Birds and Wildlife of Yerba Buena Island, Initial Findings, Report and Terrestrial Habitat Management Concepts March-June 2017

Observations and document prepared by Josiah Clark, Consulting Ecologist

Abstract

This second series of bird and wildlife surveys on Yerba Buena Island consisted of seven visits and spanned the period from early March through mid June 2017. Three different sites representing the island's characteristic habitats were visited in an effort to discover as many species as possible. Area Search survey methods emphasized breeding confirmations of terrestrial birds, but migratory birds and other fauna and ecological phenomenon were also recorded. Fifty-two species of terrestrial bird were observed during this survey, compared with 27 species observed during the first series of surveys. Twenty-two native species and one exotic species were confirmed to be breeding on this second series of surveys. The remaining species were wintering, migrant or passing transient species. Survey findings and observations will serve as baseline data in advance of the coming residential construction and increased human population on the island. Observations of the current ecological conditions and biota are meant to inform future stewardship practices, with the conservation of local biodiversity being the underpinning goal. Sedentary species with populations isolated from the mainland were determined to be the most vulnerable to local extinction on the island. Increased vehicle traffic, habitat intrusion, habitat simplification and a projected increase in human associated meso-predators are likely to be the biggest impacts to the island's birds and wildlife in the year's ahead.

Survey Methods:

This second round of wildlife surveys took place between March 5 and June 15, 2017. Terrestrial birds were the primary focus but all wildlife observed on each visit was recorded. Surveys involved 30-minute periods of actively looking and listening within one of three survey zones.

Within each zone numbers of individuals were counted and behaviors and breeding activities were recorded. The presence of young, nests, males on territories, parents carrying food, and important habitat features were also recorded.

Mammals, reptiles and amphibians were the other vertebrate groups recorded. Non-vertebrate species observed including insects, arachnids and mollusks were also recorded and identified to species when possible. Wildlife present in the marine habitats of Yerba Buena Island were recorded each visit.

Species Origins and Hierarchy of Importance

The terrestrial habitats of Yerba Buena Island serve as a habitat for resident, migrant and exotic bird species. The island's fauna today are a mix of sedentary residents, migratory and exotic wildlife with birds being a good illustration of this.

From a conservation standpoint the remaining hardy, indigenous species that have populations cut off from the mainland are the most significant and important. These are in essence "relics" from the original island's ecosystems. Long isolated from mainland populations with little or no genetic drift, these species in many cases have already begun to exhibit distinct physical differences. In this way they are by nature rare, with gene pools (and in some cases vocalizations) similar to, but distinct from the mainland. Nutall's White-crowned Sparrows, Bushtits and Chestnut-backed Chickadee are examples here.

Birds that come from far away to breed on the island, namely neo-tropical songbird migrants, are the next most significant group from a conservation standpoint as their populations are in steep decline. Wilson's Warbler, Allen's Hummingbird and Tree Swallows fall into this category.

Following that are the more locally common and widespread mobile species, which have likely been coming and going from the island since time began. Species here include American Robin, House Goldfinch and Red-tailed Hawk. Most of these are likely to thrive despite the changes that are coming to YBI.

Exotic wildlife are a negative addition to the islands fauna and should be discouraged or even eradicated. They were introduced by people intentionally and now are directly or indirectly displacing native wildlife species. Among these are European Starling, Fox Squirrel and surprising to many, Canada Goose.

Survey Goals

Bird and wildlife surveys intend to get baseline data on conditions and populations in advance of the next phase of construction. With the rising human population come challenges and opportunities for the stewardship of the previously little-studied island fauna and their habitats. The coming development on Yerba Buena Island will add thousands of new humans residents to this unique island in the bay. This survey appears to be the first check-in with the island's biodiversity in quite some time with no obvious experts I could find.

Stewardship Goals

Stewardship recommendations are meant to help retain existing native wildlife on Yerba Buena Island by maximizing habitat resources and wildlife corridors. Concepts from the studies of Island Biogeography and the Urban Wild land Interface were guiding principles in the creation of this document and are at the heart of wildlife recommendations and management goals.

Survey Areas and Existing Conditions (Photos in Appendix at end of document)

Three different zones on the northern and western parts of the island were surveyed during visits to Yerba Buena Island. It is important to note that much of the island, namely the southern and eastern parts of the island were largely off limits during the survey period and were not surveyed at all. Survey Zones were created where access was permitted while construction activities were underway and consisted of the following.

