III THE RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS

FISH HATCHERY SITING

Even though the Columbia Basin Fishery Technical Committee has recommended only recently some possible hatchery locations, the hatchery siting determinations have not been finalized. At this time it is not possible to ascertain the exact nature of impacts that hatchery construction would have on current land use plans. In general, hatchery development would preclude each of the sites from other use, such as farms, residential, or natural areas. Hatchery development could provide a park-like area for local inhabitants. More exacting information would be available as further planning occurs.

WILDLIFE HABITAT LANDS

The development of wildlife habitat would commit the land to this use, but low density recreation could also occur. Wise ecosystem management would not only increase wildlife habitat availability but also provide the best possible use in relation to agricultural and water supply factors as well. For the existing project lands a wildlife habitat plan has been prepared. On existing Lower Snake River Project lands, a total of 22 potential wildlife habitat development sites have been identified. See Appendix G. Plates 1 through 8 in that Appendix show the areas that are believed to be likely areas for habitat establishment. This use would be consistent with project land use plans.

The locations of possible off-project habitat compensation lands are currently unknown. Therefore, it is not possible to give specific effects of such habitat development on land use plans.

Most of the lands in the region which might be devoted to habitat development are now rangeland or agricultural in nature. There are no known state and/or county land use plans with which the proposed acquisition program would be in conflict. In the instances of easement acquisition the present uses of land would be maintained. Only in the case of fee title acquisition could the existing land uses be altered. Even in this instance, the agricultural nature of the proposed 400 acres of riparian vegetation would be maintained since it would be necessary to grow both food and cover crops on the land that would be acquired.

As noted above, a habitat development plan for project lands has been prepared. Much emphasis is being placed upon the management of existing project lands for the benefit of wildlife. The proposed acquisition of easements on the 15,000 acres of rangeland surrounding the project would be directly related to wildlife habitat development and/or preservation on project lands. It is planned that a modest amount of development would be undertaken on the rangeland to improve its ability to support wildlife. In general, this would consist of developing watering devices for the wildlife species. These watering devices would be generally inconspicuous and would have no effect on the primary use of the areas for cattle grazing.

Other development on the fisherman-access easements and on the hunter-access easements would be limited to providing small parking areas, litter barrels, and vault toilets. The aim of this type of development would be to prevent the degradation of areas of high use and would provide benefits to both the landowners and the general public. It is not planned to place these facilities at all easement sites; rather, they would be provided where it appears that the amount of public use would justify such developments. Utmost consideration would be given to protecting the landowner's primary use of his land. These facilities are one way of assuring that his rights are not infringed.

The project lands which were purchased by the Government for the four Lower Snake River reservoirs result in a total of about 25,500 acres between the water and the project boundary. Much of this land is steep and sparsely vegetated. Some areas of project land are used for developed parks and for port facilities. Port areas have been sold to local port districts.

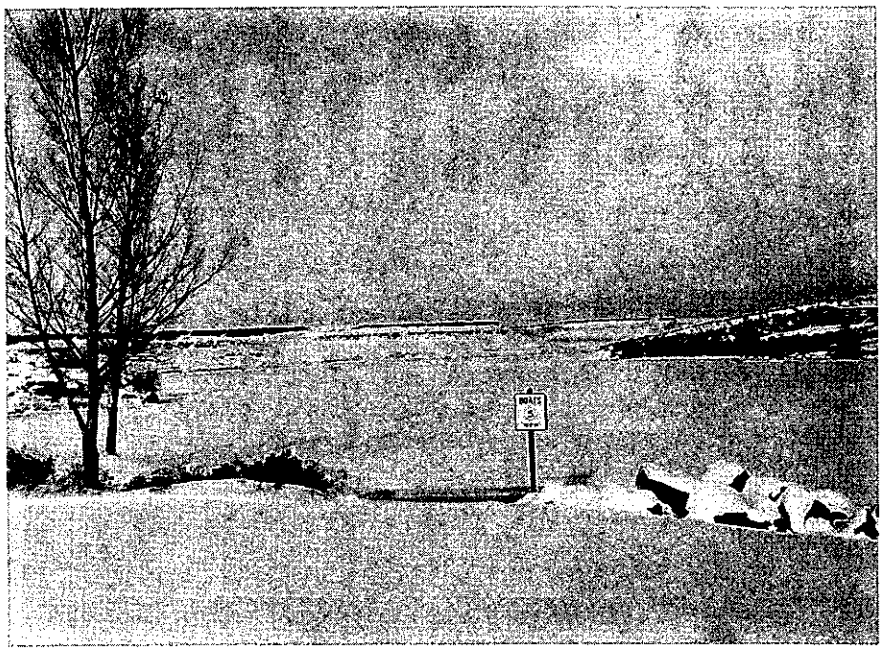
IV ENVIRONMENTAL IMPACT OF PROPOSED ACTION

The environmental impacts of the proposed compensation measures are generally discussed in this section, in the same order as the various component topics noted in the discussion of the environmental setting. Under each topic, fishery impacts are noted first, followed by discussion of impacts from the wildlife program.

1. Climate

The proposed fishery program should not affect the regional climate. It cannot be predicted at this time what small effects hatchery development would have on local climatic regimes; however, the effect is not expected to be significant. When locations for hatcheries have been selected and general designs established, it will then be possible to better determine the localized effects.

The development of wildlife habitat and the resulting increase in wildlife populations would not alter the regional climate. The increase in vegetation could result in a small climatic change in local areas.



Winter Snowfall

2. Air Quality

Hatchery construction would affect the air quality in the area. Operation of equipment would result in increases in hydrocarbons, particulates, carbon monoxide, photochemical oxidents, and nitrogen oxides. The burning of trash and slashings, as well as wind erosion at the site, would add to the suspended particulate concentration of the area.

However, the effect of the project on air quality should not be significant considering the existing high air quality of the project area and the minor contributions from hatchery construction.

Hatchery operation would also produce some air pollutants. The effect of hatchery operation should be much less than hatchery construction. The effects of hatchery operation on air quality can be determined more exactly after the plans are developed.

The development of wildlife habitat and the resulting increase in wildlife population would affect air quality. A major component affecting air quality would be the release of pollen from the various plants. Pollen would add to the suspended particulates of the area. It is not known if the pollen from the planted habitat species would be more or less annoying to people with allergenic problems.

