



Island Views

The official newspaper of
Channel Islands National Park

Volume 5, 2009 — 2010



Tim Hauf, www.timhaufphotography.com

Channel Island Live— Connecting the Park to the People

People are drawn to the Channel Islands by their inherent beauty, rich resources, and isolated nature, yet their remoteness naturally limits the number of people able to visit—less than half of park visitors ever get out to the islands. Consequently, bringing the park to the people takes on added importance.

A core park mission is to foster an appreciation of the islands' unique ecology and human history amongst a diverse and growing population. Through Channel Islands Live (CHIL), Channel Islands National Park and the Ventura County Office of Education (VCOE) are joining forces to provide new opportunities for people to learn more about the Channel Islands and their place in the local ecosystem.

To bring the park to people, the National Park Service (NPS) developed the underwater dive program on Anacapa Island nearly 25 years ago, offering visitors a rare glimpse into the park's remarkable marine ecosystem. From 1995 to 2001 a microwave link transmitted this popular program to the park visitor center in Ventura.

Expanding Through Partnerships

Seeking to expand this program, the park joined forces with VCOE in 2006. The Office of Education recently increased the capacities of its wireless network to accommodate



multimedia educational programs for Ventura County schools. By expanding the FCC-licensed microwave and fiber optic communications systems, VCOE has connected all schools in Ventura County to the Internet and Internet2, part of the K12HSN high speed educational network. This network will also help to bring the islands to more people than ever before.

Partnering with VCOE is a natural fit to bring live science and research from the park and marine sanctuary to county students and eventually to the public nationwide. Both VCOE and the park are dedicated to providing opportunities for teachers, students, and the general public to learn more about the park and sanctuary, their significant natural and

please see CHANNEL ISLANDS LIVE, 7

GMP Process Underway

Channel Islands National Park is one of America's newest and more complex national parks. As one of America's "crown jewels," it is important that park resources, both terrestrial and marine, continue to be preserved and protected for future generations.

The current General Management Plan (GMP) for the park was completed in 1985. Since that time much has occurred, such as completion of the park's major land acquisition effort, expansion of park operations and visitor facilities, and an increase in the number of resource issues the park is facing.

A new plan is being undertaken to provide a vision for the park's future, as well as guidance in resource preservation, protection, and management that will help achieve

that vision. The new plan also will help identify how the National Park Service may best protect cultural and natural resources while providing for visitor enjoyment.

The park wants to communicate, consult, and cooperate with all interested individuals and groups throughout this planning process. We urge you to take advantage of all opportunities to share your vision and support for this magnificent national park. Your participation will ensure a strong public voice and will result in a better vision and protection of park resources.

Please let us know your concerns, issues, and thoughts on what should be addressed in the GMP. For more information about the planning process visit www.nps.gov/chis/.

Park's 30th Anniversary

During 2010, Channel Islands National Park will celebrate its 30th anniversary as our nation's 40th national park. The five islands and the surrounding one mile of ocean that comprise Channel Islands National Park were designated on March 5th, 1980, when President Jimmy Carter signed Public Law

please see 30th ANNIVERSARY, 8



Island Information

- 6 Anacapa Island
- 12 Santa Cruz Island
- 16 Santa Rosa Island
- 18 San Miguel Island
- 22 Santa Barbara Island

Things to Do

- 2 Visitor Centers, Programs, Transportation
- 3 When To Visit, Where to Stay
- 4 Hiking, Fishing, Watersports
- 8 "From Shore to Sea" Lecture Series
- 10 Camping, Backcountry Camping
- 13 Santa Cruz Island Visitor Center and Film
- 20 Boating and Kayaking
- 20 Limiting Your Impact
- 24 Volunteering
- 24 Parks as Classrooms; Jr. Ranger Program

Focus on Resources

- 4 Forward to the Past
- 5 Climate Change and Geology in the Park
- 7 Monitoring Kelp Forests in the Park
- 8 Channel Islands National Park Timeline
- 11 Channel Islands National Marine Sanctuary
- 11 Channel Islands Marine Protected Areas
- 13 Island Scrub-Jay
- 14 The Island Chumash
- 17 Recovering Endemic Island Plants; New Pier
- 19 Fox Recovery; Wetland Restoration
- 23 Restoring Seabirds



Aerial view of Channel Islands National Park and National Marine Sanctuary



National Park Service
U.S. Department of the Interior

Channel Islands National Park

Named for the deep trough that separates them from the mainland, the islands off the California coast and their encircling waters are home to plants and animals found nowhere else on Earth. Isolation over thousands of years and the mingling of warm and cold ocean currents give rise to the rich biodiversity of these islands. Today, five of the islands, their submerged lands, and the waters within one nautical mile of each island are protected as Channel Islands National Park.

Mailing Address

Park Superintendent
Channel Islands National Park
1901 Spinnaker Dr.
Ventura, CA 93001

Phone

805-658-5730

Park Website

www.nps.gov/chis/

E-mail

chis_interpretation@nps.gov

The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

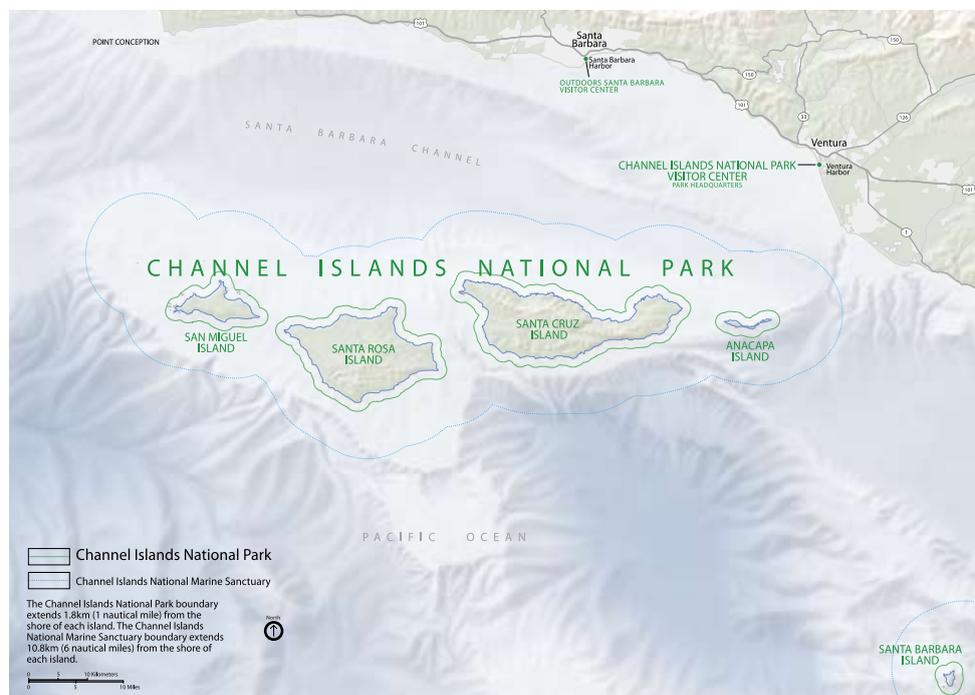
Welcome from the Superintendent

The park staff and I wish to welcome you to Channel Islands National Park, one of North America's magnificent treasures. Close to the California mainland, yet worlds apart, the park encompasses five of the eight California Channel Islands (Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara) and their ocean environment, preserving and protecting a wealth of natural and cultural resources. The park bridges two biogeographical provinces and in a remarkably small place, harbors the biologic diversity of nearly 2,500 miles of the North American coast. The Channel Islands are home to over 2,000 terrestrial plants and animals, of which 145 are found nowhere else in the world.

Like the Galapagos Islands of South America, isolation has allowed evolution to proceed independently on the islands. Marine life ranges from microscopic plankton to the blue whale, the largest animal to live on Earth. Archeological and cultural resources span a period of more than 13,000 years of human habitation.

The protection of these fragile island resources was ensured when Congress, in the act that created Channel Islands National Park in 1980, established a long-term ecological monitoring program to gather information on the current health of resources and predict future conditions. This information provides park and natural resource managers with useful products for recreation planning, conservation and restoration programs, and early identification of critical issues.

The islands were set aside by Congress not only to preserve these resources, but also to



provide for your enjoyment. If you visit the park, you will be one of a very select group. Few people actually see this park because it is not easy to get to—you can't drive to the islands. A short but exciting ocean voyage or a commercial flight in a small airplane is required. The park is one of the least visited of all of America's national parks. The relatively light visitation enhances the islands' feeling of solitude and assists in the protection of fragile resources. In establishing the park, Congress recognized the value of solitude by allowing only controlled, low-impact visitation. So a visit to this national park will always provide a

marked contrast to the bustle of southern California most people experience. It will always be a place where you can step back in time and experience coastal southern California the way it once was.

We are delighted you are interested in this marvelous place. Thanks for making the effort! We hope our park newspaper encourages you to safely explore and discover Channel Islands National Park while taking care to protect and keep these beautiful and fragile islands unimpaired for future generations.

Russell E. Galipeau, Jr., Superintendent

Visitor Information

Visitor Center

The Channel Islands National Park visitor center features a bookstore, a native plant garden, a display of marine aquatic life, and exhibits featuring the unique character of each park island. Visitors also will enjoy the 25-minute park movie, "A Treasure in the Sea," in the auditorium.

Channel Islands National Park

1901 Spinnaker Dr.

Ventura, CA 93001

(805) 658-5730 www.nps.gov/chis/

Hours: 8:30 a.m. to 5 p.m., daily

Closed Thanksgiving and December 25

Outdoors Santa Barbara Visitor Center

This visitor center not only has one of the best views of Santa Barbara, but also offers visitors exhibits and information about Channel Islands National Park, Channel Islands National Marine Sanctuary, the Santa Barbara Maritime Museum, and the City of Santa Barbara. Open daily; call for hours.

113 Harbor Way 4th Floor

Santa Barbara, CA 93109 (805) 884-1475

Interpretive Information

Books and materials about the park are available for sale through the Western National Parks Association either in the park visitor center or by mail order. This nonprofit organization supports the educational and research programs of the park.

Western National Parks Association

1901 Spinnaker Dr.

Ventura, CA 93001 (805) 658-5730 www.wnpa.org

Interpretive Programs

Weekends and holidays, rangers offer a variety of free public programs. For information about specific program dates and to learn more about the park, call, write, or visit the park's visitor center.

On the islands, rangers and volunteer naturalists offer guided hikes throughout the year.

2 Island Views

Accessibility

The mainland visitor center is fully accessible. Due to their isolation and transportation requirements, the islands are not readily accessible for individuals in wheelchairs or those with limited mobility. Limited wheelchair access is available on Santa Rosa Island via air transportation. Please call the park for information.

Transportation—How to Get There

Boat Transportation

Public boat transportation is available year-round to all five islands by the park concessionaires, Island Packers and Truth Aquatics. In addition, Island Packers offers whale watching trips while Truth Aquatics also offers scuba diving trips.

For departures out of Ventura and Channel Islands (Oxnard) Harbors contact:

Island Packers, Inc.

1691 Spinnaker Dr.

Ventura, CA 93001

(805) 642-1393 www.islandpackers.com

For departures out of Santa Barbara Harbor contact:

Truth Aquatics at Sea Landing

301 West Cabrillo Blvd.

Santa Barbara, CA 93101

(805) 963-3564 www.truthaquatics.com

Private boaters may land on all five islands within the park throughout the year. Please see "Boating and Kayaking" on page 20 for more information.

Air Transportation

Public air transportation is available year-round to Santa Rosa Island by park concessionaire Channel Islands Aviation. Flights depart from Camarillo Airport. For departures contact:

Channel Islands Aviation

305 Durley Ave.

Camarillo, CA 93010 (805) 987-1301 www.flycia.com

-Private aircraft may not land within park boundaries. All aircraft must maintain a minimum 1,000-foot altitude above land and sea surfaces within the park and sanctuary.

When to Visit—Through the Year

Visitors often ask what time of year they should visit Channel Islands National Park. Since the park is located in “sunny” southern California, it may seem that the obvious answer is “any time of year.” And, true, you can visit throughout the entire year. But, believe it or not, we do have seasons here in southern California. While the seasonal changes are nothing like one would find in Minnesota, there are differences that visitors should take into consideration when visiting the park. Each season has its own character and casts a unique mood over the islands.

In addition, visitors also should be aware that ocean and weather conditions vary considerably from day-to-day and island-to-island. Although this makes planning your visit a little difficult, we must remember that this unpredictable and, at times, unforgiving weather is one of the main reasons that the islands have been afforded so much isolation and protection from the rapid changes seen on the mainland. It is, in part, what makes the Channel Islands such a unique and wonderful place.

We encourage you to take the opportunity to fully enjoy the islands throughout the entire year. Channel Islands National Park is truly a place for all seasons.

Climate

In general, the islands have a Mediterranean climate year-round. Temperatures are relatively stable, with highs averaging in the mid 60s°F and lows in the low 50s°F. The islands receive most of their precipitation between December and March. Spring starts the warming trend toward summer when temperatures average in

the low 70s°F.

However, visitors must be prepared for high winds, fog, rough seas, and sea spray at any time. Winds are often calm in the early morning and increase during the afternoon. High winds may occur regardless of the forecast, especially on the outer islands, Santa Rosa and San Miguel (30-knot winds are not unusual). Anacapa, eastern Santa Cruz, and Santa Barbara Islands have more moderate winds. The calmest winds and sea conditions often occur August through October. Dense fog is common during the late spring and early summer months, but may occur at any time. Ocean water temperatures range from the lower 50s°F in the winter to the high 60s°F in the fall.

Spring

· Although temperatures are becoming warmer, strong winds often occur during this season. Dense fog is common during the late spring.

· The islands are green and wildflowers reach peak bloom, especially the brilliant yellow coreopsis flowers. During a normal year of rainfall, this occurs by late January through March.

· Western gulls and other seabirds begin nesting.

· Island fox pups are born.

· Spring bird migration is underway.

· End of gray whale watching season.

· California sea lions and northern fur seals start to gather at their rookery sites.

· Peregrine falcons and other landbirds begin nesting.

Summer

· Afternoon winds are common, fog diminishes near midsummer. Calm winds and seas become more frequent near the end of summer.

· Ocean temperatures begin to warm, reaching the high 60s by end of summer. Underwater visibility increases.

· Summer is the ideal time for sailing, snorkeling, diving, kayaking, and swimming.

· The park’s live dive programs begins on Anacapa with live broadcasts at mainland visitor center.

· Seabird and landbird chicks fledge (leave the nest and fly).

· Although the vegetation begins to dry out, some plants like gumplant, buckwheat, poppies, and verbena continue to bloom.

· Whale watching begins for blue and humpback whales.

· California sea lions and northern fur seals begin pupping.

· Most people visit the park during the June through August period.

· Backcountry beach camping season begins around mid August on Santa Rosa Island .

Fall

· The best chance for warm weather, calm winds, and seas continues. However, beginning around October, strong east or Santa Ana winds are possible.

· Many consider the fall as the best time of year for snorkeling, diving, kayaking, and swimming. Ocean temperatures may reach 70° in early fall and visibility may reach 100 feet.

· Blue and humpback whale watching comes to an end in early fall.



Tim Hauf

Rainbow and coreopsis, Santa Barbara Island

· Fall bird migration is underway.

· Northern elephant seals begin to gather at their rookery sites in late fall.

Winter

· Temperatures begin to cool. Winter storms start to appear, with most rain falling between December and March. Nevertheless, beautiful, sunny, clear winter days occur between storms.

· Some of the best sunsets of the year occur during this time of year.

· Gray whale watching begins at the end of December and lasts until April.

· Northern elephant seals begin pupping in early winter.

· Harbor seals begin pupping in late winter.

· Islands begin to turn green and wildflowers start blooming during the late winter months.

· California brown pelicans begin nesting.

Visitor Information

Transportation Information

Island	Frequency of Trips*	Travel Time* (one way)	Landing Conditions
Anacapa	Year-round: variable schedule 5–7 days/week	1 hour from Ventura 2 hours from Santa Barbara	Visitors must climb from the boat up a steel-rung ladder to a dock. Once ashore, visitors must climb 154 stairs to the top of the island. Non-landing trips are available.
eastern Santa Cruz (NPS property)	Year-round: variable schedule 5–7 days/week	1 hour from Ventura 2 hours from Santa Barbara	Visitors must climb from the boat up a steel-rung ladder to a pier at Scorpion Anchorage and Prisoners Harbor. All other landings are skiff (small boat) landings on a beach.
western Santa Cruz (TNC property)	Year-round: 2–5 days/week	1 hour from Ventura 2 hours from Santa Barbara	Visitors must climb from the boat up a steel-rung ladder to a pier at Prisoners Harbor. All other landings are skiff (small boat) landings on a beach. Contact The Nature Conservancy for information: (805) 642-0345.
Santa Rosa	Spring to fall: 8–12 days/month Flights: 7 days/week, year-round	3 hours from both harbors Flight: 45 minutes	Visitors must climb up a 20-foot, steel-rung ladder to a pier or be prepared for beach landings by skiff. Strong winds and rough seas are possible. Plane lands on a graded dirt airstrip. Turbulence is possible.
San Miguel	Spring to fall: 8–12 days/month	4 hours from Ventura 4.5 hours from Santa Barbara	Skiff landings on the beach—be prepared to waterproof gear and possibly to get wet. Strong winds and rough seas are possible.
Santa Barbara	Spring to fall: 4 days/month	3 hours from Ventura 6 hours from Santa Barbara	Visitors must climb a steel-rung ladder to the top of the pier from a skiff. Once ashore, visitors must walk uphill 1/4 mile with 131 long steps to the top of the island.
Multi-island trips (Truth Aquatics)	Year-round: 3 trips/month	Varies depending on destination	Trips include visits to at least two islands. These trips include meals and shipboard lodging.

*Refer to concessionaire’s transportation schedule for more information.

Where to Stay—Accommodations and Services

There are no accommodations or services available on the islands. Visitors must bring all their own food, water, and other supplies. Public phones are not available. Primitive camping is available on every island. Please refer to the “Camping” section on page 10 for more information. For accommodations in Ventura or Santa Barbara contact:

Ventura Visitor and Convention Bureau
89C South California St.
Ventura, CA 93001 (805) 648-2075

Santa Barbara City Visitor Center
1 Santa Barbara St.
Santa Barbara, CA 93103 (805) 965-3021

Camping

Camping is available year-round on all five islands in Channel Islands National Park. Please refer to the “Camping” and “Backcountry Camping” sections on page 10 for detailed information.

Picnicking

Picnic tables are available for day use on all islands except San Miguel. If weather permits, many visitors enjoy picnicking on the islands’ beaches. Visitors must bring their own food and water. Public pit toilets are available on all islands.

continued on page 4

Forward to the Past: Restoring Ecosystems of Channel Islands National Park

BY KATE FAULKNER, Chief of Natural Resources Management, Channel Islands National Park

Congress established Channel Islands National Park “in order to protect the nationally significant natural, scenic, wildlife, marine, ecological, archaeological, cultural, and scientific values of the Channel Islands.” These islands are extremely important in conserving the biological diversity that is our natural heritage in southern California.

Worldwide, islands are particularly important to the conservation of biological diversity. Islands tend to have a high percentage of endemic (unique) species and subspecies because of their isolation from the mainland. The Channel Islands, sometimes called the North American Galapagos, are no exception. Fully 10% of the terrestrial plants and 30% of the terrestrial animals on the park islands are endemic. Species such as the island fox, island scrub-jay, and the Santa Barbara Island live-forever occur nowhere else in the world.

Additionally, islands are extremely important breeding areas for seabirds and pinnipeds that forage over thousands of square miles of ocean but are dependent on these islands for breeding and nesting. Wildlife that frequent the mainland coast, such as California brown pelicans, California sea lions, and western gulls, are almost entirely dependent on the islands for breeding and raising young. Our mainland coast would have much less wildlife if we are unable to protect their critical habitats on the Channel Islands.

The isolation of the islands has protected them from much of the development and human impacts that have drastically reduced natural ecosystems on the mainland. Although the Channel Islands are within a day’s travel for over 20 million people, the islands them-

selves are relatively unaltered because of the isolation provided by the surrounding ocean.

Change Comes to the Islands

The Channel Islands have not been immune to ecological impacts, however. Substantial changes to the island and marine ecosystems have occurred during the last two hundred years. A number of species were hunted to near extinction. Non-native animals, such as sheep, pigs, and rabbits, were introduced to the islands for hunting or ranching. There were also accidental introductions, such as rats on Anacapa and San Miguel Islands and the invasive weeds that now cover large areas of the islands.

The reasons we value the Channel Islands have changed over the years. For many years the islands were valued primarily for the production of food and materials for human consumption. However, the establishment of the park in 1980 highlighted the national significance of the natural and cultural resources of these islands. Since then, substantial progress has been made in conservation of these resources.

Successes in Conservation

Four species of pinnipeds currently breed on the park islands and two additional species bred there historically. However, it has been a rough road for these animals. For example, commercial hunters decimated northern elephant seals during the 1800s. By 1900, only a remnant population of approximately 50 animals remained on Guadalupe Island off Baja California. This species, which is now such a common component of the islands’ marine

ecosystem, was almost extinct. The decline of hunting and the isolation of the islands allowed the population of elephant seals to grow and expand throughout this century to occupy their former range. Currently, elephant seals are breeding on San Miguel, Santa Rosa, and Santa Barbara Islands and their numbers are continuing to increase.

The decline and recovery of California sea otters is a very similar story to that of elephant seals. Hunting caused the near extinction of California sea otters. Protection from hunting has allowed substantial recovery during this century. However, sea otters are still listed as a threatened species and do not yet occupy their historic range at the park islands.

The Canary in the Coal Mine

Natural areas, such as Channel Islands National Park, play an important role in indicating when critical changes are happening on the earth, our life support system. Parks can play the role of “the canary in the mine.” Just as the miner’s canary alerted mine workers to poison gases in a shaft, natural areas can alert us to biological, chemical, and environmental changes that will affect our quality of life and the survival of species.

The Channel Islands played a role in two events in 1969 that galvanized our nation to take seriously the growing warning signs of our deteriorating environment. In January 1969, an environmental disaster occurred in the Santa Barbara Channel. An offshore oil platform suffered a blowout. Two hundred thousand gallons of crude oil escaped into the ocean over a period of eleven days. The oil created an 800-square-mile slick that impacted

all of the northern Channel Islands and nearby mainland beaches. Thousands of seabirds and marine mammals died.

