Central Arizona Conservation Alliance Natural Infrastructure Vision

Model Criteria
June 14, 2017

Goal: Ensure Habitat Integrity

Criteria	Criteria Weights	Methodology	Description	Data (Description, Date, Resolution)	Data Source
Rural and Urban Habitat Blocks	22%	Result values = 3,4,5 1. Resample large blocks data to 5m 2. Reclassify to give NoData 0 value, all other values remain same as original raster (prioritization of data provided by AGFD) Category 1 = 5 and Category 2 = 4 3. For small blocks, Identified census places >2,500 to be considered as populated areas 4. Clipped Esri Green Infrastructure habitat cores to urban areas 5. Convert small habitat cores to raster based on Score field (the core quality index value based on geometric values and soil variety, endemic species max, biodiversity priority index and ecological systems redundancy. This calculation is based upon the Green Infrastructure Center's (http://gicinc.org) scoring methodology in their Practitioner's Guides) 6. Reclassify all urban habitat into 2 classes using natural breaks, then reclassified so all highest values = 4; lower values = 3; all other areas 0 7. AGFD Deeded Lands, AGFD Managed Lands and AGFD Wildlife Areas converted to raster and given value of 5 7. Combine all data with Cell Statistics Maximum	The data shown here are compiled from Arizona Game and Fish Department, the US Census, and ESRI to represent an area of land that consists of important wildlife habitat and can reasonably be expected to remain natural for at least 50 years. Rural Habitat Cores are primarily comprised of lands within National Forests, National Parks, National Wildlife Refuges, large military reservations, tribal lands and lands managed by Bureau of Land Management or Bureau of Reclamation. Rural Habitat Cores also include private lands that are managed for conservation, such as Nature Conservancy preserves and some large ranches whose owners are committed to long-term conservation. All other private lands and land owned by Arizona State Land Department (which has no conservation mandate under current law) have for the most part been excluded. (Note: To keep maps readable, some habitat block polygons include small private and state inholdings that may not be conserved.) Urban Habitat Cores are areas of relatively intact habitat that is "sufficiently large to support more than one individual of a species" (Firehock and Walker, 2015). For our purposes that's an area at least 100 acres in size and at least 200 meters wide. Urban Habitat Cores are primarily comprised of lands held by local municipalities and Maricopa County.	a)Large Intact Blocks (LIBFINAL) b)US Census Places, 2015 c)Esri Green Infrastructure Habitat Cores d)AGFD Deeded Lands e)AGFD Managed Lands f)AGFC Wildlife Areas	a)AZGFD b) US Census c)Esri d)AZGFD e)AZGFD f)AZGFD
Ecological Linkages and Corridors	20%	Result values = 3,4,5 1. Resample data to 5m 2. Reclassify to give NoData 0 value, all other values remain same as original raster (prioritization of data provided by AGFD)	The data shown here represent models of potentially important areas for wildlife movement. These data come from various sources, some of which are derived through the monitoring of actual wildlife movements (empirical); some of which are inferred (theoretical models) by the relative intactness of the land and its potential for connectivity; and some of which are anecdotal from expert and/or local stakeholder observation of known movement areas. Ecological linkages and corridors should be interpreted as permeable areas or zones, as opposed to discreet paths, and used to prioritize where the highest values for maintaining statewide landscape connectivity occur. Conservation of linkages and corridors benefit wildlife, support ecological functions and provide intrinsic and extrinsic values for humans. Data and associated methodology reports can be obtained by contacting the Arizona Game and Fish Department directly.	Connectivity (Connectivity_FINAL)	AZGFD
Riparian Areas	22%	Result value = 5 1. Resample SHCGRiparianFINAL_NoTribal to 5m. Data has value of 5. (we were given revised data ~March 28, 2017, but switched back to original data on 4/18) 2. Pull riparian areas out of AZGFD modified ReGap data - value 124 reclassified to 5 (80, 83, 84, 85 are riparian but not in study area) 3. NWI Riparian data converted to raster and given value 5 4. Data combined with cell statistics maximum (prioritization of AGFD data provided by AGFD)	The data shown here are compiled from Arizona Game and Fish Department and the US Fish and Wildlife Service's National Wetlands Inventory. Riparian areas are plant communities contiguous to and affected by surface and subsurface hydrologic features of perennial or intermittent lotic and lentic water bodies (rivers, streams, lakes, or drainage ways). Riparian areas are usually transitional between wetland and upland. Riparian areas have one or both of the following characteristics: 1) distinctly different vegetative species than adjacent areas, and 2) species similar to adjacent areas but exhibiting more vigorous or robust growth forms.	a)SHCG RiparianFINAL_NoTribal b)AZGFD modified ReGap c)NWI Riparian areas	a) AZGFD b) AZGFD c)FSW National Wetlands Inventory
Landscape Integrity	12%	Result value = 1-5 1. Resample data to 5m 2. Reclassify to give NoData 0 value, all other values remain same as original raster (prioritatioon of data provided by AGFD)	This dataset represents the Arizona Game and Fish Department's landscape integrity analysis created during a statewide connectivity modeling project. Nineteen different factors were used to represent human modification on the landscape, and these were combined into a single dataset with 100 being the most intact lands with no human modification. For the Greenprint for Maricopa County, the data are ranked from 1 to 5, with 1 indicating lowest "value/importance", and 5 indicating highest "value/importance". In the case of the landscape integrity data, quantiles were used to group the original data into the 5 categories.	Landscape Integrity (LIFINAL)	AZGFD
Species richness	15%	Result value = 1-5 1. SHCGSGCNFINAL_NoTribal resampled to 5m 2. Reclassify to give NoData 0 value, all other values remain the same as original raster 3. ESA richness from TNC 2010 freshwater assesment buffered 20m 4. ESA richness data reclassifed 3,4,5 based on natural breaks of # of species 5. Spikedace crit hab lines buffered 20m 6. All other AGFD crit hab polygon data merged with spikedace buffers, converted to raster and given value of 5 7. All data combined with cell statistics maximum *AGFD crit hab in study area: Spikedace, acuna cactus, chiricahua peop forg, gila chub, mexican, mex spotted owl, narrowheaded, yellow billed cuckoo, razorback sucker, sonora chub, sw willow flycatcher	The data shown here are compiled from Arizona Game and Fish Department and The Nature Conservancy. Together, these data represent species richness represented in an ecological community, landscape or region. Species richness is simply a count of species, and it does not take into account the abundances of the individuals in each species or their relative abundance distributions. These data include birds, fish, mammals, and invertebrates.	a) Species of Greatest Conservation Need (SHCGSGCNFINAL_NoTribal) b) ESA Richness from 2010 Freshwater Assessment c) Critical habitat	a)AZGFD b)TNC c)AZGFD

