl.) Borhidi | Rubiaceae | | | Herb | High dryland |
| CK4 | merkitiki | *Tabernaemontana undulata* Vahl | Apocynaceae | | | Herb | High dryland |
| CK4 | | *Olyra obliquifolia* Steud. | Poaceae | | | Herb | High dryland |
| CK4 | varen | *Adiantum fuliginosum* Fée | Pteridaceae | | | Fern | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK4 | bergibita | *Geissospermum sericeum* Benth. & Hook.f. ex Miers | Apocynaceae | 72.8 | 26 | Tree | High dryland |
| CK4 | Bosknepa, eetbare | *Talisia megaphylla* Sagot | Sapindaceae | 14.5 | 13 | Tree | High dryland |
| CK4 | dyadidya | *Tachigali melinonii* (Harms) Zarucchi & Herend. | Fabaceae | 17.5 | 14 | Tree | High dryland |
| CK4 | tingimoni, rode bast | *Protium polybotryum* Engl. | Burseraceae | 45.5 | 16 | Tree | High dryland |
| CK4 | umabarblak, bergi | *Eschweilera ovata* Mart. ex Miers | Lecythidaceae | 10 | 11 | Tree | High dryland |
| CK4 | taya-udu, geelbloemige | *Paypayrola guianensis* Aubl. | Violaceae | 10.1 | 11 | Tree | High dryland |
| CK4 | peritiki | *Heisteria densifrons* Engl. | Olacaceae | | | Tree | High dryland |
| CK4 | ayo-ayo | *Hieronyma alchorneoides* Allemão | Phyllanthaceae | 17.4 | 16 | Tree | High dryland |
| CK4 | pina, monki-monki | *Euterpe precatoria* Mart. | Arecaceae | | | Palm | High dryland |
| CK4 | kototiki | *Mabea piriri* Aubl. | Euphorbiaceae | 20.7 | 15 | Tree | High dryland |
| CK4 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK4 | kumbu | *Oenocarpus bacaba* Mart. | Arecaceae | 19.6 | 16 | Palm | High dryland |
| CK4 | bugrumaka | *Astrocaryum sciophilum* Pulle | Arecaceae | | | Palm | High dryland |
| CK4 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | High dryland |
| CK4 | konkoni-udu, hoogland | *Gustavia hexapetala* Sm. | Lecythidaceae | 17.7 | 15 | Tree | High dryland |
| CK4 | warimbo, knopo | *Ischnosiphon gracilis* Körn. | Maranthaceae | | | Shrub | High dryland |
| CK4 | gubaya | *Jacaranda copaia* (Aubl.) D.Don | Bignoniaceae | 15.6 | 16 | Tree | High dryland |
| CK4 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 13 | 14 | Tree | High dryland |
| CK4 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 15.3 | 14 | Tree | High dryland |
| CK4 | smilax | *Smilax siphilitica* Humb. & Bonpl. ex Willd. | Smilacaceae | | | Liana | High dryland |
| CK4 | sekrepatu trapu | *Bauhinia sp.* | Bignoniaceae | | | Liana | High dryland |
| CK4 | tafrabon, knopo | *Cordia nodosa* Lam. | Boraginaceae | 12.3 | 9 | Tree | High dryland |
| CK4 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK4 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | High dryland |
| CK4 | jankrappa | *Talisia mollis* Cambess. | Sapindaceae | 20.5 | 15 | Tree | High dryland |
| CK4 | abrasa | *Clusia platystigma* Eyma | Clusiaceae | 12.5 | 14 | Hemi-Ephiphyt | High dryland |
| CK4 | kopi | *Goupia glabra* Aubl. | Goupiaceae | 45.5 | 24 | Tree | High dryland |
| CK4 | taya-udu, geelbloemige | *Paypayrola guianensis* Aubl. | Violaceae | 10.2 | 8 | Tree | High dryland |
| CK4 | gubaya | *Jacaranda copaia* (Aubl.) D.Don | Bignoniaceae | 15.3 | 16 | Tree | High dryland |
| CK4 | yakanta, rode bast | *Dendrobangia boliviana* Rusby | Cardiopteridaceae | 14.1 | 12 | Tree | High dryland |
| CK4 | taya-udu, geelbloemige | *Paypayrola guianensis* Aubl. | Violaceae | 13.3 | 13 | Tree | High dryland |
| CK4 | pisi, wana | *Ocotea splendens* (Meisn.) Baill. | Lauraceae | 10.5 | 9 | Tree | High dryland |
