Rescued Grebe Distribution Humboldt County

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Abstract

Western grebes are a staple to the coastal waters of California. Living in inland ponds during the summer season, western grebes migrate to the Bay during winter months. The rough waves and currents that are occurring this season in Humboldt Bay have many of these western grebes stranded on beaches where they are unable to return to the water. Unable to return to the water on their own the Humboldt Wildlife Care Center helps this species to get healthy after becoming beached. After being rehabilitated, the HWCC makes an effort to return them back to the wild in a suitable habitat and out of danger. Without the help of volunteers rehabilitating stranded birds, these beached western grebes would die of starvation or predation. Alternatively, it is also important to return these rehabilitated grebes back to suitable habitat so that they can continue to breed and live to continue the species. To help aide in returning these rehabilitated birds back to the wild, we have created a map that combines vicinity to roads with capture sites in order to determine good release sites in safe, suitable habitats. To do this we created buffers surrounding each capture site of about 1000 meters and 200 meter buffers around transportation ways. The places in which these buffer did not collide and occur where salt and freshwater habitats are were considered to be good possible release sites for rehabilitated grebes. All of the release site that were calculated reside along the coast of Northern California and are based off of data collected by the HWCC.

Introduction

Western grebes migrate to the coast during the fall, after spending their spring breading season in inland lakes. Figure 1 shows the different habitats used by the western grebe throughout the year. They tend to live in shallow costal bays and estuaries during the winter. The map shown below displays the migration patterns and seasonal locations of the western grebe in the United States of America (National Audubon Society). This fall season the tides were extra rough and the exhausted juvenile grebes that had just arrived from the breeding grounds were weak from their journey, which caused a lot of them to become beached. Western grebes are pelagic birds meaning that they spend their entire lives in the water, if they have been beached they cannot fly off the beach or run to the water because their bodies are incapable of doing so (Audubon, 2014). After a western grebe has been beached, it is essentially starving on the beach until it either dies or is brought to the Humboldt Wildlife Care Center for treatment. After receiving treatment from the Humboldt Wildlife Care Center, if the western grebe is able to survive in the wild on its own it will be released as close as possible to the location it was originally picked up from, in suitable habitat. We have created maps that show good release spots with suitable habitat for these rehabilitated western grebes based on factors such as vicinity to transportation ways and where the grebes were found.

