



Connections

The osprey flew hard out from the land, about 50 feet above us, over Polson Bay. It clutched something in its talons.

Close in pursuit came a golden eagle, steadily gaining.

The osprey dropped what it was carrying, wheeled, and headed back toward land. My wife and I couldn't make out what the osprey had been clutching, but it hit the water with a hefty splash. The golden eagle swooped low over the water, but the prize had sunk.

Then out overhead came a bald eagle. It headed straight for the golden. The two faced each other in mid-air, heads up, tails straight down, talons

slashing toward each other, shrieking with rage. Then the golden, recovering, headed back toward land, chased by the smaller bald. They flew over our heads and were gone.

All that took about 90 seconds to unfold before our astonished eyes.

I look back upon that experience of six years ago—a sequence that Walt Disney, during his nature kick, would have loved to have filmed—with awe.

Those birds were tied to a healthy fishery, which in turn is tied to clean water, which is tied to pollution control and good land use in the watershed, which is tied to planning and zoning to protect and improve water quality.

All connect with scientific study and with government bureaucracy. And all tightly connect with public attitudes—to individuals accepting responsibility for tens of thousands of tiny cuts into Flathead Lake water quality. And with public awareness that the lake is in steady danger. And with political determination to keep the lake clean. I don't know much but I know all that.

Plus I feel gratitude for past

blessings. If Rachel Carson hadn't written *Silent Spring* and DDT hadn't been outlawed to stop its devastation of osprey and eagle eggs, would any of those three magnificent raptors have been alive to delight us that day?

We can act. Individually and collectively, we can act to keep Flathead Lake clean. A clean lake is the primary mission of the Flathead Lakers. We know that a clean Flathead Lake is a golden attraction for high-quality economic investment. We know that a

clean Flathead Lake is a delightful resource for the people of all walks of life who live or visit here.

The Flathead Lakers don't talk party politics or ideologies. We don't holler and call names. Instead we work steadily, responsibly, uncompromisingly, to preserve and improve Flathead Lake's water quality.

- Sam Reynolds,
President



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Members are encouraged
to attend
Directors' Meeting

The Board of Directors meets every six weeks. Call Robin Steinkraus for the location if you'd like to attend a meeting.

Flathead Lakers

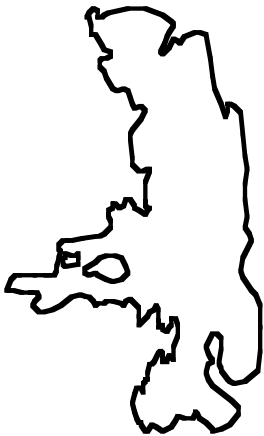
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Clean Water Depends on You:

An Opportunity to Protect

You are receiving this newsletter because we think the Flathead Lakers' message about keeping our waters clean is so important that we decided to publish a special summer edition and distribute it widely to everyone living around the lake, both in lakeshore communities and rural areas. We hope you will find it interesting and informative, whether or not you are a member.

For those of you who are not familiar with the Flathead Lakers, following are the answers to questions you may have.

Who are the Flathead Lakers?

- We are a citizens organization.
- We are people who want to preserve and protect the natural assets and quality of life we now enjoy in the Flathead for future generations.
- We are your friends and neighbors.

What do the Flathead Lakers believe?

- Flathead Lake serves as a barometer of the health of the entire basin.
- Scientific studies show that water quality in the Flathead is threatened.
- Protection of our natural wealth is always less costly than restoration.
- Sound land use and watershed planning can protect our waters.
- Each of us can be a good steward of our land and water.
- Growth and economic development can occur in harmony with our natural heritage.
- All of us should be able to enjoy clean water and a healthy environment in perpetuity.

What do the Flathead Lakers do?

- Educate adults and children about the Flathead watershed and how to protect it.
- Advocate sound land use and watershed planning and management.
- Work together with citizens, public officials and resource managers to find practical solutions to problems.
- Promote good stewardship practices.
- Serve as a voice and information resource for our members on problems and issues affecting water quality.

How can you benefit by joining the Lakers?

- Learn about issues and problems through our quarterly newsletter.
- Have a stronger voice on resource issues.
- Learn about ways to be a better steward of the land and water.
- Protect your property values.
- Help make sure growth and development are consistent with sustaining our natural heritage.
- Join forces to voice your desire to maintain high quality of life.
- Protect our natural wealth and scenic beauty for our children and grandchildren.

We hope you will agree the Lakers' mission to protect our waters and quality of life is vital for the future of the Flathead. We invite you to join us in this important work by completing and returning the membership form on the next page. And thanks again to all of you who are already members!

- Flathead Lakers Board of Directors

Come to the Flathead Lakers Annual Meeting!

