APPENDIX 1: GENERATING A CONSERVATION VALUE BASED ON WEIGHTING BY EXPERT RANKED IMPORTANCE

- These procedures mimic the Multi-Criteria Evaluation routines implemented by the *Idrisi*GIS software package (Eastman 2001).

- Scale data for each biological value to a range of 0 to 1. In this manner, when data are multiplied by a weight and summed across biological values, the final prioritization scale retains a range of 0 to 1. This process also has the benefit of bringing data based on different measurement schemes into a common range. We used a linear stretch to scale values: $x_i = (R_i - R_{min}) / (R_{max} - R_{min}) * \text{range of new scale}$, where R = raw score.

- Provide a blank matrix of pairwise comparisons to expert staff to evaluate the relative importance of the six variables for biological value. The matrix approach is described by the following abstracted example:

  X
  Y
  Z
  1
  0.5 1
  0.25 0.5 1

  This notation is shorthand for the matrix:

	X	Y	Z
X	1		
Y	0.5	1	
Z	0.25	0.5	1

  The pairwise comparisons for this matrix are: "'Variable Y' is one half as important as 'Variable X'", etc. Only half the matrix need be completed as the other values are inverses. Relative importance may record not only influence but judgments about data quality.

- Seven Arizona Chapter science staff members completed matrices, and the results were reconciled to yield:

  Total # Targets
  # Endemics
  # G1-G2
  # ESA
  # Taxonomic Groups
  # Aquatics
  1

3	1				
3	0.33	1			
1	1	0.33	1		
3	0.5	0.33	0.33	1	
3	1	1	1	3	1

- The matrix algebra solution yields the following weights:

  Total # Targets = 0.0470
  # Endemics = 0.1597
  # G1-G2 = 0.2792
  # ESA = 0.1335
  # Taxonomic Groups = 0.0882
  # Aquatics = 0.2923