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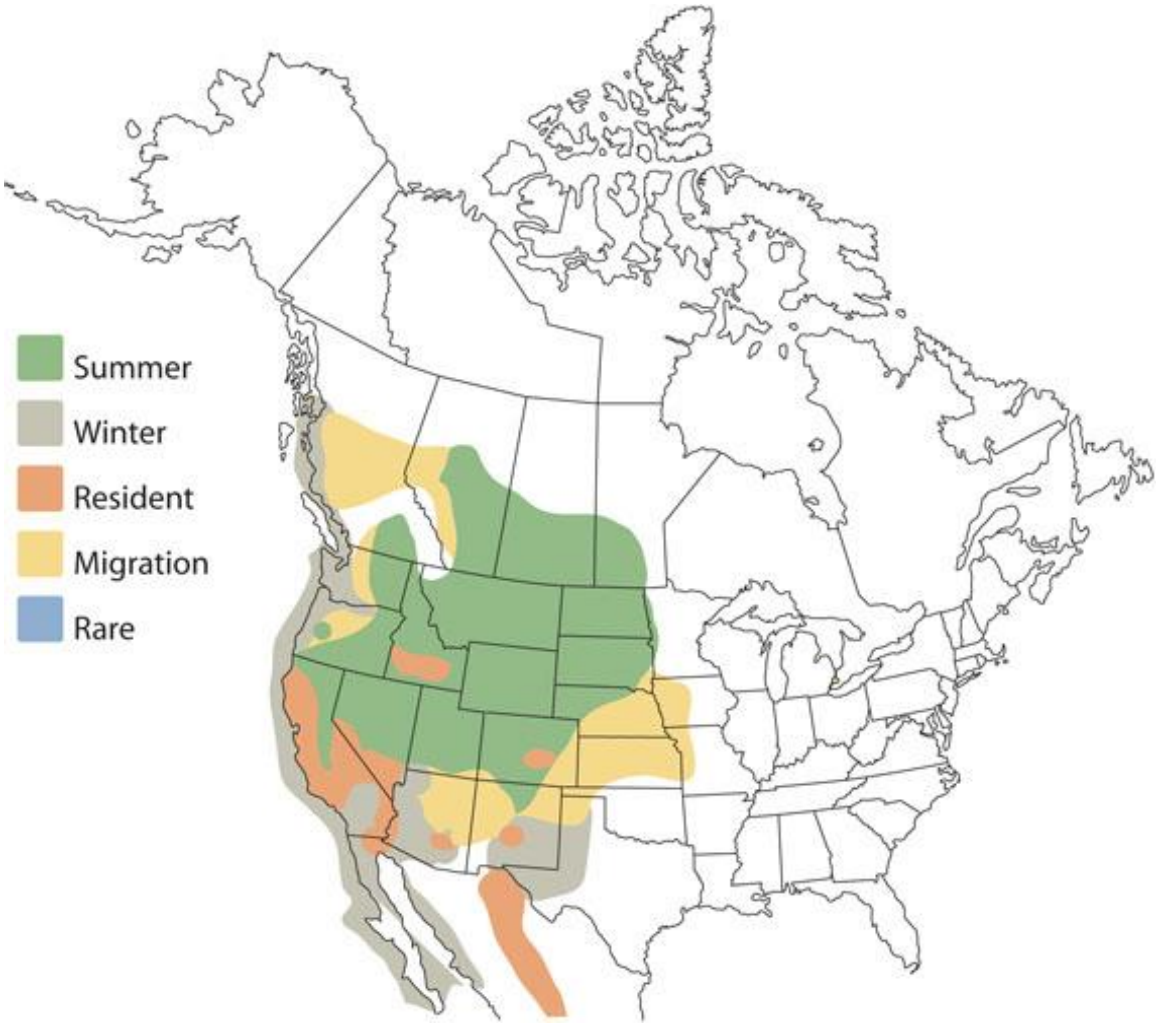

Figure 1. Western grebe North American habitat range created by National Audubon Society.

