Assignment 3 : Conducting a Gap Analysis

“A Gap Analysis consists of mapping three data layers — land cover, predicted distributions of vertebrate species, and a stewardship layer. This data is then assessed to determine how much of a target species’ (plant or animal) habitat is in conserved areas. From this assessment, planning decisions can be made about whether further protection is merited.” As the statement said, the question of this research are how much species, Arizona Woodpecker, would be conserved in the protected areas and what kinds of land covers are Arizona Woodpecker’s habitats by overlapping two data.

The mapping process started with acquiring and preparing the data. In this analysis, species data and modeling were firstly chosen to assess possible area that existed in online databases and local hard disks. Land cover, the second needed data, was downloaded then followed by Protected Areas data. Two Protected Areas data of two states were used. Moreover, Hydrologic Unit Codes data (HUCs) with 12 digits, Drainage data, Transportations data, Topoquads data and State Boundaries data were downloaded and used as additional data. Afterward, all data were imported to ArcMap to minimize unwanted data, to reduce size of data. Additionally, the selected areas were chosen by using state boundaries in the first step and then using topoquads to create a clip boundary. Some attributes of the data were queried and/or selected for specifying areas by joining with other tables in order to scope a possible data. HUCs and Species Range were combined by joining 12 digits’ field; Protected Areas’ table was queried and acquired merely Status 4 (There are no known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types).

After obtaining prepared data, dissolve Species Range using Dissolve Tool to combine into a single shape since needing an edge of species range including species distributions. Due to two Protected Areas (Arizona and New Mexico) are needed, Merge Tool merged them to a single layer. To answer how many species, Arizona Woodpecker, would be conserved in the protected areas, the tool namely Extraction by mask was selected. This tool could extract species that are looked alike a surface of protected areas and cut off un-relevant data on target areas, whereas other tools could not.

The consequences of this analysis are Species Distribution, which is in a Protected Areas found apart in Protected Areas sporadically. The massive area is the biggest protected area. Mostly, Arizona Woodpecker can be found nearby forest or woodland areas. Some of them can be found nearby temperate flooded and swamp
forest areas. However, the species is rarely found along the highways and railroads or even in the urban areas located in or nearby the protected areas. Arizona Woodpecker can be found in New Mexico State, as well. From the graphics assessment, it was found that likely less than 30% of all Species Distribution has been conserved.

To sum up, this analysis revealed that Arizona Woodpecker has not been conserved as well as it has to be. It might be due to the fact that most of them have their habitats out of the protected areas. In my point of view, expansion of more conserved areas and limiting the expansion of urban areas would yield high percentage of the conserved species.