



WILDERNESS RECORD

PROCEEDINGS OF THE CALIFORNIA WILDERNESS COALITION

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No. 6

Royal Battle Brews Over Kings River

by *Donn Furman and Patrick Carr*

It was named "El Rio de los Santos Reyes" (River of the Holy Kings) by the Spanish explorers who arrived at its banks in 1805. The Kings River has since had its share of monarchs, both holy and unholy, as the use of its water has been bitterly contested. What future awaits this magnificent Sierra stream will soon be determined.

The Kings River flows from the Sierra east of Fresno toward the landlocked basin of Tulare Lake. Draining a watershed of over 1,700 square miles, the river has three forks: the North Fork, which has been dammed since the early 1920s by the Pacific Gas and Electric Company (PG&E), and the free-flowing Middle and South Forks, which are born among the 14,000-foot peaks of Kings Canyon National Park. At Yucca Point, a whopping 7,900 feet below Spanish Peak on the canyon's north rim, the Middle and South Forks join to form the mainstem Kings.

From Yucca Point the Kings gouges its canyon even deeper as it tumbles down 19 miles of canyon, much of it a roadless wilderness, to the slack water of Pine Flat Reservoir. With the North Fork now as full of dams and pipelines as a plumber's dream, and the Middle and South Forks protected in Kings Canyon National Park and the Monarch Wilderness, it is the mainstem

river between Yucca Point and Pine Flat that conservationists -- and dam builders -- now focus on.

THE "REAL" KINGS CANYON

Some argue that this stretch of river is the "real" Kings Canyon and should have been included in the park long ago. Even devout revelers in the glacier-smoothed alpine wilderness of the river's highest stretches are awed by the drive up Highway 180, which winds high above the river to end at Cedar Grove in the park. Yuccas and redbud bloom on perilously steep slopes 2,000 feet above the river, while rock faces on the canyon's opposite wall culminate in flecks of snow atop 10,051-foot Spanish Peak. Only a few wildly beautiful trails venture to the river in this steep canyon that remains a road builder's despair, a hiker's delight.

Halfway downriver to Pine Flat, at a place called Garnet Dike, the canyon opens to permit a gravel road. Climbing from Kirch Flat Campground near the reservoir, the road brings 11,000 whitewater boaters each year to this portion of the Kings. Additional thousands of visitors fish this state-designated Wild Trout Stream, which has annual "hatches" of insects that inspired local fly fishers to

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Kings River at junction with Converse Creek

Photo by Gerald Gendron

Snowmobiles Banned From Lassen Park

"The snowmobile use test at Lassen Volcanic National Park has ended," announced Superintendent Gil Blinn in November. "Since the test program began in 1981, there has been very little active interest in snowmobiling in the park on the part of individual users or snowmobile organizations."

Jim Eaton, Executive Director of the California Wilderness Coalition, applauded the decision by

stating, "yet another of the ghosts left by James Watt has been exorcised." As Secretary of the Interior, Watt authorized the use of snowmobiles in Lassen four years ago.

During the four years, only 165 snowmobilers used the 19-mile route, sharing it with 2,801 cross-country skiers.

A public comment period at the beginning of the test generated

2,800 written comments opposing the establishment of a permanent snowmobile route in the park. About 400 written comments favoring a route were received during the same period.

"Based on the small number of snowmobilers actually using the test route and the development of other, less restrictive snowmobile facilities on nearby federal lands, the snowmobile use test is termin-

ated and no permanent snowmobile route will be designated at Lassen," Blinn said.

Although agreeing with the decision, Eaton did not like the rationale. "The small number of snowmobile users should not have been the deciding factor," Eaton said. "Like logging and mining, snowmobiles and other off-road vehicles are just not appropriate in our National Parks."

Coalition Report

by Jim Eaton

November was recovery month for many of us at the California Wilderness Coalition: rest from the physical and emotional effort that went into putting on the 1985 California Wilderness Conference in Visalia. We didn't send out all the thanks yous we should have, and our correspondence is piling up. But now that we are rested we'll get to those tasks.

As a result of the response to our post-conference plea, we more than broke even on the event. Thank you to everyone who donated and/or became members of the Coalition.

For those of you that didn't travel to Visalia, you missed a really great event. More than 700 people attended the three-day gathering. The crowd was particularly moved by the speeches of Senator Alan Cranston and Representative Richard Lehman. They gave Doug Scott and David Brower standing ovations. They howled at the moon along with Dave Foreman.

It had been six years since the previous California wilderness conference. Some changes were apparent. Rather than a slide show, the Sierra Club's Desert Committee had a video cassette recorder and television. Other video equipment could be found, along with workshops on how to use it. Newsletters and handouts seemed to be more sophisticated. The topics covered were more diverse than in the past.

