VARIABLES USED OR CALCULATED IN ENVCALC2 PROGRAM

This list is organized in the order in which variables appear in the ENVCALC2 output. NOTE: This list is transposed for ease of viewing - the output will be organized in columns from left to right across the file, with individual records in rows. The variables which are calculated depend on the structure of the input file and the choices made about which steps to calculate. See Information for Users.

KEY

Light Grey for use with Drainage/Elevation information
Darker Grey for use with the HG input variables
Blue for use with BIOMASS information on documented ungulate populations
Darkest Grey are not output in this program

Variable	Citation	Type	Explanation
INPUT VARIABLES			
GROUPNO		ID	Case number of the individual ethnic group
SECNO		ID	Section number: Regional marker
REGION		ID	Regional marker
STATE		ID	State of individual ethnic group
NAME		ID	Name of ethnic group or station name
LAT		INP	Latitude (N/S)
LATITUDE		INP	Latitude
LUNIT		INP	Latitude Unit: DD = Decimal Degrees (e.g. 23.34 degrees is 23 degrees 20.4 minutes [20.4/60 =.34]); DM = Decimal Minutes (e.g. 23.34 is 23 degrees and 34 minutes)
LONG		ID	Longitude (E/W)
LONGITUD		ID	Longitude (Decimal Degrees)
ELUNIT		INP	Elevation unit (ft/m).
ELEV		INP	Elevation at group's central point.
COKLM		INP	Distance to nearest coast (km).
SOIL		INP	Primary Soil Type
SOIL2		INP	Secondary Soil Type
VEGNU		INP	Vegetation Type
TUNIT		INP	Temperature Unit (C/F)
TJAN		INP	Mean temperature in January

TFEB		INP	Mean temperature in February
TMAR		INP	Mean temperature in March
TAPR		INP	Mean temperature in April
TMAY		INP	Mean temperature in May
TJUN		INP	Mean temperature in June
TJUL		INP	Mean temperature in July
TAUG		INP	Mean temperature in August
TSEP		INP	Mean temperature in September
TOCT		INP	Mean temperature in October
TNOV		INP	Mean temperature in November
TDEC		INP	Mean temperature in December
RUNIT		INP	Rainfall Unit (mm/in)
RJAN		INP	Rainfall in January
RFEB		INP	Rainfall in February
RMAR		INP	Rainfall in March
RAPR		INP	Rainfall in April
RMAY		INP	Rainfall in May
RJUN		INP	Rainfall in June
RJUL		INP	Rainfall in July
RAUG		INP	Rainfall in August
RSEP		INP	Rainfall in September
ROCT		INP	Rainfall in October
RNOV		INP	Rainfall in November
RDEC		INP	Rainfall in December
SETTING	Binford 2001: 168	DEINP	Drainage category. (S): Stream or river. (C): Coastal (L): Lake (P): Pan or internal drainage
HEADWAT		DEINP	Distance from water source to the headwaters of the drainage (measured along the stream)
DRAIN		DEINP	Total length (in miles) of drainage system.
H10		DEINP	Measure of altitudinal maximum at a circle with a 10 mile radius.
H25		DEINP	Measure of altitudinal maximum at a circle with a 25 mile radius.
H50		DEINP	Measure of altitudinal maximum at a circle with a 50 mile radius.
L10		DEINP	Measure of altitudinal minimum at a circle with a 10 mile radius.

L25	DEINP	Measure of altitudinal minimum at a circle with a 25 mile radius.
L50	DEINP	Measure of altitudinal minimum at a circle with a 50 mile radius.
SUBPOP	HG	Characteristic of hunter-gatherers at the time of ethnographic reporting. N: Normal Hunter-Gatherer Cases X: Suspect
HUNTING	HG	Percentage of total diet from hunting terrestrial animals.
GATHERIN	HG	Percentage of total diet from gathering terrestrial plants.
FISHING	HG	Percentage of total diet from aquatic resources.
GRP1	HG	Mean size of smallest residential group.
GRP2	HG	Mean size of largest residential seasonal camps.
GRP3	HG	Mean size of periodic regional camps.
AREA	HG	Area in 100km^2 occupied by ethnic groups.
TLPOP	HG	Total ethnic unit size.
DENSITY	HG	Population density. DENSITY = TLPOP/AREA
NOMOV	HG	Mean number of residential camp moves in one year.
DISMOV	HG	Mean total mileage of yearly movements.
AGEM	HG	Mean age of males at first marriage.
AGEF	HG	Mean age of females at first marriage.
POLYG	HG	Percentage of males with multiple wives
STMALE	HG	Mean stature of males (cm).
STFEMALE	HG	Mean stature of females (cm).
WTMALE	HG	Mean weight of males (kg).
WTFEMALE	HG	Mean weight of females (kg).
FAMSZ	HG	Mean family size. Total group size/number of married men.
MHS	HG	Mean household size (persons)
SZ1FAM	HG	Mean size of one family house. Measured as the diameter of a circle with equal area.
SZJOINT	HG	Mean size of joint family houses. Measured as the diameter of a circle with equal area.
SZCOMU	HG	Mean size of communinal houses. Measured as the diameter of a circle with equal area.
SZMEAN	HG	Mean house size. Measured as the diameter of a circle with equal area.
YEAR	HG	Year of ethnographic reporting.
BIOMASS	BM	Total ungulate biomass for area.
BIOSMALL	BM	Total ungulatel biomass (without elephants or rhinocerous).

