Overview of Biodiversity Assessment

Paradeep Phosphates Ltd (PPL) conducted a biodiversity assessment / study at its Paradeep site during December 2023. The assessment aimed to evaluate the impact on biodiversity, including local flora and fauna, within a 10 km radius from the site. Focused on Baseline and Impact Assessment, the study used established survey methods to quantify and monitor biodiversity. The assessment utilized vegetation surveys and faunal assessments employing plot method, point count, line/belt transect. Sampling was conducted for more than 10 days in and around PPL's site (10 km radius) in Paradeep, Odisha. Two field teams consisting of five members, including two senior biodiversity experts, conducted the investigations.

Spatial data from satellite imagery (Bhuvan Portal) and vegetation mapping (QlGIS & Restor) were used for landscape features and site values. Field-level data collected through an extensive study across **37 plots** provided the basis for calculating biodiversity indices (**Shannon-Wiener, Berger-Parker, Simpson's)** and revealed insights into ecosystem health. Dominant tree species included **Azadirachta indica, Pandanus tectorius, and Vachellia nilotica**. Shrub dominance featured **Lantana montevidensis, Acanthus ilicifolius, and Bonplad's croton**. Herbs, including **Cynodon dactylon, Bouteloua dactyloides, and Typha angustifolia**, was widely present across surveyed sites. Overall, the biodiversity assessment suggested varying levels of diversity and dominance across different categories of flora. The dominance of certain species in trees and shrubs was found as part of the study. At the same time, the high diversity of herbs was a positive sign for the area's ecological health.

The investigated fauna area, primarily characterized by cultivation, water bodies, shrubs, and herbs within a 10 km radius, revealed a slightly lesser faunal biodiversity. Despite small patches of native vegetation, there weren't many complex native layers, leading to a less than expected bird and mammal diversity. The inadequacy of continuous vegetation, dominated by small, isolated fragments, slowed species connectivity. Old-growth woodland habitat was found to be sparse, mainly as isolated paddock trees or within fragmented patches. The landscape was scant of mobile species, particularly arboreal mammals. Faunal assessment concluded the presence of **22 insect species, 60 fish species, 54 avifauna species**, two reptile species, and two mammal species. These were found through joint discussions, surveys and secondary research.

Agricultural expansion, over the years, has transformed much of the landscape, encroaching into natural habitats and biodiversity. The absence of continuous vegetation and the prevalence of small, isolated fragments makes it tougher to maintain diverse ecosystems. Human activities, particularly agriculture and land use changes, emerged as primary threats.

PPL shall aim towards preserving and restoring native vegetation, especially trees and shrubs, to enhance overall biodiversity including establishing buffer zones around critical habitats. Notwithstanding the presence of other industries in the area of study (10 km radius), PPL shall try to mitigate the impact of human activities. PPL is determined to have sustainability and community engagement in its core operational themes with the overall goal of preserving local biodiversity for future generations.