A) Tower Park/Summit –Terrace and north and east facing slopes above Macalla Rd and inside the Yerba Buena Road loop. Slopes above the former residential area and wooded locations around the Coast Guard Tower Facility. Predominant vegetation included Blue-Gum Eucalyptus, Algerian Ivy, Acacia species and other exotic vegetation. This zone has the biggest stand of pines of any of the survey areas and harbored higher densities of conifer-specialized species.

As a hilltop, this area serves as a gathering and reorienting location for migratory songbirds with many of the most unusual species occurring here. This area will be seeing the most marked changes of any of the areas surveyed. Retaining and bolstering habitat resources in the park, around landscaped residences and wherever possible is the best chance to conserve and even enhance native biodiversity in this area.

B) Clipper Cove Woodlands-This largest survey area included east-facing slopes below the intersection of Macalla and Yerba Buena Roads, which are the slopes above Clipper Cove Beach. The woodlands here are the most diverse of any of the areas surveyed. Blue-gum Eucalyptus is the most abundant tree species here. Monterey Cypress and Acacias are also present towards the top and middle portions of the slope.

Native woodlands included Coast-live oak and Toyon towards the top and middle of the slopes and Arroyo Willows in the lower portions. Blue-Elderberry is scattered throughout. The low-lying plant communities of willows, merging with California blackberry and coastal scrub were found to be important breeding habitats for native birds. Though no obvious watercourse was observed, the presence of willows indicates a riparian condition and the availability of fresh water near the surface. From a conservation standpoint these robust stands of native vegetation and the biodiversity they support are among the most significant natural resources on the island.

Higher densities of breeding bird territories and young were found to be nesting here than in the other area surveyed. This can be attributed to the size of the area, the structural diversity and range of vegetation types and associated resources. The range of elevations and lee-facing exposure allow for favorable growing and nesting conditions. The steep slopes and stands of inpenetrable vegetation have been a saving grace for this area. Keeping trails out of this area is the best way to preserve existing native biodiversity.

C) Coastal Bluffs: This shear and narrow band of west facing habitat is located west of Treasure Island Road near the crossing to Treasure Island proper. Native plant communities on these rugged and largely inaccessible slopes are more intact than plant communities elsewhere on the island. The dominant vegetation are low-growing, wind-sculpted Coast-live Oaks. Also present are Coastal Scrub plant communities that are specialized to endure strong westerly winds that come off the ocean and bay.

This was the smallest of the survey zones with fewer terrestrial bird species observed than the other areas. It is however a very significant area from a vegetation standpoint, being characteristic of the island's original flora and a vital breeding resource for the island's most specialized and vulnerable bird species. Preventing human intrusion and managing invasive plants will be vital here.

D) Bay waters, rocky shore and intertidal areas: Rocky shores and bay waters on the westerly portion of the island are exposed to more dynamic ocean currents and conditions and harbored many species characteristic of deeper water and the immediate coast outside the bay. In contrast the much more protected, shallow, placid Clipper Cove attracts species typical of eelgrass beds and estuaries found further inside the bay. The sandy beach of Clipper cove with willows extending into the intertidal is a remarkable natural resource and a unique relic providing a window into the Bay's beaches of yesteryear. While nearly all of the rest of the Bay's beaches were robbed of sand to create Treasure Island, as luck would have it this sandy beach was spared. Hopefully it can remain a protected treasure.

Summery of Survey Findings

Fifty-two species of terrestrial birds were observed on Yerba Buena Island during this second series of surveys. A list of these species can be found in the data section of the report. Twenty-two of these are native breeding species. European Starling was the only exotic breeding species. All breeding species are demarcated in bold on the species list.

Area A had the highest overall bird diversity with a total of 30 bird species. Breeding activities were discovered for twenty species in this area. The summit area was found to be an especially important area for migrant birds during the spring migration.

Area B had a total of 27 species. Breeding activities were discovered for twenty species in this area as well, though it held more territories of more specialized species and appeared to produce more fledglings than the other areas.

Area C had a total of 23 species of birds. Breeding activities were discovered for just 13 species likely due to its small size and limited variety of breeding structure.

Twelve species of regionally expected wintering birds were found to spend only the winter on Yerba Buena Island. These species are demarcated with (W) in italics on the species list.

