**Allocation instructions**

**Introduction**

Site allocation targets are calculated from a combination of variance of past data at the trophic level and the area of each strata (hard bottom reef area for each island, sector, reef zone, and depth bin).

**Methods**

1. Gather necessary files: **Cruise itinerary** (for number of days at each island – work with team lead to estimate how many sites we can survey per day, depends on how many divers and small boats we have), **site level trophic biomass averages** (Can use site summary file from R scripts = TMPwsd.Rdata: this is generated from scripts 01\_gitFishREACleanData and 02\_gitFishREACalcWD and starts with file ALL\_REA\_FISH\_RAW.rdata – all files on GitHub-FishPaste), and **clean sector information** (also generated by script 02\_gitFishREACalcWD, saved as TMPsectors.Rdata)
2. To calculate allocation:
   * Filter **site level trophic biomass averages** from the last 3 visits, include strata information: sector, reef zone, and depth bin.
   * Calculate standard deviation of mean biomass estimates at the higher trophic level (piscivore, planktivore, primary, secondary, total fish) for each strata.
   * Calculate proportional SD for each trophic group at the strata level = SD value divided by the island level sum of all SD values for that trophic group.
   * Calculate proportional variance for each strata = average of proportional SD for all trophic groups at that strata.
   * Calculate proportional area = Get area of each strata (from fish-paste/data/Sectors-Strata-Areas.csv or **clean sector information**) = area for each strata divided by the total area for an island.
   * Multiply proportional variance by proportional area to get a value = mean\_v
   * Calculate strata proportion by summing mean\_v for each island and dividing each strata’s mean\_v value by the island sum. Value = AREA\_VAR\_PCT
   * From the **cruise itinerary**, fill in the number of sites we can survey in one day (n), and how many days we have at each island.
   * Multiply the number of sites we can survey at each island by the AREA\_VAR\_PCT and the AREA\_PCT to calculate 2 allocation scenarios. Use your brain to adjust to final numbers.
   * OR if we are surveying an area that matches with earlier allocations, we can use Ivor’s fiddled percentages. This will work for:
     + Marianas – Guam only if we are pooling MPs and comparing to east open and west open, and all other islands. Use MANUAL\_PCT column on this file: Allocation\_MARAMP\_2017
     + PRIAs – Baker, Howland, Jarvis, Palmyra. Kingman only works if we are not surveying shallow lagoon or shallow protected slope and all other areas. Johnston is a crap-shoot.
     + Samoa – Ofu is the only straight-forward island
     + MHI – Niihau, Kauai, and Lanai. The other islands have sectors that we don’t survey each time.