But many things were the same.

Most of all, the friendly people attending the conference made it a joy to be there. A lot of old friends were there, and I made a bunch of new friends. A few of us slipped off after the conference to hike in Redwood Mountain portion of Kings Canyon National Park (an area Representative Chip Pashayan wants to transfer to the Forest Service — more about this in the next Wilderness Record).

The conference also resulted in new member groups in the Coalition. The High Sierra Stock Users Association, Merced Canyon Committee, Pomona Valley Audubon Society, and the Tule River Indian Health Project have joined the CWC. Thank you for your support.

The conference was a celebration of our recent victories along with a focus on projects of the future, especially forest planning. Five plans were issued in 1985 which will guide our National Forests for the next decade and beyond. Much of our time in 1986 will be spent analyzing more than a dozen additional plans, alerting our members and cooperators about them, and working to protect the wild lands and waters in our national forests.

The next Board of Directors meeting is February 1st in Davis. Call us for details. On January 14th we will celebrate the California Wilderness Coalition's tenth birthday. Long live the wilderness!

Update

Dodge Ridge Appeal Denied

The Regional Forester has denied the Coalition's appeal of the expansion of the Dodge Ridge Ski Area expansion in the Stanislaus National Forest. The CWC argued that the decision to expand was premature since the Forest Plan was due to be released and that the impacts on wildlife and roadless areas was inadequate.

The decision upholding the Forest Supervisor's plan to expand

the ski area included a statement of findings. For wildlife issues raised by the Coalition, including the impacts on goshawk, pileated woodpecker, wolverine, and spotted owls, the finding simply state "the Forest Supervisor addressed this issue adequately. His analysis was reviewed by the Regional Endangered Species Coordinator."

The decision will be appealed to the Chief Forester.

News Briefs

Court Rules for Wilderness Water Rights

A federal judge in Denver, chiding the Reagan administration for "benign neglect" of federally designated wilderness areas, has ruled that wilderness lands have the same rights as farms and cities to water in the arid West.

The decision by U.S. District Court Judge John L. Kane Jr. -- the first ruling that wilderness areas have a "reserved water right" -- is a victory for the wilderness movement. He not only finds for the Sierra Club, which brought the suit, on the question of reserved water rights, but he plows new legal ground on the general question of what wilderness is.

The federal government and the water establishment argued that wilderness is simply a management

designation, akin to setting aside land for wild horses. But Kane wrote, "The Wilderness Act (1964) is the initial legislation creating an entirely new reservation of federal lands" [Kane's emphasis].

During Jimmy Carter's presidency, the Interior Department issued an opinion holding that there is a "reserved water right" in wilderness areas. When Reagan named James G. Watt to be interior secretary in 1981, Watt quickly reversed the department's opinion.

In his decision in Sierra Club v. Block, Kane in effect ordered the Reagan administration to abide by the Carter administration's regulatory decision.

— from The Washington Post and High Country News

Stickeen 1973-1985

Although some people may find an obituary of a dog unusual news for the Wilderness Record, most people who know me knew Stickeen. During the past twelve years he was my constant companion and was present at innumerable meetings, workshops, and hearings. A number of speakers at the California Wilderness Conference in Visalia mentioned his passing.

Stickeen also was a wilderness dog, having visited more than 100 roadless, wilderness, and wilderness study areas and climbed more than 30 peaks. We shared many adventures akin to his namesake that was John Muir's companion.

Donations in memory of Stickeen were sent to the California Wilderness Coalition by Rob and Lacy Thayer, Russ Shay, Debbie Sease, and Tim Mahoney. Harriet Allen contributed to the Desert



Photo by Bob Schneider Protective Council in his name. Thank you all.

Stickeen died after a short illness just three days before the wilderness conference. A dawn redwood was planted over his grave in his memory.

— Jim Eaton

Mountain Lion Slaughter Proposed

The Department of Fish and Game proposes killing all mountain lions in a 250 square-mile portion of Fresno County to discover if the cougars caused the decline of the North Kings River deer herd.

As many as 90 lions would be killed by trappers to test whether fewer predators would allow the deer herd to increase. Every mountain lion now in the area and any moving in during the next four years would be eliminated.

The North Kings River deer herd has declined from 17,000 animals in 1950 to fewer than 2,000 at present. In the area between Shaver and Wishon reservoirs it is estimated that there is one cougar for every five square miles.

"We're not saying the mountain lions were the cause of the decline of the deer herd," Fish and Game biologist Ron Bertram said. "But based on fawn survival, the herd

can't seem to get out from under the predators."

