

West of the West

“Restoration”

WOTW-Restoration 5A

**Resource Title:** Santa Cruz Island – Writing for Information

**Resource Summary:** Students will compare and contrast viewpoints presented by the *Restoration* tale of *West of the West*, writing informational essays that capture key ideas, point of view, and persuasive writing

**Subject Areas:** Language Arts, Science, History/Social Studies,

**Grade Level Range:** 6-12

**Standards:**

[CCSS.ELA-LITERACY.WHST.9-10.2](#)

Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

[CCSS.ELA-LITERACY.WHST.9-10.2.C](#)

Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.

[CCSS.ELA-LITERACY.WHST.9-10.2.D](#)

Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.

[CCSS.ELA-LITERACY.WHST.9-10.2.E](#)

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

[CCSS.ELA-LITERACY.WHST.9-10.2.F](#)

Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

**Resource Provided By:** Lucy Carleton, Secondary English, ELD teacher, Carpinteria High School, Carpinteria Unified School District

**Details:**

Step I: Quick Write-

This portion could be adopted for people who do not have the Channel Islands in view to be something different, such as:

What do you know about islands?

Students would then share their responses, and discuss how islands are separate worlds, self-contained oceanic outposts, but they are obviously influenced by things, not of themselves.

## West of the West

### “Restoration”

#### Step II: View the Tale-

We would then view the “Restoration” segment of *The West of the West* (11 min. 11 seconds). Teachers can require students to take notes, or pass out Comprehension check questions and re-view, or watch and stop strategically. Students could work collaboratively to come up with answers. These questions can then form the basis of their explanatory essay. Grammar and true or false worksheets can be assigned before or after the viewing.

#### Step III: Writing Assignment-

You have just viewed the “Restoration” chapter of *West of the West*. Now, strengthen your understanding of the history of the Channel Islands by comparing the points of view presented in the film in an explanatory essay.

Begin with a clear introductory paragraph that draws readers in, then present the problem or conflict and the sequence of events that leads to its resolution in your body paragraphs and finish with a concluding paragraph where you rephrase key ideas from the essay, and evaluate which point of view you find more compelling.

Your explanatory essay should:

- increase readers knowledge of the subject or help readers better understand subject
- have precise language and correct grammar
- have a tone appropriate to the audience and subject

### **Resources:**

*West of the West* “Restoration” Comprehension Check

Name:

1. What is the example author TC Boyle points out that demonstrates the difficulty in deciding what is an invasive species and what is not?
2. List the parts of the multi-faceted restoration program outlined by Lotus Vermeer.
3. What was the major cause of the population decline and disappearance of bald eagles from the Channel Islands by the 1960s?
4. What was one of the major causes of the decline of Island foxes?
5. What problems were the feral pigs causing on Santa Cruz Island?

## West of the West

### “Restoration”

6. Why did the animal rights activist object to the killing of the pigs?
7. How did the zoologist figure out if the bald eagles were re-introduced to Santa Cruz that they would not prey upon the island foxes like the golden eagles did?

### West of the West “Restoration” Comprehension check Key

1. What is the example author TC Boyle points out that demonstrates the difficulty in deciding what is an invasive species and what is not?

He cites the wreck of the paddle steamer on Anacapa that released black rats 150 years ago

2. List the parts of the multi faceted restoration program outlined by Lotus Vermeer.
  - a) saving island fox including taking a handful of Island foxes and breeding them in captivity, b) capturing golden eagles and relocating them to the Eastern Sierras of California so they would no longer eat the little foxes “like popcorn”,
  - c) reintroduce the larger, territorial, bald eagles to the Channel Islands to keep golden eagles from returning d) kill all feral pigs e) saving native habitats

3. What was the major cause of the population decline and disappearance of bald eagles from the Channel Islands by the 1960s?

DDT, a commonly used pesticide, worked its way up the food chain and caused the bald eagles to lay eggs deficient in calcium. The birds would crush their own eggs before they could hatch.