Another twelve species were detected as passing migrants and demarcated with a (M) on the species list in the data section. Nine of these species breed in the region but appropriate habitat on the island appears insufficient. Conditions for the remaining three species are present. They could potentially breed on the island but could not be confirmed.

Breeding behaviors were not observed for three species presumed to be breeding during the 2016 survey; Mourning Dove, Common Raven and Red-breasted Nuthatch. The former two species are likely breeding somewhere on the island and the ladder is likely an erratic breeder on the island as it is in similar pine dominated habitats on the mainland.

Area D was surveyed incidentally. Consisting of the intertidal and marine areas, 36 species of bay or marine associated species were tallied. Most of these are only present during winter months. Diversity and abundance of these species was notably higher early in the survey period when the herring were running and appeared to spawn in the eel grass beds. Diversity and abundance of bay ducks and fishing birds decreased significantly as spring approached. These species are listed at the end of the terrestrial bird data set.

Treasure Island: A reference site

As an interesting comparison, the adjacent and manmade Treasure Island, though larger has far fewer native breeding wildlife species present. It lacks low, dense vegetation, dense stands of trees and has essentially no native flora. Treasure Island is an important lens, reference and "control" site that illuminates what a whittled down, future Yerba Buena Island biota might look like without proper management.

Wildlife Management Goals

Serving, as a successful breeding area is the most important role Yerba Buena Island can play to existing native wildlife. Preserving, maintaining and enhancing existing wildlife populations should be a long-term goal in the stewardship of the island.

Identifying the most vulnerable breeding species that exist on the island today is the first step in making sure they do not disappear. Tailoring specific guidelines and habitat recommendations for these "target species" illustrates an understanding for the island's biogeography at large.

Human safety, preserving built infrastructure and promoting native biodiversity are all considerations in the creation and maintenance of wildlife habitats on Yerba Buena Island.

Existing Habitat Types and their Values to Wildlife

Remnant native plant communities that serve as valuable wildlife habitat on the island include Coastal scrub, Coast Live Oak woodlands and willow riparian. Far more abundant and widespread however are introduced exotic woodlands of Blue Gum Eucalyptus, Acacia and Monterey Pine. Due to its shear coverage, exotic vegetation provides habitat for much of the wildlife on the island today.

More open disturbed areas with annual grasses, wild radish, fennel and other productive, fast growing exotic forbs have come to provide nectar, seeds, insects, larval food and nesting habitat for native birds and other wildlife.

Typical resident breeding birds of coastal scrub and open areas on Yerba Buena Island include Nutall's White-crowned Sparrow, Song Sparrow, Lesser Goldfinch, Bushtit and Anna's Hummingbird. Resident breeding birds more restricted to the Coast Live Oak and exotic woodlands include Downy Woodpecker, Brown Creeper, Chestnut-backed Chickadee and Dark-eyed Junco.

Wilson's Warbler and Allen's Hummingbird are migrant breeding species, these species make their northbound journeys each spring to set up breeding territories in willow riparian and Coast Live Oak Woodland and nest in the productive ground cover layers of California Blackberry.

Tending the Wild

The original human inhabitants of Yerba Buena Island were California's First People and surely sculpted much of their planted environment. It is likely that many of the oaks, elderberries and other plants would have been planted, tended and trans-located in an effort to create collecting areas.

It can be inferred that First Peoples introduced animals for food and as companion animals. It has been suggested that the Santa Cruz Island Jay for example, now described as distinct from the mainland's Western Scrub Jays, were likely introduced by the Chumash tribe there. The same has been postulated for the Island Fox, also present on Santa Cruz Island.

Historic Impacts

The initial construction of the Bay Bridge and the creation of the adjoining Treasure Island have greatly influenced wildlife communities on Yerba Buena Island in recent years. The most significant historic impacts to wildlife likely happened a century before that.

Much of the original vegetation disappeared during the first colonization by Europeans. The original Spanish settlers were the first to raise goats on Yerba Buena Island and for a time it was even marked on maps as "Goat Island". Native plant communities were simplified, larger wildlife and predators that may have

been there were wiped out and dozens of exotic plant species were introduced on purpose or colonized opportunistically.

Trends in wildlife immigration and extinction

The more specialized, sedentary and rare species of wildlife would have been much more vulnerable and disappeared early in the colonization by Europeans. With island habitats largely altered, migratory breeding songbirds stopped setting up breeding territories and moved on. The more generalist and mobile species moved in and in many cases thrived, a reflection in miniature of what transpired on the mainland.