Vegetation development on a permanent basis would add to the holding power of the topsoil in some areas. This would reduce wind erosion and the amount of suspended dust particles. Dust would be generated where equipment would be used in the planting of grain or hay for wildlife food patches. Also, the dust from hunter vehicles on dirt and gravel roads would be a seasonal factor.

3. Geology

The proposed hatcheries should not affect the existing geology of the area. The short-term removal of water from local streams for hatchery use would slightly reduce their sediment-carrying capacity and erosiveness. However, if the hatchery were withdrawing from a large stream, this aspect would be insignificant. Overall, the fishery program should cause little impact to geologic resources. Some local ground surface rearrangement would occur at the hatchery sites.

The development of wildlife habitat and the resulting increase in wildlife populations would not affect the geologic evolution of the region. However, the establishment of dense vegetation would reduce soil erosion in some areas, and irrigation of food patches could increase the amount of ground water contained in the soil. These would be local effects.

Palouse Falls

4. Water Quality

(1) Hatchery Construction

Rainfall runoff from hatchery sites would cause increased turbidity in any nearby stream. Increased turbidity would continue to occur until re-vegetation had stabilized the soil and retarded erosion. Water intake construction would disturb the bottom sediments of the river. Direct disturbance of the river bottom would cause an additional turbidity problem. Because the streams are freshwater, the suspended sediments would cloud the river for many miles. Cofferdams would reduce the amount of siltation in the river during construction. However, cofferdam installation would create a slight turbidity increase.

(2) Hatchery Operation

The hatcheries' design for waste treatment has not been developed. The size of the hatchery and the waterflow of receiving waters are necessary factors in determining the effects of hatchery operation on water quality. When hatchery sites are determined and hatchery designs completed, the effect of hatchery operation on water quality can be made. The hatcheries would be designed to meet all state and Federal water quality requirements for hatchery discharges.

It is estimated that at each hatchery the discharge into the receiving waters could include: ammonia, BOD, nitrates, phosphates, and suspended solids. This effluent would produce low-level enrichment of the receiving waters. Due to the dilution factor within the hatchery effluent, prior removal of solids by a treatment plant, and a large volume of water in the receiving stream, effluent effects would probably be undetectable except at the immediate point of entry. By itself, the slight enrichment from each hatchery could be beneficial in terms of food production for native fishes and other aquatic life. Combined with possible enrichment from other sources, it could contribute to the possible degradation of the receiving waters.

Wastewater being returned to the river from the fish rearing facilities would not significantly alter the receiving water's temperature regime. Wastewater leaving the facilities would be about the same temperature as the receiving river water except during the summer months when pond water temperatures should be held to a maximum of 65°F.

The method of disposal for human sanitary waste effluent is not known at this time. When the locations and design of the hatcheries have been established, it will then be determined what system would be used to treat sanitary wastes. Applicable water quality standards would be met.

In the wildlife program areas the increase in animal population would tend to create a slight increase in the nutrients placed on the land and contained in runoff from habitat development sites. Vegetation development would help prevent siltation of the receiving waters. This would reduce turbidity in the receiving waters. Restoration or development of riparian vegetation on denuded sites would lead to decreasing temperature of the water. Wildlife habitat development should indirectly increase nearby stream productivity.

5. Vegetation

Impacts of hatchery construction on vegetation would be limited to local areas. The site for a fall chinook hatchery would require approximately 40 acres. This hatchery would be constructed as near to the Lower Snake River Project area as possible but downstream from the project to minimize mortalities caused in passage through the four-dam complex. The spring and summer chinook hatcheries would require approximately 80 acres of land. The propagation facilities, which may be constructed as a single unit or multiple units, depending on site suitability, would be constructed upstream of the Lower Snake River Project to provide for the sport fisheries of eastern Oregon, eastern Washington, and western Idaho. The steelhead facilities would require approximately 80 acres. Separate hatchery facilities could be constructed upstream of the lower Snake River to provide for the sport fisheries of eastern Oregon, eastern Washington, and western Idaho. The resident fishery hatchery could be located somewhere in southeastern Washington and would require approximately 10 acres of land.

Hatchery construction would eliminate some of the vegetation at each hatchery site. Also, some lawn development would replace natural vegetation with a few grass species. Landscape architects would design the hatchery facilities to harmonize with the surrounding environment. However, the exact impact of hatchery construction on vegetation cannot be determined until hatchery locations and designs are developed.

The development of the proposed wildlife habitat lands would increase the amount as well as the characteristics of the vegetation in the region. In Appendix G,, Plates 2 through 5 display the preliminary analysis of wildlife habitat compensation along existing project riparian lands. Table 4 lists the vegetative species that are being considered for wildlife habitat development.

Development of habitat on the 500 acres of off-project land proposed for acquisition would be similar to that illustrated in Appendix G for the existing project lands. This change should be both quantitative and qualitative , as native species are to be used to the greatest extent practical.

Selected Potential Species for Restoration and Enhancement
Of Lower Snake River Lands

Prostrate Kochia	(Kochia prostrata)
Sunflower	(Helianthus annus)
Black thorn	(Prunus spinosa)
Arrowleaf balsam root	(Balsamorhiza sagittata)
Sumac	(Rhus glabra)
Blue lupine	(Lupinus sericeus)
Rabbit brush	(Chrysothamnus nauseosus)
Hackberry	(Celtis douglasii)
Wild rose	(Rosa woodsii)
Phlox	(Phlox longifolia)
Russian olive	(Elaeagnus angustifolia)
Rattlesnake brome	(Bromus brizaformis)
Bluebunch wheatgrass	(Agropyron spicatum)
Crested wheatgrass	(Agropyron cristatum)
Idaho fescue	(Festuca idahoensis)
Bitter brush	(Purshia tridentata)
Mt. ash	(Sorbus sitchensis)
Service berry	(Amelanchier alnifolia)
Blackberry	(Rubus laciniatus, R. ursinus)
Drop seed	(Sporobalus cryptandrus)
Hawthorne	(Crataegus douglasii)
Mulberry	(Morus alba)
Choke cherry	(Prunus viginiana)
Caragana	(Caragana arboresceus)
Red osier dogwood	(Cornus stolonifera)
Matrimony vine	(Lycum halimifolium)
Bladder senna	(Colutea arborescens)
Nanking cherry	(Prunus tomentosa)
Blueleaf honeysuckle	(Lonicera Korolkowii)
Vine clematis	(Clematis ligusticifolia)
Snowberry	(Symphoricarpos albus)
Canyon heather	(Eriogonum niveum)
Golden current	(Ribes aurem)

Table 4

6. Aquatic Organisms

(1) Effect of Hatchery Construction

Fish ladder and/or cofferdam construction, as well as runoff, would cause siltation in the stream. Siltation reduces the basic productivity of the waters because the suspended silt decreases the availability of light for plant photosynthesis. Silt can also cover and destroy eggs and/or larvae of fish, crustaceans, mollusks, and insects. In addition to the problems associated with siltation, the construction of a cofferdam or other site grading would create other impacts which may affect the adjacent stream. Construction effects would cease when the hatchery was completed.

