Desert Landscape Conservation Center

Appendix 2c.
Data Layers Metadata

2020

Transboundary Madrean Watersheds Landscape Conservation Design Report

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Version 1.2
June 30, 2020

Table 1. Spatial variables for Connectivity Areas, listed by variable code, description, source data, and source data date or verison.

Variable Code	*Description*	*Source*	*Date/Version*
Id	Connectivity Area ID#	n/a	12/31/2019
Type	Type of Connectivity Area: Link = Linkage defined during LCD process, Pinch Point = Pinch point in a linkage defined during LCD process, External = Previously published linkage	n/a	12/31/2019
Jaguar	Indicates whether jaguar are known to occur in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
MX_Wolf	Indicates whether Mexican wolf are known to occur in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
Mtn_Lion	Indicates whether mountain lion are known to occur in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
Bighorn	Indicates whether bighorn sheep are known to occur in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
Pronghorn	Indicates whether pronghorn are known to occur in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
Black_Bear	Indicates whetherblack bear are known to occur in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
Bison	Indicates whether bison are known to occur in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
Maj_Hwy	Indicates whether a major highway occurs in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
Sec_Road	Indicates whether major secondary roads occur in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
BW_Threat	Indicates whether the border wall is a threat to this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
Mining_Thr	Indicates whether there are mining threats in this area. Not exhaustive - supplemental information only.	expert opinion	12/31/2019
AreaAcres	Area of Connectivity Area in acres	ArcGIS	12/31/2019
AreaSqKm	Area of Connectivity Area in square kilometers	ArcGIS	12/31/2019
Source	Source of the mapped Connectivity Area. "LCD" indicates the area was mapped during the LCD process. Previously mapped areas cite their source.	various: see *LinkageSources* tab	12/31/2019
Name	Connectivity Area name	existing maps	12/31/2019
HII_mean	Mean value of the Human Influence Index within the Connectivity Area	CEC NA Human Infl. on Terr Ecosys.	v2 (2005)

Table 2. Sources for linkage data included in the Connectivity Areas.

SourceAbbrev	Citation
Chris_Hass_corridors	Hass, C.C. 2001. Landscape fragmentation and connectivity for carnivores in the Upper San Pedro Basin. Fort Huachuca Wildlife Office.
AZ Missing Linkages Project	AZ Missing Linkages Project
AZGFD Pima County Wildlife Connectivity Assessment	AZGFD Pima County Wildlife Connectivity Assessment
Atwood et al 2011 - Black bear corridors	Atwood, T.C., J.K. Young, J.P. Beckmann, S.W. Breck, J. Fike, O.E. Rhodes, and K.D. Bristow. 2011. Modeling connectivity of black bears in a deser sky island archipelago. Biological Conservation 144: 2851-2861.
Wilbor 2014 - Linkages for Climate Adaptation	Wilbor, Scott. 2014. Landscape Linkages for Climate Adaptation. University of Arizona Master's Thesis
Menke 2008 - NM Cougar Corridors	Menke, Kurt. 2008. Locating Potential Cougar (Puma concolor) Corridors in New Mexico Using a Least-Cost Path Corridor GIS Analysis
Dan Majka - Whetstone-Dragoon	AZ Missing Linkages Project
LCD	this project

Table 3. Spatial variables for Grassland Cores, listed by variable code, description, source data, and source data date or verison.

