JOHN DAY FISH DISTRICT

STOCK STATUS/ASSESSMENT/ACTION UPDATE

Wild Spring Chinook
Wild Summer Steelhead
Sensitive Species (Bull Trout-Westslope Cutthroat)
Pacific Lamprey

HABITAT PROTECTION/RESTORATION

"RED FLAG" ISSUES

E.W. CLAIRE & M.E. GRAY, MARCH 1993

STOCK STATUS/ASSESSMENT/ACTION UPDATE

WILD SPRING CHINOOK

- 1992 John Day Basin index count 13.2 redds/mile, 129% of 5-yr. avg.
- Mainstem, North Fork, Granite Cr. 133% of 5-yr. avg.
- Chinook "high" on OSP enforcement list
- Angling regulation changes effective in protecting chinook
- Working with Watermaster to assure critical flows, passage
- Purchase/easements with landowners holding critical habitats
- Middle Fork improved in 1992, but still below average for basin
- Intensified habitat protection regarding Forest Health, FPA
- Long-term habitat recovery necessary on Middle Fork

STOCK ASSESSMENT
JOHN DAY WILD SPRING CHINOOK

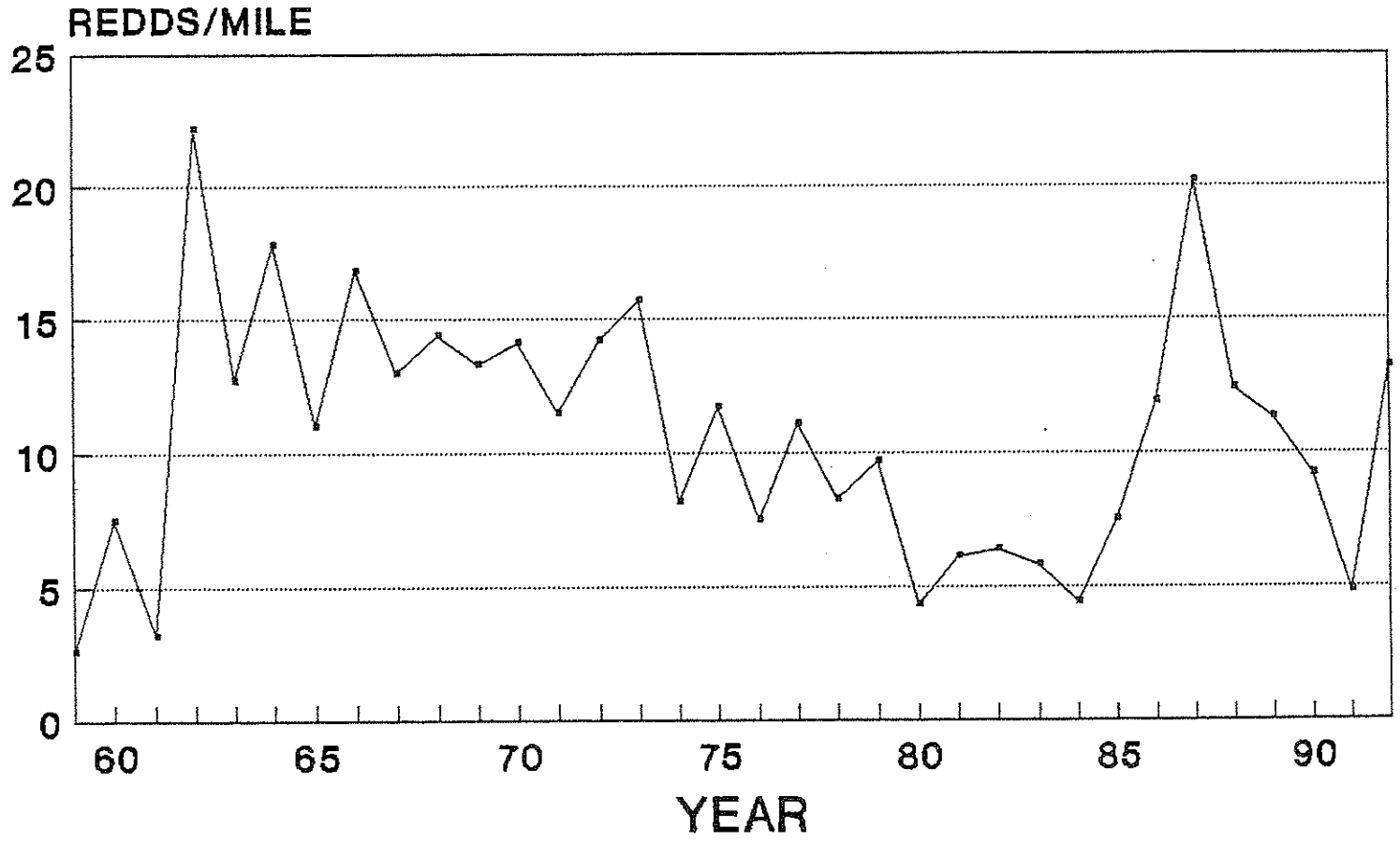
Spawning Index Counts (Redds Per Mile)

Stream	1992	Five Year Avg.	Percent
Basinwide	13.2	10.2	129
John Day River	10.9	8.8	124
North Fork	18.8	12.8	147
Middle Fork	9.0	9.1	99
Granite Cr. System	11.5	8.9	129

WILD SPRING CHINOOK
Spawning Escapement Estimates
John Day River 1987-92

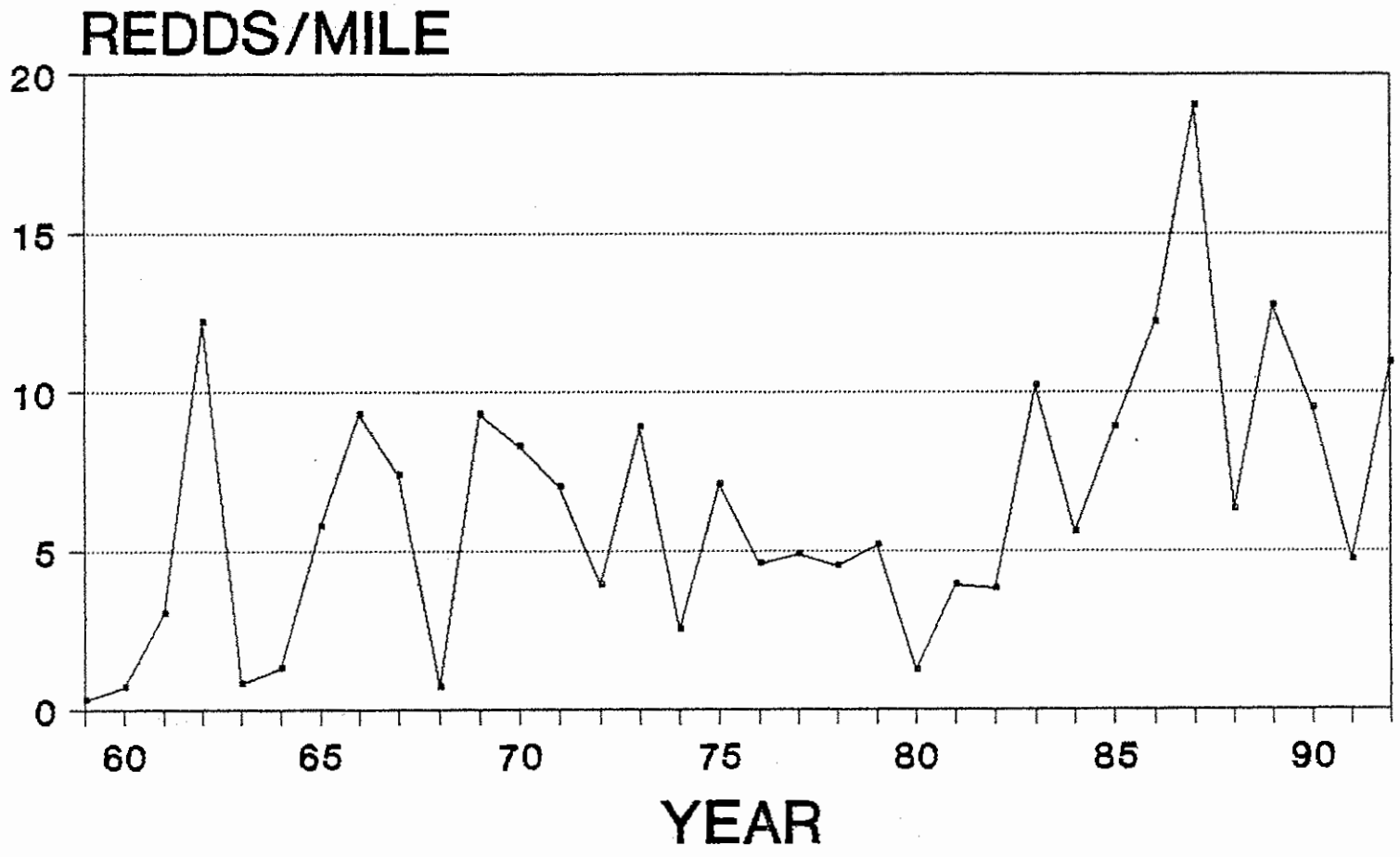
YEAR	ESTIMATED ESCAPEMENT
1987	4,596
1988	2,970
1989	2,613
1990	2,226
1991	1,143
1992	3,138