| CK4 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 15.1 | 15 | Tree | High dryland |
| CK4 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 17.8 | 9 | Tree | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK4 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 20.8 | 16 | Tree | High dryland |
| CK4 | tafrabon, knopo | *Cordia nodosa* Lam. | Boraginaceae | 12.5 | 9 | Tree | High dryland |
| CK4 | Kleine bambu gras | *Piresia goeldii* Swallen | Poaceae | | | Herb | High dryland |
| CK4 | yariyari, gelebast | *Duguetia sp.* | Annonaceae | 10 | 9 | Tree | High dryland |
| CK4 | maripa | *Attalea maripa* Mart. | Arecaceae | | | Palm | High dryland |
| CK4 | tingimoni, rode bast | *Protium polybotryum* Engl. | Burseraceae | 11 | 13 | Tree | High dryland |
| CK4 | pisi, witte | *Ocotea petalanthera* (Meisn.) Mez | Lauraceae | 29.5 | 19 | Tree | High dryland |
| CK4 | bactris | *Bactris gastoniana* Barb.Rodr. | Arecaceae | | | Palm | High dryland |
| CK4 | tonka | *Dipteryx odorata* (Aubl.) Willd. | Fabaceae | 36.9 | 24 | Tree | High dryland |
| CK4 | yamboka, rode | *Pouteria guianensis* Griseb. | Sapotaceae | 13.4 | 13 | Tree | High dryland |
| CK4 | bruinhart | *Vouacapoua americana* Aubl. | Fabaceae | 36.5 | 24 | Tree | High dryland |
| CK4 | umabarblak | *Eschweilera congestiflora* (Benoist) Eyma | Lecythidaceae | 38.8 | 19 | Tree | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK4 | boletri, basra | *Manilkara huberi* Standl. | Sapotaceae | 45 | 25 | Tree | High dryland |
| CK4 | jankrappa | *Talisia mollis* Cambess. | Sapindaceae | 11.4 | 12 | Tree | High dryland |
| CK4 | sekrepatu trapu | *Bauhinia sp.* | Bignoniaceae | | | Liana | High dryland |
| CK4 | jankrappa | *Talisia mollis* Cambess. | Sapindaceae | 18.5 | 15 | Tree | High dryland |
| CK4 | manaritiki | *Rinorea pubiflora* Sprague & Sandwith | Violaceae | | | Tree | High dryland |
| CK4 | Redi udu | Casearia arborea (Rich.) Urb. | Salicaceae | 27.8 | 16 | Tree | High dryland |
| CK4 | kromantikopi | *Aspidosperma sp.* | Apocynaceae | 31.7 | 20 | Tree | High dryland |
| CK4 | gubaya | *Jacaranda copaia* (Aubl.) D.Don | Bignoniaceae | 10 | 7 | Tree | High dryland |
| CK4 | gubaya | *Jacaranda copaia* (Aubl.) D.Don | Bignoniaceae | 11.3 | 15 | Tree | High dryland |
| CK4 | pina, monki-monki | *Euterpe precatoria* Mart. | Arecaceae | | | Palm | High dryland |
| CK4 | geri-udu | *Pogonophora schomburgkiana* Miers ex Benth. | Peraceae | 11 | 9 | Tree | High dryland |
| CK4 | ingipipa, grootbladig | *Couratari guianensis* Aubl. | Lecythidaceae | 18.1 | 11 | Tree | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK4 | gawtri, hoogbos | *Cupania scrobiculata* Rich. | Sapindaceae | 20.5 | 9 | Tree | High dryland |
| CK4 | gawtri, hoogbos | *Cupania scrobiculata* Rich. | Sapindaceae | 13.8 | 7 | Tree | High dryland |
| CK4 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 19.8 | 19 | Tree | High dryland |
| CK4 | keskesmaka | *Bactris oligocarpa* Barb.Rodr. | Arecaceae | | | Palm | High dryland |
| CK4 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | High dryland |
| CK4 | bugrumaka | *Astrocaryum sciophilum* Pulle | Arecaceae | | | palm | High dryland |
| CK4 | prokoni, rode | *Inga alba* (Sw.) Willd. | Fabaceae | 36 | 19 | Tree | High dryland |
| CK4 | mapa, kleinbladige | *Parahancornia fasciculata* (Poir.) Benoist | Apocynaceae | 12.6 | 11 | Tree | High dryland |