4. What was one of the major causes of the decline of Island foxes?

Once bald eagles became extinct on the islands, the void was filled by golden eagles that were attracted to the baby sheep and pigs brought over by Europeans. The golden eagles then preyed on the foxes who were active in the day and who were used to being the “top dog”, having previously had no other natural predator on the island.

5. What problems were the feral pigs causing on Santa Cruz Island?

- a) They were having a devastating impact on ancient archaeological sites
  - b) They caused widespread erosion
  - c) which then helped the proliferated the growth of invasive weeds
  - d) They caused the colonization of another non-native species on the island, the Golden eagle, because golden eagles were attracted to the islands to eat the baby pigs.
6. Why did the animal rights activist object to the killing of the pigs?

West of the West

“Restoration”

He thought there may be a more humane way, he did not like the “methodology”

7. How did the zoologist figure out if the bald eagles were re-introduced to Santa Cruz that they would not prey upon the island foxes like the golden eagles did?

He examined historic bald eagle nests from the islands and discovered that only 10 bones out of 10,000 were from Island foxes

West of the West “Restoration” Island Foxes True/False

|                                  |
|----------------------------------|
| <b>Name:</b><br><br><b>Date:</b> |
|----------------------------------|

Directions: Read the following sentences about Channel Island foxes. Circle either True or False. If a statement is false, explain why on the line below.

1. Island foxes are found on islands all over the world.
2. Island foxes are the smallest mammal on the Channel Islands.
3. Island foxes are the only carnivore unique to California.
4. Island foxes weigh approximately 12 pounds and are 4 to 5 inches long
5. The island foxes' ancestor was the red fox.
6. Island foxes are diurnal.
7. Island foxes communicate by howling.
8. The Chumash considered the island fox to be a sacred animal, a pet of the sun.
9. The climate of the Channel Islands is semi tropical.
10. Island foxes are omnivores.
11. Island foxes are extinct.

Answer:

1. True False \_\_\_\_\_
2. True False \_\_\_\_\_
3. True False \_\_\_\_\_
4. True False \_\_\_\_\_
5. True False \_\_\_\_\_
6. True False \_\_\_\_\_
7. True False \_\_\_\_\_

West of the West

“Restoration”

8. True False \_\_\_\_\_

9. True False \_\_\_\_\_

10. True False \_\_\_\_\_

11. True False \_\_\_\_\_

West of the West “Restoration” Bald Eagles True/False

|   |
|---|
| <p><b>Name:</b></p> <p><b>Date:</b></p> |
|---|

Directions: Read the following sentences about Bald Eagles. Circle either True or False. If a statement is false, explain why on the line below.

1. Bald eagles are one of the smaller birds of prey found in North America.
2. Bald eagles were extinct on the Channel Islands by 1960.
3. The scientific name for bald eagles means "a white headed sea eagle"
4. Bald eagles do not mind living in places where there is a lot of human activity.
5. Bald eagles primarily eat fish.
6. Bald Eagles nests are often six feet across.
7. Bald eagles typically lay 10- 12 eggs.
8. Bald eagles aren't an important part of the Channel Island ecosystem.
9. Bald eagles were successfully reintroduced to the Channel Islands beginning in 2002.
10. Bald eagles are extant.

1. True False \_\_\_\_\_

2. True False \_\_\_\_\_

3. True False \_\_\_\_\_

4. True False \_\_\_\_\_

5. True False \_\_\_\_\_

6. True False \_\_\_\_\_

West of the West

“Restoration”

7. True False \_\_\_\_\_

8. True False \_\_\_\_\_

9. True False \_\_\_\_\_

10. True False \_\_\_\_\_

West of the West “Restoration” Island Foxes True/False KEY

|                         |
|-------------------------|
| <b>Name:</b> <b>Key</b> |
| <b>Date:</b>            |

Directions: Read the following sentences about Channel Island foxes. Circle either True or False. If a statement is false, explain why on the line below.

