United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

In Reply Refer To:
01EPIF00-2021-I-0322

July 20, 2021

Darrin Phelps
State Director
U.S. Department of Agriculture - Wildlife Services
3375 Koapaka Street, Suite H-420
Honolulu, Hawaii 96819

Subject: Programmatic Informal Consultation for USDA Wildlife Services Bird Damage Management Actions in the Hawaiian Islands

Dear Mr. Phelps:

The U.S. Fish and Wildlife Service (Service) received your Biological Assessment (BA) on May 10, 2021, requesting concurrence with your determination that select Bird Damage Management (BDM) actions implemented by the U.S. Department of Agriculture (USDA), Wildlife Services (WS) on the islands of Kauai, Oahu, Molokai, Lanai, Maui and Hawaii may affect, but is not likely to adversely affect the following federally listed species: Hawaiian common gallinule (*Gallinula chloropus sandvicensis*); Hawaiian duck (*Anas wyvilliana*); Hawaiian coot *(Fulica americana alai*), and Hawaiian stilt (*Himantopus mexicanus knudseni*), collectively referred to as Hawaiian waterbirds; and the Hawaiian hoary bat (*Lasirus cinereus semotus*); and Hawaiian goose (*Branta sandvicensis*). This letter has been prepared under the authority of, and in accordance with, provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) as amended (ESA).

This Programmatic Informal Consultation (PIC) determination and findings are based on best available scientific information, information presented in your BA, and phone calls and email correspondences between the Service and USDA WS staff. A complete decision record of this consultation is on file at our Pacific Islands Fish and Wildlife Office (PIFWO) in Honolulu, Hawaii. Our log number for this consultation is 01EPIF00-2021-I-0322.

DESCRIPTION OF THE ACTION

This PIC is for all anticipated WS BDM activities for the protection of agriculture, natural resources, property, and human health and safety. For a proposed action to be covered under this PIC, each project must incorporate the applicable conservation measures outlined below. If a

proposed project does not meet the criteria outlined below, an individual consultation is required. As the federal action agency, WS is ultimately responsible for determining if a project is covered under this PIC, and for ensuring the implementation of applicable conservation measures.

WS provides BDM assistance to cooperators on the islands of Kauai, Oahu, Molokai, Lanai, Maui and Hawaii. Specific locations where BDM will occur in any given year cannot be predicted. BDM activities may be conducted on private, federal, state and county lands in Hawaii to reduce damages or threats from birds to agricultural resources, natural resources, property, and human health. BDM operations often take place in and around commercial, industrial, public and private buildings, facilities, properties, and at other sites where birds may roost, loaf, feed, nest or otherwise occur.

The analyses of effects to listed species in this PIC are intended to apply to any proposed BDM method that may be used in any locale (excluding airports and airfields) and at any time on the islands of Kauai, Oahu, Molokai, Lanai, Maui and Hawaii. The methods available in BDM operations include both lethal and non-lethal options and are described in detail in the next section.

Methods for BDM

The use of non-lethal and lethal methods has the potential to disperse non-target wildlife, including some listed bird species. To reduce or eliminate the effects on listed species, WS selects methods that are as target specific as possible and applies these methods in ways that would make it extremely unlikely that a listed species would be affected or encountered. Table 1 lists the bird species commonly targeted during WS BDM operations in Hawaii.

Table 1. Bird species targeted during BDM operations in Hawaii.

Common Name	Scientific Name
Black francolin	*Francolinus francolinus*
Feral chicken	*Gallus gallus*
Feral duck	*Anas* spp.
Feral mallard	*Anas platyrhynchos*
Feral Muscovy duck	*Cairna moschata*
Feral pigeon	*Columba livia*
Gray francolin	*Francolinus pondicerianus*
Java sparrow	*Padda oryzivora*
Northern cardinal	*Cardinalis cardinalis*
Red-crested cardinal	*Paoaria coronata*
Rose-ringed parakeet	*Psittacula krameri*
Spotted dove	*Streptopelia chinensis*
Zebra dove	*Geopelia striata*

Harassment methods

The goal of harassment is to cause individuals or groups of birds to disperse and move away from specified areas and protected resources. Dispersal methods utilize various auditory or visual stimuli to achieve the desired effect. WS may employ one or any combination of the methods detailed below.