JOHN DAY SPR. CHINOOK
1959 - 1992

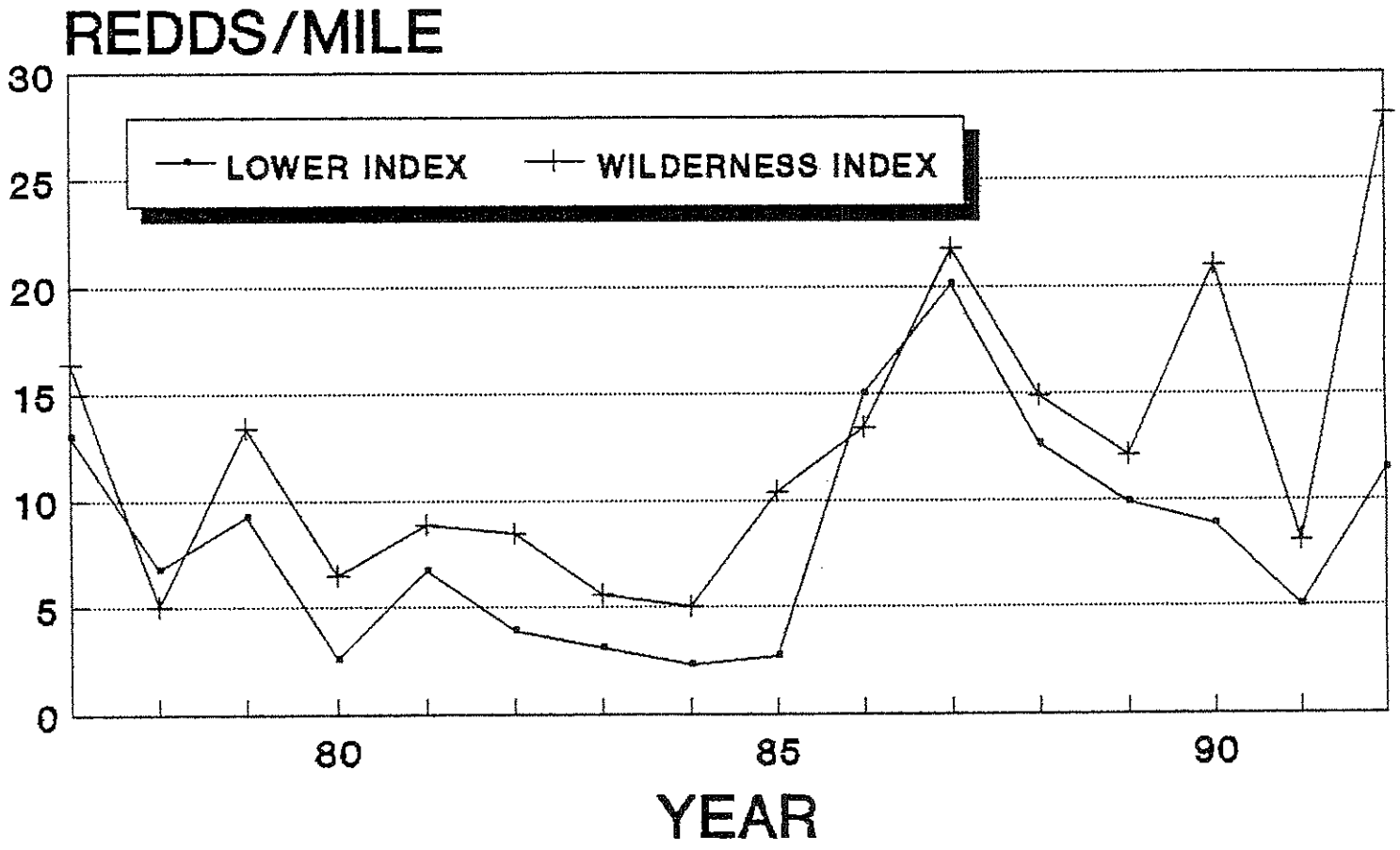


INDEX COUNTS FOR THE JOHN DAY R. SYSTEM

JOHN DAY R. SPR. CHINOOK
SPAWNING COUNTS

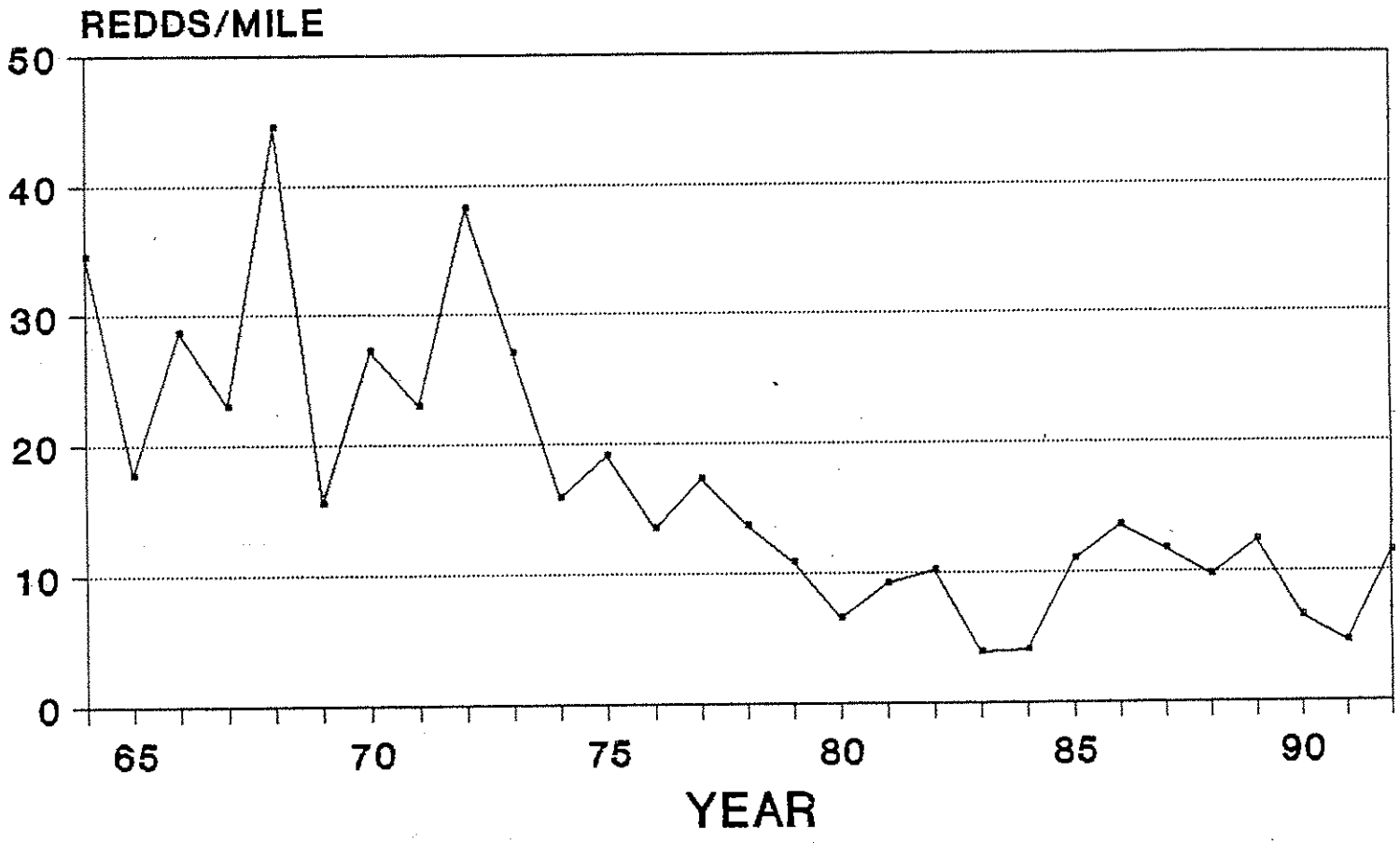


NORTH FK. JOHN DAY
SPAWNING COUNTS



WILDERNESS AND LOWER COUNTS ONLY

GRANITE CR. SPR. CHINOOK
SPAWNING COUNTS



INCLUDES GRANITE, CLEAR & BULL RUN CRS.

Comparison of Wild Spring Chinook Escapement Estimates, 1964-75 and 1976-92

NORTH FORK JOHN DAY RIVER

1964-75	1976-92	% Change
988	857	-13

- 1984 wilderness designation
- Low impact from land mgt. activities
- Headwaters protected
- New gear regs. to prevent poaching
- LMA 18-optimize anadromous fish
- Wilderness withdrawn from mineral entry
- Few new roads built
- Limited clearcutting on mainstem
- Scenic waterway

Wild Spring Chinook Escapement Estimates
Wilderness vs. Combined - North Fork John Day R.