At the same time, scientists were becoming aware of a serious decline in the breeding success of California brown pelicans. Adult brown pelicans appeared to still be numerous, providing a deceptive façade that things were alright. However, when the scientists looked more closely, they found that the pelicans were unable to nest successfully because the eggshells were too thin and thus were crushed in the nest. For several years, the pelicans suffered nearly total reproductive failure. In 1970, only one chick was successfully raised on Anacapa Island, an island that had historically been the largest breeding colony for California brown pelicans on the west coast of the U.S.

The cause of the failed pelican breeding was DDT, an organochlorine pesticide. In the late 1960s and early 1970s the mean eggshell thickness was found to be approximately 50% thinner than normal. High levels of DDT residues were correlated with the eggshell thinning—the higher the DDT levels the thinner the eggshells. Later analysis of museum eggshells collected before 1943 and the notes of biologists showed that the eggshells of California brown pelicans were substantially thinner by 1962. Also, a long-term decline of brown pelicans had started along the California coast as early as the mid-1950s. DDT similarly affected bald eagles and peregrine falcons. However, because there was no standardized biological monitoring of pelicans, the problem wasn’t identified until the populations had nearly collapsed.

please see FORWARD TO THE PAST, 23

Visitor Information

(continued from page 3)

Hiking

Many trails and roads traverse the islands, providing visitors with spectacular hiking opportunities. These trails and roads range from the maintained, relatively flat, signed trails of Anacapa to the unmaintained, rugged, mountainous, unsigned paths of Santa Rosa. Please see individual island sections for descriptions of these routes. In addition, trail maps, guides, and topographic maps are available at park visitor centers and at island bulletin boards. Hikers need to assume individual responsibility for planning their trips and hiking safely. To increase your odds of a safe hike, decrease your disturbance to wildlife, and protect resources, visitors should be in good physical condition and must follow the regulations and guidelines in the “Limiting Your Impact” section on page 20 and those listed below:

- Stay on trails and roads while hiking—**avoid animal trails**, which are narrow, uneven, unstable and dangerous. **Cliff edges should be avoided** at all times since they tend to be crumbly and unstable. Stay well back. Children should be supervised at all times by an adult.
- **Carry plenty of water**—one quart for short walks, more for longer hikes.
- Hikers should **never hike alone—use the buddy system**. This allows someone to go for help if you encounter trouble.
- Be aware of **poison oak, “jumping” cholla cactus, ticks, and scorpions**. Poison oak can be identified by its clusters of three shiny leaflets. Some ticks carry disease; check your clothing and exposed skin after hiking.
- In order to help prevent wildfires, **do not smoke on trails or in brush areas**. Smoking is allowed only on beaches or other designated areas.
- In departing from the islands, **visitors are responsible for meeting the boat concessioner on time**. Be aware of departure time by asking the ranger or concessionaire employees.



Hikers, Webster Point, Santa Barbara Island

Fishing

To fish in Channel Islands National Park, possession of a valid California state fishing license is required and all California Department of Fish and Game Regulations apply. In addition, thirteen Marine Protected Areas (MPAs) surround the islands. Special resource protection regulations apply. Please refer to page 11 and 20 for additional regulations and guidelines. Visitors may also contact the Channel Islands National Park headquarters and island rangers for more information on marine resources regulations. **Visitors should also be sure to obtain the Channel Islands National Park brochure/map and the Channel Islands National Marine Sanctuary (NOAA/NMS) Protecting Your Channel Islands brochure/map.**

Watersports

Swimming, Snorkeling, and Diving

The kelp forests, sea caves, and coves of the park await the adventurous swimmer, snorkeler, and diver. Some of the best snorkeling and diving in the world can be done right here within the park. These activities are best done on Santa Barbara, Anacapa, and eastern Santa Cruz Islands. Due to extremely windy conditions on Santa Rosa and San Miguel, these activities should not be attempted on these islands by the novice or anyone who is not properly trained, conditioned, and equipped. Please refer to diving books available in the visitor center for more detailed information on island snorkeling and diving sites.

Since the marine environment can be unforgiving, use extra caution when engaging in these activities. **Ocean conditions are highly variable and sometimes dangerous.** Many beaches on the islands have steep, dangerous shore breaks. The wind and swell generally come from the northwest and become stronger as the day continues. From October through January, visitors must also be prepared for strong east or Santa Ana winds. The ocean currents outside of coves and protected beach areas can be strong and extremely dangerous. These conditions should be carefully considered when planning your trip and entering the water. In addition to the regulations and guidelines listed in the “Limiting Your Impact” section, the following suggestions should also be considered:

- There are **no lifeguards on duty**, so all water sports are at your own risk. Visitors should

Climate Change and Geology in the Park

BY DANIEL R. MUHS, U.S. Geological Survey, Denver, Colorado

Climate change is a topic on the minds of many people these days. What many visitors to Channel Islands National Park may not realize is that these islands have abundant evidence of past, naturally occurring climate changes. Although many of the rocks on the islands formed tens or hundreds of millions of years ago, the landscape that we see was shaped by climate changes over just the past couple million years. This is referred to as the “Quaternary Period” by geologists, and was a time of dramatic swings in climate, between ice-age periods called “glacials,” separated by warm periods, such as the present, called “interglacials.” The past four interglacial-glacial periods each lasted about 100,000 to 125,000 years. We are presently in an interglacial period and the last interglacial period was about 125,000 years ago.

During interglacials, sea level is relatively high, as is the case today. During the last interglacial period, the Earth was somewhat warmer than now, and the polar ice caps on Greenland and Antarctica were smaller than they are today. As a result, sea level was about six meters (20 feet) higher than it is today. Conversely, during glacial periods, the ice caps on Greenland and Antarctica grew larger than they are today. Large ice caps also formed over extensive areas of North America and Eurasia. Because the moisture that fell as snow to form these large ice caps came from the ocean, sea level was much lower at that time than it is today. During the coldest part of the last ice age (about 20,000 years ago), sea level was about 120 meters (394 feet) lower than today. At the time of the last ice age, all four of the northern Channel Islands were connected into one big

island geologists call “Santarosae.” When it was at its largest extent, Santarosae was only about seven kilometers (4.5 miles) from the California mainland.

What effect did these huge swings in sea level have on the geologic processes taking place on the Channel Islands? One of the geologic forces acting on many parts of the California coast is erosion by waves. Wave energy on much of the Pacific coast is very high and near the shore, where waves break, the bedrock is planed down to a seaward-sloping surface called a “wave-cut platform.” On many parts of the Channel Islands, modern wave-cut platforms can be seen during low tides. The surfaces of wave-cut platforms are important habitats for many intertidal invertebrate organisms, including clams, snails, sea urchins, seastars, crabs, and barnacles. In addition to erosion, however, an important geologic process acting on the landscape is movement along faults, such as the San Andreas fault. Along the San Andreas fault, and most other active faults in California, the majority of movement of crustal blocks is horizontal, what geologists call “strike-slip” displacement. Nevertheless, most faults have at least a small component of vertical movement, and on some faults the displacement is primarily vertical. Thus, in addition to crustal blocks sliding along one another, some blocks are rising relative to the others.

Slow, but more-or-less continuous uplift along faults has been taking place on the Channel Islands for several million years and is probably the reason that there are islands at all. Thus, as any one island is being uplifted, so too is the wave-cut platform in the surf zone of



Daniel Muhs

Inner part of a modern wave-cut platform at low tide (left foreground), last interglacial marine terrace (right mid-photo), and older marine terraces (background, on the skyline), Bechers Bay, Santa Rosa Island.

the island. The rate of uplift is typically so low that we can't view it in the course of a human lifetime. From the perspective of a visitor to Channel Islands National Park, it looks like the waves are winning the battle of erosion versus uplift. Nevertheless, on a geologic timescale of interglacial-glacial periods, the story changes. As a glacial period begins, sea level lowers and the wave-cut platform becomes exposed, forming a flat, mesa-like landform. Geologists call wave-cut platforms that are exposed above sea level “marine terraces.” Such features are common along the mainland California coast. As sea level lowers during a glacial period, local uplift keeps raising marine terraces higher.

Even after large ice sheets are as big as they

are going to get, and sea level has lowered as far as it is going to go, glacial periods can continue for thousands of years. Uplift continues to operate all through this time and, eventually, the marine terrace is well above the elevation where it originally formed. As Earth becomes warmer, moving into an interglacial period, the large ice sheets on the continents melt and sea level rises again. Once this new interglacial period reaches its maximum period of sea-level rise, a new wave-cut platform begins to form in the surf zone, and the cycle starts all over again. However, the old wave-cut platform that developed during the previous interglacial period has now been uplifted out of the range

please see CLIMATE CHANGE AND GEOLOGY, 19

Visitor Information

be aware of boat landing operations at all times—**avoid water sports near skiffs that are conducting surf landings.**

- Snorkelers, kayakers, divers, and swimmers should always **use the buddy system.** This allows for someone to go for help if you encounter trouble.
- For your own safety, the law requires divers to **display a dive flag while diving.** It is recommended that spear guns be unloaded at least 50 feet from the beach.
- Before departing, swimmers, kayakers, snorkelers, and divers **should leave an itinerary and/or float plan with someone** who is on shore and can be easily contacted.
- Sea caves can be very dangerous—large waves or swells can fill a cave unexpectedly. Be extremely careful and **wear a helmet at all times when exploring sea caves.**
- Due to cold water conditions (55° to 70° F), **wetsuits and hoods are recommended.**



Tim Hauf

Snorkelers, Landing Cove, Santa Barbara Island

Surfing

Depending on the swell direction, surfing can be done at several locations on Santa Cruz, Santa Rosa, and San Miguel Islands. Generally, the north shore is best during the north-west swells of winter/spring and the south shore is best during the south swells of summer/fall. All surf spots are remote and are best accessed by private boat due to the islands' rugged terrain and the hiking distance from the designated landing areas where the park concession vessels drop off visitors. Contact local area surf shops for more information.

Boating and Kayaking

Please refer to the “Boating and Kayaking” article on page 20.

Rodents and Hantavirus

Hantavirus has been found in deer mouse populations at Channel Islands National Park. This mouse-carried virus also has been found in many locations on the mainland. This is a potentially fatal disease, and some basic precautions should be taken.

- **Avoid contact with rodents.** Rodents are hosts for a variety of diseases and parasites, including ticks and fleas, which may carry plague and rabies. Hantavirus is transmitted through the body fluids of the deer mouse and can become aerosolized when large masses of feces and dried urine are disturbed. People hiking and camping on the islands are considered to be at low risk; most cases of hantavirus infection have occurred when people have cleaned out or lived in buildings that have been inhabited by large numbers of rodents for many years. The precautions for avoiding infection by hantavirus are the same as those for the avoidance of any illness that may be contracted from rodents. When camping or hiking on the islands, the basic practices of cleanliness will reduce your chance of rodent contact.
- **Do not feed any wild animals.** Viruses and diseases are often passed through saliva. To reduce your chances of being bitten, avoid contact with wild animals.
- **Keep food and drink in rodent-proof containers.** On the islands, the mice are mostly active at night, but will also come out during the day while you are away from your site. It is best to keep food and dishes in plastic coolers or other containers that mice cannot chew through. This also applies to trash. It is not recommended to store food within tents, backpacks, or clothing since mice have been known to chew through these items.
- **Prevent entry of mice into your tent.** Mice will go everywhere in their search for food, so keep your tent screen zipped even when you are nearby. Keep your clothing and footwear inside your sealed tent especially at night.
- **Symptoms of hantavirus infection:** Infection by hantavirus causes flu-like symptoms followed by acute respiratory distress. If you experience fever, aches, and/or stomach cramps and believe you may have had contact with rodents within the last 30 days, contact your physician immediately and inform your physician that you have had contact with rodents and possibly hantavirus.

Anacapa Island

Crossing the channel to Anacapa Island, one begins to understand why the island's name was derived from its Chumash Native American Indian name *Anypakh*. Seeming to change shape in the summer fog or afternoon heat, the three islets of Anacapa look like an island of deception or a mirage. Almost five miles long, these islets (appropriately named East, Middle, and West Anacapa Islands) are inaccessible from each other except by boat. They have a total land area of about one square mile (700 acres). Waves have eroded the volcanic island, creating towering sea cliffs, sea caves, and natural bridges, such as forty-foot-high Arch Rock—the symbol of Anacapa and Channel Islands National Park.

Exploring East Anacapa's 1.5-mile trail system allows visitors to experience the island's native vegetation, wildlife, and cultural history. Although for much of the year the island vegetation looks brown and lifeless, the winter rains transform the landscape. Emerging from dormancy, the native plants come alive with color. The strange tree sunflower, or coreopsis, blossoms with bright yellow bouquets that are so vivid and numerous they can sometimes be seen from the mainland. Vibrant red paintbrush, island morning glory, and pale buckwheat add touches of color to the island's palette.

Seabirds are probably the most conspicuous wildlife on Anacapa Island. Thousands of birds use Anacapa as a nesting area because of the relative lack of predators on the island. While the steep cliffs of West Anacapa are home to the largest breeding colony of endangered California brown pelicans, all the islets of Anacapa host the largest breeding colony of western gulls in the world. Western gulls begin their nesting efforts at the end of April, sometimes making their shallow nests just inches from island trails. Fluffy chicks hatch in May and June and fly

away from the nest in July.

The rocky shores of Anacapa are perfect resting and breeding areas for California sea lions and harbor seals. The raucous barking of sea lions can be heard from most areas of the island. Two overlooks (Cathedral Cove and Pinniped Point) provide excellent spots to look down on seals and sea lions in the island coves.

Anacapa's rich kelp forests (ideal for kayaking, snorkeling, and diving) and tidepool areas provide visitors with the opportunity to meet some of the resident ocean animals up close. Visitors may also catch a glimpse of the fascinating undersea world of the kelp forest without getting wet. During the summer, park rangers dive into the Landing Cove on East Anacapa with a video camera. Visitors can see, through the eye of the camera, what the diver is seeing—bright sea stars, spiny sea urchins, and brilliant orange Garibaldi—by watching video monitors located on the dock or in the mainland visitor center auditorium. Divers answer questions from visitors while they are underwater with a voice communication system and some help from a park interpreter on the dock. This program is simultaneously transmitted to the mainland visitor center.

Anacapa Island has a rich human history as well. Shell midden sites indicate where Chumash people camped on the islands thousands of years ago. In addition, visitors can view the 1937 light station whose mission revival style buildings include the lighthouse, fog signal building, one of four original keeper's quarters, a water tank building, and several other service buildings. The original lead-crystal Fresnel lens, which served as a beacon to ships until an automated light replaced it in 1990, is now on exhibit in the East Anacapa Visitor Center.

Things To Do

- The perfect place for a half-day, one-day, or short overnight camping trip. If you have time to visit just one island, this may be the place.
- Almost all trips to Anacapa are to East Anacapa Island. A limited number of trips are offered throughout the year to Frenchys Cove on West Anacapa Island.
- Although hiking options are limited with only two miles of trails, the scenery is unmatched. Except for the staircase to the top of the island, the trails are relatively flat and easy. Access to West Anacapa is from the water only and is limited to Frenchys Cove.
- Ideal place for swimming, snorkeling, diving, kayaking, and fishing (see regulations page 20). Since Anacapa is a cliff island, access to the water is only at the Landing Cove on East Anacapa (no beaches) and at Frenchys Cove on West Anacapa.
- Live dive interpretive program is offered during the summer.
- Excellent wildlife viewing—seabirds (gull chicks in early summer), seals, and sea lions.

Refer to related articles for more information.

Island Facts

- Located in Ventura County.
- Five miles long and 1/4 mile wide
- Average rainfall is between eight and thirteen inches per year.
- The Anacapa deer mouse is only found on Anacapa Island.
- Frenchy LeDreau lived at Frenchys Cove from 1928 to 1956.
- 29 Chumash archeological sites
- 130 sea caves
- The Anacapa lighthouse, turned on in 1932, was the last permanent lighthouse built on the west coast.
- Harbor seals and California sea lions rest and breed on the island.



Lighthouse, coreopsis, and Indian paintbrush



Arch Rock with tall ship

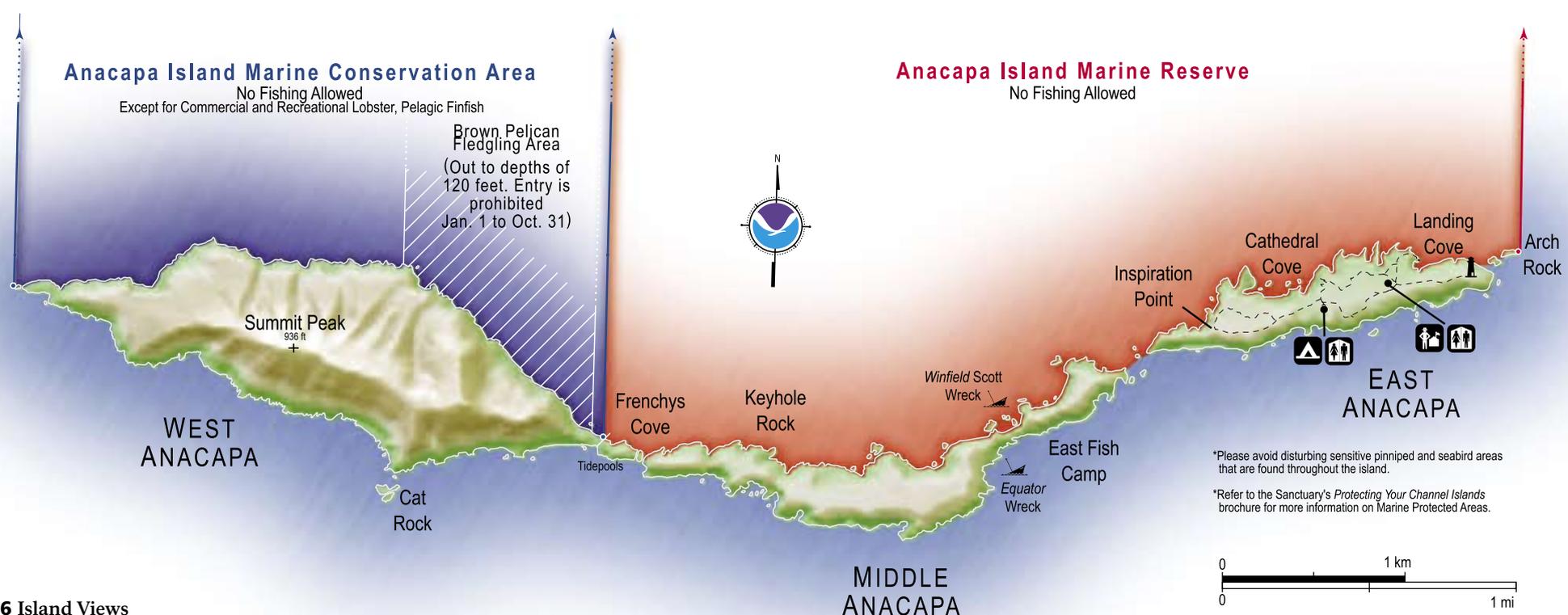


Western gull with chick

Hiking Information

Destination (from visitor center)	Distance (miles, round-trip)	Difficulty	Description
Inspiration Point	1.5	Easy	Extraordinary views. Not to be missed.
Lighthouse	.5	Easy	View the historic lighthouse built in 1932.

- Hikers must stay on trails to protect fragile vegetation and nesting seabirds and for visitor safety.
- Access to Middle (ranger-guided only) and West Anacapa (Frenchys Cove only) Islands is from the water only. Concession trips are offered throughout the year to Frenchys Cove.



cultural resources, and the challenges involved in protecting them.

The partnership between Channel Islands National Park and VCOE is an outgrowth of a more extended local partnership with Channel Islands National Marine Sanctuary, Santa Barbara Maritime Museum, and the JASON Foundation for Education. In 2003, the JASON "From Shore to Sea" expedition to the Channel Islands used similar wireless technology to deliver educational programs from Anacapa and the mainland to over 1.6 million students and over 35,000 teachers in the United States and internationally.

The partners assisted JASON in the development of educational curriculum that cover a variety of marine and terrestrial science stories within the park and the marine sanctuary. This curriculum is certified by the California Learning Resources Network (CLR.N.org). It is the intent of this project to continue to utilize the JASON curriculum and develop new education materials to enhance the learning quality and meet the educational objectives of live programming in the park and marine sanctuary.

In addition, various aspects of the program are supported by the following partners:

Channel Islands National Marine Sanctuary
Institute for Wildlife Studies
Island Packers, Ventura
Marine Science Institute, UCSB
Minerals Management Service
Montrose Settlements Restoration Program

The Nature Conservancy
Santa Barbara County Education Office
Santa Barbara Maritime Museum
JASON Foundation for Education
National Park Foundation

Funding

The program is supported by NPS funds—settlement restitution funds, including funds administered by the Montrose Settlements Restoration Project. Grants include a NOAA B-WET grant and National Park Service Challenge Cost Share Grants.

Channel Islands Live Programs

CHIL is a program that offers students and the public a new way to experience the wild and remote landscapes of Channel Islands National Park using wireless technology. It brings the park to the people by providing real-time educational programs and wildlife viewing from the spectacular natural world that lies just off the coast of southern California. Through CHIL anyone can access remote park locations and understand the value of the Channel Islands.

The ultimate outcome will be a suite of live educational and interpretive programs produced by Channel Islands National Park and VCOE for dissemination through the county schools and to other public and private institutions of formal and informal learning. This partnership will provide students and others an opportunity for interactive, place-based learning—making park science, history, and

culture more relevant and meaningful.

The types of programs currently offered through CHIL include:

• *Real-time hikes and dives.* CHIL programs highlight the remarkable natural and cultural resources of the park and marine sanctuary. Programs explore various island resources including kelp forests, a historic lighthouse, and active seabird colonies. The interactive Live Dive program is broadcast from the giant kelp forests off Anacapa Island using cameras and two-way communication to allow students and visitors to talk with park rangers during underwater dives. During summer, this Live Dive program is presented on Tuesdays, Wednesday, and Thursdays at 2 p.m. in the Anacapa Island Landing Cove and broadcast back to the mainland visitor center in Ventura. It is open to the public free of charge.