EXTREME CALCULATIONS

MWM	Binford 2001: 59	CALC	Mean temperature in degrees Celsius of the warmest month in the year.
MCM	Binford 2001: 59	CALC	Mean temperature in degrees Celsius of the coldest month in the year.
RHIGH	Binford 2001: 70	CALC	Mean monthly rainfall occurring in the wettest month of the year.
RLOW	Binford 2001: 70	CALC	Mean monthly rainfall occurring in the driest month of the year.
RRCORR	Binford 2001: 70	CALC	Number of months separating warmest month and wettest month. Positive values indicate the number of months after the warmest month; negative values indicate the number of months prior to the warmest month.

STEP 1 CALCULATIONS: WATER BALANCE PLUS PLANT BIOMASS

LATITUDE		CONV	Latitude in decimal degrees (If input was DM this is the converted value)
LONGITUDE		CONV	Longitude in decimal degrees (If input was DM this is the converted value)
MLATITUDE		CONV	Latitude ranging from -90 (Southern Hemisphere) to 90 (Northern Hemisphere)
MLONGITUD		CONV	Longitude ranging from -180 (Western Hemisphere) to 180 (Eastern Hemisphere)
ELEVATION		CONV	Elevation in feet (If input was m this is the converted value)
CMAT	Binford 2001: 58	CALC	Mean annual temperature.
ET	Binford 2001: 58-59; Bailey 1960	CALC	Effective temperature: a measure designed to examine biological implications of ambient warmth. ET = [(18*MWM)-(10*MCM)]/(MWM-MCM+8)
PET	Binford 2001: 74	CALC	Potential evapotranspiration: a measure of the potential for water loss to the soil and plant communities, where the only limiting factor is the availability of solar energy.
CRR	Binford 2001: 70	CALC	Calculated real rainfall: CRR = Total yearly rainfall.
WSTORAGE	Binford 2001: 477	CALC	Measure of the water storage capacity of various soils: (S) = 62.72 (A1) = 59.96 (A2) = 108.75 (A3) = 196.84 (A4) = 103.86 (A5) = 196.84 (A) = (59.96+108.75+196.84+103.86)/4 (U) = 174.52 (U2) = 174.52 (U4) = 174.52 (O) = 383.93 (V) = 161.20 (M) = 195.92 (M5) = 195.92 (D) = 69,95