1. Island foxes are found on islands all over the world.
2. Island foxes are the smallest mammal on the Channel Islands.
3. Island foxes are the only carnivore unique to California.
4. Island foxes weigh approximately 12 pounds and are 4 to 5 inches long
5. The island foxes' ancestor was the red fox.
6. Island foxes are diurnal.
7. Island foxes communicate by howling.
8. The Chumash considered the island fox to be a sacred animal, a pet of the sun.
9. The climate of the Channel Islands is semi tropical.
10. Island foxes are omnivores.
11. Island foxes are extinct.

\_\_\_\_\_

1. False they are found nowhere else on Earth.

\_\_\_\_\_

2. False is the largest of the Channel Islands' native mammals

\_\_\_\_\_

3. True

West of the West

“Restoration”

4. False **At 12 to 13 inches in height and 4 to 5 pounds, the island fox is about the size of a housecat.**

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5. False the island fox is a descendant of the mainland gray fox

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6. True (the opposite of nocturnal is diurnal)

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7. False they communicate by barking and sometimes growling.

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8. True \_\_\_\_\_

9. False the climate of the California Channel Islands is semi-arid teacher.

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10. True (We may want to discuss the difference between omnivores, carnivores, herbivores etc.) \_\_\_\_\_

11. False the island fox, which only a short time ago was on the brink of extinction, now only listed as near threatened.

West of the West “Restoration” Bald Eagle True/False KEY

|   |
|---|
| <p><b>Name: Key</b></p> <p><b>Date:</b></p> |
|---|

Directions: Read the following sentences about Bald Eagles. Circle either True or False. If a statement is false, explain why on the line below.

1. Bald eagles are one of the smaller birds of prey found in North America.
2. Bald eagles were extinct on the Channel Islands by 1960.
3. The scientific name for bald eagles means "a white headed sea eagle"
4. Bald eagles do not mind living in places where there is a lot of human activity.
5. Bald eagles primarily eat fish.
6. Bald Eagles nests are often six feet across.
7. Bald eagles typically lay 10- 12 eggs.
8. Bald eagles aren't an important part of the Channel Island ecosystem.

## West of the West

### “Restoration”

9. Bald eagles were successfully reintroduced to the Channel Islands beginning in 2002.

10. Bald eagles are extant.

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1. False the bald eagle is one of the largest birds of prey found in North America

2. True

3. True

4. False the bald eagle is extremely sensitive to human activity, and is found most commonly in areas free of human disturbance.

5. True

6. True

7. False a usual clutch size of two eggs

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8. True today, bald eagles are again an important part of the island ecosystem. Recovery of bald eagles on the northern Channel Islands was seen as critical to recovery of the endangered island fox, since nesting bald eagles might dissuade dispersing golden eagles from establishing breeding territories on the islands. Golden eagle predation was responsible for the massive decline of island foxes on the northern Channel Islands in the 1990s.

9. True

10. True (the opposite of extinct is extant)



West of the West

“Restoration”

West of the West “Restoration” Grammar Worksheet

|              |
|--------------|
| <b>Name:</b> |
| Date:        |

**Suffixes and PATTERNS OF WORD CHANGES**

**A. Directions:** Fill in the chart below to show verb, noun, adjective, and adverb forms of the words from “Restoration” in the word bank. Use a dictionary if necessary.

**WORD BANK**

|                    |                 |                  |                    |
|--------------------|-----------------|------------------|--------------------|
| <b>restoration</b> | <b>invasive</b> | <b>strategic</b> | <b>destruction</b> |
|--------------------|-----------------|------------------|--------------------|

| <b>VERB</b> | <b>NOUN</b> | <b>ADJECTIVE</b> | <b>ADVERB</b> |
|-------------|-------------|------------------|---------------|
|             |             |                  |               |
|             |             |                  |               |
|             |             |                  |               |
|             |             |                  |               |

**B. Directions:** Review your completed chart in Part A, then answer the questions.

1. Do you notice any word patterns in the chart above? What are they?
2. What are some of the suffixes you used to create nouns?
3. What are some of the suffixes you used to create adjectives?
4. What are some of the suffixes you used to create adverbs?