For the past fourteen years, mountain lions could only be killed upon confirmed depredation of livestock. In 1984 36 lions were killed and 52 lions have been killed to date this year. After January 1 they will be managed as game animals, similar to deer and bear.

Wildlife organizations opposed to the killing of mountain lions will file a lawsuit to stop the program if it is approved. "There are too many other factors that could be involved," said Richard Spotts of Defenders of Wildlife. "What about past logging practices, hydroelectric projects, new roads, cattle grazing, hunting, and poaching? Mountain lions and deer coexisted long before the Fish and Game came along, so it must be some failure in wildlife management."

— from the Sacramento Bee

1985 California Wilderness Conference

Photos by Pam Coz-Hill



David R. Brower, Chairman of Friends of the Earth



The 700 conference participants give Doug Scott a standing ovation



CWC Executive Dir. Jim Eaton


Resolution
Commending
Robert A. Barnes
for his untiring and enthusiastic work
to bring to fruition the
CALIFORNIA WILDERNESS CONFERENCE of 1985

WHEREAS, Bob Barnes volunteered in December 1984 to be the main organizer for the California Wilderness Conference of 1985; and
WHEREAS, Bob unselfishly gave of his personal time to plan and make arrangements for the conference; and
WHEREAS, Bob brought together leaders of environmental groups from around the Nation, Senator Alan Cranston and Representative Richard Lehman, scores of conservation organizations, and more than 700 wilderness supporters;

Therefore be it
Resolved, that the members of the CALIFORNIA WILDERNESS COALITION BOARD of DIRECTORS do hereby extend to Bob Barnes their thanks and appreciation for his valued service; and be it
Resolved further, that this resolution shall be printed in its entirety in the WILDERNESS RECORD.

ADOPTED UNANIMOUSLY THIS 6TH DAY OF DECEMBER 1985 AT THE MEETING OF THE CALIFORNIA WILDERNESS COALITION BOARD OF DIRECTORS.

Alan Cranston
ALAN CRANSTON
U.S. SENATOR




Doug Scott of the Sierra Club



Edgar Wayburn presents Sen. Alan Cranston with a special award



Small workshops were held on numerous topics during the 3 days

Thankyou

Volunteers made the California Wilderness Conference happen. For the set up of exhibits, registration desk, the John Muir play, the Ansel Adams exhibit, and a host of other projects, we are indebted to the following:

- Bob Barnes Bea Benda Leon Blumanglag Greg Collins Mike Cooper
- Del Coz-Hill Pam Coz-Hill Roy Dressel Frances Hannigan
- Neil Fernbaugh Sara Gershon Alan George Jo Ann George
- Jane Grassel Marion Holzworth Ralph Homan Ina Irvin
- Dave Kirkman Bob Lindsay Donnie Ludekens Ron Ludekens
- Ledra Lynch Bard McAllister Mary Moy Brian Newton Doris Randall
- Barbara Rose Leon Russell Jim Salgot Jim Sellers John Slaven
- Al Senn Helen Senn Dick Smith Mary Smith Theresa Smith
- Gail Toms Pat Valentine Dave Whitney Harold Wood Janet Wood
- College of the Sequoias Art Students
- College of the Sequoias Ecology Club
- Tulare County Regional Arts Council
- Visalia Entertainment and Cultural Arts Commission



Coalition V-P Bob Barnes gives Sen. Alan Cranston a book on Ansel Adams

Stanislaus National Forest Plan Additions to Carson-Iceberg Wilderness Proposed

To date, wilderness recommendations have been rare in forest plans. The Stanislaus National Forest bucks this trend by proposing that the newly-designated Carson-Iceberg Wilderness be enlarged by 23,947 acres. Combined with a small addition proposed by the Toiyabe National Forest, the wilderness would total 188,847 acres.

The Stanislaus forest plan, released in mid-November, is a mixture of good and bad recommendations. Many more acres of wild land could be preserved, and more miles of wild and scenic rivers could be protected. Environmentalists are preparing a Conservationists' Alternative to incorporate these improvements.

The plan actually includes two National Forests. The second is the Calaveras Big Trees National Forest, a 380-acre forest designated

in 1909 for the protection of virgin stands of mixed conifer forest, including Sierra redwoods and old-growth sugar pine [this will become a new wilderness trivia question].

About 145,000 acres of unprotected wild lands remain in the Stanislaus National Forest. Most of the lands are adjacent to the existing Emigrant, Carson-Iceberg, and Mokelumne wilderness areas or the Tuolumne Wild River.

