

Cal Poly Humboldt

## Digital Commons @ Cal Poly Humboldt

---

IdeaFest 2022

---

2022

# Habitat Selection of Mule Deer in Northern California Coastal Ecosystem

Arthur Ingrham

*Cal Poly Humboldt*, aci11@humboldt.edu

Follow this and additional works at: <https://digitalcommons.humboldt.edu/ideafest2022>

---

### Recommended Citation

Ingrham, Arthur, "Habitat Selection of Mule Deer in Northern California Coastal Ecosystem" (2022).  
*IdeaFest 2022*. 10.

<https://digitalcommons.humboldt.edu/ideafest2022/10>

This Poster is brought to you for free and open access by Digital Commons @ Cal Poly Humboldt. It has been accepted for inclusion in IdeaFest 2022 by an authorized administrator of Digital Commons @ Cal Poly Humboldt. For more information, please contact [kyle.morgan@humboldt.edu](mailto:kyle.morgan@humboldt.edu).



# Habitat Selection of Mule Deer in Coastal Northern California

Arthur Ingraham aci11@humboldt.edu  
Department of Wildlife, Cal Poly Humboldt

## INTRODUCTION

Understanding how species interact with their environment is an important aspect of management and conservation. Habitat selection has a profound influence on such important phenomena as population regulation, species interactions, assembly of ecological communities, and the origin and maintenance of biodiversity (Morris 2003). I surveyed four different vegetation types in the California coastal ecosystem in order to determine the habitat selection of Mule deer and in fact found strong evidence that habitat selection had occurred.

## METHODS

I collected track counts along 50-meter belt transects in Mad River County Park and Table Bluff County park, Humboldt, California to determine if habitat selection was present. After measuring the total area of the two parks using Google Earth I then determined the area of each of the four vegetation types. I calculated the proportional use and availability for each vegetation type and compared it to the expected use utilizing a chi<sup>2</sup> test.

## ACKNOWLEDGEMENTS

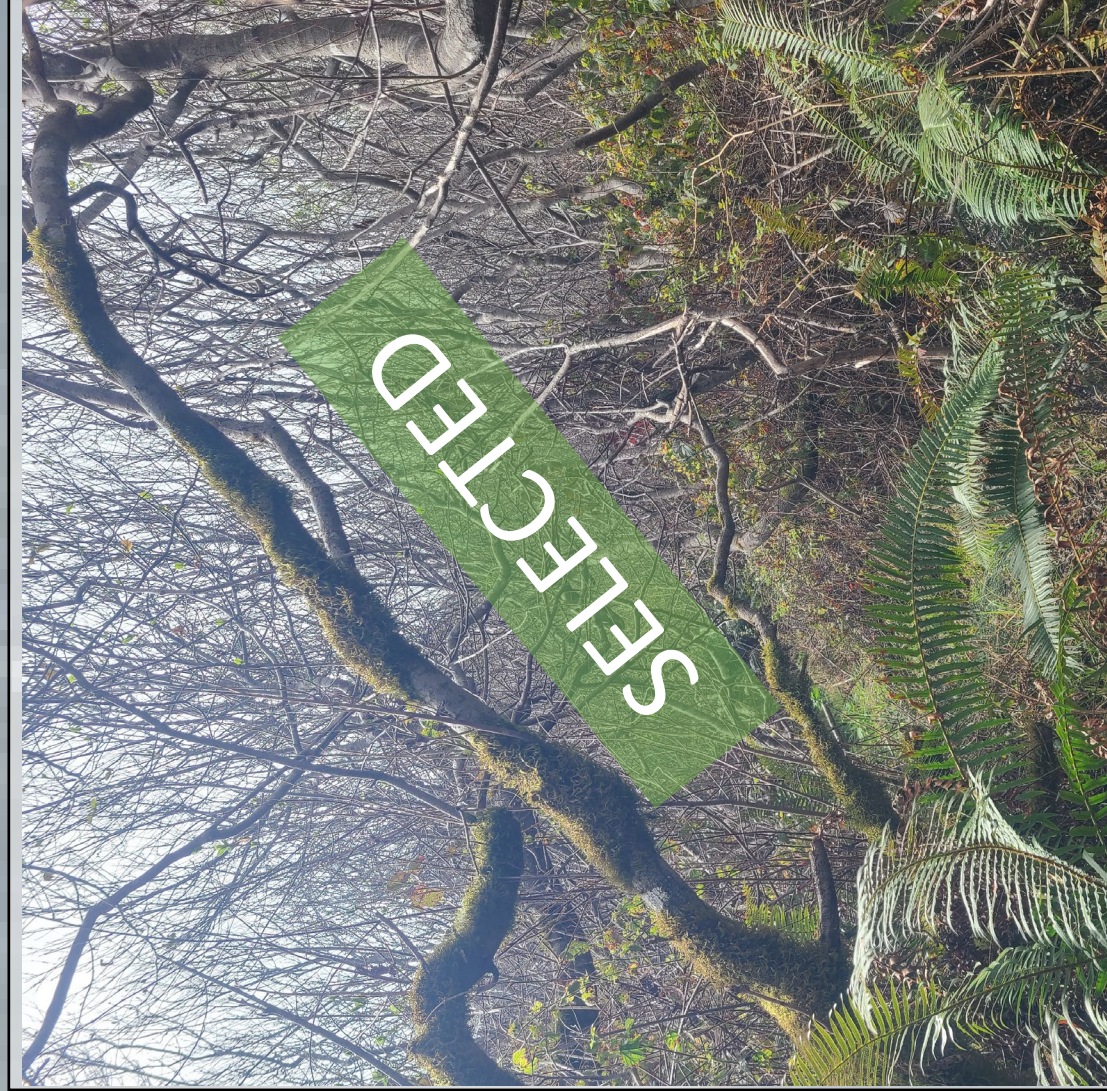
I would like to thank my senior advisor, Dr. Mohoney for his assistance throughout the semester with this project as well as my employer Kevin Jenkins and the management team for allowing me time to conduct my research.