**C. Directions:** Use the words in your chart from Part A to write a brief story. Use as many word/forms as possible

West of the West

“Restoration”

West of the West “Restoration” Grammar Worksheet KEY

|              |
|--------------|
| <b>Name:</b> |
| Date:        |

**Suffixes and PATTERNS OF WORD CHANGES**

**A. Directions:** Fill in the chart below to show verb, noun, adjective, and adverb forms of the words from “Restoration” in the word bank. Use a dictionary if necessary.

**WORD BANK**

|                    |                 |                  |                    |
|--------------------|-----------------|------------------|--------------------|
| <b>restoration</b> | <b>invasive</b> | <b>strategic</b> | <b>destruction</b> |
|--------------------|-----------------|------------------|--------------------|

| <b>VERB</b> | <b>NOUN</b> | <b>ADJECTIVE</b> | <b>ADVERB</b> |
|-------------|-------------|------------------|---------------|
| restore     | restoration | restorative      | restoratively |
| invade      | invasion    | invasive         | invasively    |
| strategize  | strategy    | strategic        | strategically |
| destroy     | destruction | destructive      | destructively |

**B. Directions:** Review your completed chart in Part A, then answer the questions.

1. Do you notice any word patterns in the chart above? What are they?  
Answers will vary
2. What are some of the suffixes you used to create nouns? -tion, -sion
3. What are some of the suffixes you used to create adjectives? -ive, -ic
4. What are some of the suffixes you used to create adverbs? -ly

West of the West

“Restoration”

*West of the West* “Restoration” Additional Resources- List of Cast

Bob Hansen Nature Conservancy Project Director

T.C. Boyle author

Lyndal Laughrin University of California Reserve Field Station

Dr. Peter Sharpe Research Ecologist Institute for Wildlife Studies

Paul Cullins Curator of Vertebrate Zoology, Santa Barbara Museum of Natural History

Russell Galipeau, Superintendent Channel Islands National Park

Norm McDonald Owner, Prohunt Inc.

Rick Feldman Animal Rights Activist

## West of the West

### “Restoration”

*West of the West* “Restoration” Additional Resources- Island Foxes NPS Reading

Island Fox Facts from NPS.gov

#### Scientific Name

*Urocyon littoralis*

The island fox only lives on six of the eight Channel Islands off the coast of southern California--they are found nowhere else on Earth. Each island population is recognized as a separate endemic or unique subspecies.

The island fox, a descendant of the mainland gray fox, is the largest of the Channel Islands' native mammals, but one of the smallest canid species in the world.

Although foxes have always existed at low population sizes, four island fox subspecies underwent catastrophic declines in the 1990s. On San Miguel, Santa Rosa and Santa Cruz Islands at Channel Islands National Park, the decline was attributed to predation by golden eagles. The presence of non-native ungulates as a food source in addition to the DDT-caused decline of bald eagles, a natural competitor, facilitated the establishment of golden eagles as resident breeders on the islands. By 2000, predation on island foxes resulted in population declines to 15 individuals on San Miguel and Santa Rosa Islands, and less than 80 on Santa Cruz Island. In 2004, each of the park's island fox subspecies were federally listed as endangered.

In 1999, Channel Islands National Park began an island fox recovery program that included captive breeding and reintroduction of foxes, removal of resident golden eagles, re-establishment of bald eagles, and removal of non-native ungulates. This coordinated, organized and highly focused strategy was able to reverse the certain extinction of an endangered population. Today, the population has nearly recovered within the park. Population trend and annual survival are currently monitored to ensure that recovery proceeds apace and future threats to the park's island fox subspecies are identified.

