Why the BEAVER Has a Better Idea

Scientists are just beginning to realize the value of beavers. How can this 50-pound fur bearer whose only tool is a set of 3-inch buck teeth check soil erosion, reduce flood damage, store water, sustain stream flow, provide fishing areas, and generally IMPROVE ecology for a host of other creatures? Read this amazing story of how beavers have been building dams for centuries — and defying man to build a better one!

by Jerry Gentry

TODAY the environment suffers from misuse, pollution, and destruction — by *man*. The interrelationship between living things is being disturbed. Penguins in the Antarctic suffer from DDT originally sprayed on field crops. Fish in the oceans have lead in their bodies, from gasoline burned in our automobiles.

"Clean up the environment!" has become a household slogan. And scientists tell us we must quit exploiting our natural resources, quit plundering and leaving in our wake a polluted, befouled and tarnished environment, or we've had it!

And man — the culprit of earth's ecological imbalance — is now belatedly looking for ways to clean up the rubbish left over from yesterday's bad habits.

Natural Balance

How different a story we find when we turn to the natural world. Here animals and plants live in balance. Each contributes its part to the whole, if left alone. And we find much of what goes on is to the special benefit of *man*.

Take the beaver, for example. The average person knows or cares little about this mammal. And yet, beavers were building land long before Jamestown was settled in North America. For centuries and millennia, beavers have been busily building topsoil, storing water, irrigating land and providing a watering place for a host of wildlife.

Beavers were greatly responsible for the early discovery and exploration on this continent. The valuable beaver pelt lured explorers and trappers deep into every nook and cranny of North America. Giant fur-trading companies sprung up overnight. Cities such as Saint Louis and many others were founded as fur-trading posts. The Hudson's Bay Company alone sold some 3 million beaver pelts during the years 1853 to 1877.

Ironically, though, in destroying the beaver for his pelt, man made a terrible mistake. It was too late before man realized that the beaver's *real value* far exceeded any temporary profits gotten from pelt sales.

The real value of beavers is — believe it or not — in their ability to build dams. Man, of course, builds dams too. These by *sheer size* pale beaver dams into insignificance. In fact, one might think it strange to even compare a "lowly" beaver dam with man's mighty monsters. Some might even think it ludicrous to dub a beaver's work with the title "dam."

But have you ever stopped to ask, "Whose dam is the most beneficial? Are there harmful side effects to man's big dams which *nature's* dam builder avoids?"

Let's take a look at one of man's greatest dams, located on the upper Nile River in Egypt. There today stands the greatest obstruction ever constructed across a natural watercourse — the Aswan Dam. It was engineered and built by Soviet scientists to boost the Egyptian economy — to stand proudly as the dam holding back the world's largest artificial reservoir, Lake Nasser.

Some Perplexing Problems

It stands *not so proudly* today, after 10 years of planning and building, for some very perplexing reasons.

For one, sardine fishing in the Mediterranean dropped disastrously after the dam began holding back the Nile — 18,000 tons of fish in 1965 to 50 tons in 1968.

There's a good reason why fishing dropped. This reason lies buried at the bottom of Lake Nasser. There, millions of tons of sediment settled out of the river instead of washing down the Nile to feed the tiny *plant* plankton, which is eaten by *animal* plankton, which is eaten by larger fish. What happened was a breakdown in the natural food pyramid! The fish at the top — and ultimately *man* — are suffering the consequences.

Sardine fishing is not the only problem directly attributable to Egypt's Big Dam. The most immediate disaster was the lake boundary itself, which submerged 20 Nubian villages, uproot-

ing some 60,000 people. These people had to be resettled elsewhere, giving up a 4,000-year culture of their homeland.

Breeding Ground for Disease

Another traditionally big problem for Egypt was aggravated by the creation of Lake Nasser. Schistosomiasis, a disease as old as the pyramids, breeds in the still waters of Lake Nasser and in slow-moving irrigation ditches. World Health Organization officials fear an additional 6,000,000 people will become victims of this intestinal parasitic disease, which renders its victims void of energy and damages vital organs. This disease already affects 40 percent of Egypt's population.

And as if all this weren't enough, the agricultural implications of the Aswan Dam are staggering. Formerly, the Nile overflowed her banks each year, depositing a layer of rich silt over the Nile valley. This silt for thousands of years supplied all the elements needed for continued agricultural productivity. Egyptian farmers have for millennia depended upon the annual flood of the Nile. Their grain yield has traditionally been high.