The introduction of exotic animals also had a significant impact on the wildlife of Yerba Buena Island. A long tended colony of feral cats near the coast guard station has surely had an impact on birds and small ground dwelling wildlife throughout the island. The presence of both Eastern Grey Squirrel and Fox Squirrel (from the southeast US) suggest humans intentionally released species on the island in recent decades. These introduced exotic mammals are predators of nesting songbirds as they hunt down nests and eat eggs.

Vulnerable Breeding Bird Species

Six non-migratory, resident bird species have populations that have likely been isolated for a very long time, perhaps many centuries or longer. Evolving in isolation, these species are developing specialized bloodlines and in some cases different physical attributes. For example the Nutall's White-crowned Sparrows on the island have notably different song dialects than the ones on the mainland. It is important to note that the there are various subspecies of White-crowned Sparrows. The more abundant wintering subspecies *Gambelli* are highly migratory.

The local populations of these species do not migrate over large bodies of water. They have significant dispersal challenges and would be unlikely to return if they were to die out today. The Farrallon Islands are a local litmus test for the mobility of birds across the region. The six species listed below are present on Yerba Buena Island but have not been recorded on the Farrallons. Listed below are notes on these species.

Downy Woodpecker: Smallest of the North American woodpeckers, this species used to be called "Willow Woodpecker" and is associated with moist woodlands and is the only woodpecker to breed on the island. It was once the most common woodpecker in San Francisco but has been largely displaced in recent years by Nutall's Woodpecker, which is more tolerant of dry conditions. It is largely sedentary and is a species that has never occurred on the Farrallon Islands. On YBI this species inhabits a variety of woodlands and requires dead wood to make nesting cavities. Abandoned woodpecker cavities are important nesting sites for other birds including swallows and chickadees.

Western Scrub Jay: As its name implies this handsome corvid favors low-lying scrub habitats throughout much of the coastal west. It was the only jay in San Francisco for nearly 100 years, but has recently been displaced by Stellar's Jay, which are more common and do better in taller trees. This species has never made it to the Farrallon Islands. On YBI this species inhabits a range of dense, low-lying habitats though is especially fond of oaks. On the plus side they are good at planting and dispersing acorns. On the negative side they can be highly predatory on vulnerable and declining songbirds and their nests

Chestnut-backed Chickadee: This small songbird nests in cavities and is a nucleus species for foraging flocks. Migrant songbirds travel with these intelligent, social residents where they find safety in numbers and tap into the local knowledge of chickadee flocks. It is a secondary cavity obligate, meaning it requires cavities to build its nests. It has never been recorded on the Farrallon Islands.

Bushtit: Similar to chickadees, these social flocking birds are welcoming to migrant songbirds. In contrast this smallest North American songbird builds hanging, sock like nests that are easy targets and especially vulnerable to predators. This species was often found to be elusive and in small numbers. When found they were often being followed and chased by jays and crows. This species favors low lying habitats for nesting but also seemed to vanish at times, likely high in the canopy. It is a poor flyer, which limits it mobility across its range. It has never been recorded on the Farrallon Islands.

Song Sparrow: Perhaps North America's most widespread and variable sparrow, this species inhabits low lying moist habitats including coastal scrub and willows. While some subspecies are highly migratory, the "Marin Song Sparrow" as found on YBI is quite sedentary and has never made its way to the Farrallon Islands.

Nutall's White-crowned Sparrow**:** This coastal subspecies of the species has fairly strict habitat requirements typified by coastal scrub plant communities. Populations in San Francisco have suffered steep declines. The wing length shorter and bills larger, this subspecies does not tend to migrate long distances. The late Dr. Louis Baptista of the California Academy of Sciences studied local song dialects of this subspecies in detail. The songs on YBI are notably distinct from those on the mainland.

Additional Wildlife Findings

Raptors: This group of birds was detected with greater frequency on this round of surveys, with three nesting species discovered. An active Osprey nest was found and photographed in eucalyptus above Clipper Cove on slopes below the officers' housing. A Cooper's Hawk territory was found near the summit of the island, with a very territorial male found calling on several visits though its nest site was not confirmed. A Red-tailed Hawk nest was in eucalyptus near the summit overlooking the coastal bluffs. Red-shouldered Hawks were present early in the spring but

disappeared or became very secretive during later surveys and breeding evidence was never detected.