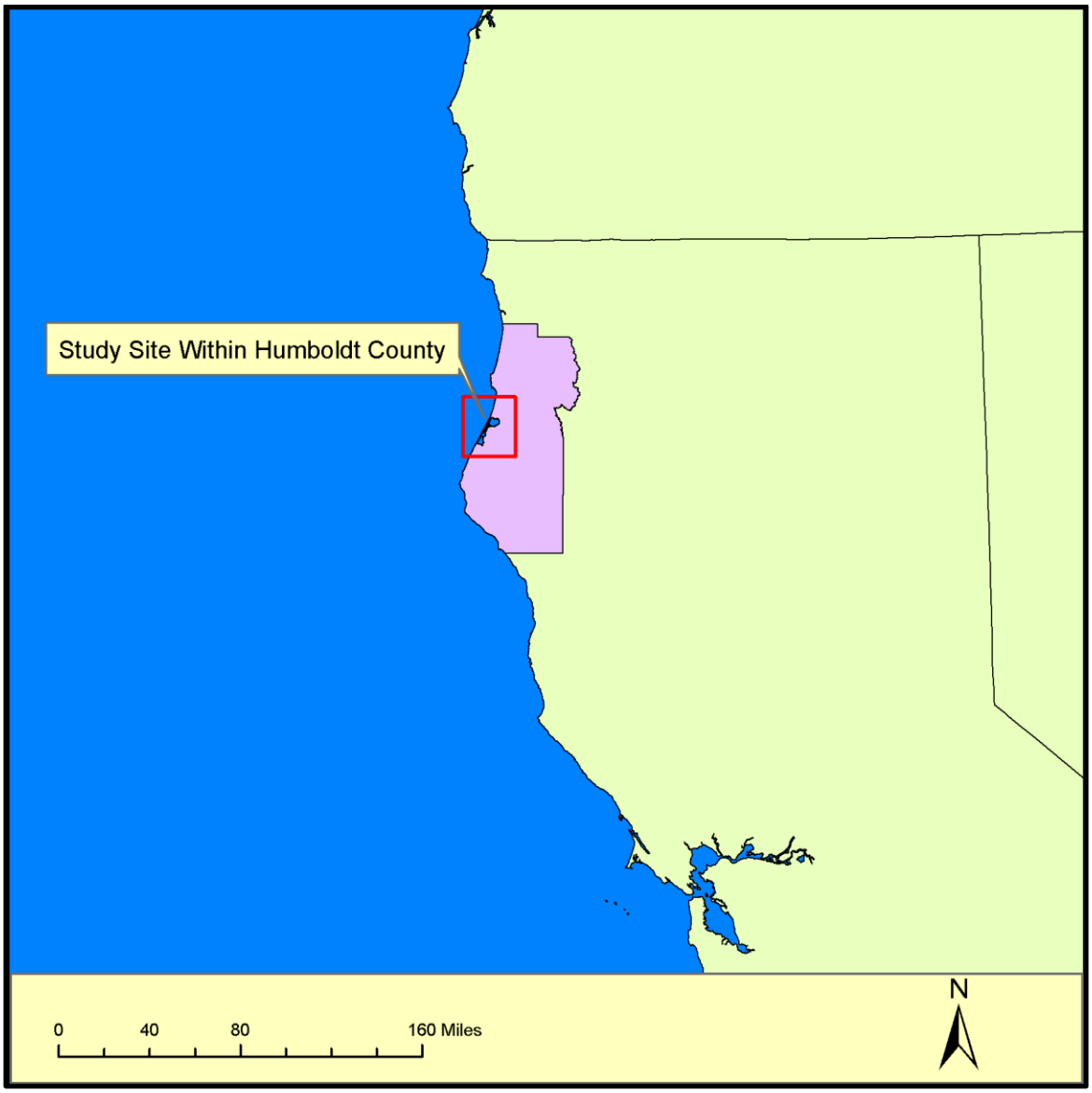

Figure 2. Study site location within Humboldt County, California.

Methods

We started out by gathering grebe capture data from the Humboldt Wildlife Care Center (HWCC), the Humboldt data hub for the salt water marsh data, county boundary and land use data sets were downloaded from the Humboldt County web site, and additional background layers for states and countries were obtained from the National Atlas web site (www.nationalatlas.gov) and the Natural Earth web site (www.naturalearthdata.com). Next, we imported the x, y data acquired from the HWCC. After the x, y data to make the points into a shape file. After we imported all of the acquired layers, we used the project tool to put all layers in the same special reference. All data was projected into World Geodetic System 1984 (WGS 84) datum and the University Transverse Mercator, Zone 10 North, projection. Once we had the

layers projected, we used the cut tools to cut down our large wetland data set to the county outline to make the dataset more manageable. Next, we used the buffer tool to add a 1000m buffer around our excel data acquired from the HWCC recording western grebe locations and a 200m buffer around the transportation route data. We added this buffer so that we could find good release sites for rehabilitated western grebes that were away from transportation ways and close to fresh/ salt water systems near to the ocean. Using these buffers, we used the Erase tool, our input data being the grebe excel points and out erase layer being the transportation data. After the tool was run we were shown where the best release locations would be in relations to where these grebes were found and transportation routes. Finally, we added a 50% transparency to the wetland and transportation layers and calculated total area of good release areas. Qualification of the data, calculations, and preparation of the maps were performed in ArcMap version 10.1 (Esri, Inc.). Additional calculations were performed in Microsoft Excel 2010. The GNU Image Manipulation Program (GIMP) version 2.8 (www.gimp.org) and Microsoft PowerPoint 2010 were used for preparation of the final maps.