#### Quick and Cool Facts

- It is the only carnivore unique to California.
- Although the island fox is one of the smallest canids in the world, it is the largest native terrestrial mammal on the Channel Islands.
- The island fox is one-third smaller than its mainland ancestor, the gray fox. At 12 to 13 inches in height and 4 to 5 pounds, the island fox is about the size of a housecat.
- Some individuals have been known to live up to 15 years.

## West of the West

### “Restoration”

- Unlike nocturnal gray foxes, which hunt exclusively at night to avoid predators, island foxes have no natural predators, allowing them to be active during daylight hours with peaks in activity occurring at dusk and dawn.
- Visually, island foxes show signs of dominance or submission through facial expressions and body posture.
- They communicate by barking and sometimes growling.
- Their keen sense of smell plays an important role in the marking of territories. Island foxes are known to scent-mark their territories with a few drops of urine and tend to concentrate scats in particular areas, often conspicuously positioned on well-traveled paths.

### Appearance

The island fox is one third smaller than its mainland ancestor the gray fox. Environmental and ecological factors such as overcrowding, reduction in predators, food limitations, and genetic variations could have contributed to the natural selection for a smaller size.

The island fox has similar markings to the gray fox. They have gray coloring on the back, rust coloring on the sides, and white underneath. The face has a distinctive black, white, and rufous-colored patterns.

On each of the six islands, a different subspecies occurs, distinguished by both genetic and physical differences. For example, San Miguel Island foxes have shorter tails, due to one less tail vertebra, and longer noses than the other island foxes.

### Range

The island fox is found on six of the islands in the Southern California bight, including the three largest islands in the Channel Islands National Park (Santa Cruz, Santa Rosa and San Miguel islands). The other three islands which island foxes inhabit San Nicolas and San Clemente, owned by the US Navy, and popular Santa Catalina Island, which in large part is managed by the Catalina Island Conservancy.

Older research on the island fox dated them back on the northern Channel Islands to 10,400 to 16,000 years ago. Yet, geologists believe the northern Channel Islands were never connected to the mainland. The most plausible and accepted theory for foxes crossing the water barrier of the Santa Barbara Channel is one of "rafting." During the last ice age, 10-20,000 years ago, ocean levels were up to 400 feet lower than today's. The channel between the islands and mainland narrowed, perhaps to just four to five miles across. The northern islands became one large island we call Santarosae. The gray fox could have rafted on debris propelled by storms and/or currents. As the climate warmed and the ocean levels began to rise, Santarosae became the islands of Anacapa, Santa Cruz, Santa Rosa, and San Miguel. Due to the lack of a fresh water source, the foxes did not persist on Anacapa, but the other three islands had suitable habitat for foxes.

## West of the West

### “Restoration”

Recent archeological work, however, only dates the oldest island fox fossil at about 6,000 years before present, which is several thousand years after native people populated the island. This raises the possibility that gray foxes were brought to the islands by humans, and rapidly evolved into a smaller, separate species after that.

Island foxes brought to the southern Channel Islands of Santa Catalina, San Nicolas, and San Clemente by the Chumash native people who traded with the Gabrielino people of the southern islands. The Chumash considered the fox to be a sacred animal--a pet of the sun, and possibly a dream helper. The island Chumash performed a fox dance and probably used the pelts of foxes to make articles like arrow quivers, capes, and headdresses.

### Habitat

The climate of the California Channel Islands is semi-arid, and though rainfall amounts differ among islands the average rainfall across all islands is less than six inches per year. The native island vegetation is mostly coastal scrub, but these habitats have been heavily modified by the effects of introduced grazing animals and other human impacts. The northern islands (San Miguel, Santa Rosa and Santa Cruz) have significant areas dominated by non-native plant species, such as annual grasses and iceplant, whereas the southern islands (Santa Catalina, San Clemente and San Nicolas) have greater development impacts such as the naval bases and the town of Avalon. The larger islands (Santa Cruz, Santa Catalina, and San Clemente) also have perennial streams that support riparian vegetation and tree species. Foxes are found in most of these habitats on these islands, but they prefer shrubby or wooded areas such as chaparral, coastal scrub and oak woodlands.