Auditory scaring devices such as propane exploders, pyrotechnics, electronic guards, and audio distress or predator vocalization recording, may be implemented to disperse damage-causing bird species. Propane exploders, electronic guards, and audio distress calls are static devices that are placed near a resource that requires protection. For example, distress or predator calls may be placed near the opening to a storage facility where birds are loafing and defecating on property. Propane exploders may be placed around and throughout a crop to protect crop resources.

Pyrotechnics consist of a variety of noise making devices, similar to fireworks that are fired from 15-millimeter flare pistols. There are several types of pyrotechnics that provide a different noise stimulus at varying distances. For example, “noise bombs” are pyrotechnics that travel about 75 feet before exploding. “Whistle bombs” produce a trail of smoke while whistling in flight and do not explode. “Rocket bombs” make a screaming noise in flight and do not explode. Rocket bombs are like noise bombs but may travel up to 450 feet before exploding. A “shell-cracker” is a larger-scale pyrotechnic that uses a standard 12-gauge shotgun shell with a timed pyrotechnic report projectile. The shell-cracker is launched from a shotgun and travels about 300 feet before exploding with a flash and loud bang.

Visual harassment techniques, including the use of effigies, flagging, remote controlled vehicles, and lasers can be effective in reducing bird damage.

Effigies are an artificial replication of a predator designed to visually deter the target species, examples of these are plastic owls, dogs, scarecrows, or even eye-spot balloons. Dog effigies are placed on heavy bases that allow the effigy to swivel with the prevailing winds. Eye-spot balloons are lightweight and move with wind or air currents, giving the impression of a large predator watching an area. Inflatable effigies are modern scarecrows that consists of a human-like effigy made of nylon cloth attached to a fan unit. Some may require a generator to power, so there is some auditory disturbance associated with the method, others use battery power with solar rechargers where noise may be added to increase effectiveness.

Flagging and light reflecting devices are visual deterrents that can be effective for deterring birds from using an area. Flagging may be constructed from black or white plastic trash bags stapled to pieces of wooden lathe or Mylar tape may be used. Mylar tape is a highly reflective, metalized polyester film that reflects light as it moves. Mylar tape is typically stretched between stakes in parallel rows or tied onto other fencing or wires and allowed to hang freely. Mylar reflects sunlight to produce a flashing effect and when blown by a breeze it pulsates and produces a humming noise. Clip-on plastic fence markers may also be implemented to deter birds from using an area. These are hard plastic that may be covered with assorted reflective tape or paint to increase visibility.

Livestock sorting flags or rattle paddles may be used in conjunction with vehicle or on-foot harassment. The sorting flag is a small flag attached to a flexible pole which can bend and cause a snapping sound. A rattle paddle is a pole that extends to a hollow plastic "paddle" containing particles that rattle when shaken.

Remote controlled watercraft, aerial drones and land-based vehicles can also be used as an auditory and visual method to disperse non-native birds.

Lasers are a visual dispersal method used in periods of low light, such as after sunset and before sunrise. However, lasers can also be used during overcast conditions or in shaded areas to move individual and small numbers of birds.

Vehicle harassment is a common dispersal tool because often an approaching vehicle is sufficient to cause birds to take flight. Birds may associate the vehicle with pyrotechnics or other forms of harassment, making the visual presence of the vehicle all that is necessary to disperse the target species. Vehicles using beacon lights and headlights are driven in the vicinity of the target species, as roads and safe travel areas allow until the target species disperse.

On-foot harassment is when WS personnel apprach a target species by walking towards it. Birds generally identify huimans as predators, making human presence an effective visual dispersal method for target species. On-foot harassment may also be used where the terrain or circumstances does not permit vehicular use.

Use of Firearms, or "lethal management" is used when non-lethal methods are not sufficient to reduce damage and to prevent habituation to non-lethal methods. WS may use shotguns, airguns, rifles or handguns to remove target species. Removing a few birds from a flock serves to make the remainder of the flock wary, thus reinforcing non-lethal harassment methods.

Capture Methods

All of the capture methods proposed result in the live capture of birds; the birds can then be released, relocated, or euthanized. Traps will be of the right size with properly sized entry points in appropriate locations to preclude listed species from capture.