• *Education programs.* More than 500 students and teachers in Ventura County schools are participating in the CHIL curriculum-based education program. Students conduct hands-on classroom and field activities to compliment the live broadcasts.

• *Webcams.* Using a personal computer, everyone can access CHIL webcams to watch a pair of nesting bald eagles in the process of raising this year's chicks on Santa Cruz Island at http://chil.vcoe.org/eagle_cam.htm. In 2009 other webcams will be up and running, offering up-close views of California brown pelicans and western gulls nesting on Anacapa Island.



Channel Islands Live divers at Anacapa Island



Visitors watching underwater program, Anacapa



CHIL students monitoring tidepools, Anacapa

Monitoring Kelp Forests in the Park

The nearshore waters along the coastline of central and southern California host one of the most productive marine ecosystems on earth, giant kelp forests. Like tropical rainforests, these towering seaweed structures support complex, dynamic communities living at various levels of the underwater canopy.

In Channel Islands National Park, kelp forests constitute one of the largest, most diverse, and most threatened ecosystems. All five park islands are surrounded by kelp beds that harbor more than 1,000 species of plants and animals. Kelp forests provide necessary habitat for species as diverse as giant black sea bass and tiny blue-banded gobies.

Kelp Forest Declining in California

Since the end of World War II, California's population has grown dramatically, particularly along its coastlines. During this time kelp forests have declined across the state. In southern California, kelp bed losses of up to 89 percent have been reported. In 1999, the Channel Islands harbored two-thirds of the remaining kelp beds in southern California.

Kelp forests are complex and dynamic ecosystems that are influenced by both natural events and human activities. Strong storms associated with El Niño years and fluctuating water temperatures can cause dramatic changes in kelp forest communities. Human activities also affect their health through coastal development, sedimentation, pollution, and fishing.

Overharvesting has a significant effect on kelp forests. Removal of predators can alter predator-prey interactions, disrupting the balance of life. For example, by overharvesting predators such as sea otters, spiny lobster or California sheephead, herbivores like purple sea urchins increase and can decimate kelp beds through overgrazing. These areas quickly transition into "urchin barrens," supporting relatively few species. Loss of kelp beds also eliminates nursery grounds for species such as rockfish and kelp bass whose young live in the kelp until they are large enough to venture into open waters. Without shelter and food from the kelp forest, these populations may be dramatically reduced.

Monitoring Kelp Forest Communities

To help better understand and protect the kelp forest community, Channel Islands National Park established a kelp forest monitoring program in 1982 to collect baseline information about kelp forest ecosystems around the five park islands. This program has expanded in coordination with the California Department of Fish and Game and Channel Islands National Marine Sanctuary. Each year the program collects size and abundance data for 70 species or categories (taxa) of algae, invertebrates, and fish that may be indicators of ecosystem health.

Since the program began, widespread and dramatic changes have occurred. The program has documented the loss of kelp beds around

several of the islands; confirmed the decline of several marine species; supported management actions, like the closure of abalone fisheries in southern California; and documented declines in the health of kelp forests where predators are absent or drastically reduced.

The program has also helped scientists and managers implement new management strategies to protect the marine ecosystem, including establishing marine reserves at the Channel Islands.

Establishment of Marine Reserves

In 2003, the State of California put the Channel Islands marine reserve network into effect, placing nearly 20% of park waters into state marine protected areas.

Marine reserves are areas of the ocean granted protection from fishing and other extractive activities. The goal of most marine reserves is to increase the abundance and

diversity of marine life inside their borders. Marine reserves have been established by many countries as part of a larger effort to protect, conserve, and restore ocean resources. The Channel Islands marine reserves were championed by a consortium of commercial and recreational fishers, agencies, and non-profit organizations in hopes that they will help reverse declines and promote recovery of kelp forest ecosystems.

Monitoring Marine Reserves

Park monitoring in and around a small reserve at Anacapa Island in the 1980s and 1990s provided an early demonstration of reserve effects in kelp forests at the Channel Islands. The data showed a marked contrast in conditions. Inside the unfished reserve, kelp forests remained resilient, large predators and abalone were still abundant, please see KELP FOREST MONITORING, 15



Claire Fackler, NOAA National Marine Sanctuaries



Dan Richards

96-199. In a letter Carter wrote, “These beautiful, fragile islands richly deserve the recognition and protection that park status provides.”

The legislation expanded the boundary from a two-island national monument, established by President Franklin D. Roosevelt in 1938, to a 250,000-acre national park containing the five islands of San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara and surrounding waters.

Former United States Congressman Robert J. Lagomarsino first introduced the park bill (HR 3757) in 1979. In congressional testimony Lagomarsino declared, “The islands, which lie at a distance of 11 to 60 miles off the coast of Santa Barbara and Ventura counties in my district, contain nationally significant scenic, ecological, cultural and scientific features which deserve to be protected as a national park for the benefit of generations to come.”

Defining the driving doctrine for the park Lagomarsino stated, “Because of the singular vulnerability of the islands’ resources, some of which exist nowhere else on Earth, this legislation specifies that the proposed park would be administered on a low-intensity, limited entry basis, so that visitor use within the park is restricted to levels which would not threaten to destroy the delicately balanced environment found there.”

Reflecting on the park’s future, Channel Islands National Park Superintendent Russell Galipeau said, “The National Park Service will continue to restore the ecological integrity of the Channel Islands while providing continued opportunities for the public to experience the park’s magnificent resources.”

The park protects a rich array of natural and cultural resources including over 2,000 terrestrial plants and animals, 145 of which are found nowhere else on earth. The park marine waters are refuge for over 1,000 species of fish, invertebrates, and algae and over 26 species of marine mammals, including the largest concentration of blue whales in the world. The islands support essential nesting and feeding grounds for over 90 percent of the seabirds in southern California, some of which are rare and endangered species. In a remarkably small area, the park preserves the biologic diversity of nearly 2,500 miles of the West Coast of North America.

Unequaled paleontological and archeological resources are found in the park—over 2,500 sites that record over 13,000 years of human occupation and a rich heritage from past ranching, fishing, hunting, and military activities. For example, the oldest human remains in North America and the most intact specimen of a pygmy mammoth were found on Santa Rosa Island.

Of importance for the nearly 20 million people that live within a days travel of the islands, the park offers unparalleled opportunities for solitude, tranquility, wildlife viewing, outdoor recreation, and education.

8 Island Views

America’s Best Idea

Why are you visiting this national park? What brought you here today? For some, it might be to experience a quiet moment at a scenic vista. For others, it could be capturing an intimate encounter with a place that you are seeing for the first time. Maybe it’s even to spend some time with a family member. It’s a question that documentary filmmaker Ken Burns has been exploring the past several years. Burns has been sending film crews around the country in preparation for his new project—America’s Best Idea. The title refers to a quote from writer and environmentalist Wallace Stegner, who mused that the “National parks are the best idea we ever had. Absolutely American, absolutely democratic, they reflect us at our best rather than our worst.” In the fall of 2009, the Public Broadcasting Service (PBS) will broadcast a six-part, twelve-hour series celebrating the founding and evolution of America’s national parks.



The project, eight years in the making, traces the birth of the national park idea in the mid-1800s and follows its evolution for nearly 150 years. Filming began many years ago, allowing Burns and his team to film in nearly all of the nation’s 58 national parks. It was an amazing time for Burns and left him with much to consider. “What surprised us were the remarkable stories of the people who made each park possible. We discovered people from every conceivable background—rich and poor; famous and unknown; soldiers and scientists; natives and newcomers; idealists, artists, and entrepreneurs—who have been part of the national park idea from the very beginning. What they had in common was a passion to save some precious portion of the land they loved so that those of us who followed might have the same chance to fall in love with that place.” Scenic shots will be mixed with archival footage and photographs and supplemented with first-person accounts from historic characters as well as personal memories and analysis collected from more than 40 interviews.

The series will be aired in the fall of 2009 on PBS. For more information, please check your local PBS station website.

“From Shore to Sea” Lectures

Every month Channel Islands National Park and National Marine Sanctuary jointly sponsor the “From Shore to Sea” lecture series. The purpose of the series is to further the understanding of current research on the Channel Islands and surrounding waters. Past lecture topics have included the recovery of the sea otter populations in southern California waters, the French and Italian heritage of Santa Cruz Island, survival strategies of open water fishes, new approaches to understanding kelp forest ecosystem health, and park efforts to restore the Prisoners Harbor wetland.

The lectures occur at 7:00 p.m. on the second consecutive Tuesday and Wednesday of the month. Tuesday lectures are at Santa Barbara Maritime Museum, 113 Harbor Way in the Santa Barbara Harbor. Wednesday lectures are at the Channel Islands National Park Robert J. Lagomarsino Visitor Center, 1901 Spinnaker Drive in the Ventura Harbor. The programs are free and open to the public.

Channel Islands National

13,000 Before Present (BP) Likely age of Arlington Canyon human remains, Santa Rosa Island (SRI).



12,000 BP Pleistocene fauna on Channel Islands—pygmy mammoth, “giant” deer mouse, flightless goose, rattlesnake, shrew, vampire bat; sea level approximately 100 feet lower than today.

8750 BP Some evidence for human occupation at Daisy Cave, San Miguel Island (SMI).

6950 BP Definite occupation at Daisy Cave, San Miguel Island; matting and sea grass cordage recovered from this time, among the earliest such on the continent; sea level 60 feet lower than today.

6750 BP Human burial along north coast, SRI.

6410 BP Site along SRI north coast is occupied.

5500 BP Beginning of Early Period—greater evidence of human occupation on the islands.

5400 BP Sites occupied near Bechers Bay and Skunk Point, SRI.

2110 BP Santa Barbara Island (SBI) is occupied by this time (currently earliest date).

600 BP Beginning of Middle Period—increased occupation of the islands.



500 Development of the frameless, plank canoe (tomol); beginning of more intensive trade.

550 Last occupation at Daisy Cave, SMI.

1200 Beginning of Late Period on the islands occurs about this time—increased complexity in social classes, technology, trade, hunting, and gathering.

1380 Only archeological date from Anacapa Island (AI) at present.



1542 Juan Rodriguez Cabrillo sails up the coast of California (only 50 years after Columbus) and dies on a Channel Island. First written description of the Channel Islands.

1602 Vizcaino sails past the Channel Islands. First good charts of the Channel Islands.

1769 Portola sails up the coast of California. San Francisco Bay is “discovered.” Settlement of the California coast begins.

1770 First introduction of glass beads to Chumash.

1777 Steel needles in use by Chumash; decline of shell bead manufacture begins.

1782 Mission San Buenaventura established. Total Chumash population estimated at 8,000 to 10,000 people.

1793 George Vancouver visits area, gives islands their present-day names.

1800 Aleut hunters active on the islands during this period. Russian and American ships leave the Aleuts on the islands for long periods of time to hunt otters. The hunters are reported to massacre some Chumash people.

1804 Spanish plan to build a mission on Santa Cruz Island (SCI), idea later abandoned.

1806 Measle epidemic. Chumash population is significantly reduced.

1812 Major earthquake hits the area.

1815 Last of the island Chumash population moves from islands to mainland. A few Aleut people are among the Native Americans abandoning the islands.

1816 1,328 Chumash reside at Mission San Buenaventura.

1824 Chumash revolt, many leave the missions only to be brought back later.

1830 30 convicts are dropped off on SCI with provisions supplied by the Santa Barbara Mission. The landing area becomes known as “Prisoners Harbor.”

1834 Richard Henry Dana arrives in California aboard the *Pilgrim* and later writes a book about his experiences in *Two Years Before the Mast*.

1836 George Nidever and hunting party have a skirmish with Aleuts on SRI.

1839 SCI is granted to Andres Castillero. (Mexican Land Grant)

1843 SRI is granted to Jose Antonio and Carlos Carrillo.

1846 SBI is used as a goat pasture.

1850 California becomes part of the United States. (Compromise of 1850) George Nidever seeps SMI from new government, introduces sheep, cattle, pigs, and horses to the island. Gull eggs are harvested on the islands and shipped to San Francisco during this period.

1852 Ranch on SRI is prospering; cattle, sheep and horses are introduced to the island.

1853 Lost Woman of San Nicolas Island is found. The S.S. *Winfield Scott* wrecks off AI.

1854 AI set aside for a lighthouse. James Whistler produces two copper etchings of AI for the U.S. Coast and Geodetic Survey.

1855 U.S. Reservation, Sanja de Cota, established for the surviving Chumash near Santa Ynez Mission. Active sealing in progress on AI.

1858 T.W. More buys interest in SRI, in 1865 the More family completes buying the island.

1860 Abalone industry established by the Chinese.

1862 6,000 sheep reported on SMI.

1869 SCI Company formed and purchased island to develop as a ranch. Sheep are recorded grazing on AI.

1870 U.S. Census of Agriculture lists 50,000 sheep on SCI.

1874 60,000 sheep reported on SRI.

1875 Paul Schumacher excavates archeological sites on SCI.

1878 Leon de Cessac leads first archeological expedition to AI.

Park Timeline

1881 Justinian Caire acquires sole ownership of SCI.

1892 *Goldenhorn* wrecked off coast of SRI.

1894 *Crown of England* wrecked off coast of SRI.

1900 Ordinances are passed making it illegal to gather abalone from less than twenty feet of water, ending Chinese commercial gathering.



1902 SRI is purchased by Vail & Vickers Co.; the ranch is converted from a sheep ranch to a cattle ranch.

1905 *JM Colman* wrecked off Pt. Bennett, SMI.

1907 H. Bay Webster leases AI and lives on Middle AI with his wife and two sons for 10 years.

1909 Japanese and American fishermen harvesting abalone.

1910 Eaton Resort is established on SCI. Northern elephant seals hunted to near extinction—reduced to less than 100 on Guadalupe Island off Baja California.

1911 Sea otter is protected by law. *Comet* wrecked off north coast of SMI.

1912 Light beacon placed on AI.

1915 *Aggi* wrecked off Talcott Shoals, one mile west of SRI. Hyder family moves to SBI to farm.

1920 Prohibition begins; islands become popular smuggling areas.

1923 *Cuba* wrecked off Point Bennett, SMI.

1928 Frenchy takes up residence on AI; remains there for 28 years.

1929 *Jane L. Stanford* is dynamited off east coast of SRI. A lighthouse is established on SBI. The Lester family resides on SMI; Herbert acts as manager of the ranch.

1930 Elephant seals return to SMI.



1932 AI lighthouse is completed.

1935 "Mutiny on the Bounty" filmed in part on SMI; the film wins best picture of the year.

1937 Edwin Stanton purchases 9/10ths of SCI.

1938 Channel Islands National Monument is established and administered from Sequoia National Park.

1940 Over 1,000 rabbits on East AI.

1941 AI is designated a Coastal Lookout Station; the lighthouse is blacked-out and men are kept on a twenty-four hour watch from the tower.

1942 An aircraft early warning post is established on SBI and New Zealand red

rabbits are introduced. Herbert Lester commits suicide on SMI.

1947 President Truman signs a proclamation extending the boundaries of Channel Islands National Monument to include one nautical mile off the shores of AI and SBI. Phil Orr sets up camp on SRI and conducts archeological fieldwork for the next 21 years.

1950 The air force establishes a small base at Johnsons Lee on SRI.

1954 Rabbit extermination program initiated on SBI by the National Park Service (NPS) and the U.S. Fish and Wildlife Service (USFWS); population is estimated at 2,600 rabbits.

1957 Channel Islands National Monument is administered from Cabrillo National Monument in San Diego.

1959 First seasonal park rangers arrive on West AI and set up a base camp. An accidental fire on SBI burns 66 percent of the island.

1960 *Santa Cruz* wrecked in Prisoners Harbor, SCI.



1962 *Chickasaw* wrecked off the coast of SRI.

1966 AI lighthouse is automated.

1967 Headquarters for Channel Islands National Monument is established in Oxnard.



1969 Pelican survey at West AI shows one hatched chick out of 299 nests.

1972 White abalone harvest in southern California peaks at almost 144,000 pounds

1974 Channel Islands National Monument headquarters is moved to Ventura Harbor.

1975 AI Visitor Center opens.

1978 NPS begins management of SMI. Dr. Carey Stanton agrees to sell his land on SCI to The Nature Conservancy.



1980 Channel Islands National Park and Channel Islands National Marine Sanctuary are established.

1982 Visitor center and administration building constructed for Channel Islands National Park in Ventura Harbor.

1985 Sea urchins comprise fifty percent of marine species harvested in the Santa Barbara Channel.



1985 Live underwater video program begins on AI.

1986 SRI is purchased by NPS.

2007 USFWS begins reintroduction of sea otters to San Nicolas Island.

1990 One-fourth of East SCI is purchased by NPS.

1991 SBI Visitor Center opens.

1992 Two more quarters of East SCI are purchased by the NPS.

1993 Feral pigs are eliminated from SRI.

1995 Island foxes begin declining on SMI, for unknown reasons.

1996 NPS acquires the last quarter of Eastern SCI bringing the total acreage owned by the public to 6,264.

1997 USFWS lists eight species of plants on SRI and nine plants on SCI as endangered or threatened.

1998 Vail & Vickers, National Parks Conservation Association, and the NPS sign a settlement agreement requiring removal of all but 12 cattle on SRI by Dec. 31, 1998.

1999 The last sheep of the sheep are live-captured and removed from SCI.

1999 Radiotelemetry study reveals that SMI fox decline is due to predation by golden eagles. First golden eagle nest is found on Coche Point on SCI. NPS begins trapping and relocation of golden eagles from the northern Channel Islands. The remaining wild island foxes on SMI, 15 animals, are brought into captivity.

2000 The Nature Conservancy donates 8,500 of its holding on SCI to the NPS, bringing the total acreage owned by the public on SCI to 14,733.

2000 The last remaining wild foxes on SRI, 15 animals, are brought into captivity.

2002 Park partners with JASON Expedition and other organizations to reach over 1.6 million students through live satellite broadcasts from the islands and underwater. White abalone become the first marine invertebrate to be proposed for listing as endangered under the federal Endangered Species Act.

2003 Rats eradicated from AI.



2003 The state of California establishes marine protected areas around the Channel Islands to protect and restore marine ecosystems.

2003 First island foxes are released back to the wild on SRI.

2004 Four island fox subspecies, the three in the park as well as Catalina island foxes, are listed as endangered by U.S. Fish & Wildlife Service.

2004 First foxes are released back to the wild on SMI, where they have been missing for five years.

2005 Channel Islands National Park and National Marine Sanctuary 25th Anniversary.



2006 Bald eagles are re-established on SCI between 2002-2006. In 2006, two pairs nest and the first chicks in over 50 years hatch on the islands.

2006 The last of 44 golden eagles are trapped and relocated from the northern Channel Islands.

2006 Non-native pigs eradicated from SCI.

2007 Channel Islands National Marine Sanctuary expands the marine protected areas into federal waters. Protected areas now encompass 21 percent of the sanctuary.



2008 Captive breeding program succeeds in bringing the island fox back from the brink of extinction on SCI, SMI, and SRI. The last of the captive foxes are released into the wild.



2008 Park concessioner Island Packers celebrates 40 years of visitor transportation to the islands.

2009 Scorpion Ranch Visitor Center opens on SCI.

2009 Parks As Classroom program educates over 30,000 children.

2009 Annual visitation to the islands and mainland visitor center has increased to over 500,000.



2009 Volunteer program grows to over 921 volunteers, donating over 65,000 hours—the equivalent of 32 full-time positions.

2010 Channel Islands National Park and National Marine Sanctuary 30th Anniversary.

Camping

Camping is available year-round on all five islands in Channel Islands National Park in National Park Service-managed campgrounds. There is currently one established campground on each island: above the landing cove on Santa Barbara, on the east islet of Anacapa, at Scorpion Ranch on Santa Cruz, at Water Canyon on Santa Rosa, and above Cuyler Harbor on San Miguel. No camping is allowed on The Nature Conservancy's western 76 percent of Santa Cruz Island. Limited backcountry camping is available on Santa Cruz and Santa Rosa Islands. Please refer to the "Backcountry Camping" section below for more information.

Camping Transportation

Because concession boats fill to capacity much faster than campground limits are met, campers must first secure transportation for an overnight trip to Channel Islands National Park. For transportation information, please refer to the "Transportation—How To Get There" section on page 2.

Camping Reservations

Camping reservations are required for all of the campgrounds. There are no entrance fees to visit the park. However, campground fees are \$15.00 per night per site. Reservations can be made no more than five months in advance. Information required for the reservations includes camping dates, transportation information, and number of campers. Reservations can be made by calling (877) 444-6777 or visiting www.recreation.gov. A confirmation notice will be mailed to campers.

Campground Facilities

Camping conditions are primitive, and users must camp within designated areas. All campgrounds are equipped with picnic tables and pit toilets. Water is not available at campgrounds and must be brought with you except at the Santa Rosa and Santa Cruz Island campgrounds. No fires are permitted. Enclosed camp stoves are permitted. Outer island campgrounds (San Miguel and Santa Rosa) have windbreaks for each campsite. Campsites are generally located close to one another. No trash containers are provided; campers must pack out their own trash.

Due to scavenging animals (including birds), campers are required to store all food and trash in animal-proof containers. National Park Service food storage boxes are provided at campsites, but coolers, plastic Rubbermaid-type boxes, or other types of containers with sealing lids may be used as well.

Weather

Campers should be prepared for a variety of weather conditions, especially on the outer islands. Thirty-knot winds are not uncommon on Santa Rosa and San Miguel Islands. Sturdy, low-profile tents, stakes, and line for securing tents to ground, table, or wind shelters are recommended. Fog can occur on the islands during any season producing cool, damp conditions. All of the campgrounds, except eastern Santa Cruz, are located away from trees and shade. Overexposure to the wind and sun can be a serious problem. Visitors are advised to bring supplies for an extra day in case boats are unable to pick up campers due to sea conditions.

