Notes for Marine Debris Monitoring Data
July 12, 2017

Tab 1 (Raw Data) – Raw monitoring data collected by the NOAA Marine Debris Program (MDP). At each site, we randomly selected four belt transects and monitored for debris in those transects. We recorded debris greater than 2.5cm found in each transect. For more information on the monitoring protocol, please see the attached documents Opfer et al. 2012, Lippiatt et al. 2013, and the MDMAP Get Started Toolbox.

Tab 2 (transect_density per 500ft^2) – In this tab, we converted the debris densities per transect from debris/m^2 data to debris/500m^2. We choose 500m^2 because this represents the area surrounding beach-goers towels/chairs and we provided a comparison that 500m^2 is about size of three parking spaces for folks to visualize the area. In the survey questionnaire (page 4) we use the language, *"The pictures below illustrate the amount of debris commonly found on United States beaches. Imagine you are picking up debris over an area of 500 square feet or approximately the area of three parking spaces, outlined in red below."*

Tab 3 (site_PivotTable_AvgMD Den.) – In the third tab, we calculated the average debris densities per site (beach), county, and state. The average debris densities are used in the remainder of the tabs (note that county and state data are used below in the region tabs).

Tab 4 (site_Hist_AvgMD-den_500ft^2) – In this tab, we ran histogram scenarios to determine the appropriate debris counts to use in the survey questionnaire. When running the histograms for the site data, our goal was to create bins with a uniform distribution. Histogram results for sites are displayed in **Tab 5 (site_histogram_output).**

- Notes:
    - o Minimum average debris density per 500m2 = 0.134 debris items
    - o Maximum average debris density per 500m2 = 40.084 debris items
    - o From the histogram outputs, the best scenario included doubling debris counts, starting with one debris item. Thus, our debris counts for the survey questionnaire (page 4) are 1, 2, 4, 8, and 16. These counts are representative, and within the range of the field collected data (min – 0.134 items to max - 40.084 items per 500m^2). *We did not include zero debris items as an option because it is not realistic to find a beach without any debris at all. Note that with our survey protocol, we are only counting debris items equal to or greater than 2.5 cm. Thus, our debris counts are likely underestimating the debris loads on the beaches.

Tab 6 (region_Hist_AvgMD Den_500ft2) – In tab 6, we calculated average debris densities by region. Note that we had to remove some of the data because a few of the sites did not fall within the regions of the National Model. After calculating average debris densities for each region, we again ran histogram scenarios. Histogram results for region are displayed in **Tab 7 (region_Histogram_output).**

- Notes:

- o   Minimum average debris density per 500m2 = 1.08 debris items
- o   Maximum average debris density per 500m2 = 28.34 debris items
- o   The debris counts (1, 2, 4, 8, and 16) for the survey questionnaire are still representative, and within the range of the field collected data at the region level (min – 1.08 items to max - 28.34 items per 500m^2).

Tab 8 (Monitoring Data_basic stats) – In the last tab, we compared the debris stats at the individual transect level, the site (beach) level and the region level.

Justification of debris types represented in survey questionnaire photos:

- We looked at monitoring data from our Marine Debris Monitoring and Assessment Project (MDMAP) and the top 10 most common items are as follows:
  - o   Hard plastic fragments, foamed plastic fragments, plastic rope/net, filmed plastic fragments, other plastic items, bottle/container caps, metal fragments, cigarettes, food wrappers, and glass fragments
- Here is the top 10 items collected during the International Coastal Cleanup:
  - o   Cigarette butts, plastic beverage bottles, plastic bottle caps, food wrappers, plastic grocery bags, plastic lids, straws/stirrers, glass beverage bottles, other plastic bags, foam take-away containers.
- When staging the photos, we tried to keep the items small, so one item would not overpower the photo.