Some additions to the Carson-Iceberg Wilderness were designated as a "planning area" by Congress in the California Wilderness Act of 1984. They were dropped from protection to achieve the reduced wilderness acreage demanded by Senator Pete Wilson, but the Forest Service was ordered to conduct a special study of these lands. These are the lands proposed for wilderness in the forest plan.



Lands near Hiram Peak will be protected

Photo by Jeff Schaffer

Another 10,269 acres adjacent to Carson-Iceberg Wilderness is a further planning area in Pacific Valley. The preferred alternative places the entire area in a "semi-primitive, non-motorized (SPNM)" designation due to the potential for downhill skiing.

Additional roadless lands adjacent to the Carson-Iceberg Wilderness were "released" by Congress in the California Wilderness Act of 1984. Other released lands include Mt. Reba and Raymond Peak (next to the Mokelumne Wilderness), Waterhouse, Bell Meadow, Eagle, Dome, Night and Cherry Lake (contiguous to the Emigrant Wilderness), North Mountain and Tuolumne River (along the Tuolumne River), and Trumbull Peak (along the Merced River).

Of the 145,000 acres of unprotected roadless lands in the Stanislaus forest, 54,812 acres are

proposed for "semi-primitive, non-motorized" classification. While this designation gives some protection from development, mountain bikes are allowed on the trails.

Four rivers were studied for their potential as wild and scenic rivers: the Clavey, North Fork Mokelumne, North Fork Stanislaus, and South Fork Tuolumne. The preferred alternative recommends "wild" classification only for a portion of the North Fork Mokelumne for which 18 of the 19 miles are already within a wilderness area.

Comments on the plan will be accepted until March 10, 1986 (this deadline might be extended). The CWC will issue a Wilderness Alert on this plan. Send your remarks to:

Blaine Cornell, Forest Supervisor
Stanislaus National Forest
19777 Greenley Road
Sonora, CA 95370

Stanislaus Roadless Areas and Rivers

| Existing Wilderness | acres | |
|---------------------|---------|--|
| Carson-Iceberg | 77,800 | |
| Emigrant | 112,000 | |
| Mokelumne | 22,000 | |

| Roadless Areas | acres | protection |
|-------------------------|--------|--------------|
| Bell Meadow | 8,200 | 42% SPNM |
| Carson-Iceberg | | |
| - Arnot | 100 | 100% SPNM |
| - Bald Peak | 20,546 | 100% WILD |
| - Pacific Valley | 10,269 | 100% SPNM |
| - Tryon Peak | 3,401 | 100% WILD |
| - West | 14,200 | 32% SPNM |
| - Wheats Meadow | 4,200 | 43% SPNM |
| Cherry Lake | 1,100 | 0% |
| Dome (14,900) | 11,100 | 0% |
| Eagle | 16,000 | 56% SPNM |
| Mt. Reba (4,100) | 3,900 | 31% SPNM |
| Night | 3,100 | 100% SPNM |
| North Mountain | 8,100 | 48% SPNM |
| Raymond Peak (4,500) | 3,200 | 56% SPNM |
| Trumbull Peak | 6,300 | 79% SPNM |
| Tuolumne River (18,200) | 16,900 | 81% SPNM, WR |
| Waterhouse (4,400) | 4,100 | 43% SPNM |

| Wild and Scenic Rivers | Potential | Proposed |
|----------------------------|--------------|----------|
| Clavey River | Wild | SPNM |
| North Fk. Mokelumne River | Wild | Wild |
| North Fk. Mokelumne River | Recreational | NN |
| North Fk. Stanislaus River | Scenic | NN, SPNM |
| South Fk. Tuolumne River | Scenic | SPNM |

SPNM = Semi-Primitive, Non-Motorized
 NN = Near Natural
 WR = Wild River
 WILD = Wilderness
 (indicates acreage in January 1984, if different from present)



Sequoia National Forest Plan

Logging Increases; Wild Lands Disappear

The draft forest plan for the Sequoia National Forest was released for public review in November. Public comment will be accepted until March 28, 1986.

While conservationists are pleased with some of the wild river designations proposed, numerous roadless areas are turned over to loggers and off-road vehicle users.

The Forest Service is recommending that portions of the Kings and South Fork Kern rivers be added to our National Wild and Scenic Rivers System. Although the preferred alternative falls short of what conservationists would like, it is a step in the right direction.

The only wilderness proposed in the preferred alternative is for a third of the Rockhouse Wilderness Study Area (WSA), wild lands man-

aged by the Bureau of Land Management adjacent to the existing Domeland Wilderness [see accompanying article]. A public hearing on this proposal is set for January 9th.