Cage traps are box-type traps that allow a single animal to be captured. Cage traps that are commonly used to capture cats and mongoose, may be used to capture larger birds such as feral chickens. Other types of cage traps, specifically designed to capture multiple birds, have a one-way swinging door. Wild bird feed is typically used as bait, water and shade are provided for in the trap. The placement of traps in areas where target species are active, and the use of target-specific attractants will minimize the capture of any non-target birds including listed species.

Decoy traps used by WS are a trap with one or two roof apexes. Birds enter the trap by dropping through a slot in the roof and are prevented from flying out by the narrow width of that opening. The size of the slot can select for the size of the target species. To entice birds into the trap, live birds are placed in the trap and act as decoys. Food and water are also provided. Active decoy traps are monitored daily to remove and euthanize excess non-native birds and to replenish bait and water.

Funnel traps are wire cage traps with funnel entrances which allow one-way passage into the trap through a wire funnel. Funnel traps are placed on the ground or can be elevated on a platform. Determining the funnel size selects for the size of bird that would be captured. The placement of funnel traps is an effective way to increase selectivity and avoid non-target captures, especially of listed waterbird species.

Corral traps are used to capture feral swine but can be used to capture domestic geese, Canada geese, feral or domestic ducks such as Muscovy ducks. If the ducks or geese are molting, they may be driven into corral traps and subsequently captured by a scoop net or secondary funnel trap.

Mist nets are used for capturing small-sized birds, but can be used to capture larger birds, such as owls. Mist nets are made of a fine black silk or nylon net usually 3 to 10 feet wide and 25 to 35 feet long. Net mesh size determines which birds can be caught and overlapping pockets in the net cause birds to entangle themselves when they fly into the net. Proper selection of mesh size, along with placement location and time of use can reduce non-target captures.

Canon or Rocket nets use mortar projectiles to propel a net up and over birds that have been baited to a capture area.

Net guns use a single CO_2 cartridge for each operation, launching weighted projectiles and net out to 60 feet. WS BDM operations most commonly use the Super Talon handheld net launcher. The net launcher is typically used to capture feral ducks and chickens. The standard net is 7 feet by 7 feet with 2-inch mesh. These are similar to cannon or rocket nets in that they are highly selective because an operator must fire the gun and can avoid areas where there are non-targets, use a different attractant, or not trigger the device in the presence of listed species. The risks to listed species or any non-target species are minimized by selective baiting, site selection that avoids non-targets and the decision of the net operator over when to activate the propellants.

Raptor traps are varied in form and function and include but are not limited to Bal-chatri, pole traps, Dho Gaza traps, Phai hoop traps and Swedish goshawk traps. These traps have various designs that may be like those previously discussed but are modified to specifically capture raptors. Raptor traps are either elevated or they are constantly monitored. Raptor traps are mainly used by WS at airports and airfields for translocation of owls but could also be used for the control and removal of the barn owl.

Action Area

The action area encompasses the lands and adjacent waters on the islands of Kauai, Oahu, Molokai, Lanai, Maui and Hawaii, where listed species may be impacted by WS BDM actions.

Pre-Survey Work

In order to determine the presence of listed species, WS will conduct a survey of each project location for listed individuals, nests, and broods prior to the start of any work. To help identify potential species which may occur within each proposed project location, each species and its

corresponding geographic range covered by this PIC can be found on the species data table in Appendix A. Actions may occur anywhere within islands listed under each species' geographic range. Conservation measures for each species identified in pre-work surveys must be incorporated into each project as well as measures specific to each BDM method.

Reporting

Under the terms of this PIC, WS will submit an annual report to the Service by July 31, which will include date, island, TMK or coordinates, BDM methods used, project scope, species impacted, and conservation measures applied. A meeting will occur between WS and the Service no later than August 31 of each year to review this PIC and summarize the actions permitted to inform recommendations to improve future effectiveness of the program. WS may use the Service's Information for Planning and Consultation (IPaC) tool when annual online reporting capabilities become available, at which time a written annual report will not be required. If this PIC does not meet the needs of WS in coordination with the Service, this PIC may be deemed inactive and ESA consultations will resume on an individual project basis.