Variable Code	*Description*	*Source*	*Date/Version*
Id	Grassland Core ID#	n/a	12/31/2019
Complex_Na	Grassland Core complex name	maps	12/31/2019
AreaSqKm	Area of core in square kilometers	ArcGIS	12/31/2019
PerGrassMo	Percent of core that is "Cropland" and "Urban and built-up", according to the 2010 NALCMS	NALCMS 2010	2010, 4.2
PerGrass	Percent of core that is "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", according to the 2010 NALCMS	NALCMS 2010	2010, 4.2
GrassMeanArea	Combine NALCMS 2010 "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", then derive mean patch size using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
GrassLPI	Combine NALCMS 2010 "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", then derive max patch size using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
GrassNP	Combine NALCMS 2010 "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", then derive number of patches using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
GrassNPperkm	Combine NALCMS 2010 "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", then derive number of patches using FRAGSTATS. Divide the result by AreaSqKm.	NALCMS 2010, FRAGSTATS, AreaSqKm	2010, 4.2
PerProtect	Percent of core that is protected, where protected means lands in the National Conservation Easement Database; lands classified as Categories 1, 2, or Not Available in the CEC NA PAD 2017; and APFF Bavispe Park units in Mexico	NCED, NA PAD, INEGI	1.4, 2017, n/a
woodytoherb16	Average woody:herbaceous ratio in 2016, calculated as GrassTree2016/GrassHerb2016	MODIS VCF	6
woodtoherbtrend	Trend in average woody:herbaceous from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF	6
GrassHerb2016	Average percent nontree vegetation cover in 2016. Same as NoTree2016.	MODIS VCF	6
GrassHerbTREND	Trend in average percent nontree cover from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF	6
GrassTree2016	Average percent tree cover in 2016. Same as Tree2016.	MODIS VCF	6
GrassTreeTREND	Trend in average percent tree cover from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF	6
GrassBG2016	Average percent bare ground in 2016, calculated as 100-Tree2016-NoTree2016.	MODIS VCF	6
GrassBGTREND	Trend in average percent bare ground from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF	6
GoodGrass	The average of GrassMeanArea (average grass patch size) and GrassHerb2016 (Percent of grassland that was not tall trees or bare ground). Used as an indicator of overall grassland quality.	GrassMean Area and GrassHerb2016	12/31/2019

Variable Code	*Description*	*Source*	*Date/Version*
GrassQuadrant	Shows if the grassland core has **good grassland, high modification** (top 25% of GoodGrass and top 25% of PerGrassMod (percent of grassland modified)); **good grassland, low modification** (top 25% of GoodGrass and bottom 75% of PerGrassMod); **poor to moderate grassland, low modification** (bottom 75% of GoodGrass and bottom 75% of PerGrassMod); or **poor to moderate grassland, high modification** (bottom 75% of GoodGrass and top 25% of PerGrassMod). Cores with good grassland and high modification may be most in danger of losing significant areas of high quality grassland habitat.		12/31/2019
GrassTreeQuartile	Shows which quartile of GrassTreeTREND (trend in percent tree cover) the grassland core falls into, including a four quartiles for positive trends (top 25, top 50, bottom 50, and bottom 25), and one category for a negative trend in tree cover (trees decrease). Cores in the top 25 are the most likely to be experiencing invasion by woody plants, while cores in the trees decrease category may be increasing in grassland cover.	GrassTree2016	12/31/2019
Tree2000	Average percent tree cover in 2000	MODIS VCF	6
NoTree2000	Average percent nontree vegetation cover in 2000	MODIS VCF	6
Tree2001	Average percent tree cover in 2001	MODIS VCF	6
NoTree2001	Average percent nontree vegetation cover in 2001	MODIS VCF	6
Tree2002	Average percent tree cover in 2002	MODIS VCF	6
NoTree2002	Average percent nontree vegetation cover in 2002	MODIS VCF	6
Tree2003	Average percent tree cover in 2003	MODIS VCF	6
NoTree2003	Average percent nontree vegetation cover in 2003	MODIS VCF	6
Tree2004	Average percent tree cover in 2004	MODIS VCF	6
NoTree2004	Average percent nontree vegetation cover in 2004	MODIS VCF	6
Tree2005	Average percent tree cover in 2005	MODIS VCF	6
NoTree2005	Average percent nontree vegetation cover in 2005	MODIS VCF	6
Tree2006	Average percent tree cover in 2006	MODIS VCF	6
NoTree2006	Average percent nontree vegetation cover in 2006	MODIS VCF	6
Tree2007	Average percent tree cover in 2007	MODIS VCF	6
NoTree2007	Average percent nontree vegetation cover in 2007	MODIS VCF	6
Tree2008	Average percent tree cover in 2008	MODIS VCF	6
NoTree2008	Average percent nontree vegetation cover in 2008	MODIS VCF	6
Tree2009	Average percent tree cover in 2009	MODIS VCF	6
NoTree2009	Average percent nontree vegetation cover in 2009	MODIS VCF	6
Tree2010	Average percent tree cover in 2010	MODIS VCF	6
NoTree2010	Average percent nontree vegetation cover in 2010	MODIS VCF	6
Tree2011	Average percent tree cover in 2011	MODIS VCF	6

