6th Grade Teacher's Guide to River Field Trips

Photograph by John D. Sutter at Sycamore Island

offered by the

RIVER PARKWAY TRUST

11605 Old Friant Rd, Fresno, CA, 93730 Phone 559-248-8480 Fax 559-248-8474

WWW.RIVERPARKWAY.ORG

Welcome

Welcome to This Year's Field Trips with the San Joaquin River Parkway and Conservation Trust!

The following pages provide some background information and activity instructions that will be helpful to know before your field trip. If you do not get a chance to share some of this information with your students, don't worry – they'll hear about it over the course of their time with us.

In the event that we do not have volunteers available to help run an activity we will call on you, the teacher, to help us run an activity. All materials and a copy of the instructions will be included in your station's activity kit. These will always be an easy to guide activity and designed to be run by someone with limited background knowledge of the subject matter.

Also included in this guide are rules and behavior expectations, the liability release form for the Day 3 canoe experience, and a commonly sighted guide to species along the river.

In the event of severe weather you are allowed to call and reschedule your field trip for another day. To do this, call the Education Administrator with as much lead time as possible. All contact information is below.

Sincerely,

Rachel Boldt

River Education Administrator
11605 Old Friant Road, Fresno, CA 93730
rboldt@riverparkway.org
559-248-8480 x 157
559-260-2279 – for cancellation or emergency only

Contents of the Guide

ABOUT THE RIVER PARKWAY TRUST

Q: What is the River Parkway Trust?

A: The River Parkway Trust, also known as the San Joaquin River Parkway and Conservation Trust, is a non-profit land trust working to establish the San Joaquin River Parkway, a 22-mile long series of parks and natural reserves linked together by a contiguous trail.

The River Parkway Trust directs its own efforts and resources to enhance the cultural and economic resources of the San Joaquin River for all the Valley's people. The River Parkway Trust believes that a sound riparian ecosystem is essential to sustain the river's benefits.

The River Parkway Trust's mission is to: **preserve and restore** the San Joaquin River lands having ecological, scenic, historic and recreational significance; **educate** the public on the need for stewardship; **research** issues affecting the river; and **promote educational, recreational and agricultural uses** consistent with the protection of the river's resources.

Q: What is the River Parkway Trust's River Education Program?

A: The River Education Program began in 1989 by a group of interested teachers and administrators from the area's three largest school districts, representatives from the River Parkway Trust and other community organizations. The Clovis, Fresno, and Madera Unified School Districts agreed to fund the program to begin utilizing the river as an outdoor classroom. The first programs offered were Teacher Education Workshops; after these trainings these teachers began taking their students on field trips to the San Joaquin River.

Since then the program, managed by the River Parkway Trust, has grown to serve thousands of children annually. The Trust's education programs include field trips to the San Joaquin River and Coke Hallowell Center for River Studies, River Quest classroom presentations, and week-long summer camp program called River Camp.

Q: What is the Lewis S. Eaton Trail and where is it located?

A: The Lewis S. Eaton Trail is a multi-use trail open to the public along the Parkway corridor. In partnership with the City and County of Fresno, the Trust has raised over $3 million to construct 7 miles of the planned 22-mile trail. Presently, it begins inside Woodward Park near the corner of Friant Road and Audubon Drive and extends to the River Center. Another three miles are currently in the planning stage. The existing seven miles are used by tens of thousands of people each year, and use is expected to increase as we add more miles that will provide public access to the riverbottom and connect recreation areas with natural areas and ecological reserves.

Q: What is the River Parkway Trust's role in land conservation?

A: In partnership with state and federal agencies and local governments, the Trust has been successful in protecting San Joaquin River landscapes through fee title acquisition, conservation easements, and wildlife habitat restoration. The River Parkway Trust has worked to protect 4,400 acres of vital riparian habitat throughout the San Joaquin River Parkway. Our primary focus is on the 22-mile reach of the river between Friant Dam and Highway 99, which consists of approximately 6,000 acres of San Joaquin River bottomlands.

Q: What efforts are being made to restore habitat along the San Joaquin River?

A: The River Parkway Trust maintains an active land conservation and stewardship program. With funding from the US Bureau of Reclamation we are working to remove invasive plant species along the river. This project is being conducted in support of the San Joaquin River Restoration Program. Additionally, we have two wildlife habitat enhancement projects at Spano River Ranch located west of Highway 41, and Jensen River Ranch located below Woodward Park. We hold volunteer workdays on the first Saturday of each month, providing public opportunities to become involved in our land stewardship work.

Q: What kinds of recreation opportunities are available along the Parkway?

A: The River Parkway Trust offers a variety of recreational opportunities along the San Joaquin River:

- The River Parkway Trust provides public fishing access at Sycamore Island, February through November, and at Camp Pashayan, Memorial Day through Labor Day.

- Guided river tours are offered May through September providing great opportunity to experience the San Joaquin River by kayak or canoe. During the winter, fall, and spring, public nature walks are offered to properties not typically open to the public.

- The Coke Hallowell Center for River Studies is open 7 days a week and provides access to the Lewis S. Eaton Trail. The restored 1890s Ranch House is open Saturdays and Sundays, 10:00 am to 3:00 pm, and includes exhibits on the natural and cultural history of the San Joaquin River.

Q: How can I help the River Parkway Trust?

A: ***Become a member*** and help support our effort to create a 22 mile parkway. ***Join our team of volunteers***, who do everything from office work to tree plantings. ***Visit the river*** after your field trip, and tell others about its beauty and importance.

Trip Preparation and Behavior Expectations

Discipline Standards

You, the classroom teacher, are responsible for the conduct of your student's on the field trip. Your adult leaders are essential to the management of the students group. The River Docents are volunteers who want to share their knowledge about the river, not to manage the discipline of the students. **Let your students know what is expected of them.**

Groups

Students should be instructed to stay with their groups. All students will be accompanied by a parent of teacher when leaving the group for any reason. Each chaperone should be accountable for supervising a specific group of students.

Rivers

Rivers are fast and cold. Swimming is not part of the field trip. Because there is often broken glass and old fishing hooks on the river's edge, shoes will be worn at all times.

Collecting Ethics

We urge caution and respect for the living environment during your field trip. In most cases, we advise no collecting at all – and instead recommend simply leaving the natural environment as it is found, with as little impact from students in the process of learning as possible. There are times, however, when it may seem appropriate and so instructionally powerful that some limited forms of collecting are desired. If so, we encourage involving students in the process of deciding whether, what, and how to collect.

The following ethic is recommended by Project Wild

1. We should obey all laws protecting plants and animals.
2. We should ask the owner before we take anything
3. We should only collect an animal if we know we can keep it alive long enough to learn from it.
4. We should not collect things that will hurt us.
5. We should only collect something if there are a lot of them in that place.
6. We should only collect something if we can learn something very important about it.

DO NOT COLLECT VERTEBRATES!

STUDY ANIMALS IN THEIR HOMES, THEN LEAVE THEM THERE.

Activity Summary by Day

Day 1: In Class

Salmon Lifecycle

Students get a chance to be a part of the salmon life cycle, and increase their understanding about the complexities of life in and around the river.

Watershed Health

After learning about the salmon life cycle students get to discuss watershed health and how people can have a positive or negative impact on the health of our rivers.

Day 2: River Center

Hike to Owl Hollow

Students will take a 3/4 mile hike from the River Center to the San Joaquin River at Owl Hollow. Along the way they will learn about historic land uses, use of ponds by migrating birds, and future plans for reclamation.

Readers Theater and Historic Ranch House

This activity encourages students to stretch their creative wings imagining what early life along the river would have been like. Using stories collected as part of our oral history project students act out parts of these stories. After performing for their peers students will be asked to reflect on the challenges of daily life for individuals in the stories.