The current scope of this PIC is limited to those actions that may affect, but are not likely to adversely affect listed species. However, this PIC is intended to be adaptive, accountable, and credible as a conservation and regulatory tool. As such, additional categories of actions that may affect, but are not likely to adversely affect listed species, may be proposed for addition under this PIC, in coordination with the Service.

Conservation Measures

WS will ensure that projects being implemented in accordance with this PIC will be designed to avoid or minimize effects to listed species. The following general conservation measures will be implemented by WS to avoid or minimize effects to listed species:

- Listed species will not be approached, fed, or disturbed.
- A buffer of 100 feet will be maintained from any listed species and operations will cease if this buffer cannot be maintained.
- Shooting will be limited to areas where disturbance to listed species will be minimized or avoided.
- In areas where listed species are known to be present, reduced speed limits will be implemented, and project personnel will be informed of the presence of species on site.
- Within wetland sites only the minimum amount of time to adequately conduct BDM will be taken.
- If a nest or active brood of a listed species is found:
    - The Service will be contacted within 24 hours for further guidance.
    - A 150-foot buffer will be established and maintained around all active nests or broods until the goslings, chicks, or ducklings have fledged. Potentially disruptive activities or habitat alteration will not occur within this buffer.

Conservation Measures for Harassment Methods

WS is not proposing to target any listed bird species for harassment. Prior to any use of proposed BDM methods, the action area will be surveyed for the presence of Hawaiian geese or Hawaiian waterbirds. If these species are present, the operations will either be suspended until the listed

species leave the action area or the operation may be relocated to maintain a buffer defined below. The following conservation measures are included in the proposed action to avoid or minimize potential effects to listed species:

- During BDM operations, WS personnel avoid, by a buffer of at least 100 feet any listed species.
- Aerial drones to harass non-native birds will not be used during dawn and dusk periods.
- Any known active nest or brood of a listed bird species is given a buffer of at least 150 feet. The nest or brood will be monitored by WS personnel and if found to be disturbed by the harassment operation, the buffer distance will increase until there is no further disturbance detected.
- Additionally, if any listed species are present where the avoidance distance cannot be maintained or disturbance cannot be avoided, BDM activities will be suspended.

Conservation Measures for Cage, Decoy, Funnel, Corral, Raptor Traps

WS is not propoing to target any listed species for capture in any BDM actions. The following conservation measures are included in the proposed action to avoid or minimize potential effects to listed species:

- Traps will not be placed in areas where listed birds are present or where there is a likelihood of listed species becoming a non-target capture.
- Traps are checked daily, but at a minimum, all traps and trapping devices are checked at least once every 72 hours. When traps cannot be checked within given timelines, trapping will be suspended, and traps closed or removed.
- Raptor traps are elevated or they are constantly monitored.
- When raptor traps are used between sunrise and sunset, they must be checked at least once every two hours. Raptor traps set between sunset and sunrise must be checked at least once during the night. Traps must be closed during inclement weather unless monitored continuously.
- Woody plants greater than 15 feet tall will not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 to September 15).

Conservation Measures for Mist nets, Cannon or Rocket nets, Net guns

WS is not proposing to capture any listed-species using nets. The following conservation measures are included in the proposed action to avoid or minimize potential effects to listed species:

- No netting operations will occur if there are listed species present within the 100-foot buffer. If a listed species enters the 100-foot buffer where a netting operation is occurring or is planned, the operation will be suspended until the listed species leaves the area.
- Mist nets will not be used during dawn and dusk periods when bat foraging activity is at its highest.
- With mist nets, personnel will check them no less than once every four hours to remove any captured birds.
- Mist nets will not be used in areas where artificial lights could attract Hawaiian seabirds.

Conservation Measures for Remote Controlled Vehicles
WS is not proposing to target any listed species using any remote-controlled watercraft, aerial drones or land-based vehicles. The following conservation measures are included in the proposed action to avoid or minimize potential effects to listed species:

- Aerial drones will not be used at night or during dawn and dusk periods.
- Any known active nest or brood of a listed bird species is given a buffer of at least 150 feet. The nest or brood will be monitored by WS personnel and if found to be disturbed by the harassment operation, the avoidance distance is increased until there is no further disturbance detected.
- Additionally, if any of the listed species are present where the avoidance distance cannot be maintained or disturbance cannot be avoided, BDM activities will be suspended.

