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The Common Range and Forage Types of the Islands of Hawaii

By Joseph A. May

On the Ground

- The major range and forage types on the islands of Hawaii are principally naturalized plant communities with a steady-state disclimax, though there are more seldom-occurring naturalized and even less-often-occurring native historic types present.
- In this article, I describe the characteristics of the six major range types using traditional Clements–Dyksterhuis range models for simplicity. My goal is to assist conservationists or professional agriculturalists in making decisions on ranches and public lands of Hawaii.

Keywords: Hawaii; range types; Clements–Dyksterhuis range model.

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Generally, the major range and forage types of Hawaii, which are principally naturalized plant communities, with a steady-state disclimax, can be categorized into about six groups. However, there are other, more seldom-occurring naturalized groups, and even less-often-occurring native, historic climax rangeland plant communities still present. The principal six naturalized range and forage types that typically compose a good majority of the grazing land acres are 1) Leeward Coastal Desert range type, 2) Leeward Semiarid Midgrass Steppe range type, 3) Subhumid and Humid Tallgrass range types, 4) Temperate Subhumid range type, 5) Humid Lowland/Humid range type, and 6) Humid Very Tall Grass range type. In this article, I focus on these six naturalized range and forage types that occur on six of the eight major Hawaiian islands (Kauai, Oahu, Lanai, Molokai, Maui, and Hawaii). The islands of Niihau and Kahoolawe are not included as I have no field experiences on these two other major islands.

I have elected to present the ecological dynamics of each range type in a traditional Clements–Dyksterhuis range condition model for simplicity of reading and understanding. I hope to assist conservationists or professional agriculturalists in understanding the average annual forage production and ecological dynamics to better inform them for decision-making on ranches and public rangelands in the state of Hawaii.

Leeward Coastal Desert Range Type

The Leeward Coastal Desert range type occurs on the leeward sides of all the islands in the arid zones. The Leeward Coastal Desert range type was referred to as “Pasture Group 1” and “Pasture Group 2” in the soil survey of the island of Hawaii¹ and the soil survey of the islands of Kauai, Oahu, Molokai, and Lanai.² This range type occurs in the present Major Land Resource Areas (MLRAs)³ 157 and 166 and to a lesser extent in MLRA 163. This particular range type occurs in an annual rainfall zone of about 127 mm to 254 mm (5 to 10 inches), though it can occur into an annual rainfall area of about 381 mm (15 inches). The local climate of this range type is xeric–aridic in nature, with xeric meaning the principal rainfall is in the winter months, with hot summers with scant rainfall or none at all.

This range type should be considered a naturalized rangeland. Thorn savannah (Fig. 1a) or open grassland (Fig. 1b) characterize this naturalized range type. The thorn savannah generally occurs immediately along leeward desert coastal areas, with the open grassland many times occurring just above the thorn savannah, at a slightly higher elevation, as a transition to the Subhumid Tallgrass range type. Some conservationists in Hawaii may refer to this range plant community in general terms as the “kiawe–buffelgrass” (*Prosopis pallida*–*Pennisetum ciliare*) or “buffelgrass” range type.

When this range type is heavily grazed by livestock, the buffelgrass, green panicgrass (*Panicum maximum* var. *trichoglume*), pilgrass (*Heteropogon contortus*), Australian bluegrass (*Dicantheum sericeum*), koa-haole (*Leucaena leucocephala*, also known as white leadtree on the US mainland), and desmanthus (*Desmanthus virgatus*, also known as wild tantan on the US mainland) decrease in volume. Pitted beardgrass (*Bothrio-*

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