Common Water

Through a fun and active game student's recognize that it is vital for water users to consider each other's needs and to share this finite resource.

Day 3: Sycamore Island

Creepy Crawlies

The river and each of the ponds at Sycamore Island have unique physical characteristics and creatures. Small groups of students will visit several sites along the water to catch and examine different forms of invertebrate life.

Photo Scavenger Hunt

Students set out in groups with cameras to find and identify the plants and animals living at Sycamore Island.

Canoeing

An hour of fun out on the water supervised by River Parkway Trust guides.

Natural History of the River

Excerpts by J. L. Medeiros

Great Valley Museum

Dawn came to break the chill of a short summer night. The concert of frog-music had ended while distant clucking sounds of ducks and coots became more frequent. A glossy blackbird with scarlet and yellow shoulder patches was perched on the long stalk of a cattail. His chirp was occasionally substituted by a shrill *ka-reee*. Before long, the orange sky was filled with flying silhouettes and the cheerful morning sounds of a lush marshland in the Great Valley. It was another July day where thousands of birds and animals would go about their specialized tasks of survival and reproduction.

A few miles away, sleepy farm children stirred to the clanking sounds of a tractor working in a nearby field. A crop-duster roared over the house on a low pass. It was no use ... a few extra winks of sleep were impossible.

It was a beautiful cool, crisp morning. Before long, the heat would be unbearable. The smells of the morning were almost overwhelming ... fresh mown alfalfa from the night before ... bacon frying for a sunrise breakfast ... a routine the children would not appreciate for many years.

Such was life not long ago for man and beast in the San Joaquin Valley. Even this has radically changed in the past few decades. Small farms are practically non-existent. Thousands of acres of homes, buildings and roads have carpeted the valley floor. This once-wild valley is now feeling the tremendous pressure from a runaway economy and population boom.

It cannot be contested that the Great Valley of California (the combined Sacramento and San Joaquin Valleys) is the most agriculturally productive region of its type in the world. Owing to productive soils and ample water from neighboring mountains, the valley has lead in agri-business for countless years. Fresno County alone has reported annual gross profits in agriculture-related products of more than two billion dollars (1980). The Great Valley feeds not only its own residents but today, supplies much of the nation and parts of the world with staple and luxury crops.

The economist might view the Great Valley as a massive gambling hall where millions of dollars are annually placed on various crops. The roulette wheel is regulated by weather and fluctuating market values. In some years, the casino may provide the players with great profits, making agriculture an attractive occupation. In other years, weather, drought, and unpredictable markets can destroy a farmer. This kind of insecurity has forced small, privately-owned farms to yield to large corporately-owned ranches. The “sustenance farm” is a vanishing concept; one that has high improbability to the Great Valley.

Hundreds of years ago it might have been easier to view the Great Valley from a strictly biological perspective. Today, a myriad of other non-biological factors play important roles in the reshaping of this vast area.

Geography and History

The Great Valley is a 400 mile long trough that varies in width from 30 to 50 miles. Although flat in general topography, it slopes gently down from the Sierra Nevada Mountains towards the West. It rises more abruptly into the Coast ranges. Today the valley averages 5 to 20 inches of annual rain, falling predominantly between the months of November and February. Its

latitude, topography and proximity to the ocean create a Mediterranean climate: hot, dry summers, and cold, wet winters.

Two major river systems drain the Great Valley: the Sacramento in the North and the San Joaquin in the South. These are fed by numerous tributaries, some of great size and volume. The discharge of these two main river systems is supported for the most part by the snow melt of the Sierra Nevada. Without this, the valley would certainly appear quite different. It is because of this enormous watershed that agricultural diversity and volume exists today.

Geologically speaking, the Great Valley in its present form is quite recent. Three to ten million years ago, the Sierra Nevada lifted to great heights and the Coast Range Mountains were being built. The Great Valley, although deposited as sediment millions of years before, was beginning to take its recent shape.

During the Paleozoic Era (more than 500 million years ago), the Great Valley did not exist, but was part of the ocean floor near the edge of the continent. Sediments from eastern portions of the continent were piling up here. Trilobites, fishes, reptiles and other creatures that evolved during this era (of 340 million years) were transformed to rocks and fossils.

In the Mesozoic Era, moltenrock that would later become the granite core of the Sierra Nevada began intruding deep beneath this ocean floor. During the later part of this era, the Sierra began its gradual uplift. Parts of the ancient sediments were crumpled and lifted above sea level. Erosion became a dominant force and the granite of the Sierra was gradually exposed. It is estimated that sediments varying from 9 to 17 miles were gradually carved away.

As the Sierra was emerging from the sea, the Great Valley region was still submerged. However, the water was considerably shallower. It was rapidly being filled with sediments from the weathering rocks of the Sierra.

Life flourished in this shallow coastal area. The extinct Trilobites were replaced with crabs, clams, snails and ammonites. Feeding on this array of food were fish and ocean dwelling dinosaurs (Ichthyosaurs and Plesiosaurs). Later, as the Sierra Nevada rose even more, terrestrial dinosaurs elsewhere on the continent became extinct. It was a time of great change.

The Cenozoic Era was a period during which many life forms as we presently know them developed in North America. As early as the Paleocene (70 million years ago) the first mammals evolved. During the Tertiary Period of this era a tropical climate prevailed. Warm temperatures promoted lush plant growth in the West. A jungle-like ecosystem may have existed where eroding rivers joined lagoons in the sea. The Sierra, eroded into a series of rolling hills, was soon to be drastically uplifted. The Coast Ranges, although beginning to move, would await their major building.

During the late Tertiary, the Sierra Nevada began its major tilt westward. Faults formed, lifting the massive granite mountains. Earthquakes shook California and the Coast Ranges began their major uplift and folding. The Great Valley was beginning to fill with the eroded sediment of these mountains. (It was the beginning of a new topography for California ... and the beginning of an Ice Age that would greatly alter the face of North America).

The plants and animals that have evolved in California are a product of a changing geologic and climatic environment. In the past three million years, there have been numerous events, climatic, physiographic, and biologic that have set the stage for speciation. The earth became colder, ice and snow covered much of this continent, and mountain building continued. The Great Valley was beginning to take its present shape.

As the Sierra Nevada continued to uplift and volcanic activity continued sporadically, new river courses were delineated. They were wild rivers which carved valleys and eroded millions of tons of sediment. Many flowed in directions much different than today. They are now settled, at least temporarily, into their present courses. As they eroded, they repositioned most of the ten mile high mountain range into the Great Valley's basin. Today, on the western edge of the valley, it is not uncommon to find sediment depths equal to or more than that of old mountain elevations.

The tropical plants and animals of Tertiary central California were forced out by the changing Quaternary conditions. New species inched south from northern latitudes to stay ahead of the encroaching glaciers and cold. Other species came from the south, driven north by similar ecological factors. Central California received an assortment of plants and animals brought together by strong forces. Many species remained virtually unchanged. Others adapted and altered time and time again, until they were best suited for their new home in California.

Many feel that the Great Valley, prior to white man and irrigation, was a massive desert inhabited by the lowliest of insects and weedy shrubs. Although there were areas within the valley that were certainly desert-like, it was quite lush in more than an equal share of regions. Above all, it was a spectacular grassland with variety in vegetation and animal life. It was a truly wild place.

After the disappearance of the last large Sierra glaciers (10 - 20,000 years ago), the valley underwent many successional changes on its way to becoming a grassland-prairie. Many of the plants and animals that had lived here during cooler periods, migrated out with the advancing heat and aridity. Some moved north, back to boreal forests. Others took a shorter route and sought refuge in the higher elevations of the valley's surrounding mountains. What remained in the valley were drought-tolerant plants or plants that found rivers and marshlands as suitable homesteads.