Conservation Measures for the Use of Lasers
WS is not proposing to target any listed species for harassment with lasers in any BDM actions. The following conservation measures are included in the proposed action to avoid or minimize potential effects to listed species:

- Lasers use will be limited to areas where disturbance to listed species will be minimized or avoided.
- Any known active nest or brood of a listed bird species will be given a buffer of at least 150 feet. The nest or brood will be monitored and if the nesters or brood appear to be disturbed by the use of lasers, the buffer distance will be increased until there is no disturbance detected.
- Additionally, if any of the listed species are present where the avoidance distance cannot be maintained or disturbance cannot be avoided, the operation will be suspended.

Conservation Measures for the Use of Firearms
WS is not proposing to target any listed species for shooting in any BDM actions. The following conservation measures are included in the proposed action to avoid or minimize potential effects to listed species:

- Shooting will be limited to areas where disturbance to listed species will be minimized or avoided.
- Any known active nest or brood of a listed bird species will be given a buffer of at least 150 feet. The nest or brood will be monitored and if the nesters or brood appear to be disturbed by the shooting, the buffer distance will be increased until there is no disturbance detected.
- Additionally, if any of the listed species are present where the avoidance distance cannot be maintained or disturbance cannot be avoided, the operation will be suspended.
- Shooting of mallards is restricted to Males in breeding plumage or Tier 1 Male hybrids where field identification is determined using Service provided field guides Suspected mallard or Hawaiian duck hybrids must meet at least three of the identifiers confirming as a hybrid or mallard before action is taken.

CONSEQUENCES OF THE ACTION

The effects analysis for individual species in the PA was done by evaluating the effects pathways based on the media through which effects are delivered to the species. Essentially, all effects on listed species are delivered through the displacement, disruption, degradation, removal, or addition of air, soil, chemicals, plants, and direct effects on individuals of a species. In the BA, WS described the effects from very specific project actions that may occur under the BDM program. The conservation measures contained herein were designed to avoid or minimize those specific effects. The Services agree with the descriptions in those specific potential effects sections, however, for the purposes of the effects analysis here, we will further examine and analyze potential effects from specific BDM methods analyzed in the BA and that may affect listed species.

To analyze the probable consequences of the proposed action on the listed species covered by this PIC, the Service followed the logical chain of Exposure - Response - Effect. In other words, the first evaluation was whether the species would be exposed to modifications of land, water or air from the proposed action. Then, if exposed, what would the likely physiological response to that exposure be, and then (understanding the biology of the species) what biological effect would result from that physiological response.

Hawaiian Hoary Bat

Bats could potentially be present within all areas where WS conducts BDM operations. Actions evaluated under this PIC are those that would not cause adverse effects to the Hawaiian hoary bat. Direct impacts to adults, sub-adults, and pups in the footprint of projects evaluated by this PIC include disturbance, capture, injury, and death.

Harassment methods, including using aerial drones, may disturb the bat and potentially cause it to temporarily abandon a feeding habitat. Bats foraging in these areas will not likely be adversely affected by BDM operations due to the implementation of conservation measures proposed by WS. Those measures make interactions between potential disturbances and the Hawaiian hoary bat extremely unlikely to occur by avoiding the use of those disturbance methods during times where those interactions would be likely. Because the disturbances are extremely unlikely to occur, they are considered discountable.

Capture methods, specifically using a mist net, may inadvertently trap a Hawaiian hoary bat. Removal of trees or shrubs 15 feet or taller to set up capture methods may inadvertently harm or kill a Hawaiian hoary bat pup. Because of the conservation measures that WS has agreed to implement, we expect the chances of a Hawaiian hoary bat being captured by a mist net or killed or harmed by tree or shrub removal to be extremely unlikely to occur and therefore discountable.

Hawaiian goose, Hawaiian waterbirds

Hawaiian geese and Hawaiian waterbirds could potentially be present within all areas where WS conducts BDM operations respective to their geographic ranges (see Appendix A) depending on the available habitat. Actions evaluated under this PIC are those that would not cause adverse

effects to the Hawaiian goose, or Hawaiian waterbirds. Direct impacts to adults, sub-adults, and eggs in the footprint of projects evaluated by this PIC include abandonment of feeding, breeding, or sheltering habitat, injury, death, and capture.