Suggested Camping Gear

Campers must be prepared for the primitive campground facilities and weather conditions. Supplies and gear are not available on the islands. Gear must be transported up ladders at most landing areas and carried some distance to the campgrounds. Packing your gear in backpacks, duffle bags, and containers with handles makes transportation easier. The boat concessionaire requires that items weigh no more than 45 pounds each. On some islands, visitors may get wet during loading and off-loading, so waterproof your gear. An extra pair of shoes packed in waterproof material is recommended. Campers should plan to layer clothing, as weather condi-



Anacapa Island campground



San Miguel Island campground



Scorpion Ranch campground, Santa Cruz Island



Water Canyon campground, Santa Rosa Island

Campground Information

Island	Required Reservation	Distance From Landing to Campground	Number of Campsites	Campground Capacity
Anacapa	Yes	154 stairs, 1/2 mile	7	30
eastern Santa Cruz (Scorpion Ranch)	Yes	1/2 mile, flat	40	240
western Santa Cruz (The Nature Conservancy)	NO CAMPING ALLOWED			
Santa Rosa	Yes	1 1/2 miles, flat	15	75
San Miguel	Yes	1 mile, steep uphill	9	30
Santa Barbara	Yes	1/2 mile, steep uphill	10	30

tions tend to change from cool and damp in the mornings to bright, warm, and windy during the afternoons. Clothing that protects against wind is advisable year-round. Hiking boots are recommended for most island trails.

Additional "needed" gear includes: hat/visor/cap; sunglasses; windbreaker/light jacket; shirts and pants that can be layered; normal clothing needs; food; sturdy tent; campstove/cooking gear; water (1 gallon per person, per day); sunscreen; flashlight; sleeping bag; matches; and first aid kit. "Suggested" gear includes: bathing suit; gloves; poncho/rain jacket; sneakers/light footwear; towel; seasick pills; garbage bags; camera/film; binoculars; toiletries; and sleeping pads.

Backcountry Camping

Backcountry camping is available year-round at the Del Norte campsite near Prisoners Harbor on Santa Cruz Island. Also, during certain times of year, backcountry beach camping is allowed on Santa Rosa Island. The National Park Service opened these islands to limited backcountry camping in recognition of their rare wilderness values. As you explore these wild areas by kayak or on foot, please take the responsibility to help us protect and preserve these delicate natural resources for future generations. The following information is just an introduction to backcountry camping in the park. Please refer to the "Backcountry Camping" site bulletin for more information. This site bulletin is available at the park website, www.nps.gov/chis, or from the park visitor center and is required reading prior to making your backcountry reservations.

WARNING: While backcountry camping is an incredible experience, it is not for the inexperienced backpacker or kayaker. Due to difficult weather, rugged terrain, and off-trail hiking, backcountry camping is an arduous endeavor and should be undertaken only by experienced, well-conditioned backpackers and kayakers.

Santa Cruz Island

Del Norte is currently the only backcountry campground on Santa Cruz Island. It is nestled in a shaded oak grove, about 700 feet above sea level, and provides scenic views of the island's pristine coastline. The hike to the site is 3.5 miles from Prisoners Harbor and 12 miles from Scorpion Anchorage. The campground has four primitive campsites (four persons per site), and users must

10 Island Views

camp within these designated sites. A picnic table, animal-proof container, and pit-style toilet are provided (campers must bring their own toilet paper). Water is not available.

Santa Rosa Island

Backcountry camping on Santa Rosa Island is currently limited to certain beaches between August 15th and December 31st. Hiking is along the beach and rugged, unsigned dirt roads or unmaintained animal paths. The closest beach for camping is 10 miles from the boat/plane drop-off location. Water is available year-round in some of the island's canyons.

Weather and Reservations

Campers should be prepared for a variety of weather conditions. Strong winds are not uncommon. Fog can occur on the islands during any season producing cool, damp conditions. Shade is limited, and overexposure to the wind and sun can be a serious problem. Visitors are advised to bring supplies for an extra day in case boats are unable to pick up campers due to sea conditions.

Backcountry campers must first secure boat transportation through the park's boat or plane concessionaires or by their own private vessel. Camping reservations are required in advance. For Del Norte, call (877) 444-6777 or visit www.recreation.gov. For Santa Rosa beachcamping, call (805) 658-5711.

Partner in Preservation: Channel Islands National Marine Sanctuary

The park has many partners that assist in preserving and protecting the Channel Islands. Together, we are a safeguard for cultural and biological diversity, preserving the islands' history and prehistory and protecting vital habitat for scores of marine and terrestrial plant and animal species. In addition, we provide for the enjoyment of these resources in such a manner that will leave them unimpaired for future generations. Please visit "Our Partners" at www.nps.gov/chis for a complete list of park partners.

One of these partners is Channel Islands National Marine Sanctuary. In 1980, the ocean wilderness surrounding Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands gained special protected status with the designation of Channel Islands National Marine Sanctuary. With boundaries extending six nautical miles around each island and encompassing 1,110 square nautical miles (about 1,470 square miles), the sanctuary protects important species, habitats, and maritime heritage resources, while balancing compatible commercial and recreational

activities. Sanctuary research, education, and resource protection programs collect data, study ecosystems, reach out to the community, and support public use and enjoyment of the rich and productive ocean environment. The sanctuary is an area of national significance because of its exceptional natural beauty and resources and it is part of a larger network of 13 national marine sanctuaries and one marine national monument that are both managed by the National Oceanic and Atmospheric Administration (NOAA).

In 2009, the sanctuary completed a new management plan, a multi-year blueprint for managing sanctuary waters. The plan includes regulation updates and nine action plans that guide how the sanctuary will ensure continued protection of this incredible marine ecosystem. Regulation updates are aimed at protecting marine habitats, sensitive species, water quality, and cultural and historic resources while continuing to allow public use and enjoyment. To view the full management plan and sanctuary regulations, please visit: <http://channelislands.noaa.gov/manplan/overview.html>

view.html

Contact Information:
Channel Islands National Marine Sanctuary
113 Harbor Way #150
Santa Barbara, CA 93109
(805) 966-7107

3600 S. Harbor Blvd. Ste. 111
Oxnard, CA 93035
(805) 382-6149

<http://channelislands.noaa.gov>



The sanctuary's research vessel *R/V Shearwater* serves as an important platform for scientists to study the MPAs around the Channel Islands.



Divers can get an up close view of marine life, such as this torpedo ray, in the sanctuary and park.



Kayaking is an exciting way to explore arches, sea caves, and shorelines within the sanctuary and park.

Channel Islands Marine Protected Areas

A network of Marine Protected Areas (MPAs) that restrict and/or prohibit harvest in the sanctuary, state, and park waters around the Channel Islands was established by NOAA and the California State Fish and Game Commission. These 13 MPAs cover 318 square miles (about 21 percent of the sanctuary) and protect and restore habitats, conserve biodiversity, provide a refuge for sea life, enhance recreational and educational opportunities, and help rebuild depleted fisheries. Nearly 80 percent of the sanctuary remains open to fishing in accordance with state and federal fishing regulations.

One type of MPA is a marine reserve, a new tool in marine ecosystem management, where all forms of take, such as fishing, are prohibited. Currently, less than one percent of the world's oceans and less than 0.01 percent of U.S. waters are designated as marine reserves.

Designation of Marine Protected Areas

The move to create MPAs around the Channel Islands began in 1998 when a local recreational fishing group raised concern about declining fish populations. In response, NOAA and the California Department of Fish and Game (CDFG) created a community group comprised of a variety of stakeholders, including, fisherman, divers, park and sanctuary personnel, and marine conservationists. This group met over a two-year period and integrated feedback from a science advisory panel, economists, and the public. The group agreed that MPAs would provide a good tool for protecting and restoring marine ecosystems, but did not agree on specific MPA boundaries and forwarded several proposals to CDFG and the Office of National Marine Sanctuaries. Based on input from the community group and scientists, the agencies developed a MPA network that connected

There are two types of MPAs in state, sanctuary, and park waters:

MARINE RESERVE (MR)

Prohibits all take of living, geological, or cultural resources. Scientific take may be permitted.

MARINE CONSERVATION AREA (MCA)

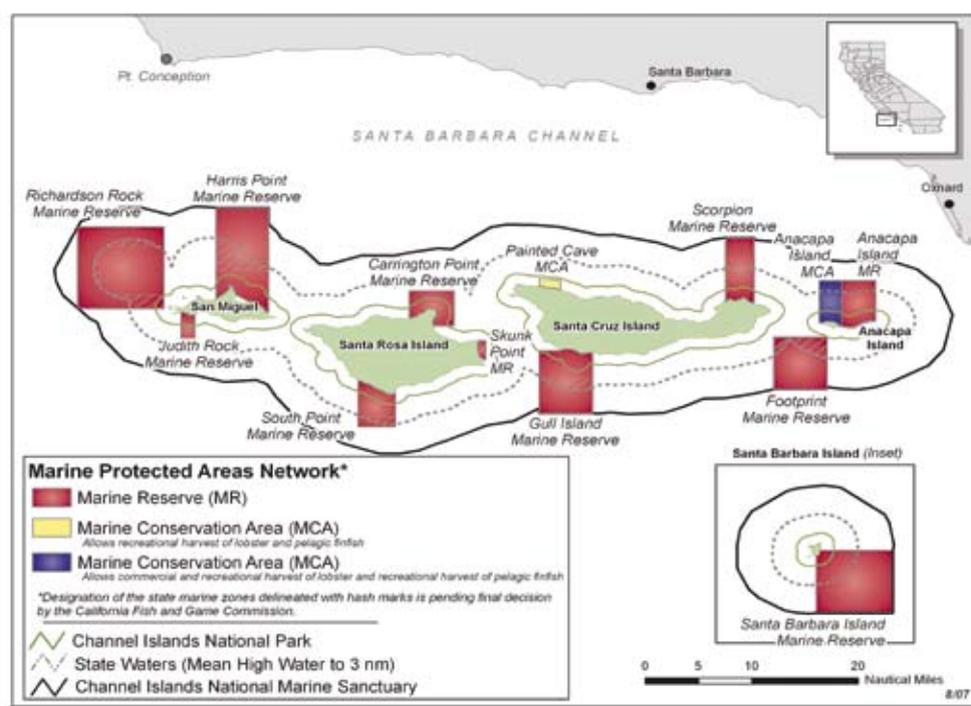
Prohibits all take of living, geological, or cultural resources, except: in the Anacapa MCA commercial and recreational harvest of lobster and recreational harvest of pelagic finfish¹ is allowed; and in the Painted Cave MCA recreational harvest of lobster and pelagic finfish is allowed. Scientific take may be permitted.

Diving, surfing, swimming, and boating are allowed within the MPAs but fishing is restricted as detailed above. Anchoring within and transit through MPAs with catch onboard is allowed, so long as fishing gear is stowed and not in use.

nearshore and deeper offshore waters including representative portions of each marine habitat, such as kelp, rocky reef, soft sediment and submarine canyons. The California State Fish and Game Commission approved this network in 2002 and the network was expanded by NOAA to include federal waters in 2007 (see map for details of Channel Islands MPA network).

Working Together—Monitoring, Outreach, and Enforcement

The sanctuary, park, state of California, U.S. Coast Guard, university partners, and the public are working together to monitor and enforce the Channel Islands MPAs and to develop and distribute information to enhance compliance. In February 2008, a special session focusing on a five-year review



of the state marine reserves was held as part of the California Islands Symposium. Invited speakers from the areas of education, enforcement, and ecological and socioeconomic studies summarized their efforts and findings. Studies by Channel Islands National Park and the Partnership for Interdisciplinary Studies of Coastal Oceans indicated that densities and biomass of harvested fish species are higher inside reserves compared to outside reserves. In addition, these studies found more and different kinds of fish inside reserves compared to outside. Studies of movement of tagged fish species showed that some are remaining in the reserves for significant portions of time, thereby gaining protection from the reserves.

Socioeconomic findings have shown that the number of recreational fishing charter boat trips has stayed fairly constant since MPAs

were established. The values of some commercial fisheries at Channel Islands (rock crab, spiny lobster, market squid, and red urchin) have increased since the designation of MPAs while the values of others (sea cucumber, California Sheephead and rockfish) have declined. Many of these changes were documented throughout California suggesting that they may be due to factors other than MPAs.

The California State Fish and Game Commission intends to review monitoring data from the Channel Islands every five years. Long-term ecological and socioeconomic monitoring at the Channel Islands is essential for managers to make informed decisions to sustain ocean resources and socioeconomic values.

Santa Cruz Island

According to legend, Santa Cruz Island was named for a priest's staff accidentally left on the island during the Portola expedition of 1769. A Chumash Indian found the cross-tipped staff and returned it to the priest. The Spaniards were so impressed that they called this island of friendly people "La Isla de Santa Cruz," the Island of the Sacred Cross. Today the protection and preservation of Santa Cruz Island is divided between The Nature Conservancy and the National Park Service. The Nature Conservancy owns and manages the western 76 percent of the island, while the eastern 24 percent is owned and managed by the National Park Service.

In its vastness and variety of flora, fauna, and geology, Santa Cruz Island resembles a miniature California. At over 96 square miles in size and the largest island in California, Santa Cruz contains two rugged mountain ranges; the highest peaks on the islands (rising above 2,000 feet); a large central valley/fault system; deep canyons with year-round springs and streams; and 77 miles of craggy coastline cliffs, giant sea caves, pristine tidepools, and expansive beaches. One of the largest and deepest sea caves in the world, Painted Cave, is found on the northwest coastline of Santa Cruz. Named because of its colorful rock types, lichens, and algae, Painted Cave is nearly a quarter-mile long and 100 feet wide, with an entrance ceiling of 160 feet and a waterfall over this entrance in the spring.

These varied landforms support more than 600 plant species in 10 different plant communities, from marshes and grasslands to chaparral and pine forests. There are 140 landbird and 11 land mammal species; three amphibian and five reptile species; large colonies of nesting seabirds, breeding seals, and sea lions; and other diverse marine animals and plants. Owing to millions of years of isolation, many distinctive plant and animals species have adapted to the island's unique environment, including the island scrub-jay and eight plant species found only on Santa Cruz and nowhere else in the world.

The island is also rich in cultural history with over 9,000 years of Chumash Native American Indian habitation and over 150 years of European exploration and ranching. Santa Cruz Island, known by the Chumash people as *Limuw* (translates to "in the sea"), was home to a dozen villages that housed over 1,000 people. Many of these islanders mined extensive chert deposits for tools and produced "shell-bead money," used as a major trade item by tribes throughout California. The largest village on the island as well as on the northern Channel Islands, *Swaxil*, occupied the area of Scorpion Ranch at the time of Spanish contact (1542). Large plank canoes, called *tomols*, provided transportation between the islands and mainland. Remnants of Chumash civilization can still be seen in thousands of shell middens on the island.

Remnants of the ranching era also can be seen throughout the landscape of the island. Adobe ranch houses, barns, blacksmith and saddle shops, wineries, and a chapel all attest to the many uses of Santa Cruz in the 1800s and 1900s. At the Scorpion Ranch adobe, the massive oven that produced bread for the entire island is still intact.



Smugglers Cove, Santa Cruz Island



Scorpion Anchorage, Santa Cruz Island



Island scrub-jay

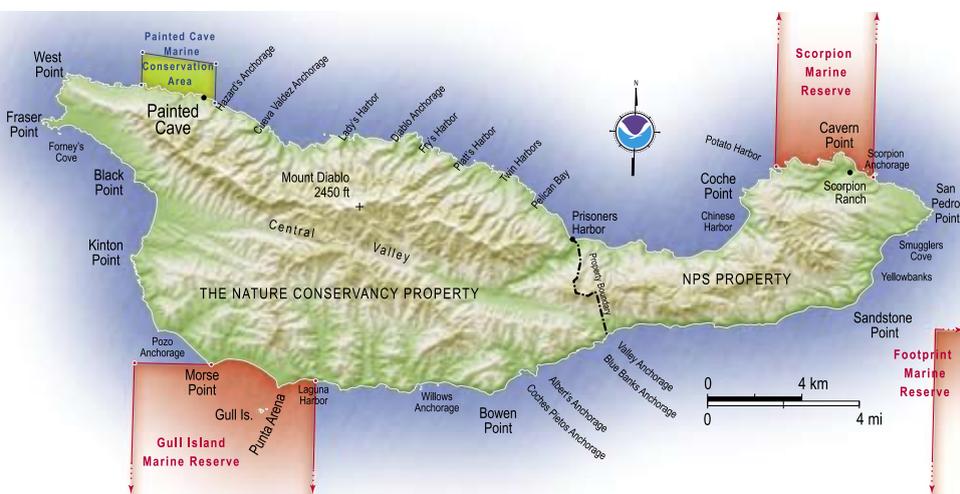
Things To Do

- One-day trips and short or long overnight camping trips. (Only one-day trips are offered to The Nature Conservancy property, including one of the best hikes in the park—along the coast from Prisoners Harbor to Pelican Bay.)
- Hiking options are unlimited with over 14,500 acres to explore on Eastern Santa Cruz Island.
- Great place for swimming, snorkeling, diving, and kayaking. Beach access is available at Scorpion Anchorage, Smugglers Cove and Prisoners Harbor.
- Shade is available in the campground.
- Birdwatchers will not want to miss the endemic island scrub-jay—only found on Santa Cruz Island and no other place in the world.

Refer to related articles for more information.

Island Facts

- Located in Santa Barbara County.
- Santa Cruz is California's largest island, almost three times the size of Manhattan. Approximately 24 miles long and up to six miles wide; 96 square miles; 62,000 acres.
- Average rainfall—20 inches. Temperature range—20° F to 100° F.
- Painted Cave is one of the largest known sea caves in the world.
- Diablo Peak (Devil's Peak) is the tallest peak on the Channel Islands at 2,450 ft.
- Santa Cruz has the greatest number of plant and animal species of all the Channel Islands.



New Visitor Center and Restoration Film

On April 6, 2009, The National Park Service (NPS) announced the opening and dedication of the Scorpion Ranch Visitor Center and additional exhibits located on Santa Cruz Island within Channel Islands National Park. In addition, the NPS released a new film entitled “Restoring Balance” about the restoration of Santa Cruz Island.

The visitor center will serve as an information, orientation, and interpretive center for over 50,000 visitors to Scorpion Valley each year—the most visited location among the five islands that make up the park.

“Creation of a visitor center at Scorpion Ranch provides a much needed, convenient facility to orient visitors to Santa Cruz Island,” said Channel Islands National Park Superintendent Russell Galipeau. “They will learn about the island’s tremendous biodiversity and rich cultural history, as well as current resource issues.”

An orientation kiosk welcomes visitors to the national park with information panels and a topographic relief map to acquaint them with Santa Cruz Island. Displays highlight a variety of recreational opportunities, safety, and suggest ways to limit impacts on wildlife.

Near the orientation kiosk is the historic

blacksmith shop that features the tools of the blacksmith trade, stories of island ranching, and information about some of the over-100-year-old ranch buildings still found in the Scorpion Valley.

The new visitor center—located in the historic Scorpion ranch house, a large masonry building constructed in the 1886 that served as the dining room, kitchen, and dormitory for the ranch hands—has exhibits that fill two rooms of the ranch house and an adjacent bakery.

The visitor center exhibits include large photo murals on the Island Chumash, island isolation, and the marine environment. Audio video features include the turbulent geologic history of the Channel Islands, the Chumash birthplace legend and seafaring lifestyle, intimate first-person accounts of island ranching, and footage of historic sheep shearing and restoration efforts.

The ranch kitchen contains the island’s original stove and cabinets and is filled with artifacts, historic photographs, and other materials donated by former Santa Cruz Island landowner John Gherini. Instrumental in planning the exhibits, Gherini shares family stories of spending summers working at the



island ranch, building fences, herding sheep, and sacking wool through a replica of the island phone system.

The bakery next door completes the displays, interpreting the finely crafted masonry bake oven—a reminder of the bread baked daily as a staple of the Italian and French immigrants who worked on the island. The displays also describe how the bakery is now important habitat for the endangered Townsends big-eared bat.

The visitor center and surrounding exhibits were made possible through recreational fees collected at national park sites and designated by Congress to be used to improve public facilities in national parks.

The new film, “Restoring Balance,” is a high-definition video, produced by the Ocean



Channel, that documents the Santa Cruz Island Restoration Program—a multi-year program by the NPS and The Nature Conservancy to help restore balance to Santa Cruz Island’s naturally functioning ecosystems. The 20-minute film highlights this complex restoration program including the removal of golden eagles, reintroduction of bald eagles, captive breeding of island foxes, removal of sheep, eradication of pigs, and the stabilization of sacred Chumash cultural sites.

This film may be viewed at the Channel Islands National Park visitor center in Ventura or online at <http://www.nps.gov/chis/photosmultimedia/multimedia.htm>. A 5-minute version of the film may also be viewed in the new visitor center at Scorpion Ranch.

Hiking Information

Destination (from Scorpion beach)	Distance (miles, round-trip)	Difficulty	Brief Description*
Historic Ranch	.5	Easy	View the historic Scorpion Ranch complex.
Cavern Point	2	Moderate	Magnificent coastal vistas and whale viewing.
Potato Harbor	4	Moderate	Spectacular coastal views. No beach access.
Scorpion Canyon	4 (loop)	Moderate to strenuous	A scenic loop hike that includes steep canyon walls and a chance to see the unique island scrub-jay.
Smugglers Cove	7	Strenuous	An all-day hike with beach access at Smugglers Cove.
Montañon Ridge	8	Strenuous	For experienced, off-trail hikers. Great views.
From Smugglers Cove:			
Smugglers Canyon	2	Moderate to strenuous	Opportunities to view native island vegetation. Be prepared for uneven terrain and loose rock.
Yellowbanks	3	Moderate	Off-trail hike that leads to an overlook. No beach access.
San Pedro Point	4	Moderate	For experienced, off-trail hikers.
From Prisoners Harbor:			
Prisoners Harbor	.25 –.5	Easy	View the historic Prisoners Harbor area and search for the island scrub-jay.
Del Norte Camp	7	Strenuous	Follow the rugged Del Norte trail east to the back-country camp.
Navy Road-Del Norte Loop	8.5	Strenuous	Route includes the Navy Road and the Del Norte Trail. Good views.
Chinese Harbor	15.5	Strenuous	A long hike that ends at the only beach accessible by land on the isthmus.
China Pines	18	Strenuous	Explore the Santa Cruz Island pine grove.
Montañon Ridge	21	Strenuous	For experienced, off-trail hikers. Must be able to read topographic maps.
Pelican Bay	4	Moderate to strenuous	This trail may only be traveled by those who have obtained a permit in advance from The Nature Conservancy or are accompanied by Island Packers (a boat concessionaire) staff.