| CK4 | maripa, bergi | *Attalea sp.* | Arecaceae | | | Palm | High dryland |
| CK4 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | High dryland |
| CK4 | | *Olyra obliquifolia* Steud. | Poaceae | | | Herb | High dryland |
| CK4 | warimbo, echte | *Ischnosiphon obliquus* (Rudge) Körn | Maranthaceae | | | Shrub | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK4 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | High dryland |
| CK4 | bruinhart | *Vouacapoua americana* Aubl. | Fabaceae | 23.1 | 15 | Tree | High dryland |
| CK4 | foman | *Chaetocarpus schomburgkianus* (Kuntze) Pax & K.Hoffm | Peraceae | 25.7 | 18 | Tree | High dryland |
| CK4 | | *Psychotria sp.* | Rubiaceae | | | Herb | High dryland |
| CK4 | tafrabon, knopo | *Cordia nodosa* Lam. | Boraginaceae | 12.1 | 9 | Tree | High dryland |
| CK4 | Redi udu | Casearia arborea (Rich.) Urb. | Salicaceae | 10.4 | 12 | Tree | High dryland |
| CK4 | ingipipa, kleinbaldig | *Couratari multiflora* (Sm.) Eyma | Lecythidaceae | 45.5 | 30 | Tree | High dryland |
| CK4 | hoepelhout | *Copaifera guyanensis* Desf. | Fabaceae | 54.6 | 25 | Tree | High dryland |
| CK4 | bromelia | *Disteganthus gracieae* Aguirre-Santoro & Michelang | Bromeliaceae | | | Herb | High dryland |
| CK4 | manbarklak, hoogland witte bast | *Eschweilera coriacea* (DC.) S.A.Mori | Lecythidaceae | 35.3 | 18 | Tree | High dryland |
| CK4 | yamboka, rode | *Pouteria guianensis* Griseb. | Sapotaceae | 17.2 | 13 | Tree | High dryland |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK4 | Bosknepa, eetbare | *Talisia megaphylla* Sagot | Sapindaceae | 13.9 | 8 | Tree | High dryland |
| CK4 | | *Stelis argentata* Lindl. | Orchidaceae | | | Ephiphyt | High dryland |
| CK5 | merkitiki | *Tabernaemontana undulata* Vahl | Apocynaceae | | | Tree | Secondary |
| CK5 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | Secondary |
| CK5 | pina | *Euterpe oleracea* Mart. | Arecaceae | | | Palm | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 28.6 | 18 | Tree | Secondary |
| CK5 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 17.4 | 14 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 19.7 | 14 | Tree | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 14.6 | 14 | Tree | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 33.4 | 18 | Tree | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 29.8 | 19 | Tree | Secondary |
| CK5 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 10.6 | 13 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 18.8 | 16 | Tree | Secondary |
| CK5 | granbusi-papaya, drifinga | *Pourouma guianensis* Aubl. | Urticaceae | 13.2 | 14 | Tree | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 13.5 | 13 | Tree | Secondary |
| CK5 | Bospapaya, 3 vinger | *Cecropia sp.* | Urticaceae | 10.3 | 9 | Tree | Secondary |
| CK5 | warimbo, knopo | *Ischnosiphon gracilis* Körn. | Maranthaceae | | | Shrub | Secondary |
| CK5 | sekrepatu trapu | *Bauhinia sp.* | Bignoniaceae | | | Liana | Secondary |
| CK5 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | Secondary |
| CK5 | babunnefi | *Scleria secans* Urb. | Cyperaceae | | | Herb | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 28 | 18 | Tree | Secondary |
| CK5 | tafrabon, hoogbos | *Cordia sagotii* I.M.Johnst. | Boraginaceae | 21.7 | 13 | Tree | Secondary |
| CK5 | tafrabon, hoogbos | *Cordia sagotii* I.M.Johnst. | Boraginaceae | 11.8 | 14 | Tree | Secondary |