Results

During the month of October, 50 western grebe were found and brought to the Humboldt Wildlife Care Center.

The table below displays the area of the good release cites for the grebes.

Case id	City Found	Date Found	Area of Good Release Location (m)
857	McKinleyville	2014-10-11	1197023.50
858	McKinleyville	2014-10-12	1542292.54
859	Samoa	2014-10-12	1260010.78
860	Loleta	2014-10-12	1874152.32
863	McKinleyville	2014-10-13	2020766.60
864	Manila	2014-10-13	1510716.21
865	Orick	2014-10-13	1385345.96
866	McKinleyville	2014-10-13	1197023.50
872	Crescent City	2014-10-14	3141177.00
873	Crescent City	2014-10-14	3141177.00
874	Manila	2014-10-14	1510716.21
875	Manila	2014-10-14	1510716.21
876	Manila	2014-10-14	1510716.21
879	Manila	2014-10-15	1510716.21
880	Crescent City	2014-10-15	3141177.00
881	Crescent City	2014-10-15	3141177.00
882	Crescent City	2014-10-15	3141177.00
883	Crescent City	2014-10-15	3141177.00
884	Crescent City	2014-10-15	3141177.00
885	Crescent City	2014-10-15	3141177.00
886	Crescent City	2014-10-15	3141177.00

887	Crescent City	2014-10-15	3141177.00
888	Crescent City	2014-10-15	3141177.00
889	Crescent City	2014-10-15	3141177.00
890	Crescent City	2014-10-15	3141177.00
891	Crescent City	2014-10-15	3141177.00
892	Crescent City	2014-10-15	3141177.00
893	Crescent City	2014-10-15	3141177.00
894	Crescent City	2014-10-15	3141177.00
897	Mckinleyville	2014-10-16	1197023.50
899	Crescent City	2014-10-15	3141177.00
900	Crescent City	2014-10-15	3141177.00
901	Crescent City	2014-10-15	3141177.00
902	Crescent City	2014-10-15	3141177.00
903	Crescent City	2014-10-15	3141177.00
907	Trinidad	2014-10-18	932924.00
908	Trinidad	2014-10-18	932924.00
910	Westhaven	2014-10-18	1164618.15
911	Orick	2014-10-19	2327666.01
912	Westhaven	2014-10-19	1164618.15
914	Arcata	2014-10-19	2071611.00
915	McKinleyville	2014-10-20	141900.91
920	Arcata	2014-10-20	2071611.00
926	Trinidad	2014-10-20	1231520.34
927	Arcata	2014-10-21	1571130.16
929	Arcata	2014-10-21	1571130.16
932	Trinidad	2014-10-23	1164618.15
944	Samoa	2014-10-24	1260010.78
948	Manila	2014-10-24	1510716.21

Western grebes need to be released in water so in the areas where the grebes can be released they will need to be released in the water bodies included in the buffers.

