California State Parks

Seal Watch

Sonoma Coast State Beach

Docent Manual

Supported by Stewards of the Coast and Redwoods
Russian River District State Park Interpretive Association

Seal Watch Program

Sonoma Coast State Park

California State Parks/Russian River District

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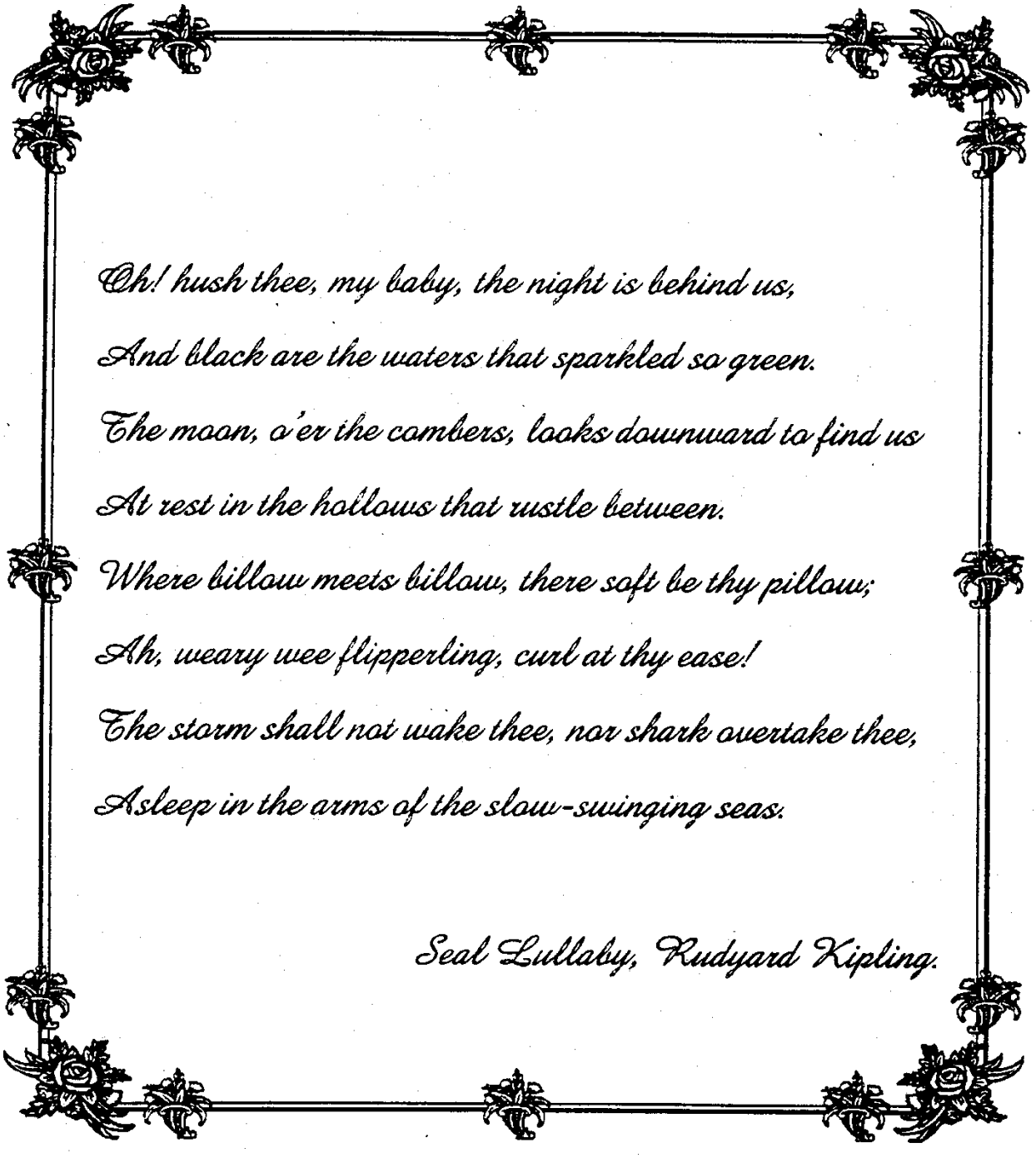

Oh! hush thee, my baby, the night is behind us,

And black are the waters that sparkled so green.

The moon, o'er the combers, looks downward to find us

At rest in the hollows that rustle between.

Where billow meets billow, there soft be thy pillow;

Ah, weary wee flipperling, curl at thy ease!

The storm shall not wake thee, nor shark overtake thee,

Asleep in the arms of the slow-swinging seas.

Seal Lullaby, Rudyard Kipling.

TABLE OF CONTENTS

Seal Watch, An Introduction 7
Part One: Seal Watch And The State Park System 9
Overview of Seal Watch 11
Volunteers In State Parks 12
Park Rules And Regulations 16
Goat Rock And The State Lifeguard Program 18
Part Two: Watching The Seals: Logistics and Information 19
Seal Watch Emergency Contacts and Phone Numbers 21
Seal Watch Logistics 23
I. Before You Go 23
II. Maps and How to Get There 24
III. Shift Preparation on Site 26
IV. Setting up on the Beach 27
V. Sign-In 28
VI. During Your Watch 29
VII. Most Commonly Asked Questions about Harbor Seals 31
VIII. Response to Ill or Injured Animals or Lone Pups 32
IX. Completing Your Watch 33
A Personal Recollection 34
A History Of The Harbor Seal Haul Out 35
Part Three: Seal Studies At Jenner 38
Harbor Seals At Jenner, CA, 1974-1993 40
Seal-Human Interaction Study At Jenner 41
Elephant Seal Mounting and Attacks on Harbor Seals, Jenner 42
Foraging Study, Russian River Mouth 43
Part Four: Biology Of Marine Mammals 46
Harbor Seal Facts 49
I. Classification 49
II. Habitat and Population Distribution 49
III. Food 49
IV. Physical description 50
V. Locomotion 51
VI. Senses 52
VII. Social behavior 53
VIII. Reproduction 53
IX. Lifespan and Major Reasons for Mortality 55
California Sea Lion 56
Northern Elephant Seal 58
Steller Sea Lion 61
How To Distinguish Sea Lions From Harbor Seals 64
Information Sources 68

SEAL WATCH, AN INTRODUCTION

Dian Hardy, Seal Watch Founder
Written in the early 1990s, edited 1/2009

To be at the river's mouth: there in the surround of sky, ocean and land, under the wheel of gull pelican and cormorant, at the magnetic north of the resting place of the harbor seals, is to have known satisfaction of a rare kind. In February of 1985, this resting place was threatened by the city of Santa Rosa's inability to manage its own growth. Following an accidental release of raw sewage into the river, the city admitted it would have to release huge quantities of treated effluent due to the inadequacies of its holding facilities. River residents were shocked and angered at this cavalier treatment. One day before the release (later found illegal), I read in the *Press Democrat* that a Fish and Game Warden said that he felt there would be no difficulty with the seals--after all, dogs had been held in waste water up to thirty days with no ill-effects. This was the first I'd ever heard of the seals, and as an animal rights activist, I was deeply concerned.

At this time, I was in contact with Greenpeace, who had come up to Santa Rosa to try to block the outflow. Their activism and commitment at this difficult time added to my own and helped inspire me to begin monitoring the haulout. As the estuary filled with effluent the seals departed, and did not return until the water had cleared. However, it was evident that the greater immediate threat to the seals was from tourists and unleashed dogs. For a decade since the seals arrival at the haulout in the mid-1970s, the Sonoma Coast State Park's limited resources prevented full development of a program to safeguard the site from these threats. So I went home and called some friends. A day later we were on the site, protecting the seals as best we could. Our spontaneous appearance on the site ultimately led to contact with State Parks and the formation soon afterward of a co-operative association known at that time as *Stewards of Slavianka*.

Our mission then and now is to safeguard the habitat of the harbor seal. The protection we provide is essential, largely because this haulout – the largest on the Sonoma Coast, and one of the largest in northern California – is also a rookery, a place where the seals give birth to their young. Over the years, we have developed co-operative relations with the Marine Mammal Center in Sausalito and the California Academy of Sciences. We have gathered data and assisted with stranded and injured animal transport. We have helped in the research of a number of studies, and are in the process of publishing some of our own. In the years to come, we hope these efforts will lead to a higher level of protection for the Jenner site.

This manual was designed to enhance the orientation process, and provide a reference on the site. The manual is broken up into four sections, all of which comprise the totality of knowledge each Seal Watcher needs in order to fulfill our mission. Besides basic information like Park phone numbers, and how we as volunteers fit into the State Park system, you will find detailed information on the seals. There is a summary of Linda Hanson's foraging study and synopses of the various studies undertaken by Joe Mortenson. Longtime Seal Watchers Bill Higgins (now passed on) and Steven Messimer provided overviews of the specific duties and experience of the Seal Watcher. There is also a summary of the history of the haulout up until the time of Seal Watch's creation, written by twenty-five year Jenner resident and

former SOS board member, Elinor Twohy.

After years of skepticism and doubt, I still see the possibility of a peaceful, cooperative and compassionate universe. Seal Watch has become for me an expression of faith in such a world. For all of you who have come to take part in this endeavor, both longtime friends and new colleagues, it is my hope that we can manifest this faith at the Jenner haulout – this smallest fragment of the earth – as an example of what might be done in the greater world beyond.

PART ONE

SEAL WATCH AND THE STATE PARK SYSTEM

OVERVIEW OF SEAL WATCH

The Russian River mouth at Jenner is a critical habitat for California's harbor seal. March through May is the harbor seal pupping season on the California coastline. For several months thereafter, many harbor seals remain around the mouth of the Russian River, nursing, mating and molting. They depart only for a few weeks in autumn, traveling east and north to forage, returning in the winter.

Several studies (and simple observation) have shown the harbor seals are extremely wary of humans and will rapidly disperse and remain away from areas in which humans have encroached. Mothers will abandon pups if humans are near them, and abandoned pups, even if they receive expert care, rarely survive to adulthood. Jenner's seal population has a lower-than average rate of reproduction. Studies suggest that the high and fairly constant level of human interference is a central factor in the low pupping rate.

The Seal Watch program is intended to educate the visiting public about the harbor seals and maintain a physical buffer area around their haul-outs from March through September each year. This covers the most critical periods for the harbor seals: when pregnant seals are preparing to pup, when pups are nursing, and during the mating season and the molting period.

The legal basis for this work is contained in The Marine Mammal Protection Act of 1972, which makes illegal "any …act which would result in the disturbing or molesting of a marine mammal…[T]o interrupt the animal's normal activities constitutes harassment and is against the law."

Seal Watch volunteers receive training about the seals and the state parks. Although trained by Stewards of the Coast and Redwoods, they are unpaid employees of the California State Park System. Volunteers arrange with the monthly shift coordinators to serve at least one four-hour shift a month from March through September in Goat Rock State Park, at the mouth of the Russian River. While on duty, volunteers maintain a perimeter for visitor observation of the seals without disturbing them, and may address visitor questions about the seals. Volunteers are usually visited by the Sonoma Coast Lifeguard during their shifts, and are in contact with the Jenner Visitors Center by radio.

Seal Watch volunteers are the major source of protection for the harbor seals of Goat Rock State Park.

VOLUNTEERS IN STATE PARKS

As a member of Seal Watch it is important to keep in mind that you are a volunteer employee of the California State Park System. Interpreting and protecting the harbor seal rookery is the primary task, but it must be accomplished within the parameters of the park's larger mission. The park system itself grew out of the turn-of-the-century progressive view that an enlightened government can provide for the happiness and recreation of the citizen while preserving vital natural and historical resources. The first park was formed in 1902, with the establishment of the California Redwood Park at Big Basin in Santa Cruz County. In 1927, the State Park Commission was formed for the purpose of selecting sites for future state parks, and a bond issue was authorized to fund necessary purchases. The purchase of selected lands began soon afterward, leading to the creation of a system of park units now numbering 278 areas and representing all varieties of the state's unique scenery, including redwoods, beaches, deserts, historic sites, scenic reserves, recreation areas and mountains.

The Sonoma Coast State Park was one of the first parks created by the commission, and purchase of the unit's first lands was begun in the early 1930s. When the Sonoma Coast State Beach opened in the spring of 1934, roughly 600 acres had been reserved for park's use. These acres included most of the beach front land between Salmon Creek and the Russian River. The Depression and the Second World War slowed the pace of subsequent park development, but work proceeded in earnest in the late 1940s, with the construction of facilities at Goat Rock, Wright's Beach and Salmon Creek, and the appointment of the park's first permanent staff. Through the years the park slowly expanded to include most of Bodega Head, North Jenner and the lower portion of the Willow Creek basin, including Porno Canyon. It contains a total of 5,000 acres, with hiking trails, parking lots, rudimentary restroom facilities, and two developed and two environmental campgrounds. The staff has grown from a total of two rangers in 1948 to a contingent of six rangers, five maintenance workers, several lifeguards and numerous seasonal staff.