(2) Effect of Hatchery Operation

Untreated hatchery wastewater discharges containing the metabolic waste products of the fish and residual fish food have been found to increase the Biochemical Oxygen Demand (BOD), total phosphate, nitrates, and total solids of the receiving stream and can result in significant quantities of undesirable solids being deposited in the streambed at the hatchery outfall. Increased levels of certain "nutrient" compounds resulting from hatchery discharges have also been found to stimulate primary productivity (algae) downstream from hatcheries. This in turn results in increased numbers of benthic organisms such as mayflies, stoneflies, dragonflies, caddisflies, trueflies, and beetles. This would result in an increase in stream productivity.

Hatchery operation would use chemicals which affect aquatic wildlife. The rearing ponds may need intermittent treatment to prevent the spread of fish diseases. External parasites and most systemic bacteria are not expected to be a problem at the proposed hatcheries. Airborne pathogens, such as the spores of the common fungus Saprolegnia, and common soil myxobacteria which are the cause of bacterial gill diseases and columnaris (a systemic infection), would require chemical or drug control. It is possible that returning adults will be carriers of pathogens. However, rainbow trout eggs that are needed for hatching and rearing to meet the trout program should only be accepted from disease-free broodstock sources. When treatments for these diseases are necessary, chemical treatment will be confined to individual ponds or incubators; the entire water volume circulating through the hatchery will not be treated.

The purpose of the hatcheries would be to obtain satisfactory adult returns to spawning areas. At an average of 5,000 eggs per female fish, the hatcheries could raise millions of fingerlings. Fall chinook salmon would produce 11,450,000 eggs, spring and summer chinook would produce 9,650,000 eggs, and steelhead would produce 16,950,000 eggs. Hatcheries using recirculated water produce fish

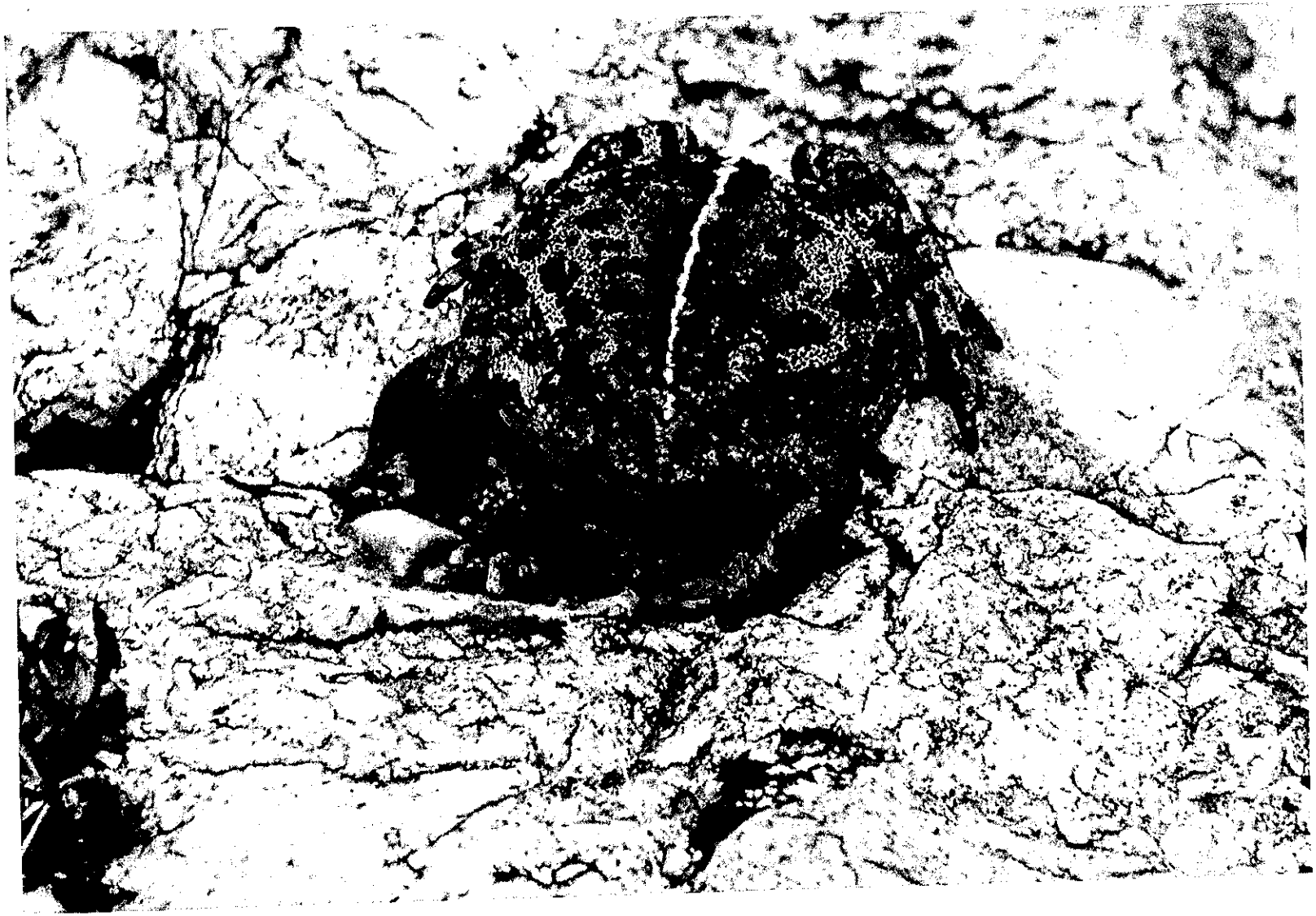
LENGTH OF THE LIFE CYCLE AND OF HATCHERY CARE VARY WITH SPECIES AND CONDITIONS

at a much faster growth rate than occurs in the wild. By 11 months, steelhead hatchery fish would be able to be released for downstream migrations. Fish raised in raw stream water require at least six additional months before they reach migration size. The average size of downstream migrants (called smolt) vary from species to species. The likelihood of species survival is enhanced because of decreased stream mortality among the eggs, fry, and fingerlings. Hatchery survival is near 75 percent, while natural survival is approximately 10 percent. Smolt losses during their seaward migration can be very high; therefore, high hatchery productivity is required to maintain the necessary spawning population of adult salmon to keep the species extant.