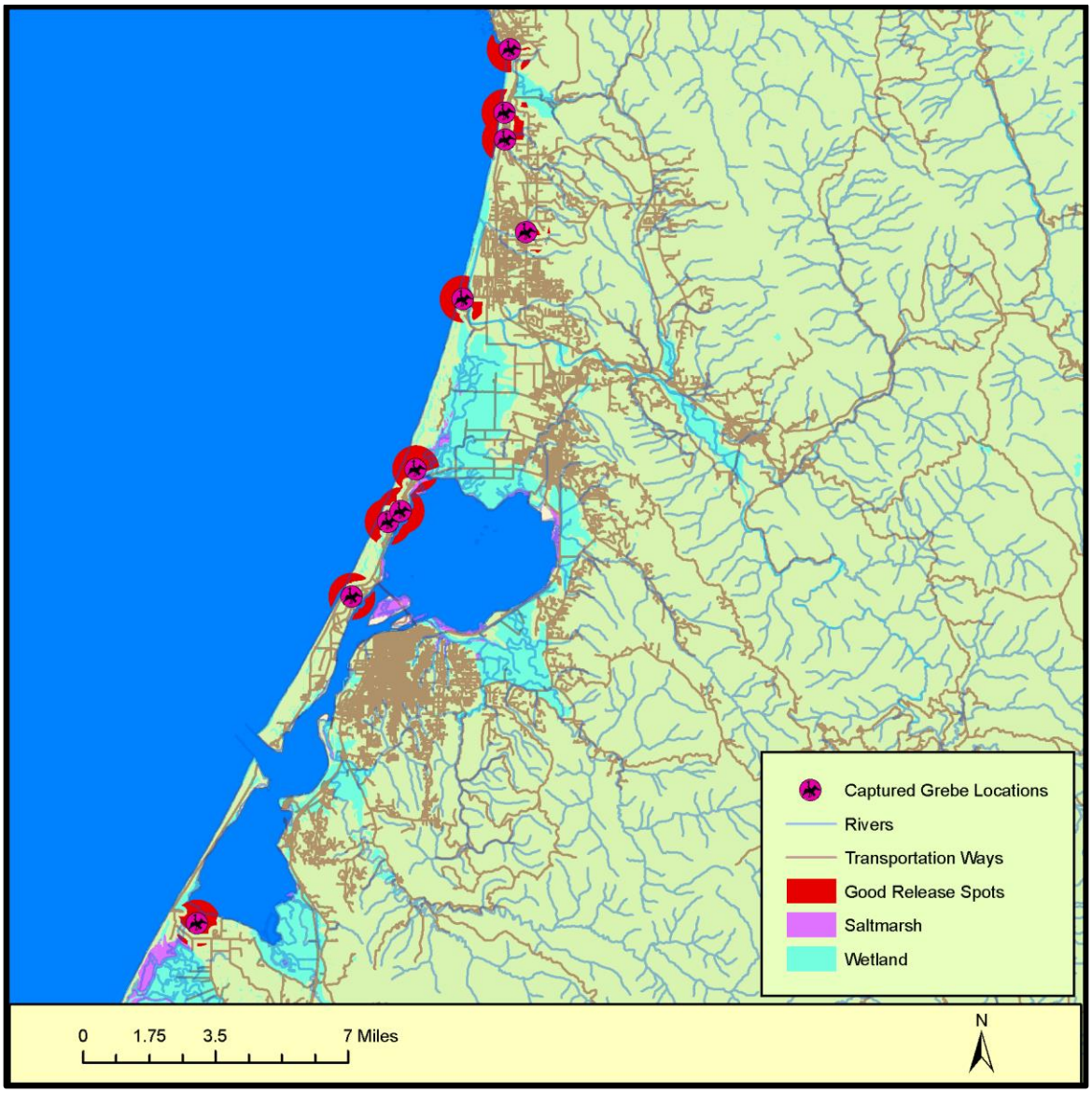

Figure 3. Good release spots for the western grebes after recovery.

Conclusion

This report shows the recommended locations that would be a good release site for western grebes after recovery. The sites are located where the grebe was originally found with an added 1000 meters for the possible release area. Western grebes need to be released in water so in the areas where the grebes can be released they will need to be placed in the water bodies that are included in the buffers.

The sites of the found grebes are not surprising because it is within the approximate range of the species during its residential period. Wetland and/or salt marshes are all within the buffer range of 1000 meters from the original location; therefore, the healthy grebes will be able to survive after they are released.

Acknowledgements

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Bibliography

"Western Grebe: Aechmophorus Occidentalis." *National Audubon Society*. National Audubon Society, 1 Jan. 2014. Web. 20 Oct. 2014. <http://birds.audubon.org/birds/western-grebe>.