***Sunday, July 13 – 6:30 to 8:30 PM
at the Salish, on the lake in downtown Polson***

Enjoy dessert and coffee or punch on the patio
Learn about the most recent research on non-point pollution
and what it means for Flathead Lake

Dr. Jack Stanford, Director of the Flathead Lake Biological Station, will present the annual "State of the Lake" report and will update us on the TMDL (total maximum daily load) research results. Flathead Basin Commission Chair Elna Darrow will discuss how we can use this new information to protect Flathead Lake.

Thanks to our '97 volunteers!

*Sue Crawford
Lana Cummins
Dick Fossum
Ed Gilliland
Martha Groenke
Betty Heliker
Jim Slack
Cas Still
Jack Truzzolino
Dick Wollin*



YES! I want to belong to the Flathead Lakers!

Name _____
Address _____
City _____ ST _____ ZIP _____
Telephone _____
Summer Address _____

DUES: \$25 Individual \$50 Sustainer \$100 Patron \$250 Benefactor
 \$500 Protector Gift & Remembrance (\$25 Min.) Other _____

Mail to: Flathead Lakers • PO Box 990 • Bigfork, MT 59911

A Freak Preserved by an Accident:

The Making of Flathead Lake

by Dave Alt

In one way or another, all lakes and ponds are freaks. Water naturally tends to run down through streams to the ocean. Lakes can exist only in places where something prevents water from running down hill. So every lake must have its reasons. The reasons for Flathead Lake's existence start back in the last ice age and extend far beyond the lakeshore.

Look at a map sometime to see what happens to the Flathead Valley north of the Canadian border. You will see that it extends all the way through British Columbia and into the southern Yukon as an almost perfectly straight trough with steep valley walls on either side. Geologists call it the Rocky Mountain trench and the Flathead and Mission Valleys are its southernmost end.

During the last ice age, and presumably during the earlier ones as well, an enormous glacier filled the Rocky Mountain trench. Ice poured off the neighboring mountains and down their valleys as smaller glaciers that met and coalesced in the Rocky Mountain trench. They filled it from wall to wall with a mighty river of ice thousands of feet thick and 20 or more miles wide.

As the ice age continued, the monstrous glacier slowly pushed south through the Flathead Valley where the north end of the Mission Range split it like a wedge diverting one branch into the Swan Valley and the other into the Mission Valley.

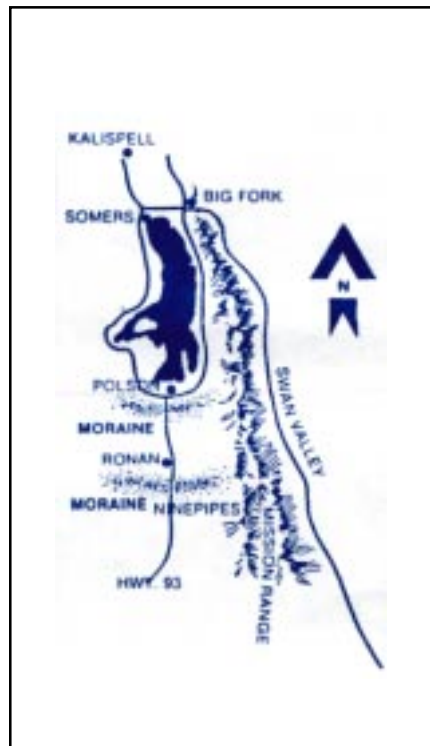
The branch that went down the Mission Valley made it to the vicinity of Ninepipes Reservoir, where the ice was so deep that it completely buried the Mission Range about as far south as Ronan. That explains why the range is so smoothly rounded north of the Ronan area and so rough and craggy south of there. The contrast is really quite striking.

Glaciers end when they reach a place with a climate warm enough to

melt the front of the ice river back at the same rate it advances. We can think of glaciers as natural conveyor belts because they carry enormous loads of sediment of all sizes ranging from clay to enormous boulders.

Where glaciers end, they dump much of that debris to form a ridge called a moraine.

The big moraine at Ninepipes is



especially conspicuous because it contains hundreds of little lakes and ponds full of ducks. Each little lake and pond marks a place where a chunk of ice was once buried in the moraine and then later melted leaving a depression.

After the moraines had formed, the climate changed slightly and the ice front melted back a few miles. New moraines formed just south of Polson in the Mission Valley. The Polson moraine is especially easy to see because it

forms a prominent ridge across the valley. People driving north on Highway 93 get their first view of Flathead Lake just as they reach the crest of the Polson moraine. Nobody forgets it!