Variable Code	*Description*	*Source*	*Date/Version*
NoTree2011	Average percent nontree vegetation cover in 2011	MODIS VCF	6
Tree2012	Average percent tree cover in 2012	MODIS VCF	6
NoTree2012	Average percent nontree vegetation cover in 2012	MODIS VCF	6
Tree2013	Average percent tree cover in 2013	MODIS VCF	6
NoTree2013	Average percent nontree vegetation cover in 2013	MODIS VCF	6
Tree2014	Average percent tree cover in 2014	MODIS VCF	6
NoTree2014	Average percent nontree vegetation cover in 2014	MODIS VCF	6
Tree2015	Average percent tree cover in 2015	MODIS VCF	6
NoTree2015	Average percent nontree vegetation cover in 2015	MODIS VCF	6
Tree2016	Average percent tree cover in 2016. Same as GrassTree2016.	MODIS VCF	6
NoTree2016	Average percent nontree vegetation cover in 2016. Same as GrassHerb2016.	MODIS VCF	6

Table 4. Table 3. Spatial variables for Forest Cores, listed by variable code, description, source data, and source data date or verison.

Variable Code	*Description*	*Source*	*Date/Version*
Id	Forest Core ID#	n/a	6/1/2019
Complex_Na	Forest Core complex name	Mountain Range names	6/1/2019
Country_of	Countries occupied by the Forest Core	n/a	6/1/2019
BL_MEW	Indicates type of ecosystem in core, according to Brown and Lowe: Y = Brown and Lowe indicates Madrean Evergreen Woodland, O = Brown and Lowe does not show Madrean Evergreen Woodland, but it does show Petran Montane Conifer Forest	Brown and Lowe	2006
Area_Acres	Area of core in acres	ArcGIS	6/1/2019
AreaSqKm	Area of core in square kilometers	ArcGIS	6/1/2019
PerMEW	Percent of core that is "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", according to the 2010 NALCMS	NALCMS 2010	2010
MEWMeanArea	Combine NALCMS 2010 "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", then derive mean patch size using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
MEWLPI	Combine NALCMS 2010 "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", then derive max patch size using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
MEWNP	Combine NALCMS 2010 "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", then derive number of patches using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
MEWNPperkm	Combine NALCMS 2010 "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", then derive number of patches using FRAGSTATS. Divide the result by AreaSqKm.	NALCMS 2010, FRAGSTATS, AreaSqKm	2010, 4.2
PerProtect	Percent of core that is protected, where protected means lands in the National Conservation Easement Database; lands classified as Categories 1, 2, or Not Available in the CEC NA PAD 2017; and APFF Bavispe Park units in Mexico	NCED, NA PAD, INEGI	1.4, 2017, n/a