| CK5 | pikinmiski | *Pseudopiptadenia suaveolens* (Miq.) J.W.Grimes | Fabaceae | 11.5 | 13 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 17.5 | 18 | Tree | Secondary |
| CK5 | pedreku, rode | *Xylopia discreta* Sprague & Hutch | Annonaceae | 28.9 | 19 | Tree | Secondary |
| CK5 | | *Lepidagathis alopecuroidea* (Vahl) R. Br. ex Griseb. | Acanthaceae | | | Herb | Secondary |
| CK5 | | *Rolandra fruticosa* (L.) Kuntze | Asteraceae | | | Herb | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 39.5 | 19 | Tree | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 17 | 16 | Tree | Secondary |
| CK5 | | *Olyra obliquifolia* Steud. | Poaceae | | | Herb | Secondary |
| CK5 | watratitei | *Doliocarpus sp.* | Dilleniaceae | | | Liana | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 27.2 | 18 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 29.6 | 18 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 22.8 | 18 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK5 | prokoni, tamarin | *Balizia pedicellaris* (DC.) Barneby & J.W.Grimes | Fabaceae | 13 | 9 | Tree | Secondary |
| CK5 | lontukasi, geelbloemige | *Byrsonima crassifolia* Kunt | Malpighiaceae | 34.6 | 11 | Tree | Secondary |
| CK5 | prokoni, tamarin | *Balizia pedicellaris* (DC.) Barneby & J.W.Grimes | Fabaceae | 12 | 11 | Tree | Secondary |
| CK5 | | *Miconia sp.* | Melastomataceae | | | Shrub | Secondary |
| CK5 | pedreku, rode | *Xylopia discreta* Sprague & Hutch | Annonaceae | 13.1 | 15 | Tree | Secondary |
| CK5 | ingipipa, kleinbaldig | *Couratari multiflora* (Sm.) Eyma | Lecythidaceae | 10.7 | 11 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 16.2 | 15 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 35.5 | 15 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 16.9 | 14 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 18.1 | 14 | Tree | Secondary |
| CK5 | tafrabon, hoogbos | *Cordia sagotii* I.M.Johnst. | Boraginaceae | 13.6 | 14 | Tree | Secondary |
| CK5 | watratitei | *Doliocarpus sp.* | Dilleniaceae | | | Liana | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK5 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | Secondary |
| CK5 | sangrafu | *Costus scabe*r Ruiz & Pav. | Costaceae | | | Shrub | Secondary |
| CK5 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 27.2 | 18 | Tree | Secondary |
| CK5 | yakanta, rode bast | *Dendrobangia boliviana* Rusby | Cardiopteridaceae | 19.8 | 19 | Tree | Secondary |
| CK5 | paramaka | *Astrocaryum paramaca* Mart. | Arecaceae | | | Palm | Secondary |
| CK5 | merkitiki | *Tabernaemontana undulata* Vahl | Apocynaceae | | | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 19 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 12 | 14 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 18.9 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 21 | 17 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 18.4 | 17 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 20.5 | 17 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 18.7 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 15.2 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 10.5 | 14 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 12 | 13 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 23.3 | 17 | Tree | Secondary |
| CK5 | switbonki, kapuweri | *Inga disticha* Benth. | Fabaceae | 11.5 | 13 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 16.6 | 18 | Tree | Secondary |