The large size of the Polson moraine suggests that the ice front must have remained at that position for quite a few years. During the summers of those years, glacial meltwater washed loads of sand and gravel through old stream channels across that moraine and spread them across the valley floor to the south. Those outwash deposits, as they are called, completely fill what would otherwise be a low area between the Polson and Ninepipes Moraines. Ronan and Pablo both stand on those glacial outwash deposits.

There is abundant evidence that the great ice age glaciers melted very rapidly, probably within a couple thousand years. As the glaciers thinned and began to shrivel they must also have slowed in their movement. Finally they stopped moving and became great sheets of stagnant ice lying upon the land.

I think Flathead Lake fills a basin that exists where a large mass of stagnant ice survived for a few centuries after the end of the last ice age. Had that ice not been there, the present lake basin would have filled with outwash sediments. The same explanation can be extended to most of the other large and small lakes that spangle the floor of the Rocky Mountain trench. But why does the lake basin remain unfilled and undrained?

In fact, Flathead Lake is partially filled. During the 8 to 10 thousand years of its existence, the Flathead River has built a large delta into the north end of the lake. The road between Bigfork and Somers goes right across the lower part of that delta. Given enough time, that delta

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Swimmer's Itch Revisited

If you're one of the many people who suffer from red itchy spots after a dip in Flathead Lake, you're probably already aware of its cause—a tiny parasitic worm. But you may not know that researchers believe its increase may be related to the increase in nutrients in the lake.

Swimmer's itch is a nuisance human allergic response caused by parasitic flatworms. The parasite has a complex life cycle, which includes two hosts.

The immature flatworms, called Cercariae, are found in snails while the adults are carried by mergansers. In order to complete its life cycle, the parasite must pass through both snail and waterfowl hosts.

As the Cercariae leave their snail hosts, enter the water, and begin to search for a proper waterfowl host, they may cause problems for humans. If a free-swimming Cercaria makes contact with a human, the organism burrows into the skin and dies, and in the process may trigger an allergic reaction.

Longtime residents commonly report that swimmer's itch is much more prevalent in Flathead Lake now than in the past.

Dr. Craig Spencer of Augustana College in South Dakota

(and formerly with the Flathead Lake Biological Station) studied swimmer's itch in the summer of 1992. Spencer suspects that the primary culprit of the increased incidence of swimmer's itch is increased algae growth around the shoreline of the lake.

Since attached algae appears to have increased significantly in recent years, snails may now be more abundant, providing more potential hosts for the parasite.

Research conducted at the Flathead Lake Biological Station indicates that increased growth of algae around the shoreline of Flathead Lake has been stimulated by increased amounts of nutrients (phosphorus and nitrogen) entering the lake.

Likely sources of the increased nutrients include septic systems, sewage treatment plant effluent, fertilizer runoff from lawns, orchards and agricultural fields, and land disturbance activities which increase erosion and the transport of sediment and nutrients to the lake.

Swimmer's itch appears to be another reason to keep Flathead Lake clean!

continued from page 4

will eventually fill the lake.

And Flathead Lake is also partially drained. People driving Highway 93 along the south side of the lake west of Polson often notice roadcuts in what looks like soft, white clay. Those deposits are old lake-bed sediments deposited when Flathead Lake was much deeper than it is now. In fact, the lake level must once have reached the crest of the Polson moraine, but it could not have stayed there long.

As soon as the lake rose to the lowest level on the crest of the Polson moraine, the water must have poured across and begun to cut a spillway. That overflow channel still exists as the course of the Flathead River through the Mission Valley. A large stream can erode glacial deposits quite easily so we can imagine that the newly-formed Flathead River must have sliced

down through the moraine rather quickly. The river would have drained Flathead Lake long ago except for a curious accident.

For no reason except blind chance, the Flathead River happened to start flowing along a course that carried it directly across the top of a bedrock hill buried within the glacial sediments. It could as easily have started to flow on another course that would have taken it to one side or the other. When the rapidly eroding river cut down to the elevation of the buried hill, the hard bedrock slowed it down and so saved Flathead Lake. Since then the river has cut a narrow gorge through that buried bedrock hill. It is the site of Kerr Dam.

So Flathead Lake is a freak preserved by an accident. It formed in the first place because a big mass of stagnant ice didn't melt as fast as

the rest of the Rocky Mountain trench glacier. And it still exists because the Flathead River just happened to erode into the top of a buried hill that it could as easily have missed.

Dave Alt is a professor of geology at The University of Montana, and the author of Roadside Geology of Montana. This article originally appeared in Montana Magazine.

Flathead Lake: Its Legacy, Its Future

by Jack A. Stanford

I have received many phone calls this spring from people concerned about the profusion of algae growing on the shore of Flathead Lake. The scummy, stringy stuff has coated rocks all around the lake. What's the problem? The answer to that question requires a historical perspective.