Variable Code	*Description*	*Source*	*Date/Version*
BurnSev	Percent of core that has experienced high severity fire since 1984, adjusted to diminish the effect over time. Same as HalfLife10 from the BurnSeverity tab. Formula (where year = percent of core that burned at high severity in that year): SUM(2008-2017)+0.5*SUM(1998-2007)+.25*SUM(1988-1997)+0.125*SUM(1984-1987). Calculated only for Forest Cores at least partially in the US.	MTBS	2017
NumHSFires	Number of high severity fires in core since 1984. Calculated only for Forest Cores at least partially in the US.	MTBS	2017
BurnRisk	Percent of core in Fire Behavior Fuel Model classes likely to burn at high severity (Anderson 13 classes 7, 9, 10, &12); same as C71012_9 from BurnRisk tab. Calculated only for Forest Cores at least partially in the US.	Landfire FBFM13	1.4
ForestQuadrant	Shows if the forest core has **high burn risk, small patches** (top 25% of BurnRisk and bottom 50% of MEWMeanArea (average patch size)); **high burn risk, large patches** (top 25% of BurnRisk and top 50% of MEWMeanArea); **low burn risk, small patches** (bottom 75% of BurnRisk and bottom 50% of MEWMeanArea); **low burn risk, large patches** (bottom 75% of BurnRisk and top 50% of MEWMeanArea); or no burn risk (BurnRisk=0). *Burn risk here represents the percent of the core at risk of high severity fire.* Cores with high burn risk and small patches may be most in danger of losing significant portions of forest habitat, while those with low or no burn risk and large patches may be in the least danger.		
FBFM1	Percent of core where fuel model indicates: Surface fires that burn fine herbaceous fuels, cured and curing fuels, little shrub or timber present, primarily grasslands and savanna	Landfire FBFM13	1.4
FBFM2	Percent of core where fuel model indicates: Burns fine, herbaceous fuels, stand is curing or dead, may produce fire brands on oak or pine stands	Landfire FBFM13	1.4
FBFM3	Percent of core where fuel model indicates: Most intense fire of grass group, spreads quickly with wind, one third of stand dead or cured, stands average 3 ft tall	Landfire FBFM13	1.4
FBFM4	Percent of core where fuel model indicates: Fast spreading fire, continuous overstory, flammable foliage and dead woody material, deep litter layer can inhibit suppression	Landfire FBFM13	1.4
FBFM5	Percent of core where fuel model indicates: Low intensity fires, young, green shrubs with little dead material, fuels consist of litter fromunderstory	Landfire FBFM13	1.4

Variable Code	*Description*	*Source*	*Date/Version*
FBFM6	Percent of core where fuel model indicates: Broad range of shrubs, fire requires moderate winds to maintain flame at shrub height, or will drop to the ground with low winds	Landfire FBFM13	1.4
FBFM7	Percent of core where fuel model indicates: Foliage highly flammable, allowing fire to reach shrub strata levels, shrubs generally 2 to 6 feet high	Landfire FBFM13	1.4
FBFM8	Percent of core where fuel model indicates: Slow, ground burning fires, closed canopy stands with short needle conifers or hardwoods, litter consist mainly of needles and leaves, with little undergrowth, occasional flares with concentrated fuels	Landfire FBFM13	1.4
FBFM9	Percent of core where fuel model indicates: Longer flames, quicker surface fires, closed canopy stands of long-needles or hardwoods, rolling leaves in fall can cause spotting, dead-down material can cause occasional crowning	Landfire FBFM13	1.4
FBFM10	Percent of core where fuel model indicates: Surface and ground fire more intense, dead-down fuels more abundant, frequent crowning and spotting causing fire control to be more difficult	Landfire FBFM13	1.4
FBFM11	Percent of core where fuel model indicates: Fairly active fire, fuels consist of slash and herbaceous materials, slash originates from light partial cuts or thinning projects, fire is limited by spacing of fuel load and shade from overstory	Landfire FBFM13	1.4
FBFM12	Percent of core where fuel model indicates: Rapid spreading and high intensity fires, dominated by slash resulting from heavy thinning projects and clearcuts, slash is mostly 3 inches or less	Landfire FBFM13	1.4
C71012	Sum of FBFM7, FBFM10, anf FBFM12	Landfire FBFM13	1.4
C71012_49	Sum of FBFM4, FBFM7, FBFM9, FBFM10, and FBFM12	Landfire FBFM13	1.4
C71012_9	Sum of FBFM7, FBFM9, FBFM10, and FBFM12	Landfire FBFM13	1.4
PerHFS1984	Percent of core that burned at high severity in 1984	MTBS	2017
PerHFS1985	Percent of core that burned at high severity in 1985	MTBS	2017
PerHFS1986	Percent of core that burned at high severity in 1986	MTBS	2017
PerHFS1987	Percent of core that burned at high severity in 1987	MTBS	2017
PerHFS1988	Percent of core that burned at high severity in 1988	MTBS	2017
PerHFS1989	Percent of core that burned at high severity in 1989	MTBS	2017
PerHFS1990	Percent of core that burned at high severity in 1990	MTBS	2017
PerHFS1991	Percent of core that burned at high severity in 1991	MTBS	2017
PerHFS1992	Percent of core that burned at high severity in 1992	MTBS	2017