	Combined (18 miles) 1964-76	Wilderness (8 miles) 1977-92
FISH/MILE:	33	37

- Poaching
- Vehicle access
- Increased traffic
- Land mgt. impacts:
  - Logging/salvage
  - Grazing
  - Mining
  - Roads
  - Recreational use
- Increased salmon harassment

- No vehicle access
- Min. land mgt.
- Upper watershed protection
- Restricted traffic/use
- No logging
- No road building
- Total mineral withdrawal
- High quality water & habitat
- Provides salmon sanctuary

Comparison of Wild Spring Chinook Escapement Estimates, 1959-75 and 1976-92

GRANITE CREEK SYSTEM

1959-75	1976-92	% Change
1,086	486	-55

- Heavy mining activity, especially since 1975
- Red Boy, Blue Bird & Buffalo acid mine waste blowouts
- No wilderness designation
- Mountain pine beetle salvage - 1975-82
- 60% of Beaver Cr. drainage clearcut
- 60% of Bull Run drainage clearcut
- Extensive road construction
- Ukiah/Granite road paved
- Major increase in people since 1970
- Town of Granite re-incorporated
- Major increase in salmon poaching & harassment

Comparison of Wild Spring Chinook Escapement Estimates, 1959-75 and 1976-92

MAINSTEM JOHN DAY RIVER

1959-75	1976-92	% Change
264	382	+45

- 1980 BPA Habitat Program - private lands much improved
- Public harassment low - little access
- Upper watersheds lightly impacted
- No major clearcuts
- Improved screening
- 50% of riparian lands fenced
- Improved water management
- Little or no poaching

Review of T&E, Sensitive and Stocks of Concern
Northeast Regional Fish Management Meeting
March 30-31, 1993

District	John Day
Basin	John Day
Species	Wild Spring Chinook
Status	Depressed Stable Population

Previous Assessment	1991 index counts 4.8 redds per mile basinwide. 41% of five-year average of 11.6 redds per mile. Middle Fork and Granite Creek systems showing serious decline. Only 2.9 and 4.6 redds per mile respectively in 1991. (22 and 58% of five-year avg.) North Fork (overall) and North Fork Wilderness were 6.4 and 8.1 redds per mile respectively. Mainstem at 4.7 redds per mile, 45% of its five-year average. Prior to implementing recent hook regs. and increased enforcement, poaching was a problem.
Most Recent Findings	Index surveys (55 miles) in 1992 found 13.2 redds per mile. (129% of 5-year avg. of 10.2) Mainstem, North Fork, Granite Cr. System 133% of their 5-year avgs. Middle Fork only 99% of 5-year avg. @ 9.0 redds per mile. 1992 N. Fk. Wilderness index was highest on record at 28.1 redds per mile. The CEP Action Plan Critique for chinook salmon indicates that enforcement and regulations are successful at discouraging poaching.
Actions	Implemented and enforced (with OSP) terminal tackle restrictions to reduce chinook snagging. New regs., signing, etc. working well. Spring chinook designated high priority in ODFW-OSP CEP program. (ongoing)

Coordinated with watermaster to assure critical diversions are met and minimum flows are enforced. Monitor, maintain, and enforce an aggressive passage and screening program. (ongoing)

Continue intensive inventory to maintain stock database. (ongoing)

N. Fork acid spill settlement for $275,000 completed. High priority for restoring Middle Fork riparian lands.

Livestock exclosure completed on Middle Fork TNC lands. Management Plan drafted. Investigate off-channel rearing potential. (ongoing)

Pursue purchase/easements with private landowners holding critical chinook habitats on the Middle Fork. (ongoing)

Intensify habitat protection through implementation of forest plans and BPA efforts. (ongoing)

Current Assessment

Total Basin population greater than 300 fish. Complies with Wild Fish Mgt. Policy. (1992 estimate = 3,138 spawners.)

1992 Middle Fork estimate 414 spawners; Granite system 558 spawners. North Fork system continues to be highest return (1992 estimate = 1,614 spawners).

Middle Fork complied in 1992 with WFMP, however past habitat and water quality degradation (lost riparian system) still holds system well below average.

There is strong public and tribal interest to protect and enhance the wild spring chinook run in the Middle Fork and basinwide. A long-term habitat enhancement/recovery program is underway.

Primary reason for stock decline is loss of riparian habitat, poor habitat quality and high stream temperatures.

SUMMER STEELHEAD

WILD SUMMER STEELHEAD

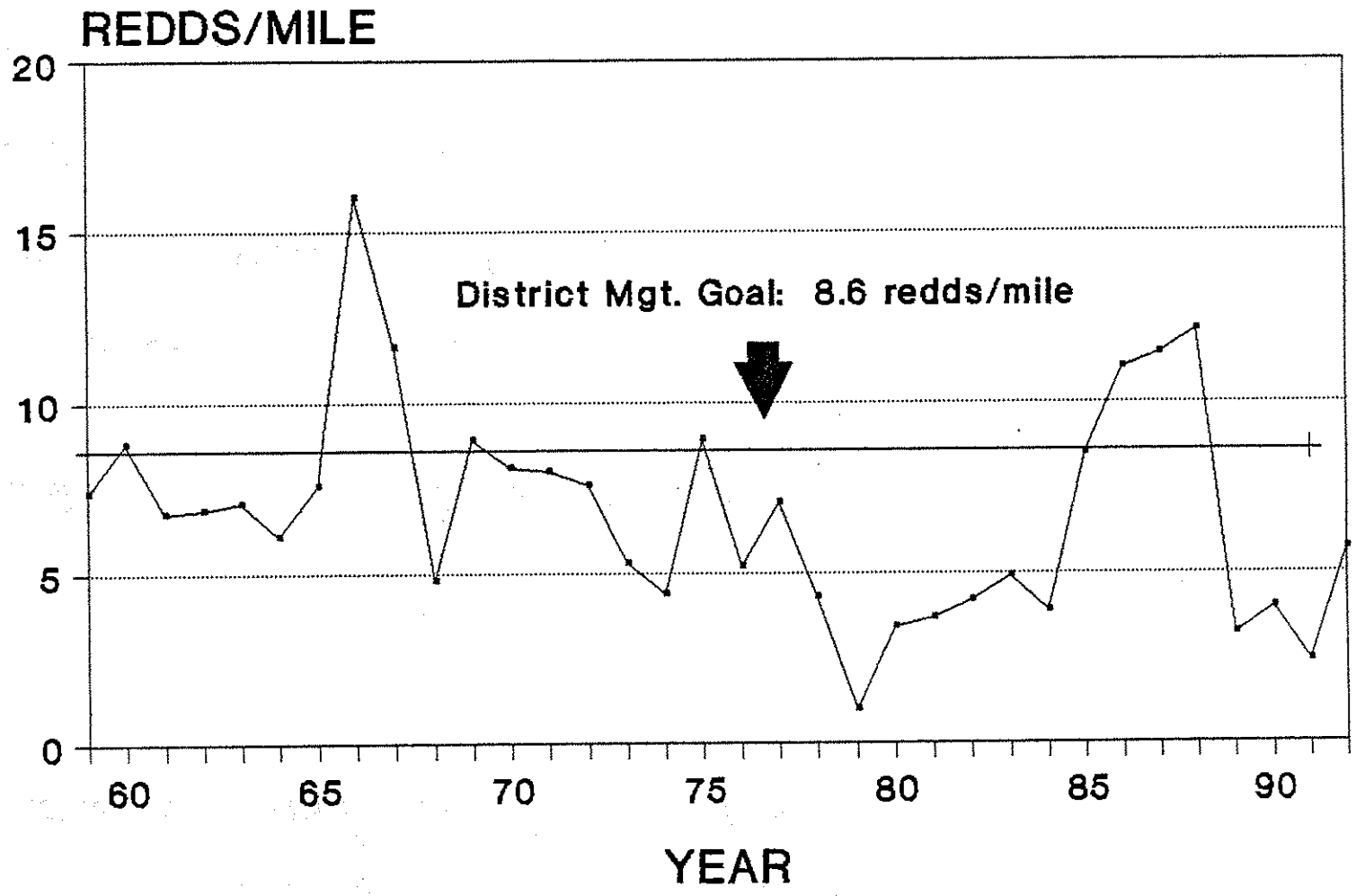
- 1992 index 5.7 redds/mile, 104% of 5-yr. avg.
- '91-92 run catch rate: 0.31 fish/angler, 10.9 hrs./fish
- '92-93 lower river creel: 3.45 to 1 hatchery : wild ratio, catch rates 0.32 and 13.8
- John Day River still high % of McNary fallback tags
- Rock Cr. - Harper, Irby, and McCoin ("the roller") fishways now complete
- Working with Watermaster to assure critical flows, passage
- Intensified habitat protection regarding Forest Health, FPA
- Steelhead "high" on OSP enforcement list
- Wild Bonneville A-run: 42,200 (no emergency regulations recommended)
- Columbia River wild A's only 13% of total Columbia steelhead escapement at Bonneville
- Rock Creek - first steelhead redds counted in over 40 years