Since 1971 I have directed water quality research on Flathead Lake. Clean healthful lakes are consistently transparent, are free of scum-forming algae and support a stable food web, including a diverse array of plants and animals. Such lakes are said to have high "water quality." Flathead Lake used to be like that.



Indeed, turn-of-the-century limnologists (scientists that study fresh water) at the Flathead Lake Biological Station described the lake in detailed, published papers as clear, devoid of scum-forming algae, and abounding with large cutthroat (flats) and bull (dollys) trout and other native fishes. From around 1910 to the 1930s kokanee salmon, lake trout and other non-native fishes were stocked and proliferated in the lake; but the water continued to be clear and clean. Completion of Kerr (1938) and Hungry Horse (1954) Dams changed the way water is stored in the lake and initiated shoreline erosion and reconfiguration that continue today. Still, the lake remained clear as a bell in the fall, noxious algae were rarely observed, and native fishes remained relatively common, although non-native kokanee largely replaced the native cutthroats.

When I began my career at Flathead Lake, water quality was very good in comparison to other large lakes, but subtle signs of deterioration were apparent. I recognized that we needed a state-of-the-art research facility and program at the Biological Station in order to understand and document the causes and consequences of these and future changes. During the 1970s we were able to obtain funding to build the needed facilities and begin careful documentation of the details of lake and river ecology.

We now have the longest limnological chronology ever produced anywhere in the world for a large lake. Our data bases describe transport of dissolved and particulate matter into the lake from its tributary rivers and from the atmosphere. We have documented complex biophysical responses within the lake. This record clearly shows that water quality in the lake is deteriorating as a consequence of the interactive effects of elevated nutrient (nitrogen and

phosphorus) inputs from human sources, lake level and flow regulation by the dams, and altered food web structure caused by the introduction of non-native species, especially mysid (opossum) shrimps in the early 1980s.

In the period 1975-1982 we showed that the sewage treatment plants (STPs) in Kalispell, Whitefish, Columbia Falls and Bigfork contributed about 17 percent of the nutrients reaching the lake, in addition to substantial diffuse (non-point) inputs from agriculture, urban and rural development, and forest practices. I predicted that the lake was poised to produce unprecedented blooms of noxious algae.

In the summer of 1983, a lakewide bloom of *Anabaena flos-aquae*, a toxic bluegreen alga, occurred for the first time in Flathead Lake. The

bloom underscored our conclusion that water quality was declining and that human sources of nutrients had to be curtailed.

After we demonstrated the feasibility of nutrient removal at an experimental STP built at the Biological Station, the Montana Water Quality Bureau initiated a program to reduce nutrient inputs. The program banned the local sale of phosphorus-containing detergents, and called for reconstruction of the urban STPs for nutrient removal. By 1992 inputs from the STPs declined to less than 2% of the total load reaching the lake annually.

Nonetheless, the lake bloomed again in 1993. There is little doubt that the 1993 bloom would have been much worse if the STPs had not been upgraded.

However, the relationship between nutrient inputs and algae blooms was vastly complicated by the invasion of opossum shrimp which destabilized the lake food web. We discovered the shrimp in 1982. They had colonized Flathead Lake after being planted by the Montana Department of Fish Wildlife and Parks in Whitefish and Swan Lakes, where they were intended to increase production of kokanee. The shrimp were imported from Waterton Lake where, as in all big, deep lakes east of the Rockies, they are the primary forage for native lake trout and lake whitefish.

Opossum shrimp are voracious predators of large zooplankton, which are the primary forage for open water feeders like kokanee and cutthroat trout. The shrimp feed on zooplankton at night, resting on the lake bottom during the day. Therefore, they forage only for fishes living deep in the lake, such as the non-native lake trout and lake whitefish. I predicted that the mysids would flourish in Flathead Lake and cause the kokanee population to decline radically,

if not disappear completely, for lack of food; whereas, non-native species, particularly lake trout and lake whitefish, would expand their populations due to the abundance of their preferred forage, opossum shrimp.

That is exactly what happened. By 1988 the kokanee were gone and the lake was full of mysids, lake trout and lake whitefish. Adding insult to injury, this food web change contributed to the continuing decline of water quality because large zooplankton which eat algae were vastly reduced by the shrimp.