Mammals: North American River Otter was the only additional mammal discovered on the island since the last survey. Photos of tracks are located in the images section. Tracks were identified with the help of assistant Cedric Duhalde and his professors at Humboldt State University. While a bit of a surprise this species is highly adaptable, mobile and has been found in San Francisco in recent years as well.

Reptiles and Amphibians:

Two additional reptiles were added to the species list from the last surveys. The populations of these reptiles are relic, tiny and are probably the most vulnerable to extinction of any species listed in this report.

Northern Alligator Lizard of the population described as the "San Francisco Alligator Lizard" subspecies was discovered. A single and fleeting sighting of a Terrestrial Garter Snake was of an unknown population.

Both were found only on the western coastal bluffs and have surely been isolated from mainland populations for a very long time. These observations were discovered during the Bioblitz and recorded on INaturalist .

Potential Impacts and Habitat Protection

The most vulnerable species of wildlife are those that live close to the ground and are adversely affected by vehicle traffic, human intrusion and the simplification of dense impenetrable plant assemblages. Protecting existing habitat by routing human traffic away from these areas will minimize habitat intrusion and simplification. The placement of "reptile fences" as installed at Mountain Lake Park for example could be used along the edge of the coastal bluffs to minimize emigration onto the active roadways, which are a primary cause of mortality for reptiles where roads are present.

Creating and maintaining structurally diverse, food rich native plant communities on Yerba Buena Island will be the best way to provide for the island's specialized wildlife species. Robust native plant communities provide habitat for passing wintering and migrant species as well, further supporting local and regional biodiversity.

Photos by Josiah Clark unless otherwise noted

Image Section 1- Survey Areas:

Survey Area A: Open areas of lupines, California blackberry and coastal scrub are the most important breeding resources in the flatter areas toward the summit. Encouraging these aggressive and robust native vegetation types around the edges of housing is among the best things that can be done to support wildlife in this area.

Survey Area A: Near the summit proper. These open areas hosted many migrant bird and butterfly species. Nesting birds of these areas included Nuttall's White-crowned Sparrow, Lesser Goldfinch and Allen's Hummingbird. Enriching these areas with native coastal scrub and grassland species will greatly increase opportunities for wildlife here

Survey Area B: The slopes above Clipper Cove have the most diverse and robust bird breeding habitats of anywhere on the island. Note the presence of willows on the beach, riparian scrub in the middle section and oaks and toyons in the foreground. Removing eucalyptus, acacia and ivy from these areas is among the best ways to protect these valuable breeding areas.

Survey Area B: The shaded oak understory areas encourage native vegetation that is much better for nesting songbirds than areas below eucalyptus. Clearing eucalyptus from the edges of oak woodlands will preserve and enhance these attractive native woodlands.

Survey Area C: Western Bluffs with low growing Coast Live Oaks and Coastal Scrub. This narrow band of vegetation has survived the ages and is hardy but also vulnerable. Coast live Oaks in this area have a very different character and habit than those in Area B.

Survey Area C: More open areas of this zone would benefit from more biomass rich native Coastal Scrub, Riparian Scrub and Willow Riparian. Limiting and prohibiting access to these areas will be important for the future protection of rare biota here.

Survey Area D: The placid water of Clipper Cove is a favorite haunt of bay ducks, grebes, loons and cormorants. The abundance of seabirds and bay waterfowl varied considerably over the survey period.

Survey Area D: Intertidal areas and the remarkable sandy beach that was spared while other beaches of the bay were robbed of sand to create Treasure Island. Woody debris like this is important for a wide range of wildlife uses including roosting sites, foraging areas and homes for intertidal organisms. Placing woody debris on the waters edge, as has been done at Crissy Field, will provide habitat for wildlife and can be used to discourage access into sensitive areas.

Images Section 2-Wildlife

Tracks of North American River Otter. This skulking individual was never found, nor had anyone I talked to ever seen or heard of one there. These tracks look similar to raccoon but the webbing in the feet and gate were confirmed to indeed to be otter.

Osprey nest above Clipper Cove in Eucalyptus: The adults were seen many times and were often quite vocal. The recent arrival of nesting Bald Eagles has broken up the large osprey nesting colonies in Marin. The first nesting records around SF in recent years are likely dispersing birds looking for safer breeding areas. This may be the case with this nest.