In 1985, the park district entered into an arrangement with park volunteers to assist the full-time staff with the fulfillment of the park's mission. The organization grew out of the efforts of the first Seal Watchers under the leadership of Dian Hardy after the city of Santa Rosa released untreated sewage into the Russian River. Working with Sonoma Coast Ranger Dan Winkelman, Hardy and the other founders of the Seal Watch organization integrated the score of Seal Watchers into the park's official program. Very soon, a larger volunteer organization formed under the name Stewards of Slavianka to assist in a wide range of interpretive and volunteer duties. Since that time, the Stewards role has expanded, and its name has changed to reflect this. Today, Seal Watch is one of several volunteer organizations under the aegis of the Stewards of the Coast and Redwoods.

As members of Seal Watch, you must remember that you are an unpaid employee of the state and will not receive pay or goods for work performed, whether the work in question be fund raising, interpretation, staffing sales booths and/or giving demonstrations. All of your services will be on a strictly voluntary basis, and you cannot be required by any of the park staff or anyone else to do any work which you do not wish to do. As a park volunteer you will be covered by the same policies as regular employees regarding liability. A number of state and federal tax benefits are available for volunteers. You may be able to deduct some

unreimbursed expenditures made while serving the Department, such as automobile mileage, bus and cab fare, parking and toll fees, cost of meals and lodging if away overnight, travel expenses above per diem allowance and expenditures for special uniforms or costumes. You will also be covered by Compensation Insurance in the event you are injured while working in the park. For any of this to be valid, you must complete a form: A Volunteer Record and Service Agreement (DPR 208). These forms are available at orientation sessions, and can be obtained from the Seal Watch coordinator.

The Volunteer Services Agreement (VSA) is a contract between DPR and volunteers. The VSA legally enrolls individual volunteers into the department's Volunteers in Parks Program and entitles them to workers compensation benefits. The VAS includes a description of the work volunteer will perform, any time commitments, conditions for reimbursements of expenses if reimbursement is to be provided, and the volunteer's official starting date. 'The document can be modified at any time by mutual agreement, but it must at all times accurately reflect the volunteer's duties. The document itself is valid for a total of 3 years, though extensions and renewals of the agreement are available options.

Any volunteer under the age of 18 must have a parental permission form signed by parents or legal guardians and a parent or guardian must volunteer with anyone under 18. This form is to be attached to the VSA, and will be valid only for the time period stated on the VSA Several of the Labor Code laws may apply to volunteers under the age of 18. Defined by the California labor Code, Chapter 2 occupational Privileges and Restrictions Article 2, Minors, section 1286(c), a minor is any person under the age of 18 years who is required to attend school as specified under the provisions of the Education Code. An employer can be cited and fined for a Child Labor Law violation that has a direct or immediate correlation to the health, safety or security of a minor, or creates "substantial probability of death or serious physical harm to a minor."

When enrolling as a park volunteer with Seal Watch, you are agreeing to abide by certain standards of conduct rules and procedures. As a volunteer, you are expected to conduct yourself in a manner that reflects pride in yourself and in the State Park System. The following information is intended to give you some guidance along these lines.

DEPENDABILITY. You must be both punctual and dependable in fulfilling your duties. If an unforeseen emergency arises, notify the volunteer coordinator immediately. If you are committed to a shift requiring a replacement, attempt to find a replacement from the alternate list and notify the volunteer coordinator of any Changes. Remember, promptness and reliability are crucial! Teamwork and co-operation keep our volunteer program alive.

APPEARANCE. You must be neat and clean in appearance when acting in a public function, Wear the approved volunteer badge or vest when identifying yourself as a volunteer with the State Park System.

ATTITUDE. A pleasant and professional attitude is all-important. All visitors are guests, and it is primary responsibility to see that their visit is pleasant, enjoyable, and safe, The public expects and deserves to be treated in a courteous and professional manner. If a visitor comes to you with a complaint, explain to him or her what action you can or cannot take, and report the matter promptly to a ranger or lifeguard. If a visitor asks you to identify yourself, do so. Above all, never give false or misleading information to the public. If you do not know the answer, don't be afraid to say so, but try to be well-informed and helpful. Avoid any public criticism of the State Parks Department, staff, or policies when performing volunteer duties. If there is something you disagree with, discuss it with the volunteer coordinator or the supervising ranger.

BEHAVIOR. Immoral conduct, the illegal use of drugs, reporting to work with alcohol on the breath, being drunk or drinking alcohol on duty, or commission of a serious crime are all expressly prohibited, and will result in your being asked to leave the program. It is your responsibility to treat your co-workers and park staff with courtesy and respect, to obey all lawful orders to report to the park on time and ready to work, and to remain alert while on duty. It is not proper to listen to radios or cassettes, play cards, or perform other such activities in view of the public. Keep private visiting to a minimum when the public is present. Do not use public contacts as a soap box for your private views.

AUTHORITY. As a volunteer, you do not have peace officer authority. You should be familiar with park rules and regulations and, using your best judgment, you should caution park visitors if you witness a violation of these regulations. You are to report all violations of law or park rules that you witness to a ranger or lifeguard. You are, of course, expected to personally comply with all park rules and regulations.

CONFIDENTIALITY. Certain information of which you may become aware is confidential and must not be discussed outside the organization. Confidential information includes such things as crime and incidents, rescue and accident reports, disciplinary actions, employee grievances, budget proposals, and proposed policy changes. If you are questioned on these matters, politely but firmly refer the questioner to park staff.

INTERPRETATION. You are required to read this manual in order to become familiar with the basic information. It is important that all volunteers know and adhere to a certain "standardization of facts" for a consistent interpretive program. A fact, stated as a fact, must be a fact! A story, legend, or conjecture may be included in your presentation, but it must be clearly identified as such. Admit "I don't know" rather than relate misinformation. Don't change from interpreting facts to personal showboating. Let your visitor be your guide to the direction of your interpreting. A satisfactory speaking voice and the ability to communicate well are basic requirements for effective interpretation. It is important that you possess the ability to accept constructive criticism for reasons of self-improvement. All volunteers are encouraged to repeat training sessions as a refresher, and to assist in sharing information and experiences as a volunteer.

When interpreting the seal haulout, emphasize the interdependence between people and nature, between any one piece of nature and all the other pieces, and between historic facts and current interpretations thereof. Historical and natural historical events did not happen in isolation, but were linked to other events which the visitor may know about and relate to. Nor is any part of the river mouth setting independent of any other part. Command of the facts of the haulout, the lifecycle of the seals, the interactive nature of the various animals in the area, the historic and natural historic development of the coast and rivermouth, are all extremely important in providing a meaningful and enjoyable interpretive experience for the park visitor. By weaving these elements together, it is possible not only to provide that full interpretive experience, but also to lay the foundation for apprehending the value of this particular natural setting and the importance of preserving it. Getting to know the personality or experience of the visitor is likewise useful when interpreting – finding out, for instance, if they have ever seen harbor seals before or if they live and work in an environment radically different from the coast environment. In all, the interpretive experience should be fun, both for the visitor and the interpreter. By investing some time and effort to learn and understand the many aspects of the seal haulout, it is possible to take part in something that is extremely rewarding and enjoyable. To this end, there are a number of published sources of great value available in the county library system and the District Office (see bibliography at end of this manual). Stewards of the Coast and Redwoods also possesses a number of useful resources, thus membership in this organization for the purpose of making contacts and accessing information is greatly encouraged.

PARK RULES AND REGULATIONS

While tending to your duties as a Seal Watch volunteer, keep in mind the State Parks motto: *"THE BEST OF CALIFORNIA FOREVER."* Without protection, many areas in the California State Park System could soon perish.

Conveying the parks philosophy, policies, and rules generally results in willing cooperation. A small percentage of visitors, however, will continue to resent or resist the regulations. They will require special attention or enforcement action.

As a volunteer, you may encounter situations where you must decide whether a visitor's actions merit only an explanation of a rule or more formal action. Any acts that may constitute potential hazards to the safety of people or property should be reported promptly to the Jenner Visitor Center or any ranger. State Park Rangers and some lifeguards have peace officer authority. Do not threaten or try to bluff a visitor. Never hesitate to call upon a ranger for guidance or assistance in any situation which threatens to become a problem. Doing so also may preclude or minimize liability in case of an accident.

It is important that each volunteer read and become familiar with rules and regulations of the State Park System, specifically those that apply to Sonoma Coast State Beach. The following is a summary of some of the more commonly seen violations:

ANIMALS: No person is allowed to hunt, injure or otherwise disturb any animal within the park's boundaries. State Fish and Game regulations govern all activities from the average (mean) high tide area and beyond. Within this authority tidepool creatures are protected from molestation and injury. Regarding marine mammals, the federal government has also placed protective measures regarding their safety.

COLLECTING: Living and non-living things are protected within State Parks, including all plant life and driftwood. Permits must be obtained from the district's superintendent for any exceptions.

GEOLOGICAL & ARCHAEOLOGICAL FEATURES: Such features are protected from removal, disturbance, injury, disfigurement, defacement, destruction or mutilation.

PETS: Animals must be kept leashed and under control at all times within a State Park unit. **Dogs are not allowed on hiking trails or at the environmental campgrounds. Certain areas on the Sonoma Coast are closed to dogs, including the bluffs on Bodega Head and Goat Rock beach.** Dogs are allowed on a leash at Blind Beach, Shell Beach or Furlong Gulch, to the south of Goat Rock**.**

FIRES: Fires are not allowed on the beaches. Fires are allowed in designated fire rings only.
FIREARMS & WEAPONS: Regardless of the intention of their possession, it is illegal to possess or carry any weapon capable of causing injury.

LITTER: Disposal of any item, other than in a proper trash receptacle, is prohibited.

CLOSED AREAS: Because of significant dangers to the public, certain areas may be closed

to public access at the discretion of the district superintendent. On the Sonoma coast, two locations in particular have claimed the lives of a number of park visitors. Goat Rock proper is completely closed to any kind of hiking or climbing activity, and the rock outcropping at Duncan's Landing, known as Death Rock, is restricted to any type of entry.

OFF-HIGHWAY VEHICLES: No vehicles are allowed off-road in a State Park, and all vehicles must be registered through DMV for use on roads.

HORSES: Generally, horses may not be ridden on beaches. Certain areas are exceptions, including the beach south of the Bodega Dunes' day use area.

CAMPING: Camping is allowed only in designated state-operated campgrounds at Wright's Beach, Bodega Dunes, Willow Creek and Pomo Canyon.

CURFEW: Juveniles (under 18 years of age) may not be on Sonoma Coast State Beaches after sunset unless accompanied by their parent or guardian.

VEHICLE OPERATION: All rules of the road, as defined by the California Vehicle Code, apply in State Parks.

CRIMINAL ACTIVITIES: Any activity which is defined as criminal, through the California Penal Code, is illegal within a. State Park unit. Alcohol-related regulations also apply.

PUBLIC RESOURCES CODE: 'The Department shall protect the State Park System from damage and preserve the peace therein. Any person who violates the rules and regulations established by the Department is guilty of a misdemeanor and, upon conviction, shall be punished by imprisonment in the county jail for a time not to exceed 90 days, or by a fine not exceeding $500, or by both such fine and imprisonment.

GOAT ROCK AND THE STATE LIFEGUARD PROGRAM

Rex Grady, LGS II, State Lifeguard Service

Few places on the coast are as unspoiled, accessible and breathtaking as Goat Rock State Beach. Imposing cliffs, windblown bluffs, long sandy beaches, a diverse array of spring wild flowers, imposing sea stacks, an ever-changing and diverse rivermouth, a wide variety of sea birds and great Goat Rock itself make this beach a remarkable place for recreation. Since its inclusion in the State Park, Goat Rock has been a favorite among park visitors from throughout the state and beyond. Unfortunately, Goat Rock, for all its manifold beauties, is extremely dangerous. An impressive drop-off, just yards from shore, a steep berm and a prevalence of rough northwestern swells conspire to form a nearly irresistible shore break and back-wash, potentially deadly to anyone caught in it. Over the years, many people have been taken unaware by the sudden fury of the so-called “sleeper waves” generated along this stretch of beach. Merely walking on the sand close to the water's edge is enough to place one at risk from these unpredictable waves. The river, too, poses dangers. Due to tidal fluctuations and the instability of the river's banks, anyone wading, swimming, beach walking, diving, kayaking or boating can suddenly find him/her self fighting a treacherous current. From 1950 to the present dozens of people have died here, either drowned in the river, swept out to sea by waves, or crushed in falls from Goat Rock itself.