The shrimp have changed the lake forever. State and Tribal fisheries managers conducted a 5-year, multi-million dollar kokanee stocking "experiment" in an attempt to re-establish kokanee. The experiment failed. At the same time, the native bull trout population has declined precipitously, very likely due to competitive exclusion by the expanding lake trout population. Recently, the US Fish and Wildlife Service recommended listing of the bull trout under the authority of the Endangered Species Act; but reversing the decline in Flathead Lake will be a tall order because domination of the food web by mysids and lake trout cannot be changed. Indeed, highest management priority should be to preserve native bull trout populations in sub-basins isolated by waterfalls or dams where mysids and/or lake trout have not invaded, such as Swan Lake, Hungry Horse Reservoir and certain stream-lake systems in Glacier National Park.

But what about the algae problem? A quick look at the shoreline this year leaves little doubt about proliferation of the "ring around the lake." Fortunately, these are not the noxious bluegreen algae but they are a mess nonetheless.

These shoreline growths are a result of the big winter snow pack which is now moving through the lake and bringing with it a massive nutrient load from human and natural sources. The unusually high runoff, coupled with warm, rainy weather and very little wind and wave action to scour the algae, has warmed the lake rapidly, producing ideal conditions for production of algae on the shoreline.

People have little ability to control the weather, perhaps beyond minimizing production of greenhouse gases that may be causing chaotic weather through the complex effects of global warming. But research at the Biological Station has clearly shown that a large proportion, as much as a third, of the nutrient load coming into the lake is from diffuse runoff in areas of intense human activities. We have state-of-the-art STPs, but we can do a much better job of reducing non-point sources of nutrients along the shoreline and throughout the water- and airsheds. The objective is to keep nutrients on the land where they can grow crops and timber, not in the water where they will cause noxious algae to grow.

Nutrient reductions are mandated by the Federal Clean Water Act when a waterbody is impaired. The Act prescribes allocation of the nutrient load reaching lakes to the various sources, so that inputs can be reduced. This process is called a Total Maximum Daily Load (TMDL) allocation. Research at the Biological Station has documented specific sources of nutrients within the Basin. Uncertainty exists about how much influence timber management activities have had on nutrient inputs because the timber management community has been reticent about directly measuring effects of harvest and road building on export of nutrients to the rivers and Flathead Lake. But ample information and incentives exist for better land and water stewardship by all users of the Flathead Basin.

The TMDL process is the responsibility of the Montana Department of Environmental Quality and will be assisted locally by the Flathead Basin Commission. I have made available all of our data and interpretations about water quality in Flathead Lake to the managers and we will continue to gather new information and publish our studies to assist the water quality improvement effort. Make no mistake, scummy algae will continue to flourish in Flathead Lake unless we reduce the input of nutrients from human sources.

The ecology of our big lake is very complicated, and continued vigilance and study are required to protect it for future generations. Research at the Biological Station will continue to focus on the lake as the crown jewel of a vast mountain ecosystem characterized by wonderful natural attributes. Our economy, our quality of life and our future are tied to conservation of high quality water in Flathead Lake because the lake reflects all that we do and all that we are.

Jack Stanford is the Jessie M. Bierman Professor of Ecology and Director at the Flathead Lake Biological Station, The University of Montana. He is the University's 1997 Distinguished Scholar and is internationally recognized for his work at the Biological Station.

For more information
about pollution from
non-point sources
and what it means
for Flathead Lake:

Attend the Lakers
Annual Meeting
on July 13

see page 3 for details

Septic System Maintenance Quiz

- A. When was the last time your septic tank was inspected or pumped out?
- | | |
|------------------------------|----------|
| Less than one year | 0 points |
| Between one and three years | 2 |
| Between three and five years | 8 |
| More than five years | 10 |
| What is a septic tank? | 20 |
- B. Have you noticed an unpleasant sewage-like odor around your house lately?
- | | |
|--|----|
| Never | 0 |
| Once in a while | 3 |
| All the time | 10 |
| Only when the wind blows from the neighbor's house | * |
- C. Are there any perpetually wet spots in your yard?
- | | |
|--------------------|----|
| None | 0 |
| One | 3 |
| More than one | 6 |
| My yard is a swamp | 10 |
- D. What does your well water smell and taste like?
- | | |
|---|----|
| Always like clear mountain spring water | 0 |
| Mostly like clear mountain spring water | 2 |
| Sometimes like clear mountain spring water | 6 |
| Sometimes like old dirty socks or barnyard runoff | 10 |

TOTAL SCORE: _____

If your total score is 10 or more, you should use the attached coupon and arrange to get your tank pumped.

*You might want to give the attached coupon to your neighbor!