**Dune Habitat**  
Consists of mounds of sand formed by the wind typically along a beach or in the desert. Dune habitat made up 3.4% of the land surveyed.



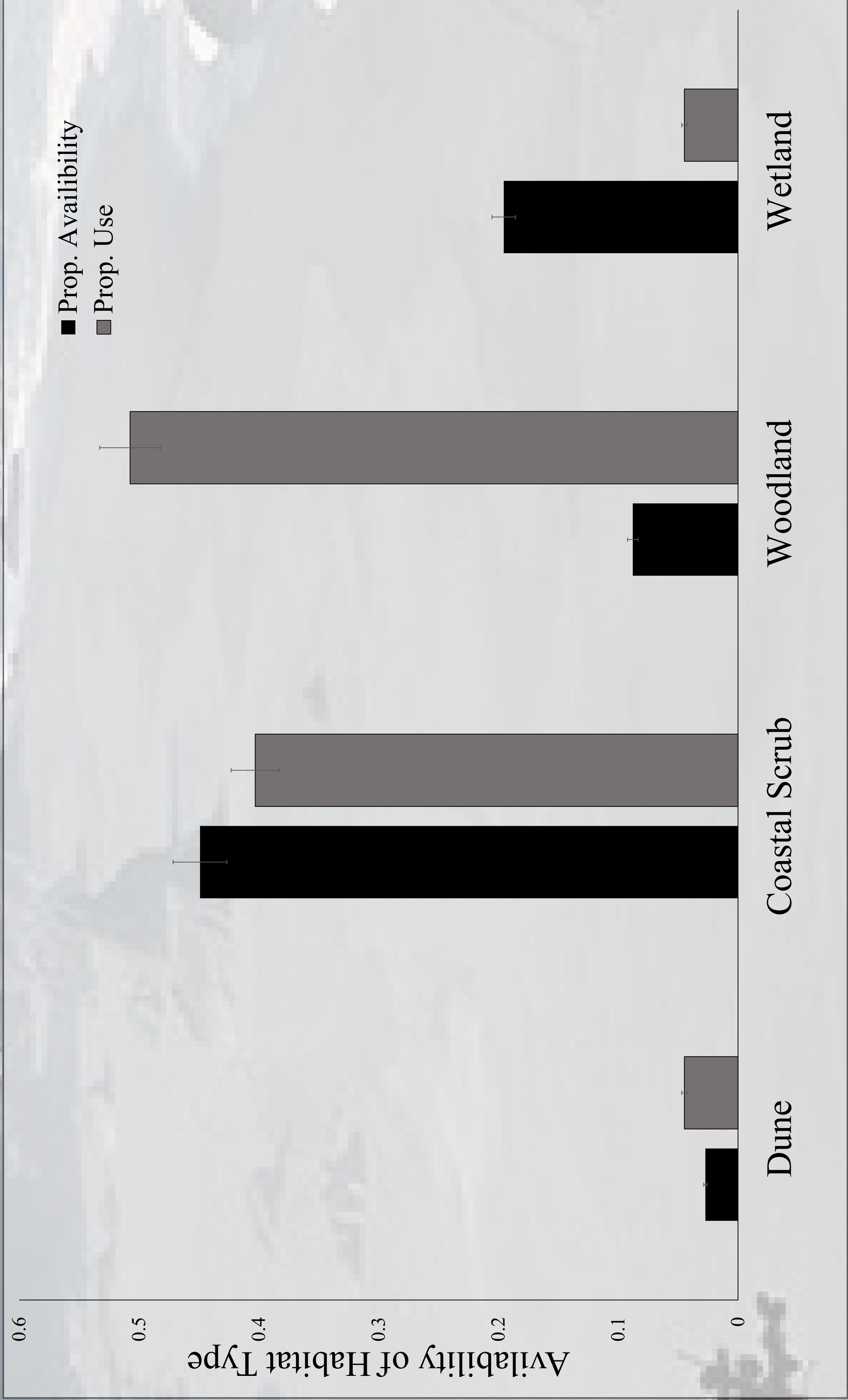
**Coastal Scrub Habitat**  
Consists of low to moderate sized shrubs of woody to semi-woody structure. Coastal scrub habitat made up 64% of the land surveyed.



**Woodland Habitat**  
Coastal oak woodlands are highly variable due to their wide distribution along California's coast. They can range from almost pure stands to a combination of species. Ranging from open canopies to nearly closed.



**Wetland Habitat**  
This study focused on Table Bluff County Park between Humboldt Bay and the Eel River Estuary. Together these two bodies of water make up a complex supporting more than 100 species of fish, 500 aquatic invertebrates, and thousands of over wintering shorebirds and water birds.



**Figure 1.** Proportional availability of habitat type compared to the proportional use of each habitat by mule deer in coastal California ecosystem, Humboldt County CA.

## LITERATURE CITED

- Morris D. W. 2003. Toward an ecological synthesis: a case for habitat selection. *Oecologia* 136:1-13.
- Wallmo O. C., et al. 1977. Evaluation of deer habitat on a nutritrional basis. *Journal of Range Management* 30:122-127.

## RESULTS

My general hypothesis that Mule deer select one habitat type was supported. My findings show statistical significance that Mule deer prefer woodland habitat, avoid wetland habitat, and use both dune and coastal scrub habitats in proportion to their availability (Fig. 1

$\chi^2=7.8$   $P<0.001$ ,  $df=3$ ).

## DISCUSSION

Due to the seasonality of Northern California, adequate supplies of highly digestible forage are not available year-round. Diets consisting primarily of woody twigs cannot meet maintenance requirements of deer (Wallmo et al. 1977). Therefore, deer must select habitat types that offer the most nutrient foraging while also providing adequate security. My results suggest that for both dune and coastal scrub habitats the proportion of available habitat is nearly equal to the proportion of use that was observed, this shows that the deer neither prefer or avoid it. However, for woodland habitat the proportion of use far exceeds the proportion of available habitat. The results show that the deer are seeking out woodland habitat. This action is most likely caused by the better condition of browse in the woodland habitat. It is the opposite for wetland habitat, the proportion of available habitat far exceeds the proportion of available use. This shows that Mule deer are actively avoiding wetland habitat, most likely due to the poor browse conditions present.