STOCK ASSESSMENT
JOHN DAY WILD SUMMER STEELHEAD

Spawning Index Counts (Redds Per Mile)

Stream	1992	Five Year Avg.	Percent
Basinwide	5.7	5.5	104
John Day River	7.0	6.9	101
North Fork	3.6	3.1	116
South Fork	4.4	6.4	69
Middle Fork	9.5	10.2	93

JOHN DAY STEELHEAD
1959 - 1992



1992 John Day Arm Steelhead Fishery, Oct. 16-Dec. 15 /1

Period	Est. # Anglers	Total Hrs. Fished	Steelhead Catch Kept	Steelhead Catch Rel.	Hrs. per Stlhd.	Hrs. per Keeper	H/W Ratio
Oct. 16-31	477	2,454	143	44	13.1	17.2	3.25
Nov. 1-15	729	4,312	186	64	17.2	23.2	2.82
Nov. 16-30	510	2,999	1881	40	13.2	16.0	4.50
Dec. 1-15	253	1,463	115	35	9.8	12.7	3.36
TOTAL	1,969	11,228	632	184	13.8	17.8	3.45

/1 Effort and catch expansion based on two assumptions:
a) Sampled days representative of non-sampled days.
b) On sample days, 95% sample rate was achieved.

Other Notes:

* for Oct. 16-Dec. 15 period, 63% of anglers were OR residents 36% WA residents, and a combined 1% were residents of ID and CA.

WILD SUMMER STEELHEAD

Spawning Escapement Estimates

John Day River 1987-92

YEAR	ESTIMATED ESCAPEMENT
1987	34,268
1988	36,373
1989	9,619
1990	12,024
1991	7,214
1992	17,134

1990 McNARY FALLBACK STUDY-- Steelhead Tag Recovery.

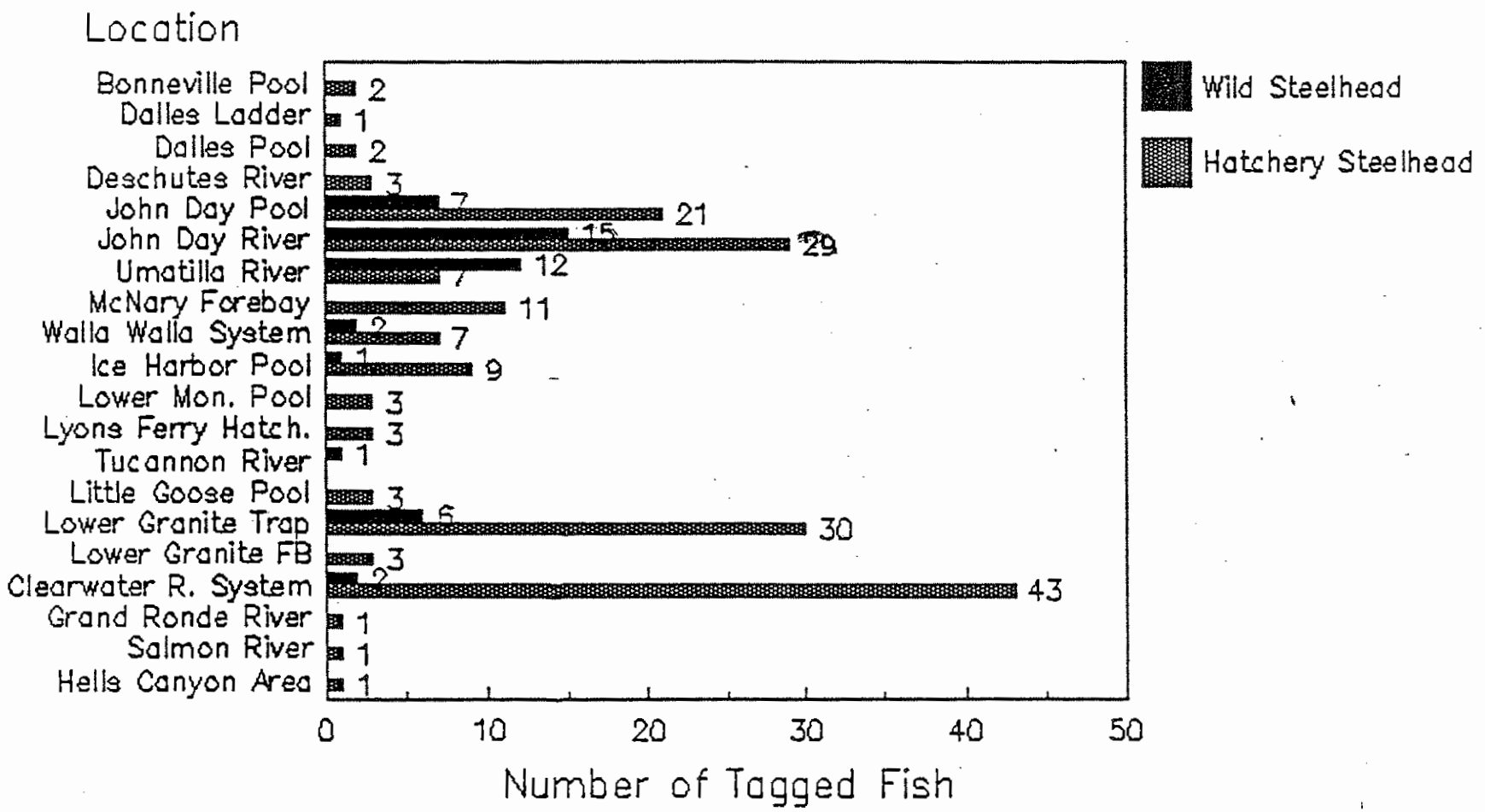
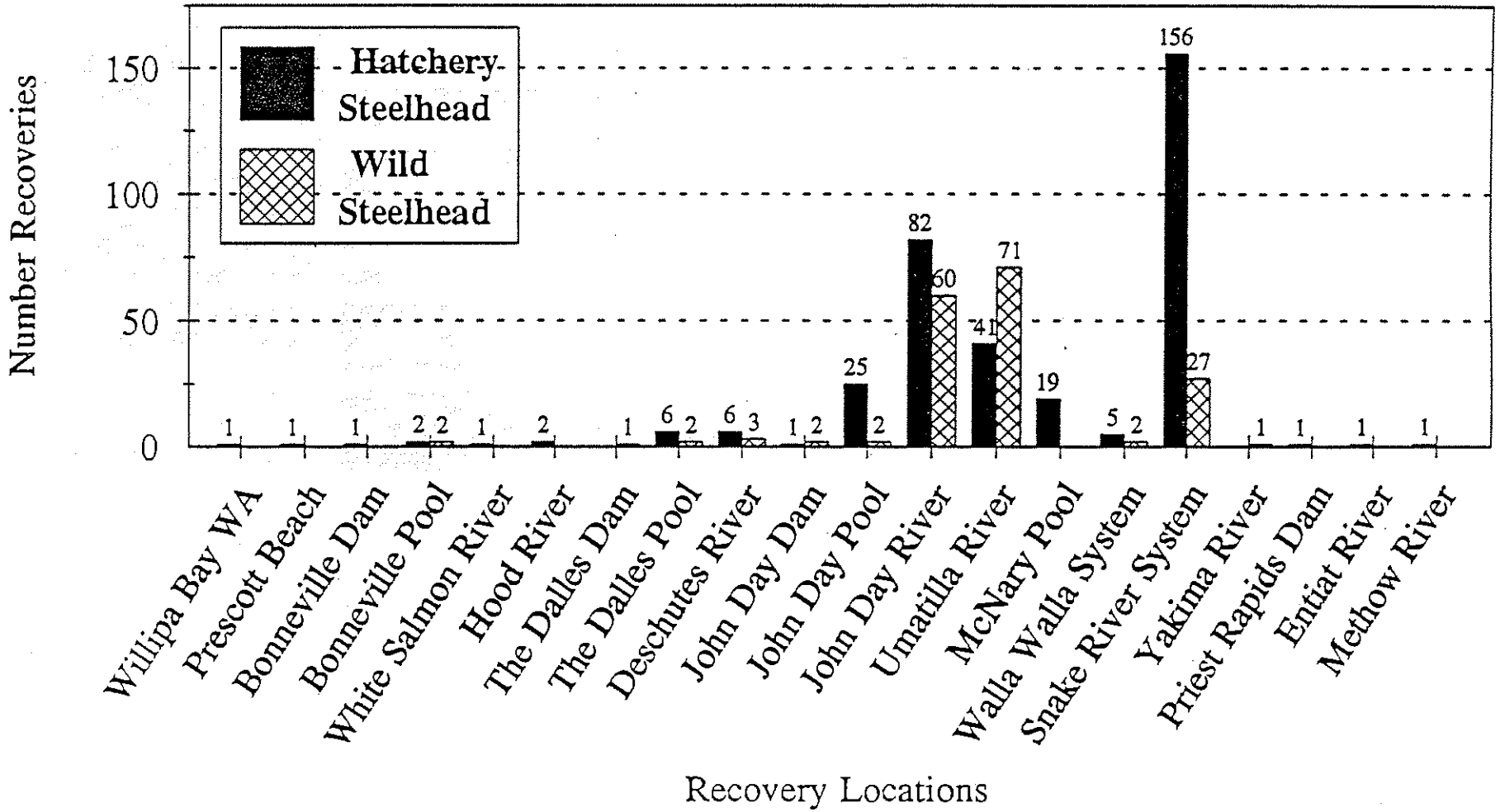


Figure 21. Recovery Locations For Steelhead Tagged During The 1991 Fallback Evaluation, McNary Dam.