**Save Your Septic System • Save Flathead Lake Water Quality
Save Your Money!!**

The following septic services will honor this coupon with a
10% DISCOUNT
on their standard price for cleaning your septic tank

A-1 Sanitation	755-3938	Mel's Pumping Service	752-5318
Action Septic	257-4714	Shur-Clean Pumping Service	837-4714
J & M Septic Pumping	892-4787	Ready Freddy septic Tank Pumping	752-4552
Wild West Sewer & Drain		752-1244	
Ken Pedersen Pumping Service		837-6711 & 752-4321	
Don Byrnes Septic Tank Pumping (Ronan)		676-2077	
Smith's Septic Pumping (Polson)		883-6708	

Tips for keeping your septic system in shape

Maintaining your septic system can help protect water quality. Incomplete treatment from a failing system can result in health risks for humans and can allow excess nutrients to reach streams and lakes, promoting algae growth. Algal blooms not only make the lake unpleasant for recreation, but they also affect water quality for fish and wildlife habitat. As these plants die, settle to the bottom, and decompose, oxygen that fish need to survive is used up.

- CONSERVE WATER. Excessive water use is the most common cause of septic failure, so reduce water used for bathing, laundry, and flushing the toilet.
- Identify and repair leaking pipes, sticking float valves in toilets, and dripping faucets to reduce water waste. A dripping faucet can waste 15-20 gallons per day.
- Install low-volume toilets and low-flow showerheads. Typical toilets use 5-6 gallons per flush, providing nearly half the wastewater from a house. Flush toilets using less than 2 gallons of water are available.
- Use toilet tissue that breaks up easily when wet to help prevent clogging.
- Do not use the toilet as a waste basket. Don't flush facial tissue, diapers, sanitary supplies, or any kind of plastics down the drain.
- Don't use a garbage disposal. Ground up garbage does not decompose easily, causes rapid buildup of solids in the tank, and may move out of the tank into the drainfield, clogging distribution pipes and soil pores.
- Never put coffee grounds down your drain.
- Dispose of household hazardous waste properly.
- Wash only full loads of clothes in the washing machine. To avoid overloading your system, spread washing over the week instead of washing several loads in one day. A single load takes about 40 gallons.
- Wash only full loads in the dishwasher. Typical dishwashers use about 13 gallons for each wash. Newer models use 8-9 gallons.
- Minimize the use of household chemicals and cleaners.
- Discharge all sewage waste from the house into the septic tank. Don't run wastewater from laundry directly into the drainfield as the detergent or soap scum will quickly clog soil pores and cause failure.

- Do not add "starters" to your septic system. Enough bacteria are available in the wastes flushed into the septic tank. Even after the tank has been pumped, enough bacteria will be there when you use the system again.
- Do not use additives in your system. They are of no benefit and may harm the system. Additives that cause the sludge to increase in volume or float will result in sludge being flushed into the drainfield, plugging soil pores.
- Pump the septic system regularly to remove solids and scum. Use the coupon on the previous page!

Educational seminars are held each Wednesday night at the Flathead Lake Biological Station at Yellow Bay during the summer session of classes. It's not too late to catch the last four seminars this year.

Seminars

July 9

Do boreal forest dynamics buffer or enhance global climate change?

-John Kimball, ecologist at the Flathead Lake Biological Station

July 16

Prothonotary warbler: A declining neotropical migrant?

-Charles and Leann Blem, visiting ecologists from Virginia Commonwealth University

July 23

Integrated ecological economic assessment of watersheds

-Tony Prato, visiting scientist from the University of Missouri

July 30

Instream habitat unit classification: Inadequacies for monitoring and some consequences for management

-Geoffrey Poole, ecologist at the Flathead Lake Biological Station

Smart Growth Through Planning

by Robin Steinkraus, Flathead Lakers Executive Director

Most of us live here because we love this place. Some of us are part of families that have lived here for many generations, some of us are newcomers, and some are temporary visitors—but we are joined in our appreciation for the beauty of the landscape, the abundance of wildlife, the clean rivers and lakes, the lack of congestion and low levels of crime.

Population growth and development have accelerated dramatically in recent years. Flathead County's population grew by 20% (adding about 2,000 new residents per year) and Lake County's by 18.4% since the 1990 census. The agricultural communities and rural land that defined the Flathead Valley are being transformed.

This experience is not unique to the Flathead. We have the opportunity to learn from both the successes and the dramatic failures of other communities that have grappled with the opportunities and problems that accompany growth.

One needn't travel far—Denver, Salt Lake City, Seattle, Spokane, even Missoula—to see that growth has costs.

On the ever-widening outskirts of Denver and Seattle huge homes sprawl across former agricultural land and wildlife habitat, and individual towns and communities are inundated by growing and merging suburbs. Along

with growth and sprawl have come traffic jams, air and water pollution, diminishing open space, unsightly development, loss of community character and scenic beauty.

In fact, many of the people coming here are moving to escape these problems. Research is showing that the health of the economy in communities in the northwest is tied to environmental quality and quality of life.