Island foxes give birth to their young in simple dens, which are usually not excavated by the foxes themselves. By two months of age, young spend most of the day outside the den and will remain with their parents throughout the summer. Some pups disperse away from their natal territories by winter, although others may stay on their natal territories into their second year.

### Feeding

Island fox diets vary based upon food item diversity of the individual islands. On San Rosa Island, where food item diversity is high, deer mice, Jerusalem crickets, beetles, and earwigs are the preferred food. On other Channel Islands, diets include plant items such as fruits from cactus, manzanita, saltbushes and seafigs, as well as insects and deer mice when they are present. Occasionally, foxes forage along the shoreline for crabs and other marine invertebrates.

### Reproduction

Island foxes are generally monogamous (mate for life), and breed only once a year. Pairs are seen together frequently beginning in January, and mating takes place in late February to early March. The gestation period is thought to be similar to the gray fox, which is around 52 days, and pups are born from late April through early May. Litter size ranges from one to as many as five pups, but two or three is considered average. Born in the protection of a den, pups are blind and helpless

## West of the West

### “Restoration”

with short dark brown hair at birth. They emerge from the den at about one month of age, much furrer but still considerably darker than adults. They begin to resemble their parents by late summer.

It is believed that island fox pups undergo a period of extended parental care. In a recent study of island foxes, scientists found adults and pups in the same trap on 22 occasions. In 24 traps containing only pups, they found killed mice and other prey items outside the traps, apparently left by the parents for their young. As with most wild canids, males play an important role in the rearing of young.

### Conservation Status

The island fox, which only a short time ago was on the brink of extinction, provides an instructive example of how a coordinated, organized and highly focused strategy was able to reverse the certain extinction of an endangered population.

Due to these successful efforts, the IUCN Red List of Endangered Species now lists the island fox as near threatened.



West of the West

“Restoration”

*West of the West* “Restoration” Additional Resources- Bald Eagles NPS Reading

Bald Eagle Facts from NPS.gov

Scientific Name

*Haliaeetus leucocephalus*

The bald eagle is one of the largest birds of prey found in North America. It is the national bird and symbol of the United States of America. This sea eagle has two known sub-species and forms a species pair with the white-tailed eagle. Its range includes most of Canada and Alaska, all of the contiguous United States, and northern Mexico. Bald eagles typically can be found near large bodies of open water with an abundant food supply and old-growth trees for nesting. In Channel Islands National Park, due to the persecution by humans and the effects of organochlorine chemicals such as DDT, breeding bald eagles were eliminated by the mid-1950's. In an innovative reintroduction program conducted 2002 and 2006, sixty-one young bald eagles were released on the northern Channel Islands.

### Quick and Cool Facts

- The scientific name means "a white-headed sea eagle" and comes from the Greek words *halos*, meaning sea; *aetos* meaning an eagle; *leukos* meaning white; and *kephalus* referring to the head. Bald is from the Middle English word *balled*, meaning shining white.
- Rather than do their own fishing, bald eagles often go after other creatures' catches. A bald eagle will harass a hunting osprey until the smaller raptor drops its prey in midair, where the eagle swoops it up.
- Had Benjamin Franklin prevailed, America's emblem might have been the wild turkey not the bald eagle.
- The largest bald eagle nest on record, in St. Petersburg, Florida, was 10 feet in diameter and 20 feet tall. Another famous nest—in Vermilion, Ohio—was shaped like a wine glass and weighed over 2 tons. It was used for 34 years until the tree blew down.
- Immature bald eagles spend the first four years of their lives in nomadic exploration of vast territories and can fly hundreds of miles per day. Some young birds from California have reached Alaska.
- Bald eagles can live a long time, with a longevity record of 28 years in the wild and 36 years in captivity.
- Bald eagles occasionally hunt cooperatively, with one individual flushing prey towards another.

