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Indian Summer

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This paper titled, "Indian Summer" focuses on preserving and strengthening two resources culturally and socially important to the Shoshone-Bannock Indian Tribe on the Fort Hall Reservation in Idaho; their young people and the Pacific-Northwest Salmon. After learning that salmon were not returning in significant numbers to ancestral fishing waters at headwater spawning sites, tribal youth wanted to know why. As a result, the Indian Summer project was conceived to give Shoshone-Bannock High School students the opportunity to develop hands-on, workable solutions to improve future Indian fishing and help make the river healthy again. The project goals were to increase the number of fry introduced into the streams, teach the Shoshone-Bannock students how to use scientific methodologies, and get students, parents, community members, and Indian and non-Indian mentors excited about learning. The students chose an egg incubation experiment to help increase self-sustaining, natural production of steelhead trout, and formulated and carried out a three step plan to increase the hatch-rate of steelhead trout in Idaho waters. With the help of local companies, governmental agencies, scientists, and mentors students have been able to meet their project goals, and at the same time, have learned how to use scientific methods to solve real life problems, how to return what they have used to the water and land, and how to have fun and enjoy life while learning.

Introduction

The migratory salmon of the Snake River Basin are one of the world's great natural wonders.

For thousands of years young fish, born in the headwater streams and lakes of Idaho, have migrated up to 1,000 miles to reach the Pacific Ocean. There they

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roam thousand of miles; as far north as southeast Alaska, as far west as Japan, and as far south as northern California. (Gov. Publication-1993)

For more than 10,000 years, Snake-River-Basin salmon have been economically and spiritually central to Native American Indian cultures. These fish were taken, as they returned on great spawning runs, at falls and rapids along the Columbia River and in the Snake River tributaries. (Gov. Publication-1993)

"We as Indian People celebrate through ceremonies and traditions, one of the great mysteries of life, the annual return of the salmon." Lionel Boyer, Shoshone-Bannock Tribes

Human activities over the last century have seriously impacted the salmonid resources of the Pacific coast. Streams of all sizes have been damaged by many types of human activity. Logging, forest fires, road building, urban expansion, pulp mills, mining, power dams, port development, agricultural activities, chemical, thermal, and sewage disposal pollution have all caused salmon production and populations to decline. (Oregon Department of Fish and Wildlife, 1985)

Water, land, plants, and animals have always been and still are a crucial part of Native American life, as is true for all of mankind since we all, both Native and non-Native, share Mother Earth as our home. All humankind need clean water, air, and land to survive.

Teaching Verses Learning

Baba Dioum, a Central African Conservationist, stated: "For in the end we will conserve only what we love. We will love only what we understand. And we will understand only what we are taught."

Indian Summer is about teaching. It is about teaching good science. It is about teaching conservation. It is about teaching the culture and tradition of the Indian people. It is about teaching cooperation. It is about teaching respect and admiration for the water, land, plants, and animals. It is about teaching goal-setting. It is about teaching students that there is life without T.V! It is about learning to work hard, and at the same time having fun! Indian summer teaches about life.

Teachers of Native American students need to show them the importance of science. Many Indian students see little or no relationship between their lives and what goes on in the classroom (Gilliland, 1988). In a recent publication (1993) by the Idaho Committee on Indian Education, the committee listed several goals and recommendations to improve American Indian Education. Some of these goals include (a) preparing American Indian children for future educational experiences by providing early childhood educational programs that are culturally,

linguistically, and developmentally appropriate. (b) establishing a school environment that respects, maintains, and promotes American Indian values, language, and traditions, (c) encouraging American Indian parents, tribal officials, and community leaders to participate in the education of American Indian students, and (d) raising the self-esteem and cultural pride of the American Indian students.

Indian summer uses the greatest class room in the world—one used for countless centuries by all people—nature, and the great outdoors!

Science as Group Problem Solving

Indian Summer was designed to teach, demonstrate, and learn scientific problem solving methods, and to teach and learn the culture, language, and traditions of the Shoshone-Bannock people. Indian Summer follows the goals discussed earlier for improving American Indian education. We want to establish a program that promotes the values, language, and traditions of the Shoshone-Bannock Tribe. We want to encourage parents, tribal officials, and community leaders to participate in the education of young reservation students. We felt that by following the Indian Summer program design we could raise students self-esteem and cultural pride.

The other aspect of Indian Summer, was to do sound scientific research; research that would help both animal and human species. I believe Indian summer is accomplishing these goals.

Indian Summer focuses on salmon. The salmon's importance to the Tribe extends far beyond their mere food value. Young men and women are taught respect for this great fish when they hunt it. They learn not only respect for the salmon, but for the environment, their elders, their family, and at the same time themselves.