Review of T&E, Sensitive and Stocks of Concern
Northeast Regional Fish Management Meeting
March 30-31, 1993

District	John Day
Basin	John Day
Species	Wild Summer Steelhead
Status	Depressed Stable Population

Previous Assessment

1991 spawning index count 2.4 redds per mile, 28% of mgt. objective, 35% of five-year average. Estimated steelhead escapement in 1990 was 7,214 adults.

In creel collected on the '90-91 run, catch rates were 0.27 fish/angler and 10.3 hours/landed fish.

Most Recent Findings

1992 spawning index 5.7 redds/mile, 104% of five-year average of 5.5 redds/mile, 66% of mgt. objective. Estimated steelhead spawning escapement in 1992 was 17,134 adults.

In creel collected on the '91-92 run, catch rates were 0.31 fish/angler and 10.9 hours landed fish.

Creel from John Day arm fishery (Oct. 15 - Dec. 15, 1992) shows 3.45 to 1 hatchery : wild ratio; catch rates 0.32 fish per angler and 13.8 hours per landed fish.

Minimal creel has been collected for the '92-93 upriver steelhead fishery due to icing and high, off-color river conditions.

Forty three McNary fallback tags were reported to us (from '91-92 run). WDF indicates John Day River still producing a high percentage of recoveries.

Four steelhead redds were found in Rock Cr. just below Anson Wright Park, the results of restoring passage at lower Rock Cr. diversion dams. This is the first steelhead spawning to occur in Rock Cr. in over 40 years, since the dams were built.

Actions

Completed the McCoin fishway ("the roller") on Rock Creek and improved the jump pool at Wolf Hollow dam upstream. This completes the major

passage projects on Rock Cr. which will access steelhead into upper Rock Cr. for the first time in over forty years.

Conducted 107.25 miles of steelhead spawning index counts in 1992 to maintain stock database.

We lobbied for commercial closure of the John Day Sanctuary through Tribes, Region, and Portland staff. Tribes agreed to full John Day Sanctuary protection during 1992 winter gillnet season.

Longview Ranch R&E project is complete; angler access stiles are installed and in use.

Habitat protection has intensified with new Forest guidelines, Forest Practices investigations, Forest Health salvage; BPA emphasis in 1990 shifted to steelhead, with projects on Canyon Cr., E. Fk. Canyon Cr., Mountain Cr., and Long Cr. Review EA's for compliance. (ongoing)

Screening improvements and new screens are being implemented to reduce losses. (ongoing)

Working with Watermaster to assure critical diversions are regulated, minimum flows and IWR's are protected, passage provided. (ongoing)

Wild summer steelhead are "high" on OSP enforcement priority list; lower river fall/winter fishery, middle and upper river winter/spring fishery, and North/Middle Fork spring fishery are all patrolled. (ongoing)

Pursue agreements with landowners holding critical habitats--get agreements and implement BPA projects. (ongoing)

Current Assessment

Summer steelhead runs continue to "hold their own" and provide a significant sport fishery in the John Day basin. Redd counts have been below management goal of 8.6 redds/mile for the last four seasons, but showed improvement in 1992.

Early indications from A-run wild dam counts and lower river fishery indicate John Day run should be average in 1993.

Emergency regs. will not be recommended due to 1992-93 StS run strength of 42,200 wild fish over Bonneville.

Concern continues over the small wild component of the total Columbia River steelhead run. In 1992 the wild component made up only 19 percent of the total run (13 percent were wild A's).

Hatchery steelhead continue to be a greater concern, with continued occurrence in lower river creel.

BULL TROUT

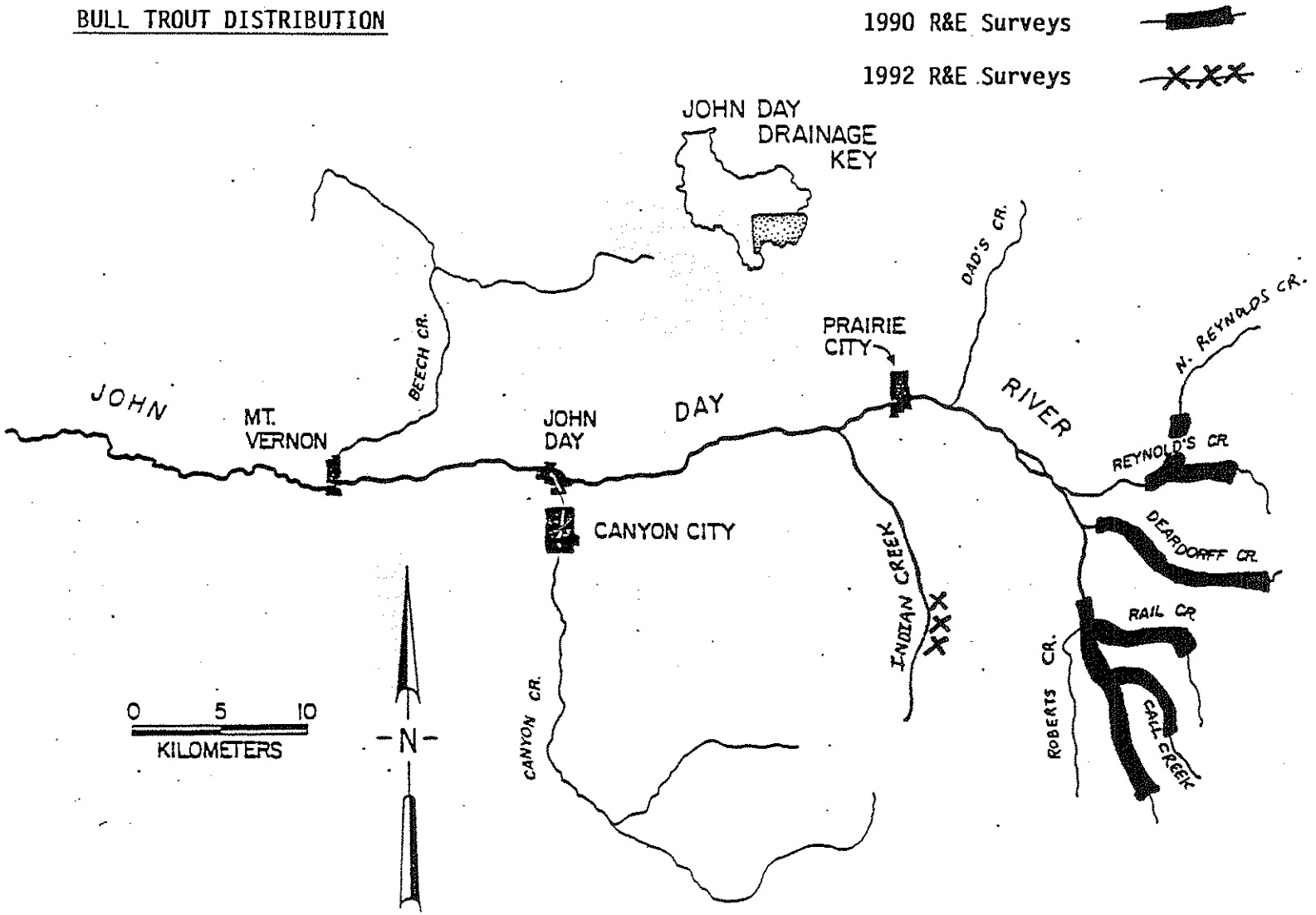
BULL TROUT

- Petition for Federal ESA listing statewide in '92
- Updated inventory: bull trout in only 24% of suspected mileage (65 of 266 miles)
- District creel reveals 80% decline in bull trout reported in catch 1961-92
- OSP say new trout regulations to protect salmon also saving bull trout
- A summary of all district bull trout data completed, March '93
- Will continue BuT habitat surveys in '93
- Bull trout temperature data collected on South Trail and Baldy creeks in '92
- Intensified habitat protection regarding Forest Health, FPA, grazing

