## ABOUT THE HABITAT SUITABILITY INDEX (HSI) MODELS

Each model is a Level II, spatially explicit wildlife habitat relationships model which builds on CWHR habitat suitability information with distance to resources, home range, habitat patch size and territory. These were written as ARC-INFO .amls by Ms. Irene Timossi, Ms. Ellen Woodward, and Dr. Reginald H. Barrett, Department of Environmental Science, Policy, and Management at the University of California, Berkeley. To work, the models require ARC/INFO software and GIS GRID coverages of CWHR habitat types, water, roads, slope, etc.

No. 1 -- * B134     Blue Grouse (Dendragapus obscurus)
No. 2 -- * B364     Brown Creeper (Certhia americana)
No. 3 -- * M072    California Ground Squirrel (Spermophilus beecheyi)
No. 4 -- * B512     Dark-eyed Junco (Junco hyemalis)
No. 5 -- * M079    Douglas' Squirrel (Tamiasciurus douglasii)
No. 6 -- * B375     Golden-crowned Kinglet (Regulus satrapa)
No. 7 -- * M154    Marten (Martes americana)
No. 8 -- * B381     Mountain Bluebird (Sialia currucoides)
No. 9 -- * B356     Mountain Chickadee (Parus gambeli)
No.10 -- * B141     Mountain Quail (Oreortyx pictus)
No.11 -- * A044     Mountain Yellow-legged Frog (Rana muscosa)
No.12 -- * B307     Northern Flicker (Colaptes auratus)
No.13 -- * M080    Northern Flying Squirrel (Glaucomys sabrinus)
No.14 -- * B117     Northern Goshawk (Accipiter gentilis)
No.15 -- * A039     Pacific Treefrog (Hyla regilla)
No.16 -- * B308     Pileated Woodpecker (Dryocopus pileatus)
No.17 -- * M145    Porcupine (Erethizon dorsatum)
No.18 -- * M153    Raccoon (Procyon lotor)
No.19 -- * B123     Red-tailed Hawk (Buteo jamaicensis)
No.20 -- * M049    Snowshoe Hare (Lepus americanus)
No.21 -- * B483     Spotted Towhee (Pipilo maculatus)
No.22 -- * B346     Steller's Jay (Cyanocitta stelleri)
No.23 -- * M003    Vagrant Shrew (Sorex vagrans)
No.24 -- * R036     Western Skink (Eumeces skiltonianus)
No.25 -- * B305     White-headed Woodpecker (Picoides albolarvatus)
No.26 -- * B315     Willow Flycatcher (Empidonax traillii)
No.27 -- * B463     Wilson's Warbler (Wilsonia pusilla)
No.28 -- * M055    Yellow-pine Chipmunk (Tamias amoenus)

## LINK TO REPORTS FOR EACH SPECIES

| HSI Model Reports |
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| Blue Grouse (=Sooty Grouse) |
| Brown Creeper |
| California Ground Squirrel |
| Dark-eyed Junco |

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|---|
| Douglas Squirrel |
| Golden-crowned Kinglet |
| Marten |
| Mountain Bluebird |
| Mountain Chickadee |
| Mountain Quail |
| Mountain Yellow-legged Frog (=Sierra Madre yellow-legged frog, Sierra Nevada yellow-legged frog) |
| Northern Flicker |
| Northern Flying Squirrel |
| Northern Goshawk |
| Pacific Treefrog |
| Pileated Woodpecker |
| Porcupine |
| Raccoon |
| Red-tailed Hawk |
| Snowshoe Hare |
| Spotted Towhee |
| Steller's Jay |
| Vagrant Shrew |
| Western Skink |
| White-headed Woodpecker |
| Willow Flycatcher |
| Wilson's Warbler |
| Yellow-pine Chipmunk |

**RUNNING THE HSI MODELS IN ARC/INFO**

By Irene Timossi
Department of Environmental Science, Policy and Management
University of California
Berkeley, CA  94720

The models expect to be run from the ARC prompt.  They can be run from the GRID prompt, but a warning message will appear.  Each model has three macro files associated with it.  For example, the Pileated Woodpecker model has three files:  PWO.AML;  PWOFORM.MENU;  and PWOMODEL.AML.  The first file (PWO.AML) is the base macro and is used to execute the model.  The menu file (PWOFORM.MENU) will present a menu if the macro is run interactively.  The model file (PWOMODEL.AML) contains the actual spatial modeling commands.  Directions for running the macro can be found in the base macro (PWO.AML).  RUNALL.AML has examples of how to run the models in batch mode.

Several files are required to run each macro, and not all macros require all of these files. You must refer to the base macro for your species to determine the coverages required. All coverages must be GRID coverages.

*        CWHR Suitability Coverage: must contain habitat suitability values for the species and may contain other fields. The field name of the suitability fields must be the species CWHR id code (e.g., B145) plus an "_" and the single letter code indicating which suitability (R,C,F, or G) applies. (The file name for the geometric mean in this case would be "B145_G".) A file containing CWHR habitat suitabilities has been extracted for each species from Version 7.0 of the CWHR database and is available as a comma-delimited *.txt file with the following values: Species ID, Hab_Code, Hab_Size, Hab_CC, WHR_Code, Repro_Index, Cover_Index, Feeding_Index, General_Index

Character fields are not surrounded by quotes. Suitability values have been converted to integers -- L=1, M=2, and H=3. To use the *.txt file with workstation ARC/INFO®, you must convert the file using the DBASEINFO command. The converted file can then be joined to the grid file containing the WHRTYPE field using the JOINITEM command.

*        Boundary Coverage: must contain a "1" for grid cells inside the boundary of the study area and a "0" for grid cells outside the boundary.

*        Distance from Streams Coverage: a coverage showing how far each cell is from the nearest stream. This coverage is created using the euclidean distance command (EUCDIST) in GRID.

*        Distance from Lakes Coverage: a coverage showing how far each cell is from the nearest lake (if you do not have a lake coverage, you may use the stream coverage twice in the macro). This coverage is created using the euclidean disctance command EUCDIST) in GRID.

*        Distance from Roads Coverage: a coverage showing how far each cell is from the nearest road. This coverage is created using the euclidean distance command (EUCDIST) in GRID.

*        Slope Coverage: a coverage showing the slope of each grid cell in percent slope.

*        Aspect Coverage: a coverage showing the aspect of each grid cell in degrees.