### Appearance

The plumage of an adult bald eagle is evenly brown with a white head and tail. The tail is moderately long and slightly wedge-shaped. Males and females are identical in



## West of the West

### “Restoration”

plumage coloration, but reversed sexual dimorphism, which occurs in many raptors, is evident in the species in that females are 25 percent larger than males. The beak, feet, and irises are bright yellow. The legs are feather-free, and the toes are short and powerful with large talons. The highly developed talon of the hind toe is used to pierce the vital areas of prey while it is held immobile by the front toes. The beak is large and hooked, with a yellow cere.

### **Range**

The bald eagle's natural range covers most of North America, including most of Canada, all of the continental United States, and northern Mexico. It is the only sea eagle endemic to North America. At minimum population, in the 1950s, it was largely restricted to Alaska, the Aleutian Islands, northern and eastern Canada, and Florida. It presently occupies historical habitats from the bayous of Louisiana to the Sonoran Desert and the eastern deciduous forests of Quebec and New England. Northern eagles are migratory, while southern birds are resident, remaining on their breeding territory all year.

Historical records indicate that in the early 20th century bald eagles bred on all islands within the park, with at least two dozen nesting pairs over the 8 Channel Islands. Breeding bald eagles provided important ecosystem functions in the northern Channel Islands. For example, bald eagles were once the top marine aerial predator and probably fed upon a variety of seabirds and fish. Bald eagles are generally highly territorial, and in the past this behavior may have prevented golden eagles from colonizing the islands. Due to the persecution by humans and the effects of organochlorine chemicals such as DDT, breeding bald eagles were eliminated by the mid-1950's. In an innovative reintroduction program conducted 2002 and 2006, sixty-one young bald eagles were released on the northern Channel Islands. Bald eagles have also been reintroduced on Santa Catalina Island

### **Habitat**

The bald eagle explores seacoasts and other large bodies of open water with an abundance of fish as well as rivers, large lakes, and mountainous open country. The bald eagle prefers old-growth and mature stands of coniferous or hardwood trees for perching, roosting, and nesting. Selected trees must have good visibility, an open structure, and proximity to prey, but the height or species of tree is not as being in close proximity to water. The bald eagle is extremely sensitive to human activity, and is found most commonly in areas free of human disturbance.

### **Feeding**

The bald eagle's diet is opportunistic and varied, but most feed mainly on fish. When fish sources are unavailable, eagles may rely largely on carrion, especially in winter, and they will scavenge carcasses up to the size of whales, though it seems that carcasses of hooved animals and large fish are preferred. They also may sometimes feed on subsistence scavenged or stolen from campsites and picnics, as well as garbage dumps. Mammalian prey includes rabbits, hares, raccoons, muskrats, beavers, and deer fawns. Preferred avian prey includes grebes, alcids, ducks, gulls, coots, egrets, and geese. Most live prey are quite a bit smaller than the eagle, but

## West of the West

### “Restoration”

predatory attacks on large birds such as the great blue heron and even swans have been recorded. Reptiles, amphibians and crustaceans (especially crabs) are preyed on when available.

Fishing is a learned behavior for the bald eagle, and so juvenile eagles spend their first year eating carrion (carcasses) until they become proficient at fishing (Dooley et al. 2005). Prey remains from bald eagle nests on Santa Catalina Island contained almost 90% fish (Newsome et al. 2010), but an historic bald eagle nest on San Miguel contained more bird remains than fish (Collins et al. 2005). The abundance of seabirds and pinnipeds on the northern Channel Islands means eagles likely take advantage of those resources more than in other areas. This could pose a problem for recovery of bald eagles on the northern Channel Islands (see below), because pinniped sand seabirds contain more DDE than do marine fish, due to bioaccumulation at higher trophic levels.