(3) Effects of Habitat Development

Overall, the development of shoreline wildlife habitat would tend to increase the productivity of the aquatic environment. Some shade over the water may be provided as trees mature. Vegetation establishment would reduce the siltation in the receiving waters by reducing soil erosion on the adjacent lands. The vegetation would increase the population of insect life in the area, which is a major food source for fish. Addition of organic matter and nutrients to the land ecosystem could eventually result in small increases of these materials into the aquatic ecosystem. This would add to the stream's productivity.

Fishing in Dworshak Reservoir



The Western Toad (Bufo boreas) captures grasshoppers, flies, and the interests of naturalists who enjoy observing non-game species.

7. Terrestrial Wildlife

(1) Effects of Hatchery Construction on Terrestrial Wildlife

Hatchery construction would diminish available wildlife habitat. Habitat reduction is perhaps the most harmful effect of hatchery development. Terrestrial habitat may be generally regarded as the vegetation in the area. Construction activities would remove a portion of the hatchery site's vegetation. Wild animals require vegetation for food, shelter, and/or cover. Any alteration of the vegetative cover affects the animals in the area.

Small herbaceous animals, such as squirrels, mice, moles, and rabbits, would be among the first to show the results of vegetation removal. These small mammals would either be killed or be displaced from the construction areas. However, because the land adjacent to the hatchery site should already be maintaining maximum animal populations, some of the displaced animals may also perish. Of course, this only occurs if there are more animals than the land can maintain. Such animal over-populations would be reduced by predation, starvation, and/or disease.

Insectivores and small carnivores such as shrews, moles, snakes, bats, frogs, lizards, turtles, salamanders, and weasels would also be killed or displaced. These small animals may also exceed the land's carrying capacity, resulting in some losses. Birds, for the most part, would be able to locate substitute feeding areas. Larger animals such as deer, beaver, bobcat, lynx, foxes, and coyote are more wary as well as mobile, and they can usually avoid construction activities and equipment.

However, age is an important factor in the animal's ability to survive construction activities. Young birds that cannot fly would most likely be killed during construction. Likewise, small juvenile mammals remaining in dens could be killed. Eggs of turtles, birds, lizards, and snakes would probably be totally destroyed during hatchery construction. Other animals that are slow or sleeping could also be killed by construction activities. Amphibians, snakes, and lizards, which are slow-moving or torpid during the hot mid-day period, are more susceptible to moving equipment than small mammals. Hibernating or estivating animals would also be highly susceptible. These life forms would be most likely to be killed during construction activities.

As the site becomes revegetated, small mammals, amphibians, reptiles, and birds would reinhabit the area. The establishment of primary vegetation should require about one year for those areas cleared of all vegetation. In three to five years the area should be stabilized. By this time the large trees would be the only habitat that would not be replaced.

(2) Effects of Hatchery Operation on Wildlife

The movement caused by hatchery personnel, tourists, and equipment around the hatchery will influence the behavior of the birds and other animals in the area. If noise and human activity is moderate, some animals such as deer, coyotes, raccoons, and others could return to the area. When tourist visitation is low, a higher wildlife density could be expected in the area. The first generation of small mammals should adjust to the additional noise and movement. However, the use of the area by bird life may be curtailed to some extent. The hatchery's existence would cause a slight change in the number as well as type of animals found in the area. Table 5 is a typical listing of the animals that may be found as related to types of development.

Some animals can become destructive to the hatchery's operations or merely nuisance problems. The Pacific mole is one such animal. The hatcheries would contain some areas of lawn grasses maintained by the hatchery personnel. The Pacific mole would be an animal that may cause damage to these lawn areas. If any moles were to inhabit the lawn areas they would be trapped, then either killed or transferred to an area where they would not be considered destructive. The belted kingfisher, herons, and mergansers also can cause problems. These birds feed on small fish, and if hatchery rearing tanks are not protected, these birds would feed regularly on the hatchery's fingerlings. In the past, predatory birds have been destroyed by hatchery personnel.

Some visitors, especially unsupervised children, may accidentally or deliberately destroy nesting sites and other forms of wildlife habitat near the hatchery. In addition, some animals would be removed from the area as pets. Frogs, crayfish, insects, salamanders, snakes, and lizards are most likely to be captured and removed. However, if visitors are properly informed that the area is an animal sanctuary, such wildlife losses can be minimized.

The constructed hatchery facilities would provide additional habitat area for some animals. The hatchery buildings would become nesting sites for starlings, pigeons, and house sparrows. Populations of these birds may increase in the area. The feed storage area would sometimes be inhabited by the house mouse and the Norway rat. Hatchery personnel would make an effort to eliminate these rodents. These two rodents would most likely be introduced into the hatchery area with feed deliveries. They are primarily found in structures used for storage.

TABLE 5 Common Nesting Birds and Resident Mammals

Industrial Development	Residential Area	Formal Park	Wild Growth
BIRDS			
Domestic Pigeon	House Sparrow	House Finch	Magpie
House Sparrow	House Finch	Robin	Crow
Starling	Robin	Western Kingbird	Song Sparrow
	Say's Phoebe	Mourning Dove	Sparrow Hawk
	Western Kingbird	Sparrow Hawk	Pheasant
	Starling	Crow	Quail
		Bullock's Oriole	Eastern Kingbird
		Starling	Bullock's Oriole
			Robin
			Bewick's Wren
			Brewer's Blackbird
			Starling
			Mourning Dove
MAMMALS			
House Mouse	House Mouse	Cottontail	Deer Mouse
Rat		Pocket Gopher	Skunk
		Deer Mouse	Raccoon
		Ground Squirrel	Mink
			Cottontail
			Shrew
			Mountain Vole
			Weasel
			Ground Squirrel

Source: See reference 35.

