

Black-necked Swan (*Cygnus melancoryphus*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2022
Revised, February 2022
Web Version, 5/31/2023

Organism Type: Bird
Overall Risk Assessment Category: Uncertain



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1 Native Range and Status in the United States

Native Range

From Schlatter et al. (1991a):

“The Black-necked Swan *Cygnus melancoryphus* has an almost continuous distribution on the southern cone of South America, including wetlands from southeastern Brazil, southeast Paraguay, almost all Argentina, the southern two-thirds of Chile, and Uruguay.”

From Velasquez et al. (2019):

“The black-necked swan *C. melancoryphus* is the only representative of the genus in South America, and nearly 100,000 swans inhabit freshwater and coastal wetlands located between ca. 28°-52°S.”

Status in the United States

There is no evidence of an established wild population within the United States.

Cygnus melancoryphus is in the ornamental pet trade within the United States (e.g., Purely Poultry 2022) and captive breeding has occurred to introduce a population in Lakeland, Florida (see Walsh 2019, below).

From Urdarevik (2007):

“Due to the relatively calm nature of *C. melancoryphus*, they are a valuable breeding bird. There is a large pet trade in this species. Since they have a healthy population in South America and are not endangered, humans have been able to export *C. melancoryphus* to North America.”

From Walsh (2019):

“City officials proudly announced the birth of Lakeland's first black-necked swan cygnet Monday night. It was born a little more than three weeks ago, successfully hatched in the city's incubator as part of a multiyear captive breeding program.”

“Platt said the city traded two of its swans to a Chicago-based breeder for a mated pair of black-necked swans roughly six years ago, after Lakeland's last surviving one died of old age. The goal was to encourage the couple to breed and reintroduce the friendly, highly social species back to Lake Morton.”

“The cygnet will also be microchipped and its wings pinioned to prevent flight before it is transferred to the city's swan nursery later this week.”

Means of Introductions in the United States

There is no evidence of an established wild population within the United States.

Remarks

ITIS (2022) lists *Cygnus melanocorypha* (Molina, 1782) and *Cygnus melanocoryphus* (Molina, 1782) as synonyms of the valid name *Cygnus melancoryphus*. The information search for this screening was conducted using the valid name and its synonyms.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2022):

“Current Standing: valid”

Kingdom Animalia

Subkingdom Bilateria

Infrakingdom Deuterostomia

Phylum Chordata

Subphylum Vertebrata

Infraphylum Gnathostomata

Superclass Tetrapoda

Class Aves

Order Anseriformes

Family Anatidae

Subfamily Anserinae

Genus *Cygnus*

Species *Cygnus melancoryphus* (Molina, 1782)

Size, Weight, and Age Range

From Urdarevik (2007):

“Black-necked swans are the smallest members of the genus *Cygnus*, ranging in length from 102 cm to 124 cm. Males range in mass from 4.5 kg to 6.7 kg, and females from 3.5 to 4.4 kg. Wingspan also differs between the sexes, where male wingspan range is 435 to 450 mm, in females it is 400 to 415 mm.”

“In the wild, *C. melancoryphus* is expected to live between 10 and 20 years, which a record age of 30 years. In captivity, the average age for a black-necked swan is 6.8 years, but they can live up to 20 years.”

Environment

From Swan Specialist Group (2022):

“These swans are found on a variety of wetlands, from shallow lakes, coastal lagoons to harbours and swampy river basins, often in close proximity to humans on the continent, but on the Falkland Islands are fairly shy (Woods & Woods 1997). They prefer areas of high water levels to feed and fair amounts of vegetation and pondweed.”

Climate

From Velasquez et al. (2019):

“[...] nearly 100,000 swans inhabit freshwater and coastal wetlands located between ca. 28°-52°S.”

“[...] the temperate zones of South America [...]”

Distribution Outside the United States

Native

From Schlatter et al. (1991a):

“The Black-necked Swan *Cygnus melancoryphus* has an almost continuous distribution on the southern cone of South America, including wetlands from southeastern Brazil, southeast Paraguay, almost all Argentina, the southern two-thirds of Chile, and Uruguay.”

From Velasquez et al. (2019):

“The black-necked swan *C. melancoryphus* is the only representative of the genus in South America, and nearly 100,000 swans inhabit freshwater and coastal wetlands located between ca. 28°-52°S.”

Introduced

No records of introductions were found for *Cygnus melancoryphus*.

Means of Introduction Outside the United States

No records of introductions were found for *Cygnus melancoryphus*.