Flora & Fauna of a Valley in Equilibrium

For thousands of years plants and animals competed for their own special niche or placement within the valley ecosystems. During the last 10,000 years, the climate became more "stable" and the Great Valley ecosystems approached equilibrium. They remained dynamic but stable for more than ten thousand years until 1769 when Europeans entered California to stay.

It must have been spectacular during previous years of equilibrium. Although grasslands were probably the dominant vegetational feature, there were also large oak woodlands, extensive marshlands, vernal pools, riparian forests and alkali sinks. These community types supported unique plants and animals, each with special ecological interrelationships.

Grasslands were the most extensive. Thousands of acres extended from the Coast Ranges to the Sierra Nevada and from the Tehachapis to the Klamaths. A great number of the grasses were perennial bunch grasses, much different than the sod-prairies of the Midwest. These bunch grasses were tall and stout. Many grew chest-high to a person. Interspersed with these were numerous annual grasses and a luxuriant assortment of wildflowers. Lupines, poppies, sunflowers, represented only a few of the thousands of flowering plants unique to California. On the margins of the Great Valley some peculiar grasses found refuge. These low growing, sticky grasses probably evolved on the beaches of ancient oceans in the Valley. As the sea receded, these plants remained in the pools and wet depression of Coast Range and Sierra foothills.

The grasslands were interrupted with unique topographical features: vernal pools. These were depressions filled with shallow water with impervious bottoms of clay or bedrock. These vernal or "spring" pools were filled by winter rains. Water could not percolate through but instead, evaporated away from the pool. By summer, these pools were once again as dry and hard as

concrete. It was during this period of evaporation that a spring flora would emerge to decorate each pool with bold colors. As the pools dried, the volume of collected water was reduced. Instead of a single species following the declining water line, numerous species of various colors bloomed in concentric rings. Each was designed to best fit the various micro-environments of their shrinking pool.

In some years, the valley must have appeared as a solid sheet of colors. In as late as 1868, John Muir's first trek across the "Great Central Plain of California" left him awed with the "continuous bed of honey-bloom" and the lush river courses with tall oaks. Still, today we hear stories of days-gone-by when spring wildflower displays were common and poppies grew "wall-to-wall."

The flat aspect valley prairie was broken up by riparian and valley woodlands. Here the riparian plants grew, fed by the cool melt of Sierra snows. The woodlands were dense. Those that flourished close to the water contained poplars, alders, willows, box elders, maples and similar trees and shrubs. These woodlands were among the valley's finest wildlife preserves. Within them were found egrets, herons, hawks, woodpeckers, various waterfowl, and an almost unending list of birds. Along with this rich avifauna could be expected other participants in a well-balanced ecosystem; a lush understory of plants, insects, rodents, and larger mammals like racoons, foxes, coyotes, and other predators. At the edges of these riparian "jungles" was a transition zone called the ecotone. It was made up of trees and shrubs not so tall as those near the water's edge. The ecotone was an essential buffer between the riparian and grassland communities.

Away from the immediate ecotone, the stately Valley oak woodlands clustered. Each summer as the snows of the high country melted, these oaks would be fed by river flood waters. Today the once-wild rivers of the valley are warm, slow and muddy. No longer do they flood the river margins and quench the thirst of the monarch oaks. Low water tables and voracious domestic cattle that graze on seedlings have doomed the Valley oak. As is true for many plants and animals of the Great Valley, it is destined for early extinction.

Water seemed to rarely be a problem for plants and animals near the San Joaquin and Sacramento Rivers. It was a time of great seasonal changes: wet winters, warm springs, hot summers and balmy autumns. The early summer's heat would melt the Sierra snows while rivers flowed cold and wild until July or August. Passage across the San Joaquin River was impossible during its flooding stages. Often it was miles wide and could not be forded or ferried at its lower reaches. In years of heavy rain and snow, the southern San Joaquin Valley would be joined to the north by a continuous shallow lake. Tulare, Kern and Buena Vista Lakes would often combine during flood periods to produce a freshwater lake hundreds of square miles in area.

Excepting drought years (which undoubtedly spurred the claims that the valley was but a desert) this abundance of water from snow melt and rain supplied thousands of acres of freshwater marshlands. This expansive ecosystem was, without doubt, the most biologically productive of all within the valley. Marshes lined the river courses of the valley and were nourished by underground seepage as well as flood water. Here, in a relatively constant environment, plants could grow profusely and establish habitat for both aquatic and terrestrial organisms. Cattails, tules, rushes and sedges flourished in the slow moving water of the marsh. Under the water's surface, fishes, frogs, crayfish, clams, worms and crustaceans thrived. Innumerable insect species lived in the mud, attached to submerged stems, or in free-floating forms. A complex and involved ecosystem developed between primary producers (plants), primary consumers (herbivores), and a lengthy list of secondary consumers (carnivores and omnivores). As these organisms perished, their nutrients and energy was returned to the ecosystem via decomposing bacteria and fungi.

The marshes were the gathering grounds of millions of waterfowl. Special flyways evolved as ducks, geese and other migratory birds sought food and rest in the Great Valley. It is through the ecological principles of marshlands that officials develop game and wildlife refuge management principles today.

At the wide margins of the marshlands and flood plains developed the alkali sinks. Here water would accumulate infrequently and be left to stand and evaporate. It might be months or years between periods of re-flooding. Intermittent moisture levels and impervious clay soils encouraged the development of alkaline and saline regions within the valley. Because of this adverse environment, numerous plant and animal species evolved to tolerate its extremes: high temperatures, long periods of drought, and increased salts in the water. Saltbushes, saltgrasses, and other peculiar plants developed mechanisms to either store or exclude salts. Rodents learned to scrape salt layers from seeds and leaves, excrete concentrated urine (to save water and rid of salts), or eat fatty seeds which provided more water through cellular respiration. It was in these regions of sparse accommodations that unique organisms such as kangaroo rats, kit foxes, and leopard lizards developed and somehow learned to thrive.

No one knows exactly what the Great Valley looked like before European man came to stay. We do, however, have enough scientific information to develop a pretty clear picture. It was a vast, sprawling plain of a great variety of vegetation and animal life. It was a mosaic of grasslands, marshlands and woodlands, topographically altered by wild river, shallow lakes, and pools. It must have been an Eden for its fauna: everything from insects to mammals. It once supported large herds of deer, Pronghorn antelope and Tule elk. There was even enough space for Grizzly bears to roam (a California variety now extinct). The valley supported huge flocks of herons, egrets, and similar large birds. Bald and Golden Eagles, hawks, and falcons represented organisms high on the food chain. The California Condor must have made frequent visits into the valley in search of food.

Human Impact

We might wonder what crossed the minds of the first white explorers in the Great Valley. It must have been a sight to see. But how could man change in two hundred years what was sculptured by nature in more than ten thousand? How powerful was this man that he could alter the biological course of evolution beyond recognition? Before him, thousands of Miwok, Maidu, and Yokuts lived without significantly altering the landscape. What needs and wants of this man could threaten this one of a kind valley?

In 1769, the first Spanish missionaries entered California near San Diego. The following year the Great Valley was described by a small party of Spanish explorers looking for an inland route to Monterey. Awed by the immense valley, they were perhaps the first to unconsciously condemn it ... they called it a pasture ... destined to be grazed by domestic cattle and sheep. And so began the rapid demise of the Great Valley grasslands. Later would come enough people and machines to turn the fertile soils, mow the tall oaks, drain the marshes, dam the rivers, and flood or plow the vernal pools.

The grasslands declined first. Hundreds of thousands of Spanish cattle and sheep overgrazed the native grasses. These plants were predominantly perennial bunch grasses. They evolved without heavy grazing pressure and were hence not well suited or adapted for this catastrophic event. The native grasses were rapidly reduced in population, size and vigor.