			(T) = 66.72 (H) = 143.03
SNOWAC	Binford 2001: 75	CALC	Snow accumulation: the amount of surplus water accumulated in months with a mean monthly temperature less than 1 degree Celsius.
WRET	Binford 2001: 75	CALC	Water retention: if CRR is greater than PET then the excess water may have been added to the water already stored in the soil.
AE	Binford 2001: 74 Rosensweig 1968	CALC	Amount of water evaporated or transpired into the atmosphere measured in mm.
RUNOFF	Binford 2001: 75	CALC	Water runoff: if CRR is greater than PET then the excess water may be lost to the location through runoff.
WATD	Binford 2001: 75	CALC	Water deficit: if AE is less than PET, then the rainfall was less than what could have been evaporated by solar radiation at this location - water is evaporated from that stored in the soil.
MI	Binford 2001: 477 Mathers 1962: 120	CALC	Moisture index: Measures suitability of environment to agricultural production. MI = 100 * (CRR / PET-1).
BT	Binford 2001: 59; Holdridge 1947	CALC	Biotemperature: measures the central tendency calculated by dividing by 12 the sum of all mean monthly temperatures greater than 0 degrees Celsius.
GROWC	Binford 2001: 73 Bailey 1960	CALC	Length of growing season. Number of months with mean temperatures greater than 8 degrees Celsius.
WILTGRC	Binford 2001: 79	CALC	Number of months in the growing season in which CRR is less than or equal to 38% of PET.
WATDGRC	Binford 2001: 79	CALC	Number of months in the growing season in which the value for WATD is greater than zero.
WATRGRC		CALC	Number of months in the growing season in which water is retained in the soil.
RUNGRC	Binford 2001: 79	CALC	Number of months in the growing season in which runoff is greater than zero.
PGROW	Binford 2001: 85	CALC	Weighted measure of the simultaneous presence of both water and solar radiation available to the plant community. Scales from 0-36; 0 indicates no chance for plant growth; 36 indicates good growing conditions year round. IF CRR≤.40*PET THEN PGROW = 0.0 for month in question ELSE IF CRR ≤1.2*PET THEN PGROW = 1.0 for the month in question ELSE IF CRR > 1.2*PET THEN PGROW = 3.0 for the month in question

SDTEMP	Binford 2001: 70	CALC	Standard deviation of monthly temperature array.
CVTEMP	Binford 2001: 71	CALC	Coefficient of variation of monthly temperature array.
SDRAIN	Binford 2001: 70	CALC	Standard deviation of monthly rainfall array.
CVRAIN	Binford 2001: 70	CALC	Coefficient of variation of monthly rainfall array.
RRCORR2	Binford 2001: 71	CALC	Correlation of peak rainfall to warmest month scaled from 0.0 to 12.0; 4.6 indicates peak rainfall in same month as peak temperature = equivalent to .1 on RRCORR variable above
RRCORR3	Binford 2001: 71	CALC	Correlation of rainfall to warmest month, for cases with 12 months of growing season the value of RRCORR3 is set at 4.5; when growing season < 12, RRCORR3 = RRCORR2.
SEASON	Binford 2001: 71	CALC	Seasonal ordination for season with greatest rainfall. (1) Spring: RRCORR2 0 – 2.99 (2) Summer: RRCORR2 3.00 – 5.99 (3) Fall: RRCORR2 6.00 – 8.99 (4) Winter RRCORR2 9.00 – 11.99.
MAXRANGE	Binford 2001: 166	DECALC	Difference between the lowest recorded point of elevation and the highest recorded point of elevation
MEANELEV	Binford 2001: 166	DECALC	Mean elevation for all calculated elevation values
STDELEV	Binford 2001: 166	DECALC	Standard deviation of elevation value array.
CVELEV	Binford 2001: 166	DECALC	Coefficient of variation of elevation value array.
MAXELEV		DECALC	Highest elevation point out of elevation variable array.
MINELEV		DECALC	Lowest elevation point out of elevation variable array.
ELEV		DECALC	With the elevation array, elev is the average of the high and low values for 10 mile radius.
PERWRET	Binford 2001: 79	CALC	Percentage of the growing season, during which water is stored in the soil.
PERWDEF		CALC	Percentage of the growing season in which the value of WATD is greater than zero.
PERWLTG	Binford 2001: 79	CALC	PERWLTG = WILTGRC/GROWC. Percentage of the growing season where the plant community is at or above the wilting point.
DEFPER	Binford 2001: 79	CALC	DEFPER = (WATDGRC/GROWC) * 100. Percentage of the growing season in which a water-deficit occurs.
NAGP	Binford 2001: 79	CALC	Net above-ground productivity: Measure of new cell life added to a habitat as a result of photosynthesis and growth.
	Rosensweig 1968: 71		NAGP = 10**({[1.0 + (1.66±.27)]*[$\log_{10}$AE]} – (1.66±.07)).
POTNAGP	Binford 2001: 79-80	CALC	Estimate of the potential level of net above-ground productivityif rainfall were not a limiting factor. Uses PET in place of AE in equation above.