Short Description

From Swan Specialist Group (2022):

“The Black-necked Swans’ appearance is very much derived from its name, with black head and neck contrasting greatly with the rest of the body which is white. They have a grey spatulate bill with a pink caruncle at the base. Adults have flesh coloured legs and feet, and legs are set far back on the body to increase swimming efficiency, but this does make them clumsy on land (Todd 1979). Juveniles have a dark brown head and neck colouring, turning black after the first year, and they have full adult plumage by 18 months. The bill is of a pinkish grey appearance, and the caruncle does not become fully developed until 3-4 years old (Navas 1977; Seijas 1997).”

Biology

From Velasquez et al. (2019):

“These water birds prefer habitats with abundant subaquatic banks of macrophytes serving as their primary food source.”

From Swan Specialist Group (2022):

“This swan breeds mainly in the southern parts of its range and tends to occupy the same range throughout the year.”

“The Black-necked Swan has a soft musical whistle which they utter repeatedly when threatening intruders. This sound is also used as triumph display by paired birds, and a contact call whilst in flight.”

“Wild adults moult their flight feathers between August–December [...] (Kear 1972).”

From Urdarevik (2007):

“This species is mainly vegetarian, feeding mostly on stonewarts (*Characeae*), pondweeds (*Potamogeton*), milfoil (*Myriophyllum*), wild celery (*Vallisneria*), and other waterweeds. They will also eat some invertebrates, like insects and rarely fish or frog spawn.”

From Schlatter et al. (1991b):

“The breeding season at Torca and Rio Cruces [Chile] starts in July and may end by March-April of the next year. The population of Laguna El Peral breeds from August to December.”

“Observations in November 1988 showed persistent aggression of one adult pair toward cygnets and juveniles which, presumably, belonged to other pairs.”

From Corti and Schlatter (2002):

“Resident versus migratory status is still poorly known, although it is clear that, whereas many birds winter in the southern part of the species’ range (Vuilleumier, 1997), others disperse northward as far as the Tropic of Capricorn in southern Brazil.”

“Our microhistologic analyses of the feces of *C. melancoryphus* revealed no animal matter, suggesting that the swans are strictly herbivorous.”

“We did not observe Black-necked swan cygnets eating insects, which may indicate that they are herbivorous just like adults.”

From Falklands.net (2022):

“Large nests are constructed from vegetation close to the water's edge during August and September, with 4 to 7 eggs being laid. Eggs hatch in late October or early November, with chicks fledging by February.”

Human Uses

From Urdarevik (2007):

“Swans were a source of food for native peoples of the world, but are seldom hunted currently.”

“Also, tourism is highly encouraged to the Falkland Islands just to witness the sight of this species, promoting the tourist industry. Swans control algal populations, improving water quality.”

“Due to the relatively calm nature of *C. melancoryphus*, they are a valuable breeding bird. There is a large pet trade in this species. Since they have a healthy population in South America and are not endangered, humans have been able to export *C. melancoryphus* to North America.”

According to BirdLife International (2016) *Cygnus melancoryphus* is used as a local and national food source, is a local and national sports bird, and is found as a pet or on display internationally.

Diseases

***Cygnus melancoryphus* is known to carry Newcastle disease which is on the World Health Organisation for Animal Health list of notifiable diseases (OIE 2022).**

According to Poelen et al. (2014) *Cygnus melancoryphus* can be the host to the following parasites and pathogens: *Capillaria skrjabini*, *Epomidiostomum vogelsangi*, *Echinoparyphium* sp., *Anserobilharzia brantae*, *Apatemon gracilis*, *Plasmodium* sp., *Capillaria skrjabini*, *Avioserpens* sp., *Nadejdolepis* sp., and Newcastle disease virus.

In addition, WoRMS (2022) lists *Cygnus melancoryphus* as a host to the following parasite: *Nasusbilharzia melancorhypha*.

Threat to Humans

From Urdarevik (2007):

“Human microsporidiosis, a serious disease of immunocompetent and immunosuppressed people, can be due to zoonotic and environmental transmission of microsporidian spores. The prevalence of microsporidian infections in waterfowl is significantly higher than in other birds. Waterborne microsporidian spores of species that infect people can originate from common waterfowl, like *C. melancoryphus*, which have unlimited access to surface waters, including waters used for production of drinking water.”

3 Impacts of Introductions

Cygnus melancoryphus has not been recorded as introduced and established outside of its native range, therefore there is no information on impacts of introductions.

4 History of Invasiveness

The history of invasiveness is classified as No Known Nonnative Population. No evidence was found of the species having become established outside its native range or any information on impacts of introductions. *Cygnus melancoryphus* is in trade in the United States but the exact volume or duration of trade associated with this species could not be found.

