

Appendix A. Calculations pertaining to the Sequencing of Conservation Actions in the Southeast Division

Relative Threat Status (RTS). Our first step towards calculating the overall Relative Threat Status (RTS) of a given conservation area is to assess the impact of a single stress at the given conservation area. Although *severity* and *percent of target occurrences* is scored as ordinal data (very high, high, medium, low), the four ranks are assigned a numeric value (Table 1), lending more weight to the severity of the stress over the proportion of target occurrences affected. Severity is weighted because of the impending 5 year time frame in which the ranks were defined.

Table 1. Ordinal data used to score Severity and % Target Occurrences and the numeric values assigned

| Score | Severity | % Target Occurrences |
|-----------|----------|----------------------|
| VERY HIGH | 8 | 4 |
| HIGH | 4 | 3 |
| MEDIUM | 2 | 2 |
| LOW | 1 | 1 |

By squaring the multiple of *severity* and *percent target occurrences*, a *stress score* is calculated for each of the 28 sources of stress. Each *stress score* is represented by a *stress score alpha rank* as depicted in table 2.

Table 2. Possible Severity x % Target Occurrences score combinations:

| Severity Score Category | Numeric Value | % Target Occurrences Score Category | Numeric Value | Stress Score (Severity x % Target Occurrences) ² | Stress Score Alpha Rank |
|-------------------------|---------------|-------------------------------------|---------------|---|-------------------------|
| VERY HIGH | 8 | VERY HIGH | 4 | 1024 | Very High |
| VERY HIGH | 8 | HIGH | 3 | 576 | Very High |
| VERY HIGH | 8 | MEDIUM | 2 | 256 | Very High |
| VERY HIGH | 8 | LOW | 1 | 64 | High |
| HIGH | 4 | VERY HIGH | 4 | 256 | Very High |
| HIGH | 4 | HIGH | 3 | 144 | High |
| HIGH | 4 | MEDIUM | 2 | 64 | High |
| HIGH | 4 | LOW | 1 | 16 | Medium |
| MEDIUM | 2 | VERY HIGH | 4 | 64 | High |
| MEDIUM | 2 | HIGH | 3 | 36 | Medium |
| MEDIUM | 2 | MEDIUM | 2 | 16 | Medium |
| MEDIUM | 2 | LOW | 1 | 4 | Low |
| LOW | 1 | VERY HIGH | 4 | 16 | Medium |
| LOW | 1 | HIGH | 3 | 9 | Low |
| LOW | 1 | MEDIUM | 2 | 4 | Low |
| LOW | 1 | LOW | 1 | 1 | Low |

Once the *stress scores* have been calculated for each stress at each conservation area, the next step involves tallying the *alpha ranks* for each source of stress and converting the ranks into a log 5 scale (i.e. all *very high* values translates into 125, *high* values 25, *medium* values 5, and *low*

values 1). The total number of each tallied *alpha rank* is then multiplied by its respective log value (i.e. *very high*: $7 \times 125 = 875$ or *high*: $9 \times 25 = 225$) (table 3). Finally, the Relative Threat Status (RTS) for each conservation area is calculated as the sum of all *log values* within a given conservation area (Table 3).

Table 3. Calculations involving Relative Threat Status. Very High (VH), High (H), Medium (M), Low (L).

| Conservation Area | Total Number of Alpha Ranks: | | | | Alpha Ranks x Log 5 value: | | | | Relative Threat Status |
|-------------------|------------------------------|---|----|---|----------------------------|--------|-------|-------|------------------------|
| | VH | H | M | L | VH = 125 | H = 25 | M = 5 | L = 1 | |
| A | 7 | 9 | 7 | 0 | 875 | 225 | 35 | 0 | 1135 |
| B | 4 | 3 | 0 | 0 | 500 | 75 | 0 | 0 | 575 |
| C | 3 | 0 | 12 | 0 | 375 | 0 | 60 | 0 | 435 |
| D | 1 | 9 | 4 | 0 | 125 | 225 | 20 | 0 | 370 |

Relative Contribution to Ecoregional Goals (RCEG). This parameter is obtained for each conservation area by assessing two attributes: 1) the total number of ecoregional targets and 2) the number of imperiled conservation targets. Imperiled conservation targets is defined as the number of G1 and G2 ecoregional target occurrences and the presence of irreplaceable targets (G1/G2 targets that are only found at one conservation area in the ecoregion). These numbers were then subdivided into log 5 and log 3 quartile scales respectively and assigned a weighted rank value. Ecoregional targets are weighted at 75% and imperiled targets at 25% (Table 4). Finally the weighted values were added to provide the final value called the Relative Contribution to Ecoregional Goals (RCEG) for each conservation area.

Table 4. Log quartiles and the weighted values assigned.

| Log 5 Quartile Scale | Weighted Value 75% | Log 3 Quartile Scale | Weighted Value 25% |
|----------------------|--------------------|----------------------|--------------------|
| > 126 | 24 | >28 | 8 |
| 26-125 | 12 | 10-27 | 4 |
| 6-25 | 6 | 4-9 | 2 |
| 1-5 | 3 | 1-3 | 1 |

For example: Conservation area B possesses 55 target occurrences of which 37 are ranked G1 or G2 (Table 5). Since 55 on a log 5 quartile scale falls between 26 and 125 it is assigned a weighted value of 12, while 37 on a log 3 quartile scale is >28 and is assigned a weighted value of 8 (Table 4). There is no irreplaceable target, thus the weighted values are added to give a RCEG value of 20 (Table 5).

Table 5. Relative Contribution to Ecoregional Goals is the sum of the weighted values of the total number of target occurrences and the number of G1-G2 target occurrences. The appropriate weighted value is assigned based upon the log scale as outlined in table 4.

| Conservation Area | Total # Target Occurrences | Weighted Value | # of G1-G2 Target Occurrences | Weighted Value | Irreplaceable Targets ^b | Relative CEG ^a |
|-------------------|----------------------------|----------------|-------------------------------|----------------|------------------------------------|---------------------------|
| A | 360 | 24 | 206 | 8 | | 32 |
| B | 55 | 12 | 37 | 8 | | 20 |
| C | 21 | 6 | 36 | 8 | | 14 |
| D | 5 | 3 | 26 | 4 | 1 | 25 |
| E | 15 | 6 | 9 | 2 | | 8 |

^a CEG – Contribution to Ecoregional Goals

^b Irreplaceable Targets - all conservation areas with an irreplaceable target is assigned a default RCEG of 25.

Determining Sequencing Categories. Four sequencing Categories of Now-Right Now, Now, Soon, and Later are assigned to each conservation area based upon the values of Relative Threat Status and Relative Contribution to Ecoregional Goals (Table 6). Conservation areas that possess irreplaceable targets are assigned a default RCEG value of 25 since concern is elevated because of the potential loss of a target (Table 5).

Table 6. Sequencing Categories defined.

| | | RCEG | | RTS |
|---------------|----|-----------|-----|-------------|
| NOW-RIGHT NOW | if | ≥ 25 | | |
| NOW | if | < 25 | and | ≥ 250 |
| SOON | if | $>17 <25$ | and | < 250 |
| | or | < 17 | and | $>50 < 250$ |
| LATER | if | < 17 | and | < 50 |