(3) Effect of Wildlife Habitat Development

The development of wildlife habitat would have a most significant impact on terrestrial wildlife. With proper land management, it is possible to increase communities of wildlife near the four-dam complex. The habitat development project would be directed at game species; however, any habitat development would supply many additional niches for non-game species. The use of both high project and off-project land would mean an increase in animal populations.

The development of shoreline habitat would increase populations of furbearers such as raccoons, mink, weasel, river otters, muskrat, and beaver. Waterfowl would benefit from shoreland habitat development. The installation of isolated floating goose-nesting islands adjacent to shoreland habitat could lead to successful rearing of Canada geese goslings. The eggs would be safe from disturbances on the floating islands.

Developed and managed uplands could supply habitat for ring-necked pheasant, valley quail, and other birds. Cottontail rabbits would also benefit from the development of upland habitat, and non-game species should increase in population as the habitat is increased.

Deer population would also benefit by the development of upland game bird habitat. The fencing of the habitat lands to prevent overgrazing by cattle would be both beneficial and also prove hazardous to deer. Deer occasionally become hopelessly entwined in some types of barbed wire fencing.

The selection of the types of plants and the game species that would be established directs the increases in non-game species. The major factor is the development of the primary productivity of the land.

Leaping deer sometimes become entangled in the top two strands of barbed wire fencing as has the doe mule deer shown here.

8. Threatened Species of Wildlife

(1) Effects of Hatchery Development

Seventeen threatened species of wildlife may inhabit the project area. As the Corps establishes the hatchery sites, wildlife surveys at the sites would provide information on threatened species at each site. If hatchery construction would disturb a seriously threatened species, the Corps would consider an alternative site for the hatchery. However, all hatcheries would be designed to minimize their impact on the environment. Serious disturbance to threatened wildlife can be avoided with proper safeguards.

Section 7 of Public Law 93-205, the Endangered Species Act of 1973, provides that "all other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary (of Interior), utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to Section 4 of this Act and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical."

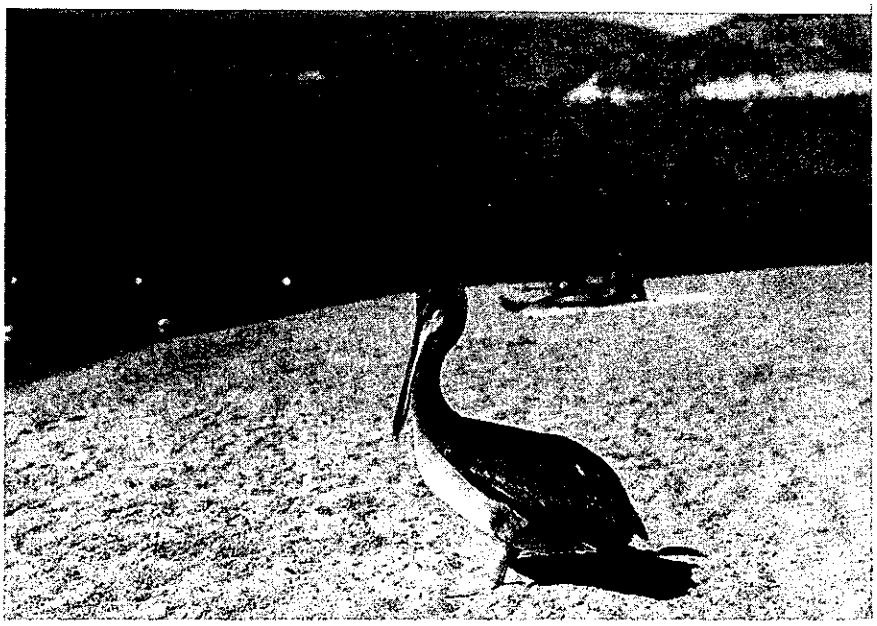
(2) Effects of Habitat Development

The development of wildlife habitat could enhance the threatened situation of the Aleutian Canada goose and the American peregrine falcon. Although the Aleutian Canada goose does not usually breed within the lower Snake River area, it is not unlikely that it would rest during its migration at the shoreline habitat.

The American peregrine falcon has been known to breed within the region. Habitat development might enhance the falcon status because of the increase in waterfowl production as well as overall numbers using the shoreline habitat. The American peregrine falcon preys on ducks and other birds. Increased populations of pheasants and chukar may also contribute to the falcon's survival.

The lower Snake River region may contain as many as 17 species of threatened wildlife, 14 bird species, and 3 species of threatened mammals. The wildlife habitat development program would not directly influence the mammals. However, it might prove beneficial to these birds: the Tule white-fronted goose, prairie falcon, American osprey, western snowy plover, Ferruginous hawk, Columbia sharp-tailed grouse,

northern long-billed curlew, western burrowing owl, and the Yakutat fox sparrow. If these birds occur at a wildlife habitat development, they might benefit through either increased food production or habitat availability.



California Brown Pelican

9. Archaeology

Public Law 93-291, the Archaeological Conservation Act of 1974, requires an archaeological investigation at hatchery sites before construction begins. This procedure would prevent damage to most archaeological artifacts and/or fossils; however, during hatchery construction, workers may uncover archaeological artifacts and/or fossils. If such archaeological items are discovered, construction personnel would contact the appropriate authorities, and they would wait for an authorized expert to evaluate the site before continuing work in the area. However, before discovery, some items of archaeological interest may unavoidably be destroyed or damaged by construction activities. Any such newly discovered artifacts and fossils could add to our understanding of early man and his culture.

Hatchery operation should not cause any direct impact on the archaeological potential of an area. It is unlikely that visitors would cause significant damage to an area of average archaeological potential. However, visitors to established archaeological sites can cause severe damage to artifacts and fossils by attempting to collect souvenirs. Thus, hatcheries would be sited to avoid possible destruction or disturbances of known archaeological sites. If valuable archaeological items were uncovered during construction, and the hatchery could not be relocated, the archaeological site would be salvaged or protected. While archaeologists are investigating the site, visitors would be prohibited from entering the sensitive area. However, after the site has been completely investigated, it could be incorporated into a visitors' interest point with displays explaining early man's lifestyle as well as archaeological recovery procedures used at the site.