STOCK ASSESSMENT
JOHN DAY BULL TROUT

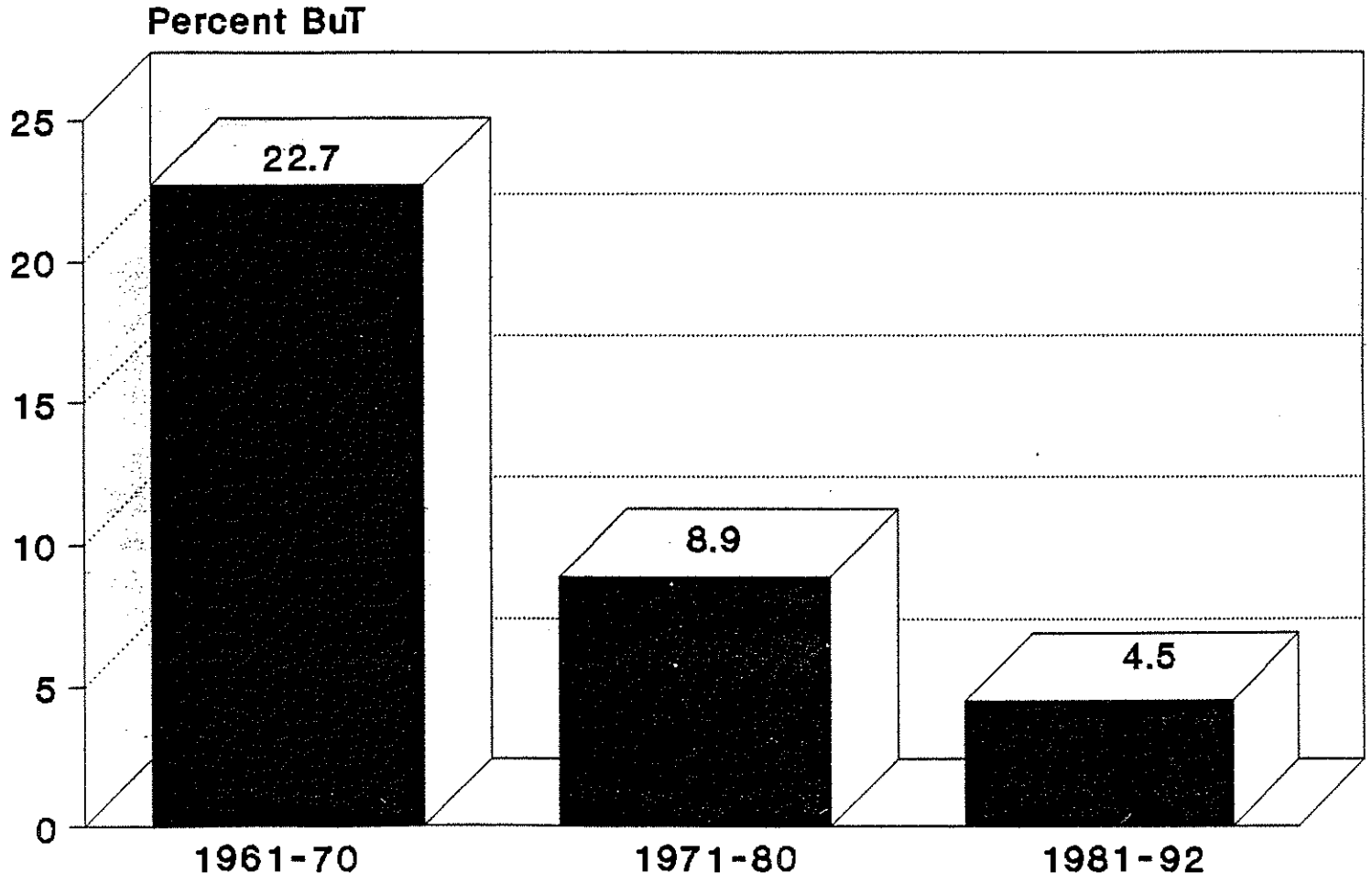
Distribution Inventory

Stream	Suspected Dist. (Miles)	Actual Dist. (Miles)	Percent
John Day River	49.25	23.25	47
North Fork	181.2	33.25	18
Middle Fork	35.75	8.25	23



Mainstem John Day River from the headwaters to Mt. Vernon.

Percentage of BuT in Random Trout Creel 1961-92

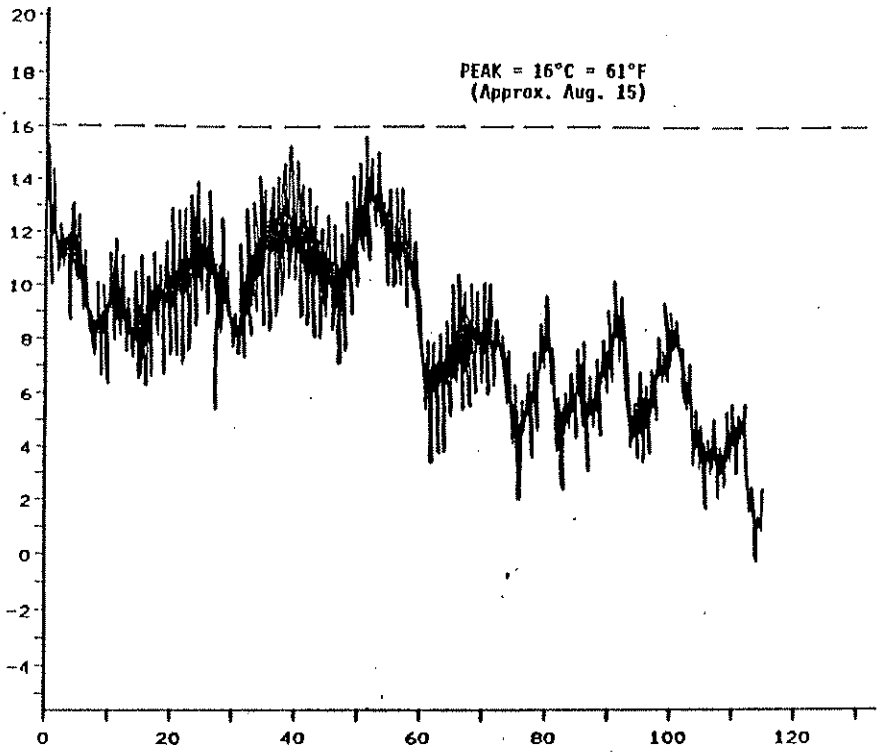


Percentage of Bull Trout in Random District Creel 1961-92

Period	% BuT /1
1961-70	22.7
1971-80	8.9
1981-92	4.5

/1 The number of BuT sampled, as a percentage of the total number of trout in the annual creel (only streams with BuT).

Ryan TempMentor SN902808 #002



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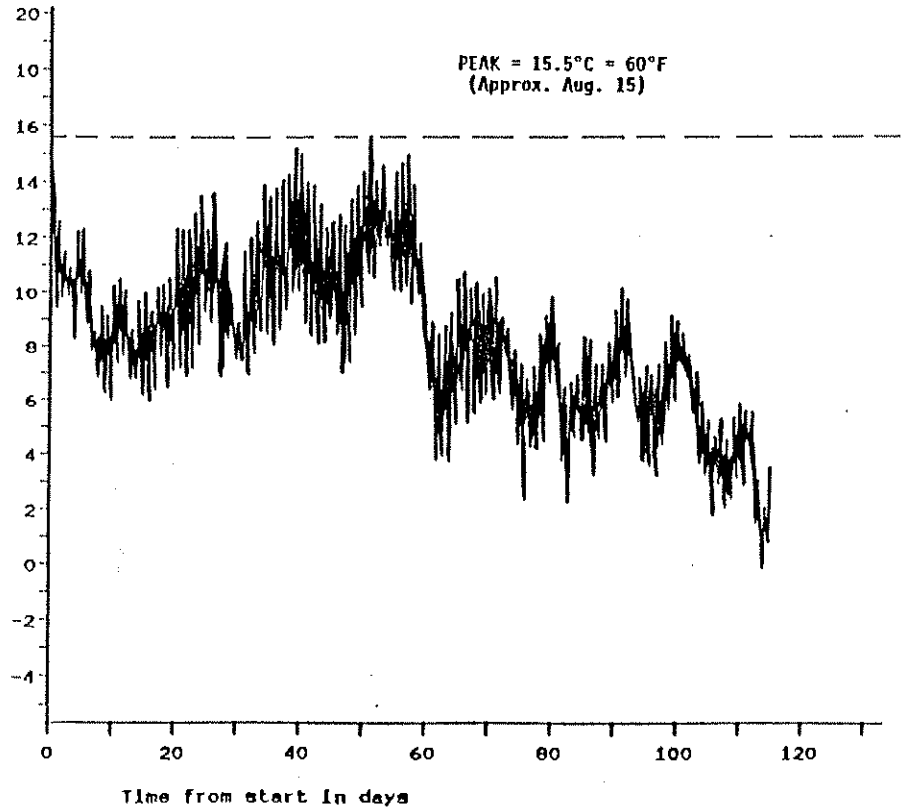
S.F.TRAIL CREEK 6/23/92 10/16/92 Every 30min

Ryan TempMentor SN902809 #002



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BALDY CREEK 6/23/92 10/16/92 Every 30min

Review of T&E, Sensitive and Stocks of Concern
Northeast Regional Fish Management Meeting
March 30-31, 1993

District	John Day
Basin	John Day
Species	Bull Trout
Status	State Sensitive - Documented Declining Distribution

Previous Assessment

Watershed degradation from logging, mining, roading, poor forest health. Riparian degradation from logging and grazing.

