

Our analysis of the trumpeter swan Tri-State segment indicates that these birds are derived from a remnant flock that survived the market hunting overexploitation of the species that occurred in North America prior to the protections of the MBTA in 1918. Some swans found refuge in the isolated and protected environs of Yellowstone National Park, high-elevation areas that have harsh winters and a short nesting season compared to lower elevations. Some people speculate that Tri-State swans are specially adapted to this marginal habitat. However, we have found no scientific evidence to support such a conclusion. No evidence indicates that the birds in this flock were isolated for periods of time sufficient for such adaptations to occur. Some have speculated that the swans that nested in the Tri-State Area once migrated elsewhere for the winter, but we know of no data to verify whether they were migratory or not prior to European settlement of the Tri-State Area (Gale *et al.* 1987, Dubovsky and Cornely 2002). Implementation of an artificial feeding program beginning in 1935 may have modified the swans' natural migratory behavior, but that also is conjecture (Dubovsky and Cornely 2002).

The petition alleges that the Tri-State Area flock is discrete from other portions of the North American trumpeter swan population in part because the Tri-State birds are separated from other breeding populations by approximately 400 miles. The petitioners assert that breeding pairs are not formed between the Tri-State birds and other swan populations.

There are no known physical, physiological, or behavioral differences between any of the trumpeter swan flocks in North America (Gale *et al.* 1987). Even if most of the Tri-State swans do not migrate to nesting grounds in Canada (which available data suggest) (Dubovsky and Cornely 2002), this behavior is not evolutionarily significant within the meaning of our DPS policy. Numerous flocks of geese and swans (including trumpeters) in the United States exhibit nonmigratory behavior because sufficient life requisites exist in the flocks' habitat throughout the year. Therefore, the fact that the birds in the Tri-State Area flock are not known to migrate long distances is not a unique behavioral trait within the meaning of the DPS policy.

The petitioners allege, based on neck-collar observations, that the Canadian- and United States-nesting birds are reproductively isolated because birds have not been seen nesting on their non-natal nesting grounds. However, although many swans have been marked over the years, observations of marked

swans are of a limited value in establishing the reproductive isolation of the Tri-State Area flock. Many observations of marked swans were of those that had been trapped and translocated. It is not appropriate to use observations of these birds to make inferences about natural movements and pairing behavior of free-flying wild trumpeter swans. Further, many swans are marked but never seen again, or are seen only during the first few years after marking (*e.g.*, Gale *et al.* 1987:286, Shea and Drewien 1999). Given that swans are long-lived, much of the neck-collar data may reflect only a small fraction of these birds' reproductive lifetime and thus is not indicative of all of an individual bird's movement patterns. Trumpeter swans also inhabit many remote areas that are not amenable to direct observations of the birds. Therefore, it is plausible that some marked birds may nest in remote areas that are not their natal nesting grounds. Lastly, one observation of a mixed-group (Canadian/Tri-State) pairing has been documented (Shea and Drewien 1999); mark-recovery information indicates two Tri-State Area nesting birds were sighted in Alberta (Dubovsky and Cornely 2002), and two birds marked in Grande Prairie summered in the Tri-State Area (Gale *et al.* 1987). These instances suggest that some reproductive intermingling of the two flocks may be occurring, that gene flow is possible between the groups, and that sampling procedures may simply have been inadequate to detect much interchange to date. Therefore, we conclude that current information does not support the petitioner's allegations that the Tri-State Area flock is reproductively isolated.

Our DPS policy provides that quantitative measures of genetic or morphological discontinuity may provide evidence of discreteness. As discussed in detail below based on current trumpeter swan genetic information, we conclude that available information does not provide evidence of genetic discontinuity that would support the contention that the Tri-State Area flock is discrete.

*(2) Is the Tri-State Area Flock Delimited by International Governmental Boundaries Within Which Differences in Control of Exploitation, Management of Habitat, Conservation Status, or Regulatory Mechanisms Exist That Are Significant With Regard to Conservation of the Taxon?*

Under the DPS policy, we specifically look for differences in regulatory mechanisms between nations that are significant in light of section 4(a)(1)(D) of the Act (*e.g.*, whether inadequate regulatory mechanisms in one nation as

compared to another may contribute to species endangerment), such that it would be consistent with the purposes of the Act to delineate a population based on a non-biological element. Simply stated, we look for regulatory differences between nations that are relevant to a listing decision and that would warrant separating populations of a taxon using international boundaries.

The petitioners allege that the Tri-State Area flock should be considered distinct from other trumpeter swan flocks in North America because of a difference in management and exploitation of the species in Canada. However, migratory waterfowl are managed under the auspices of international treaties, including the Migratory Bird Treaty with Canada which the MBTA implements, and highly structured international entities, such as the Flyway Councils. The goals of the Pacific Flyway Council concerning trumpeter swan management are international in scope (*i.e.*, the Council contains representatives from both Canada and the United States) and include encouraging growth of the Canadian flocks while rebuilding United States breeding flocks of trumpeter swans (Subcommittee on Rocky Mountain Trumpeter Swans 1998). Public education goals and research needs include the same tasks in both countries. The Province of Alberta has supported management actions in the United States, including implementation of a general swan season (U.S. Department of the Interior 2001).

With regard to habitat management, the United States and Canada protect breeding areas, conduct swan transplants, band or otherwise mark birds, and monitor population status. Establishment of annual sport-hunting regulations in both countries is completed in accordance with the Convention Between the United States and Great Britain (for Canada) for the Protection of Migratory Birds (1916 Treaty). Both countries also publish draft regulations that are subject to public review and comment. Neither country has a sport-hunting season specifically for trumpeter swans. Swans in both countries are protected by similar regulatory processes. Canada and the United States (Alaska) allow subsistence take of swans during the spring and summer. As discussed earlier in this document, the United States has established a limited quota for allowable take of trumpeter swans as part of the package of trumpeter swan conservation measures. All waterfowl hunting