NAGPP	Binford 2001: 478	CALC	NAGP per 100 sq km instead of per sq m. NAGPP = (NAGP/1000)*100000000
PPPER	Binford 2001:85	CALC	Percentage of potential evapotranspiration realized as actual evapotranspiration. (Not actually output)
BIO	Binford 2001:85	CALC	Measure of the maximum biomass that can occur at a given location. Also known as MAXBIO. BIO = [-1514.10169014+(23.7869109052*POTNAGP)+(-0.0609287524512*POTNAGP^2)+(6.46993574054E-05*POTNAGP^3)]/[1+(-.00230688794979*POTNAGP)+(1.30111054427E-06*POTNAGP^2)+(75212956032E-10*POTNAGP^3)]
BAR	Binford 2001: 85	CALC	Measure of the maximum biomass accumulation ratio. Also known as MAXBAR. BAR = MAXBIO/POTNAGP
BAR5	Binford 2001: 85	CALC	Biomass accumulation ratio. BAR5 = BIO5/NAGP
HIRX	Binford 2001: 477 Holdridge 1959	CALC	Rainfall index: Used to classify plant communities. HIRX = PET / CRR.
RRANGE		CALC	Range of rainfall between wettest and driest months. RRANGE = (RHIGH – RLOW)
TRANGE	Binford 2001: 59	CALC	Range of temperatures TRANGE = (MWM-MCM)
REVEN	Binford 2001: 70; Whitmore 1975: 44-66	CALC	venness of rainfall: scaled 1.0 to 12.0 where 1.0 means all months get even rainfall and 2.0 means that all the rainfall occurs in a single month. REVEN = RHIGH/(CRR/12)
MRAIN	Binford 2001: 72	CALC	Meanness of rainfall: arranged from 0.0 to 100.0 where 0 is the least even rainfall and 100 is the value for no difference between wettest and driest months. MRAIN = (RLOW/RHIGH) * 100.
MTEMP	Binford 2001: 68	CALC	Meanness of temperature: arranged from 0.0 to 100.0 where 0 is the least even temperature and 100 is the value for no difference between warmest and coldest months. MTEMP = [(MCM+45)/(MWM+45)] * 100.
TEMP	Binford 2001: 59; Bailey 1960:10	CALC	Temperateness: tracks differences in temperature range between adjacent months at specific locations, with a positive bias in favor of locations where mean wither temperatures are above 0 degrees Celsius.
PTOAE	Binford 2001: 78	CALC	PTOAE = PET/(AE+1). Ratio of potential to actual evapotranspiration; used as an indicator of biotic community structure.
PTOWATD	Binford 2001: 78-79	CALC	PTOWATD = PET/(WATD+1). Ratio of potential evapotranspiration to the water deficit.
PTORUN	Binford 2001: 79	CALC	PTORUN = PET/(RUNOFF+1). Ratio of potential evapotranspiration to runoff. Predictor of all true forest plant associations.

PTOWATR		CALC	PTOWATR = PET/(WATRET+1). Ratio of potential evapotranspiration to soil water retention.
MEDSTAB	Binford 2001: 72	CALC	Mediterranean climate indicator. MEDSTAB = 10**{[log10ET2 – log10(7.5*SQRT(CRR))] * RRCORR2 * log10REVEN} / 10.
SUCSTAB	Binford 2001: 170	CALC	Indicator of conditions likely to result in extensive, periodic burning. SUBSTAB = 10**{log10ET2-log10(7.5* SQRT(CRR))}*{10**[log10(PERWLTG/100)*LREVEN]}/10
MAXSUC	Binford 2001: 170	CALC	Cutoff for the maximum succession stability in which NAGP is sufficient (>500 g/m^2) to provide fuel for succession. (Not actually output). MAXSUC = 1.2699958 + 0.27247947(NAGP) when NAGP is less than 500.

SUCSTAB2	Binford 2001: 171	CALC	If NAGP > 499.99 then SUCSTAB2 = SUCSTAB
			If NAGP < 500.00 and SUCSTAB < MAXSUC, then
			SUCSTAB2 = SUCSTAB.
			If NAGP < 500.00 and SUBSTAB > MAXSUC, then
			SUCSTAB2 = {1.0 – [(SUCSTAB-MAXSUC)/(225-MAXSUC)]}*MAXSUC