In 1990, a lifeguard program was instituted to combat the dangers associated with this otherwise lovely shore line. The program was intended to cover the entire Sonoma Coast park, but special emphasis has always been placed on Goat Rock. Lifeguards provide a full-time presence on weekends, with coverage as needed on weekdays. Their primary task is to safeguard the visiting public, mainly through interpretive talks and safety contacts. It is the lifeguard's goal to prevent situations from occurring during which the visitor's life might be at risk. Secondary considerations include enforcement of park rules and regulations, providing park and local information, historical and natural history, interpretation and assisting other park staff with assorted tasks. Safety contacts have been augmented greatly by an interpretive program aimed at school-aged children. This program has allowed lifeguards to reach out into the community in a unique way.

Whenever possible, lifeguards have rendered assistance to Seal Watch; locating and/or transporting stranded and sick animals and helping volunteers with the set up and break down of their Goat Rock station. Lifeguards recognize the importance of the rookery, and have taken seriously their obligation as Park employees most closely associated with Goat Rock, to provide enforcement of the harbor seal protection area. Seal Watch volunteers are asked to keep an eye out for lifeguard presence. The lifeguards are glad to hear from you, and they rely on you to give them any pertinent information regarding the state of the beach. But please remember, the lifeguard's priority is public safety. If there is an emergency, follow the “Walkie-Talkie” procedures or use the phone at Goat Rock to dial 911. If a lifeguard is nearby, contact him or her. They are trained to respond to safety-related emergencies, and are in direct contact with the Park's emergency dispatcher.

PART TWO

WATCHING THE SEALS:

LOGISTICS AND INFORMATION

SEAL WATCH EMERGENCY CONTACTS AND PHONE NUMBERS

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EMERGENCY at Goat Rock State Park:
Radio Instructions

1. **Rotate the switch on radio top to the right**. This also increases the volume.
2. When "1" shows in the view window, **hold down the button on the upper left side of the radio** (as you look at the radio face).
3. **Describe the situation and your location** and request advice and assistance. Release the button when you finish speaking.
4. **If you get no response**, press the music note key to ring other radios on the system.
5. To check the batteries, look in the upper right-hand corner of the view window. You will see a symbol for a battery with three bars in the symbol. As the batteries get low, the number of bars will decline. Three bars indicates that the batteries are fully charged.

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Be aware that cell phone service is unreliable on the beach at Goat Rock. From Goat Rock the closest pay phone is across the street from the Sizzling Tandoor Restaurant on Hwy 1 & Willow Creek Road.

State Parks Central Dispatch Can be used for emergencies	1-916-358-1300
Call for Emergencies	9-1-1
Jenner Visitor Center:	707-865-9757
State Parks Staff, Bodega Dunes	707-875-3483
Jenner weather, Elinor Twohy	707-865-2762
Marine Mammal Center	415-289-SEAL [7325]
Seal Watch Program Coordinator, Bob Caricato	707-829-8927
Dead marine mammal CA Academy of Sciences	800-532-9551
General information about Seal Watch or Stewards of the Coast and Redwoods	707-869-9177

SEAL WATCH LOGISTICS, *Steven L. Messimer*

If you cannot cover your shift, call someone on the list to ask to switch with them. If all else fails, call your monthly shift coordinator, preferably two weeks before the scheduled shift.

I. BEFORE YOU GO

Contacts. The weekend before your watch you are required to contact your:

- shift coordinator to confirm that you will make your watch; and
- shift partner to arrange to meet and coordinate driving.

Verify the supply lockbox combination, if necessary.

Dressing. The day of the watch, dress in layers and bring rain protection. Your local weather can bear **no** relation to weather at Goat Rock State Park. The beaches are wonderful if you are properly prepared, but unforgiving if you are under dressed. If you have serious concerns about the weather, you may ask Elinor Twohy at 707-865-2762.

Beverage: The beach is a dry climate, and you need to hydrate accordingly. A pot of coffee may get you up, but will not be appreciated on watch, when the nearest restroom is a half-mile away. The following drinks are recommended:

✷ Water ✷ Sports drinks ✷ Juice

The following drinks are **not** recommended:

✷ Coffee ✷ Caffeinated drinks ✷ Soda

Skin protection. Prepare for wind, sun and fog. Suntan lotion, lip balm, and a skin moistener may help.

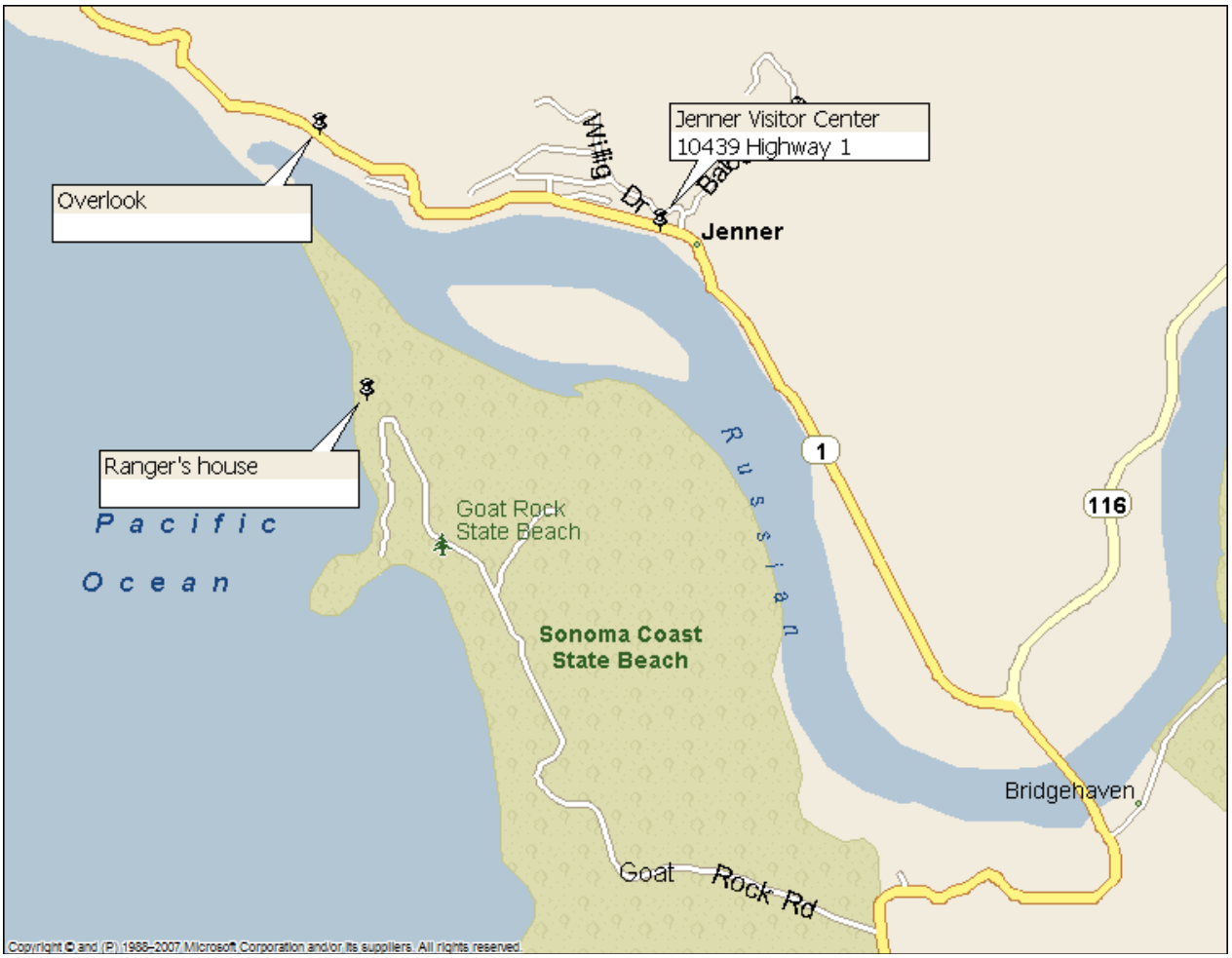
Communication. Cell phone access along the Sonoma Coast is rare and unreliable. Expect to be out of range during your shift, and rely only on the Stewards' Walkie-Talkie.

Timing. Be on time: on the beach at 10 a.m. for the morning and 2 p.m. for the afternoon shifts. Allow time for the count and checking at the overlook and getting supplies.

II. MAPS AND HOW TO GET THERE

Highways. River Road and Route 116 West to Route 1 are the most direct routes when coming from west and north, but some side roads may be less curvy and faster.

Goat Rock State Park shown to emphasize the primary locations for Seal Watch



III. SHIFT PREPARATION ON SITE

Overlook. Before your shift, drive to the overlook just north of Jenner along Highway 1 (it is the second dirt pull-out past the last Jenner buildings). At the overlook, use binoculars to count the seals. Enter that count in the shift log when you retrieve it from the supply box.

Also note any animal
1. isolated from the other seals
2. that is unusually lethargic
3. with open wounds, i.e. holes or gashes
4. with dry, crusty eyes
5. that is extremely thin/emaciated, especially a pup or yearling
6. that appears to be dead
7. with identification tags or markings. (If possible, note the tag color and number.)

Enter this information in the log book prior to set-up, and notify the Marine Mammal Center (at 415-289-SEAL) of wounded, emaciated or tagged seals.

As the great majority of visitors come from the south side of the river at Goat Rock, volunteers generally set up on that side. If the number of volunteers allows it and north side visitors require it, however, a volunteer may be posted on the north side of the river.

Morning shift volunteers pick up supplies for the day's watch from the locked boxes in the park at the south side of the Russian River, and at the Jenner Visitor Center on the north side. **Afternoon shift volunteers** return the items to the locations from which they came.

North side supplies are kept at the Jenner Visitor Center

South side supplies. The south side box is outside the ranger's house in Goat Rock State Park. Enter the park, drive down the hill, and make a sharp right turn almost at the bottom. Make the first right just before the parking lot on an access road to the ranger's house. Park (temporarily) at the barrier and walk in towards the ranger's house. The box is located on your left by a fence just before the house. If you see the ranger or a member of his family, identity yourself as being with Seal Watch. You will receive the combination from the monthly coordinator. Load the backpack with supplies for **both** shifts.

Supplies. The basic supplies are:

- Seal Watch backpack
- Walkie-Talkie (radio): check that the batteries are charged; replace if needed
- Logbook, vests, tidebooks, pamphlets, Ocean Safety handouts.
- Spotting scope (south side only), tripod, binoculars,

If you are the only person on watch, it is not necessary to bring all of the gear. Successful watches have been performed with only a vest and a seal watcher.

Parking, North Side. When you need to access the north side beach, park at the overlook and walk down the trail. Be very careful on this trail as it is steep and rocky.

Parking, South Side. Park in the main lot on the Goat Rock side. If the parking lot is full, unlock the gate to the ranger's house and drive in, return the key to the lock box, shut and lock the gate. The key box is attached to the left gate post; the combination is **SWK** (Seal Watch Key). To open the lock, spin the dial at least three times clockwise to the S, counter-clockwise to W, then clockwise to K. Slide the black lever down to open. You may have to give the dial a slight wiggle in the clockwise direction as you move the lever down. The key is attached to the cover. After using the lock, replace the key and cover, push the lever up and spin the dial clockwise. Park out of the way of the garage or any vehicle at the ranger's house. You must place a Seal Watch parking pass (located in the box) on your dashboard. Do not block the garage area, the ranger's vehicle or the house. Park as much out of the way as possible.

IV. SETTING UP ON THE BEACH

At the beginning of each shift, volunteers

1. determine the location for set-up,
2. radio the Jenner Visitor Center; and
3. log in for the day.

The volunteer location is based on personal safety and distance from the seals.

Personal Safety. When you arrive at the beach, visually check the ocean and the river, and verify the high and low tides timing and height from the tide book. Consider where a sleeper wave would hit and where the tide will reach at its peak. If personal safety requires it, set up farther than normal from the seals. If you have any questions concerning the conditions, use your walkie-talkie to contact the lifeguards.

Seal Concentrations. The seals usually haul out in one area. If they are scattered across the beach, set up 50 yards back from the seals which are closest to the parking lot. (Until you are used to judging the 50 yard span, it may help to walk about 65 steps—about 50 yards—from a marked spot on the beach, and note the span visually.) Regardless of the distance, if the arrival or presence of volunteers or visitors causes three or more seals to alert, they are being disturbed, and people must be moved further back from them. If you set up 150 yards or more back from the seals, however, visitors will not be able to see the seals and this may

result in a challenge to your barrier and authority. If your reasons are sound for your barrier location, such as personal safety, most visitors will understand.

Signs and ropes. Information and warning signs generally are placed on the beach at the beginning of the season. They are intended to inform visitors about the seals and their protection **before** they reach the seal watch location. Thus these signs and ropes should be kept well back of the 50-yard buffer around the seal haul-outs; a 200-yard range may be appropriate. Volunteers generally set up watch past those signs and ropes.