Harassment methods, including audio and visual methods, may cause listed species to temporarily abandon feeding, breeding, or sheltering habitat within action areas. This disturbance is not likely to result in adverse effects to the species due to the temporary nature of the disturbance (pulse effect), the low frequency of disturbance, and the availability of the species to return to those life functions with a high recovery rate once the action is completed. Based on our best judgment, this disturbance would not be able to be meaningfully measured, detected, or evaluated and is therefore considered insignificant.

Shooting of feral mallards and mallard hybrids, could inadvertently result in the death of a Hawaiian duck. WS using the key to identify Hawaiian duck and Hawaiian duck hybrids in the Hawaiian Islands, and the mallard and Hawaiian duck identification guideline provided by the Service's migratory bird program, and depending on the island and location, taking action only after males are identified as definitely a mallard or a Tier I hybrid reduces the chances of taking a Hawaiian duck to a point where it would be extremely unlikely to occur and therefore discountable.

Capture methods, may inadvertently capture, injure, or kill a Hawaiian goose or Hawaiian waterbird. Because of the conservation measures that WS has agreed to implement, we expect the chances of a Hawaiian goose or Hawaiian waterbird being captured, injured, or killed to be extremely unlikely to occur and therefore discountable.

Beneficial effects

Although not wholly beneficial, management of barn owls and cattle egrets will be beneficial to the Hawaiian goose and Hawaiian waterbirds by removing some predation which may increase reproductive potential. The control of feral mallards and mallard hybrids will also be beneficial to the Hawaiian duck that is threatened by hybridization with mallards.

CONCLUSION

For the reasons listed above in the consequences of the action section, the Service has concluded that WS actions will have insignificant or discountable effects on ESA-listed species. We therefore concur with your determination that implementation of any of the covered actions described above, may affect, but is not likely to adversely affect the federally listed Hawaiian hoary bat, Hawaiian goose, Hawaiian common gallinule, Hawaiian duck, Hawaiian coot, and Hawaiian stilt.

Reinitiation of consultation is required and will be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (1) new information reveals effects of the action that may affect ESA-listed species or designated critical habitat in a manner or to an extent not previously considered; (2) if the identified action is subsequently modified in a manner that causes an effect to the ESA-listed

species or designated critical habitat that was not considered in this PA; or (3) if a new species is listed or critical habitat designated that may be affected by the identified action.

We appreciate your efforts to conserve threatened and endangered species. If you have any questions, please contact Johnathon Kraska at johnathon_kraska@fws.gov or by telephone at 808-792-9427.

Sincerely,

DARREN LEBLANC Digitally signed by DARREN LEBLANC Date: 2021.07.20 15:03:16 -10'00'

Darren LeBlanc
Planning & Consultation Team Supervisor

Enclosure: Appendix A. [Species Data]

Appendix A: Species Data

Common Name	Scientific Name	Hawaiian Name	Federal Listing	Critical Habitat / Recovery Plan	General Habitat Requirements	Breeding Season	Geographic Range	Summary of Range
Hawaiian hoary bat	*Lasiurus cinereus semotus*	ʻōpeʻapeʻa	Endangered October 13, 1970 (35 FR 16047)	Not designated / Recovery Plan for the Hawaiian Hoary Bat	Roost in native and non-native vegetation from 1 to 9 meters above ground level. Forage in a variety of both	June 1 - September 15	All Main Hawaiian Islands (MHI): Kauai, Oahu, Lanai, Maui, Hawaii	They have been found roosting in ohia, puhala, coconut palms, macadamia, kukui, kiawe, avocado, shower trees
Hawaiian goose	*Branta sandvicensis*	nēnē	Threatened reclassified as threatened on December 19, 2019 (32 FR 4001; 84 FR 69918)	Not designated / Draft Revised Recovery Plan for the nēnē or Hawaiian Goose (*Branta sandvicensis*)	Coastal dune vegetation and non-native grasslands (e.g., golf courses, pastures, rural areas), sparsely vegetated low- and high-elevation lava flows, mid-elevation native and non-native shrubland, early successional cinderfall, native and non-native alpine grasslands and shrublands	September 1 - April 30	Hawaii, Maui, Kauai and Molokai	The current Hawaiian goose population is estimated in 2019 at 3,492 individuals with birds found on Hawaii, Maui, Kauai, (with the highest numbers) and on Molokai
Hawaiian common gallinule	*Gallinula galeata sandvicensis*	ʻalae ʻula	Endangered March 11, 1967 (32 FR 4001)	Not designated / Recovery Plan for Hawaiian Waterbirds, Second Revision	Inhabit freshwater marshes, wetland agricultural areas, taro patches, reedy margins of water courses (e.g., streams, irrigation ditches), reservoirs, and wet pastures	Year-round, but most activity occurs between March 1 - August 31	Kauai and Oahu, possibly Maui and Hawaii	Occurs in wetland habitats below 125 meters on the islands of Kauai and Oahu, Kauai: Hanalei and Wailua River valleys, irrigation canals on the Mana Plains. Oahu: between Haleiwa and Waimanalo, Pearl Harbor and the leeward coast at Lualualei Valley