None of the six further planning areas (117,708 acres) in the Sequoia National Forest are recommended for wilderness designation. Most of the acreage of these wild lands is proposed for "semi-primitive, motorized (SPM)" and "roaded natural (RN)" management. In SPM areas motorized travel is allowed on trails, including off-road vehicle "touring." In RN areas "resource modifications range from evident to strongly dominant."

The Scodies roadless area, for example, is almost entirely zoned for semi-primitive, motorized management, with several roaded

natural corridors. This is done despite the fact that the area nearly became wilderness in the California Wilderness Act (it was dropped to meet Senator Wilson's demand for reduced acreage) and remains a priority with conservationists. The Pacific Crest Trail traverses the area.

Besides the further planning areas, fifteen other roadless areas (329,700 acres) were "released" from wilderness consideration by the California Wilderness Act of 1984. Forest planners have misinterpreted the congressional intent for "release" of these areas and no longer acknowledge that these roadless areas still exist. Although the Forest Service is not required

to consider a wilderness option for these areas, conservationists want to see other forms of protection for them, including designation as "semi-primitive, non-motorized (SPNM)" areas [mountain bikes, unfortunately, would be allowed].

Since the range of alternatives is so bad, local environmentalists intend to develop a "conservationists' alternative" for the Sequoia National Forest. The California Wilderness Coalition will send activists a Wilderness Alert explaining this position.

Send comments by March 28 to:
Forest Supervisor
Sequoia National Forest
900 West Grand Avenue
Porterville, CA 93257



Rockhouse WSA and the Domeland Wilderness

Photo by Bob Barnes

Hearing Set for Rockhouse WSA

Included in the forest plan for the Sequoia National Forest is a recommendation for the Rockhouse Wilderness Study Area (WSA) managed by the Bureau of Land Management. As required by law a formal hearing is scheduled for January 9th in Bakersfield to receive public comment on this area.

The 35,557-acre Rockhouse WSA is adjacent to the existing Domeland Wilderness (94,686 acres). The preferred alternative recommends only 12,700 acres of the WSA for wilderness designation. Conservationists believe the entire WSA should be preserved as wilderness.

The current boundary between the Domeland Wilderness and Rockhouse WSA is on section lines which

form the administrative boundary between the Forest Service and Bureau of Land Management. Protection of the WSA would enhance the Domeland Wilderness and help prevent illegal off-road vehicle trespass.

The Rockhouse WSA is dominated by pinyon pine and has no commercial timber. Rocky slopes, poor soil development, and low precipitation limit vegetative growth. The southern end of the area contains massive granitic rock ridges and outcrops.

The January 9th hearing is part of a meeting scheduled for 7:00 P.M. in the Venus Room, Civic Auditorium, 1001 Truxton Avenue, Bakersfield.

Sequoia Roadless Areas and Rivers

| <u>Existing Wilderness</u> | <u>acres</u> | |
|----------------------------|--------------|--------------------|
| Domeland Wilderness | 94,686 | |
| Golden Trout | 111,146 | |
| Jennie Lakes | 10,500 | |
| Monarch | 23,800 | |
| South Sierra | 24,410 | |
| <u>Roadless Areas</u> | <u>acres</u> | <u>designation</u> |
| Black Mountain | 15,800 | SPNM, SPM |
| Slate Mountain | 13,100 | RN, SPM |
| Cannell | 47,300 | SPM, SPNM, RN |
| South Sierra | 9,500 | RN |
| Jennie Lakes | 3,200 | RN |
| Rincon | 59,700 | SPM, SPNM, RN |
| Chico | 43,700 | SPM |
| Domeland Addition | 3,100 | RN |
| Mill | 29,900 | SPM, SPNM |
| Lyon Ridge | 5,200 | RN, SPM |
| Greenhorn Creek | 29,600 | SPM |
| Oat Mountain | 12,400 | SPM, RN |
| Kings River | 24,300 | SPM, SPNM |
| Agnew | 9,700 | SPM |
| Kings Canyon | 3,200 | RN, SPM |
| Dennison Peak | 6,700 | SPNM, RN |
| Moses | 24,359 | SPNM, RN |
| Woodpecker | 12,400 | RN, SPM |
| Woolstaff | 44,300 | SPM, SPNM, RN |
| Scodies | 48,000 | SPM, SPNM, RN |
| Cypress | 1,949 | RN |

| <u>Wild and Scenic Rivers</u> | <u>Potential</u> | <u>Proposed</u> |
|-------------------------------|------------------|-----------------|
| Kings River | Wild | Deferred |
| Kings River | Wild | Wild |
| South Fork Kings | Recreational | Recreational |
| South Fork Kings | Wild | Wild |
| South Fork Kern | Recreational | |
| South Fork Kern | Recreational | Recreational |
| South Fork Kern | Scenic | Recreational |
| South Fork Kern | Wild | Wild |

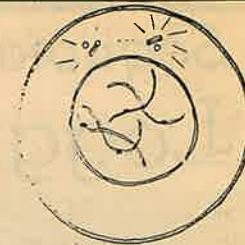
SPNM = Semi-Primitive, Non-Motorized.

