

The Feral Mallard Threat To Hawai'i's Native Duck: Recommendations For Preventing The Extinction Of The Endangered Koloa Maoli

Position Paper

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Koloa maoli (Anas wyvilliana)
Photo by Greg Koob



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Position Statement

Introduced Mallards (*Anas platyrhynchos*) are driving the genetic extinction of Hawaii's endangered Koloa maoli (Hawaiian Duck, *A. wyvilliana*). Hybridization with feral Mallards (domestics reproducing in the wild) is currently the most serious threat to Koloa. Public outreach, in conjunction with feral Mallard control, is essential. Governmental support to strengthen and enforce quarantine laws and regulate instate breeding and commerce is crucial to stopping the sources of feral Mallards and closely-related nonnative ducks. **We must act now to prevent loss of another Hawaiian bird and secure a future for our Koloa maoli.**

Summary

Koloa maoli or simply Koloa are small dabbling ducks related to but genetically distinct from Mallards^{1,2}. Koloa are petite, agile, secretive, and a deeper, richer brown than Mallards³. Starting about the mid-1800s, Mallards were brought to Hawai'i for sport hunting, egg production, and pond beautification. Mallards were released or escaped into the wild. Now, in addition to habitat



loss and introduced predators, feral Mallards directly threaten Koloa with extinction^{3,4,5,6}. Hybridization occurs when a Mallard and Koloa mate and produce fertile, hybrid offspring. Over generations, interbreeding among hybrids, Mallards, and Koloa leads to loss of Koloa. This “unnatural” hybridization results from human activities, such as species introductions or habitat modifications, which bring geographically-isolated species into contact^{7,8}. Migratory Mallards also occur in Hawai'i in very low numbers⁹. They arrive and depart with other migratory ducks that call Hawai'i home during their nonbreeding season, and are not believed to pose a threat to Koloa.

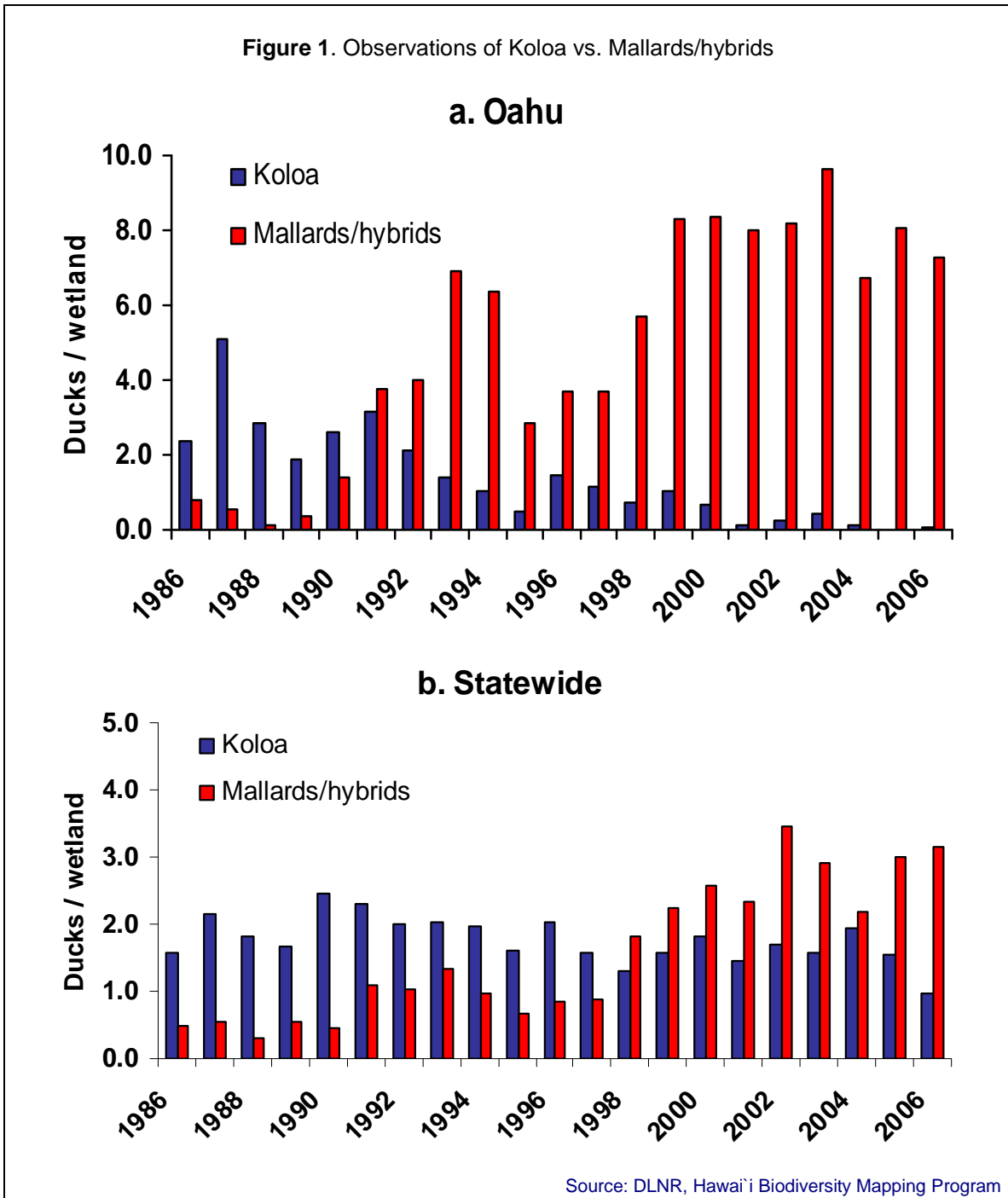
- Feral Mallards are a *keystone threat* because they can negate all other activities to help Koloa.
- Loss of Koloa is imminent unless feral Mallards and Mallard/Koloa hybrids are controlled (and new sources are stopped).
- The public is largely unaware that the Koloa maoli exists and is in trouble.
- Koloa has a high potential for “recovering” from being endangered, but only if we act *now*.