Along with introduced livestock came seeds of foreign plants, imbedded in hair and wool or stow-awayed in supplementary feed. The native valley plant species were not prepared for human intervention in their evolution and consequently were quickly replaced by the introduced grasses

and weeds. Most of these alien plants came from other countries with similar Mediterranean climates, making their takeover that much easier. In only a few decades it was near impossible to find where native species were not replaced by foreigners such as wild oats, foxtails, broome grasses, thistles, filaries and mustards. Man, his voracious livestock, and foreign plants had struck their first blow, hastening the death of this huge and wild refuge.

The Nineteenth Century brought with it fame and fortune for new Californians. Livestock profits greatly fluctuated as they were so closely dependent upon ample rainfall. But new opportunities quickly substituted the dwindling livestock economy. The foothills of the Sierra yielded enough gold to attract miners from throughout the country. The mountain soils were hydraulically mined by gold seekers and the valley's rivers were filled with waste. During this new California preoccupation, hundreds of businesses and enterprises sprang up. New towns required service lines and railroads began to cover the state.

The century also saw advances in agricultural practices. Diversified farming produced a wide variety of grains and crops new to the California markets. Dry farming was prevalent, but a few of the valley's acres had seen irrigation water. Although the natural valley was experiencing a great change, the final blow was not dealt until the widespread usage of irrigation.

Who could stop thousands of people from trying their hand at making a living here? It was a good life, too ... fertile soils, ample water ... the Great Valley was destined to become famous.

With the Twentieth Century came irrigation, electricity and mechanization. Acres of "wasteland" were plowed and flooded with Sierra waters. Grasslands became productive grainfields. Rivers were dammed and water courses diverted. Oak woodlands were harvested and vernal pools and lakes flooded for ricefields. Machinery and tractors evolved seemingly overnight ... and the Great Valley's wildness disappeared equally as fast.

With agriculture also came industry. A rapid paced attempt to keep up with the ever-expanding population. Factories began to spring up almost as rapidly as homes and housing tracts. Then came highways, school yards, shopping centers, and thousands of acres of asphalt, concrete and air pollution ... a far cry from waving cattails and seas of native grasslands.

We face today the same survival questions we did one hundred years ago. Only today there are more people to whom we find ourselves responsible. But, how much natural land remains? How much land already converted to agriculture do we dare build structures upon? Does anyone really care about the valley's last remaining marshlands, river lands, or vernal pools? If we are really concerned about precious agricultural land, why do we build homes and industries upon it? Is there any way to slow or stop this rampant monster?

We must still rely upon our innate desire for solitude, tranquility, and peace of mind. It is best found in nature ... or in parks, under trees and near birds. We still have the opportunity to properly manage the few remaining natural areas within the Great Valley. Even if there are but a few acres here by the river ... a few there by the marsh, we must continue to impress upon each other the need for wildness. The need to watch the sunrise, to hear the blackbirds cackle, to smell the spring wildflowers and fresh winter mornings.

We can't count upon Emerson, Thoreau or Muir ... we have only ourselves.

Activity Details

Day One: In Class Presentation

Introduction

The presenter will ask students what they know about the San Joaquin River, show a map or hand out smaller maps of the SJR watershed, and ask about which animals live along the river.

Salmon

Students get an introduction to salmon as an animal that lives in the river for part of its lifecycle

Why do the students think this might be a special kind of fish?

Anadromous – they live in both fresh and salt water

Salmon are a keystone species - a plant or animal that plays a unique and crucial role in the way an ecosystem functions. Without keystone species, the ecosystem would be dramatically different or cease to exist altogether.

Salmon Life Cycle

For this the presenter will need several volunteers, some willing to look funny. Each person will have a few sentences to read as part of their role. Each part is included below.

- *Use volunteers to help explain each part of the life cycle*. Each volunteer gets a silly hat and a card with 1-2 sentences to read. Have other students hold predator cards, and the students get to decide which predator is most dangerous at each stage.
- Have each student with a hat stand in the order they think reflects the salmons life cycle (once they have it right hand out predator cards)
- Predators can either stay in their seats or make a separate line. With each stage of development have the class pick the related predator.

Salmon Eggs – Eggs are the first step in the salmon lifecycle. My eyes are the first thing to develop.

Eggs make a yummy snack for other creatures that live in the stream like sucker fish

Alevins – I have just been born, my yolk sac keeps me from getting hungry. I don't have to hunt yet, so I can stay safe in my redd.

Silt and dirt - This clogs the redd and might kill the fish if they can't get fresh water with enough oxygen

Fry – My yolk sac is gone and my stomach is now buttoned up. I have to leave the redd to hunt for food. Luckily I am becoming camouflaged!

Parr – I am now a year old and have special marks called parr marks, they are unique to each species of salmon

Bass fish – These fish live in deeper water and prey on the fry when they emerge from the redd to hunt for food in deeper parts of the river channel.

Smolts – My parr marks are gone and I am swimming downstream to the estuary, where fresh and salt water meet. I am becoming silver to blend into the open ocean.

Egrets and Herons – each of these birds wades out into the stream and waits for a salmon to swim by, then they snatch it out of the water.

Ocean Going – My internal organs have changed so I can live in the oceans salty water. My belly is silver and my back is darker gray. I will spend 2-7 years swimming in the ocean eating shrimp, krill, and smaller fish.

Otters and Sea Lions – These aquatic mammals catch the salmon as they exit the estuaries, sometimes chasing them into open water.

Returning Adults – I am now big and strong after years out in the ocean. This year I will return to my home stream to lay eggs and start the next generation. I won't eat anything as I swim upstream to the same place I was born.

Bears – Salmon have to swim upstream in order to spawn. As they fight the current, bears pluck them out of the water.

- Thank all of the class helpers and have them return the placards and hats.

Salmon Habitat and Watersheds

Ask the students to think about the lifecycle they just demonstrated, what do salmon need in their habitat at each stage of their lifecycle? What makes for good salmon habitat?

Cool water temperature
Clear water
Plenty of Shade
Plenty of oxygen
Low levels of pollution

Watershed

- As you discuss salmon habitat needs, hand out heavier sheets of paper to each student.
- 'this is going to become a watershed'

Healthy fish need a healthy watershed

What is a watershed? – have students define

> A watershed is the area of land that catches all precipitation for a region and channels it into a river and lake system.

Everything we do happens in a watershed and therefore affects the water and its quality.

Sometimes we call this land use. Let's try and name some different types of land use.

- Forestry, agriculture, lawns, cities, golf courses, roads

How we use the land impacts the quality of the water.

What are possible sources of pollution for salmon?

- Fertilizing lawns
- Dumping oil
- Throwing garbage on the ground
- Grease being dumped down drains
- Pesticides used at home or on farms
- Animal waste from pets or farms running into the river (parasites)
- Hydroelectric dams cause problems for salmon going upstream

How can we prevent water pollution and erosion?

Let student's brain storm a bit depending on time.

On your next trip you'll be at the River Center – there you will see that plants that grow along the river, historic home for one of our rivers early residents, and native American artifacts – all of which will teach you about life along the river.

DAY Two:
River Center

Common Water: Background

Students should know that all living things on earth need water and that water is a finite but renewable resource. This activity helps students recognize that it is vital for water users to consider each other's needs and to share this finite resource.

Many of us have experienced standing up in a large crowd to watch a performer or speaker on stage. Often, to get a better view, someone will sit on the shoulders of a friend. How does this make people standing behind the couple feel? Sometimes what works for the individual may not work for the group.

Water is used by all members of a community. Because water is important to all water users, as demands for this finite resource grow, the need to conserve and manage supplies also grows.

Fortunately, water is a reusable resource. Given time, biological (e.g. rain, settling out of sediments) processes in healthy ecosystems improve water quality and quantity. Wastewater treatment plants facilitate these processes as well.