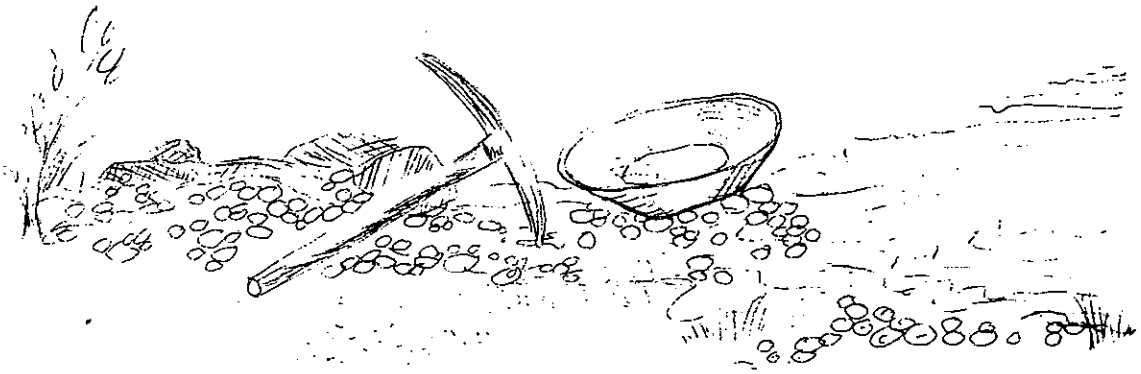
The shoreline wildlife habitat development may uncover some items of archaeological interest. A similar procedure would be used to unearth the artifacts and/or fossils, as noted above for hatchery construction. However, the land would eventually be developed into wildlife habitat, and no educational display could be established at the site.

Archaeological Recovery Site

10. National Historic Sites

Hatchery development would not significantly affect any National Historic Site. During hatchery construction and operation, the proposed compensation effort could affect the highway traffic loads around historic sites. During construction the movement of equipment over a nearby highway could create dust, affecting the air quality of the historical site. People heading for fishing areas or hatcheries may visit some of the historic sites during their trip.

Development of wildlife habitat would not directly affect National Historic Sites. Increased wildlife populations could add to the enjoyment of visitations at the historical sites because of the possibility of sighting wildlife on the grounds. Hunters may stop at some of the historical sites during hunting excursions. Traffic on highways leading to historical sites would increase.



11. Socioeconomics

The program of hatchery development may cause an influx of construction workers into parts of the region. Some construction workers may temporarily move their families into the area. This would result in the temporary increase of service requirements of local government and/or public facilities; i.e., schools, hospitals, public health services, police department, sanitation, and others. The hatchery would provide a recreational and educational opportunity to local residents, and the fish produced at the hatchery would also provide recreational opportunities.

The actual construction of the hatchery would result in an economic stimulus to nearby local communities. Construction workers would spend much of their incomes at local retailers. If contractors use local labor exclusively, it would still stimulate the local economy through increased employment. The materials necessary for construction would be primarily drawn from local and regional suppliers. Capital cost estimates for the entire fishery complex are $42,250,000. Annual operation, maintenance, and replacement estimates are close to $2,950,000. Table 6 shows estimates for mitigation.

The annual value of the commercial anadromous fishery from the project is $4,071,320. The value of the sport fishery for both anadromous and residential species from the project is $5,787,000 annually. The commercial fishery will harvest approximately 4,260,000 pounds of anadromous fish per year, while the sport fishery will harvest 1,966,100 pounds of project-raised anadromous fish. The commercial harvest will comprise an estimated 68 percent of the harvest (by weight).

Current information on the justification indicates that the hatcheries have a benefit-cost ratio as follows: fall chinook, 2.14:1; spring and summer chinook, 3.55:1; steelhead, plus fishing access, 1.25:1; and the trout hatchery, 2.29:1.

The basic land use of the lands on which easements are obtained would not be changed. The lands would remain in their present ownership and be subject to a new tax structure. The selling of a property right can reduce the assessed value of the encumbered property, depending on the easement. The Corps believes that in most cases the land use will not be significantly affected; therefore the easements should not significantly affect the tax base. The owners would be paid a reasonable and agreed-upon amount of money for the privilege of sportsman access. Taxes on lands transferred to the Washington State Department of Game in fee would be paid by the Department or, if the county preferred, they would receive one-half of the violation fees obtained in that county. The acres obtained by the Corps in fee may be removed from the tax base. If land is obtained through condemnation, landowners forced to sell would feel a personal loss, especially concerning inherited land.

Benefit-Cost analyses of the hatcheries are as follows:

Fall Chinook

Item	100-Year Life
Initial Construction Cost	$ 6,200,000
Annual Costs	
Interest and Amortization, 5-7/8 percent	$ 365,495
Operation and Maintenance	450,000
Total	$ 815,459
Annual Benefits	
Commercial Fishery Value 934,000 lbs. @ $0.99 per lb.	$ 924,660
Sport Fishery Value 91,500 angler days @ $9.00 per day	823,500
Total	$ 1,748,160
Benefit-Cost Ratio	2.14:1

Spring and Summer Chinook

Item	100-Year Life
Initial Construction Cost	$11,500,000
Annual Costs	
Interest and Amortization, 5-7/8 percent	$ 677,867
Operation and Maintenance	900,000
Total	$ 1,577,867
Annual Benefits	
Commercial Fishery Value 2,994,000 lbs. @ $0.99 per lb.	$ 2,964,060
Sport Fishery Value 293,000 angler days @ $9.00 per day	2,637,000
Total	$ 5,601,060
Benefit-Cost Ratio	3.55:1

Trout Hatchery

Item	100-Year Life
Initial Construction Cost	$ 3,000,000
Annual Costs	
Interest and Amortization, 5-7/8 percent	$ 165,800
Operation and Maintenance	100,000
Total	$ 265,800
Annual Benefits	
Sport Fishery Value	
67,500 angler days @ $9.00 per day	$ 607,500
Benefit-Cost Ratio	2.29:1

Steelhead Including Fishing Access

Item	100-Year Life
Initial Cost	
Steelhead Hatchery	$20,500,000
Sport Fisherman Access Lands	1,050,000
Total	$21,550,000
Annual Costs	
Interest and Amortization, 5-7/8 percent	$ 1,270,265
Operation and Maintenance	1,510,000
Total	$ 2,780,265
Annual Benefits	
Commercial Fishery Value	
332,000 lbs. @ $0.55/pound	$ 182,600
Sport Fishery Value	
Outside Project Area - 236,000 angler-days @ $9.00/day	2,124,000
Acquired Access Lands - 130,000 angler-days @ $9.00/day	1,170,000
Total	$ 3,476,600
Benefit-Cost Ratio	1.25:1

Streambank Fishing

The wildlife habitat development program would require about $458,302 per year over the 100-year life. Below is a partial breakdown of the costs and benefits associated with the wildlife compensation plan.