5 Global Distribution

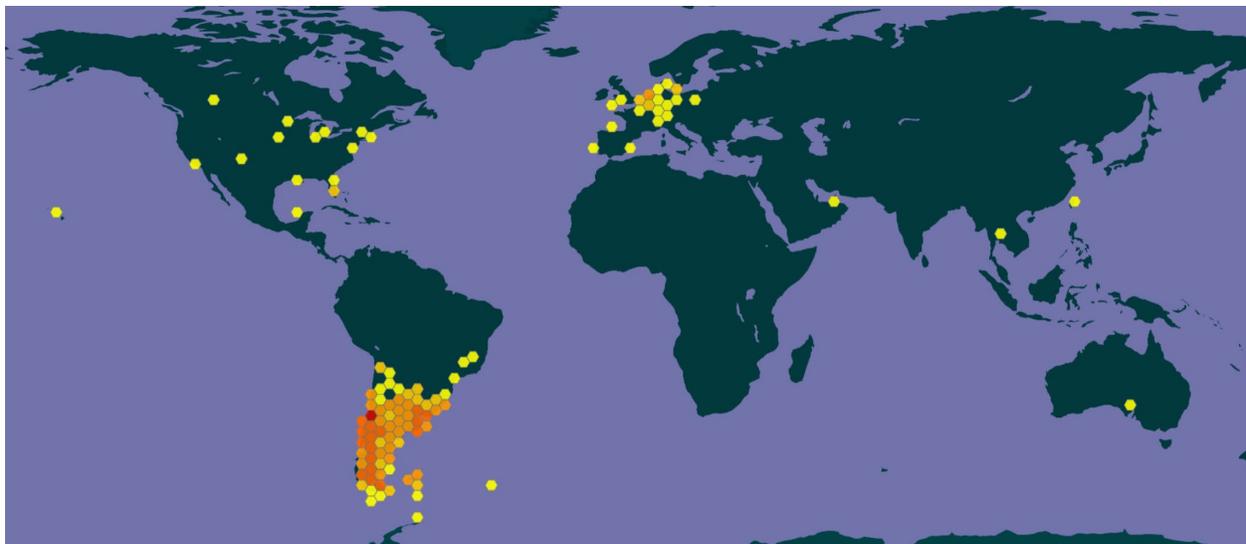


Figure 1. Known global distribution of *Cygnus melancoryphus*. Observations are reported from southern Brazil, Chile, Argentina, Uruguay, South Georgia, the Falkland Islands, the United States, Canada, United Arab Emirates, Antarctica, Thailand, Australia, Taiwan, Spain, The United Kingdom, Portugal, France, Belgium, Italy, Germany, Poland, Sweden, Denmark, and the Netherlands. Map from GBIF Secretariat (2022).

The points found in the United States, Canada, United Arab Emirates, Thailand, Antarctica, Australia, Taiwan, Spain, The United Kingdom, Portugal, France, Belgium, Italy, Germany, Poland, Sweden, Denmark, and the Netherlands were not included in the climate matching analysis because they were representative of a domestic or zoo animal sighting, a one time sighting, or there are no records in the scientific literature supporting the species being established in the area.

Scientific literature states that the native range of *Cygnus melancoryphus* includes Paraguay, but no specific information or data points on where in the country it is located could be found, therefore Paraguay was not included in the climate matching analysis.

6 Distribution Within the United States

No records of *Cygnus melanocoryphus* in the wild in the United States were found.

7 Climate Matching

Summary of Climate Matching Analysis

Almost the entire contiguous United States had high to medium local climate match. There were very small areas of low match in very northern New England. Areas of high local climate match included the southeastern United States, eastern New Mexico, western Texas, and the region east of the Cascades. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean distance) for the contiguous United States was 0.854, High (scores of 0.103 and greater are classified as High). All States had a High individual Climate 6 score except for Maine, New Hampshire, and Vermont, which all had Medium individual Climate 6 scores.