Since the enactment of water quality control laws, especially the 1972 Clean Water Act, many rivers and lakes are cleaner than they were in the 1960's. There is good news regarding water quantity, as well. Farmers throughout the country have reduced ground water consumption through efficient water use practices (e.g., planting crops that require less water, adopting irrigation methods that use less water, capturing and reusing runoff).

Conservation and practical use of water can be employed by water users (e.g, homeowners, businesses, industry) to prevent water shortages and ensure long-term supplies. If sharers of a water source consider the needs of all water users, and plan for and manage those needs then water of sufficient quality and quantity should be available. We can all make a difference!

Common Water *(adapted from Project Wet)*

Background: Students represent different water users getting water from a common source (aquifer).

Materials: *Sponges – ¼, 1/3, ½, and full *Food coloring * 1 bowl/student *5 gallon bucket filled ¾ with river water *Clear Ice cream container filled with rocks/dirt *straw

Set Up: *Put the bucket in the middle.
*Put a drop or two of food coloring on one of the ¼ sponges, a few of the 1/3 sponges, and all the large sponges.
*Fill the plastic ice cream container with rocks and dirt.

Facilitating the Activity: Set the stage – introductory questions:

- Who are the major water users in our community and how do they use water? *i.e. farms use water to grow crops for us to eat, homes use water for cooking/cleaning.*
- Why would different water users need different amounts of water? *Different needs*
- Where do we get the majority of our water from? *Groundwater*

Demo: Groundwater Aquifer

- Explain that the ice cream container represents a groundwater aquifer. Pour a glass of water into the container.
- Ask: Where did the water go? It is caught underground?
- Ask: How do we get the water out of the groundwater aquifer? Water gets pumped out of a well.
- Put a straw in the ice cream container and pretend to suck up the water.

Doing the Activity

- Tell the campers that the common water in the middle is their aquifer and were are going to explore how it is used.
- Tell them that each 20 second round represents a time period"
- Refer to the Round Scenarios for what to do for the four rounds. **(Bold=new additions for that round)**
- After each round have the campers pour ½ of their water back into the groundwater aquifer. This simulates some water infiltrating down into the groundwater.

	Scenario	**Small ¼ sponge**	**1/3 spongs**	**½ sponge**	**Whole Sponge**
200 years ago (Round 1)	*A few homesteaders settle in the area. With minimal water needs*	**3 homesteaders**			
100 years ago (Round 2	*A town has developed with a farm to feed the people.*	**2 town residents** 3 homesteaders		**1 small farm**	
50 years ago (Round 3)	*The town has become a city with more people. There are businesses, industry, and hospitals.*	3 homesteaders 2 town residents	**5 city residents**	**1 factory** **1 hospital** 1 small farm	**1 large farm** **1 powerplant**
Round 4 (Present Day)	*The town has continued to grow and new industry has moved in.*	3 homesteaders 2 town residents	**3 city residents** 5 city residents	**1 steel mill** 1 factory 2 businesses 1 small farm	**1 meat processor** 1 large farm 1 powerplant

- **Post Activity Debrief** – Have the campers put their sponges next to their bowls and then walk around the circle to look at the other camper's bowls. Then have them circle around the central aquifer.
  - Why did the different water users have different sized sponges? *Different amounts of water used*
  - Why are some of the bowls different colors? What does that represent? *pollution*
  - What are some types of pollution? *Garbage, Oil, Detergents, etc*.
  - What could we do to have less pollution and ensure clean water in our common groundwater aquifer? *users could use less pollutants, use less water, reducing litter, using organic fertilizer, etc.*
  - **What did you learn from this activity – give a couple of campers a chance to answer.**
- Encourage a huge sponge water fight at this point

Hike To Owl Hollow

Students will take a 3/4 mile hike from the River Center to the San Joaquin River at Owl Hollow. The terrain is fairly flat, with one small hill to climb over. The trail meanders between two large ponds and an active gravel mining pit. The River Parkway Trust has an agreement with Vulcan Materials Company to walk along the trail. Students will be expected to stay on the trail and with the group. The Trust will have volunteers and student interns join the hike to ensure the group stays together. This is for safety purposes since we will be walking on an active gravel mining site.

Along the way students will learn:

- about historic uses of the land and the transition to gravel mining
- use of the ponds by migrating birds
- plans for the future

Owl Hollow– Owl Hollow is a 6-acre river front property owned by the River Parkway Trust. Just downstream of the property is a river riffle in which salmon redds have been found. The CA Department of Fish and Wildlife is studying movement of fish in this area utilizing fish tracking equipment.

Return from Owl Hollow – We will be returning along the same route taken from the River Center. It is important for students to be kept together for the sake of timing. Straggling is discouraged.

Materials Needed

Students need to be aware that there will likely be mud along the trail. They should not wear flimsy or expensive shoes. The trail guide will make every effort to rout around mud but students are often inattentive with regards to foot placement.

Life Along a River: Reader's Theater

This activity encourages students to stretch their creative wings imagining what early life along the river would have been like. Using stories collected as part of our oral history project students act out parts of these stories. After performing for their peers students will be asked to reflect on the challenges of daily life for individuals in the stories.

Stories:

- Bernie Salado: Lived at the River Center. Bernie compares and contrasts life in Mexico with life along the San Joaquin.
- Emily Sample: A Native American perspective of life along the river.

Ranch House Exploration

The activity extension allows the students to explore our historic ranch house and see how families, right up to the time Bernie was a resident on the ranch, might have lived. The first floor is furnished in reproduction craftsman furniture, correct to the 1920's era of the home. Upstairs Students can interact with exhibits detailing the restoration of the San Joaquin River, wildlife commonly found along the river, and other historical artifacts from the early history of the Ranch.

Students are entering a museum and the objects inside should be treated as such. Items upstairs can frequently be handled, but with care. If the activity facilitator feels that students are not showing adequate amounts of respect for the home or its contents students will be escorted out of the house.

Day Three: Sycamore Island

Photo Scavenger Hunt

Students will be participating in a photo scavenger hunt around Sycamore Island. Teams will be given maps, cameras, and chaperones and will attempt to discover the uniqueness of Sycamore Island without a traditional nature guide. Here we encourage students to use their own camera's/phones in addition to the ones we are able to provide as they complete their task list.

Teachers you and any staff or volunteers available will be responsible for making sure students do not wander too far from their meeting place. They will be given boundaries at the start of the activity, however we will need your active assistance to keep everyone safe and within those boundaries.

Water Canaries/Aquatic Wild

What are the "water canaries" telling you about local water quality?
Objectives:

Students will:

1. Identify several aquatic organisms, and
2. Assess the relative environmental quality of a stream or pond using indicators of pH, water temperature, and the presence of a diversity of organisms.

Background

In the early days of coal mining, canaries were brought into mines to be used as indicators of the mine's air quality. Because canaries are more sensitive than humans to the presence of dangerous gases in the air, their discomfort or death indicated that the air was not safe to breathe. Although this practice no longer exists, it stands as an example of how animals have differing sensitivities to environmental factors. In streams and ponds, the presence or absence of certain organisms, called **indicator species**, reveals much about water quality. These creatures make up a biotic index (number of living organisms found in an ecosystem). Water with numerous aquatic species is usually a healthy environment, whereas water with just a few different species usually indicates conditions that are less than healthy. The word healthy is used to indicate an environment supportive of life. Pollution generally reduces the quality of the environment and, in turn, the diversity of life forms. In some cases, the actual biomass (the mass of living organisms) will increase because of pollution, but the diversity is compromised as a result of the limited number of types of organisms that can withstand polluted conditions.