Wildlife Habitat Development

	100-Year Life
Initial Cost, Lands and Development	
Annual Costs	$6,138,000
Interest and Amortization, 5-7/8 percent	361,804
Operation and Maintenance	121,000
Total	$ 482,804
Annual Benefits	
Big Game Hunting Values	
9,900 hunter-days at $9.00 per day	$ 89,100
Upland Game Hunting Value	
28,500 hunter-days at $9.00 per day	256,500
Waterfowl Hunting Value	
1,000 hunter-days at $9.00 per day	9,000
Appreciation Use	
43,500 user-days at $2.25 per day	97,895
	$ 452,459
Benefit-Cost Ratio	0.94:1

TABLE 6

SUMMARY OF FACILITIES AND COSTS OF FISHERY COMPENSATION FACILITIES
LOWER SNAKE RIVER PROJECT

Facility	Land Requirement	Cost	
		Construction	Annual O&M
Fall Chinook Hatchery 101,800 pounds smolt production	40 acres	$ 6,200,000	$ 450,000
Spring and Summer Chinook Hatcheries 450,000 pounds smolt production	80 acres	$11,500,000	$ 900,000
Steelhead Trout Hatcheries 1,377,500 pounds smolt production	80 acres	$20,500,000	$ 1,500,000
Rainbow Trout Hatchery 93,000 pound capacity	10 acres	$ 3,000,000	$ 100,000
Streambank Lands for Fisherman Access and Development	750 acres	$ 1,050,000	$ 10,000 1/
TOTAL FEDERAL COST	960 acres	$42,250,000	$ 2,950,000

NOTE: a. Hatchery costs are based on actual recent experience at Dworshak, Spring Creek and Bonneville Hatcheries.

b. Land costs are based on knowledge of local land costs achieved by recent experience.

c. Hatchery costs include necessary trapping facilities.

d. Hatchery costs include necessary land @ $1,000 per acre.

1/ Performance of and budgeting for operation and maintenance will be a state responsibility

The breakdown only estimates the value of non-game wildlife. Naturalists and others spend considerable amounts of time and money to photograph and/or enjoy wildlife in a natural setting. There is little data available on non-game appreciation use. Sports such as backpacking, canoeing, and camping are on the increase. People enjoy spending time in a natural setting.

An article which further discusses the types of socioeconomic considerations is included as Appendix H. Although the article focuses on Wyoming, the major points noted are considered to be appropriate to the Snake River region, even though the numbers cited are not.

12. Recreation

The proposed hatchery construction should not create significant effects on recreational sites within the project area. Construction vehicles may increase the traffic load on highways serving recreational sites. The movement of equipment and construction materials on highways leading to the hatchery site and at the hatchery site would probably create dust. This dust could affect recreational areas near highways leading to the hatchery site or near the hatchery. Hatchery constructon may result in increased turbidity and alter the color of nearby stream waters. These changes could affect water quality at downstream recreational areas. A reduction in water quality could influence the use of the water for water-related recreation; i.e., swimming, diving, fishing, water-skiing, boating, and others.

Hatchery operation would result in some changes in man-use, highway traffic loads, and maintenance. Most of the Government-controlled recreational sites (excluding skiing) within the project area (86%) are located on Federally controlled lands. The results of fishery compensation efforts would affect the recreation sites nearest streams which would receive additional fish.

Of those sites, the ones most likely to be affected by compensation efforts are: Washington - Little Butte, Field Spring, Lewis and Clark Trail; Oregon - Mosier Spring, Bear Canyon, Hilgard Junction, Blackhorse, Imnaha River, Cloverdale, Evergreen, Indian Crossing, and Lick Creek; Idaho - Helmer, Castle Creek, South Fork Clearwater, North Fork Slate Creek, Allison Creek, and Seven Devils. These recreational sites would experience increased use by fisherman. Maximum use of these recreational sites could be expected at the beginning of the fishing season. Rapid increases in use could also be expected when anadromous fish runs move up nearby streams. Some overcrowding of streambanks may occur near access points.

The former Idaho State record steelhead was caught in the now inundated portion of the North Fork Clearwater. The fish weighed 29 lbs. 8 oz. The new record is a Dworshak Hatchery fish caught in 1973.

During periods of maximum use there would be associated problems of increased highway traffic, increased noise, and increased sanitation requirements. Additional maintenance would probably be required as overall man-use loads increase.

The wildlife compensation plan is designed to provide 9,900 big game hunter-days, 28,500 upland game hunter-days, and 1,000 waterfowl hunter-days.

The development of the habitat for game species would add to the production of non-game species as well. Birdwatchers, backpackers, hikers, and other naturalists would enjoy the wildlife habitat areas. The habitat area would offer some unique collection of wildlife species that the surrounding vegetation could not offer. An estimated 43,500 user-days of birdwatching, photography, and other naturalist activities could occur at the wildlife habitat areas. The following table shows the extent of the needed habitat compensation.

Table 7. Average Annual Wildlife User-Days, Lower Snake River Project, Washington State

	Without Project (Man-Days)	With Project (Man-Days)	Difference (Requiring Compensation)
Hunting Use 1/ (Big Game, Upland Game, Waterfowl)	57,600	18,200	39,400
Appreciative Use 2/ (Game and Non-Game Species)	63,600	20,100	43,500
Fur Animal	4,200 (pelts)	2,100 (pelts)	2,100 (pelts)

1/ From BSFW & NMFS Report (Reference 19).

2/ From the Washington Department of Game, 1974 Use Figure; appreciative use is increasing at an average rate of 4.4 man-days per year in proportion to every 100 man days of hunting use in Washington.