Appendix A: Species Data

Common Name	Scientific Name	Hawaiian Name	Federal Listing	Critical Habitat / Recovery Plan	General Habitat Requirements	Breeding Season	Geographic Range	Summary of Range
Hawaiian duck	*Anas wyvilliana*	koloa maoli	Endangered (March 11, 1967; (32 FR 4001)	Not designated / Recovery Plan for Hawaiian Waterbirds, Second Revision	Occur in a wide variety of natural and artificial wetland habitats including freshwater marshes, flooded grasslands, coastal ponds, streams, montane pools, forest swamplands, taro, lotus, shrimp, and fishponds, irrigation ditches, reservoirs, and mouths of larger streams	Year-round, but most nesting activity occurs between January 1 - May 31	All of the MHI, with majority on Kauai (90 percent), Oahu and Maui	Kauai: found in Hanalei National Wildlife Refuge and montane streams. Oahu: found in Kawainui, Hamakua, and Heeia marshes, James Campbell National Wildlife Refuge, and in wetland habitats in or near Punahoolapa, Haleiwa, Pearl Harbor, and Lualualei Valley. Maui: found in Kahului, Kanaha and Kealia ponds. Hawaii: occur in the Kohala Mountains, Pololu, Waimanu and Waipio valleys, and on Mauna Kea. Estimated population size of 2,200 and 715-757 individuals observed in 2017 statewide surveys
Hawaiian coot	*Fulica americana alai*	alae keʻokeʻo	Endangered October 13, 1970 (35 FR 16047)	Not designated / Recovery Plan for Hawaiian Waterbirds, Second Revision	Lowland wetland habitats with suitable emergent plant growth interspersed with open water, freshwater wetlands and taro fields, reservoirs, sewage treatment ponds, and brackish wetlands.	Year-round	All of MHI except for Kahoolawe, 80 percent of population found on Kauai	Coastal plain wetlands below 400 m. Kauai: Hanalei, Huleia, Opaekaa Oahu: coastal wetlands and reservoirs and along the windward and north shores Maui: Kanaha and Kealia Ponds, Nuu Pond. 895-1709 individuals observed in 2017 statewide surveys
Hawaiian stilt	*Himantopus mexicanus knudseni*	aeʻo	Endangered October 13, 1970 (35 FR 16047)	Not designated / Recovery Plan for Hawaiian Waterbirds, Second Revision	Found in ephemeral lakes, reservoirs, settling basins, natural or manmade ponds. Brackish water habitats include coastal ponds, silted fishponds, and estuaries; and saltwater habitats such as inshore reefs, silted beach areas, and tidal flats.	March 1 - August 31	All of MHI except for Kahoolawe.	Oahu: found on the north and windward coast at Kahuku Point. Kauai: found in large river valleys, reservoirs and sugarcane effluent ponds. Maui: use the coastal wetlands of Kanaha and Kealia. Molokai: the southern coastal wetlands and playa lakes are important habitats. Lanai: permanent residents at the Lanai City wastewater treatment ponds. Hawaii: Kona coast. 1127-1860 individuals observed during 2017 statewide surveys.