Variable Code	*Description*	*Source*	*Date/Version*
PerHFS1993	Percent of core that burned at high severity in 1993	MTBS	2017
PerHFS1994	Percent of core that burned at high severity in 1994	MTBS	2017
PerHFS1995	Percent of core that burned at high severity in 1995	MTBS	2017
PerHFS1996	Percent of core that burned at high severity in 1996	MTBS	2017
PerHFS1997	Percent of core that burned at high severity in 1997	MTBS	2017
PerHFS1998	Percent of core that burned at high severity in 1998	MTBS	2017
PerHFS1999	Percent of core that burned at high severity in 1999	MTBS	2017
PerHFS2000	Percent of core that burned at high severity in 2000	MTBS	2017
PerHFS2001	Percent of core that burned at high severity in 2001	MTBS	2017
PerHFS2002	Percent of core that burned at high severity in 2002	MTBS	2017
PerHFS2003	Percent of core that burned at high severity in 2003	MTBS	2017
PerHFS2004	Percent of core that burned at high severity in 2004	MTBS	2017
PerHFS2005	Percent of core that burned at high severity in 2005	MTBS	2017
PerHFS2006	Percent of core that burned at high severity in 2006	MTBS	2017
PerHFS2007	Percent of core that burned at high severity in 2007	MTBS	2017
PerHFS2008	Percent of core that burned at high severity in 2008	MTBS	2017
PerHFS2009	Percent of core that burned at high severity in 2009	MTBS	2017
PerHFS2010	Percent of core that burned at high severity in 2010	MTBS	2017
PerHFS2011	Percent of core that burned at high severity in 2011	MTBS	2017
PerHFS2012	Percent of core that burned at high severity in 2012	MTBS	2017
PerHFS2013	Percent of core that burned at high severity in 2013	MTBS	2017
PerHFS2014	Percent of core that burned at high severity in 2014	MTBS	2017
PerHFS2015	Percent of core that burned at high severity in 2015	MTBS	2017
PerHFS2016	Percent of core that burned at high severity in 2016	MTBS	2017
PerHFS2017	Percent of core that burned at high severity in 2017	MTBS	2017
2017_2013	Sum of PerHFS2013-PerHFS2017	MTBS	2017
2012_2008	Sum of PerHFS2008-PerHFS2012	MTBS	2017
2007_2003	Sum of PerHFS2003-PerHFS2007	MTBS	2017
2002_1998	Sum of PerHFS1998-PerHFS2002	MTBS	2017
1997_1993	Sum of PerHFS1993-PerHFS1997	MTBS	2017
1992_1988	Sum of PerHFS1988-PerHFS1992	MTBS	2017
1987_1984	Sum of PerHFS1984-PerHFS1987	MTBS	2017
HalfLife10	Percent of core that has experienced high severity fire since 1984, adjusted to diminish the effect over time. Formula: SUM(PerHFS2008-PerHFS2017)+0.5*SUM(PerHFS1998-PerHFS2007)+.25*SUM(PerHFS1988-PerHFS1997)+0.125*SUM(PerHFS1984-PerHFS1987)	MTBS	2017

Variable Code	*Description*	*Source*	*Date/Version*
Total	Percent of core that has experienced high severity fire since 1984, NOT adjusted to diminish the effect over time. Formula: SUM(PerHFS1984-PerHFS2017)	MTBS	2017
Count_Fires	Total number of fires of high severity since 1984, in core	MTBS	2017

Table 5. Table 3. Spatial variables for HUC12 Watersheds, listed by variable code, description, source data, and source data date or verison.