| CK5 | tafrabon, hoogbos | *Cordia sagotii* I.M.Johnst. | Boraginaceae | 13.3 | 16 | Tree | Secondary |
| CK5 | bospapaya, uma | *Cecropia obtusa* Trécul | Urticaceae | | | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 19 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 19 | 15 | Tree | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 19.9 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 13.3 | 19 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 29.3 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 24.2 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 12.9 | 15 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 15.9 | 15 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 24.4 | 16 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 12.8 | 15 | Tree | Secondary |
| CK5 | granbusi palulu (bosbanaan) | *Phenakospermum guyannense* (A.Rich.) Endl. ex Miq. | Strelitziaceae | | | Herb | Secondary |
| CK5 | Passiflora | *Passiflora glandulosa* Cav. | Passifloracea | | | Liana | Secondary |
| CK5 | pokaitongo | *Heliconia acuminata* A.Rich. | Heliconiaceae | | | Herb | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK5 | watratitei | *Doliocarpus sp.* | Dilleniaceae | | | Liana | Secondary |
| CK5 | mispel, eetbare | *Bellucia grossularioides* (L.) Triana | Melastomataceae | 17.5 | 16 | Tree | Secondary |
| CK5 | lontukasi, geelbloemige | *Byrsonima crassifolia* Kunt | Malpighiaceae | 21.1 | 14 | Tree | Secondary |
| CK5 | switbonki, kleinbaldige | *Inga heterophylla* Willd. | Fabaceae | 10.8 | 7 | Tree | Secondary |
| CK5 | Boszuurzak, kapuweri | *Annona sericea* Dunal | Annonaceae | 15.1 | 8 | Tree | Secondary |
| CK5 | weti-udu | *Tapirira guianensis* Aubl. | Anacardiaceae | 22.5 | 16 | Tree | Secondary |
| CK5 | watratitei | *Doliocarpus sp.* | Dilleniaceae | | | Liana | Secondary |
| CK5 | bospapaya, uma | *Cecropia obtusa* Trécul | Urticaceae | 13.5 | 13 | Tree | Secondary |
| CK5 | babunnefi | *Scleria secans* Urb. | Cyperaceae | | | Herb | Secondary |
| CK5 | pinya, man | *Vismia macrophylla* Kunth | Hypericaceae | | | Tree | Secondary |
| CK5 | bospapaya, uma | *Cecropia obtusa* Trécul | Urticaceae | 10.2 | 10 | Tree | Secondary |
| CK5 | miconia | *Miconia racemosa* (Aubl.) DC. | Melastomataceae | | | Shrub | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| CK5 | pangapanga | *Palicourea guianensis* Aubl. | Rubiaceae | | | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 29 | 15 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 12.5 | 8 | Tree | Secondary |
| CK5 | yakanta, gele bast | *Poraqueiba guianensis* Aubl. | Icacinaceae | 10.3 | 7 | Tree | Secondary |
| CK5 | vanilla | *Vanilla planifolia* Andrews | Orchidacea | | | Orchid | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 22.6 | 8 | Tree | Secondary |
| CK5 | switbonki, rode bast | *Inga pezizifera* Benth. | Fabaceae | 20.1 | 8 | Tree | Secondary |
| CK5 | kopkopi | *Trema micrantha* (L.) Blume | Cannabaceae | | | Tree | Secondary |
| CK5 | pinya, man | *Vismia macrophylla* Kunth | Hypericaceae | | | Tree | Secondary |
| CK5 | pinya, uma | *Vismia guianensis* (Aubl.) Pers. | Hypericaceae | | | Tree | Secondary |
| CK5 | diatitei | *Davilla kunthii* A.St.-Hil. | Dilleniaceae | | | Liana | Secondary |
| CK5 | | *Aeschynomene indica* L. | Fabaceae | | | Shrub | Secondary |