SPM = Semi-Primitive, Motorized RN = Roaded Natural

Wilderness Wildlife

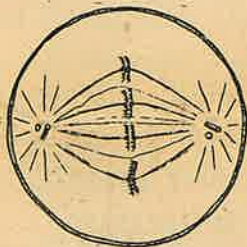
The Genetics of Wildlife Conservation

by Dennis Coules



Throughout California and worldwide, wild species are being fragmented into ever smaller remnants of their original natural habitats. As a result, their local populations are being steadily reduced in size or eliminated. One consequence of this trend is the threat of imminent extinction of the species if all local populations disappear.

The other consequence, which is more difficult to observe but which may lead to extinction in the future, is the erosion of genetic diversity within a species. If we wait until a species is nearly extinct to conserve it, much of its genetic diversity may already be lost. This may severely compromise the long-range survival of the species, no matter how greatly its population numbers recover and expand at a later date.



GENETIC BOTTLE NECKS

Population geneticists refer to the effects of a severe drop in population numbers followed by a population recovery as the "bottleneck effect." This is very similar to the "founder effect" that occurs when a population is initiated by a small number of colonists. Founder and bottleneck effects are easily studied in the laboratory by measuring the response of populations of different initial sizes to artificial selection. Generally, populations that were composed of fewer individuals at the outset will be less responsive to selection (thus less adaptable) because they have less genetic variability for selection to work with.

A good example of a genetic bottleneck is the case of the northern elephant seal. This species was reduced to less than 30 individuals by 1900 but has now recovered to over 30,000, with almost no genetic variability between individuals (comparable to 30,000 clones!). In such a genetically uniform species, any significant environmental stress or disease would be expected to affect all individuals similarly. In the

absence of variable individuals that were genetically pre-adapted to withstand the stress, survival of the species is less likely.

In a totally uniform population, mutation is the only source of genetic variability. Mutation is a very slow process. For example, in the fruitfly on the average only about one in 100,000 flies will have a mutation in a given gene.

But the elephant seal may be lucky. When a founder or bottleneck effect does occur, rapid expansion to a large population size provides more opportunity for mutation, as long as the species persists long enough. If a species is suppressed at low population levels for an extended period, as has been the case for most threatened species, genetic variability will be increasingly eroded.

MINIMUM VIABLE POPULATIONS

The most important genetic effect of small population size is "inbreeding depression." Inbreeding may reduce the "fitness" (i.e., the successful production of fertile offspring) of a population by increasing the frequency of undesirable recessive genes and reducing overall heterozygosity. (Heterozygosity within a population is the maintenance of multiple forms of genes, e.g., the genes for brown eyes and for blue eyes).

Conservation biologists roughly estimate that for large animals an "effective population size" of about 50 is needed to overcome inbreeding effects. An effective population size refers to a population where the individual contributes equally to the next generation with random mating and an equal sex ratio. Therefore the actual population size usually must be much larger than 50 to provide an effective size of 50. So much for the California condor, which now numbers only about nine in the wild and 21 in captivity.

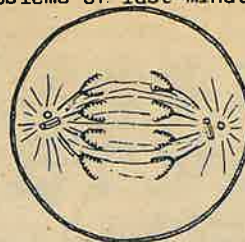
Inbreeding effects are considered a major barrier to success in captive breeding/reintroduction programs. The longer a population is maintained at a small size, the greater the effects.

For the long-range future of a species, even greater numbers are important. Over time, the frequency of many genes in a population fluctuates in a relatively random manner (this is called "genetic drift"). The smaller the popula-

tion, the more likely that some genes will be lost by chance, especially rare genes. The more genes lost, the less raw material available for natural selection to work with as a species tries to adapt to changing environments, predators, toxins, or other conditions.

For example, very large population sizes enable the housefly, mosquito, and other insects to survive and eventually develop resistance to many man-made insecticides because of a few individuals that carry a rare gene or genes for resistance. In fact, two target insects in North America that did not develop resistance to DDT, the corn borer and apple maggot, were exotic species which colonized this continent from small populations (the founder effect) which probably lacked individuals carrying the necessary resistance genes.