When a young man or woman hunts salmon, the first one they obtain is not kept for their own use, but given to an elder of the tribe. Honor songs are sung, not only for the great salmon, but for the elder, and the young man or woman as well. They learn to give respect when they hunt; respect is shown the animal that has given its life so they may live, and respect is shown to elders who have also given up most of their lives for them as well. In giving respect, the young person is in turn shown respect. The salmon is not just a fish, it is an important part of the circle of life.

For countless centuries, Indian people have been working on and solving many kinds of problems. I am very sure it was the Native American who first coined the term, "team player." A recent buzz word for corporate America, the term team player represents a problem solving, hands-on approach to science emphasizing the skills of science rather than the simple memorization of facts, and

is the most likely approach to provide the intrinsic motivation Indian students need to learn science (Gilliland, 1988).

A good way to show students the utility of science is to teach it as a problem solving activity (Guthridge, 1986). At the Shoshone-Bannock High School we use the environment as our classroom. Since Mother Earth is our home, what better place to teach students? Starting with the environment, students can learn the scientific method of making hypothesis, controlling variables, and collecting and recording evidence in a systemic way to test hypotheses and draw conclusions from the evidence. Students are reminded that the Native American culture has and is today fostering curiosity, problem solving skills, information gathering skills, and recording techniques. Students are shown that the scientific method is a naturally occurring event happening everyday in their lives.

There is much evidence of the need for improvement in the educational experience of not just Native students, but all students. Low achievement, teenage suicide, and adult unemployment all indicate a need for better education (Gilliland, 1988). There are many causes for this lack of achievement, a poor self-concept and lack of motivation on the students part may be largely responsible. However, these are brought about by many other factors inside and outside the school. Alcoholism and the lack of community support are problems in many communities. But an education irrelevant to the needs of the community is equally to blame. J. Francis Rummel summarizes: "Now that we have achieved education for all, let us seek education for each." Indian summer is truly seeking the education for each.

Indian Summer Project

The Shoshone-Bannock team developed three goals to help increase the hatch rate of steelhead/salmon in Idaho waters:

1. Examine current fish populations and habitat conditions.
2. Determine what factors may be affecting fish populations.
3. Develop a plan to address the factors limiting fish populations.

The following objectives were formulated to help students reach project goals:

- Test the technology for successful hatching
- Increase egg to fry survival
- Determine optimum incubator densities and configurations
- Minimize costs
- Minimize processes
- Minimize fish handling
- Increase community education and involvement.

Stream-Side Egg Incubation

With help from mentors, students decided to work with the steelhead trout population. To accomplish this they made incubator units from old discarded refrigerators, worked with mentors to conduct stream surveys, and conducted general stream-side chemistry, microbiology, and heavy metal analysis.

Using converted refrigerators for hatching boxes have the following advantages: (a) They are cheap, all our refrigerators were free; (b) the cost of conversion parts, in-flow and out flow piping, Plexiglas baffling, silicone sealant, etc., ranged from about \$25.00 to \$40.00 per hatching box (not counting labor); (c) insulated boxes hold temperature very constant; (d) they are heavy enough to stay in place but light enough to be hand carried; (e) they are durable and long lasting; (f) the darkness inside simulates the natural conditions of being buried in the gravel, which protects from exposure to sunlight and keeps algae from growing; and (g) after initial set up they are virtually maintenance free. There are many other advantages that I will not cover them at this time.

Students learned good research techniques, as well as cultural lessons on how to manage and care for the new life forms, in this case steelhead trout, placed under their care for the duration of the project.

Summary of Data

The students had a live hatch rate of 80 to 99.9% (1996 data combining all 10 incubator boxes built and monitored for the study), for a successful overall live hatch rate of 89%. They also completed base-line data on dissolved oxygen levels, pH, temperature, and nitrate levels; analyzed heavy metals (as previously mentioned); and took microbiology cultures.

During the project, students learned about recycling, and were asked some of the following questions: How is it one can take an old discarded refrigerator and make something useful? How is it one can take a students work in science, and make that knowledge useful? Can a group of people working together for a positive cause, make a difference? And lastly, how is the students young life very similar to that of the young fry they are working with?

We are truly all related in what we do on this Mother Earth. This is what Indian Summer is about.

Conclusion

Indian Summer is much more than a summer program. Indian Summer is about Native Indian people. Indian Summer is getting young students, parents, community members, and Indian and non-Indian mentors excited about learning. Indian Summer is about learning and doing Native culture. Indian Summer is about learning to conserve what we love. Indian Summer is about understanding each other and what we are taught. Indian Summer is about doing great science. Indian Summer is about giving back what we have taken from the water and land. Indian Summer is about learning the great mysteries of life in mother natures classroom—the great mountains of Idaho. Indian Summer is about having fun and enjoying life!

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