| Transect | Local Name | Scientific Name | Family | DBH | Height | Habitus | Forest type |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

**Annex 4 Focus groups data**

Focus group 1
Participants:

- Boobe
- Desire Zeegenaar
- Michel Pina (village Head)
- Wendell Asadang

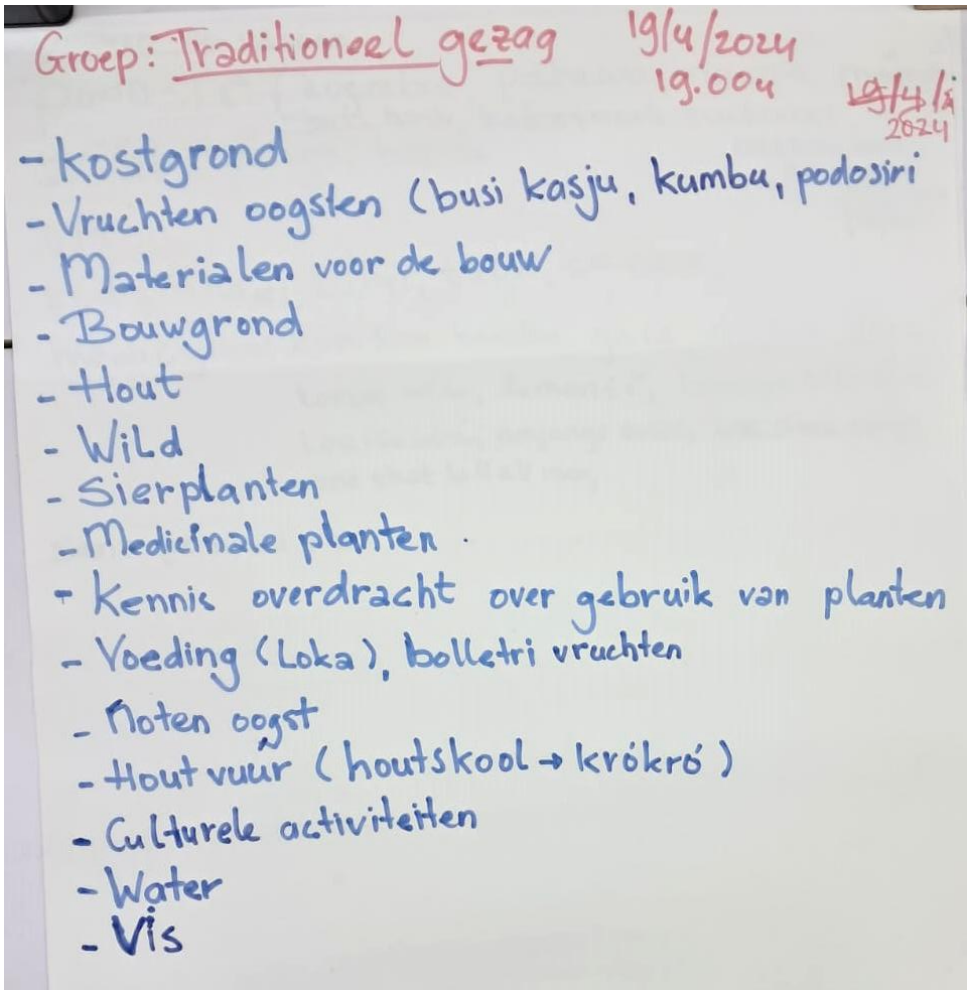

Figure A4-1 The list of ecosystem services mentioned by Focus Group 1

Focus group 2
Participants:

- N.M. Boobe (female)
- Felientje Zeegenaar (female)
- B. Aweti (male)
- Toobi Basedi (female)

Focus group 3
Participants:

- Gilliërso Aside
- Rualdo Leefman
- Fernando Aweti
- Joël Burge
- Ombreto Flawtantie
- Sifo Flawtantie
- Nadiëllo Afonsoewa
- Djenero Kentie

Note: the professions of the young men are village construction workers, gold miners and hunters.