* No hiking is allowed beyond the national park boundary onto The Nature Conservancy property. Private boaters, please see page 21 for landing information. The boundary is the property line (marked by a fenceline) between Prisoners Harbor and Valley Anchorage.

• Before hiking, please refer to more detailed descriptions in the hiking guides available at island bulletin boards or mainland visitor center.

The Island Scrub-Jay: An Island of Their Own

BY LUKE CALDWELL

Although little is known about the Island scrub-jay, it captures many people’s imaginations. Santa Cruz Island is currently the only place to find this endemic jay, but is thought to have once inhabited three other nearby islands— Santa Rosa, San Miguel, and Anacapa. Since they went extinct on the other islands, it’s important to know the jay’s requirements for long-term survival.

Santa Cruz Island has many species of plants and animals found nowhere else on Earth, but this bird stands out as a great example of the natural treasures the islands contain. Genetic analysis shows the island scrub-jay became a distinct species about 150,000 years ago. Even though island scrub-jays look superficially like their mainland relatives, they have a few readily apparent differences: they are brighter blue and larger and have a proportionally burlier bill, allowing them to be one of the top terrestrial predators on Santa Cruz. They eat just about anything, including insects, reptiles, mice, and birds’ eggs.

Island scrub-jays are monogamous and may stay with a mate for their entire lives. Each pair vigorously defends its territory of a few hectares and rarely leaves it. Both the male and the female help build nests three to forty feet high in trees and shrubs. They use small oak branches to form the cup of the nest, which the parents line with grass and small roots. Females incubate three to five eggs for about 20 days. While the female sits on the

eggs, the male spends his time hunting and defending the nest from hawks, foxes, and other predators. Observations suggest that the more time parents spend near their nest, the higher their chances of defending against nest predators.

After the eggs hatch, both parents spend 23 days feeding, defending, and caring for their nestlings. This is a long period, and ongoing research indicates that only about one-third of the nests are successful in fledging young. However, if a jay can make it through the gauntlet of predators to live into their second year, it’s likely to live for more than 20 years.

There is still have much to learn about the ecology and management of the island scrub-jay. This jay’s tiny range and resulting small population size make it especially vulnerable to natural disasters such as a catastrophic fire, to disease such as West Nile Virus, and to habitat alteration due to climate change. Currently, research is being conducted on the jay’s breeding biology, population status, diet, and disease monitoring. This work brings a better understanding of the needs and challenges facing this unique species. As the island’s vegetation continues to recover from 150 years of grazing it will be important to monitor how these changes impact these birds.



Michumash: The Island Chumash



Robert Schwenmer, CINMS

2004 Chumash Maritime Association channel crossing to Santa Cruz Island

Traditionally the Chumash people lived in an area extending from San Luis Obispo to Malibu, including the four Northern Channel Islands. Today, with the exception of the islands, Chumash people live in these territories and areas far beyond. Approximately 148 village sites have been identified, including 11 on Santa Cruz Island, eight on Santa Rosa Island, and two on San Miguel Island. Due to the lack of a consistent water source, Anacapa and Santa Barbara Islands was likely inhabited on a seasonal basis. A true maritime culture, the Chumash hunted and gathered natural resources from both the ocean and the coastal mountains to maintain a highly developed way of life. Today we have evidence of more than 13,000 years of human occupation of the islands, highlighted by the discovery of Arlington Springs Man. Among the oldest dated human remains in North America, radio-carbon dating indicates he lived approximately 13,000 years ago.

What's in a Name: *Michumash* is the word from which the name Chumash is derived. Roughly translated, *Michumash* means “makers of shell bead money” and is the term mainland Chumash used to refer to those inhabiting the islands.

Achum, or shell bead money, was “minted” by the island Chumash using small discs shaped from olivella shell and drills manufactured from Santa Cruz Island chert. The shell bead money was exchanged with mainland villages for resources and manufactured goods that were otherwise unavailable on the islands.

Over time, many Chumash place names have been altered to reflect the uses or perceptions of various other cultures. Anacapa Island, however, retains a name closest to the Chumash *Anyapakh*, meaning “mirage.”

Santa Cruz Island, known by the Chumash people as *Limuw*, translates to “in the sea,” while Santa Rosa Island, or *Wi'ma*, means “redwood driftwood.” Though no translation to modern English is known, San Miguel Island is referred to as *Tuqan*.

Limuw—A Story of Place: *Hutash*, the Earth Mother, created the first Chumash people on the island of *Limuw*, now known as Santa Cruz. They were made from the seeds of a Magic Plant.

Hutash was married to the *Alchupo'osh*, Sky Snake, the Milky Way, who could make lightning bolts with his tongue. One day he decided to make a gift to the Chumash people. He sent down a bolt of lightning, and this started a fire. After this, people kept fires burning so they

could keep warm and cook their food.

In those days the Condor was a white bird. But the Condor was very curious about the fire he saw burning in the Chumash village. He wanted to find out what it was. So he flew very low over the fire to get a better look. But he flew too close; he got his feathers scorched and they turned black. So now the Condor is a black bird, with just a little white left under the wings where they did not get burned.

After *Alchupo'osh* gave them fire, the Chumash people lived more comfortably. More people were born each year, and their villages got bigger and bigger. *Limuw* was getting crowded. And the noise people made was starting to annoy *Hutash*. It kept her awake at night. So, finally, she decided that some of the Chumash people had to move off the island. They would have to go to the mainland, where there weren't any people living in those days.

But how were the people going to get across the water to the mainland? Finally, *Hutash* had the idea of making a bridge out of a *wishtoyo* (rainbow). She made a very long, very high rainbow that stretched from the tallest mountain on *Limuw* all the way to *Tzchimoos*, the tall mountain near Mishopshno (Carpinteria).

Hutash told the people to go across the rainbow bridge and fill the whole world with people. So the Chumash people started to go across the bridge. Some of them got across safely, but some people made the mistake of looking down. It was a long way down to the water, and the fog was swirling around. They became so dizzy that some of them fell off the rainbow bridge, down through the fog into the ocean. *Hutash* felt very bad about this, because she told them to cross the bridge. She did not want them to drown. So, to save them, she turned them into dolphins. Now the Chumash call the dolphins their brothers and sisters.

The Tomol: Chumash society featured an upper class of chiefs, shamans, boat builders, and artisans; a middle class of workers, fishermen, and hunters; and a lower class of the poor and outcast.

The brotherhood of the *tomol*, an elite group of boat builders in the upper echelons of Chumash society, constructed the plank canoe, or *tomol*, which is the oldest example of ocean watercraft in North America.

Preferably constructed of redwood, which drifted down from northern California and was collected on *Wi'ma* (Santa Rosa Island), the *tomol* ranged from eight to 30 feet in length and held three to 10 people.

The *tomol* was constructed of a single piece

of wood for the floor, with three or four rows of planks. Milkweed, yucca, dogbane, or sinew from deer were used as cordage to tie the *tomol* together. *Yop*, a glue consisting of a mixture of pine pitch and asphaltum was used to seal the space between boards. Sharkskin was used for sanding, red ochre for staining, and abalone for inlay and embellishment.

The use of the *tomol* allowed for an elaborate trade network between the islands and mainland, between natives and non-natives, and amongst the island communities themselves.

Today the Chumash Maritime Association, in partnership with Channel Islands National Marine Sanctuary and Channel Islands National Park, continues the tradition of the *tomol*. In September 2001 paddlers rowed the *tomol* *'Elye'wun* (swordfish) across the Santa Barbara Channel, completing the first channel crossing in more than 125 years.

Missionization: The Spanish were the first Europeans to visit the Chumash in 1542. Juan Rodriguez Cabrillo was impressed by the friendliness of the Chumash people who he encountered. However, along with European contact came European diseases and conflict.

Even relatively minor illnesses, such as the common cold, were devastating to the previously unexposed people of North America, and many Chumash people succumbed to disease.

In an attempt to convert the native population to Christianity and secure the area for Spain against the Russian and Aleut fur traders, the Chumash people were removed from their traditional lands. The Mission Era (1772—1822) was marked by the construction of five Spanish missions in Chumash territory and continued outbreaks of disease, further decimating the population.

The mission system depended on the use of native labor to propel industry and the economy. The social organization of Chumash society was restructured, leading to the erosion of previous power bases and further assimilation.

When California became part of Mexico, the government secularized the missions and the Chumash sank into the depths of poverty. By the time of the California gold rush, the Chumash had become marginalized, and little was done to understand or help the remaining population.

***i sari wa*; It Will Continue Indefinitely:** Today Chumash community members con-

tinue to move forward in their efforts to revive what was becoming a forgotten way of life. Much has been lost, but the Chumash take pride in their heritage and culture.

With a current population nearly 5,000 strong, some Chumash people can trace their ancestors to the five islands that now constitute Channel Islands National Park. This rich, continuing history is a testament to the Chumash people and their island home.

Although the Chumash reservation in Santa Ynez represents the only federally recognized band, it is important to note that several other Chumash groups exist. The National Park Service invites you to visit Channel Islands National Park, Santa Monica Mountains National Recreation Area, and other local areas to learn more about the Chumash and other Native American cultures. For more information please visit:

Channel Islands National Park
www.nps.gov/chis

Chumash Indian Tribal Elders Council
www.santaynezchumash.org

Santa Barbara Museum of Natural History
www.sbnature.org/research/anthro/chumash/index.htm

Chumash Indian Museum
www.chumashindianmuseum.com

Tomol Crossings Continue

Although the historic Brotherhood of the Tomol disbanded in 1834, a contemporary group built *Helek*, which means peregrine falcon, in 1976 based on ethnographic and historic accounts of *tomol* construction. It was the first *tomol* built in 142 years, and the modern paddlers traveled from San Miguel Island to Santa Rosa Island and finally to Santa Cruz Island.

Twenty years later, the Chumash Maritime Association completed a 26-foot-long *tomol* which they named *'Elye'wun* (pronounced “El-E-ah-woon”), the Chumash word for swordfish.

On September 8, 2001, *'Elye'wun* made the historic crossing from the mainland to Santa Cruz Island. Over 150 Chumash families and friends gathered to greet the *tomol* and paddlers on the beaches of Santa Cruz.

Three years later, on September 11, 2004, *'Elye'wun* again crossed the Channel to Santa Cruz Island, this time greeted by more than 200 Chumash and American Indians at the historic Chumash village of *Swaxil*, now known as Scorpion Valley. The 21-mile trip took over ten hours. A crew of Chumash youth aged 14 to 22 joined the paddlers, a significant accomplishment for the next generation of Chumash leaders.

Since then this has become an annual crossing, taking place every September. Members of the Chumash community continue to celebrate their heritage and culture through this event.

Centuries ago, the *tomol* was used to connect different island Chumash groups with each other and the mainland. Today, it links past generations of Chumash with the present-day Chumash community.

Visit the Chumash Maritime Association at www.chumashmaritime.org for more information.

Sukinanikey: To Bring Back to Life

By JULIE TUMAMAIT, Chumash Elder

Some of my fondest memories are of the times I spent on the Ventura pier fishing, or at least trying to fish, with my father Vincent Tumamait. I was way too young, 8 or 9 years old, but he gave me a little green fishing pole and my first catch left us laughing in delight as it slipped out of my little hands back into the water. As I stood on that pier my eyes wandered to those large land masses out in the ocean. I never asked anyone what they were; I am not really sure what I would have asked. I would just admire their beauty, especially on a clear day. I have always known that I am a Chumash Native, but exactly what that meant to me at that time, I can't say. I did wonder if there were people living out there. The idea that I come from a long line of descendants, over 13,000 years worth, never crossed my mind. I now know that I descend from the Chumash villages of *Nanawani*, *Swaxil*, *Lu'upsh*, and *Mashchal* on Santa Cruz Island on my father's father's side, and from the village of *Hichimin* on Santa Rosa Island on my father's mother's side. Both of these families ultimately moved over to the mainland to coastal and interior villages.

Decades after my fishing trips, the opportunity to visit Santa Cruz island presented itself. It was a birthday celebration for Anthony Romero. His daughters Kimberly and Jacy came with him. I was there with my father Vincent and brother Patrick. Ernestine De Soto and her daughter Gina came as well and the trip was arranged by our dear friend Kathy Conti at the Santa Barbara Museum of Natural History. We all sat by the caves at Orizaba singing and praying. We thought that it had probably been at least 150 years since that many Chumash people had been together on the island.

Looking at those caves along the coast of

Santa Cruz Island reminded me of the story of the swordfish people (*Elye'wun*). Old men with long white beards and bushy eyebrows that hung over their eyes determined the fate of a greedy fisherman. A long, long time ago, a man from the mainland wanted to go fishing on the island. He invited along a young Chumash boy from the Ventura area and told him he knew of a place where the abalone grew so thick on the rocks that they touched each other. Despite the boy's objections, the man insisted that the boy take all the abalone. The young Chumash boy knew immediately when he saw the *Elye'wuns*, one twirling the bullroarer overhead and the next playing a flute. Both sat in the opening of a cave; they seemed unaffected by the waves crashing over them. The boy knew that the fisherman had enough of a catch of abalone, but the fisherman wanted more, demanded more, and the boy obeyed. Upon returning home the boy went to his grandmother and told her of the sighting. She gave him a drink of the *toloache* (datura) to counteract the effects of the encounter. The fisherman drowned on the way home, and that is all. Today many agencies and volunteer organizations are working to protect the marine habitat, just as the *Elye'wuns* did in the days of old. Even today I remember this story as people try to take more than they need. *Hutash* (Mother Earth) never forgets and has often reminded us with her vengeance.

Each time I return to the islands I can see them returning to their natural conditions as non-native plants and animals are removed. I have seen the island since the sheep were removed and I am seeing the pine forest return now that the pig population is being reduced. *Sukinanikey*: to bring back to life; this is what is happening to the islands. This rebirth also

marks the return of Native Peoples to our home: to be able to feel the spirit of the ancestors, to bless the return of the bald eagles, to realize what devastation DDT has had on the natural balance of the world.

We are watching the return of the bald eagle to the islands, and with the removal of the golden eagle the small and beautiful island fox may have a chance to survive. We hold the eagle in such great reverence. We see him causing the phases of the moon with his wings as he holds up the upper world, we see him as *Wot* of all the winged people. His feathers are used in sacred regalia and his down feathers are woven into cordage for ceremony. We have heard of red Ants being wrapped up in the feathers of the eagle and used in an ant curing ceremony. We sing and dance to the eagle. Each one of these great birds has its place in the world and we are helping to restore that delicate balance.

Every one of my trips to the islands has been unique and special. At the passing of my father Vincent, in 1992, I decided to finish his presentations of Chumash songs and stories. He had been scheduled to welcome a group of native people at the Santa Barbara Museum of Natural History. Soon after that welcome program, I was asked to go to Santa Cruz Island with The Nature Conservancy for a few days to do a program for the guests who came with us. Although I was overwhelmed emotionally, I went; I was filled with anxiety during the boat trip over. The boat stopped at Orizaba to see the Painted Cave and I asked if I could have some private time. While I sat and prayed for my Daddy to be with me to help me through this time, I brought out the ceremonial pipe that was given to me by my Elder, hoping the smoke would take my prayers skyward. As I got up to leave, I noticed a small but very fat



wooly black bear caterpillar next to me. I got up to leave, being careful not to harm it, and as I turned to look for it, it had vanished. Three days later as I was in my room preparing my program, I found that wooly black bear on the floor. I picked him up and carried him out to the small island museum. The former caretaker's room now holds Chumash artifacts and pictures of my father, my grandfather and my great-grandfather. I knew in my heart that that little caterpillar was my father telling me that it would be all right and that he would always be with me. Since that time I know that he is with me and I honor his presence.

The greatest gift that I can give to my ancestors is to go back to the islands and sing to them, and to repeat the stories of teachings, so that the ancestors will know that we have not forgotten and that "it will continue indefinitely." I SARI WA

Kelp Forest Monitoring

(continued from page 7)

and kelp grazing by purple urchins appeared to be kept in check through competition and predation.

Following the establishment of the Channel Islands marine reserve network, the National Park Service (NPS) doubled the number of kelp forest monitoring sites to better test the effects of the reserves. The new monitoring sites are paired inside and outside four of the 13 Marine Protected Areas to allow comparison. Data from these sites will allow scientists to address whether or not the current network of marine reserves are an effective tool for biological conservation in the Channel Islands.

Although scientists expect it to take a long time to detect significant change in the marine reserves due to the inherent variability of the kelp forest ecosystem, a five-year review in 2008 of data demonstrated some positive trends in the new marine reserves including:

- Greater overall number of fish inside reserves.
- Larger average size of some species like kelp bass and spiny lobster inside marine reserves. In many marine species, larger animals produce disproportionately more eggs, contributing more offspring to the next generation.

Managing Ocean Parks

It is widely recognized that ocean resources are declining worldwide. Major threats to ocean systems include pollution, overdevelopment, ocean warming, and overfishing.

In some parks, like Channel Islands, marine reserves have been established in an effort to reverse negative trends in fish communities and to restore ecosystem health. The NPS is required to use the best available science to evaluate the performance of marine reserves in its parks and recommend further management actions. Programs like the Channel Islands Kelp Forest Monitoring Program provide information needed to address important questions like: 1) Will marine reserves reverse declines and restore ecosystem health?; and 2) Are other actions needed to protect marine ecosystems?

Kelp forests are an important part of California's economic, cultural, and natural history. By protecting the biological diversity of its kelp forests, Channel Islands National Park and its partners are striving to prevent further losses of critical marine habitats and allow for recovery of ocean resources.



Robert Schwemmer, CINIMS



Dan Richards

How do National Parks Help Conserve Ocean Resources?

In ocean parks, the National Park Service manages and conserves the nation's maritime heritage on behalf of the American people, protecting and—in some cases restoring—biodiversity to prevent loss of marine habitat and ecosystem integrity.

Conservation Through Cooperation

Channel Islands National Park was established in 1980 to protect the five northern Channel Islands and their offshore waters out to one nautical mile. Nearly half of the park lies underwater and encompasses one of the most diverse marine environments in the world. The living marine resources in Channel Islands National Park are managed by the state of California. The National Park Service and the National Oceanic and Atmospheric Administration are charged with monitoring ecosystem health and recommending actions to protect the systems. Fishing is allowed

in park waters, consistent with state regulations. When existing policies do not succeed in maintaining fish population size and community structures, information from park science programs helps scientists and managers design new strategies to protect the marine ecosystems.

An important part of conservation at the Channel Islands is monitoring the health of the park's marine environment.

The protection and stewardship of marine resources requires baseline information, which can then be used to understand how an ecosystem naturally varies over time. Monitoring allows scientists and resource managers to detect significant changes in the ecosystem and to assess the success of various management actions.

Santa Rosa Island

Santa Rosa Island illustrates the processes of a national park in development. Though the island was included as part of Channel Islands National Park upon the park's inception on March 5, 1980, it wasn't until December 1986 that the island came under the ownership of the National Park Service. Visitation is welcome throughout the year. However, a private hunting operation for introduced deer and elk under a special use permit limits access to parts of the island for several months.

Located 40 nautical miles from the Channel Islands National Park visitor center in Ventura, Santa Rosa is the second largest island in California at approximately 53,000 acres in size. The island's relatively low profile is broken by a high, central mountain range, rising 1,589 feet at its highest point. Its coastal areas are variable, ranging from broad sandy beaches gently sloping toward a dynamic ocean to sheer cliffs plunging toward the turmoil of a sea intent on changing the contour of the land.

As on its larger neighbor, Santa Cruz Island, these varied landforms support a diverse array of plant and animal species. About 500 plant species can be found within nine plant communities, including six plant species which are found only on Santa Rosa and nowhere else in the world. One of these species, the Santa Rosa Island subspecies of Torrey pine, is considered one of the rarest pines in the world—the last enduring members of a once widespread Pleistocene forest. A remnant, mainland subspecies of Torrey pine also can be found near La Jolla, California, at Torrey Pines State Reserve. Santa Rosa Island also hosts over 100 bird and three mammal species (including the island's largest native mammal, the endemic island fox); two amphibian and three reptile species; and colonies of seabirds, seals, and sea lions.

Remains of an ancient endemic species, the pygmy mammoth, have been uncovered on Santa Rosa, along with Santa Cruz and San Miguel Islands. These miniature mammoths, only four to six feet tall, once roamed island grasslands and forests during the Pleistocene. The fossil skeleton discovered on Santa Rosa Island in 1994 is the most complete specimen ever found.

Along with extensive paleontological resources, Santa Rosa Island has rich archeological resources. Home to the Island Chumash until approximately 1820, *Wima* (as the Chumash refer to the island) contains thousands of significant and federally protected archeological sites. Archeological investigations on the island have enabled archeologists to construct a more complete picture of Chumash life on the islands. Radiocarbon dating on some of these sites indicates that humans have been using the island for more than 13,000 years.

Others have come to the island during more recent centuries to exploit its rich resources, sometimes making it their home. In addition to the native Chumash, European explorers, Aleut sea otter hunters, Chinese abalone fishermen, Spanish missionaries, Mexican and American ranchers, and the U.S. military all have left their mark on the Santa Rosa landscape. Visitors can see relics of these occupations in remnants of fishing camps, water troughs and fence lines, the pier where cattle were loaded and unloaded since 1901, buildings and equipment of the historic Vail and Vickers ranch at Bechers Bay, remains of the military installations, and a great diversity of sites to be discovered all around the island.

Things To Do

- One-day trips, multi-day boat trips and overnight camping trips (minimum stay is generally 3 days—Friday to Sunday).
- Be prepared for adverse weather.
- Backcountry beach camping is available during certain times of year.
- Hiking options are unlimited with over 54,000 acres of rugged peaks, magnificent canyons, and beautiful beaches.
- Due to high incidence of strong winds, swimming, snorkeling, diving, and kayaking are limited and recommended for the experienced visitor only.
- Despite the wind, Santa Rosa offers exceptional beach walking on white sand beaches. Access to one of the best beaches, Water Canyon Beach, is just over a mile from the pier in Bechers Bay and just down canyon from the campground.

Refer to related articles for more information.