Shifts in the river mouth and in the seal haul-outs occasionally require you to move the signs and ropes to better protect the seals. You may also place a temporary sign or rope near a group of seals away from the larger haul-out, when they are too dispersed to be covered by the watchers. Up on the beach, one often cannot see down to the tideline, or to the edge of lagoon, so visitors may pass by unobserved. A sign and rope by the ocean or lagoon may alleviate this problem. Locate your signs so that they will not be washed out to sea.

Because the concrete weights at the base of the signs and ropes make them unwieldy, you may need to use the walkie-talkie to ask a ranger to assist in moving the signs and ropes. A single sign and rope on an isolated beach will often keep visitors back from the seals without a Seal Watcher being present.

V. SIGN-IN

Radio (Walkie Talkie) Procedures.

Once you have completed your setup, check in with the Jenner Visitor Center.

Check-in time for morning shift is 11 a.m.
Check-in time for afternoon shift is 2:30 p.m.

1. Turn on the radio by rotating the on/off switch (on radio top) to the right. This is also the volume control.
2. When the number “1” shows in the view window, the radio is ready to use.
3. To transmit, depress and hold down the PTT button located on the upper left side of the radio (as you look at the radio face).

Say : “Hello, this is Seal Watch, over".

Release the PTT button once you have finished speaking.
The Visitor Center docent will say, “Hello Seal Watch, over**.”**

Say: How many people are on duty and your location.

4. If you get no response, press the music note key to ring other radios on the system. On their end it will sound as if a phone is ringing.
5. To check the batteries, look in the upper right-hand corner of the view window. You will see a symbol for a battery with three bars in the symbol. As the batteries get low, the number of bars will decline. Three bars indicates that the batteries are fully charged.
6. If there is a problem with the radio, please contact the Stewards Office at 707-869-9177.
7. **Turn the radio off** when not in use and at the end of your shift.

Log book. Fill in a new form for each shift, providing the seal-count at the start of the shift. Note any seals in unusual condition, particularly for follow-up observation by those on the next shifts.

Spotting Scope. Upon set-up, adjust the magnification for visitors to focus on the seals.

VI. DURING YOUR WATCH

Interacting with visitors. Although many visitors will have seen the signs about the seals before reaching the set-up area, many are uncertain about where they can go and where the seals are. You may approach visitors as they come toward the river mouth, offering binoculars and informing them of the location of and necessary buffer zone around the haul-out. By doing so, you are preventing their encroaching too close, while providing a friendly basis for their viewing. You may adjust the spotting scope height and direction to encourage visitors, especially children, to view them. In this process, many will ask you questions about the seals. The majority of such questions are addressed in **Section VII** below.

Marine Mammal Protection Act of 1972. The legal basis for your work is contained in this federal act, which makes illegal "the negligent or intentional operation of an aircraft or vessel, or the doing of any other negligent or intentional act which would result in the disturbing or molesting of a marine mammal". Most particularly it states that, "... **the animal's normal behavior should not be interrupted. To interrupt the animal's normal activities constitutes harassment and is against the law."**

River watch. Please regularly check the river. **County ordinance prohibits boats within 100 yards of the haul-out area.** The vendors for canoe and kayak rental in Jenner have agreed to notify their customers of this restriction. But renters may need to be reminded and others may need to be informed about the restriction and the location of the seals. A Sonoma County Ordinance also sets a 5 MPH speed limit for water vessels on the river from the bridge at Bridgehaven to the mouth of the river. You may need to call out to visitors on the water to inform them of these restrictions.

Regulation violations. If you encounter a visitor who insists on passing the boundary or in any other way refuses to abide by these laws and guidelines, **do not put yourself in a potentially dangerous position.** Let the person go ahead, and as soon as possible thereafter, radio the Jenner Visitor Center to call for a ranger.

Animals needing attention. Attempt to repeatedly observe any animals that may be ill or pups that are alone for an extended period. Notify the Jenner Visitors Center immediately if you sight a wounded animal. Rescue guidelines are outlined in **Section VIII** below.

Log book. For most accurate records, enter counts and comments soon after events and visitors occur. You're encouraged to read in the log book.

Radio. The radios are to be used for your safety, for assistance from the lifeguards and for asking the Jenner Visitor Center or ranger to contact the Marine Mammal Center. If you have

any problems with the radios, please inform your monthly shift coordinator after your shift. Please keep the radios in the backpack while on the beach (to keep it safe and sand-free). An extra set of batteries is in the pack.

Severe weather. You may find that the weather on your watch is too severe to remain on the beach. If so, please follow the standard check-out procedures (**Section IX below)**, notify the lifeguard as you depart, and inform your monthly watch coordinator on your return home.

Photography. Visitors may wish to approach the seals to take photographs. You may encourage them to watch for seals in the ocean, where they often will come closer to people than they would on land. Please remind visitors that apparently minimal interruption can lead a mother to abandon a pup and drive seals from the haul-out and is illegal.

Swimming. Many beaches on the Sonoma Coast—including, of course, Goat Rock State Park are exceedingly dangerous. Visitors who wish to swim should be referred to Doran Beach within Bodega Bay, about 10 miles to the south of Goat Rock State Park. When distributing the bilingual Ocean Safety handouts make sure they are given to anyone who expresses and interest in swimming in the ocean.

Tidepooling. Visitors interested in viewing tide pools may be referred to Shell Beach, which lies about a mile south of Goat Rock Park on Highway 1. Check the tide book to determine the day's low tides, as the pools are not visible at other times, and approaching them may be dangerous. Please ask that visitors not disturb tide pool life, and remind them that even turning over a rock may expose invertebrates to sun and air that is lethal to them.

VII. MOST COMMONLY ASKED QUESTIONS ABOUT HARBOR SEALS

1. **How long have the seals been here?**
We have been told by long-time local resident Elinor Twohy that the harbor seals displaced the local sea lion population in 1974.

2. **Do they stay here all year?**
There is a constant presence at the spits, with the exception of several weeks in the fall.

3. **How much do seals weigh?**
Average adults weigh 175-300 pounds and are 4 to 6 feet in length. Males are slightly larger than females. Newborns weigh from 10-25 pounds and are 16-36 inches long.

4. **How long do they live?**
A seal's life span is estimated to be up to 29 years. Less than 50% of pups survive their first year.

5. **What do they eat?**
The major part of a seal's diet consists of flatfish, octopus, hake and hagfish. Minor parts of their diet include squid, salmon and rockfish. They can be described as nocturnal marine predators. (see Foraging Study by Linda Hanson)

6. **Why do they lie on the beach so much?**
Hauling-out is an important part of the daily routine. Seals on the beach are resting, regulating body temperature, and re-oxygenating their blood.

7. **How often do they mate?**
Seals will mate once a year, usually six weeks or so after a pup is born.

8. **How long is the gestation period?**
After being impregnated, seals undergo two months of delayed gestation. Nine months after this delayed gestation, they give birth to a single pup.

9. **How long do pups nurse**?
Pups will nurse from four to eight weeks and more than double their weight in this time.

10. **Can pups swim at birth**?
Yes, but they will often need their mother's assistance. You may see them resting on their mothers' backs while in the water.

11. **How long do pups stay with their mothers?**
Until the end of lactation, usually about eight weeks after birth. Year-olds may remain close to other adults, possibly their mothers, prior to the birth of other pups.

12. **Where are they born?**
Seals are usually born on land. In response to stress and interference, mothers may birth pups in the water, decreasing their chances of survival.

13. **How can you identify newborns?**

Newborn seals are significantly smaller than the rest. You can sometimes see where the umbilical cord was attached. Their coats are the same color as adults. Only premature newborns have white coats. Full-term pups molt their white coats while still in the uterus and are born with a dark coat. In Jenner, pups are born only in March, April and May.

14. **How long can seals hold their breath?**
15. Twenty to thirty minutes.

16. How deep do they dive?
More than 300 feet; the record depth measured was approximately 600 feet.

17. Where do they sleep?
They prefer to sleep on the land, but often are forced to sleep in the water (high tides, etc.); if so, they wake up frequently to surface and breathe.

18. Do sand and mud bother their eyes?
Glands steadily lubricate their eyes with tears; their eyes are also protected by a membrane which is like an inner eyelid that effectively wipes away sand and debris,

19. What is the difference between seals and sea lions?
Sea lions have visible ear flaps, their call is a noisy bark, they "walk" with all four flippers, their heads have a longer, more dog-like muzzle, and their flippers provide more upright and dexterous locomotion on land.

VIII. RESPONSE TO ILL OR INJURED ANIMALS AND LONE PUPS

Animals for observation include those:
1. isolated from other seals for extended periods, especially pups;
2. with open wounds—holes or gashes;
3. with dry, crusty eyes;
4. that are extremely thin, with loose folds of skin around the neck, especially pups;
5. with identification tags.

If you believe an animal requires assistance, contact the Jenner Visitor Center to ask that they call the Marine Mammal Rescue Center (MMC). The more information you can give them, the better they can perform the rescue, if that is determined to be necessary.

Visitors may notify you of a harbor seal pup alone on the beach. Explain that its mother probably is temporarily away fishing and will return. Also inform visitors that standing anywhere near a harbor seal pup may result in its permanent abandonment. If the pup is not within the 50-yard protection area, put a sign and/or ropes to keep visitors at such a distance. If the pup is visible and attracting visitors, and a volunteer can be spared, one may be posted at the 50-yard perimeter. Try to keep observers where they cannot be seen, should the mother return. If, after several hours of observation, the mother has not returned, the pup should be reported to Marine Mammal Center.

Never touch a harbor seal pup without explicit instructions from the Marine Mammal Center (415) 289-SEAL or a Sonoma Coast State Park official.

MMC is a private, non-profit, 95% volunteer organization, funded by private donations and memberships. The Center is open to the public seven days a week from 10 AM to 4 PM.

IX. COMPLETING YOUR WATCH

When your watch is finished, complete all entries in the log book.

Morning shift. Notify the afternoon shift volunteers of any animals requiring observation and any deficiencies in the supplies and equipment. If requested, bring back supplies that the afternoon volunteer will not need and secure them in the lockbox.

Afternoon shift. Ensure that the radio is turned off. Move all signs and ropes well above the high tide line. Gather all gear, return it—and the parking pass—to the lockbox and lock it securely.

At the beginning of your shift, you may have noticed an animal whose condition appeared poor. If you were unable to observe it well from the beach, at the end of your shift, please return to the overlook to determine if further attention may be needed. Please notify the lifeguard about animals whose condition requires continuing observation by those on subsequent shifts, or if you believe expert attention may be warranted. Give as detailed information on your observations as possible.

Also inform the Seal Watch Volunteer Program Coordinator of missing signs or equipment, or if extra radio batteries are not in the backpack or if you had to use them, so they can be replaced. Please inform State Park staff about public safety and legal issues. (Refer to *Seal Watch Phone Numbers* page.)

Remember when you complete your watch:

- ✷ You have done something good today
- ✷ You have spent four hours in one of the most beautiful locations in the world
- ✷ You have met new and interesting people
- ✷ The visitors have appreciated your service and have enjoyed the seals
- ✷ Future visitors will be able enjoy the presence of the seals
- ✷ The seals and their pups have had a much nicer day due to your efforts
- ✷ Hot showers are very nice.

A PERSONAL RECOLLECTION

Bill Higgins

For the morning shift, I prefer to arrive at the overlook by 9 a.m. This gives me a chance to count the seals and observe why we are here. Frequently, someone is among the seals or chasing them into the water. From there I drive to Goat Rock, pick up the gear and walk the quarter mile or so to the site. I approach the seals cautiously, stopping once they begin to get restless and raise their heads. This usually will happen at about the 50-yard legal limit, but I recommend measuring out 50 yards some time beforehand in order to get familiar with what 50 yards looks like. If you are too far back, visitors will complain they can't see. But all conditions depend on the weather, tides, where the seals have put themselves, and where the sand spit happens to be. These variables involve the moon, weather, waves and the time of day. I've seen the beach completely change overnight.

Then the wonderful part begins! Just watching the seals is worth it, but to help visitors from all over the world understand why we are here is a pleasure in itself. Besides the seals, there can be seen sea lions, elephant seals, osprey, brown pelicans, and cormorants. I once saw a mother and baby whale fifty feet from the water's edge. I have seen pelicans diving 10 to 20 feet and landing in the water, and osprey diving from up to 100 feet, then having to lurch out of the water carrying a fish. Terns will do the same. A pelican can sit in the water and swallow its dinner while the osprey must fly inland and take it to its young in the tops of the trees.

Two o'clock comes quickly when sun and tourists are out. But if the weather is cold and windy they will still come out, just in lesser numbers. Whenever you go out to the spit, be sure to wear layered clothing, because the temperature can go from 80 degrees to 40 degrees in a very short time, and back again. If you don't you will surely either freeze or be much too warm. Despite these adverse and unpredictable conditions, the animals and the people can make the experience worth it.

This brings us to sleeper waves. Though lifeguards warn everyone who comes on the beach, many beach-goers will still go walking in breakers or letting their children run in the water. I've personally told parents about this very dangerous beach and witnessed the same parent take a screaming, scared child back to the car because he/she was knocked down by a wave. Our instructions are never to go in the water to rescue anyone. Call the lifeguard or 911.

