Cyanotech Corporation Conservation Plan for Hawaiian Stilt (*Himantopus mexicanus knudseni*) Annual Report for 2007

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Abstract

This annual report covers data collected August 2006 to July 2007 for the Conservation Plan for Hawaiian Stilt (*Himantopus mexicanus knudseni*) at Cyanotech Aquaculture Facility. The nesting habitat and Ducks Unlimited raceway continued to be maintained in a manner unusable to the stilts. Cleaning the *Spirulina* production raceways reduced the invertebrate food source. The total amount of Hawaiian Stilt incidental take at Cyanotech was zero. Cyanotech's conservation plan was amended to extend incidental take permits for ten years. There were no nests at the Cyanotech facility or in the lava field of Keahole International Airport.

Facility Management

Nesting Habitat

Netting erected over the nesting habitat in February 2003 to provide physical exclusion to the 0.69-ha man-made nesting habitat is still in place. The netting has sustained severe wind damage and now only covers a portion of the habitat. Noting that there have been no instances of stilts returning to the habitat no action has been taken to repair the netting, only additional Mylar deterrents have been placed in the habitat. Three 90-watt floodlights are above the nesting habitat and illuminate the habitat at night. The floodlights were positioned on the North side of the habitat and operated by a photocell switch turning the lights on at sunset and off at sunrise. Netting was monitored daily to check for entangled birds. To date, there have been no entangled birds in the netting.

Production Area

In 1998, a production raceway was converted into a stilt-nesting habitat and became known as the "DU raceway". In 2003 the former DU raceway was netted as per recommendation of the 2002 annual report. The netting was monitored daily to check for entangled birds. To date, there have been no entangled birds in the netting.

Raceway Cleaning

The alternative method of removing the invertebrate food source was to drain the production raceways, allow them to dry, and sweep out the sediment and invertebrates. Draining and cleaning the raceways is part of the normal operation and maintenance of *Spirulina* Production. Raceways have been cleaned on average of once every 12 months. Cyanotech has implemented an ongoing cleaning schedule for the *Spirulina* production raceways that will have each raceway cleaned a minimum of twice per year. Raceway cleaning is based upon visual inspection of each raceway. Raceways with the most invertebrates are taken out of production for cleaning. The goal for this project is to clean one to two raceways per week.

Property Outside of Cyanotech Boundaries (Lava Field of Keahole International Airport and 'Opae'ula pond)

The lava field adjacent to the Cyanotech facility, where stilts had nested in previous years, was monitored weekly for nesting activity. Surveys were conducted every Saturday during the nesting season. A Nikon 20 x 60 Fieldscope and Zeiss 10 x 40 binoculars were used to survey the lava field. In addition to weekly surveys daily observations of stilt movements at and around the facility helped determine if stilts were frequenting the lava field. There were no instances of stilts being observed in the lava field.

Additionally, as part of the conservation plan, Cyanotech funds predator control efforts at 'Opae'ula pond. 'Opae'ula pond is a 3.24 hectare coastal wetland located in the North Kona district of Hawai`i Island. The wetland is utilized for foraging by migratory waterbirds and shorebirds as well as for nesting by endangered Hawaiian Stilts (*Himantopus mexicanus knudseni*) and Hawaiian Coots (*Fulica alai*). The coastal area mostly consists of dry scrub, non-native

vegetation. The vegetation around the perimeter of wetland consists mostly of Kiawe trees (*Prosopis pallida*) and other non-native scrub type vegetation.

Predator control was implemented in an effort to increase survivorship of all life stages of nesting Hawaiian Stilts and Hawaiian Coots, by reducing densities of Small Indian mongooses (*Herpestes auropunctatus*), Rats (*Rattus spp*), and European House Mouse (*Mus domesticus*). Predator control efforts consisted of utilizing 27 tamper-resistant bait boxes around the perimeter of the wetland baited with Diphacinone rodenticide. The predator control work and wildlife surveys were conducted on the second and forth Monday of each month.

In 2007, to date there have been three stilt nests with three fledglings and three hatchlings still at the pond.

Stilt Counts, Nesting, and Incidental Take

Stilt Counts

Stilt counts are conducted weekly throughout the year. On May 3rd there were two stilts observed in Spirulina raceway 64. This was the only observation of stilts during the weekly surveys. Hazing efforts have been successful in reducing the numbers of stilts frequenting the facility and also resulted in no nesting at the facility. The stilts have become conditioned to the point that merely driving in their vicinity is enough to have them leave the facility with minimal if any use of either the laser or the pyrotechnics. It is known that stilts do still frequent the facility at night, the numbers are fewer than ten and a few nights of late night hazing is enough to deter them from returning for several months.

Nesting

There were no nests at the Cyanotech facility or in the lava field of Keahole International Airport.

Incidental Take

As per the Conservation Plan, surveying for incidental take was conducted twice per week during the nesting season and once per week during non-nesting season. However, monitoring for injured or dead stilts was conducted daily as part of normal operations of the production raceways. Surveying the raceways for debris was conducted daily in an effort to protect the mechanical and harvest systems of the production raceways. Surveying the raceways visually first thing in the morning, before the paddlewheels were turned on, has proven to be the most effective method of identifying and recovering debris and stilts from the raceways. Visual observations were also made while the driving around the production area to deter stilts from utilizing the facility to nest or roost.

There was one partial set of stilt remains recovered from a road in the Spirulina raceway area on May 16th, 2007. The remains consisted of two wings and one leg.. The remains were bagged, labeled, put in a freezer and the Wildlife Agencies were notified. The total amount of incidental take at Cyanotech for 2006 was zero.

Recommendations and Requests

Continue to modify and improve current deterrent measures as well as identify and research new deterrent measures for the facility.

Continue to modify and improve methods of reducing the invertebrate food source in the production raceways.

It is recommended that Cyanotech operate at 100% of production capacity during the stilt-nesting season (March-August). If this is not possible, idle raceways should be filled with seawater to prevent stilts from nesting in the idle raceways.

Cyanotech requests that the Wildlife Agencies continue to work cooperatively with the Cyanotech staff to provide technical assistance on policy and conservation issues, as well as biological expertise (e.g., compliance, adaptive management, bird deterrents, etc.).

References

Evans, K. and Uyehara, K. 2001. A Conservation Plan for Hawaiian Stilt at Cyanotech Aquaculture Facility Keahole Point, Hawaii. Ducks Unlimited Inc. 76 p.

Waddington, J.S. 2006. Cyanotech Corporation Conservation Plan for Hawaiian Stilt (*Himantopus mexicanus knudseni*) Annual Report for 2005. September 9 ,2006. Cyanotech Corporation. 11 p.