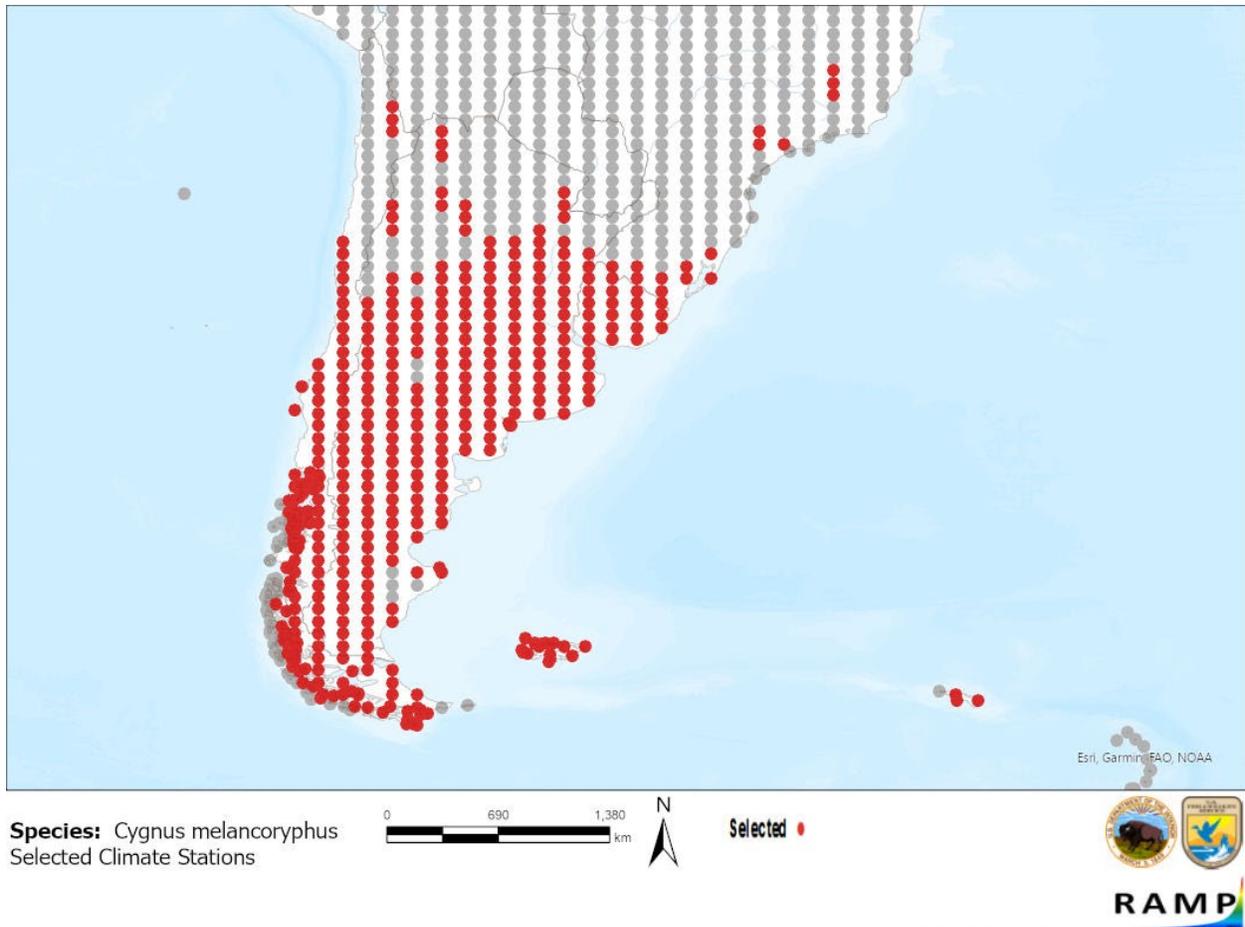


Figure 2. RAMP (Sanders et al. 2021) source map showing weather stations in South America selected as source locations (red; Brazil, Argentina, Chile, South Georgia, and the Falkland Islands) and non-source locations (gray) for *Cygnus melancoryphus* climate matching. Source locations from GBIF Secretariat (2022). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