Pre-Trip Activities

1. Provide students with a copy of the Stream Inhabitant Worksheet. These are common species found in the San Joaquin River and ponds located at Sycamore Island. Allow students time to study photos online of the various species.
2. Explain to students that they will have the opportunity to search for and collect a variety of aquatic species on their field trip. Have the students identify possible impacts they might have on the critters, stream bank, and riparian vegetation. Have the students establish a list of ethical guidelines they will follow for their sampling activities. *The Trust Docent will explain additional rules on the field trip.* This activity is meant to help students begin thinking about how their actions impact the environment and how they can decrease that impact.

Field Trip Procedures

1. Students will receive an introduction to basic water quality measurements:

- pH
- Water Temperature

- Dissolved Oxygen

1. Trust Docents will provide a brief presentation on how these measurements are taken that includes a demonstration of testing water collected from the river and ponds at Sycamore Island. These measurements will be related to habitat needs of salmon and other important aquatic species.
2. Discuss with students how the values for pH, water, and air temperature affect the diversity of life forms found in aquatic environments. Utilizing the *Aquatic Fact Condition Sheet* have the students make some predictions about what animals they might find. Predictions can be filled in on the *Student Worksheet II.*
3. In preparation for collecting, brief students on habitat courtesies. Ask them to share some of the ethical guidelines they developed in class. Instruct them on how to minimize the potential for damaging habitat, and encourage care in their collecting techniques. Emphasize that all wildlife are to be returned to their habitat unharmed.
4. Begin the activity by observing the water. Identify organisms on the surface and below.

Sampling equipment includes:

- Nets
- Buckets
- Scopes
- Trays

Have the students collect as many different forms of animal life as possible. Ask them to be alert to differing micro-habitats near rocks, in riffles, and in pools. Place animals in clear trays for viewing and drawing. Students can get an up close look at smaller creatures using scopes provided. Keep an adequate amount of water in the trays, and keep them in a cool shady spot. Change the water as often as necessary to keep the animals cool.

5. Using a species-identification book have students identify and draw on *Student Worksheet I* the animals observed in the aquatic environment and those temporarily removed for observation in the collection containers. Ask them to fill in the number of each kind found and to describe the actual location where the animal was found. Once these observations are completed, carefully return the animals to their natural habitat. Provide colored pencils to allow for accurate drawings.
6. Encourage students to discuss their observations. How diverse were the aquatic organisms. Introduce the concept of diversity, and explain that a variety of different kinds of plants and animals is usually an indication of a healthy ecosystem.
7. Summarize the study with re-emphasis on the fact that diversity of animals is a useful indicator of habitat quality as well as an overall indicator of environmental quality.

Post-Trip Extensions

1. Research other examples of biological indicators. Determine how substances such as DDT result in bio-magnifications (increased accumulation) in creatures such as birds of prey, fish, shellfish, and such.
2. Identify how in stream conditions might affect wildlife out of the water.

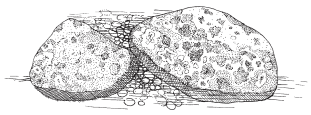
FOR STUDENTS

Stream Inhabitants

Cutthroat Trout, Brook Trout

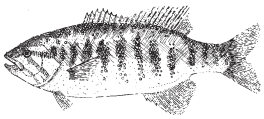
- Need very clean water with high levels of dissolved oxygen.
- Need colder water than many other fish.

Spots of algae growing on rocks



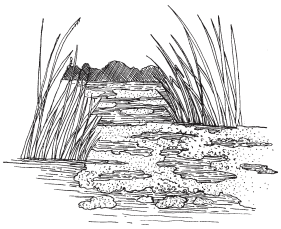
- Found in many water conditions from cold to warm, including fast-moving water.

Rainbow Trout, Brown Trout, Smallmouth Bass, suckers, whitefish



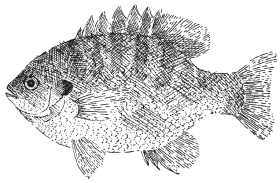
- Need relatively clean water.
- Can tolerate somewhat warmer water temperatures than cutthroat and Brook Trout.

Large beds and floating mats of algae



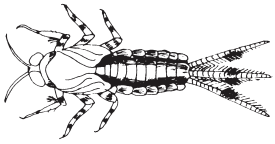
- Generally require slow-moving or stagnant water.
- Encouraged by high nutrient levels in the water.

Carp, chub, shiners, sunfish



- Pollution tolerant.
- Prefer warmer, slower-moving water than other types of fish.

Mayfly, caddisfly, and stonefly nymphs; gilled snails; adult riffle beetles; hellgramites (dobsonfly larvae)

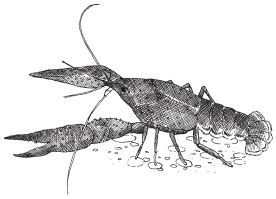


- Pollution sensitive.
- Need good to excellent water quality.

Eelgrass, elodea, and other types of rooted aquatic plants

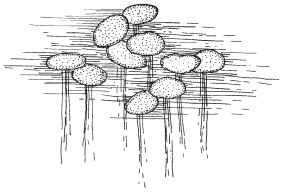
- Unlikely to grow in fast-moving water.

Crayfish, riffle beetle and cranefly larvae, dragonfly and damselfly nymphs, clams and mussels



- Somewhat pollution tolerant.
- Need fair water quality to survive.

Duckweed, water lily, and other types of floating aquatic vegetation



- Need slow-moving, sometimes even stagnant water

Midge fly and blackfly larvae, leeches, aquatic worms, lunged snails

- Pollution tolerant.
- Can survive in water of poor quality.

Aquatic Conditions Fact Sheet

FOR STUDENTS

pH Ranges That Support Aquatic Life

Most Acidic — Neutral — Most Basic

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Bacteria	1.0 — 13.0
Plants (algae, rooted, etc.)	6.5 — 13.0
Carps, suckers, catfish, some insects	6.0 — 8.5
Bass, crappie	6.0 — 8.5
Snails, clams, mussels	6.5 — 9.0
Largest variety of animals (trout, mayfly, stonefly, caddisfly)	6.0 — 8.5

Temperature Ranges (Approximate) Required for Certain Organisms

Temperature	
Greater than 68 F (20 C) = Warm water	Much plant life, many fish diseases Most bass, crappie, Bluegill, carp, catfish, caddisfly, dragonfly, mayfly, mussels
55 – 68 F (12.8 – 20 C) = Cool water	Plant life, some fish diseases Salmon, trout, stonefly, mayfly, caddisfly, water beetles, smallmouth and rock bass, various minnows and darters, mussels
Less than 55 F (12.8 C) = Cold water	Trout, caddisfly, stonefly, mayfly, various minnows, darters, sculpins

Dissolved Oxygen (DO) Requirements for Native Fish and Other Aquatic Life (DO in parts per million [ppm])

(Below 68 F) Cold-water organisms including salmon and trout	(Above 68 F) Warm-water organisms including fish such as bass, crappie, catfish, and carp
6 ppm	5 ppm

FOR STUDENTS

Student Worksheets I and II

Student Worksheet I

Where Organism Was Found	Sketch of Organism	Number Found

Student Worksheet II

Observations	Predictions
Water Temperature _____ Air Temperature _____ pH _____ Dissolved O_2 _____	

Canoeing

The highlight of the day is canoeing on our ‘instream’ pond. This is a safe, quiet water area where students can learn to handle a boat and paddle around. For students who do not wish to participate, alternative activities will be available. Included here is an attachment with information about what to wear/bring for canoeing and the require liability release document. All students who participate in canoeing must have a signed liability release form. We will have two Trust canoe guides and canoe volunteers leading this activity. Please talk with your students about paying attention to the guides who will be giving a safety talk and instruction on canoeing prior to getting in the boats.