### **Reproduction**

Bald eagles nest in trees except in regions where only cliff face or ground sites are available. They tend to use tall, sturdy conifers that protrude above the forest canopy, providing easy flight access and good visibility. In southern parts of their range, bald eagles may nest in deciduous trees, mangroves, and cactus. It's unknown whether the male or the female takes the lead in selecting a nest site. Nests are typically built near the trunk, high up in the tree but below the crown.

On the Channel Islands, where large trees are scarce, bald eagles have built nests on cliff faces, rock shelves and shallow cliffs, as well as in island pines and Torrey pines. One pair even attempted nesting in a grassland on Santa Cruz Island.

Bald eagles build some of the largest of all bird nests—typically 5 to 6 feet in diameter and 2 to 4 feet tall and ranging in shape from cylindrical to conical to flat, depending on the supporting tree. Both sexes bring materials to the nest, but the female does most of the placement. They weave together sticks and fill in the cracks with softer material such as grass, moss, or cornstalks. The inside of the nest is lined first with lichen or other fine woody material, then with downy feathers and sometimes sprigs of greenery. Ground nests are built of whatever's available, such as kelp and driftwood near coastal shorelines. Nests can take up to three months to build, and may be reused (and added to) year after year. The female lays one to three eggs with a usual clutch size of two eggs. The eggs are incubated for approximately 35 days, and the young eagles fledge 10 - 12 weeks after hatching. Bald eagles become sexually mature at five to six years with maturity usually corresponding to when their head and tail feathers become white.

### **Conservation Status**

The bald eagle's recovery is a spectacular conservation success story. Once abundant in North America, the species became rare in the mid-to-late 1900s—the victim of trapping, shooting, and poisoning as well as pesticide-caused reproductive failures. In 1978 the bird was listed for protection under the Endangered Species Act. Since 1980, gentler treatment by humans along with the banning of DDT (the

## West of the West

### “Restoration”

bird's main pesticide threat) has led to a dramatic resurgence. By the late 1990s, breeding populations of bald eagles could be found throughout most of North America.

In 2002, with funding from the [Montrose Trustees Restoration Program](#), the park (in conjunction with partner, [Institute for Wildlife Studies](#)) began to introduce juvenile bald eagles to the northern Channel Islands. This was done using a technique called "hacking". Birds of approximately 8 weeks of age were kept in one of two hack towers on Santa Cruz Island until they were ready to fly (at approximately 3 months of age). Sixty-one young bald eagles were introduced to the northern Channel Island between 2002 and 2006.

Today, bald eagles are again an important part of the island ecosystem. 2006 marked the first successful bald eagle nest on the Channel Islands in over 50 years, and since that time, the recovering bald eagle population on the islands has grown. As of 2013 there were five breeding pairs on Santa Cruz Island, two on Santa Rosa, and one on Anacapa, and a total of over 40 bald eagles on the northern Channel Islands.

Recovery of bald eagles on the northern Channel Islands was seen as critical to recovery of the endangered island fox, since nesting bald eagles might dissuade dispersing golden eagles (*Aquila chrysaetos*) from establishing breeding territories on the islands (Coonan et al. 2010). Golden eagle predation was responsible for the massive decline of island foxes on the northern Channel Islands in the 1990s.

In June 2007, the bird's recovery prompted its removal from the Endangered Species list. Continuing threats to bald eagle populations include lead poisoning from ammunition in hunter-shot prey, collisions with motor vehicles and stationary structures, and development-related destruction of shoreline nesting, perching, roosting and foraging habitats.

Based upon information of population trends, the IUCN Red List of Threatened Species has listed the bald eagle a species of Least Concern and current data demonstrates that the population is presently increasing.

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