Today, there are no more annual floods. The Aswan Dam has tamed the Nile and robbed Egypt's farmers of their natural fertilizer.

What will the farmers do? For one thing, they must BUY AND TRANSPORT artificial fertilizers to their lands to replace what would have been deposited naturally by the Nile. And who knows at this premature date what these artificial fertilizers will do to Egypt's soil?

Nature's ecological pattern has been broken. And as always, when physical laws of nature are broken, man suffers the consequences.

In the eyes of its planners, the Aswan Dam represented a solution to Egypt's growing food crisis. But before completion in 1970, Egypt's burgeoning population was already demanding more food than the newly productive lands irrigated from Lake Nasser can supply.

Many people today are seeing that big dams like the Aswan for irrigation are not the solution to the world's food problems. This solution is given in our free educational booklet *Famine — Can We Survive?* Write for your free copy. It makes plain the problem and shows the *solution* to the world food crisis.

Nature's Dam Builder

It is a rather sad commentary on our technological age that man's attempt to harness power, control floods, and provide irrigation has been a costly intrusion into the balance of nature.

On the other hand, there is the beaver, a dam builder whose dams are really *beneficial* — for the present and for future generations. In fact, the beaver is characterized as having the ability to build a *perfect* dam!

And even though this construction engineer weighs only 50 pounds or so, and waddles along on 4 legs, he's completely qualified for the job at hand.

In very special ways, he's qualified. For example, his metabolism allows him to swim underwater for one-half mile, and hold his breath 15 minutes in emergencies, though normally five minutes is the limit. And his four chisel teeth can fell a 5-inch aspen in 5 to 15 minutes.

"But wait a minute," you're saying. "Man-made dams may have their problems, but beaver dams are nothing like the great dams man can build."

Yes, correct. The beaver's dams are much different from man's big dams. For some very good reasons. In fact, it is this *difference* which makes the beaver dam important. Consider the following questions.

Which dams — man's or beaver's — are really the *most efficient,* pound for pound? The most beneficial? Has man really made any engineering improvements over beaver dams? What are the *benefits* of beaver dams?

Beavers Build Land

Take land building, for example. Beaver dams build up the land. Man's big dams in many cases inundate thousands of acres of already productive farm lands along river bottoms. The beaver is instrumental in *creation* of rich soil where formerly only rocky stream beds existed.

There was the case of a New York truck farmer who dug a drainage ditch across his onion patch. He was shocked to find rich loamy soil 12 to 15 feet deep! He couldn't understand how all that rich soil got there — and why it was so deep. As the ditch reached the end of his field, diggers ran into the remains of an ancient beaver dam. Sticks were dug up which were easily defined as beaver cuttings.

Immediately the answer was clear. Years, possibly centuries earlier, a beaver colony had dammed a stream. Slowly over the years, the pond behind the dam gradually filled up with silt. As the pond got shallower, the beavers raised the dam. This went on until eventually it was no longer practical for the beavers to raise the dam further. They simply abandoned the dam, moved on and chose another site to start all over again. Once abandoned and untended, the old dam broke, leaving behind the rich silt. Here grasses quickly sprung up and a rich meadow was formed. Years later the New York truck farmer bought the land and planted his crops. And much to his benefit, the beavers had actually *created* a rich plot of earth for him.

This is no isolated example. Naturalists find that beavers have created rich mountain pasturage and farmlands all across the North American continent.

A noted zoologist tells the significance of beavers in creation of rich land:

"By damming streams, beavers create ponds but since these rapidly silt up, their work is unending, and throughout the millennia, *millions of acres of pasture land have thus been created* where only sterile rocky river courses would have otherwise been" (*Living Mammals of the World,* Ivan T. Sanderson, Doubleday and Company Inc., N. Y., 1965, p. 118).

The same author continues:

"Further, by raising the water table all around their pond, the plant growth of much larger areas is completely altered, the conifers are pushed back and broad-leafed trees allowed to take hold. Thus, *enormous areas of the best soil and pasture* in the homelands of the white man and in those countries which he has colonized — northern Asia and North America — *would never have existed had it not been for the beaver.*"

There are many other examples of

benefits which man has experienced from the presence of beavers. One year during a prolonged drought, Idaho fruit growers broke 14 beaver dams, channelling the water through irrigation ditches, saving a $15,000 fruit crop otherwise doomed to disaster. And the beavers were none the worse off. They had their dams repaired and ponds full again in short order.