WACCESS		CALC	Calculates plant access to water during the growing season.
CLIM	Binford 2001: 57, 70	CALC	Ordination of the earth's climates by temperature where: (1) ET< 10.00 (2) 10.00 to 12.49 (3) 12.50 to 14.55 (4) 14.56 to 16.61 (5) 16.62 to 18.15 (6) 18.16 to 22.57 (7) ET >= 22.58
AVWAT	Binford 2001: 80	CALC	Moisture ordination of climate (1-8) (1) PTOAE > 5.0 (2) 2.25<PTOAE≤5.0 (3) 1.61<PTOAE≤2.25 (4) 1.41<PTOAE≤1.61 and DEFPER > 50 (5) 1.41<PTOAE≤1.61 and DEFPER < 50 (6) PTOAE≤1.41 and PTOWATD > 3.4 and PTOAE > 1.23 (7) PTOAE≤1.41 and PTOWATD > 3.4 and 1.01<PTOAE≤1.23 (8) PTOAE≤1.41 and PTOWATD > 3.4 and PTOAE≤1.01
CLASS		CALC	Nominal classification of available water into wet/dry distinction.
BIO5	Binford 2001: 85	CALC	Primary biomass. IF AE/PET < 1.0 BIO5 = 10**[($\log_{10}$CRR-($\log_{10}$1.75+$\log_{10}$PET)] * BIO * [(2.5 * PGROW/36)+PPPER]/3.5 OTHERWISE BIO5 = BIO
VEGCLASS		CALC	Preliminary discriminant function of vegetation typology

VEGDF		CALC	Refined discriminat functions of vegetation typology
STEP 2 CALCULATIONS			
LBIO		CALC	Log_{10} value of BIO
LBIO5		CALC	Log_{10} value of BIO5
LBAR5		CALC	Log_{10} value of BAR5
LNAGP		CALC	Log_{10} value of NAGP
LET		CALC	Log_{10} value of ET
LPET		CALC	Log_{10} value of PET
LAE		CALC	Log_{10} value of AE
LBT		CALC	Log_{10} value of BT
LTRANGE	Binford 2001: 182	CALC	Log_{10} value for TRANGE
LCMAT		CALC	Log_{10} value of CMAT
LMCM		CALC	Log_{10} value of MCM
LMWM		CALC	Log_{10} value of MWM
LMTEMP		CALC	Log_{10} value of MTEMP
LCVTEMP		CALC	Log_{10} value of CVTEMP
LCRR		CALC	Log_{10} value of CRR
LREVEN		CALC	Log_{10} value of REVEN
LRHIGH		CALC	Log_{10} value of RHIGH
LRLOW		CALC	Log_{10} value of RLOW
LRRCORR2		CALC	Log_{10} value of RRCORR2
LRRCORR3		CALC	Log_{10} value of RRCORR3
LRRANGE		CALC	Log_{10} value of RRANGE
LMRAIN		CALC	Log_{10} value of MRAIN
LRUNOFF		CALC	Log_{10} value of RUNOFF
LSNOWAC		CALC	Log_{10} value of SNOWAC
LWATD		CALC	Log_{10} value of WATD
LCVRAIN		CALC	Log_{10} value of CVRAIN
LDEFPER		CALC	Log_{10} value of DEFPER
LSUCSTAB		CALC	Log_{10} value of SUCSTAB

LPTOAE		CALC	Log_{10} value of PTOAE
LPTOWATD		CALC	Log_{10} value of PTOWATD
LPTORUN		CALC	Log_{10} value of PTORUN
LPTOWATR		CALC	Log_{10} value of PTOWATR
LWACCESS		CALC	Log_{10} value of WACCESS
LWRET		CALC	Log_{10} value of WRET
LWLTGRC		CALC	Log_{10} value of WLTGRC
LRUNGRC		CALC	Log_{10} value of RUNGRC
LWATRGRC		CALC	Log_{10} value of WATRGRC
LPERWDEF		CALC	Log_{10} value of PERWDEF
LPERWLTG		CALC	Log_{10} value of PERWLTG
LHIRX		CALC	Log_{10} value of HIRX
LSSTAB2		CALC	Log_{10} value of SUCSTAB2
LCOKLM	Binford 2001: 154	CALC	Log_{10} of COKLM
LLAT	Binford 2001: 109	CALC	Log_{10} value of LATITUDE
LBIOMASS		BMCALC	Log_{10} value of BIOMASS
LBIOSMALL		BMCALC	Log_{10} value of BIOSMALL.
LELEV		BMCALC	Log_{10} value of ELEV
VEGTAT	Binford 2001: 97-100 Strahler and Strahler 1984:420-440	ID	Ordination of the earth's vegetative communities. This variable is an early alphabetic classification which has been replaced by the numbered VEGNU classification.
DRANK	Binford 2001: 168	DECALC	Length of drainage relative to the Nile. DRANK = (DRAIN/4132)*10
DPOSIT	Binford 2001: 168	DECALC	Distance to headwaters relative total drainage length. DPOSIT = HEADWAT/DRAIN
DGROSS	Binford 2001: 168	DECALC	Measure of unearned water expected at a specific location. DGROSS = DRANK*DPOSIT
LMAXRANGE		DECALC	Log_{10} value of MAXRANGE