Remember, it's 99% fun and you'll enjoy it 99% of the time. The thank-you's you will get will far outnumber any of the minor problems.

A HISTORY OF THE HARBOR SEAL HAUL OUT

Elinor Twohy

1972 SEA LIONS HAUL OUT

The Twohy home is on the estuary where the Russian River meets the ocean. In 1972 we first observed that sea lions were hauling out onto the sandbar, south bank of the river, in considerable numbers. Our neighbor, who had been here off and on from the mid 1930's and was a full-time resident from 1963, told us he had never seen the sea lions in that location prior to 1972. Other people in Jenner confirmed this observation.

1974 HARBOR SEALS ALSO

In April, 1974, a visiting artist with the U.S. Fish and Wildlife Service pointed out that there were harbor seals in the estuary. This was a complete surprise to us, as previously we had seen only California Sea Lions. After that we noted two distinct groups of mammals occupying the sandbar. Although only a few yards apart on the beach, the sea lions and the harbor seals did not intermingle. They were amicable, but didn't fraternize.

1975 SEA LIONS SHARE, THEN DEPART

Within a year or so the sea lions moved to the outer rocky ledges in the ocean north of the rivermouth, an area already inhabited by others of their kind. The harbor seals had the sandbar and estuary virtually to themselves. An occasional bark of a sea lion can be heard from the estuary, but the herd never returned to the beach.

EARLY PROTECTIVE MEASURES

Concern over the disturbance of the seals by the public, especially during pupping time, increased as the numbers of harbor seals grew, and as write-ups and photographs in the newspapers and magazines attracted more and more visitors.

ANO NUEVO

An article in *Sunset Magazine* in 1973 about the elephant seals brought 50,000 visitors to Año Nuevo, north of Santa Cruz, that year, and led to the formation of the Año Nuevo Interpretive Association. They now have a total of 200 docents trained to lead tours to the breeding/pupping/haulout beach.

SIGNS

"SEAL CRAWLS"

The Parks Department started placing protective signs along the sandbar and made an effort to instruct and control visitors. Ranger Floyd Lemley, a Marine Mammal specialist, designed some of the first signs, gave instruction to visitors on the beach and conducted "seal crawls" when everyone crawled along the beach on their stomachs in seal fashion, to a distance of 50 yards from the seals. Our upright posture would have alarmed them.

PHONING FOR A RANGER

I, too, had voiced my concerns about the many incidents of harassment of the seals that I could see from my window. The Department of Parks asked me to call their dispatch office when I thought that a ranger should be on the scene. It could take the ranger up to 20 minutes to arrive; by that time the miscreant usually had departed.

LOG-BOOK

Parks also asked me to keep a logbook; I recall that in one hour there were 17 separate infractions observed and recorded.

CALLING OUT

Sometimes I would cup my hands to project my voice across the river, and shout: "Get back from the seals," Startled visitors would look skyward to see who was admonishing them from above (the way they do now when the ranger "speaks" to them from Highway 1).

DISTURB-ANCE BY MOTOR-CRAFT

Something had to be done about the buzzing and harassing of seals by the drivers of speed boats and jet skiers. A long-standing County ordinance protects upriver swimming beaches and docks with a 5 MPH speed limit, but the estuary from Bridgehaven to the month of the Russian River had no protection whatsoever from motorboats.

CITIZENS ADVISORY COMMITTEE

Protection of the wildlife of Penny island, the sandbar, and the estuarine waters was (and is) one of the expressed goals of the Citizens Advisory Committee to the Parks Department. In their December, l983 meeting, they resolved to protect the seals by asking that the estuary be covered by the existing ordinance, and, additionally that power boats be banned from the pupping area.

BARR, TWOHY, CARPENTER

Two of the committee members, Norah Barr and myself; took the resolution, a petition with 500 signatures of citizens in the area, and our rough draft of the ordinance that: we wanted enacted, to Ernie Carpenter, our County Supervisor for the Fifth District of Sonoma County. He agreed to present it to the Board of Supervisors, where it would be heard. and voted upon at three consecutive meetings. By mid-1983, we had a new county ordinance–even stronger than the one we had drafted. It created a 5 MPH speed limit from the Bridge at Bridgehaven to the Rivermouth and prohibited boats within 100 yards of the marine mammals, haul-out area.

NEW ORDINANCE: SEALS PROTECTED

The Parks Department put up the speed limit sign at the boat ramp by the Visitor Center; enforcement is the responsibility of the Sheriff's Department.

"SEAL WATCH"

The need for a group of docents to help Parks personnel was very evident. The weekend “Seal Watch” program is a godsend to the seals and visitors alike. The volunteers protect the seals from encroachment that endangers their well-being, and enhances the experience of the visitors by interpreting the natural resources.

Because the use of Goat Rock Beach and North Jenner Beach has escalated, we need a more comprehensive seal protection program. Through education in the schools, on the beach, and through the media we hope to increase awareness of what constitutes harassment and, therefore, to minimize it.

PART THREE

SEAL STUDIES AT JENNER

HARBOR SEALS AT JENNER, CA, 1974-1993

.Joseph Mortenson, Ph.D., and Elinor Twohy

Method

Beginning on November 1, 1989, Elinor Twohy counted the seals on the Jenner beach and any people nearby once a day. Twohy's counts were taken at different times on successive days to discern any diurnal pattern in the haulout.

Results

Jenner counts vary with the season and the year. The major peaks were in winter; the lesser ones in early spring/summer.

Daily pattern: The daily pattern showed that overall, seal numbers were highest toward mid-afternoon.

Day of the week: Seal numbers tended to be lowest on Sundays and next lowest on Saturdays.

River: The number of seals counted was strikingly lower when the river was barred. The normal mid-afternoon peak in seal numbers was not found when the river was shut.

People: There was no statistically significant relationship between the number of people on the beach and the number of seals counted at Jenner. However, the weekend and mid-afternoon patterns suggest some human visitation impact.

Overview

The Russian River haulout pattern deviates from the harbor seal norm in its annual, weekly, and daily rhythms. In the winter, numbers are maximal, rather than minimal, as observed at other sites. In spring and summer, when the seals are guarded, the number of seals remains high. The percentage of pups born at Jenner is very low, however, compared with that reported at many other haulouts. In fall the deviation of the Jenner population from the norm is greatest. Seals do not show a midday peak in numbers and often are simply absent.

A single hypothesis that accounts for much of this data is avoidance. Seals avoiding high seas may explain the annual winter high. Sensitive pregnant seals avoiding harassment may explain the very low pupping rate of spring. Normally fearful migrating seals avoiding visitors may account for the fall seal absences and the failure of seal numbers to be maximal near noon. More evidence will be necessary to confirm this or any of the other hypothesis.

SEAL-HUMAN INTERACTION STUDY AT JENNER

Joseph Mortenson, Ph.D.

The interference project, designed in 1992, was adapted from Sarah Allen's disturbance study method in Marin, so that the two sites could be compared. The study consisted of data collection by a volunteer at the site for a two hour period mornings, afternoons and early evenings roughly six times a month. Data included general conditions – cloud cover, mouth open or closed, presence of guards (Seal Watch, Lifeguards, Rangers) and count of seals (adults and. pups). A count was taken every half hour if the observer was not busy documenting interferences. IAll interference events were noted, including their time, the kind of reaction by the seals (alert, move or flee), the source of the disturbance, the number of disturbers, and the distance.

The first analysis of the data has been completed. It indicates a high and fairly constant level of human interference with natural seal behavior at the Jenner Spits. This level remains high year round, despite the facts that the number of seals falls radically in autumn. There is evidence that in fall the seals are more reactive to people, acting more like the seals in most haulouts. Many relationships are emerging, some expected and some unexpected. An unexpected one is that the numbers of pups appear to be highest in the morning and evening, which may reflect human interference.

ELEPHANT SEAL MOUNTING AND ATTACKS ON HARBOR SEALS, JENNER

Joseph Mortenson, Mary Follis and Keary Sorenson

In the spring of 1994 and 1995, a sub-adult male elephant seal was observed at Jenner pushing a harbor seal pup below water and mounting harbor seal pups. Mounting is part of the elephant seal's characteristic mating pattern. Mounting attacks on weaned elephant seals were observed frequently at Año Nuevo State Reserve (the major coastal mainland beach for elephant seals), suggesting that the attacks on harbor seal pups at the Jenner Spits might reflect the same tendency.

Up to half of all the pups at Año Nuevo bore visible signs of attack. A 21-year analysis of fatalities at the colony, however, indicated that an average of only 0.2% of pups were killed annually through male mounting. But harbor seal pups are much smaller than elephant seal pups—there is a much larger discrepancy in size and weight between them and the male elephant seal sub-adults. The effects of such mounting attacks, therefore, are likely to be much more severe.

From 2004 through 2007, another series of attacks was made by a male elephant seal (named "R1" by the National Marine Fisheries Agency) at Jenner. R1 was observed by Seal Watch volunteers and Jenner residents, mounting and attacking harbor seals. R1 moved between the north and south beaches at the Russian River mouth—both harbor seal haul-outs. He first arrived in 2004, during the elephant seal mating season and stayed only a short time. He appeared to be trying to mount harbor seals, killing one or two before leaving the area. This behavior recurred during the mating season in 2005 and 2006, during which he killed six and two to three seals, respectively, right before leaving.

In his attacks in 2007, however, R1 appeared to be intending to kill, rather than mount the victims. He remained in the Jenner area for nearly six months, during which time he killed more than 12 harbor seals. (Only those for which bodies were recovered were included in the count.) Eleven of the twelve bodies found were female. Nine were pregnant, and two had recently borne pups. Two abandoned pups were subsequently found in the area, one under the Jenner Visitor Center , another on the north beach of Russian River mouth.

The one male death was attributed, indirectly, to R1. That male died from a shark attack after R1 had attacked several females. Blood from R1's attacks may have brought a shark into the lagoon during high tide (when it could breach the mouth closing), when it killed the male. The body was found on Penny Island in the Jenner Lagoon.

R1 showed no fear of humans. Attacks on humans were reported, including on a kayaker and a surfer. In 2007, he also attacked a dog swimming in the estuary.

R1 did not appear in 2008 and his whereabouts are unknown.

Seal Watch volunteers should note in the log when there is an elephant seal on the beach and monitor its activity. If there is an attack, note the time and describe the specific behavior. The Marine Mammal Center should not be called unless an animal is injured.

FORAGING STUDY, RUSSIAN RIVER MOUTH

Linda Hanson

A foraging study funded in part by Sonoma County and Sonoma State University, was conducted between 1989 and 1991 to examine the impact of the harbor seals and California sea lions on the migrating salmon and steelhead populations. It was published in 1993.

Although the sea lions have long been seasonal visitors, their numbers have always been low. Concerns with fishing interests developed as harbor seals began to colonize the beach at the mouth of the river in the mid l970s. While the harbor seal population varies seasonally, it peaked at about 600 animals, fueling controversy about their impact on the migrating salmon.

Most studies have shown that both these pinnipeds are opportunistic feeders, taking prey that is most abundant. However, characteristics of the Russian River mouth may increase the likelihood of predation on salmon.

1. Migrating fish enter a very small, narrow channel at the mouth of the river. This increases the prey encounter rate for the pinnipeds as fish move through this small volume of water.

2. Chinook, coho and steelhead salmon return to spawn from September through April each year, with peak migration occuring in the winter and early spring. The population of both harbor seals and transient sea lions peak at a time that coincides closely with the periods of adult salmon migration.

3. While adult salmon are only seasonally available, a large number of juvenile salmon are released year-round from the Warm Spring Hatchery upriver.

The foraging study at this site had two major components. One examined the impact of foraging pinnipeds on adult salmon migrating into the river system by observing and analyzing chase and capture data. The second portion of the study used scat (fecal) analysis to more closely examine the diet of the harbor seals. The scat analysis was particularly important for assessing the level of' predation on juvenile salmon since it is thought that they are captured and consumed underwater, making this type of predation impossible to detect by observation alone.

In the first part of the study, the foraging behavior and chase success of harbor seals and California sea lions was monitored during 74 days (213 hr) of the 1989-90 and 1990-91 salmon migration.

Harbor seals initiated chases and captured salmon in shallow water, while sea lions typically confined their foraging to the mouth of the river and deeper waters within the estuary. The likelihood that either harbor seals or sea lions would capture salmon decreased when both pinnipeds became involved in the same chase.

However, predation on adult salmon as they moved through the Russian River estuary appeared to be minimal. The total number of pinnipeds foraging within the estuary was consistently low (the average was 8), and the period of predation short in comparison with the

length of the salmon migration. Although large numbers of harbor seals congregated at this site during the salmon migration, most weren't observed foraging here.