A series of beaver dams recorded in Colorado stored 1,241 acre-feet of water, enough to irrigate 30,000 acres for one day, or 1,000 acres for one month.

The Saga of Willow Creek

Another example is the story of Willow Creek, also in Idaho. It was more a ditch for spring floods to rage through than a living stream. Cattle had no water after June, since Willow always went dry. The lake below was silting up badly from tons of mud carried by torrential runoff during spring flow.

One year a pair of beavers were planted on Willow Creek. (Incidentally, willow trees are one of the beaver's favorite foods.) That year the beavers built 17 dams, and the following year there were 59 dams, with more as time progressed. The whole Willow Creek range was transformed. Lush meadows replaced dry, parched ground and the creek itself became a living stream the year around.

Willow Creek no longer silted the lake, stream flow was stabilized, cattle ranchers could run cattle the year around, ducks and geese came to the beaver ponds — the whole ecology of the region improved tremendously.

Unfortunately man was shortsighted in this example of Willow Creek. An insufficient number of trees were available to the beavers and dam construction soon ran out, forcing the beavers to leave the creek.

Today, Willow Creek is again eroding badly and no beavers inhabit it.

Even — as in the case of Willow Creek — when man tries to return to nature's way, he often finds it's *too late.*

The whole ecological system must be kept intact. The removal of one creature, such as the beaver, upsets the balance. Merely restoring that animal alone is not enough. But where the proper habitat *does* exist, there's no question that introducing beavers is beneficial in conserving soil and water resources.

One such area is found near the headwaters of the Boise River. There on a recent survey we observed an example of a "beaver meadow." For years beavers maintained dams across the shallow Boise River headwaters. Eventually the whole area silted in, in some places four feet deep and more! Today the area is a lush green meadow providing water and forage for deer, moose and other wildlife. Grass grows 3 to 4 feet tall in this rich garden spot. And beavers still live there, too — in canals and bank dens throughout the meadow. This area illustrates rich productivity, where only a rocky stream bed would have existed had there been no beavers there.

In Wyoming

There are many dramatic examples of beaver meadows in Wyoming as well. On a 70-mile tour through the Bridger National Forest and adjacent lands in western Wyoming, we viewed literally dozens of such meadows in the making. With me was Mr. Envern F. Putnam, co-author of *Beaver: Management and Ecology in Wyoming,* who pointed out:

"Beavers were instrumental in the formation of most of the fertile valleys and mountains in this area. There's no question as to the benefits of beaver on the headwaters of our streams. It's further downstream, where man lives, that beavers become a nuisance."

Mr. Putnam pointed out one old beaver meadow which encompassed a square mile or better. Today the stream continues to meander through this lush green valley. Beavers are still present at one end. Fishermen were taking advantage of this spot as we passed through.

Nature's Conservation Agent

There's basic benefit in *where* the beaver chooses to build — in the small streams and tributaries, not the large rivers below.

Says one authority: "Beaver dams prevent floods by trapping the water up in the headwaters of streams, preventing it from gaining the momentum that causes destruction. It is FAR MORE EFFICIENT to dam the *smaller tributaries* of a stream than to dam the main stream, and the beaver can do the job much better and far cheaper than man.

"Beaver dams also catch and so reduce the loads of soil sediment that the streams would carry into the man-made dams farther below. Ponds also force more water underground, thus helping the low water tables of the land to rise" (*The World of the Beaver,* by Leonard Lee Rue III, J. B. Lippincott Company, N. Y., 1964, page 86).

Beaver dams antedate our modern big dams in most design principles and sound construction practices. Yet the beaver dam does *not* produce ill side effects which plague many of man's big dams.

Environment Helped, Not Hindered

The side effects of beaver dams when analyzed from the "systems approach" to ecology — that is, taking all factors into consideration — are quite beneficial.

The pond serves as a hub of life for a host of other animals. Ducks, geese and other water birds nest nearby. Deer, cattle and other animals come to the pond for water. Trout and bass find the beaver pond a home with abundant food. Grasses spring up green and lush for hundreds of yards on either side of the pond, due to sub-irrigation of the land. Even the trees killed by the backed-up waters serve as an insect haven and thereby supply food for woodpeckers. This helps increase the woodpecker population for better protection of living trees. Also, when the trees are downed, sunlight can filter through to aid grass and algae growth.

Idaho Fish and Game Commission Information officer Bill Cunningham commented to us about the effects of beaver ponds on fish: "... Of course they definitely benefit fish, because in many instances they create areas of water which ... are deep enough to remain cool enough to support fish life."