Information for Calm Water Adventure at Sycamore Island

Students will have the chance to experience canoeing on a large calm water pond at Sycamore Island. This portion of the field trip will be led by River Parkway Trust canoe guides who have exceptional experience teaching canoe skills. Along the way students will learn basic paddling skills and how to steer a canoe on the water.

- Students will be introduced to the River Guides and asked to be quiet for a safety talk and demonstration.
- Guides will show students how to properly fit their life jacket (all students who participate must wear a life jacket while on the water).
- Guides will give a demonstration on how to get in and out of the boat and paddling techniques.
- Students may not get in the boats until the guides have said it is ok.
- Guides will tell students what the canoeing boundaries are.

Although the risk is low, canoes can turn over on the water. For this reason we recommend wearing clothing that can get wet. We will have a space set out with a tarp for students to leave backpacks, electronics, and a spare set of clothes if they wish.

- No flip flops are allowed.
- Students must always wear their shoes, no bare feet are allowed.
- We recommend old tennis shoes or sandals with straps.

Students will be paddling two-person canoes. Some canoes can handle a third middle rider. With our larger groups this will be required.

Canoeing Lesson Plan

Objectives:
1. To learn safety around the water and boats.
2. To learn parts of a canoe and paddle.
3. To learn at least three different strokes used to propel canoes as evidenced by demonstrating proper technique.
4. To develop better coordination and teamwork as evidenced by demonstrating the ability to steer a canoe to a specific location.
5. To understand the physics behind canoeing. To describe and understand speed, force, motion, mass, and gravity in the context of canoeing.

Key Terms:
1. Force = A push or a pull that can cause a change in the motion of an object.
2. Speed = The rate per unit time at which an object moves.
3. Motion = The change in position of an object in a certain amount of time
4. Bow = The front of the boat.
5. Stern = The back of the boat.
6. Keel = The seam down the middle of the bottom of the boat.
7. Gunwales = The rim on the sides of the boats.
8. Blade = The larger part of the paddle that pushes the water.
9. Thwart = The crosspiece forming a seat for a rower in a boat.

Safety Rules
- Always wear a life jacket
- Do not stand up in a canoe
- Do not rock the boat or ram into other boats
- Always watch the weather
- Stay together

Your canoe guides will cover additional safety rules that must be followed on the trip.

Canoe History

· On ancient Egyptian drawings appears crafts moved with paddles. Egyptians, in the pyramids age, navigated the Nile waters aboard narrow boats built with bunches of rush, tied with ropes and leather straps.

· At the peninsula of Yucatan (Central America), in Chichen Itzá, another representation of canoes appears in a 1150 year-old BC mural, and at the ruins of Tikal, in the heart of Guatemala, there are bones of 700 BC with engravings that represent canoes.

· In the Caribbean coasts, when Christopher Columbus arrived to the American Continent, the Indigenous approached to the three Colon's ships, with boats made from a single piece. A big trunk of tree was hollowed with fire, and the tips were sharpened for a better water cutting.

· The Indians of North America used the canoes as their medium of life, for the transport, hunting, fishing and the war. In their origins this type of crafts were built with hollow trunks of trees or skins of animals, previously treated. Later were made with wood and bones framework, covered with birch-bark skins and animals leathers.

· In Britain, primitive crafts were developed in slightly different way, and called "Coracles". These were

made almost round, with a skin covering over a wattle framework.

· In Ireland, the "Curraghs" were the forerunners of much modern canoe building methods, although the

shape is practically the same of some of the primitive canoes.

· The current kayak, descend from the "boat of men" (Ka-i-ak) from the Eskimos. Built with bones and skins of animals, practically covered in its entirety and whose maximum sophistication is reached in Greenland. Fundamentally used to hunt and to fish. Was much more streamlined and built more for single occupancy.

· Local Indians used canoes for transportation, hunting and gathering food.

Taken from: http://www.geocities.com/xabier_sanjuan_a/kayaking.html#HISTORY

Canoeing Review Sheet

1. Name three safety rules to follow when canoeing.

_____

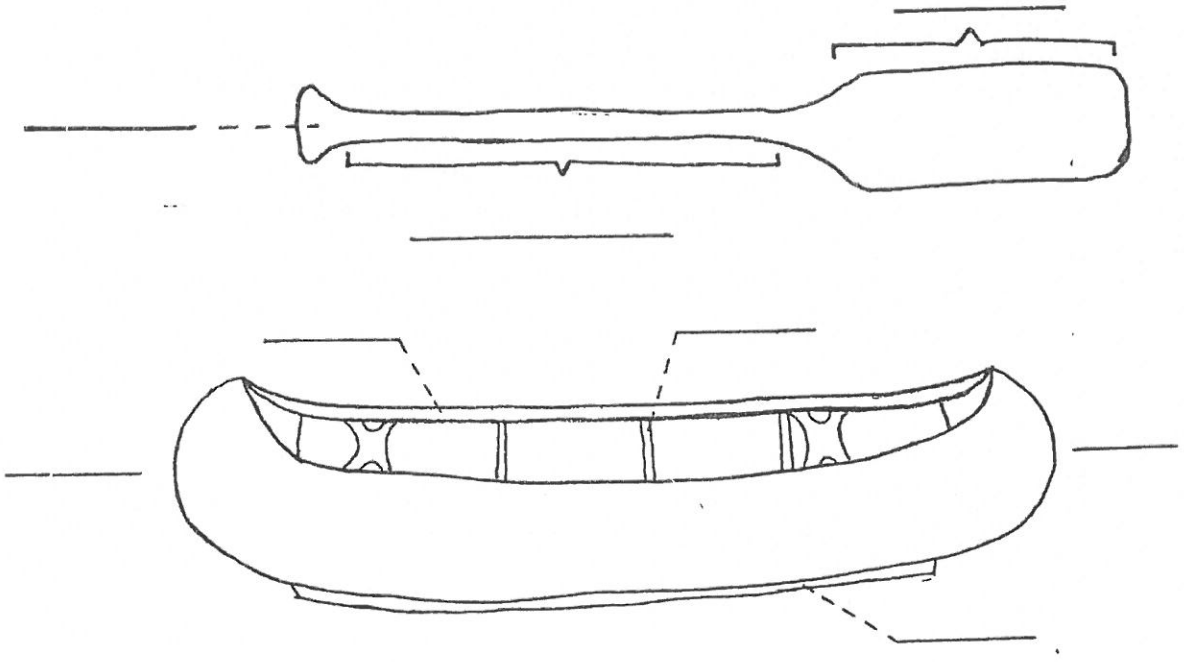
_____

_____

2. Who were the first people to use canoes? _____

3. Label the parts of the canoe and paddle below.

Handle Shaft Blade Keel Bow Stern Thwart Gunwhales



4. The hardest part of canoeing was _____

_____

5. Describe force and how it applies to canoeing. _____

_____

San Joaquin River Parkway and Conservation Trust, Inc.

11605 Old Friant Road
Fresno, California 93730-9701

AGREEMENT FOR RELEASE OF LIABILITY AND ASSUMPTION OF RISK NATURE WALK/RIVER TOUR

I am aware that walking in riverbottom areas and canoeing/kayaking a river are hazardous activities involving the risk of injury, death, and property loss. Uneven ground, proximity to the river, moving and still water, transportation to and from the river, rocks, wild plants and animals, equipment, and other people present hazards which I acknowledge. I also acknowledge that the opportunity to be in the outdoors and wilderness make the comforts of civilization and medical care more difficult to obtain. Acknowledging these risks, I wish to participate in this activity.

