

Conservation Status Assessment of Waterbirds

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- **Introduction**

The Waterbird Conservation for the Americas Initiative (www.waterbirdconservation.org) is an international bird conservation planning and implementation partnership that is committed to ensuring that waterbird populations and habitats are sustained throughout the lands and oceans of continental North America.

The Initiative published a North American Waterbird Conservation Plan (NAWCP) in 2002 that provides a framework for prioritized conservation needs of 210 species of waterbirds using habitats throughout the plan area (defined as the 29 nations from Canada to Panama including the Caribbean, and pelagic regions of the north Pacific and Atlantic Oceans). Major avian families represented include Gaviidae, Podicipedidae, Diomedidae, Procellariidae, Hydrobatidae, Phaethontidae, Sulidae, Pelecanidae, Phalacrocoracidae, Fregatidae, Ardeidae, Threskiornithidae, Ciconiidae, Rallidae, Gruidae, Laridae and Alcidae. Sixteen working groups have developed (or are in the process of developing) conservation action plans and implementation teams at the regional scale.

A technical committee of the Initiative coordinated a continental status assessment of species to assist in identifying conservation needs and priorities of waterbirds in North America. The methods and results of the status assessment are summarized in NAWCP. This report provides detailed information on the philosophy, process and products of waterbird status assessment.

- **Definition of waterbird status assessment**

Conservation status assessment characterizes the vulnerability of each species to population unsustainability within the plan area relative to other waterbirds. The process is comprised of the following steps: 1) developing vulnerability indices (factor scores) from best-available information for six population attributes critical to sustainability (population trend, population size, threats to breeding and non-breeding populations, and spatial distribution of breeding and non-breeding populations), and 2) assigning species to conservation concern categories based on population factor scores. Further considerations can then be applied to these concern categories to develop priorities for conservation action.

- **Uses of waterbird status assessment**

The waterbird status assessment process develops and compiles information that has been critical to waterbird conservation since the NAWCP was published. Population

estimates have been used in publications (e.g. Delany and Scott 2002) and conservation priorities have been adopted at the national level in some cases (e.g. USFWS Species of Conservation Concern list).

However, the most significant use of waterbird assessment has been in guiding the conservation commitments of hundreds of wildlife managers, researchers, educators, policy-makers and conservation funding sources within the Initiative's broad partnership. Regional and international working groups have used the continental-scale assessments to inform and provide the impetus for on-the-ground conservation projects at refuges, sanctuaries and important waterbird sites throughout the plan area.

- **Principles of credibility and usefulness to make status assessment effective**

The Initiative has been committed to the development of a status assessment process that provides an effective tool for waterbird conservationists. The principles of credibility and usefulness are essential elements to creating an effective conservation tool; these principles are fundamental to waterbird status assessment.

Credibility of the status assessment process is rooted in rationality and a reliance on science-based information. As used in conservation planning (as opposed to species recovery), status assessment is a process that abstracts information that is often both complex and inadequate. Furthermore, knowledge of avian sustainability is not yet advanced to allow definitive assessments of vulnerability to population extinction. Because there are rarely benchmark values of population size, trend, distribution areas that are definitively associated with sustainability, the products of status assessment—principally, the identification of conservation priorities—are not considered quantitatively robust in most cases, but are tools for guiding conservation activities and allocating resources.

Despite the lack of definitive information on the population attributes that would ensure sustainability, WCA advocates a practical approach to discriminating levels of conservation concern. Individual species are assessed relative to other waterbirds, which produces a list of species ranging from those at most risk to those at least risk of population extinction. Since a list of species characterized by their relative risk of vulnerability to extinction theoretically could be comprised entirely of species extremely vulnerable, the WCA assigns all species to conservation concern categories and recommends that regional working groups identify conservation strategies for all species, not simply those in the highest concern categories.

Similarly, WCA's commitment to practical and actionable conservation recommendations within the NAWCP plan area is reflected in the use of spatially-relevant factors. Other entities assess species status at scales larger (i.e. IUCN assesses global status) or smaller (e.g. Natural Heritage Programs assess status within

state/provinces) than NAWCP. Although information developed at larger and smaller scales is used as context in setting conservation priorities, the continental waterbird status assessment does not involve factor scores that reflect global range, global abundance or other attributes because the conservation of global populations of waterbirds is outside the purview of WCA. Our continental assessment is spatially compatible with our commitment to ensure sustainable waterbird populations in the plan area.

A credible status assessment is supported by our use of science-based information to estimate population attributes. The status assessment committee has enlisted the aid of hundreds of ornithologists throughout the plan area to compile best-available information on waterbirds. The process itself has been improved by modifications suggested by conservation scientists. The inclusive nature of this effort to maximize scientific input both for species-specific information as well as the assessment process, reinforces credibility. In addition, the committee has endeavored to make the process transparent and replicable. “Raw” or source information, protocols, products, reviewers’ comments, etc have been made available to all constituents through publications and website postings.

Of equal importance to credibility in developing a conservation tool is utility. WCA is committed to maximizing the usefulness of status assessment to a broad array of waterbird conservationists. This commitment is reflected in the relative simplicity of the status assessment protocol, its compatibility with the status assessment methods of other bird conservation initiatives, and WCA’s adherence to status assessment results for an appropriate time interval. Recognizing that waterbird status is inherently dynamic, WCA has committed to updating status assessments within approximately 5 year intervals. This turnover rate is appropriate to the anticipated rate of new information development, responsive to the potential need to accelerate or decelerate conservation actions for individual species, and avoids the “moving target” aspect that results from modifying assessments at smaller time intervals.