This is comparable to the situation of the black-footed ferret, which at this very moment is being wiped out by canine distemper, a disease which is considered 100 percent fatal to ferrets. The ferret's case illustrates several of the problems of last-minute conser-



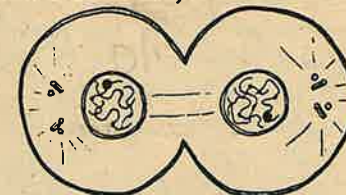
vation efforts. The population is small, numbering only 22 upon its discovery in 1981, 138 at its peak after discovery, and 25 at last report. Thus the likelihood of disease-resistance genes in the population is small, and it reduced even further by probable inbreeding. Even worse, the only known population is just that, a single population, so no outside sources of reintroduction exist to reestablish the colony if it is destroyed.

It has been proposed that a permanent effective population size of at least 500 is needed to minimize the long-term consequences of random fluctuations in gene frequency to the future evolution of a species. With an effective size over this number, mutation will tend to counter-balance the random loss of rare genes. The actual population size would have to be much higher than 500 because all juveniles and non-breeding adults do not contribute to the effective

size, and adjustments must be made for the sex ratio. Obviously, many of the world's rare and endangered mammals, birds, and reptiles already have slipped below this level.

Of course, effective population sizes of 50 or 500 do not guarantee the vitality of a given species over the short or long-term, respectively. Many factors are involved in species survival other than genetic factors, such as the need to maintain disjunct populations to prevent spread of disease or the need of some species, such as the passenger pigeon, to have a certain population density in order to reproduce.

How should genetic considerations influence the strategies of wildland conservationists concerned with preservation of natural biological communities and species? It is clear that protection of a single population or just a few small populations of a wildlife species will not ensure its perpetuation. Agencies such as the U.S. Forest Service, which propose to preserve a few populations of an old-growth forest species, such as the spotted owl, while allowing clearcutting of the rest of their range may be dooming such species to eventual extinction. We also should recognize that extended maintenance in zoos with the anticipation of eventual reintroduction to the wild, although possibly a last hope for a few species, cannot ensure the long-term survival and adaptability of wildlife. Only preservation of large and numerous populations of each species through the protection and restoration of large expanses of natural habitat (wilderness) will suffice to maintain the Earth's diversity.



FURTHER READING

- 1) M.E. Soule and B.E. Wilcox, eds., 1980, Conservation Biology, Sinauer Associates, 395 pp.
- 2) O.H. Frankel and M.E. Soule, 1981, Conservation and Evolution, Cambridge University Press, 327 pp.

Dennis Coules is the CWC's consultant for wildlife and desert issues.

Kings River Fight

Cont. from Page 1

design several famous fly patterns.

A short distance above Kirch Flat is the proposed Rodgers Crossing dam site. Like a rude guest at a dinner party, the notion of building Rodgers Crossing has been around for longer than conservationists care to remember. But the threat suddenly grew serious last February when the Kings River Conservation District (KRCDC) contracted with the prestigious Bechtel Corporation for a thorough study of the dam. Bechtel is examining alternative dam plans that could flood up to 13 miles of the mainstem Kings Canyon.

THE DAM THAT WON'T HOLD WATER

KRCDC's interest in Rodgers Crossing is curious, for in most years this dam would supply no water. The district is the major water supplier for a 1.1 million-acre area encompassing some of the most valuable land in Fresno, Kings, and Tulare counties -- the heart of California's agribusiness industry. Farmers in the district's service area already use 3.2 million acre feet of water each year (over one trillion gallons!), much of it drawn from the Kings. So much, in fact, that in most years farmers grow crops on the former bottom of Tulare Lake, once the Kings' terminus.

Besides the Kings, farmers tap one other major water source, and herein lies the KRCDC's interest in Rodgers Crossing. Pumping ground water has traditionally been an easy, quick way to irrigate crops, but it's proven to be too much of a good thing for Kings River farmers. Locally, uncontrolled ground water pumping results in an average annual overdraft (the amount tapped from wells and not replaced) that is estimated to total 300,000 acre feet. Wells are dug steadily deeper, pumping costs rise, and the land's capacity to ever hold water

again diminishes as the ground compacts.

If you look at the overdraft problem without considering conservation, you might decide there's only one solution: build another dam to replace water you'd otherwise take from the ground. In defiance of the facts, that is the approach the KRCDC has taken for many years. Despite numerous past studies of Rodgers Crossing performed by the Army Corps of Engineers, the Fresno Irrigation District, and at least twice by the KRCDC itself -- all of which showed the dam to be an economic loser that would produce water only once every three or four years -- the district is paying Bechtel \$450,000 in hopes they'll be told those earlier studies were wrong. While the study won't be complete until early next year, KRCDC staff already appear confident of its results. "The dam [Rodgers Crossing] should have been completed long ago," stated KRCDC General Manager Jeff Taylor in an interview published in the Fresno Bee last May.