IN CONSIDERATION for being permitted to participate, I agree to:

1. Accept and assume all risks and hazards related even remotely to outdoor activities, not limited to these mentioned above including those arising from negligence, carelessness, or omission of those listed below;
2. Waive, release, and discharge all claims and liabilities for injury, death, or loss I have or may have in the future from any cause as a result of my participation, even if the claim or liability is due to negligence, carelessness, or any act of omission of those listed below;
3. Not make any claim, file suit, or demand anything for any injury, death, or loss that arises in any way from my participation;
4. Indemnify and pay all costs and expenses for those listed below in any legal action for injury, death, or loss to: (a) me, or (b) any other person as a result of my conduct;
5. Consent to pay for any medical diagnosis and treatment rendered to me by anyone for injury or other medical situation during or resulting from my participation. In connection therewith, I have informed the lead guide of any relevant medical conditions.
6. Grant full permission to the San Joaquin River Parkway and Conservation Trust, Inc. or agents authorized by it to use any photographs, video tapes, motion pictures, recording or any other record of the activity for any legitimate purpose. Further, I hereby waive any right I may have to inspect or approve the finished product.

These promises apply in advance to the San Joaquin River Parkway and Conservation Trust, Inc., all of its affiliates, agents, and volunteers, and to all persons or entities involved in this trip, including other guests, landowners, public agencies, and equipment suppliers. These promises are binding on me, all members of my family, all minors who accompany me, and also my heirs, successors, or any legal representatives.

BY SIGNING THIS AGREEMENT I AGREE THAT I HAVE READ IT CAREFULLY. I AM GIVING UP LEGAL RIGHTS THAT I MIGHT HAVE. I SIGN THIS AGREEMENT OF MY OWN FREE WILL.

YOUR SIGNATURE: _____ DATE SIGNED: _____
Participant, or Parent/Guardian if under 18

NAME (LAST, FIRST): _____ PHONE: _____

STREET ADDRESS: _____

CITY, STATE: _____ ZIP: _____

EMERGENCY CONTACT AND PHONE: _____

MEDICAL CONDITIONS/MEDICATION: _____

San Joaquin River Parkway and Conservation Trust, Inc.

ACUERDO DE LIBERACION DE OBLIGACION LEGAL Y
APROPIACION DE RIESGOS

Reconozco que ir en canoa en un río es una actividad peligrosa que me pone a riesgo de lesión, muerte, o daño a mis bienes. Reconozco los riesgos que presentan el agua corriente o estancada, el transporte para ir y venir del río, las pedras, plantas y animales, el equipo para uso en actividades al aire libre al igual que daños ocasionados por otras personas. También entiendo que el tener la oportunidad de estar en contacto con la naturaleza en tierra salvaje, resultará mas difícil el obtener asistencia médica u otras comodidades que se encuentran en la civilización. Aceptando estos riesgos, deseo participar en este paseo.

EN CONSIDERACION A SERME PERMITIDO PARTICIPAR, YO ME COMPROMETO A:

1) Aceptar y asumir todos los riesgos y peligros relacionados aún remotamente con ir en canoa y demás actividades al aire libre sin estar limitado a aquellos mencionados anteriormente incluyendo aquellos que resulten a causa de negligencia, descuido u omisión de las siguientes partes detalladas;
2) Renunciar, liberar y absolver todas demandas y responsabilidades por lesión, muerte, o pérdida que yo tenga o pueda tener en el futuro por cualquier causa por resultado de mi participación aún si la demanda o responsabilidad es debido a la negligencia o cualquier acto de omisión de las siguientes partes detalladas;
3) No hacer ningún reclamo, presentar una demanda ni pedir nada a cambio por cualquier lesión, muerte o pérdida a resultado de mi participación;
4) Indemnizar y pagar todos los gastos y costos relacionados con aquellas partes mencionadas en la siguiente lista debido a acciones legales tomadas a causa de lesión, muerte o pérdida de: (a) Mi persona, (b) o cualquier otra persona a causa de mis acciones y conducta.
5) Estar de acuerdo con pagar por cualquier diagnosis o tratamiento médico que yo reciba de cualquier persona a causa de lesión u otra condición médica durante el paseo o como resultado de mi participación. Además, le he informado al guía principal acerca de todas las condiciones médicas que tengo.
6) Doy completa autorización al Parque del Río San Joaquin y al Fideicomiso de Conservación o a agentes autorizados por ambas entidades el uso de fotografías, videos, películas, grabaciones o cualquier tipo de medio para registrar bajo cualquier propósito legítimo los paseos por canoa otorgados por agentes autorizados del Parque Del Río San Joaquin. Aún más, renuncio a cualquier derecho que pueda tener de inspeccionar o aprobar el producto final.

Estos compromisos se aplican por adelantado a San Joaquin River Parkway and Conservation Trust, todos sus afiliados, agentes y voluntarios y a todas personas o entidades involucradas con este paseo, incluyendo otros huéspedes, dueños de terrenos, agencias públicas y preveedores de equipo. Estos compromisos se aplican a mi persona, a todos los miembros de mi familia, todos los menores de edad que me acompañen al igual que a mis herederos, sucesores o representantes legales.

AL FIRMAR ESTE ACUERDO, AFIRMO HABERLO LEIDO CUIDADOSAMENTE. RENUNCIO A DERECHOS LEGALES QUE PUEDA YO TENER. FIRMO ESTE DOCUMENTO POR MI PROPIA VOLUNTAD.

FIRMA_____FECHA DE FIRMA_____
(Su nobre, o Padre/Gurdián para menores de 18 años)

NOMBRE(S)_____ TELEFONO_____

DIRECCIÓN_____CUIDAD_____ESTADO_____CÓDIGO POSTAL_____

CONTACTO EN EMERGENCIA, CON TELEFONO_____

CONDICIONES MÉDICAS, MEDICINAS_____

Species List

Plants
curly dock
big leaf maple
western sycamore
willow trees
California bay
poplar tree
cottonwood trees
oaks - valley, golden
white alder
spearmint
cockleburr
thistle
duckweed
cattail
sage - mugwort
wild cucumber
rush - scouring, bull
horsetail
ferns - sword, bracken

Insects
water strider
water boatman
back swimmer

dragonfly
damselfly
may fly
mosquito
gnats
caddis fly

Invertebrates
planaria worms
snail
sowbug
crayfish
centipede
millipede
shrimp
mussel
rotifers
nematode worms
amphipods
copepods

Vertebrates
fish:
crappie
brook trap
rainbow trout
western sucker

hardhead – bull
mosquitofish
stickleback
lamprey eel
Calif. minnow
bluegill
shad

amphibians:
Calif. Newt
Bullfrog
6 sp. of salamanders

reptiles:
racer snake
Gopher snake
king snake
garter snake
western fence
alligator lizard
western pond turtle
lizard

mammals:
little brown bat
shrew
mice - deer, harvest
striped skunk
beaver
opossum
raccoon
wood rat
pocket gopher
bobcat
squirrels - mule, deer
muskrat
feral cats
mule deer
squirrels - ground, fox

birds:
Great blue heron
American bittern
wood duck
american kestrel
red-tailed hawk
white-tailed kite
ruby kinglet
tree swallow
green swallow
robin
black phoebe
mourning dove
song sparrow
house wren
savannah sparrow
snowy egret
scrub jay
belted kingfisher
bank swallow
ruddy duck
hummingbird
downy woodpecker
cattle egret
killdeer
American coot
western grebe
mallard duck
greenback heron
black-headed
black-crowned night
heron
Brewer's black bird
red-winged blackbird
grosbeak

Vocabulary List

Anadromous - ascending rivers from the sea for breeding

Keystone Species - a species on which other species in an ecosystem largely depend, such that if it were removed the ecosystem would change drastically.

Estuary - a water passage where the tide meets a river current;

Redd – a gravel nest where adult female salmon lay their eggs

Watershed - the area of land that includes a particular river or lake and all the rivers, streams, etc., that flow into it

Biotic index - number of living organisms found in an ecosystem

Micro-habitats - a small specialized habitat within a larger habitat. Examples include a tree stump or a dead animal.