Focus group 4
Participants:

- Richelle Aweti – 18 jaar
- Vidents Zeegenaar – 17 jaar
- Angela Amoida – 15 jaar
- Rejoice Pikientio – 14 jaar
- Siënba Weewee – 16 jaar
- Mbidhu Kentie – 18 jaar
- Cadoucha Dalfour – 20 jaar
- Chaïsta Misidjan – 22 jaar
- Edithsha Misidjan – 17 jaar
- Edith Misidjan – 48 jaar
- Elsila Fingfing – 46 jaar
- Romilda Asadang – 40 jaar

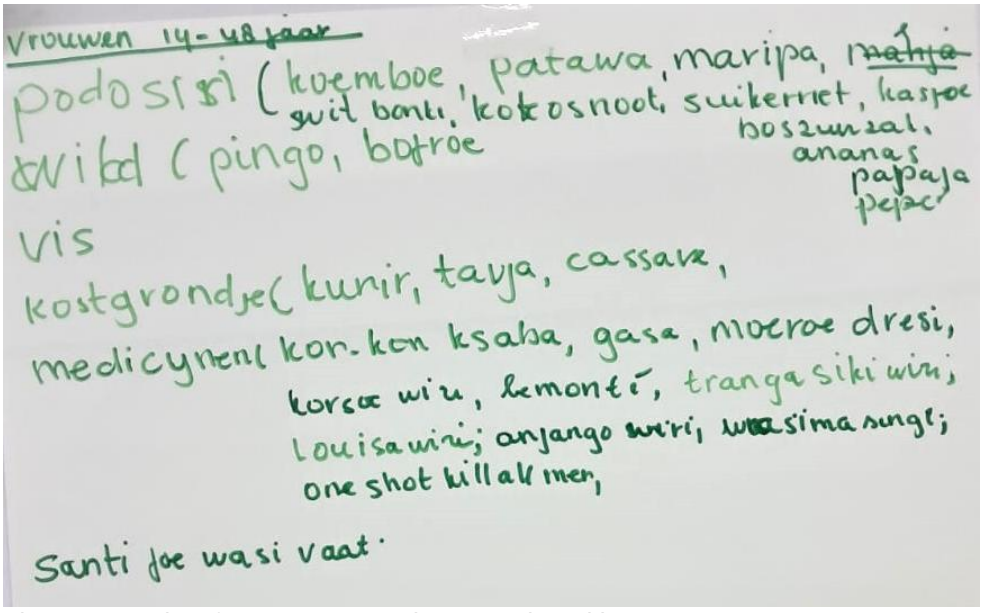

Figure 4A-2 List of ecosystem services mentioned by group 3

Table A4-1 List of ecosystem services translated from Fig 4-1 and 4-2

| Focus group: | Date and time: | Ecosystem service: |
|---|---|---|
| Traditional authority | 19-Apr-24 19:00h | agricultural plot |
| | | busi kasyu, kumbu, podosiri |
| | | construction material |
| | | land |
| | | timber |
| | | game |
| | | ornamental plants |
| | | medicinal plants |
| | | exchange of knowledge on use of plants |
| | | food (loka), bolletri fruits |
| | | harvesting nuts |
| | | fire wood (charcoal/krokro) |
| | | cultural activities |
| | | water |
| | | fish |
| Women 14 - 48 jaar | | fruits; podosiri, kumbu, patawa, maripa, swit'bonki, kokosnoot, suikerriet, kasyu, boszuurzak, ananas, papaya, peepe |
| | | game (bofru, pingo) |
| | | fish |
| | | agricultural plot; kunir, taya, cassave |
| | | medicinal plants (kon-koni kasaba, gaasa, muru dresi, korsu wiri, lemonti, trangasikiwiri, luwisawiri, anangoswiti, wasuma/singer, one-shot-kill-all-men) |
| | | sand for washing dishes |

# Rapid Biodiversity Assessment Compagniekreek

**February 2025**

Improving Environmental Management in the Mining Sector of Suriname,
with Emphasis on Artisanal and Small-Scale Gold Mining (EMSAGS Project)
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