The scat analysis portion of the foraging study supported the conclusion that harbor seals at this site do not utilize salmon as a major prey species. The most common prey types found in their scat were flatfish, octopus, hake, and hagfish. These species are common offshore, but either are not found within the estuary, or are found there in low numbers. Salmon remains, mostly of juvenile-sized fish, were found in only a small number of scat.

Like the findings in other recent studies, the use of the Jenner hau1out by harbor seals appears to he coincidental to the salmon migration rather than dependent upon it.

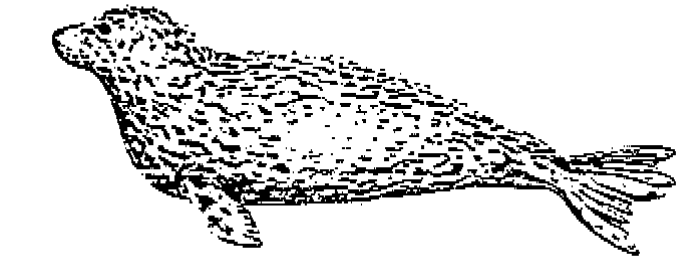
For more information, see bibliography in this manual or contact Linda Hanson at 3141 Highway 128, Calistoga, CA 94515.

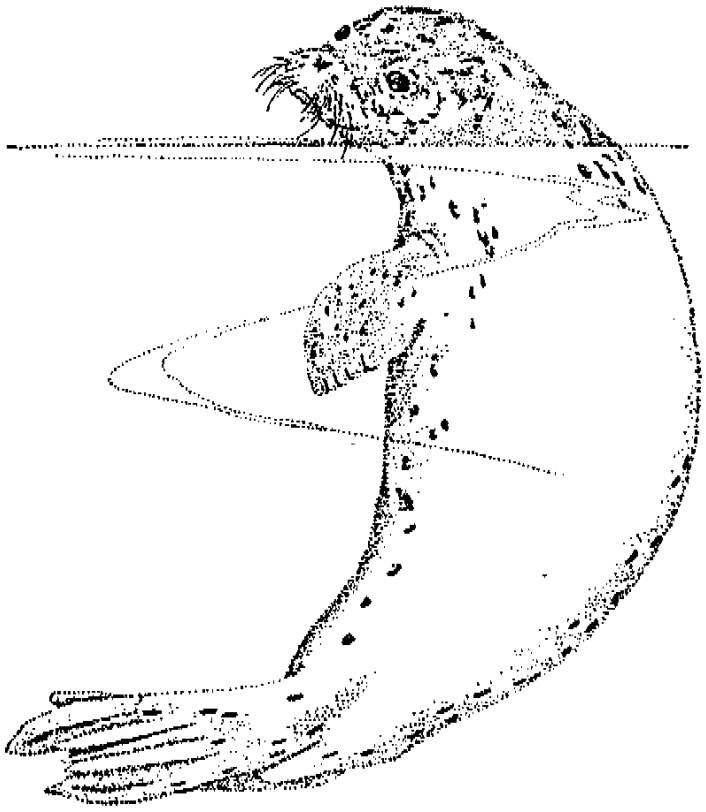
PART FOUR

BIOLOGY OF MARINE MAMMALS

HARBOR SEAL

(Phoca vitulina)





HARBOR SEAL FACTS

I. Classification

Scientific Name: Phoca vitulina
Belongs to the scientific order Pinnipedia (which includes sea lions and walruses).
Name Pinnipedia means fin or feather-footed, referring to their modified limbs which are built for swimming.

Origin of Pinnipedia order – the skeleton and limb structure show that these mammals once possessed four legs and were able to walk on land. However, no series of links with existing terrestrial animals has been found. The oldest pinniped remains are from the Miocene period. Two main groups are recognizable in the earliest fossils: Walking ones (sea lions) with a swimming mechanism near the fore body, and crawling ones (true seal) with a swimming mechanism near the hind body. This leads some zoologists to believe the family tree has two trunks instead of one.

Common name: Harbor, Spotted, Hair, or Common Seal

Subspecies: There are five which are found in the temperate marine waters of the northern hemisphere. The differences among the species are thought to be primarily geographical, although some claim the heads of the Atlantic and Pacific seals are distinguishable.

II. Habitat and Population Distribution

Shore-living animal which prefers estuaries, rivers and areas where sandbars, beaches or rocks are uncovered at low tide for hauling out. No definite migrations, but will move in search of food.

Distribution in the northern hemisphere of the five subspecies:
- Pacific subspecies
  - *richardsi* – the eastern Pacific from Herschel Island in the Arctic, the eastern Bering Sea and along the coasts of Alaska, British Columbia, the western United States and Baja California.
  - *stejnegeri* – western Pacific
- Atlantic subspecies
  - *vitulina* – eastern Atlantic
  - *concolor* – western Atlantic
- Landlocked subspecies -- P.v. melonae in the Seal Lakes, Quebec.

World population: ****(1981 estimate) between 400,000 and 500,000 seals (with P.v. stejnegeri and P.v. richardsi stabilizing between 300-350,000)****

III. Food

Eats fish, squid, crustaceans, mollusks - between 5-20 pounds a day, depending upon the seal's size. Jenner's harbor seals mainly eat flatfish, octopus,hake and hagfish (see "Foraging Study," Linda Hanson, Part III). Food is swallowed whole. If too large for one mouthful, the seal will thrash it into smaller chunks. Has rapid digestion, with soft fish digested in a few hours.

IV. Physical description

Size: Average adult weighs 150-250 pounds and is 4-6 feet in length. Males are slightly larger. At birth, pups are 16-36 inches long and10-25 pounds. Males and females grow at the same rate until about 5 years of age when females stop growing. Males continue growing until 10 years of age. Alaskan seals tend to be somewhat larger than the seals of the California coast.

Color variable: Glossy gray or charcoal gray, dorsal surface abundantly scattered with small black and white dots (dots are sparse on underside.)

Form – Plump fusiform shape streamlined by subcutaneous blubber. Rounded head with blunt snout, face dog-like with nostrils close together forming a 'V', no external ear flap. Front teeth are pointed and sharp - adapted for catching, tearing and swallowing as opposed to holding and chewing. Back molars are cusped for crushing shells and crustaceans; has 34 teeth.

Flippers -- each of the four short limbs has five digits which are webbed. There is no thumb and none of the digits can be moved separately, but have to be moved as one. The foreflipper and hindflipper digits have narrow claws from 1-2 inches long which are bluntly pointed.

Forelimbs – attached without a collarbone so that they lie flush with body wall and present little resistance to water. They have not as broad a surface as the hind limbs and provide direction in the water, rather than power. The claws on forelimbs are used for gripping and for scratching and preening almost every part of the body.

Hind limbs – First and fifth digits are long and stout to support the arc of fleshy web, whereas the other digits are shorter and thinner. When the flipper is fully spread, it resembles a wide fan. Efficient as a steering rudder and propeller, hindflippers are used mainly for swimming as they cannot be rotated forward to help in movements on land. They cannot grip or hold things. Short tail is tucked between hindflippers when swimming.

Physical Adaptations to Cold, Marine Environment

Blubber -- thick layer, provides thermal insulation stores food energy for use during long fasts and lactation periods, Increases buoyancy and fills out skeleton for body streamlining.

Pelts -- Short, thick hair; outermost are thick, rather coarse guard hairs about 1 centimeter long which cover a dense inner stratum of hairs almost as coarse but half as long. Each guard hair has 4 or more underhairs attached to the root. Sweat glands under skin secrete an oily fluid which helps to waterproof hairs.

Molt -- Adults and pups molt during following the adult's breeding season when it is warm and animals are mainly on land. No eating or mating takes place during molting. Seals lose their hair gradually in patches. Females molt after pup birth and weaning. Pups molt

a white coat while still in the uterus or shortly after birth and will not molt again until they are a year old.

Blood circulation -- seals have 1½ times the volume of blood than does man. The contraction and dilation of numerous veins in surface layers of flesh and blubber aid in thermoregulation and in diving. High metabolic rate helps keep body warm.

Eyes – fluids wash over the eyes continually to protect them but seals lack a nasolacriminal duct to drain eye fluids into the nose. This is not needed because of its mainly aquatic environment and this is why the eyes are rimmed with tears out of the water. Eyelids protect the eyes from injury.

Ears – the orifice closes by a muscle when the seal dives. There are no external ear flaps.

V. Locomotion

Land - movement fairly restricted on land. Moves by levering body forward in a series of caterpillar-like movements or by placing one hand after another alternately and pulling the body forward. The harbor seal is noticeably less mobile on land than the sea lion.

In water - uses 4 webbed limbs, propelling by lateral movements of the lower body and hind-flippers. Foreflippers are used as a steering rudder. Can swim forward and upside down, but rarely backwards. Sea lions, conversely, use their forelimbs for power and their hind flippers for direction.

High speed (12-15 knots) – foreflipper pressed tightly against body; propulsion by swimming/lashing movement of the back half of the body. Hindflippers are spread wide but pressed together so they form a vertical rudder, moves with swift lateral thrusts of thighs and hindflippers. Can go short distances at dolphin-like speeds.

Normal or moderate speed (9 knots average) –- seal carries foreflippers close to body with tips projecting beneath. Hindflippers are lashed open and shut in wider swinging movements.

Slow speed – seals use foreflippers as stabilizers, swinging them in short circles with oar-like motion towards the body. Hindflippers are vertical, held apart and swung from side to side with a slow, twisting, graceful motion of the thighs, each flipper half-closing and opening alternately.

One characteristic pose in water is vertical – hangs with just the head out of the water. This is called “bottlenosing”. It may be a breathing posture.

Diving ability

Seals dive for their food and have been observed to dive in excess of 300 feet. The record is 600' (206 meters). At rest, dives are 3-4 minutes. An adult can remain submerged for as long as 23 minutes. A maximum time of 30 minutes was obtained experimentally.

Nostrils – close naturally when diving and must be consciously opened to breathe. Pressure against the nasal cartilage by the moustachial pad and water pressure closes the nostrils. They are opened by a muscular contraction which lifts the moustachial pad.

Breathing – breathes out on a dive, reducing the air in the lungs. This collapses the lower lung, reducing buoyancy. The remainder of the air is held in the rigid, less absorptive parts. The seal is then less susceptible to the bends as it receives no air and retains less nitrogen.

Blood --the harbor seal has a greater volume of blood than land mammals its size. Therefore, more oxygen can be retained. The blood also has high myoglobin levels (oxygen carriers). Both of these factors help prevent tetany, or “muscle oxygen deficiency" while the seal dives. Oxygen is conserved in diving by vasoconstricting all peripheral blood vessels and shunting the blood supply to vital organs – heart, lungs, kidneys, brain and intestine. The extremities use available oxygen and then switch to glycogen or starch stored in the muscles. The heart beat slows from 85-120 beats per minute to 6-20 beats under water. When the seal surfaces, the heart beat shoots up to about 160 beats per minute. The seal also has a high tolerance for carbon dioxide.

VI. Senses

Sight – front layer of the iris is transparent and is crossed by a network of blood vessels; eye is lubricated with tears. Underwater the pupil expands into wide circle to let in as much light as possible. In the light, the pupil is contracted to a slit. Eyes are larger than man's and sight thought to be more acute than man’s underwater but inferior on land. Blind seals have survived in the wild and in zoological collections for years.

Hearing – capabilities are keen and well developed for hearing underwater. Have responded in tests to sounds of 55 kHz, though pitch discrimination is lost at about half of that level. In the air, measured at 12 kHz.

Scent – sensitive out of water. Nostrils close underwater. It is not known how acute this sense is underwater.

Touch – the whiskers are thought to be very important in sensing fish in the darker, deeper waters or at night. The upper lip forms a thick pad with many vibrissae deeply embedded on each side. These antennae continually grow and are highly tactile and sensitive. They are connected to the brain through a substantial nerve system.

Underwater, seals push the upper lip in and out, creating a sweeping motion. Whiskers stand clear of the face underwater, except when moving fast. Any movement underwater sets up a vibration and current which is detected by the seal's whiskers. The whiskers are used involuntarily when out of the water.

VII. Social behavior

Generally a shy and retiring species which spends 30 – 45% on land and 55 – 70% in the sea. In the water, adults are solitary and rarely interact outside of sexual encounters. On

land, they haul out in loose groups with no structural social organization. Prefer to return to the same hauling grounds so they rarely wander far except in search for food. (It's actually complex).

Communication –seals make hissing sounds, snorts, and sneezes. Adults are quieter than the pups, who vocalize often with their mothers. They occasionally make sounds at other seals in play and when threatened. Harbor seals also loudly slap the water and their body with their foreflippers.

Hauling ground behavior – rarely moves far from the sea, as seals are awkward on land. Harbor seals have a very low level of activity while on land. They do not like to be touching each other while in the grounds. If another seal does make contact, a flipper may be waved in the air at the intruder with an accompanying hiss or moan. Younger seals will play on the fringes of the group and stay out of the way of the adults. Seals, as they mature, become less playful and tolerant of close contact.