Variable Code	*Description*	*Source*	*Date/Version*
HUC12	HUC12 watershed code	NHDPlus HR WBD	Beta
BurnSev	Percent of HUC12 that has experienced high severity fire since 1984, adjusted to diminish the effect over time. Formula (where year = percent of HUC12 that burned at high severity in that year): SUM(2008-2017)+0.5*SUM(1998-2007)+.25*SUM(1988-1997)+0.125*SUM(1984-1987). Calculated only for HUC12s in the US.	MTBS	2017
NumHSFires	Number of high severity fires in HUC12 since 1984. Calculated only for HUC12s in the US.	MTBS	2017
BurnRisk	Percent of HUC12 in Fire Behavior Fuel Model classes likely to burn at high severity (Anderson 13 classes 7, 9, 10, &12). Calculated only for HUC12s in the US.	Landfire FBFM13	1.4
HII_mean	Mean value of the Human Influence Index within the HUC12.	CEC NA Human Infl. on Terr Ecosys.	v2 (2005)
CropPer	Percent of HUC12 that is "Cropland", according to the 2010 NALCMS	NALCMS 2010	2010, 4.2
CanopyCov	The average percent tree cover in the HUC12 in 2016.	MODIS VCF	6
2016VegPerCov	The average percent vegetation cover (CanopyCov + notree cover) in the HUC12 in 2016.	MODIS VCF	6
VegTrend	Trend in average percent vegetation cover (CanopyCov + notree cover) from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF	6
2017SummrNDVI	Average NDVI value in the HUC12 during the summer growing season of 2017 (July, August, and September)	MODIS MOD13Q1	various
SummrNDVITrend	Trend in average NDVI value in the HUC12 during the summer growing season (July, August, and September) from 2000-2017, calculated as the slope of the best-fit line to all yearly data points.	MODIS MOD13Q2	various
TotalPerWi_m	The total length of perennial stream within the HUC12.	TNC AZ Freshwater Assess., WRRC Perennial Streams	12/31/2019
MaxPerWi_m	The length of the longest connected perennial stream network within the HUC12.	TNC AZ Freshwater Assess., WRRC Perennial Streams	12/31/2019
PerConnect_m	The length of the perennial stream network that the HUC12 is connected to (includes streams outside of the HUC12, but which the HUC12 is connected to by perennial flow).	TNC AZ Freshwater Assess., WRRC Perennial Streams	12/31/2019
AreaSqKm	Area of HUC12 in square kilometers	ArcGIS	12/31/2019
ElRange	The elevation range of the HUC12, calculated as the maximum-minimum elevation.	ArcGIS, DEM	12/31/2019
TRI_mean	A measure of the roughness of the topography within the HUC12, calculated as the mean Topographic Roughness Index.	ArcGIS, DEM, Geomorphometry & Gradient Metics Toolbox	v2, 6/31/18

Variable Code	*Description*	*Source*	*Date/Version*
PerProtect	Percent of HUC12 that is protected, where protected means lands in the National Conservation Easement Database; lands classified as Categories 1, 2, or Not Available in the CEC NA PAD 2017; and APFF Bavispe Park units in Mexico	NCED, NA PAD, INEGI	1.4, 2017, n/a
FcorePER	Percent of HUC12 that is within a Forest Core	Forest Cores	12/31/2019
GcorePER	Percent of HUC12 that is within a Grassland Core	Grassland Cores	12/31/2019
LinkPER	Percent of HUC12 that is within a Connectivity Area	Connectvity Areas	12/31/2019
PerSDS	Percent of HUC12 that is "Tropical or sub-tropical shrubland", according to the 2010 NALCMS, calculated only for HUC12s that contain Brown & Lowe's "Sonoran Desertscrub" types. For HUC12s where Sonoran and Chihuahuan Desertscrub both occur, this includes both types.	NALCMS 2010, Brown & Lowe	2010, 4.2
SDSMod	Within Brown & Lowe's "Arizona Upland Subdivision" in the HUC12, the percent "Cropland" and "Urban and built-up" combined , according to the 2010 NALCMS.	NALCMS 2010, Brown & Lowe	2010, 4.2
PerGrass	Percent of HUC12 that is "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", according to the 2010 NALCMS	NALCMS 2010	2010, 4.2
PerGrassMo	Within Brown & Lowe's "Plains and Great Basin Grassland" and "Semidesert Grassland" in the HUC12, the percent "Cropland" and "Urban and built-up" combined, according to the 2010 NALCMS	NALCMS 2010, Brown & Lowe	2010, 4.2
GrassNP	Combine NALCMS 2010 "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", then derive number of patches using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
GrassLPI	Combine NALCMS 2010 "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", then derive max patch size using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
GrassMeanArea	Combine NALCMS 2010 "Tropical or sub-tropical grassland" or "Temperate or sub-polar grassland", then derive mean patch size using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
PerMEW	Percent of HUC12 that is "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", according to the 2010 NALCMS	NALCMS 2010	2010
MEWNP	Combine NALCMS 2010 "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", then derive number of patches using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
MEWLPI	Combine NALCMS 2010 "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", then derive max patch size using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2