LMEANELEV			Log_{10} value of MEANELEV
LCVELEV		DECALC	Log_{10} value of CVELEV
LSTDELEV			Log_{10} value of STDELEV
LDRAIN		DECALC	Log_{10} value of DRAIN
LHEADWAT			Log_{10} value of HEADWAT
LDRANK		DECALC	Log_{10} value of DRANK
LDPOSIT			Log_{10} value of DPOSIT
LDGROSS		DECALC	Log_{10} value of DGROSS
LHUNTING		HGCALC	Log_{10} value of HUNTING
LGATHER		HGCALC	Log_{10} value of GATHERIN
LFISHING		HGCALC	Log_{10} value of FISHING
LDEN		HGCALC	Log_{10} value of DENSITY

STEP 3 CALCULATIONS

CRRPREY	Thackeray 1980	PROJ	Mean ungulate body mass calculated from CRR.
EXPREY	Binford 2001: 109	PROJ	Expected moderate body-size ungulate biomass (kg/km^2). EXPREY = 10**[(ELEV*5.30810E-05)+(LLAT*-.0300235)+(LNAGP*1.200771)+(LWATD*-0.116610)+(LWATRGRC*0.216493)+(NAGP*-4.26495E-04)+(RRCORR2*-0.028577)+(WRET*-0.008066)+(WSTORAGE*0.005171)]
EXPREYA	Binford 2001: 180	PROJ	Expected prey per 100 km^2. EXPREYA = 100*(EXPREY+.001)
STATUS		CALC	Used to establish the range from which expected prey values are known.
LEXPREY		CALC	Log_{10} value of EXPREY
EXPREYORD	Binford 2001: 113	PROJ	Ordinal measure of expected prey. (1) very low (2) low (3) scant (4) moderate (5) high (6) very high
WSUM		PROJ	Sum total of raw expected fishing, hunting and gathering. Values between 80 and 120 are in the reasonable range of HG projections

WHUNTP		PROJ	Expected percentage of hunting using ethnographically known hunter-gatherer cases.
WGATHP		PROJ	Expected percentage of gathering using ethnographically known hunter-gatherer cases.
WFISHP		PROJ	Expected percentage of fishing using ethnographically known hunter-gatherer cases.
LWGATHP		PROJ	Log_{10} value of WGATHP
WDEN1		PROJ	Projected HG Density1: calculated from equation run on proportional subset of HG cases.
WDEN2		PROJ	Projected HG Density2: calculated from equation run on total HG file.
WDEN		PROJ	Projected HG Density: Mean of WDEN1 and WDEN2
LWEXDEN		CALC	Log_{10} value of WDEN.
EXPRIM1	Binford 2001: 180	PROJ	Accessible human plant food per 100 km^2 (step 1). (Not output). EXPRIM1 = [(NAGP/1000)*100000000]*[1.0-(BAR5/85)]*[1.0-(BIO5/61000)^2]*[1.0-(BIO5/61000)]
EXPRIM2	Binford 2001: 180	PROJ	Accessible human plant food per 100 km^2 (step2). (Not output). EXPRIM2 = EXPRIM1 * [1.0-(EXPREY/20000)^2]*[1-(NAGP/6300)]
EXPRIM4	Binford 2001: 180	PROJ	Accessible human plant food per 100 km^2 (step3). EXPRIM3 = EXPRIM2 – (EXPRIM2*[1.0-(GROWC/12)^2] * 1.0 – [(ET-7.0)/23]
EXWGT2	Binford 2001: 182	PROJ	Expected mean body weight of males. EXWGT2 = 39.379231+(LTRANGE*16.057666)+(MRAIN*.149448)
EDENH1		PROJ	Persons per 100 km^2 projected to be fed by hunting.
EDENG1		PROJ	Persons per 100 km^2 projected to be fed by gathering.
EDENF1		PROJ	Persons per 100 km^2 projected to be fed by fishing.
EFOODBIO		TER MODEL	Calculated food needs in animal biomass.
EFOODBIO2		TER MODEL	Secondary way of measuring the food need in terms of animal biomass.
EPLTFOOD		TER MODEL	Calculated food needs in plant biomass.
RXPREY	Binford 2001: 180	CALC	Reciprocal of prey biomass. RXPREY = 1.0 – (EXPREY/20000)
EHUNTPR		TER MODEL	Calculated hunting pressure based on EFOODBIO.