Goal: Protect Water Resources

Criteria	Criteria Weights	Methodology	Description	Data (Description, Date, Resolution)	Data Source
Headwaters	17%	Result value = 5 1. NHD Flowlines joined with NHD Plus Value Attribute Added table 2. Flowlines with stream order of 1 selected (headwaters) 3. Headwaters buffered 20m 4. Converted to raster and given value of 5	This layer shows 1st order streams from the National Hydrology Dataset (NHD) Flowlines and the Horizon Systems NHD Plus Value Attribute Added table. These headwater streams are buffered by 20 meters.	a) NHD flowlines b) NHD Plus VAA table	a)National Hydrology dataset b)Horizon Systems NHD Plus
Perennial Rivers and Streams	19%	Result value = 5 1. USFWS wetlands data queried to choose upper and lower perennial (values beginning with R2 and R3) 2. Data queried again to remove any features with the x modifier (which is excavated) 3. Converted to raster and given a value of 5	All streams from USFWS National Wetland Inventory, excluding upper and lower perennial wetlands and excavated streams (x modifier).	USFWS Wetlands	USFWS NWI Wetlands
Intermittent and Ephemeral Rivers, Streams, Washes	12%	Result value = 5 1. USFWS wetlands data queried to choose intermittent (values beginning with R4) 2. USFWS wetlands data queried to choose unknown perennial (values beginning with R5). (doing this was result of convervation and looking at data with Stacie/Bob/Kate) 3. Data merged together 4. Data queried again to remove any features with the x modifier (which is excavated) 5. Data buffered 20m each side 6. Converted to raster, given a value of 5	Intermittent (R4) and unknown perennial (R5) streams from the USFWS National Wetland Inventory. Features with the x modifier (excavated) are excluded, and then all features are buffered by 20 meters.	USFWS Wetlands	USFWS NWI Wetlands
Wetlands	15%	Result value = 5 1. USFWS wetlands data queried to choose Freshwater Emergent Wetlands and Freshwater Shrub Wetlands 2. Converted to raster and given a value of 5	Freshwater emergent wetlands and freshwater shrub wetlands from the USFWS National Wetland Inventory.	USFWS Wetlands	USFWS NWI Wetlands
Lakes, Ponds, Reservoirs	6%	Result value = 5 1. USFWS wetlands data queried to choose lakes, ponds, reservoirs 2. Converted to raster and given a value of 5	Lakes, ponds, and reservoirs from the USFWS National Wetland Inventory.	USFWS Wetlands	USFWS NWI Wetlands
Springs/Seeps	16%	Result value = 5 1. Seeps/springs selected from NHD points 2. Seeps/springs buffered 500 feet 3. Converted to raster and given value of 5	Seeps and springs from the National Hydrography dataset points, buffered by 500 feet.	NHD Points	National Hydrology Dataset
Enhance Natural Recharge	5%	Result value = 1 - 5 1. Esri Green Infrastructure cores converted to raster based on score field (the core quality index value based on geometric values and soil variety, endemic species max, biodiversity priority index and ecological systems redundancy. This calculation is based upon the Green Infrastructure Center's (http://gicinc.org) scoring methodology in their Practitioner's Guides) 2. Reclassified using natural breaks and given values 1-5 with no data = 0	These Intact Habitat Cores from ESRI are minimally disturbed natural areas (based on NLCD 2011) at least 100 acres in size and greater than 200 meters wide, following methodology from the Green Infrastructure Center (http://gicing.org). They are scored based on 53 attributes from a suite of physiographic, biologic, and hydrographic factors wrapped up into a "core quality index". (See this site for more information.) Cores are ranked 1 to 5 based on the range of core quality index scores divided into quintiles.	Habitat cores	Esri
Floodplain	10%	Result value = 0,4,5 1. Floodways were selected from FEMA flood hazard area data, converted to raster and given value of 5 2. 100-year floodplains were selected from FEMA flood hazard areas data, converted to raster and given value of 4 3. Data combined with cell statistics maximum	Flood zones from FEMA given a value of 5 (Very High) for a floodway and a value of 4 (High) for a 100-year flood zone.	FEMA flood hazard layer	FEMA