We can learn, as we have this spring, from the experience of communities where homes crowd the banks of rivers and streams, where streams are channelized and dikes built, and where, when the floods come, the water must go somewhere and the damage is pushed downstream. We should look at those places where careless logging in the watershed has destabilized slopes, increasing erosion and runoff.

We can look to the examples of resort communities like Sun Valley, Jackson Hole, and Vail, where only the very wealthy can now enjoy life in those special places.

Some people think those things could never happen here. But the growth trends indicate that view may be short-sighted.

What can we do to prevent the problems that go along with growth

from destroying the very qualities we all appreciate and that draw people here in the first place?

Planning has not been popular here or throughout much of the west, where an attitude of independence and rugged individualism has prevailed.

But planning is not an extreme idea. It is a way to guide growth and development while safeguarding the community and environmental qualities we cherish. It is a way to make reasonable decisions about what we want for the future of the place we live, rather than allowing developers, discount store owners, and international corporations to make those decisions for us.

Through planning we can make sure our tax dollars are used efficiently in financing roads and sewers to accommodate growth. We can assure that enough land in appropriate areas is earmarked for community needs such as housing, schools, businesses and parks.

Planning can help us retain the character of our communities and protect our property values. It can help us adapt to natural systems to prevent the expensive and harmful results of building in floodplains. It can help us protect the health of our waters, including the largest freshwater lake west of the Mississippi.

We would not intentionally destroy the place we love. But often the gradual nature of growth and the changes it brings make it hard to recognize its real and cumulative consequences.

Planning can help us to be better neighbors and better stewards of our land and water so the Flathead can remain a place future generations will love.

Flathead County Zoning Changes Rejected

The Flathead County Commissioners unanimously rejected the zoning regulation amendments proposed by Montanans for Property Rights. Lakers' executive director Robin Steinkraus and several Lakers' members were among those who testified in opposition to the amendments at the June 4 hearing.

The amendments would have restricted zoning to addressing only health and safety. That was one of several provisions deemed illegal by the county attorney's office.

Commissioner Dale Williams voiced support for the neighborhood planning process that has been used in several communities. Perhaps the vote will usher in a new era of support for planning and cooperation in Flathead County.

Trying to Fool Mother Nature

by Bruce Farling

Obscured in the raging dispute over Yellowstone bison management and brucellosis risk, and absent from the debate over whether it's actually possible to have game ranches in Montana and not destroy native wildlife, are many lessons that clearly demonstrate that when you interfere too much with Mother Nature you generally lose. Hands down.

In the Yellowstone dispute, ranchers and Governor Racicot say they're worried bison will transmit brucellosis to Montana's cattle herds, thereby jeopardizing the state's brucellosis-free certification. But where'd the bison get brucellosis in the first place? The word is domestic cattle. Therefore, in our zeal to replace native species—bison—with European animals—cattle, we may have indirectly introduced a pathogen to Yellowstone that is causing huge political and economic fallout, to say nothing of what it's meant to the last free-roaming herd of buffalo in the nation. We messed with Mother Nature and we lost.

After examining experiences elsewhere, it's also clear that native wildlife lose when game ranches are established. In Canada, domestic elk have spread tuberculosis to native elk, causing huge headaches and expense for wildlife managers, and ultimately the public. Red deer, sika deer, mouflon sheep, European boar and other exotic species favored by game ranchers across the United States have escaped and harmed native species. Once in the wild, they, or at least the genes and diseases they transmit, cause havoc with indigenous wildlife.

So what does this have to do with the Flathead?

Nowhere is the evidence more clear about the hazards of introducing aliens among natives than in fishery management. Planting non-native fish on top of those that dispersed and evolved without the helping hand of humans, has caused tremendous problems all over the world. And that includes Montana—and the Flathead.

Nearly four out of 10 fish species found in Montana today—around 33 or so—arrived here in the buckets, milk cans and trucks of anglers and fishery managers in the last 110 years. Most of the introductions were well-intended and demanded by anglers. Many, but not all, provide recreation. But many also are contributing to the demise of native species. Lake trout—suspected, at most, to have occurred naturally in only a few lakes in northeast Glacier Park—are gobbling native bull trout in Flathead Lake and the Flathead River. Planted illegally in Yellowstone Lake, these voracious aliens now pose a huge threat to the last stronghold of yellowstone cutthroats, one of only three true trout native to Montana.