Sleep – will sleep on land or just below the water surface. If underwater, the seal will come up to breathe every 4 minutes or so.

Reaction to danger – on land, the herd will raise heads and look in direction of danger. Some may go into the water, while others may stay ashore until danger is imminent. If danger does not materialize, those in water may haul out again immediately. If in the water, a seal will dive sideways and slap the water with its foreflipper.

Aggressive interaction – growls with foreflipper raised in a threatening wave. More aggressive action is a head thrust or butt – a sharp, rapid extension and retraction of the neck with open mouth and growl. Fighting is rare.

VIII. Reproduction

Mating

Seals prefer to return to the same breeding grounds for mating and birth.

Sexual maturity occurs between 3 – 5 years for the female and 5 – 6 years for the bull. Female will not mate while nursing pup, but will after the pup is weaned. At that time she enters estrus; mating takes place about 6 weeks after the pup is born, usually early fall.

Spring – There is a period of especially boisterous play between couples, writhing and twisting, mouthing each other's napes, snarling and slapping the water with foreflippers, but mating act rarely is observed. This period ends with pupping season and begins again after molting is completed in the fall. The seals actually play all year round, but the frequency varies.

Fall – Mating is marked by much pre-coital play. A bull will approach a cow and she will respond with growls, head thrusts and flipper waving. The bull will rush and grab her by the back of the neck and a fierce battle with the cow may ensue before copulation. The male will ride the back of the female, clasping her under the foreflippers with his clawed foreflippers. They will roll and copulate by both twisting their hind-ends over sideways. Mating almost always occurs in the water.

Pregnancy and Birth

Delayed implantation – True pregnancy begins in November to December, about 60 days after mating. This retardation of embryonic development (characteristic of many marine mammals) means the fertilized egg (zygote) remains in blastula (ball) state of development for 1½-2 months, and then implants in the uterine wall where it begins development. This delayed implantation means the pup is born in the season of the best weather for survival. It also allows the mother time to get into good condition to nourish another embryo, as she fasts during lactation and may lose nearly 1/4 of her weight.

Birth – Seals will give birth in water, land, ice or sandbars, depending on location of seal herd. The cow will jettison the calf head first from the womb so hard that the umbilical cord is severed. The placenta is ignored and discarded by the mother.

A female has one pup a year. Pupping times vary with subspecies, but is usually around April/May at Jenner. The season tends to be later the further north the seals are. In the north Pacific, time for pupping varies with latitude. The more southerly seals pup first, and the Alaskans last.

Pups – about 16-36 inches long and 10-25 pounds, lean, lanky and long. Usually molt white pre-natal coat while still in womb, so coat is dark at birth. Can swim from birth but remains very awkward on land for several weeks. Less than 50% of the pups will survive their first year.

Nursing – female has two mammary teats on her lower abdomen which retract beneath the body surface except when in use. The sheet-like mammary glands are spread out like blubber over much of the body's ventral surface. Seal milk is 45% fat, 10% protein, 45% water with traces of lactose and ash. This extremely high fat content in the milk is the reason the pups more than double their weight by their weaning time.

Relationship with mother – cow is devoted parent during the 4 – 8 week lactation period, but after that is no longer interested in her pup. She noses the pup often during this time and actively plays with it. The pup will ride on her back, nipping at her flippers and chasing its mother in the water. Mothers can recognize their pups by sound and smell and will not often adopt deserted pups.

Weaned pups – at the end of the lactation period, learns to eat prawns, shrimp and small rockfish. They do not wander far from the sea, river, estuary or sandbank frequented by the adults. In the spring, pups engage in the same courtship rituals as the adults, often with others of the same sex.

IX. Lifespan and Major Reasons for Mortality

Longevity – Life span estimated up to 29 years for some specimens in the wild, although few ages have been recorded. Age can be estimated by sectioning teeth and counting annual ridges (bands of dentine and cementum).

Human Predation – East coast seals extremely wary of humans as potential enemies. The local harbor seals at Jenner are unusually tame. Bounties were placed on them because of the reputed damage they did to the salmon fishery. Seals were hunted extensively for this reason during 1940-1960 and soon abandoned some traditional hauling grounds. Research has found, however, that Jenner harbor seal predation on adult salmon during the migratory season is minimal ("Foraging Study," Linda Hanson, Part III). Seals are now protected by law in the U.S. and British Columbia.

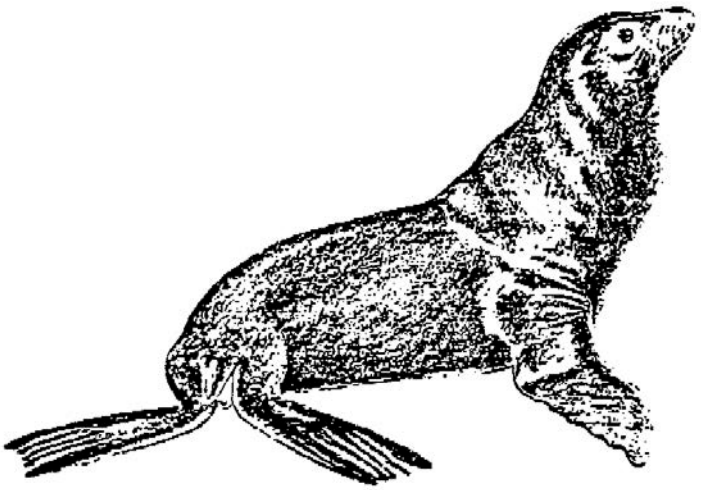
Parasites – have to occur in large numbers in an animal to do appreciable damage. Organs and the common parasites that infest them are: the gut - nematodes, acanthocephalans, trematodes, cestodes; the heart, lungs, blood vessels - nematodes; nasal cavity - mites; skin - ticks.

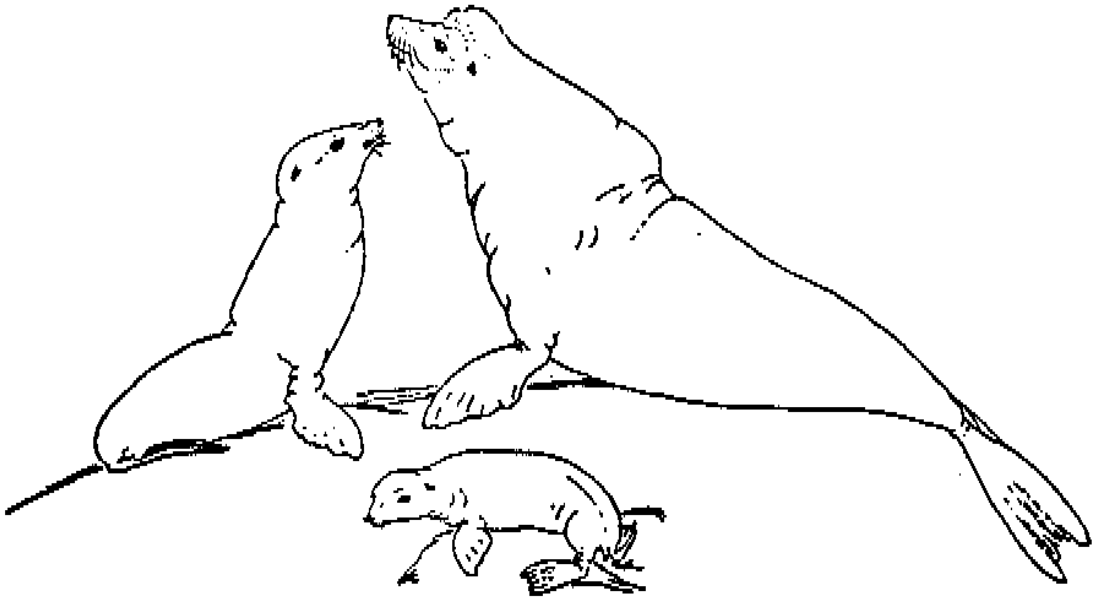
Pups – seal pup mortality is extremely high in the first year. Causes: Starvation, abandonment, washing away by heavy seas from hauling grounds, bacterial infection leading to lung infections, predators.

Predation by killer whales and sharks.

CALIFORNIA SEA LION

Zalophus californianus





CALIFORNIA SEA LIONS
(Zalophus californianus)

Playful and sociable, these sea-going mammals range from Baja California north to British Columbia. Inhabiting coastal waters, sea lions frequently come ashore to rest and sunbathe at traditional haulouts. In the sea, they can be seen in groups or singly. At Jenner, they fish individually but assemble in rafts to bark or rest. The California sea lion's sexual life centers around the offshore islands of southern and Baja California. Here, in July and August, California sea lions gather to mate and give birth. During the fall/winter months, young males and adult bulls generally move northward along the coasts of northern California, Oregon, and Washington, while the females and other young remain behind. The bulls can be recognized by their size (8 feet and up to 600 pounds), by their dark brown coats, and by a crest or "bump" on the forehead. The females are smaller (6 feet and about 200 pounds), with lighter coats.

Their sleek, agile bodies are adapted both for life on land and in water with narrow, pointed snouts, smooth muscular torsos and slim tapered flanks, the California sea lion is a sleek, streamlined animal adapted for moving smoothly and swiftly through the water. Propelled by their long, wing-like foreflippers, sea lions are naturally able to turn, leap and somersault with nimble grace. Unlike seals, sea lions have small external ears and use all four flippers to climb rocks and lumber on land. The two rear flippers can be pulled under their bodies to be sat or stood on.

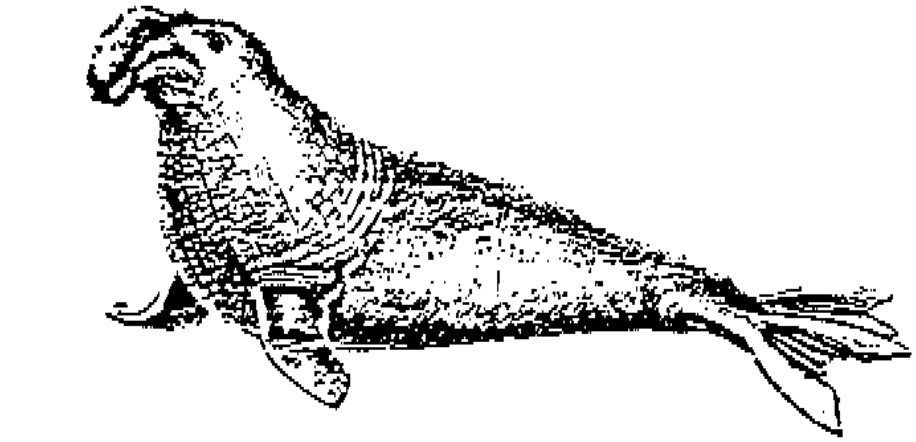
A sea lion colony is noisy, with continuous barking and activity throughout the day and night. Sea lions produce and can distinguish a wide range of vocal sounds. The large bulls bark to defend territories during the breeding season. Reaching maturity at about six years, the bulls often battle for control of their territories and the gregarious clusters of females in the crowded rookery-nursery. Here, in June and July, the pups are born. Female sea lions, returning from feeding at sea, make use of repeated recognition calls to locate their nursing pups in the teeming throng.

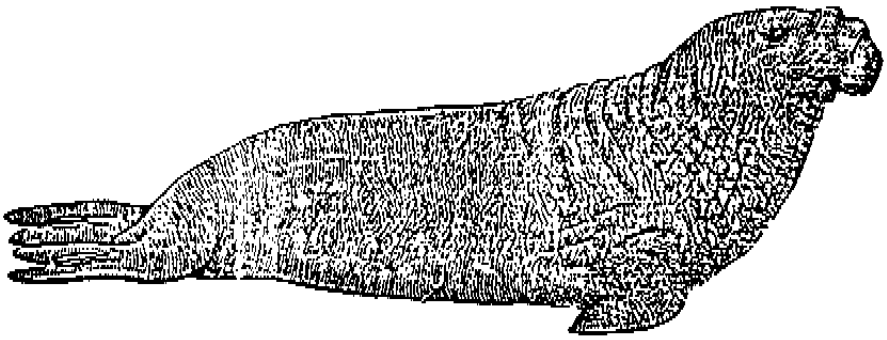
Pups develop quickly on land, then take to the sea to develop survival skills. Born with their eyes open, the precocious pups are soon wandering about the rookery, investigating and playing, returning to their mothers only for nourishment. Weighing between 12 and 14 pounds at birth, the pups grow rapidly on their mother's rich milk (36% fat, 14% protein, and no sugar). By 2 months of age, they are feeding on small fish in the shallow tidal pools. Playfully chasing each other through the surf, the pups develop their swimming, diving and food catching skills. Mortality rate may be between 40 to 60% during the pup's first year.