Variable Code	*Description*	*Source*	*Date/Version*
MEWMeanArea	Combine NALCMS 2010 "Mixed Forest" + "Temperate or sub-polar broadleaf deciduous forest" + "Temperate or sub-polar needleleaf forest" + "Temperate or sub-polar shrubland" + "Tropical or sub-tropical broadleaf evergreen forest", then derive mean patch size using FRAGSTATS	NALCMS 2010, FRAGSTATS	2010, 4.2
SpringCVMean	Average Conservation Value score for springs in the HUC12. Calculated only for HUC12s in the US.	SIA Spring Prioritization Tool	1
SpringTMean	Average Threat score for springs in the HUC12. Calculated only for HUC12s in the US.	SIA Spring Prioritization Tool	1
SpringIMax	Distance of most isolated spring in HUC12 from the nearest other spring or perennial stream. Calculated only for HUC12s in the US.	SIA Spring Prioritization Tool	1
SpringDens	Density of mapped springs in the HUC12 (NUMsprings/AreaSqKm). Calculated only for HUC12s in the US.	SIA Spring Prioritization Tool	1
NUMsprings	Number of mapped springs in the HUC12. Calculated only for HUC12s in the US.	SIA Spring Prioritization Tool	1
SDSBG2016	Within Brown & Lowe's "Arizona Upland Subdivision" in the HUC12, the average percent bare ground in 2016, calculated as 100-Tree2016-NoTree2016.	MODIS VCF, Brown & Lowe	6
SDSBGTREND	Within Brown & Lowe's "Arizona Upland Subdivision" in the HUC12, the trend in average percent bare ground from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF, Brown & Lowe	6
SDSHerb2016	Within Brown & Lowe's "Arizona Upland Subdivision" in the HUC12, the average percent nontree vegetation cover in 2016. Same as NoTree2016.	MODIS VCF, Brown & Lowe	6
SDSHerbTREND	Within Brown & Lowe's "Arizona Upland Subdivision" in the HUC12, the trend in average percent nontree cover from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF, Brown & Lowe	6
SDSTree2016	Within Brown & Lowe's "Arizona Upland Subdivision" in the HUC12, the average percent tree cover in 2016. Same as Tree2016.	MODIS VCF, Brown & Lowe	6
SDSTreeTREND	Within Brown & Lowe's "Arizona Upland Subdivision" in the HUC12, the trend in average percent tree cover from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF, Brown & Lowe	6
GrassBG2016	Within Brown & Lowe's "Plains and Great Basin Grassland" and "Semidesert Grassland" in the HUC12, the average percent bare ground in 2016, calculated as 100-Tree2016-NoTree2016.	MODIS VCF, Brown & Lowe	6
GrassBGTREND	Within Brown & Lowe's "Plains and Great Basin Grassland" and "Semidesert Grassland" in the HUC12, the trend in average percent bare ground from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF, Brown & Lowe	6
GrassHerb2016	Within Brown & Lowe's "Plains and Great Basin Grassland" and "Semidesert Grassland" in the HUC12, the average percent nontree vegetation cover in 2016. Same as NoTree2016.	MODIS VCF, Brown & Lowe	6

