

Assessing Factor Scores for Waterbirds

Six variables were considered when evaluating the conservation status of the species at the continental scale. Three factor scores were based on quantitative information (Population Size, Breeding Distribution, Non-breeding Distribution) and three were qualitative (Population Trend, Threats to Breeding, Threats to Non-breeding). All variables were scaled from 1-5, with 5 indicating greatest vulnerability.

1. **Population Trend (PT)**: This variable uses existing information on waterbird species to estimate categories of population decline. The time period over which trend was estimated for most species is 1970 to present.

- 5 biologically significant population decline
- 4 apparent population decline
- 3 apparently stable population
- 2 apparent population increase
- 1 biologically significant population increase

2. **Population Size (PS)**: This variable provides information on the current (1990-present) abundance of each species within North America. Log-transformed population data produced a normal distribution. The 1-5 scale represents quintiles of the range of log-transformed values.

- 5 up to 480 individuals
- 4 480 – 5,800 individuals
- 3 5,800 – 69,200 individuals
- 2 69,200 – 832,000 individuals
- 1 832,000 – 10,000,000 individuals

3. **Threats to Breeding (TB)**: This variable rates the threats impacting most or all of the total North American population of each species during their breeding season. The importance of vulnerability due to concentration (coloniality) is considered when scoring this factor. Species that do not breed in North America receive a Not Applicable (NA) for this score.

- 5 Known threats are actually occurring and can be documented; concentration results in actual risk
- 4 Significant potential threats exist, but have not actually occurred; concentration results in high potential risk
- 3 No known threats, or information not available; concentration not a risk
- 2 Threats assumed to be low from all factors including concentration
- 1 Demonstrably secure

4. **Threats to Non-breeding (TN)**: This variable rates the threats known to exist for each species during their non-breeding season. The scores are the same as the above threats to breeding, but without the additional risk due to concentration during breeding.

5. **Breeding Distribution (BD)**: This variable estimates the vulnerability to population loss due to small breeding distribution. Total *land-based* breeding area in North America was estimated in square kilometers. Breeding ranges were determined using range maps primarily from Harrison (1985; seabirds), Taylor (1998; rails), and Hancock and Kushlan (1984; herons) and from BNA accounts. The 1-5 scale was created, as above, with log transformed data. Species that do not breed in North America receive a Not Applicable (NA) for this score.

- 5 highly restricted (up to 450,000 km²)
- 4 local (450,000 km² – 1,500,000 km²)
- 3 intermediate (1,500,000 km² – 5,000,000 km²)
- 2 widespread (5,000,000 km² – 16,000,000 km²)
- 1 very widespread (16,000,000 km² – 52,500,000 km²)

6. **Non-breeding Distribution (ND)**: This variable estimates the vulnerability to population loss due to small non-breeding distribution. Total area occupied by non-breeding birds (including wintering, migratory, and in some cases breeding areas) in North America is reported in square kilometers. Non-breeding ranges were determined using standardized procedures described above. Non-breeding ranges were determined by using range maps primarily from Harrison (1985; seabirds), Taylor (1998; rails), and Hancock and Kushlan (1984; herons) and from BNA accounts.

- 5 highly restricted (up to 1,300,000 km²)
- 4 local (1,300,000 km² – 4,200,000 km²)
- 3 intermediate (4,200,000 km² – 13,600,000 km²)
- 2 widespread (13,600,000 km² – 44,000,000 km²)
- 1 very widespread (44,000,000 km² – 140,000,000 km²)