As warm-blooded, air-breathing mammals in a hostile aquatic environment, the first year of life at sea is the most difficult for young sea lions. Finding sufficient food, withstanding disease and the infestation of parasites, surviving storms at sea and attacks by predatory sharks and killer whales are all potential hazards faced by young sea lions. In captivity, the life span of a sea lion is about 15 to 25 years. In the wild, few animals over 15 years are seen. The California sea lion's naturally inquisitive and playful nature, their ability to move easily both in and out of the water, and their intelligence have contributed to their success as show animals.

NORTHERN ELEPHANT SEAL

(Mirounga angustirostris)





ELEPHANT SEALS

(Mirounga angustirostris)

Once endangered, mammoth elephant seals now crowd the beaches of the offshore islands of California and Mexico. They have also established a number of mainland haulouts, the most famous at Año Nuevo. Most recently, sightings have been made at Jenner.

Tolerant of crowding, elephant seals congregate in large colonies for breeding and molting. The large prostrate forms of northern elephant seals can be seen on the beaches of the offshore islands of California and Mexico. Because they are unable to rotate their hind flippers under their ponderous bodies when ashore, they must crawl awkwardly on their stomachs with an undulating motion resembling a caterpillar. Since they can't climb well, they are usually found on rocky ledges as are the more agile California sea lions, but tend to be limited to the island's few flat sandy beaches or pebbly coves. They can climb Bodega Rock, so it is not impossible to see them in a rocky area.

Hardly moving, elephant seals doze in the sun and lazily scoop sand onto their backs with their short front flippers. This sand-flipping behavior helps them to keep cool and may discourage insects. Brief squabbles erupt occasionally as animals enter or leave the crowded beach areas, but activity is usually at a minimum, except during the breeding season.

Excellent swimmers, elephant seals are adapted for long periods of underwater feeding. Although awkward and slow on land, in the water these seals are streamlined, powerful and amazingly graceful swimmers. Submerging to depths of up to 4,000 feet, elephant seals may remain below the surface for as long as 60 minutes. Typical dives are 20 minutes, as the sea elephant searches for sharks, ray, or deep-water fish. To locate food in the sea's depths, elephant seals depend upon their excellent hearing and sensitive whiskers. In addition, their large eyes are adapted for picking up what little light is available to detect shadowy passing forms.

Only the largest and strongest males control breeding territories and sire the young seals. Unlike most seals, male and female elephant seals are quite different in size. A mature bull may weigh 4,000 to 5,000 pounds and measure up to 16 feet. The females weigh up to 1,500 pounds and measure from 10 to 12 feet. During the mid-winter breeding season, the largest and strongest males establish territories and collect harems of a dozen or more females, which they vigorously defend from other males.

Confrontations between bulls are for dominance rather than fights to the death. In most cases, the harem master warns the intruder by first inflating his large nose and issuing a trumpeted challenge. Usually this is sufficient warning. However, heavily scarred bulls of equal size engage in chest-to-chest combat which may last 1 to 2 hours. Using their long canine teeth, they bite their opponent’s neck until one is defeated and retreats.

Black-coated pups grow quickly into silver-coated adolescents. Elephant seal pups, with their loose fitting, woolly, dark coats, are usually born between December and February. They are about 4 feet at birth and weigh between 50 to 60 pounds. In the first four to six weeks, the pups nurse frequently on fat-rich milk (55% fat), attaining weights up to 400 pounds, after

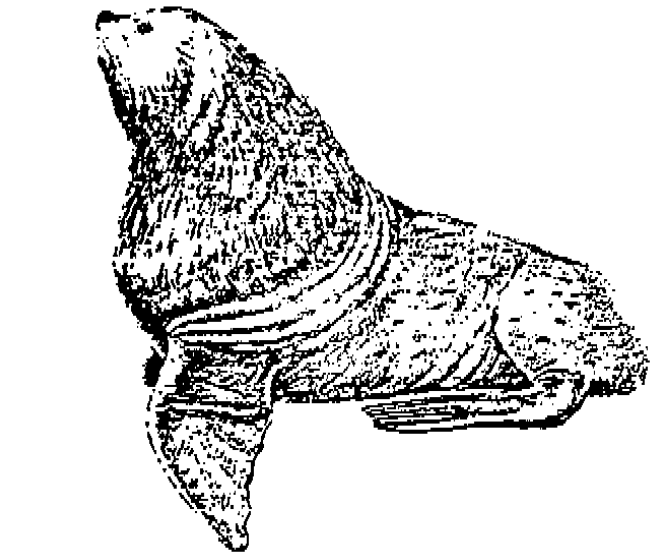
which they are weaned. They then shed their juvenile coat for the silvery gray coat of an adolescent and venture into the water for the first time.

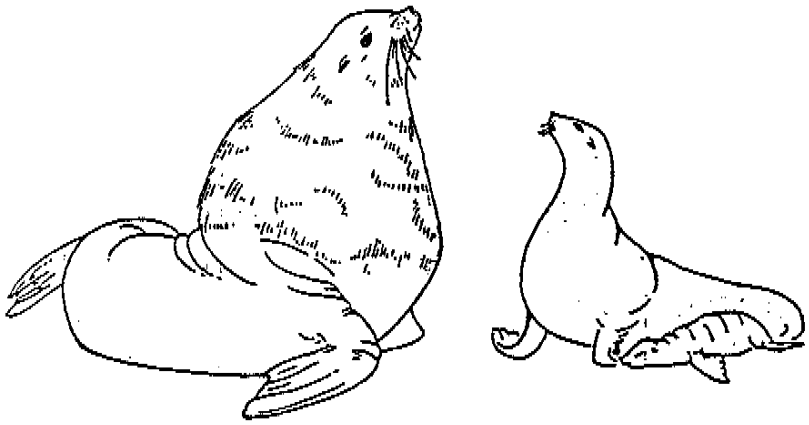
Elephant seals undergo a period of annual molt, shedding both the hair and the outer skin. They do not feed during this time but live off their thick layer of blubber. When the molt is completed they return to the sea to spend long months feeding alone, preparing for the winter when they will again gather at their island breeding grounds.

Once taken in large numbers for their oil, elephant seals have made a dramatic comeback. Because of their large size, thick layer of blubber and tameness, elephant seals were easily taken in large numbers in the late 1800s. By 1907, less than 100 known individuals remained. Protected by the Mexican and Californian governments, their numbers increased steadily. Today, the present population is estimated at 120,000 or more. However, due to the shortage of suitable breeding beaches on the rocky islands, overcrowding and disease now limit continued population growth.

STELLER SEA LION

(Eumetopias jubatus)





STELLER SEA LIONS

(Eumetopias jubatus)

Largest of the sea lions, stellers inhabit exposed rocky shores of the North Pacific. With a population that has dropped to approximately 80,000 (from estimates of 250,000 to 300,000), the Steller sea lion is now classified as threatened. The range of the Steller extends from southern California's Channel Islands north to Alaska, along the coasts of Kamchatka, northern Japan and Korea, with the center of abundance in the Aleutian Island chain. Opportunistic feeders, Stellers feed on squid, octopus and a wide variety of fishes.

Stellers are well adapted for coming ashore on steep rocky terrain. With a thrust of their powerful foreflippers, they can easily propel themselves out of the water, 5 to 10 feet up the side of a precipitous ledge. They use their leathery flippers to grip and pull themselves up the slippery, wave-splashed slopes and along narrow ledges to find resting places above the crashing surf. Shaded overhangs and damp depressions are especially sought, as overheating can be a problem for these well-insulated aquatic mammals. Stellers can be seen riding waves at Fort Ross.

Even at sea, Steller sea lions are social animals, often feeding and resting in groups. When feeding at sea, groups of Stellers repeatedly submerge in synchronized dives. With powerful strokes of the foreflippers and necks outstretched, they glide in swift pursuit of their underwater prey. When not feeding, Stellers are frequently seen resting in compact floating raft formations, with one flipper extended up out of the water to catch the warmth of the sun's rays.

Coarse-maned bulls aggressively defend their breeding territories. In May, with the coming of spring in northern California waters, mature male Stellers begin to claim individual territories and breed at Año Nuevo and at Fort Ross. Aggressive bluffing behavior is characterized by nodding the head, roaring, snorting, and lunging toward the would-be intruder. As breeding activity intensifies, more pushing and biting contests occur.

The mature males weigh over a ton and measure about 11 feet. They are distinguished by their large size, cork-colored coats and thick, scarred, muscular necks covered with a mane of coarse hair. Females are smaller, weighing only about 650 pounds and are 74 to 8 feet long. The majority of the pups are born in July and August. Weighing about 44 pounds and measuring 3 feet at birth, the pups develop rapidly. To survive, Steller pups must quickly learn to recognize their own mothers and maneuver over steep ledges. For the newborn pups, a Steller sea lion rookery is a harsh environment of slippery, steep rocks, crashing waves, and aggressive adults. Shortly after birth, pups learn from their mothers

how to climb rocks. Vocal encouragement is used, or, if the terrain is too difficult, pups are lifted by the loose skin of their backs.

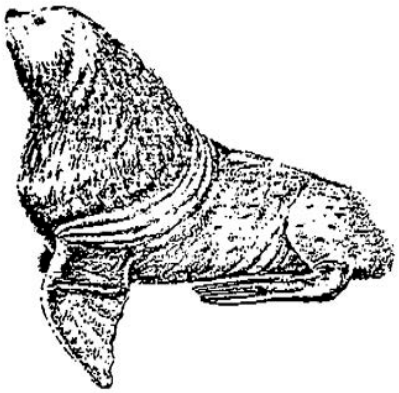
Female Stellers will nurse only their own young and are actively aggressive towards other pups attempting to approach them, fiercely biting and tossing them into the air. To survive, a pup must learn early to distinguish its own mother's call from all the others. Steller pups may nurse for up to 18 months and female stellers are often seen with both a newborn pup and a yearling.

HOW TO DISTINGUISH SEA LIONS FROM HARBOR SEALS

Although similarly adapted in many ways, sea lions and seals are believed to have different ancestors. Some of the more noticeable differences are:

	SEA LIONS	**HARBOR SEALS**
EARS:	Small external ear flaps	No external ear flaps
FRONT FLIPPERS:	Large, wing-like foreflippers	Foreflippers are small with noticeable claws
HIND FLIPPERS:	Able to rotate hips and hind flippers beneath the body	Unable to rotate hips & hind flippers beneath the body
MOVEMENT IN WATER:	Propel body with the foreflippers in an up-and-down flying motion	Propel body with the hind flippers in a back-and-forth sculling or fish-like motion
MOVEMENT ON LAND:	Walk or “gallop” on all four flippers	Undulating motion much like a caterpillar

Steller Sea Lion



Harbor Seal

SEA LIONS

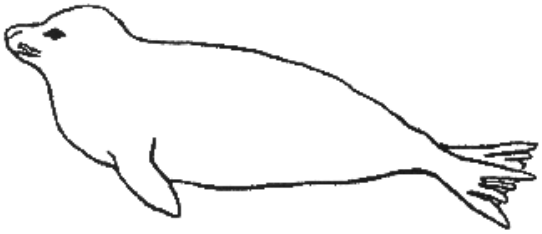
Body: Slim, streamlined, amphora shaped, sloping shoulders, muscular torso and shoulders, narrow tapered flanks. Dark brown plush coat.

Head: Ear flaps – small, slim

Front Flipper: Long, broad, wing-like, scalloped edges correspond with five digits. No nails, no hair, leathery.

Hind Flippers: Large, Paddle-like webbed digits (5) all about the same length. Long flat nails midway along middle 3 digits only, no hair, leathery.

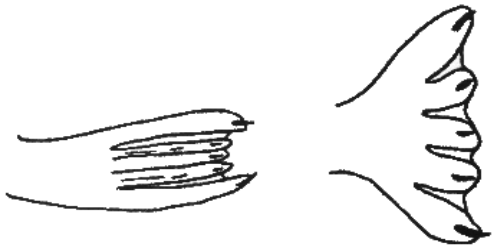
SEALS



Body: Fat sausage-shaped, no neck short-haired gray coat, sprinkled with black and white spots

Head: Black ear holes behind eyes, no ear flaps.

Front Flippers: Short, thick, blunt 5 digits with sharp nails, covered with hair.



Hind Flippers: Stick out stiffly, cannot bend under body, short, webbed with 5 digits, outer 2 longer than inner 3, long flat nails on all digits, flipper covered with fur.

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PLACES TO SEE AND STUDY MARINE MAMMALS
Salt Point Gerstle Cove past Sea Ranch (harbor seals)
Pier 39 San Francisco (seal lions)
Marine Mammal Book store, Pier 39
Marine Mammal Center (closed for upgrade, opening to the public, Spring 2009)
Goat Rock
Fort Ross Visitor Center: go outside and look west, see the rocks, listen for the roar of a Stellar sea lion; also can see “rafts” of sea lions with flippers up in water.

Video:
The Secret of Roan Inish; Andre the Seal.