R&E Aquatic Inventory Survey, conducted in 1990 and 1991, showed basin summer distribution only 25% of suspected mileage (61 of 247 miles).

Only 33 of 181 miles of suspected summer distribution on North Fork held bull trout. (1990-91)

Genetic studies indicate one Col. R. bull trout stock, and populations are now quite isolated due to environmental barriers.

AFS lists bull trout at "Moderate Risk" in upper mainstem, "High Risk" in Middle Fork, "of special concern" in North Fork. (re: extinction)

Most Recent Findings

R & E Aquatic Inventory Survey, conducted in 1992, brings basin summer distribution to 24% of suspected mileage (64.75 of 266.25 miles).

1992 R&E surveys added only Indian Cr. (1.25 mile) and Clear Cr. (2.5 miles) to known summer distribution.

Analysis of creel from 1961 to 1992 indicates decreasing incidence of But, from 22.7% in the 60s to 4.5% in the 80s.

Actions

Intensify habitat protection through increased involvement in monitoring of Forest Plans, Grazing AMP's, Federal biological evaluations, timber sales, and Forest Health salvage sales. (ongoing)

Bag limit lowered to two bull trout daily in N.E. Oregon. (ongoing)

Continue Aquatic Inventory Surveys with shifting priority to habitat surveys over presence/absence. Presence/absence in the middle tribs. of the North Fork is still needed. (ongoing)

Continue to collect stream temperature data from selected bull trout tributaries.

Montana filed petition with USFWS in November 1992 for listing of bull trout as threatened in Montana, Idaho, Oregon and Washington.

Cooperating OSP officers have agreed to increase awareness and notation of bull trout observations.

Reviewing and commenting on timber/salvage sales; have modified several sales based on sensitive species habitat. (ongoing)

Amendment proposal submitted to NPPC F&W Program by Buchanan (ODFW), Howell (USFS), and James (CTUIR) for BuT life history, habitat, and limiting factors work in John Day, Grande Ronde, and Umatilla basins. (Supported by district.)

Compiled all known district BuT information into "fact packet" and presented to Bob Hooton on March 1. (Initial stages of restoration efforts with USFS & Tribes.)

Current Assessment

Based on apparent reduction in distribution and increasing intensity of timber harvest and Forest Health salvage, cannot argue with AFS request for status review.

Spawner populations greater than 300; complying with WFMP, but apparently declining. Need to intensify habitat protection.

Historic migrations of bull trout between mainstem habitats and spawning tributaries already gone. No interchange with Colbumia River anymore.

WESTSLOPE CUTTHROAT

WESTSLOPE CUTTHROAT TROUT

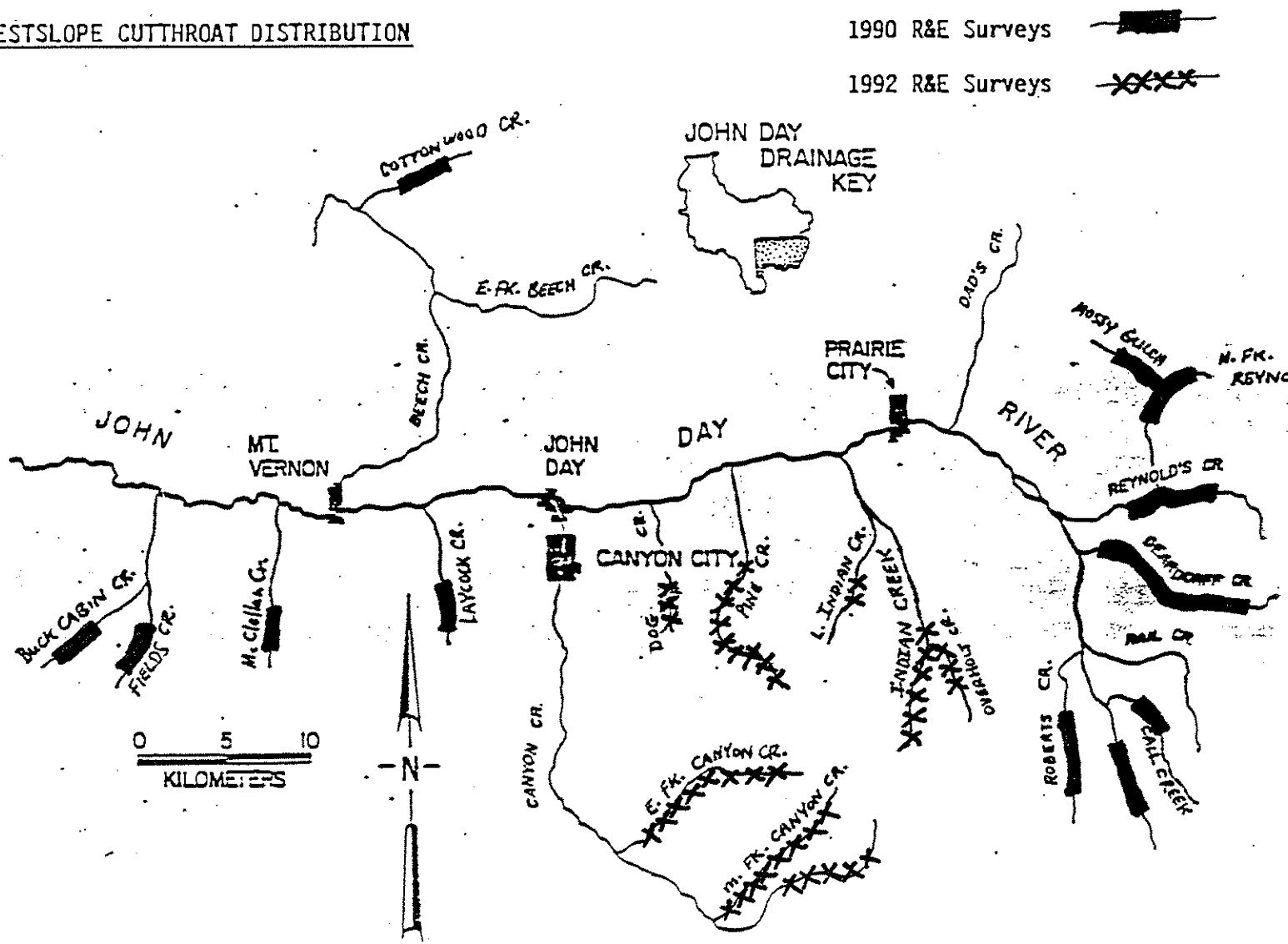
- State sensitive - depressed stable population
- Distribution limited to 41 percent of suspected habitat
- Mainstem bypass counts only 42% of previous ten year avg.
- Watershed, riparian, habitat and water quality degradation greatest impact
- Cutthroat found extensively in upper mainstem tribs. - 1992 R&E surveys (24.75 miles of newly confirmed habitat)
- No westslope cutthroat found in 1992 N. Fk. and M. Fk. R&E surveys
- Intensified habitat protection
- Continue R&E surveys for presence/absence and habitat assessments
- Review/comment/require BE's on land actions affecting cutthroat
- Presently meet WFMP in known habitats (greater than 300)

STOCK ASSESSMENT
JOHN DAY CUTTHROAT TROUT

Distribution Inventory

Stream	Suspected Dist. (Miles)	Actual Dist. (Miles)	Percent
John Day River	126.50	59.0	47
North Fork	52.5	14.0	27
Middle Fork	0	0	0

WESTSLOPE CUTTHROAT DISTRIBUTION



Mainstem John Day River from the headwaters to Mt. Vernon.

Review of T&E, Sensitive and Stocks of Concern
Northeast Regional Fish Management Meeting
March 30-31, 1993

District	John Day
Basin	John Day
Species	Westslope Cutthroat Trout
Status	State Sensitive - Depressed Stable Population

Previous Assessment	Cutthroat summer distribution limited to 37% of suspected Mileage (1990 R&E Aquatic Inventory Survey). Recent ten-year avg. Bypass trap count in upper mainstem only 42% of previous ten-year avg. Watershed degradation from logging, mining, roading, poor forest health. Riparian degradation from logging and grazing.
Most Recent Findings	No cutthroat found in 1992 North Fork and Middle Fork surveys by R&E crew. Cutthroat found in eight upper mainstem tributaries by 1992 R&E survey crew. (24.75 additional miles of distribution confirmed.) Basin summer distribution is now 41% of suspected mileage (73 of 179 miles).
Actions	Intensify habitat protection through increased involvement in monitoring of Forest Plans, grazing AMP's, Federal biological evaluation, timber sales, and Forest Health salvage sales. (ongoing) Continue R&E Aquatic Inventory Surveys with shifting empnasis on habitat surveys over presence/absence. (ongoing) Reviewing and commenting on timber/salvage sales; have modified several sales based on sensitive species habitat. (ongoing)
Current Assessment	Spawner populations greater than 300; complying with WFMP; apparently stable although habitat is declining. Need to intensify habitat protection.