Local and Global Conservation Implications

Public outreach and threat-abatement is needed statewide because genetic research suggests that hybrids may fly inter-island⁶. Feral Mallards are potential reservoirs of disease¹⁰, compete for precious wetlands resources with Koloa and probably other endangered waterbirds, and could complicate efforts to bring the critically-endangered Laysan Duck (*A. laysanensis*) back to the main Hawaiian Islands. Thus, controlling feral Mallards would benefit a suite of endemic Hawaiian waterbirds.

Resident wild ducks on O`ahu and Maui are predominantly Mallard/Koloa hybrids, but true Koloa populations are believed to still occur on Kaua`i, Ni`ihau, and Hawai`i in wetlands mauka to makai^{3,5,6}. Koloa skillfully maneuver winding river corridors and forest canopy, occupying a unique ecological niche (role in ecosystem). However, there is alarming evidence that hybrids are

increasing within these populations. Twenty-year trends on O`ahu show a rapid increase in Mallard/hybrid observations and an equally rapid decrease in Koloa observations (Fig. 1a). Statewide, Koloa observations fluctuated with an overall slight decline, while Mallard/hybrid observations substantially increased (Fig. 1b). Although State survey data are fairly subjective, based on limited field characteristics, DNA studies support these trends⁶.



Feral Mallards threaten native duck populations around the world. Endemic island ducks with small populations and limited wetlands habitat are particularly vulnerable. A lack of timely action has led to extinction of native ducks in other regions (Table 1). However, Hawai'i has an advantage over these regions. Once feral Mallards are removed, Hawaii's isolation provides a natural barrier to reinvasion. Once the threat of hybridization is removed, with habitat restoration and management, recovery of Koloa is achievable.

Table 1. Other native ducks threatened or potentially threatened by hybridization with Mallards

Species	Location
African Black Duck, <i>A. sparsa</i>	Southeast Africa ¹¹
American Black Duck, <i>A. rubripes</i>	Eastern N.A. ¹²
Mottled Duck, <i>A. fulvigula</i>	Southeastern U.S. ¹³
Laysan Duck, <i>A. laysanensis</i>	Laysan and Midway, Northwestern Hawaiian Islands ¹⁴
Mexican Duck, <i>A. diazi</i> ^x	Southwestern N.A. ¹⁵
New Zealand Grey Duck, <i>A. superciliosa superciliosa</i> ^x	New Zealand ¹⁶
Australian Black Duck, <i>A. superciliosa rogersi</i>	Australia ¹⁷
Eastern Spot-billed Duck, <i>A. zonorhyncha</i>	Russian Far East ¹⁸
Yellow-billed Duck, <i>A. undulata</i>	Southeast Africa ¹¹
Meller's Duck, <i>A. melleri</i>	Madagascar, Mauritius ¹⁹

^xExtinct or approaching extinction.

Socio-political and Socio-economic Considerations

Some people enjoy feeding ducks on ponds – Supplemental feeding can result in successful breeding, population growth, wildlife nuisance problems, and a higher chance of disease outbreaks^{10,20}. Recent records on Moloka'i, Kaua'i, and the Honolulu Zoo suggest Mallard/Koloa hybrids are expanding to previously unoccupied areas (Engilis, UC Davis, pers. comm., 2008).

Feeding feral Mallards in close proximity to human dining or living areas is a potential human health hazard – Although most duck diseases do not affect people, feral ducks harbor potentially-harmful microorganisms that can affect people, especially people with compromised immune systems²¹. Feeding stations resulting in concentrations of excrement provide suitable conditions for growth of disease-causing organisms.

Domestic Mallards including barnyard ducks are used on a small scale for apple snail (*Pomacea canaliculata*) control in taro patches, weed control, and food production – There is no intent to prohibit responsible use of domestic ducks in agriculture. However, increasing numbers of abandoned domestic ducks (feral ducks) on water bodies point to the need for stronger regulatory controls on domestic ducks in state.

Feral duck control is likely to be controversial – The fate of a unique Hawaiian species is at stake. Part of the solution is to reduce the population of feral Mallards so they do not interbreed with Koloa. Some people may find this upsetting and question why hybrid birds are bad. We believe, however, that when given a choice between feral Mallards/hybrids or Koloa (can't have both), an aware public will choose the Koloa. Thus, an effective public outreach campaign is vital to the success of the remaining management actions.

Management Needs

The Hawaii Conservation Alliance supports changes in policy and increases in funding to:

- **Heighten public awareness:**
 - > Educate people about the feral Mallard threat to Koloa and other endemic waterbirds.
 - > Raise awareness about quarantine rules and regulations on domestic and non-domestic Mallards.
- **Develop and implement a plan for humane removal of feral Mallards and Mallard/Koloa hybrids from the wild.**
- **Promote responsible domestic duck ownership to protect Koloa and other endemic waterbirds:**
 - > Prevent releases or escapes of domesticated Mallards including barnyard ducks.
 - > Support voluntary removal of domesticated Mallards from private property.
- **Prevent habitat modifications that further give feral Mallards the competing edge**
- **Effectively address quarantine laws:**
 - > Reinforce quarantine laws to prevent importation of Mallards and closely-related ducks that threaten Koloa.
 - > Strengthen quarantine rules and regulations to restrict instate production and commerce of Mallards and closely-related ducks that threaten Koloa.
 - > Enforce quarantine laws and permit terms to protect native waterbirds.

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