- **Scales of status assessment—relationship between continental status assessment and regional planning/implementation efforts**

The continental waterbird status assessment provides guidance for regional working groups to adopt conservation strategies for waterbird populations and habitats. At the regional scale, partners face complex challenges of managing wildlife resources in landscapes often highly altered by human activities and with ecosystem components in disequilibrium. WCA recommends regions adopt “focal” species when identifying priorities to achieve multiple objectives and opportunities. Objectives include conservation (birds in higher conservation concern categories), management (birds of management concern—often a local or regional issue), and educational (engaging the public by focusing on charismatic birds). The WCA does not request regions develop factor scores for regional populations of waterbirds (although regions are free to do this at their own discretion). Often regional scale information on population attributes is of higher quality than what is available at larger scales, and regions are encouraged to use

waterbird data directly to set priorities rather than lose precision through the abstracting process of developing factor scores.

- **Assessment protocol**

The technical committee developed a process for assigning colonially-nesting waterbirds to conservation concern categories that was adapted from the Partners in Flight and US Shorebird Conservation Plan guidelines and accommodates the special conservation issues of species that aggregate during breeding season and/or utilize extensive marine habitats. The assessment protocol was published in 2002 as part of the North American Waterbird Conservation Plan which contained status assessments of colonially-nesting waterbirds only. Assessments of non-colonial waterbirds included in the plan (i.e. marshbirds) were to be developed within 2-5 years of the plan's publication and were expected to follow the general guidelines used for colonial species (see below).

Conservation status was determined by evaluating six factors that contribute to vulnerability to population decline (population trend, population size, threats to breeding and non-breeding, distribution of breeding and non-breeding populations). These factors were scored and concern categories were determined through a step-wise categorization process. All species were ranked relative to each other within the spatial context of North America as defined in NAWCP.

- **Assessing Factor Scores**

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)

- **Conservation Concern Categories**

Each waterbird species was assigned to a category of conservation concern (such as *Highly Imperiled*, *Species of High Concern* etc.) based on factor scores developed from best available information. If both Population Trend and Population Size cannot be estimated, species are not ranked. The categories are:

1. **Highly Imperiled:** [Term changed to Species of Highest Concern](#). This includes all species with significant population declines and either low populations or some other high risk factor.

- a. PT = 5 and either PS, TB, TN, or BD = 5

2. **Species of High Concern:** Species that are not Highly Imperiled. Populations of these species are known or thought to be declining, and have some other known or potential threat as well.

- a. PT = 4 or 5 and either PS, TB, TN, or BD = 4 or 5; or
- b. PS = 4 or 5 and either TB or TN = 4 or 5

3. **Species of Moderate Concern:** Species that are not Highly Imperiled or High Concern. Populations of these species are either a) declining with moderate threats or distributions; b) stable with known or potential threats and moderate to restricted distributions; or c) relatively small with relatively restricted distributions.

- a. PT = 5 and either PS, TB, TN, BD, or ND > 1; or
- b. PT = 4 and either PS, TB, TN, BD, or ND > 2; or
- c. PT = 3 and either PS, TB, TN, BD, or ND = 4 or 5; or
- d. PS = 4 or 5 and either BD or ND >3

4. **Species of Low Concern:** Species that are not Highly Imperiled, High Concern or Moderate Concern. Populations of these species are either a) stable with moderate threats and distributions; b) increasing but with known or potential threats and moderate to restricted distributions; or c) of moderate size with known or potential threats and moderate to restricted distributions.

- a. PT = 3 and either PS, TB, TN, BD, or ND = 3; or
- b. PT = 2 and either PS, TB, TN, BD, or ND = 4 or 5; or
- c. PS = 3 and either TB, TN, BD, or ND = 4 or 5

5. **Species not at risk:** [Term changed to Species of Lowest Concern](#) all other species

- **Marshbird Status Assessment**

The Technical Services Committee of the Waterbird Conservation Council committed to conducting a status assessment in 2005 of the 43 species of “marshbirds”

listed in the North American Waterbird Conservation Plan (NAWCP). Although marshbird evaluation is currently underway at a regional scale through the efforts of regional working groups throughout the Americas, the Council considered it critical to accomplish a continental assessment in 2005. Regional assessments are not expected to be completed until 2007 and the Council felt that the Initiative should conduct a continental scale assessment with best available information in order to raise awareness in a timely way of the needs of marshbird conservation.

The goal of assessing marshbird status is to develop information and identify conservation priorities that will bring non-colonial species to a level of conservation planning that is equivalent to what exists for colonial species in the NAWCP. Therefore, marshbird status assessments will be conducted according to the published protocol, although data on marshbird population size and distribution did not contribute to the formulation of factor score thresholds. It was determined that incorporating marshbirds in the existing colonial waterbird priorities framework (rather than developing an additional framework for marshbirds) would facilitate the adoption of conservation projects for waterbirds generally. Colonial waterbirds and non-colonial waterbirds are fully integrated therefore, and NAWCP can provide relatively simple guidance to resource managers concerning conservation needs.

It is expected that marshbirds will be represented largely in the higher concern categories for waterbird conservation, but this may be appropriate given their small distributions, sedentary habits, and heavy reliance on freshwater wetlands—habitats under stress throughout the plan area.

References

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