Other benefits of beaver ponds on ecology are noted by Gary Harper of the Sawtooth National Forest, Ketchum, Idaho: "We can definitely see advantages in stream control, water control, continued flows of water as well as perhaps settling out of siltation at times in the spring and periods of high water, as well as recreational benefits that beaver

dams do provide in the line of fishing."

Nature welcomes the beaver pond. Unfortunately, due to gross misunderstanding of its purpose, man nearly destroyed the beaver, which once populated every mountain and hill stream from Washington to Maine, and from Alaska throughout Canada and even into the southern parts of the United States almost to the Gulf Coast. Once there were 60,000,000 beavers on the North American continent. Today estimates run less than 10,000,000 and the majority of those are in Canada, where larger wilderness areas are still available.

Intelligent Works, But Where From

But did you ever wonder just *where* the beaver learned to build dams? Man goes to school for years, studies thick textbooks, receives degrees in engineering and finally is able to design and construct huge dams which serve a temporary purpose. These dams make possible certain benefits as viewed through the eyeglass of "technological" progress. However, from a total-effect viewpoint, they undeniably intrude into the natural ecological balance.

The beaver has no textbooks, no schools, no degrees of higher learning. Yet it is the beaver who is able to construct the "perfect" dam — the dam that *fits* into the overall ecological pattern and even builds land and stores water for man. The benefits are *long* lasting.

Where did the beaver get his "intelligence" to build with such perfection?

One author put it this way:

"Despite their purely automatic and apparently mechanistic activities, and their lack of practical forethought, *beavers appear to draw upon sources of information that are beyond our ken*" (*Living Mammals of the World,* by Ivan T. Sanderson, Doubleday and Company Inc., N. Y., 1965, p. 118).

Nature the Master Builder

Man must still acknowledge that the creatures and plants he finds in nature are SUPERIOR in certain *instinctual* abilities, although they cannot invent and *thoughtfully* plan as man can. To tap the reservoir of knowledge to be gained by studying the miraculous abilities of animals such as the beaver, a whole new science, called bionics, has arisen.

The idea of bionics is to go to nature to find answers to problems. One such group in a recent meeting of the Institute of Environmental Sciences made these shocking admissions:

"The engineer and scientist today is facing a 'new world,' a world that has had good answers to engineering problems for thousands of years — if only we engineers, with our scientist and mathematician friends, *could know where to look.*

"No less a source than the 'Scriptures,' in the book of Job, chapter 12, verses 7 and 8, should have INDICATED A ROUTE of research years ago. Job . . . said, 'but ask now the beasts, and they shall teach thee, and the fowls of the air, and they shall tell thee: or speak to the earth [plants, trees, and 'creeping' things], and it shall teach thee: and the fishes of the sea shall declare unto thee.'

"Most modern experimenters in 'bio-engineering' eventually face the humility of reality — their accomplishments are *very meager* compared to designs in nature — in birds, animals, fish, plants, reptiles and insects. The engineer knows now that to come any closer to matching some of nature's fantastic feats, he must have the help of the biologist and nature observers. Nature IS STILL THE MASTER BUILDER" (*The Future of Bio-Engineering in Our Daily Lives,* p. 3).

Man considers himself much more intelligent than any creature. But if the beaver as other animals draws upon sources beyond our ken, must there not be some power — some being of greater intelligence than man — who created the beaver? Is it not reasonable to ask if there is some Supreme Intelligence which imparted this superior ability of dam construction to beavers? And to impart it in such a way that the beaver takes its place in a superbly balanced and closely knit ecological system?

The beaver does not really need to build dams to survive. This is proved by the fact that some beavers become bank dwellers. In other words, the benefits which the beaver bestows on man are NOT due to any behavior patterns essential to the beaver's survival. Therefore, the "need" for evolving dam-building characteristics disappears. With it disappears the unproved theory that beavers are a product of an evolutionary process.

Does it really make sense that the beaver's intelligent construction ability — planned for the benefit of all, both now and for the future — could have evolved without need or direction?

That is rather an insult to intelligence.

Then what is the answer?

The Creator God designed the beaver, and programmed into its mind the instinct to build dams — perfect dams — which have a purpose in the overall balance of nature.

You can prove the existence of your Creator and the purpose for His creation. Write for a free copy of the booklet *Does God Exist?* It gives the scientific proof you need. Also, request the FREE booklet *Our Polluted Planet.* It explains how we are destroying the intricate balance of our earth systems — and the dire consequences we are producing. □

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