EHUNTPR2		TER MODEL	Calculated hunting pressure based on EFOODBIO2.
TERMH2	Binford 2001: 187	TER MODEL	Number of persons per 100 km^2 unit who could be supported by the ungulate resources alone. TERMH2 = ({EXPREYA*[1.0-(EXPREY/20000)]}*0.026142)/(EXWGT/0.0450)
TERMG2	Binford 2001: 187	TER MODEL	Number of persons per 100 km^2 unit who could be supported by the plant resources alone. TERMG2 = (EXPRIM3 * 0.000060)/(EXWGT/0.43748)
TERMGSTD		TER MODEL	Terrestrial model for gathering dependence given standardized weight of 59.04 kg.
TERMD2	Binford 2001: 187	TER MODEL	Population density expected at a particular location, expressed in terms of persons per 100 km^2 TERMD2 = TERMH2 + TERMG2
TERMHNT2	Binford 2001: 188	TER MODEL	Terrestrial model percentage dependence upon terrestrial animals: (TERMH2/TERMD2)*100
TERMGTH2	Binford 2001: 187	TER MODEL	Percentage dependence upon terrestrial plant foods: (TERMG2/TERMD2)*100
EDENH22		TER MODEL	Expected density supportable by hunting.
EDENG22		TER MODEL	Expected density supportable by gathering.
TEMPPLR		TER MODEL	Plant food to person ratio using TERMG2.
WPPLR		TER MODEL	Plant food to person ratio using EDENG1.
TMPANR		TER MODEL	Animal food to person ratio using TERMH2.
WPANR		TER MODEL	Animal food to person ratio using EDENH1.
EPHNDX22		CALC	Measure of hunting pressure on the habitat which is corrected for "richness" of the terrestrial habitat.
EPGNDX22		CALC	Measure of gathering pressure on the habitat which is corrected for "richness" of the terrestrial habitat.
EPRINDX2		CALC	Scale of pressure on the environment.
SUBSPX2	Binford 2001: 190	TER MODEL	Terrestrial model expected subsistence bias.

WGTORD		CALC	Ordination of projected mean body weight.
TERMDORD		CALC	Ordination of terrestrial model density.
WTFMALE2		PROJ	Projected weight of female (kg).
STMALE2		PROJ	Projected stature of male (cm).
STFMALE2		PROJ	Projected stature of female (cm).
STORD		CALC	Ordination of projected mean stature.
BDYPROPM		PROJ	Projected body proportion for males (stature/weight).
BDYPROPF		PROJ	Projected body proportion for females (stature/weight).
WEXSUM		HGPROJ	Similar to WSUM, only for use with ethnographic cases.
WEXGATHP		HGPROJ	Similar to WGATHP, only for use with ethnographic cases.
WEXHUNTP		HGPROJ	Similar to WHUNTP, only for use with ethnographic cases.
WEXFISHP		HGPROJ	Similar to WFISHP, only for use with ethnographic cases.
WEXDEN		HGPROJ	Similar to WDEN, only for use with ethnographic cases.
LWEXDEN		HGCALC	Log_{10} value of WEXDEN.
SUBSPX2	Binford 2001: 190	HGPROJ	Terrestrial model expected subsistence bias, for use with ethnographic cases.
DENORD		CALC	Ordinal measure of density based on vegetation type (VEGNU) for HG projections.
SUBSPE		CALC	Ordinal classification of projected HG subsistence specialty 1=hunting or dependence on terrestrial animals 2=gathering or dependence on terrestrial plants 3=fishing or dependence on aquatic resources
EXNOMOV1		PROJ	Projected expected number of residential moves per year, scaled for subsistence type, for groups with year round camp to camp mobility pattern.
EXNOMOV2		PROJ	Projected expected number of moves per year, scaled for subsistence type, for groups who move into and out of a central location or who are primarily sedentary.
EXAREA1		PROJ	Projected total area, scaled for subsistence type, for groups with year round camp to camp mobility pattern.
EXAREA2		PROJ	Projected total area, scaled for subsistence type, for groups who move into and out of a central location or who are primarily sedentary.
EXTLPOP1		PROJ	Projected total population, scaled for subsistence type, for groups with year round camp to camp mobility pattern.
EXTLPOP2		PROJ	Projected total population, scaled for subsistence type, for groups who move into and out of a central location or who are primarily sedentary.
EDENP1		PROJ	Projected inverse population density using EXAREA1/EXTLPOP1.
EDENP2		PROJ	Projected inverse population density using EXAREA2/EXTLPOP2.
EXGRP1		PROJ	Projected mean size of smallest residential group, segmented by group pattern and subsistence specialization bias.