Even if Bechtel's engineers succeed in giving Rodgers Crossing an economic thumbs up based on hydropower and flood control benefits, there is undeniably shaky logic in destroying 13 miles of a spectacular river canyon for a reservoir that usually won't provide any water. The problem with Rodgers Crossing is one encountered today by water developers throughout the West: the productive dam sites are already taken. Those left were passed up for good reason.

A variety of alternatives to Rodgers Crossing are available. Improved water conservation among area farmers, through such techniques as using sprinklers instead of flood irrigation and leveling fields to reduce runoff, would cut ground water overdrafting. Some portions of the KRCDC service area have irrigation efficiencies as low as 50%, and excess irrigation water

usually evaporates without benefiting crops or the water table.

It is also possible that KRCDC's overdraft is not as severe as has been thought. Statewide ground water overdrafting "doesn't appear to be as much as we used to think," said California Department of Water Resources Director David Kennedy in a meeting of conservationists and water managers last June. The problem merits further investigation before a solution as radical as Rodgers Crossing is decided upon.

Some local residents also support a plan that has been considered by the KRCDC to raise Pine Flat Dam by 20 feet. This would inundate close to a mile of the free-flowing Kings but would provide both water and additional flood control at less environmental and economic cost than Rodgers Crossing. The district could work with the Army Corps of Engineers on this project, as Pine Flat is a federal dam. And as for hydropower, which would likely be Rodgers Crossing's big money-maker, the California Energy Commission recently stated in its draft biennial electricity report

that additional new hydropower projects are not needed in the state.

YOUR HELP NEEDED IN A KING SIZED FIGHT!

The Committee to Save the Kings River (CSKR) and Friends of the River are determined to see the Kings, from Pine Flat to its headwaters, preserved as a National Wild and Scenic River. We are hopeful that the river's indisputable natural values will outweigh the questionable benefits of damming the mainstem Kings.

In Congress, supporters of a Wild and Scenic Kings River have a powerful ally in Representative Richard Lehman (D-Fresno), who took a lead role in preserving the Tuolumne River last year. In a recent letter to the Sequoia National Forest, Lehman stated that "it would be unconscionable to allow an unnecessary dam at Rodgers Crossing to destroy this great Sierra canyon."

Donn Furman is chair of the Committee to Save the Kings River. Patrick Carr is editor of Headwaters, the membership newsletter of Friends of the River.



CWC T-Shirts are a Great Catch

It's easy to get hooked on CWC T-shirts. Don't get caught without wearing the CWC logo of black mountains beneath a blue sky, with yellow sand dunes in the foreground. KEEP IT WILD rings the top of the logo, with CALIFORNIA WILDERNESS COALITION beneath.

T-shirts are 100% double knit cotton. Regular T-shirts are available in white, yellow, tan, and blue in S, M, L, and XL. A limited

number of French-cut style T-shirts are available in white, pink, and powder blue in women's S, M, and L.

T-shirts are \$8.00 to CWC members; \$10.00 for non-members (sales tax included). There is an order form on Page 8; clearly indicate if you want regular or french-cut, size, color, and a substitute color. Please add \$1.25 postage; 75¢ for each additional T-shirt.

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...to promote throughout the State of California the preservation of wild lands as legally designated wilderness areas by carrying on an educational program concerning the value of wilderness and how it may best be used and preserved in the public interest, by making and encouraging scientific studies concerning wilderness, and by enlisting public interest and cooperation in protecting existing or potential wilderness areas.

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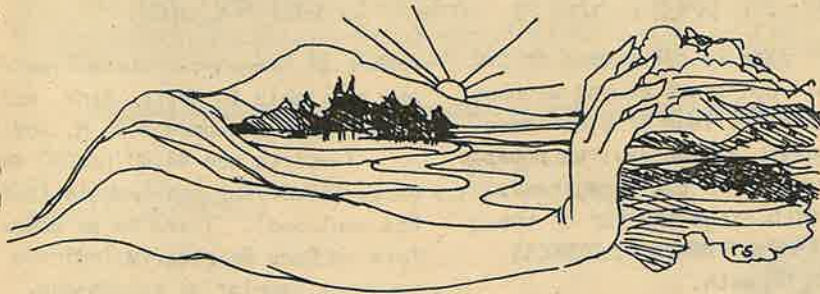
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