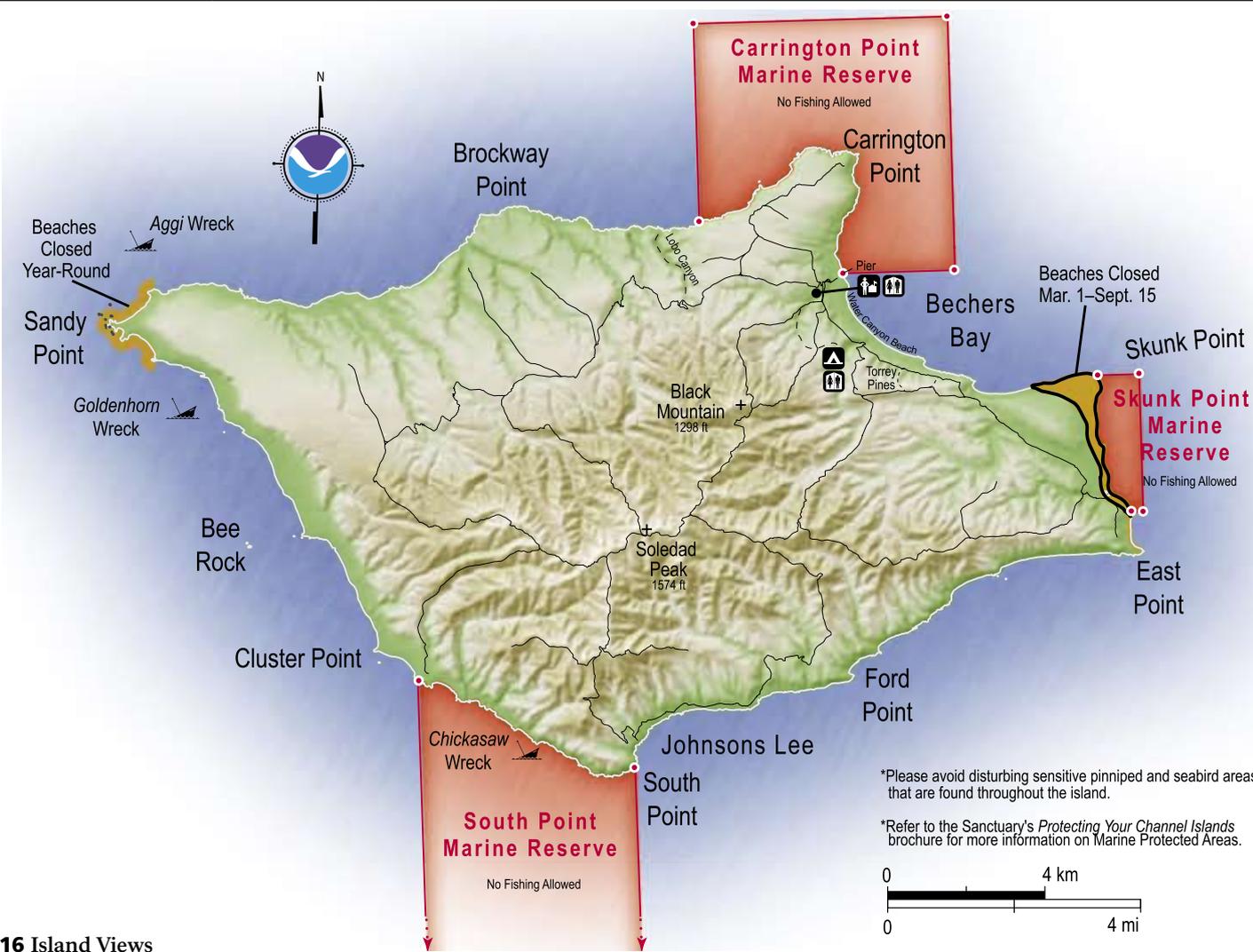
Island Facts

- Located in Santa Barbara County.
- Approximately 15 miles wide by 10 miles long; 84 square miles; 53,000 acres.
- Santa Rosa Island is 26.5 miles from the nearest mainland, three miles east of San Miguel Island, and six miles west of Santa Cruz Island.
- Average rainfall is 15 inches per year.
- Five endemic plant species occur only on Santa Rosa Island.
- Santa Rosa Island is home to only 3 native terrestrial mammals—the island fox, spotted skunk, and deer mouse. They are all endemic to the Channel Islands.
- Reptiles and amphibians include the gopher snake, alligator lizard, western fence lizard, Pacific tree frog, and slender salamander.

Hiking Information

Destination (from pier)	Distance (miles, round-trip)	Difficulty	Description
Water Canyon beach	2	Easy	If the wind is not too strong, this is a wonderful two-mile-long white sand beach to explore.
East Point	12	Strenuous	A beautiful coastal hike with opportunities to explore the Torrey pines and unrestricted beaches.
Lobo Canyon	13	Strenuous	Spectacular canyon with wind and water sculpted sandstone cliffs, a stream, and native plants.
Torrey Pines	5	Moderate	View the Torrey pines and get great views from the top of the grove.
Black Mountain	8	Strenuous	Great views (weather permitting) of Santa Rosa, San Miguel, Santa Cruz, and the mainland.

- Please respect the privacy of the ranching operation by following the signed path from the pier through the ranch area.
- Each year for a few months, Vail & Vickers operates a private hunt for stocked deer and elk. During these hunting periods, hiking may be restricted in certain areas. Please check with the ranger before hiking and be aware of the hunting operation.



Tim Hauf
Torrey pines, Bechers Bay



Tim Hauf
Historic barns (1870s), Santa Rosa Island



Bill Faulkner
1994 excavation of pygmy mammoth

*Please avoid disturbing sensitive pinniped and seabird areas that are found throughout the island.

*Refer to the Sanctuary's *Protecting Your Channel Islands* brochure for more information on Marine Protected Areas.

Recovering Endemic Plants of the Channel Islands

BY KATHRYN MCEACHERN, Senior Plant Ecologist, USGS

At the California Channel Islands, off the state's southern coast, cold waters from the north mix with warmer waters from the south. Never connected to the mainland, each of the eight Channel Islands, developed unique floras as colonizing plants adapted to their new island homes. This part of California is one of only five Mediterranean climate regions in the world, characterized by hot, dry summers and cool, wet winters. Thus, the islands support a truly unusual assemblage of plants and animals found nowhere else.

The northern five islands comprise Channel Islands National Park, established by Congress in 1980. Programs to protect the islands' flora and fauna and restore habitat began shortly after the park's creation. The park islands support 75 endemic plant taxa, 14 of which are listed as threatened or endangered species.

From the beginning, the restoration of the Channel Islands was a daunting task. For about 150 years, these islands had been used for ranching, and large areas of native scrub and woodland were converted to stands of non-native annual grasses. An important first step was the removal of non-native grazing animals from the islands. This task, nearly complete, is a major step toward recovery.

For the last decade, U.S. Geological Survey (USGS) research has focused on gaining the scientific knowledge needed for recovering the listed plant taxa, searching for remaining populations, sampling their habitats, monitoring population changes and distribution, and conducting recovery experiments. Our research approach has asked three basic questions:

- Where are the listed plants found?
- How are their populations doing?
- Are there threats that we can identify and do something about?

We use the answers to develop recovery actions along with our partners, the National Park Service, the Santa Barbara Botanic Garden, the University of California Reserve System, the U.S. Fish and Wildlife Service, and The Nature Conservancy.

The 14 listed plant species span a range of life histories, from tiny annuals that complete their life in one year to slow-growing shrubs that can live for decades. Although they differ vastly in stature and longevity, they have all had to contend with the same environmental challenges. For example, each of the listed species in the unique conditions found on the Channel Islands. The ranching that had been practiced for decades before establishment of the park changed their environment, reducing their populations and restricting them to a few small patches of the habitat.

The island endemic plants did not evolve mechanisms for coping with the grazing and trampling of large grazing animals. Invasive plants, intentionally introduced for forage and crops or accidentally brought to the islands, became widespread. Most of the endemic plants were unable to cope with the combination of grazing impacts and aggressive invasive species, and these natives became trapped in ever-shrinking habitats. Ultimately, they became endangered because they were reduced to a very low number of populations with only a few plants each that were isolated from one another.



Katie Chess/USGS

Santa Cruz Island lace pod

Almost all of these endangered plants grow best in shaded locations, or in places with substantial amounts of fog, such as coastal bluffs or terraces. Climate change is shifting these moisture patterns, with the result that a few of the endangered taxa are not able to reproduce as well as before. The effects of these ecological changes—grazing, invasive species, and climate change—can be seen in the listed plants today. However, our monitoring and research results are showing us ways to help them recover, now that non-native animals are being taken off the islands and we have begun to control invasive plant species. Our goal is to help the native plants reoccupy enough of their former ranges and grow in population size so that they can become resilient enough to cope with continuing environmental challenges, such as those anticipated with climate change.

The good news for these rare Channel Island plants is that the raw material for recovery is still there. Most rare plant populations known earlier in the 1900s still persist, even though they are small. Their habitats are usually dominated by more common native plants, some of which appear to be expanding, thereby creating additional shaded habitat for these rare plant species. Our studies show that most of the endemic species produce seeds that germinate readily, and we have found ways to encourage more seed production by using hand pollination or by weeding competitive, non-native plants. Some native plants are able to expand on their own as habitats recover.

Another successful recovery technique has been to find suitable but unoccupied habitats for many of the endangered plants. That enables us to “jump start” recovery by establishing new populations in places where it might take years for these plants to colonize on their own. So far, we have had good success developing new populations of two species from seeds and cuttings. We have also documented that existing populations of a few native plants have expanded soon after non-native animal removal. We have high hopes that ecosystem recovery spurred by the non-native animal removal programs will stimulate recovery of these endemic plants, and we are developing ways to help those species that have problems recovering on their own. USGS research is guiding rare plant management in the Channel Islands National Park, and together with our partners, we are translating our research results into successful recovery actions.

Article courtesy of USGS “Endangered Species Bulletin” Fall 2008.

Listed Plants of Channel Islands National Park

Taxon	Status	Total populations	Islands*
Herbaceous Annuals			
Hoffmann's slender-flowered gilia (<i>Gilia tenuiflora</i> ssp. <i>hoffmannii</i>)	E	2	SRI
Santa Cruz Island chicory (<i>Malacothrix indecora</i>)	E	6	SCI, SRI, SMI
Island malacothrix (<i>Malacothrix squalida</i>)	E	1	SCI
Island phacelia (<i>Phacelia insularis</i> var. <i>insularis</i>)	E	1	SRI, SMI
Santa Cruz Island lace pod (<i>Thysanocarpus conchuliferus</i>)	E	8	SCI
Herbaceous Perennials			
Hoffmann's rock cress (<i>Arabis hoffmannii</i>)	E	5	SCI, SRI, (AI)
Succulent Perennials			
Santa Cruz Island live-forever (<i>Dudleya nesiotica</i>)	T	1	SCI
Santa Barbara Island live-forever (<i>Dudleya traskiae</i>)	E	10	SBI
Small Shrubs			
Soft-leaved paintbrush (<i>Castilleja mollis</i>)	E	2	SRI
Sea-cliff bedstraw (<i>Galium buxifolium</i>)	E	8	SCI, SMI, (SRI)
Island rushrose (<i>Helianthemum greenei</i>)	T	36	SCI, SRI, SCT
Full Shrubs			
Santa Rosa Island manzanita (<i>Arctostaphylos confertiflora</i>)	E	3	SRI
Island barberry (<i>Berberis pinnata</i> ssp. <i>insularis</i>)	E	5	SCI, (AI, SRI)
Santa Cruz Island bush mallow (<i>Malacothamnus fasciculatus</i> var. <i>nesioticus</i>)	E	4	SCI

*AI = Anacapa Island, SBI = Santa Barbara Island, SCI = Santa Cruz Island, SCT = Santa Catalina Island, SMI = San Miguel Island, SRI = Santa Rosa Island; parentheses () indicate presumed extirpated



Dirk Rodriguez

Santa Rosa Island manzanita



Katie Chess/USGS

Santa Cruz Island live-forever

New Pier on Santa Rosa Island

During 2009, the pier on Santa Rosa Island will be replaced. The existing pier was originally built in the early 1870s to serve ranching needs on the island. Major repairs or reconstruction of the pier occurred in 1913 and again during World War II in 1945. The current pier was repaired and rebuilt shortly after the National Park Service (NPS) acquired Santa Rosa Island in 1987, to provide access to the island for visitors and safe operations for cooperators, researchers, and employees.

The repairs made by the NPS in 1987 were temporary in nature and not intended to last for more than 20 years. Currently the pier is the only viable access for supplies and materials to support all island operations including visitor services, resource management, research and maintenance. It also provides essential visitor access via concession boat and private vessel for this 53,000-acre island. At present, the pier is servicing approximately 700 vessel landings per year. Since 1987 the pier has suffered heavy corrosion from the marine environment and deterioration from storms and overall use. Emergency repairs were conducted in 2002, 2004, and 2006 to replace corroded pier pilings.

The new pier will be built on the same footprint as the existing pier. The height of the pier will be increased to approximately 23 feet above the mean low water height to avoid storm surge, and it will connect to the shore at an elevation matching the original pier elevation.

During construction the pier will be closed to the public with completion planned for December 2009. “We are sorry for any inconvenience this project will have for visitors and others in their travels to Santa Rosa Island,” said NPS Superintendent Russell E. Galipeau Jr. “It is essential that we replace the existing pier now and invest in a new pier that will provide improved access to the island and ensure safe landings for years to come.”



Tim Hauf

San Miguel Island

Wind and weather constantly sweep across the North Pacific to batter the shores of the westernmost of all the islands, San Miguel. This extreme weather creates a harsh but profoundly beautiful environment. The 9,500-acre island is primarily a plateau about 500 feet in elevation, but two 800-foot rounded hills emerge from its wild, windswept landscape. Although lush native vegetation covers this landscape today, a century's worth of sheep ranching and overgrazing caused scientists in 1875 to describe the island as "a barren lump of sand." With the grazing animals removed, vegetative recovery is in progress. Giant coreopsis, dudleya, locoweed, lupine, buckwheat, coastal sagebrush, and poppies are all recolonizing the island to their former extent, returning San Miguel to its more natural state.

Also making a comeback, after years of hunting, are the thousands of pinnipeds (seals and sea lions) that breed, pup, and haul out on the island's 27 miles of isolated coastline. Hikers who make the all-day, ranger-guided, 16-mile round-trip hike across the island to Point Bennett will never forget seeing one of the world's most spectacular wildlife displays—over 30,000 pinnipeds and up to five different species hauled out on the point's beaches at certain times of year.

Other wildlife include the island fox and deer mouse. Both of these little creatures are "endemics"—they are found only on the Channel Islands. The island fox, the size of a house cat, is the largest land animal on the island. In the waters surrounding San Miguel, the marine animals get much larger. Dolphins and porpoises are often spotted along with gray whales, killer whales, and the largest animal of all, the blue whale.

In the spring and summer the skies are filled with birds. Boaters entering Cuyler Harbor receive a greeting from western gulls, California brown pelicans, cormorants, and Cassin's auklets that nest on Prince Island. Black oystercatchers, with their bright red bills and pink feet, feed along the beach. Terrestrial residents include the western meadow-



Spring flowers, Cuyler Harbor, San Miguel Island

lark, rock wren, and song sparrow, an endemic subspecies. Peregrine falcons have recently been restored to the island and are nesting successfully once again after years of decimation by the pesticide DDT.

In addition to the variety of natural resources, San Miguel hosts an array of cultural resources as well. The Chumash Indians lived on San Miguel almost continuously for over 11,000 years. Today there are over 600 fragile, relatively undisturbed archeological sites. The oldest one dates back to 11,600 years before the present—some of the oldest evidence of human presence in North America. Juan Rodriguez Cabrillo and his men laid eyes on San Miguel Island in 1542. Upon claiming the island for the Spanish crown, Cabrillo named it "La Posesion." Some stories say that Cabrillo wintered and died on San Miguel Island. No one knows where Cabrillo is buried, but there is a memorial commemorating the explorer on a bluff overlooking Cuyler Harbor.

Other outstanding island resources that visitors may experience on San Miguel include the caliche forest (sand-castings of ancient vegetation), fossil bones of the Pleistocene pygmy mammoths that stood 4 to 6 feet at the shoulders, 150 years of ranching history, and numerous shipwrecks. Whether you are interested in life of the past or life of the present, San Miguel Island has it in abundance. Visit, explore, and enjoy.

Things To Do

- One-day trips, long overnight camping trips (minimum stay is generally three days—Friday to Sunday), and multi-day boat trips.
- Be prepared for adverse weather.
- Hiking options are limited. Visitors may explore a small area on their own—including the two-mile-long Cuyler Harbor beach and the one-mile trail to the ranger station. To see other parts of the island you must go with a ranger. Rangers are generally available to lead hikes, but check with the park or concessionaires in advance.
- Ideal place for viewing native vegetation, the unique caliche forest, and seals and sea lions (with ranger escort).
- Due to high incidence of strong winds, swimming, snorkeling, diving, and kayaking are limited and recommended for the experienced visitor.
- Despite the wind, Cuyler Harbor is one of the most scenic beaches in the park.

Refer to related articles for more information.

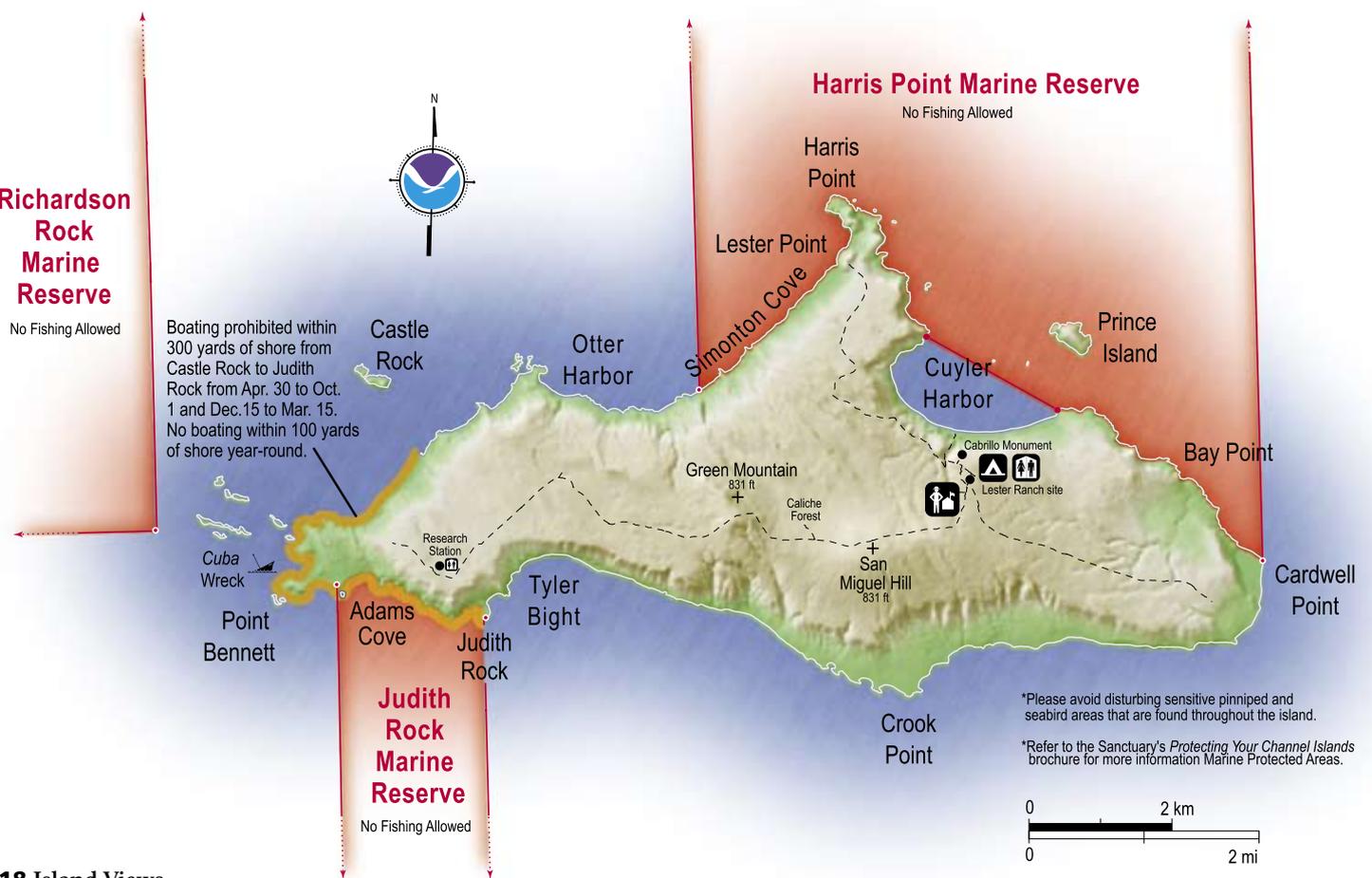
Island Facts

- Located in Santa Barbara County.
- 14 square miles; 9325 acres; eight miles long by 4 miles wide.
- The San Miguel Island fox, deer mouse and introduced rat are the only land mammals found on San Miguel Island.
- Up to five different pinniped species and 30,000 individuals can be found at Point Bennett, one of the largest concentrations of wildlife in the world.
- One of the oldest known Chumash archeological sites (11,600 years ago) is on San Miguel Island.
- Over a dozen Channel Islands endemic plants.

Hiking Information

Destination (from Cuyler Harbor)	Distance (miles, round-trip)	Difficulty	Description
Cuyler Harbor Beach	2	Easy	A wonderful two-mile-long white sand beach to explore. Use caution around rockfalls.
Lester Ranch site	2	Moderate	Hike up a spectacular canyon with lush native vegetation to an overlook and two historic sites.
Caliche Forest	5	Strenuous	View sand-castings of ancient vegetation. Must be accompanied by a park ranger.
Point Bennett	16	Strenuous	Continue past the caliche forest with a park ranger to view over 30,000 seals and sea lions.
Lester Point	5	Strenuous	Hikers must be accompanied by a park ranger on this hike to an incredible, windswept overlook.

- Hikers must stay on island trails to protect fragile vegetation and for visitor safety.
- Hikers must be accompanied by a park ranger beyond the ranger station.