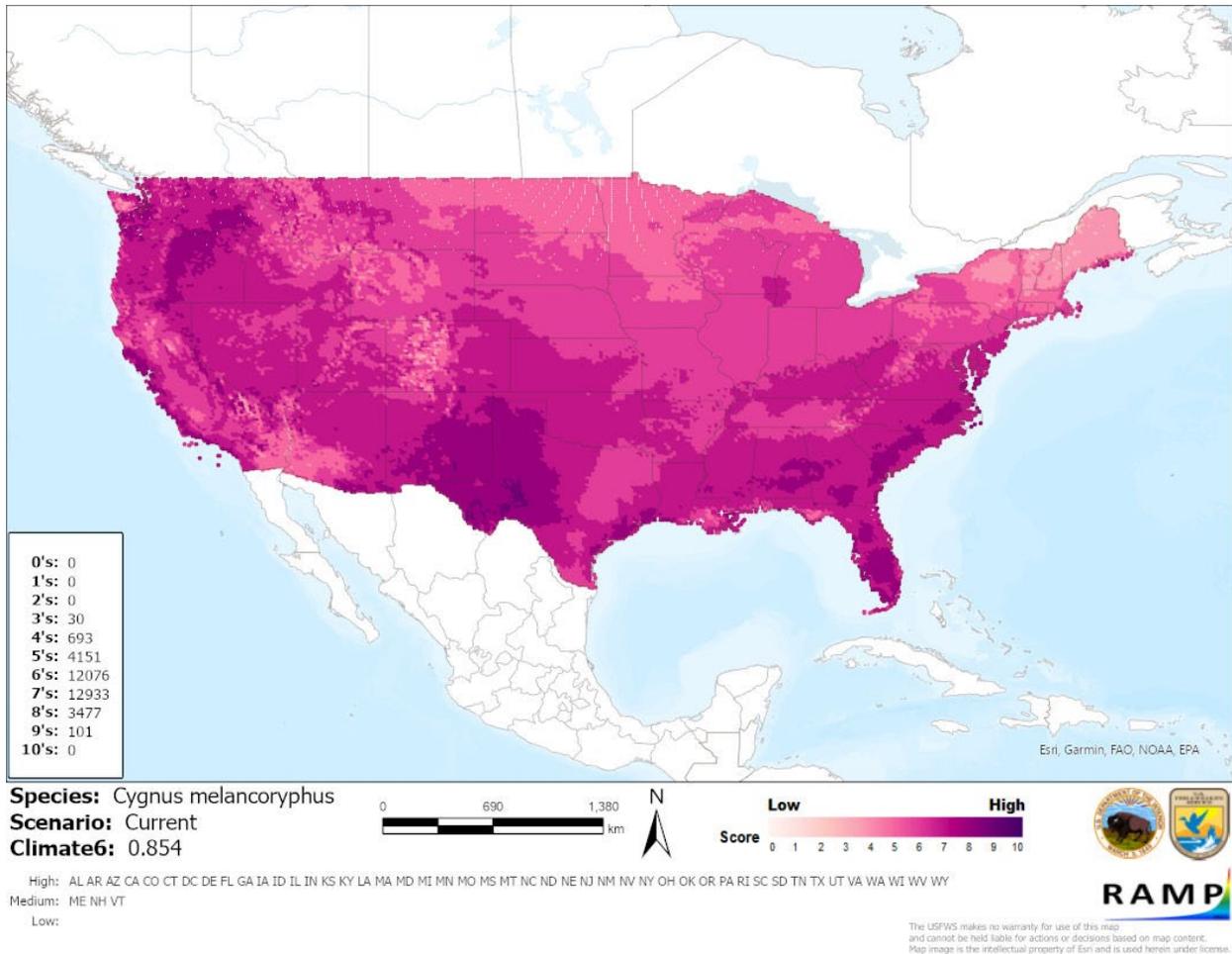


Figure 3. Map of RAMP (Sanders et al. 2021) climate matches for *Cygnus melancoryphus* in the contiguous United States based on source locations reported by GBIF Secretariat (2022). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

8 Certainty of Assessment

The certainty of this assessment is Low. Available biological and ecological information for *Cygnus melancoryphus* was sufficient and georeferenced occurrences were abundant across most of its native range. However, due to the migratory life history of *C. melancoryphus* and widespread use as an ornamental species, determining the distribution of established populations

globally was difficult with available data. The geographic range of established populations used in the climate match analysis was estimated based on a synthesis of available literature. Range information was often at the country-level and conflicting, with sources characterizing the occurrence status of *C. melancoryphus* differently from each other. As such, the climate match with the contiguous United States could be overestimated if selected source locations are not wholly representative of established populations.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Black-necked swan (*Cygnus melancoryphus*) is a waterfowl that is native to southern South America, including Brazil, Paraguay, Argentina, Chile, South Georgia, and the Falkland Islands. This species is known to be traded and bred as an ornamental pet, however there is no evidence of this species ever having become established outside its native range. No specific information was found regarding trade volume or duration. The history of invasiveness is classified as No Known Nonnative Population. The overall climate match category for the contiguous United States was High. Virtually all the contiguous United States had a medium to high local climate match. With the lack of introductions outside of its native range and the confusion regarding distribution of established populations the certainty of assessment is Low. The overall risk assessment category is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Overall Climate Match Category (Sec. 7): High**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks/Important additional information: No additional remarks**
- **Overall Risk Assessment Category: Uncertain**

10 Literature Cited

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 11.

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11 Literature Cited in Quoted Material

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

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