Variable Code	*Description*	*Source*	*Date/Version*
GrassHerbTREND	Within Brown & Lowe's "Plains and Great Basin Grassland" and "Semidesert Grassland" in the HUC12, the trend in average percent nontree cover from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF, Brown & Lowe	6
GrassTree2016	Within Brown & Lowe's "Plains and Great Basin Grassland" and "Semidesert Grassland" in the HUC12, the average percent tree cover in 2016.	MODIS VCF, Brown & Lowe	6
GrassTreeTREND	Within Brown & Lowe's "Plains and Great Basin Grassland" and "Semidesert Grassland" in the HUC12, the trend in average percent tree cover from 2000-2016, calculated as the slope of the best-fit line to all yearly data points.	MODIS VCF, Brown & Lowe	6
Country	Country in which most of the watershed falls.		
ForestQuadrant	Shows if the forest in the HUC12 has **high burn risk, small patches** (top 25% of BurnRisk and bottom 50% of MEWMeanArea (average patch size)); **high burn risk, large patches** (top 25% of BurnRisk and top 50% of MEWMeanArea); **low burn risk, small patches** (bottom 75% of BurnRisk and bottom 50% of MEWMeanArea); **low burn risk, large patches** (bottom 75% of BurnRisk and top 50% of MEWMeanArea); or no burn risk (BurnRisk=0). *Burn risk here represents the percent of the core at risk of high severity fire.* Watersheds with high burn risk and small patches may be most in danger of losing significant portions of forest habitat, while those with low or no burn risk and large patches may be in the least danger.		
GoodGrass	The average of GrassMeanArea (average grass patch size) and GrassHerb2016 (Percent of grassland that was not tall trees or bare ground). Used as an indicator of overall grassland quality.	GrassMean Area and GrassHerb2016	12/31/2019
GrassQuadrant	Shows if the grassland in the HUC12 is **good grassland, high modification** (top 25% of GoodGrass and top 25% of PerGrassMod (percent of grassland modified)); **good grassland, low modification** (top 25% of GoodGrass and bottom 75% of PerGrassMod); **poor to moderate grassland, low modification** (bottom 75% of GoodGrass and bottom 75% of PerGrassMod); or **poor to moderate grassland, high modification** (bottom 75% of GoodGrass and top 25% of PerGrassMod). Watersheds with good grassland and high modification may be most in danger of losing significant areas of high quality grassland habitat.		12/31/2019
GrassTreeQuartile	Shows which quartile of GrassTreeTREND (trend in percent tree cover) that grassland in the HU12 falls into, including a four quartiles for positive trends (top 25, top 50, bottom 50, and bottom 25), and one category for a negative trend in tree cover (trees decrease). Watersheds in the top 25 are the most likely to be experiencing invasion by woody plants in their grasslands, while watersheds in the trees decrease category may be increasing in herbaceous cover within their grasslands.	GrassTree2016	12/31/2019

Variable Code	*Description*	*Source*	*Date/Version*
SDSVegQuadrant	Shows if the Sonoran Desert Scrub in the HUC12 has a **strong herbaceous to bare ground** trend (50% most negative SDSHerbTrend and 50% most positive SDSBGTrend); **strong bare ground to herbaceous** trend (50% most positive SDSHerbTrend and 50% most negative SDSBGTrend); **weak herbaceous to bare ground trend** (50% least negative SDSHerbTrend and 50% least positive SDSBGTrend); **weak bare ground to herbaceous trend** (50% least positive SDSHerbTrend and 50% least negative SDSBGTrend), or **other** (some other combination of trends). Watersheds with a strong bare ground to herbaceous trend may be experiencing invasion of buffelgrass or nonnative annuals.	SDSHerbTrend & SDSBGTrend	12/31/2019
SDSModQuadrant	Shows if the HUC 12 has **abundant SDS (Sonoran Desert Scrub), high modification** (top 50% of PerSDS and top 25% of SDSMod); **less SDS, high modification** (bottom 50% of PerSDS and top 25% of SDSMod); **abundant SDS, low modification** (top 50% of PerSDS and bottom 75% of SDSMod); **less SDS, low modification** (bottom 50% of PerSDS and bottom 75% of SDSMod). Watersheds with abundant SDS and high modification may be most in danger of losing significant areas of high quality SDS habitat.	PerSDS & SDSMod	12/31/2019
Water_Scarce	A measure of water scarcity in the HUC12, with lower values equating to greater water scarcity. An average of the TotPerWi_m (rescaled from 0-100) and SpringDens (rescaled from 0-100). Not calculated for Mexico due to a lack of comprehensive data on springs. Waters in watersheds with scores very close to but greater than zero may be especially worth protecting, as they are very rare water sources in their area.	TotPerWi_m & SpringDens	12/31/2019