Caliche forest, San Miguel Island



Cuyler Harbor from Harris Point trail, San Miguel Island.



Elephant seals, Point Bennett, San Miguel Island

of wave erosion.

After a number of these interglacial-glacial cycles have taken place, there can often be a series of uplifted wave-cut platforms, or marine terraces, visible on a coastline, each one representing a separate interglacial period. They can look like a set of stairsteps rising out of the sea. You can see the marine terrace representing the last interglacial period, about 125,000 years ago, on Santa Rosa Island. It is visible as you approach Bechers Bay when you near the island and is the broad, flat coastal plain that the ranch house is built on and where the pier extends out from the land. As you look upward from that surface, older, higher marine terraces are visible as flat surfaces on the hills surrounding Bechers Bay. You can trace the last interglacial marine terrace around much of the south side of Santa Rosa Island as a flat, bench-like landform. At Johnsons Lee, its innermost edge has an elevation of about 20 meters (66 feet) above sea level. Because sea level was about six meters higher than present during the last interglacial period, this means that Santa Rosa Island has been uplifted about 14 meters (46 feet) in the past 125,000 years, or about 0.11 meters (four inches) per thousand years.

The same last interglacial marine terrace is visible as a low bench on the north side of West Anacapa Island and on the southeastern and northwestern sides of Santa Barbara Island. On both of those islands, the terrace's inner edge is only about nine meters (30 feet) above sea level, meaning that these two islands have been uplifted only about three meters (10 feet) since the last interglacial period. On Santa Barbara Island, the last interglacial marine terrace is low enough that it is a favorite hauling-up spot for marine mammals, and sea lions can often be seen resting on the old wave-cut platform.

Are there landforms that developed during glacial periods on the Channel Islands? Wave-cut platforms developed when sea level was low, too, but these are now far offshore and submerged in the current interglacial period. However, visitors to the islands can see landforms that are above water that developed in the last glacial period, particularly on San Miguel Island and Santa Rosa Island. The submerged shelves off the Channel Islands are very rich biologically, with a diverse assemblage of kelp forests, fish, and marine invertebrates. These invertebrates have skeletons composed of a mineral called calcium carbonate, and when they die, their shells are broken into sand-sized fragments by waves. These sandy shell fragments accumulate offshore during interglacial periods. During a following glacial period, sea level drops and the offshore shelf is exposed. The newly exposed shelly sands are easily picked up by the strong northwesterly winds that characterize the Channel Islands region. The wind carries them landward where they accumulate as dazzling white sand dunes. When sea level rises again during an interglacial period, the source of sand on the shelf is cut off, the dunes are colonized by vegetation, and sand no longer moves downwind. Thus, many of the stabilized sand dunes on the Channel Islands are relics of the last glacial period, and formed about 20,000 years ago.



Daniel Muhs

Ice-age fossil sand dune, about 20,000 years old, Simonton Cove, San Miguel Island.

Although the Channel Islands were a long way from the large ice sheets that covered much of Canada and the northern United States during the last glacial period, they looked very different from the islands we see today. In addition to a lot of shifting sand dunes, an ice-age visitor to the island would have seen a very different flora and fauna. From studies of fossil pollen that has accumulated in the sediments of Santa Barbara Channel, we know that during the last glacial period, the oak-grass woodland of modern southern California was not here, and instead there was a coniferous forest, with abundant pine trees. Fossil specimens of Douglas fir and cypress, which only grow farther north in California today, have been found on the Channel Islands, indicating that they once thrived on the islands. It is possible that the Torrey pines of Santa Rosa Island are the stranded descendants of what was once a much more extensive ice-age pine forest.

In addition, the islands hosted one of the most famous ice-age mammals: the mammoth, a relative of the modern elephant. Unlike the Columbian mammoths that roamed the mainland, however, the island mammoths were smaller and are called "pygmy" mammoths. Mammoths probably reached the islands by swimming (elephants are excellent swimmers!) during glacial periods, when the distance from the mainland to the islands was at a minimum. Subsequent sea-level rise during interglacial periods would have stranded the mammoths on the island, and a limited forage area would have preferentially selected the smaller members of the population. Remains of the skeletons of mammoths have been found in many places on the islands, particularly San Miguel Island and Santa Rosa Island. A nearly complete pygmy mammoth skeleton was discovered in 1994 in an ice-age sand dune on Santa Rosa Island. You can see a cast of this mammoth skeleton in the park's visitor center in Ventura.

The Channel Islands have uplifted marine terraces that formed during warm interglacial periods and sand dunes, conifers, and mammoths that record cold glacial periods, when sea level was lower and the northern islands were all connected. Your visit to Channel Islands National Park is a look into dramatic global climate changes of the past couple of million years on Earth.

Fox Recovery Continues



Tim Hauf

In fall 2008, the last of the captive bred island foxes, one of America's rarest mammals and occurring only on the Channel Islands, were released to the wild, bringing an end to the captive rearing program. In all, 285 foxes were released over a nine-year period with the final pair set free on November 7, 2008.

The fox population on the northern Channel Islands has steadily grown by 20 to 30 percent per year since four of the six subspecies were listed by the U.S. Fish & Wildlife Service (USFWS) as a federally endangered species in March 2004. By the late 1990s predation by golden eagles caused a decline in the island fox population of over 90 percent.

"This early and remarkable sign of recovery appears to be one of the quickest recoveries of an endangered species in the history of the Endangered Species Act," said former Deputy Secretary of Interior Scarlett. "We hope to see the fox population grow within a few years to a level sufficient to consider their removal from the list of endangered species."

At the lowest point, in 1999, there were only 15 foxes each on San Miguel and Santa Rosa islands—a catastrophic drop in fox numbers

from 450 and 1,500 respectively. In 2000 there were less than 70 foxes on the largest Channel Island, Santa Cruz. Today there are close to 1,000 foxes thriving in the wild on the northern Channel Islands. Population monitoring in 2008 indicated there were close to 200 adult foxes on San Miguel, and over 700 on Santa Cruz. The remarkably quick recovery of these subspecies is due to the success of recovery actions (golden eagle relocation and island fox captive breeding) as well as the high reproductive success of wild foxes.

Captive breeding—set up as insurance against the loss of foxes from golden eagle predation—was responsible for saving the island fox from the brink of extinction on Santa Cruz, San Miguel, and Santa Rosa Islands. In addition, other measures were taken to restore balance to the islands' ecosystems. Several organizations including The Nature Conservancy, The Institute for Wildlife Studies, and the Montrose Settlements Restoration Program, worked cooperatively to relocate golden eagles that were responsible for the near extinction of the island fox, reestablish bald eagles, and eradicate feral pigs.

Wetland Restoration

The National Park Service is proposing to restore a portion of the historic coastal wetland and associated stream channel at Prisoners Harbor on Santa Cruz Island.

Prisoners Harbor, once the largest coastal wetland on the Channel Islands, was important for floodwater storage and habitat for wildlife and native plants. Coastal wetlands in California are increasingly rare—over 90 percent have been eliminated.

Prisoners Harbor has an extensive legacy of human occupation including Chumash habitation, fishing, and ranching. In the late 1800s island owners rerouted the creek, filled in the adjacent wetland with gravel, and introduced non-native plants such as eucalyptus and stone pines. These actions reduced the ecological value of the coastal wetland system and resulted in diminished habitat quality for island species, such as the endangered island barberry, Santa Cruz Island silver lotus, island fox, island scrub-jay, and migratory waterfowl.

Channel Islands National Park is preparing an Environmental Impact Statement compar-

ing the impacts of alternative methods of restoring the coastal wetland while protecting archeological resources from further flood damage. Proposed plans include removing fill from the former coastal wetland, reconnecting the stream with its floodplain, removing non-native eucalyptus in the lower Cañada del Puerto, protecting archeological sites, preserving the integrity of the historic landscape, and providing a compatible visitor experience.



Tim Hauf

Limiting Your Impact

Regulations and Guidelines for Protecting Natural and Cultural Resources



Jeff Foot

Harbor seals, Santa Rosa Island

The protection and preservation of your park's biological, cultural, and historical resources is a major mission of the National Park Service. By following the park regulations and guidelines, you can help protect these rare and unique treasures of Channel Islands National Park for future generations to enjoy.

Regulations

There are a number of federal and state laws and regulations that protect Channel Islands National Park and the people who visit here. Visitors to the park are responsible for knowing and abiding by those rules. Listed below are some of the most important rules you need to know. Further information is available from park rangers at the visitor center in Ventura and on the islands or under the "Laws & Policies" section of our website (www.nps.gov/chis).

- Fishing is prohibited in the marine reserves.
- Personal watercraft such as jet skis are not allowed in park waters.
- Pets are not allowed on the islands. Service animals require a permit from the Superintendent.
- Fires are not permitted. Smoking is only allowed in designated areas.
- Landing is not permitted on offshore rocks and islets.
- Waters around Point Bennett on San Miguel Island are closed to protect seals and sea lions.
- Hikers must stay on established trails on Anacapa, Santa Barbara, and San Miguel islands.
- Some sea caves at Santa Cruz Island are closed to protect nesting seabirds.
- The shoreline of Santa Barbara Island is closed to landing except for the cove below the ranger station.
- The shoreline of San Miguel is closed to landing except at Cuyler Harbor.
- The beaches at Skunk Pt. and Sandy Pt. on Santa Rosa are closed to protect wildlife.
- The waters on the north side of West Anacapa Island are closed most of the year to protect nesting pelicans.
- Collecting of plants, rocks, animals, and artifacts is prohibited.
- The following items may not be brought to the park: live or potted plants; soil; cut flowers; firewood or any unfinished, untreated wood; corrugated boxes; tools or equipment with attached soil; motorized vehicles; and bicycles.
- Channel Islands National Park local regulations: Each national park has specific local regulations established under the superintendent's discretionary authority under Title 36 CFR. These regulations are compiled annually and available at www.nps.gov/chis or in print at park headquarters.



Brown pelican, Anacapa Island

- Title 36 Code of Federal Regulations governs all national parks, including Channel Islands, and is available by visiting our website.
- Fishing in the waters of Channel Islands National Park is governed by the state of California. The state sport fishing regulations for ocean waters apply in the park. A valid California fishing license with an ocean enhancement stamp is required to fish within the park.
- Marine Protected Areas in the Channel Islands were established in 2003. Within these reserves it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization for research, restoration, or monitoring purposes. There are 10 marine reserves and two conservation areas in the Channel Islands. See page 11 or visit <http://www.dfg.ca.gov> for more information, including maps and details of the regulations.

Guidelines

Avoid areas—sea caves (including dry caves), offshore rocks, cliffs, and beaches—where birds, seals, and sea lions are roosting, resting, nesting, or pupping. These animals are easily disturbed. Under federal law it is illegal to disturb and/or harm these animals. They are sensitive to any type of human disturbance including loud noises and artificial light. Disturbance while animals are resting can cause a fatal depletion of energy reserves. During the nesting or pupping season, disturbance may cause them to crush or abandon their nests, eggs, chicks, or pups. Without parental protection, the eggs or young may overheat and are vulnerable to predation. Entire colonies have been lost this way. Be careful not to disturb seal pups that appear stranded on beaches. These pups are being weaned by their mothers.

Look ahead and give animals at least a 100-yard clearance. Approach new territory slowly and quietly. If an animal starts to look alarmed (appears agitated or starts watching you), then you are too close. This can cause an animal severe stress. Sit calmly at a safe distance. Let the animals adjust to your presence, and you will be rewarded with exciting displays of natural behavior.

For your safety as well as theirs, do not approach sick or injured animals. Alert a ranger or a boat concession employee.

Take advantage of the islands' best weather by kayaking during September and October. Most seabirds, shorebirds, and pinnipeds have completed their reproductive cycles by this time. In addition, calm seas and wind are common during these months.

Remember, you're in their habitat. Help educate others. Let's protect our wildlife for all to see.

Boating and Kayaking

Boating (excluding personal watercraft—see regulations on page 20) and kayaking are unique and rewarding ways to experience the pristine marine environment of Channel Islands National Park. You will find solitude and splendor. Here you will also face new challenges and may encounter unexpected dangers. This section is designed to help in planning a safe, enjoyable, and environmentally sound sea kayak trip in the park.

Planning Your Trip

Kayaking: Sea kayaking is a high-risk activity that has caused the death of park visitors, and annually numerous near-fatal kayak incidents occur in the park. The challenging and quickly changing weather and, at times, extreme sea conditions and dangerous sea caves greatly add to the risks of sea kayaking in the park.

Visitors may kayak on their own or with a park authorized guides/outfitter. Kayaking on your own in any area of the park should not be attempted by novice or first-time kayakers or anyone who is not properly experienced, trained, conditioned, and equipped.

For your safety, the National Park Service (NPS) recommends that sea kayaking be done with one of the park's authorized guides/outfitters. The guided trips are moderate to strenuous, but some do not require previous kayaking experience.

Visitors with their own kayaks who would like to explore the park may contact the park concessionaires, who transport kayaks for an extra fee. The concessionaires offer year-round transportation to the islands for day visits and camping trips.

Sea kayaking opportunities are available throughout the park. To help you decide which island to visit, specific island information is available at www.nps.gov/chis or from the visitor center through publications and exhibits.

The area of the park that is most popular for sea kayaking is centered around Scorpion Beach on East Santa Cruz Island. This location is a world-class destination for kayaking because of easy beach access, clear ocean waters, nearby camping, available kayak outfitters, and a spectacular shoreline with beautiful sea cave and cliffs to explore.

Sea kayaking at San Miguel and Santa Rosa Islands is recommended to only the most highly experienced (expert), skilled, conditioned kayakers with all necessary safety equipment, due to the consistently extreme weather and sea conditions that regularly dominate these areas.

Due to the many hazards of crossing the channel from or to the mainland to the park islands and the shipping lanes the NPS does not recommend this be attempted by sea kayakers.

Boating: To help you decide which island to visit, specific island information is available at www.nps.gov/chis or from the visitor center through publications, exhibits, and the park movie. Boaters may land on all five islands within the park throughout the year.

Detailed boating information about the channel and islands may be obtained from the U.S. Coast Guard's (USCG) "Local Notice to Mariners" publication by contacting the Coast Guard at (510) 437-2981. Cruising guides to the Channel Islands and nautical charts are available from local marine stores and online bookstores. Refer to the National Oceanic and Atmospheric

Administration's (NOAA) National Ocean Survey charts 18720, 18721, 18725, 18727, 18728, 18729, and 18756.

Visitors may boat on their own or with a park authorized commercial service operator. Due to challenging weather conditions, boating should not be attempted by the novice or anyone who is not properly trained, conditioned, and equipped. Currents, shifting swells, fog, and strong winds can change quickly in the channel. The trip to the islands also takes the boaters across some of the busiest shipping lanes in California. Ship speeds of 25 to 35 knots present a special hazard to boaters while crossing the channel.

There are no public moorings or all-weather anchorages around the islands. It is recommended that one person stay on board the boat at all times. Boaters are responsible for any damage to the resources caused by their boat.

Weather

Conditions in the Santa Barbara Channel and around the islands are variable, and the ocean is unforgiving. Only experienced boaters with vessels capable of withstanding severe weather are advised to make the cross-channel passage. Boaters should obtain the latest weather broadcast provided by the NOAA Weather Service by calling (805) 988-6610, visiting its web site at www.wrc.noaa.gov/, and by monitoring the weather radio—VHF-FM 162.475 MHz (weather station 3) for marine forecasts and VHF-FM 162.55 MHz (weather station 1) and VHF-FM 162.40 MHz (weather station 2) for land-based observations.

Weather conditions vary considerably in the channel. The calmest winds and sea conditions often occur August through October, making kayaking ideal. Kayaking is possible during other months, but with a much greater chance for adverse wind and seas with sudden unexpected changes. High winds may occur regardless of the forecast. Forty-knot winds are not unusual for Santa Rosa and San Miguel Islands. Anacapa and Santa Barbara Islands have more moderate winds.

Winds are often calm in the early morning and increase during the afternoon. Generally the wind comes from the northwest, but kayakers and boaters must be also be prepared for strong east or Santa Ana winds at anytime, especially from September through April. Dense fog is common during the summer months, but may occur at any time, making chart and compass navigation mandatory. Ocean currents of considerable strength may be encountered both near- and offshore from the islands. Ocean water temperatures range from the lower 50s (°F) in the winter to the upper 60s (°F) in the fall.

Safety

Due to challenging weather conditions, boating and kayaking should not be attempted by the novice or anyone who is not properly trained, conditioned, and equipped. Safety requires good planning and common sense. Boating and kayaking are potentially hazardous, even for experienced operators. Please follow these safety recommendations:

Use the buddy system. There are no lifeguards on duty. Boating and kayaking are at your own risk. Stay together and paddle within the skills of the least experienced paddler in the group.



Tom Hart

Kayaking near the Arch Rock, Anacapa Island

Obtain current weather and sea conditions. The conditions around the islands are considered “open ocean.” Extreme weather conditions may be encountered at any time, and sea conditions may become dangerous without warning. There is no place where visitors will be kayaking in a protected cove. Always observe and evaluate sea conditions before entering the water. Be alert to wind, wave, and currents at all times.

Do not travel downwind (with the wind) as you will have to return into a headwind.

Wind and waves typically come out of the northwest or west. Winds tend to increase in the afternoon. Morning hours can be a better time for kayaking and other watersports. Challenging Santa Ana or east winds may occur anytime, but are most common from September through April.

Do not exceed your skill level. If you are new to sea kayaking or other watersports, stay close to your launch area and paddle with an experienced kayaker. Ask NPS personnel or kayak guides if you have questions concerning weather, safety, etc. Be capable of reentering your kayak from the water.

Let someone know where you are going and when you expect to return. Boaters and kayakers should always file a float plan with family and/or friends and inform them of your departure and return. The float plan should include: 1) the number of boats and boaters on the trip as well as the color, size, and type of craft used; 2) names and addresses for the boaters, as well as emergency phone numbers; 3) any survival and special emergency equipment should be listed (EPIRB, VHF, food rations, flares, etc.); and 4) the place, date, and time of departure and return should be logged as well as destination(s). This information can be invaluable for a search operation if something goes wrong. Remember to be flexible with your plans. Weather should always determine your course of action. If you are boating or kayaking across the channel, you should also file a formal float plan with the harbormaster before departing and contact island rangers at the beginning and end of the paddle.

Carefully select and equip your paddle craft. Craft should be of a sea kayak design and kayakers must have the following items: 1) Life-

jackets—all paddlers must have lifejackets; 2) Helmets—always wear a helmet when paddling below cliffs and in sea caves; 3) VHF radio, tow line, compass, throw bag, first aid kit, signaling device (airhorn, whistle, or signal mirror). Carry these items with you and know how to use them; 4) Wetsuits are highly recommended. Water temperatures remain cold throughout the year.

Sea Caves. Sea caves can be very dangerous—large waves or swells can fill a cave unexpectedly. Even on calm days, the wake from large ships in the channel can pose a danger to boaters and kayakers in caves. Be extremely careful and wear a helmet at all times when exploring sea caves. Always observe and evaluate sea conditions before entering any sea cave.

Shipping Lanes. Major shipping lanes lie between the islands and the mainland. Boaters and kayakers should be aware of their location and use caution when crossing them. Listen to the USCG notice to mariners broadcast on VHF Channel 22 since the waters in and surrounding the park are sometimes closed for military operations.

Regulations

In addition to the regulations listed below please see “Limiting Your Impact” on page 20 and the Laws and Policies section of the park website (www.nps.gov/chis) for additional information.

- You may not exit your kayak while in caves.
- Do not disturb wildlife within caves. It is illegal to feed, touch, tease, frighten, or intentionally disturb wildlife.
- Please avoid use of artificial lights in caves.
- Stay off rocks. Scorpion Rock and all other offshore islets are off limits.
- Several sea caves are closed to public entry. To protect nesting ash storm-petrels and Xantus’s murrelets and their habitats, Bat Cave and caves #3 and #4 within the Cavern Point Cove Cave Complex are closed year-round. (Bat Cave: UTM 11S 0262623, 3770695 Lat. N34°03'07.2", Long. W119°34'25"; Cavern #3 & #4: UTM 11S 0263641, 3770901 Lat. N34°03'16.0", Long. W119°33'41"). Refer to the map above.
- Marine reserves are closed to fishing. The area between Scorpion Rock and Potato Harbor

Boating and Kayaking Landing Information

Island	Permit Required	Fee	Landing Areas	Landing Facility
East Anacapa	No	No	Landing Cove	Small dock*
Middle Anacapa	Yes*	No	Schedule with ranger	Rocky shoreline
West Anacapa	No	No	Only at Frenchys Cove	Beach
eastern Santa Cruz (NPS property)	No	No	Anywhere	Beach; pier at Scorpion and Prisoners
western Santa Cruz (TNC property)	Yes*	Yes*	TNC designated areas	Beach
Santa Rosa	No*	No	Anywhere*	Beach; pier in Bechers Bay
San Miguel	No*	No	Only at Cuyler Harbor*	Beach
Santa Barbara	No	No	Landing Cove	Small dock*

* Please see specific island information below for details.

Kayak Outfitters

Visitors may kayak with one of several authorized kayak guide and outfitting services that offer a variety of kayak trips to the Channel Islands. The trips are moderate to strenuous in nature, but some do not require previous kayaking experience. Kayak excursions are offered year-round.

For a current list of authorized kayak guide and outfitting services, please visit: <http://www.nps.gov/chis/parkmgmt/visitor-services-list.htm>.

from the shoreline out to six nautical miles is a marine reserve—the take of living, geological, or cultural resources is prohibited. Please see page 11 for more information on marine reserves.

Landing Permits and Procedures

There are no landing permits required for the islands administered by the NPS; however, there are closed and restricted areas on each island. Please refer to the “Limiting Your Impact” section on page 20 for information on regulations and guidelines. A landing permit is required to land on The Nature Conservancy (TNC) property on Santa Cruz Island. It is recommended that boaters contact the park ranger on each island before landing for an orientation, information on daily events, island safety, landing instructions, weather conditions, or camping check-in. Park rangers occasionally monitor VHF Channel 16. Channel 16 is a hailing frequency only, and rangers will instruct you to switch to another channel upon contact. If you cannot hail the park ranger on the island on which you plan to land, try contacting a ranger on a neighboring island, as island canyons and mountains sometimes obscure radio transmission. Boaters may land according to the following procedures. Please note that rocks or islets on or near any of the islands are closed year-round to any landing.

