Analysis of Social Trails in the Tsukuba University Area.

Shyamantha Subasinghe (Doctoral program in Geoenvironmental Science)

1. Motivation

The social trails (desire paths) are not a part of the official university trail network. Social trails indicate the inefficiency of current sidewalks and the disturbance on human, but on the other hand, it reduces the aesthetic value of the campus. In this context, understanding of the distribution of social trails and its related factors are important for formation of landscape related policies by the university.

2. Introduction

A social trail may a path developed by erosion caused by human footfall. These trails usually lay on the shortest or easily navigated route between an origin and a destination.

According to the literature, the way finding of social trails occurrence involves four stages, orientation, route decision, route monitoring and destination recognition. The present study reveals the spatial distribution of social trails in the area of the University of Tsukuba, and its related factors that I found during the fieldwork session. Specifically, Global Positioning System (GPS) and Geographical Information System (GIS) based tools and techniques were employed in the data collection and analysis stages.

3. Study Area

Figure 1. Study area and subdivisions

The area of the University of Tsukuba was selected as the study area. In order to, conduct the fieldwork, the whole study area was divided into 11 subdivisions (Figure 1).

The fieldwork was carried out to cover the whole area of the university in systematic and rigorous inspections.

4. Methodology

Demarcation of trails: The demarcation of a social trail was conducted using the track manager technique, available in GARMIN(etrex 20)™ GPS.

Ancillary data: The information of connecting features (origin and destination), and the approximate width was noted in the field book for each trail.

GPS data processing: The collected data was uploaded to the Google Earth™ software and the error of trails were rectified (Figure 2). The uploaded file was converted to ESRI™ shape file.

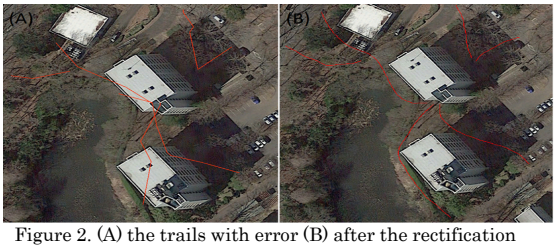

Figure 2. (A) the trails with error (B) after the rectification

Data analysis: The trail density and the majority were found using grid-based analysis. The grid size was 100m x 100m. The spatial pattern and its related factors were discussed qualitatively and quantitatively.

5. Results and Discussion

The study shows that the social trails are becoming a severe problem in the university (Figure 3).

Figure 3. Some examples for social trails in the university area

The residence hall areas including Hirasuna, Ichinoya and Oikoshi showed higher density of trails distribution compared to other areas. The majority of social trails, compared to total trail distribution in the grid area, showed in Ichinoya area, Gene research center area, Human and social science institute area, Arts and physical education area, Hirasuna and Oikoshi area, and Tennis court area of Kasuga (Figure 4).

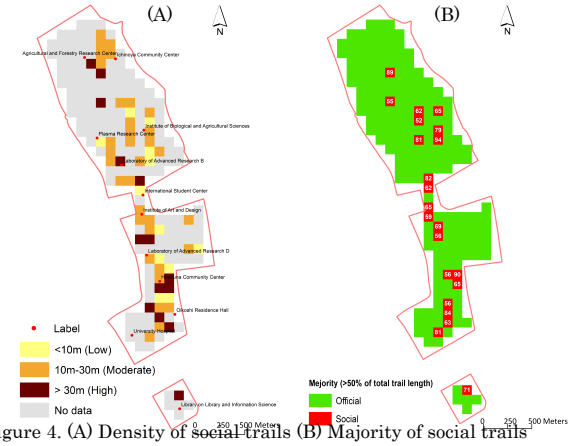

Figure 4. (A) Density of social trails (B) Majority of social trails

Further, the study found out that, although the higher number of connection between car/bicycle parking area and roads occurred, the connection between the road to road is more active than all other trail connections.