Westslope cutthroats, Montana's state fish, are rapidly disappearing for many reasons, including from habitat destruction. But the threats found most consistently across its range are those posed by non-native fish such as rainbow, brown and brook trout, which can outcompete, or, in the case of rainbows, hybridize with the cutthroats. Brook trout, those interlopers from the East, also can push native bull trout around, or interbreed with them, producing sterile offspring that destroys a season's work of spawn from the rare natives. In addition, illegal introductions of feisty mid-westerners like pike and walleye have been documented to be death on

native fish. Walleyes were planted by well-meaning state biologists to reservoirs east of the divide. Unfortunately, these waters now provide self-styled Johnnie Walleye-seeds with a handy source of alien fish to illegally spread around the state.

Biologists also suspect illegal introductions of non-native fish are the source of some disease outbreaks, including, possibly, the occurrence of whirling disease in some waters. Non-native fish have also extracted a toll on other indigenous residents of Montana's aquatic communities, including frogs, toads and salamanders. The demand by anglers—and we really didn't know better years back—for trout fishing in high lakes that were naturally barren of fish, prompted fishery managers to plant hundreds of lakes with trout. The presence—practically overnight, geologically speaking—of a new top-of-the-line predator in these closed aquatic systems, may be one of the reasons native amphibians are disappearing in the West.

No matter how much humans try to engineer nature to suit our current social or economic fancies, it always seems—depending on the scale—we push something we value today, or will value tomorrow, to the brink. Looking at some of the resource disputes in Montana today, it seems, as George Bernard Shaw said, “we learn from experience that we don't learn from experience”.

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*Flathead Lakers is a non-profit
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to protect Flathead Lake and encourage
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Please see page 2 if you're wondering why you received this newsletter.
And If you have a septic system, don't miss our special discount on page 8!

Keeping an Eye on the Bottom Line

by George Darrow

There are many kinds of wealth. Some kinds you can carry in your pocket. Some can be gained or lost with the speed of light as it is shifted between cities or between continents. We in the Flathead have a special wealth that is shapeless, mostly takes its color from the blue sky, cannot be grasped because it runs through our fingers, and yet brings increase to life wherever it goes.

Most of humankind live downstream from other people and their wastes and the waste products of their human economies. Here in the Flathead nearly 100,000 very fortunate people live immediately downstream from the melt water of mountain snowfields. An extraordinary gathering system known as the North Fork, Middle Fork, and South Fork of the Flathead River extends for nearly 200 miles along the Continental Divide. Pure water, distilled from the ocean and swept inland by the prevailing westerly winds, is efficiently milked from the clouds by the mountain summits ranged along the Divide.

The marvelous productivity and quality controls of this environmental system provide a sustainable stream of economic benefits available to we few who live here. This endowment of natural capital is almost unique in its bounty. Few other places on Earth are similarly endowed. Given to us it can continue to provide for our children and their children if we respect and cherish the gift. As renewable natural capital it is ours to use or abuse.

If taken for granted and degraded by thoughtless acts, a devalued flow of liquid capital will result in a diminished economy, reduced property values, impaired aquatic life, and a depreciated resource for our downstream neighbors. Flathead Lake is the bottom line where the consequences of our stewardship are brought to reckoning. All of us in our daily lives and continuing economic activities contribute to this bottom line.

The Flathead Lakers as an organization helps each of us with its vigilant oversight and motivated nurturing programs to maintain a healthy bottom line for our priceless resource capital. If we lose Flathead Lake, you lose your investment.

Every economy is fashioned from the creative intermeshing of natural capital and human capital, each with their embedded information, and financial capital or manufactured capital. Natural capital includes, besides water resources, the ecosystem services of self-maintaining natural systems and the tapestry of plant and animal (including people) that is the product of healthy, harmoniously functioning ecosystems.

Too often we only think of capital in its monetary and manufactured forms. Human capital with its creativity, visioning powers, cooperative strengths and entrepreneurial energies is, of course, invaluable. Remarkably, nearly 30% of the people at work in the Flathead (three times the national average) are self-employed individual proprietors. They are a unique productive resource.

The natural amenities and the attractive lifestyle available in the Flathead both sustain and attract entrepreneurs. Financial capital can be generated by skilled people armed with economic experience and focused energies. Finally, there is a library of valuable genetic information available in the self-organizing and self-maintaining species interacting in the natural ecosystems that are still essentially intact in our region. Our human communities in the Flathead still retain the capacity to function in cooperative harmony. Neighborliness is still a common attribute of our people.

It is no wonder that we have the fourth strongest economy in the state, an economy that generates a full ten percent of all personal income in Montana. We have the natural assets, we have the amenities, we have the people. Our focused efforts can provide a sustainable, growing prosperity if only we keep watch on the bottom line of our resource endowment!

George Darrow is a geologist and economist who formerly prospected for crude oil and is now engaged in growing his own oil (mint oil being an essential oil) on an irrigated farm north of Bigfork.