EXGRP2	PROJ	Projected mean size of largest residential seasonal camps, segmented by group pattern and subsistence specialization bias.
EXGRP3	PROJ	Projected mean size of periodic regional camps, segmented by group pattern and subsistence specialization bias.
EXMHS	PROJ	Projected mean household size (number of people per household), segmented by group pattern and subsistence specialization bias.
EXSZMEAN	PROJ	Projected mean house size, segmented by group pattern and subsistence specialization bias. Unit is linear measure of the diameter of a circle with area = to house area.
EXSZ1FAM	PROJ	Projected size of one family house, segmented by group pattern and subsistence specialization bias. Unit is linear measure of the diameter of a circle with area = to house area.
EXDMOV1	PROJ	Projected total distance moved, scaled for subsistence type, for groups with year round camp to camp mobility pattern.
EXDMOV2	PROJ	Projected total distance moved, scaled for subsistence type, for groups who move into and out of a central location or who are primarily sedentary.

STEP 4 CALCULATIONS: GROWTH RATE MODEL and DENSITY CONTROLLED SUBSISTENCE

MAXPATH	GR MODEL	Maximum potential pathogen load as a function of Mean Coldest Month
MXMNDIFF	GR MODEL	Difference between the maximum and minimum pathogen load using MCM
MAXRAIN	GR MODEL	Maximum rain using ET
ACTPTHLD	GR MODEL	Actual pathogen load using CRR, MaxRain and MaxPath
REDUCTP	GR MODEL	Population reduction scaled to maximum global population reduction from pathogens, which is 38%
PATHDIFF	GR MODEL	Multiplication of reduction percentage by terrestrial model density (TERMD2)
TMREPPOT	GR MODEL	Terrestrial model reproductive potential
REPRATE	GR MODEL	Reproductive rate potential
UPGATHP	PROJ	Unpacked percent dependence on gathering
UPHUNTP	PROJ	Unpacked percent dependence on hunting
UPFISHP	PROJ	Unpacked percent dependence on fishing

D1GATHP	PROJ	Using log10 population density of 1.0, percent dependence on gathering
D1FISHP	PROJ	Using log10 population density of 1.0, percent dependence on fishing
D1HUNTP	PROJ	Using log10 population density of 1.0, percent dependence on hunting
D1HPGATHP	PROJ	Using log10 population density of 1.5, percent dependence on gathering
D1HPFISHP	PROJ	Using log10 population density of 1.5, percent dependence on fishing
D1HPHUNTP	PROJ	Using log10 population density of 1.5, percent dependence on hunting
D2GATHP	PROJ	Using log10 population density of 2.0, percent dependence on gathering
D2FISHP	PROJ	Using log10 population density of 2.0, percent dependence on fishing
D2HUNTP	PROJ	Using log10 population density of 2.0, percent dependence on hunting
D2HPGATHP	PROJ	Using log10 population density of 2.5, percent dependence on gathering
D2HPFISHP	PROJ	Using log10 population density of 2.5, percent dependence on fishing
D2HPHUNTP	PROJ	Using log10 population density of 2.5, percent dependence on hunting
D3GATHP	PROJ	Using log10 population density of 3.0, percent dependence on gathering
D3FISHP	PROJ	Using log10 population density of 3.0, percent dependence on fishing
D3HUNTP	PROJ	Using log10 population density of 3.0, percent dependence on hunting
TABLE		
PETAR1	CALC	Potential evapotranspiration by month - where 1 is January and 12 is December
…PETAR12	CALC	
SNACAR1	CALC	Snowfall accumulation by month - where 1 is January and 12 is December
…SNACAR12	CALC	
AEAR1	CALC	Actual evapotranspiration by month - where 1 is January and 12 is December
…AEAR12	CALC	
WRAR1	CALC	Water retained in the soil by month - where 1 is January and 12 is December
…WRAR12	CALC	
RUNAR1	CALC	Water lost through runoff by month - where 1 is January and 12 is December
…RUNAR12	CALC	
WDAR1	CALC	Measure of amount of water deficit by month - where 1 is January and 12 is December
…WDAR12	CALC	