California Slender Salamander: This species was quite widespread and abundant in moist parts of the forest during the wet season. As the survey period went on into the spring, salamander became sparse and hard to find. Despite concerted efforts neither Ensatina Salamander nor Arboreal Salamander could be found in any of the survey areas. All the reptiles and amphibians on the island have very low odds for colonization and these populations have surely been isolated for a very long time. Many of the individuals I found appeared more reddish in color than mainland populations.

California Banana Slugs: With obvious dispersal challenges and serious intolerance for salt water our official state mollusk is clearly isolated here. Some individuals had black spotted color schemes that appeared different from mainland populations.

Images Section 3-Noteworthy Habitat Resources

Yellow Bush Lupine: This hyper fast growing and short-lived native shrub has serious habitat potential as it stacks multiple functions. Serving as a nectar source, larval food and nesting sites to name a few, this plant should definitely be used as soon as possible to infill low value open areas and create fast habitat. Contrary to the beliefs of some this plant has in fact been in the Bay Area for centuries and was spread by Native Americans. Seeds of this lupine were found deep in ancient shell middens at Crissy Field. It was likely used to attract game near villages and as a cover crop during the rotation of collecting areas.

Willows and Blue Elderberry: A riparian habitat power combo. The widespread planting of just these two species could have significant and wide-ranging benefits to a diversity of native wildlife.

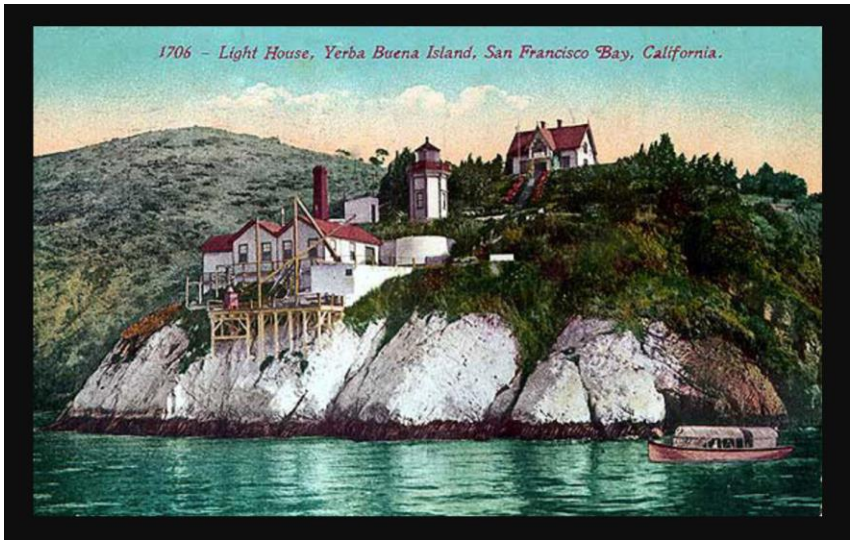
California Blackberry: Shown here with Spittlebug larvae, this is likely the single most important plant for wildlife throughout the Bay Area. Also an extreme stacker of functions this plant provides larval food (5+butterfly species), nectar, fruit, insect forage, cover and favored nesting sites for declining cup nesting songbirds.

Images Section 4-Habitat Threats

Habitat Intrusion: Illegal encampments and social trials slice and dice up the last and in many cases most wild parts of the island. Not restricted to YBI, these issues plague natural areas all across San Francisco and beyond. Patrols, camp clean-ups and impediments to intrusion should all be arranged before the issues get worse.

Algerian Ivy: Out of the hundreds of invasive plants on the island, this one is likely the worst. It is present in virtually all parts of the island, is spread by both seeds and runners, overwhelms the native vegetation. Once in fruit it is spread far and near by birds. Climbing strands bear fruit and should be cut down to limit the spread of this ubiquitous weed.

Images Section 5- History



Postcard, incorrectly dated as “1706” (lighthouse not completed until 1885).

This depiction of the island clearly shows that much of the island was covered in coastal scrub and the presence of trees was restricted to areas around buildings. The summit is free of any buildings, suggesting this remained as a wilder part of the island during the early years of European colonization.

Before the presence of the Bay Bridge the true island character of the island is revealed. Today most people hardly recognize it as an island. In so doing its important unique island natural history has been largely overlooked.

Photo by Photo: Fred May, Fred May Media Relations