Hunting and fishing are popular pastimes that draw thousands of people to the Snake River. These sportsmen spend a lot of money in the region in the name of their favorite pastime.

Often the particular hunter or fisherman not only reaps the benefits of his consumptive sport, but intertwines a share of nonconsumptive wildlife use during a day on the Snake. These nonconsumptive uses are manifested in photographs of wildlife or entries in a birdwatcher's field notes. With most people, though, the simple sighting of wildlife and associated pleasure is the reward.

The proposed compensation would re-establish the opportunities to enjoy and use wildlife in these various forms. The goal, as far as steelhead angling is concerned, is to replace 130,000 angler-days per year in the lower Snake River.

The angling for resident fish is schedule for a boost of 67,500 angler-days per year over the existing use. This figure takes into account a differential included in the 1972 BSFW and NMFS Report which states that two stream days are equal to three reservoir angler-days.

Lost hunting days would be compensated by providing an opportunity for 28,500 hunting-days for upland birds; 9,900 hunting-days for big game; and 1,000 hunting-days for waterfowl.

Appreciative use (non-consumptive use of wildlife and its surroundings which is shared by hunters, fishermen, and non-hunters or non-fishermen alike) would be replaced to an estimated 43,500 man-days.

The assumption is that these days are in addition to those now taking place. The addition of these user days to the present situation would have people-related impacts such as littering, vandalism, fire hazard, and relative crowding.

The proposed action would have its greatest impact upon the management of fishery and wildlife resources and on the availability of outdoor hunting and fishing opportunities. The intent of the action is to replace resources that have been lost as a result of construction of the Lower Snake River Project; consequently, the environmental impact is largely beneficial.

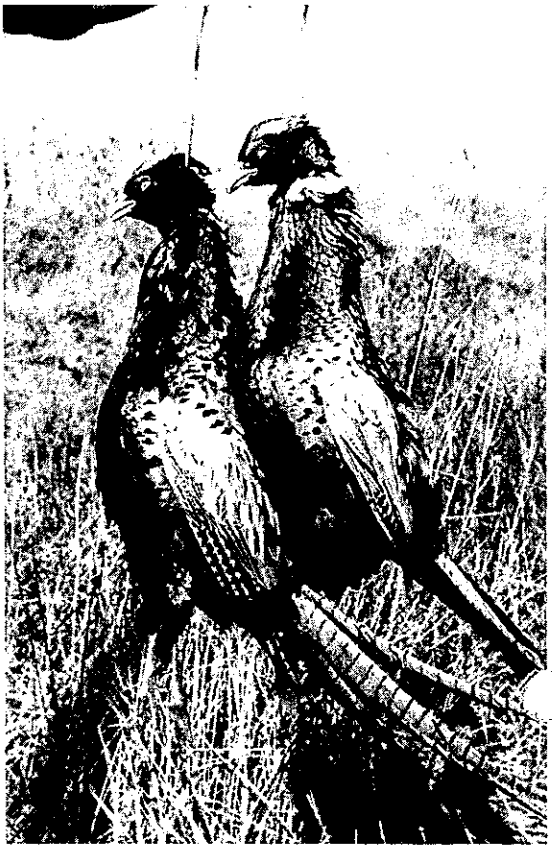
Some potential exists for adverse impacts upon areas which have not previously received much use from the public. Basically, litter control and vandalism may become more of a problem in areas presently unavailable to the public. However, if current practices are followed, game department personnel can and would help landowners who enter into sportsmen access easement agreements in controlling this type of problem. One of the real advantages of the easement approach is that it enables game department personnel to help in the control of the small percentage of hunters and fishermen who abuse both the rights of the public and the individual landowners because most hunters would use the easement lands.

Major values of the proposed land acquisition program center around making available land managed for production of wildlife. The availability of such land is becoming more important as our national population grows. It can also be looked on in the perspective of spreading out existing fishing and hunting pressure by making more areas available for use. Although this is tempered somewhat by the fact that areas have been lost due to project construction, it is probably true that areas acquired through easement acquisition and purchase would be managed more intensively than those lands that were lost. Indeed, if compensation is to be achieved, more intensive management of less area would need to be accomplished.

Although management of fish and wildlife resources is oriented toward providing sport for fishermen and hunters, an inseparable part of the equation lies in providing for the general well being of the species. It is a known fact that species management for hunting and fishing purposes has led to the preservation and continued well being of several species. The active management of areas to be acquired as part of the proposed compensation plan would play a part in the maintenance of game species considered to be of importance to a large segment of the population.

One of the major side values of management for game animals is that habitat development and protection aids a wide variety of species, many of which are not game animals. In the present report there is no specific plan for compensation for non-game species that have been affected by project construction; however, habitat development for the game species would have definite values for other members of the wildlife community.

Big game hunting challenges a hunter's ability to overcome the elements and outwit his prey.



Gamebird hunting provides explosive moments; you either bag your prey or watch it fly away.

13. Esthetics

From clearing until revegetation the hatchery site would disturb the visual harmony of the surrounding landscape. Proper hatchery design would minimize the impact on the natural beauty. Landscape architects would design the hatchery surroundings to blend with the natural setting. Hatchery plans would require revegetation of most cleared areas with indigenous plants. However, the hatcheries would alter the plant communities on some parts of their sites, and the hatchery buildings and other structures would remain in the area for the life of the project.

Hatchery operation would have only minor effects on the esthetics. The movement of hatchery equipment would disturb the natural setting of the site, but other hatchery operations would not cause disturbances.

The trees, shrubs, and wildflowers of the wildlife habitat development program would provide a pleasing natural setting. Such quiet green areas have a relaxing influence on visitors. Added pleasure could occur from the sighting of various wildlife. Many people enjoy visiting natural areas to take photographs of waterfowl and other interesting wildlife. Non-game as well as game species are enjoyable to such visitors. Wildlife habitat areas would provide a variety of such esthetic pleasures.

From a non-hunter point of view, the program for wildlife habitat development offers increased opportunity for viewing of birds and animals. This may serve a variety of interests, from the casual chance sighting to serious nature photography.

While some of the habitat plantings of grain and hay may be somewhat artificial in appearance, the random shrub and tree plantings would again provide "riparian" growth. This would add greenery to the canyon setting and improve the overall esthetic atmosphere.