Santa Barbara Island: A permit is not required to land or hike on Santa Barbara Island. Access to the island is permitted only at the Landing Cove. The landing dock is available for unloading purposes only. No craft, including kayaks and inflatables, should be left moored to the dock. Please lift your inflatables up to the upper landing.

Anacapa Island: A permit is not required to land or hike on East Anacapa Island or at Frenchys Cove. West Anacapa (except Frenchys Cove) is a protected research natural area and is closed to visitors. Visitors are allowed on Middle Anacapa by permit only and when accompanied by a park ranger. The moorings near the Landing Cove at East Anacapa Island are reserved for use by the NPS, the USCG, and the park concessionaire only. Private boaters must anchor a reasonable distance from these moorings. This is

not an all-weather anchorage. It is recommended that one person stay on board the boat at all times. The landing dock is available for unloading purposes only. No craft, including kayaks and inflatables, should be left moored to the dock. Please lift your inflatables and kayaks up to the lower landing.

Santa Cruz Island: Boaters may land on the eastern 24 percent of Santa Cruz Island without a permit. This area is owned by the NPS and is east of the property line between Prisoners Harbor and Valley Anchorage. No buoys are available at any landing area. Buoys are reserved for the NPS and the USCG. A pier is available at Scorpion Anchorage and Prisoners Harbor. Due to surf and swell conditions, boaters should use extreme caution when making surf-landings at any beach, especially Smugglers Cove and those beaches facing south and southeast between San Pedro Point and Sandstone Point.

A permit to land on the other 76 percent of Santa Cruz Island is required from TNC. A fee is charged and no overnight island use is permitted. Visit www.nature.org/cruzpermit to obtain a permit. Allow 10 business days for processing.

Santa Rosa Island: Boaters may land along coastline and on beaches without a permit for day use only. Beaches between and including Skunk Point and East Point are closed from March 1st to September 15th in order to protect the threatened snowy plover. The beaches around Sandy Point are closed year-round. Boaters may not use the mooring buoys in Bechers Bay. They are reserved for the NPS, the USCG, and the park concessionaire.

San Miguel Island: Overnight anchorages are restricted to Cuyler Harbor and Tyler Bight. Visitors may land only on the beach at Cuyler Harbor. Visitors may walk the beach at Cuyler Harbor and hike up Nidever Canyon to the ranger station. To hike beyond the ranger station, visitors must be escorted by a ranger and have a permit. Call (805) 658-5711 prior to mainland departure to obtain a permit.

Santa Barbara Island

The smallest of the Channel Islands is deceptive. From a distance, this one-square-mile island looks barren, uninteresting, and forlorn. Upon closer examination, the island offers more than one would expect—an island of resting elephant seals, blooming yellow flowers, tumbling Xantus's murrelet chicks, and rich cultural history. Santa Barbara Island is the center of a chain of jewels, a crossroads for people and animals.

Santa Barbara Island is 38 miles from the closest point on the mainland. The smallest of the California Channel Islands, it is only one square mile in size, or 639 acres. Formed by underwater volcanic activity, Santa Barbara Island is roughly triangular in outline and emerges from the ocean as a giant, twin-peaked mesa with steep cliffs. In 1602 explorer Sebastian Vizcaino named Santa Barbara Island in honor of the saint whose day is December 4th, the day he arrived.

Visitors to Santa Barbara Island can witness the incredible recovery of the island's plant life and wildlife after years of habitat and species loss due to ranching and farming activities, including the introduction of nonnative plants, rabbits, and cats. Although non-native grasses still dominate the landscape, native vegetation is recovering slowly with the help of the National Park Service's resource management program.

After winter rains, the native plants of the island come alive with color. The strange tree sunflower, or coreopsis, blossoms with bright yellow bouquets. Other plants, like the endemic Santa Barbara Island live-forever, shrubby buckwheat, chickory, and cream cups, add touches of color to the island's palette.

This recovery of native vegetation, along with the removal of non-native predators, has aided in the reestablishment of nesting land birds. Today there are 14 landbirds that nest annually on the island. Three of these, the horned lark, orange-crowned warbler, and house finch, are endemic subspecies found only on Santa Barbara Island.

Unfortunately, the island's recovery did not come soon enough for the endemic Santa Barbara Island song sparrow. The destruction of this sparrow's sagebrush and coreopsis nesting habitat and the presence of feral cats led to the extinction of this species in the 1960s. This sparrow, which was found only on Santa Barbara Island and is now lost forever, was one of the smallest forms of song sparrow, differentiated by its very grey back.

Seabird colonies have also benefited from the recovery of Santa Barbara Island. The island is one of the most important seabird nesting sites within the Channel Islands, with 11 nesting species. Thousands of western gulls nest every year on the island, some right along the trailside. Fluffy chicks hatch in June and mature to fly away from the nest in July. The steep cliffs also provide nesting sites for the endangered California brown pelicans, three species of cormorants, three species of storm-petrels, and one of the world's largest colonies of Xantus's murrelets.

The rocky shores of Santa Barbara Island also provide resting and breeding areas for California sea lions, harbor seals, and northern elephant seals. These marine mammals feed in the rich kelp forests surrounding the island. The raucous barking of sea lions can be heard from most areas of the island. Overlooks, such as the Sea Lion Rookery, Webster Point, and Elephant Seal Cove, provide excellent spots to look down on seals and sea lions. Visitors can also jump in the water to see what lies beneath the ocean surface. Snorkeling in the Landing Cove, visitors can see bright sea stars, spiny sea urchins, and brilliant orange Garibaldi fish. California sea lions and occasional harbor seals frequent the Landing Cove waters and the surrounding rocky ledges.

All of these incredible resources can be experienced by hiking the six miles of trails and by snorkeling, swimming, or kayaking along the island's coast.

Things To Do

- One-day trips and long overnight camping trips (minimum stay is generally 3 days—Friday to Sunday).
- The entire island is accessible through the six miles of scenic trails. Unlimited and exceptional island coastal views await the visitor.
- Ideal place for swimming, snorkeling, diving, and kayaking. Since Santa Barbara Island is a cliff island, access to the water is only at the Landing Cove (no beaches).
- Excellent wildlife viewing—seabirds, seals, and sea lions.
- Great place to see recovery of native vegetation. Wonderful wildflower displays in the spring.

Refer to related articles for more information.

Island Facts

- Located in Santa Barbara County.
- One square mile in size.
- Average rainfall is 12 inches per year.
- The endemic, threatened island night lizard occurs only on Santa Barbara, San Nicholas, and San Clemente Islands.
- Home to 14 endemic plant species and subspecies that occur only on the Channel Islands. Forms of buckwheat, dudleya, cream cups, and chicory are found only on Santa Barbara Island.
- The island's cliffs offer perfect nesting habitat for one of the world's largest breeding colonies of Xantus's murrelets, a rare seabird.
- Squatters lived on the island before government leasing began in 1871.



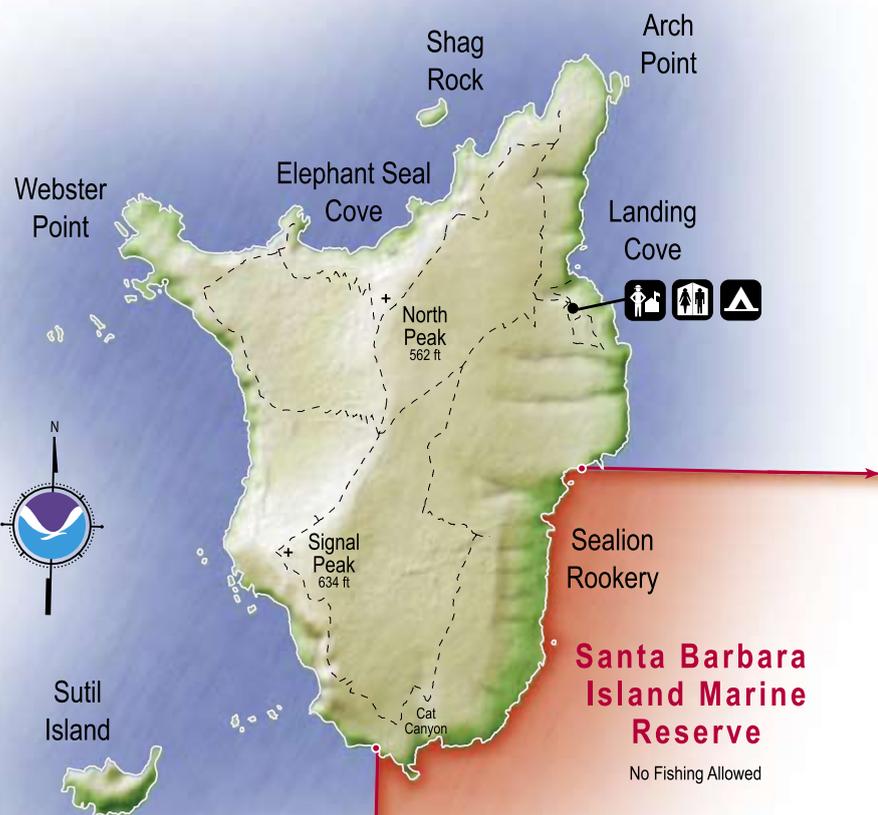
Island night lizard



Santa Barbara Island live-forever



Xantus's murrelet chick



*Please avoid disturbing sensitive pinniped and seabird areas that are found throughout the island.

*Refer to the Sanctuary's *Protecting Your Channel Islands* brochure for more information on Marine Protected Areas.



Coreopsis near Arch Point

Hiking Information

Destination (from visitor center)	Distance (miles, round-trip)	Difficulty	Description
Arch Point	2	Moderate	Great views and wildflowers in season.
Elephant Seal Cove	5	Strenuous	View elephant seals from steep cliffs.
Sea Lion Rookery	4	Moderate	View seal lions as they haul out on the coast.

- Portions of trails are subject to closure when pelicans are nesting from January—August.
- Hikers must stay on island trails for visitor safety and to protect vegetation and nesting seabirds.

Restoring Seabirds to the Channel Islands

The Channel Islands are vital habitat for seabirds, providing essential nesting and feeding grounds for 99% of seabirds in southern California. Eleven species of seabirds depend on the rich marine resources and the isolation of these offshore islands to provide food and undisturbed nesting grounds safe from predators. The islands host half of the world's population of ash storm-petrels and western gulls and 80% of the U.S. breeding population of Xantus's murrelets. In addition, the islands are home to the only major breeding population of California brown pelicans in the western U.S.

Impacts to Seabirds

Seabirds in the park and throughout southern California are impacted by many factors including contaminants, oil spills, invasive species, and changes in the ocean environment.

For example, the introduction of DDT, a long-lived pesticide, into the marine environment has severely impacted seabird populations at the islands. Before DDT was banned in the 1970s, California's brown pelican population suffered nearly complete reproductive failure.

On land, predation and habitat disturbance by invasive species have impacted seabirds. At Anacapa, introduced black rats preyed heavily on seabird eggs and chicks severely depleting populations of Xantus' murrelets.

Black rats still prey on seabird populations on San Miguel. At Santa Barbara Island, seabirds were decimated by cats and habitat has been marginalized by years of over grazing by introduced livestock and rabbits. Seabird habitat has also been severely impacted by grazing of non-native animals on Santa Cruz Island.

Monitoring and Restoration

Through monitoring and restoration programs, the park and its partners are working to conserve critical nesting habitat and to protect the integrity of island and marine ecosystems that support seabird populations in southern California. Several of these projects have been funded by the Montrose Settlements Restoration Program (MSRP), a multi-agency government program dedicated to restoring natural resources harmed by DDTs and PCBs released into the environment. For more information on MSRP visit: www.montroserestoration.gov.

Anacapa Island: Monitoring of Anacapa's Xantus's murrelet colonies have shown that they are recovering following rat eradication in 2002. In addition, California brown pelican monitoring on Anacapa Island shows that these endangered birds, which breed only on the Channel Islands, are rebounding and have been proposed for delisting. However, ongoing studies indicate that DDT continues to persist at higher than expected levels in several

species of seabirds nesting on the islands, including cormorants and petrels.

Santa Barbara Island: On Santa Barbara Island, efforts are underway to restore seabird nesting habitat for Xantus's murrelets and Cassin's Auklets by removing non-native plants and planting native vegetation to improve seabird habitat. Nest boxes insulated against the elements have also been installed with the goal of providing a secure nesting area and vocalization playback systems have been used to attract auklets.

San Miguel Island: Monitoring has shown that San Miguel Island and its associated islets, Prince Island and Castle Rock, support regionally important and diverse seabird colonies, including one-third of the breeding seabirds in the Channel Islands. To enhance critical seabird nesting habitat efforts will be made to eradicate the introduced black rat and prevent future rodent introductions.

Santa Cruz Island: Scorpion and Orizaba Rocks, located off of Santa Cruz Island, are important nesting islets for burrow-nesting seabirds in California. To restore seabird habitat on these islets, restoration efforts have included removing non-native vegetation, revegetation with native plants, installation of nest boxes, and signs informing the public that the rocks are closed to protect nesting seabirds.



The Channel Islands are critically important to seabirds, supporting:

- the largest breeding colonies of seabirds in southern California
- the only breeding colonies of California brown pelicans in California
- the only protected colonies of California brown pelicans, western gulls, and Xantus's murrelets on the West Coast of the U.S.
- the only breeding tufted puffins, Cassin's auklets, and rhinoceros auklets in southern California
- the largest colonies in southern California of Cassin's auklet, western gulls, Xantus's murrelets, rhinoceros auklets, tufted puffins, ash storm-petrels, double-crested cormorants, pigeon guillemots, and black storm-petrels
- over 30 years of seabird research

Forward to the Past

(continued from page 4)

Pollutants have hit other species hard on the Channel Islands. Bald eagles were once an important component of the island ecosystem. It is estimated that at least twenty nesting pairs of bald eagles occurred on the park islands in the early 1900s. Hunting, egg collection, and DDT all took their toll and resulted in the total elimination of bald eagles by the 1950s.

Fortunately, the American public and government reacted strongly to the loss of wildlife and the growing pollution of the environment. Many consider the publicity surrounding the Santa Barbara oil spill and the fate of the California brown pelican a major impetus for the environmental movement. Just one year later, in the spring of 1970, Earth Day was born.

Everything is Connected

John Muir said, "When you try to pick out anything by itself, you find it hitched to everything else in the universe." We have found this to be true as we attempt to restore healthy natural ecosystems to the Channel Islands.

A prime example of the "connectedness" of ecosystems and the unintended consequences of non-native species introductions was the plight of the island fox. The direct cause of the decline of island foxes was predation by golden eagles (see fox article on page 19). However, the true cause of island fox decline was put in place by a combination of changes that occurred over a period of 150 years. The combination of the introduction of non-native pigs, the removal of native shrublands by grazing animals, and the extirpation of bald eagles created an unnatural situation in which golden eagles could flourish. The

non-native pigs provided a year-round food supply for the golden eagles. The grasslands that replaced the native shrublands did not provide adequate cover for the foxes. The fish-eating bald eagles no longer competitively excluded their cousins, the golden eagle. The result—predation by nonnative golden eagles drove three subspecies of island foxes to near extinction. The park, The Nature Conservancy, and other partners began a concerted effort to live capture and relocate golden eagles. However, we knew that until the feral pigs were removed from Santa Cruz Island and the bald eagles are reestablished on the islands, the long-term survival of the foxes could not be assured. As of 2006, the National Park Service, The Nature Conservancy, and contractor Prohant eliminated feral pigs from Santa Cruz Island. The island fox, as well as the entire terrestrial ecosystem, now have much improved prospects for recovery.

Putting Our Finger on the Pulse of the Park Ecosystems

As Albert Einstein observed, "The significant problems we face cannot be solved at the same level of thinking we were at when we created them." Clearly, we must improve our understanding of how the natural world functions if we are to ensure the conservation of island resources. We must answer the questions: How healthy are ecosystems in Channel Islands National Park? Can they cope with accelerated invasions of non-native species, elimination of native species, and air pollution? How do ecosystems change as non-native species are removed and native species are restored?

The park staff, in conjunction with scientists from other agencies, universities, and museums, began to develop a long-term ecological monitoring program in 1982. Every year park staff and cooperators have gathered information on the health of kelp forests, rocky intertidal communities, seabirds, landbirds, terrestrial animals, and vegetation. Information gathered through this program has been critical to identifying resource declines and improving our understanding of how the ecosystems work (see seabird article above). The declines of brown pelicans, island foxes, and marine resources illustrate the importance of keeping our finger on the pulse of the island ecosystems and identifying problems early enough to take corrective action.

The Challenges Ahead

The task in front of us is large. We are fortunate to have many partners—universities, private non-profits, volunteers, conservation organizations, and others—that share our goal of protecting and restoring the natural ecosystems of the Channel Islands. Additionally, many species require habitat outside of the park for their long-term survival.

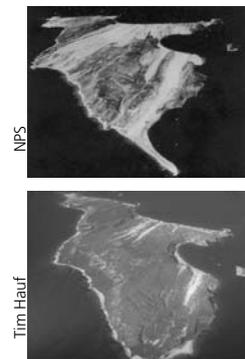
With the northern five Channel Islands now entirely in conservation ownership, many of the species in the park are clearly more "healthy" than they were in the past. Elephant seals have reoccupied island beaches, California brown pelicans are nesting on Anacapa and Santa Barbara Islands, peregrine falcons are again flying over the islands, and the vegetation of the islands is recovering.

We have had significant conservation successes on the islands. However, the park

is not an "island." The long-term health of park resources will depend not just on what we do within park boundaries, but also on the decisions that are made outside of park boundaries. Pollutants, overharvest of marine resources, and, ultimately, global warming all have the potential to unravel the balance of life at the Channel Islands.

The remaining challenges are many and will require commitment from the park, our partners, and the public to ensure that future generations have the opportunity to experience the abundant and unique assemblage of plants and animals of the Channel Islands National Park that it has been our pleasure to experience

San Miguel Island in 1930 when non-native animals overgrazed the island, reducing it to "a barren lump of sand." (top). San Miguel in January 2000. Just 30 years after the removal of non-native animals, vegetation has returned and started to stabilize the island (middle). San Miguel's native vegetation as it appears today above Cuyler Harbor (bottom).





Sanctuary and Park Volunteer Opportunity



Channel Islands Naturalist Corps (CINC) is a group of specially trained volunteers dedicated to educating visitors to Channel Islands National Marine Sanctuary and Channel Islands National Park. Members provide education about the unique resources found within the sanctuary and park to thousands of local residents, tourists, and school children annually. CINC volunteers also participate in numerous local outreach events and collect valuable research on marine mammals and other important resources.

Volunteers accepted into the program are specially trained in a five-week training class with topics including sanctuary and park resource protection programs; interpretation techniques; and an overview of the physical, biological, and cultural aspects of the Santa Barbara Channel and Channel Islands.

CINC volunteers represent the sanctuary and park onboard local whale watch vessels and educational cruises. Additional training opportunities are available to become certified to lead island hikes. Get involved in your sanctuary and park to help protect the ocean and islands through education and research.

Volunteer requirements include: 1) being at least 18 years of age; 2) enjoying working with people (strong public speaking skills desired); 3) knowledge of, or desire to learn about, the natural and cultural history of the Santa Barbara Channel and Channel Islands; 4) attending the required training and professional development sessions; 5) committing to one year of volunteer service with a minimum of 80 hours (which includes three hours per month at volunteer meetings); and 6) ability to handle up to eight hours at sea on power and/or sailing vessels.

For information about our upcoming volunteer orientation and training classes programs please call (805) 382-6149 or visit http://channelislands.noaa.gov/edu/edu_natc.html.

Volunteers come from all over the world to help preserve and protect America's natural and cultural heritage for the enjoyment of this and future generations. Volunteers of all ages give their time and expertise to help achieve the National Park Service mission.

Channel Islands National Park has many volunteer opportunities including staffing the information desk at the visitor center, interpretive naturalist, scientific data entry, historic research, trail maintenance, vegetation restoration, and much more. Some of our recent volunteer projects have included island fox pen building on Santa Rosa and San Miguel Islands as part of the island fox captive breeding program and recovery effort, Del Norte Trail maintenance, planting native plants in the campground on eastern Santa Cruz Island, and beach clean-up on eastern Santa Cruz Island.

Whatever volunteer job you choose, please know that every park employee knows we could never provide the service we do without our incredible volunteers. We could not do it without them.

For more volunteer information, please contact our Volunteer-In-Parks Coordinator at (805) 658-5700 or visit www.nps.gov/chis.

Channel Islands Park Foundation

Dedicated to enhancing the awareness and understanding of the California Channel Islands. The foundation supports projects to develop research funding, educational opportunities, and to expand public awareness and participation. For more information, visit ciparkfoundation.org.

Parks as Classrooms

Attention educators! Do you know students who would like to take a close look at a sea star, examine a pygmy mammoth bone, learn more about the true story that inspired the book *Island of the Blue Dolphins*, or set foot on one of the park's islands? Then the park's education program is for you.

Each year rangers at Channel Islands National Park share park resources with nearly 10,000 students in classrooms and again that many at the park's visitor center.

Hour-long, in-class programs cover a variety of natural and cultural history topics for grades 2-5 in local schools. Programs at the visitor center meet the needs of classes from preschool through university level. There is no charge for these programs, and they are aligned with the California content standards.

For more information visit www.nps.gov/chis or contact the park's education coordinator by phone at (805) 658-5735.

Island Packers, an official park concessionaire, also offers a variety of

student programs, from half-day whale watching to full-day Anacapa and Santa Cruz Island trips. For more information visit www.islandpackers.com or call (805) 642-1393.



Be a Junior Ranger



This program helps children discover and protect the wonders of the islands. Ask for a free Junior Ranger booklet at the visitor center, boat concessionaire offices, or on the islands from park staff. You may also download a copy at www.nps.gov/chis.

Kids of all ages may also become WebRangers by visiting www.nps.gov/web-rangers. At the WebRanger website, you'll play fun games and solve mysteries and puzzles, while learning what park rangers do to help protect our natural resources and cultural heritage. You'll also learn how park rangers observe and discover new things about our national parks—things to share with visitors like you.



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Department of the Interior

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