PACIFIC LAMPREY

PACIFIC LAMPREY

- Observed depressed population
- Lamprey held high value in Tribal culture and as food source
- Recent low observance of adults
- Ammocoetes still quite numerous
- Bypass trap data recorded since 1991 for lamprey
- Will continue to monitor bypass traps
- Document all adult sightings
- Sightings becoming rare, adults declining
- Major problems presumed mainstem Col. passage and habitat loss
- Six lamprey adults and three redds observed in spring 1992

LAMPREY - JOHN DAY BYPASS TRAPS

Year /1	Trap#	Stream	Pacific /2	Brook /2
1991				43 /3
1992	18	John Day R.	24	0
	148	John Day R.	22	76
	161	S.F. John Day R.	10	0
	221	Beech Cr.	29	2
	361	Murderers Cr.	19	50
	499	Rock Cr.	2	0
			106	128

/1 Trap period, 3-1 to 9-30.
/2 Adult #'s vs. ammocoete #'s not recorded.
/3 Species not recorded.

Review of T&E, Sensitive and Stocks of Concern
Northeast Region Fish Management Meeting
March 30-31, 1993

District John Day

Basin John Day

Species Pacific Lamprey

Status Observed Depressed Population

Previous Assessment

Lamprey hold high value in tribal culture. Historically important food source.

Low observance of adults in recent times. Within last few years only a few spawning adults have been seen on steelhead surveys on mainstems of Middle Fork and South Fork.

Ammocoetes are numerous in rotary screen bypass traps, but general decline in adults is observed. Bypass trap data has recorded catch only since 1991.

Most Recent Findings

Two live adults, two dead adults, and two redds were observed on the lower John Day River (rm 80-150) in the spring of 1992.

A spawning pair was observed on a redd near rm 65 on the Middle Fork John Day, during district steelhead surveys.

A total of 106 adult and ammocoete pacific lamprey were recorded in 1992 bypass traps. (mainstem, S. Fk., Beech Cr., Murderers Cr., Rock Cr.)

Actions

Continue to monitor bypass trap counts.

Document <u>any</u> observations or capture of Pacific lamprey, in all life stages.

Current Assessment

Support listing as a State sensitive species. Adult returns appear to be declining, based on rarity of sightings.

Concern by tribal biologists over apparent decline.

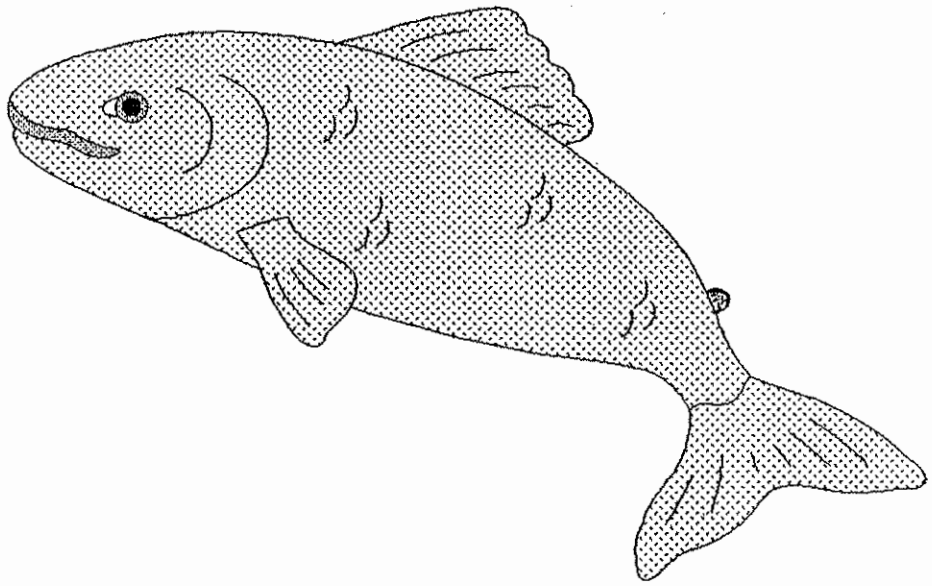
Decline heavily linked to mainstem Columbia passage problems; secondarily to habitat degradation and depressed salmonid runs.

Wild Fish Population List
Proposed Changes

- "New" BuT distribution (R&E) - Indian Cr., Clear Cr.
- "New" CT distribution (R&E) - eight mainstem tributaries
- Middle Fork spring chinook - adult spawners > 300 - 1992
- "Cleaned-up" list based on 1992 R&E surveys
- Transfer updated list to Mark Chilcote

HABITAT PROTECTION/RESTORATION

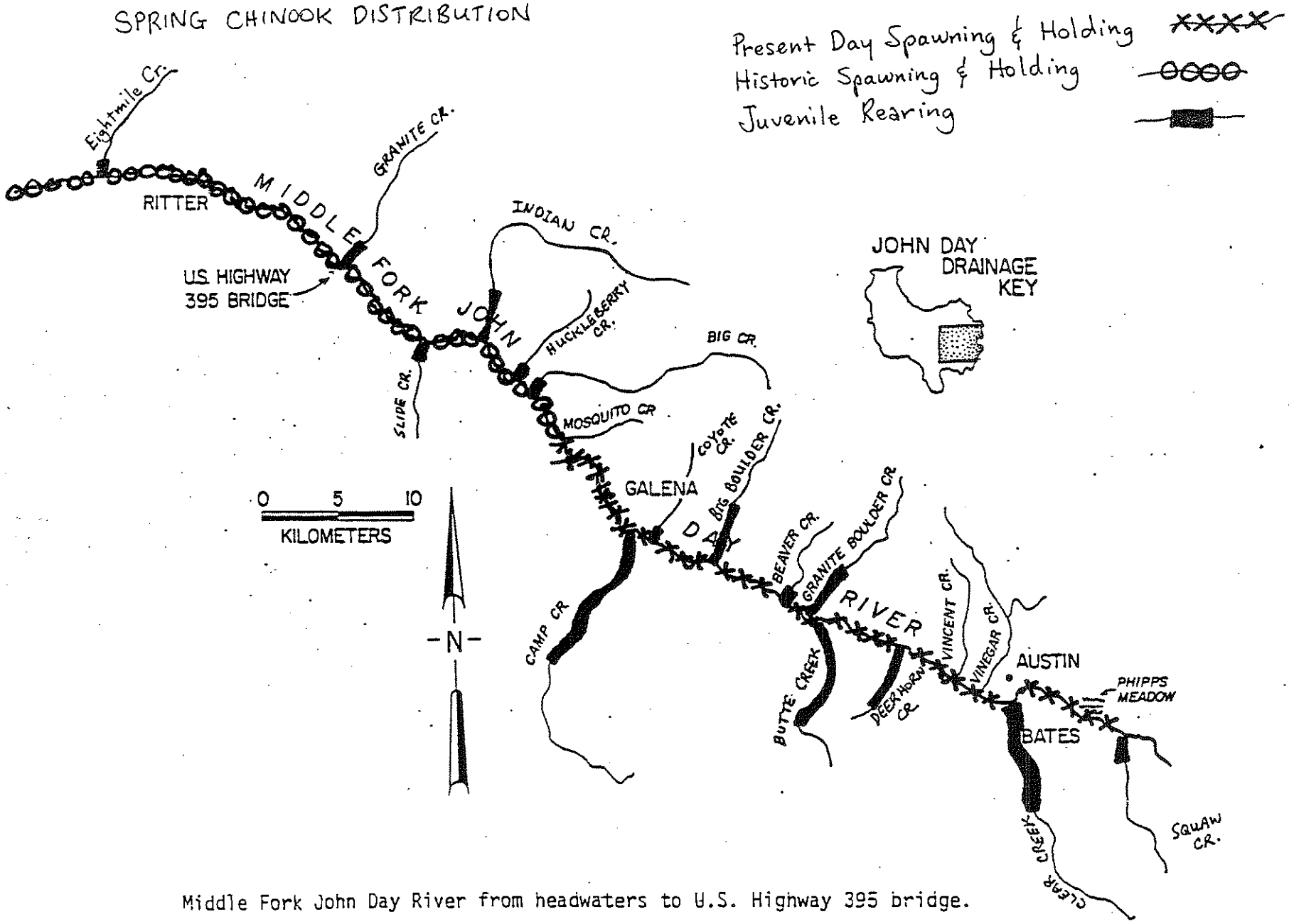
MIDDLE FORK JOHN DAY
Spring Chinook and Bull Trout
Habitat Protection and
Restoration Strategies



E.W. Claire
M.E. Gray
March 1993

Wild Spring Chinook
Population Status

- Historical Distribution
  - Mainstem Middle Fork
  - Major tributaries - juveniles
- ESA Status
  - Oregon stock of concern
  - AFS stock of special concern
- Present Distribution
  - Mainstem above Mosquito Cr. - adults
  - 18 tributaries - juveniles
  - All tenuous



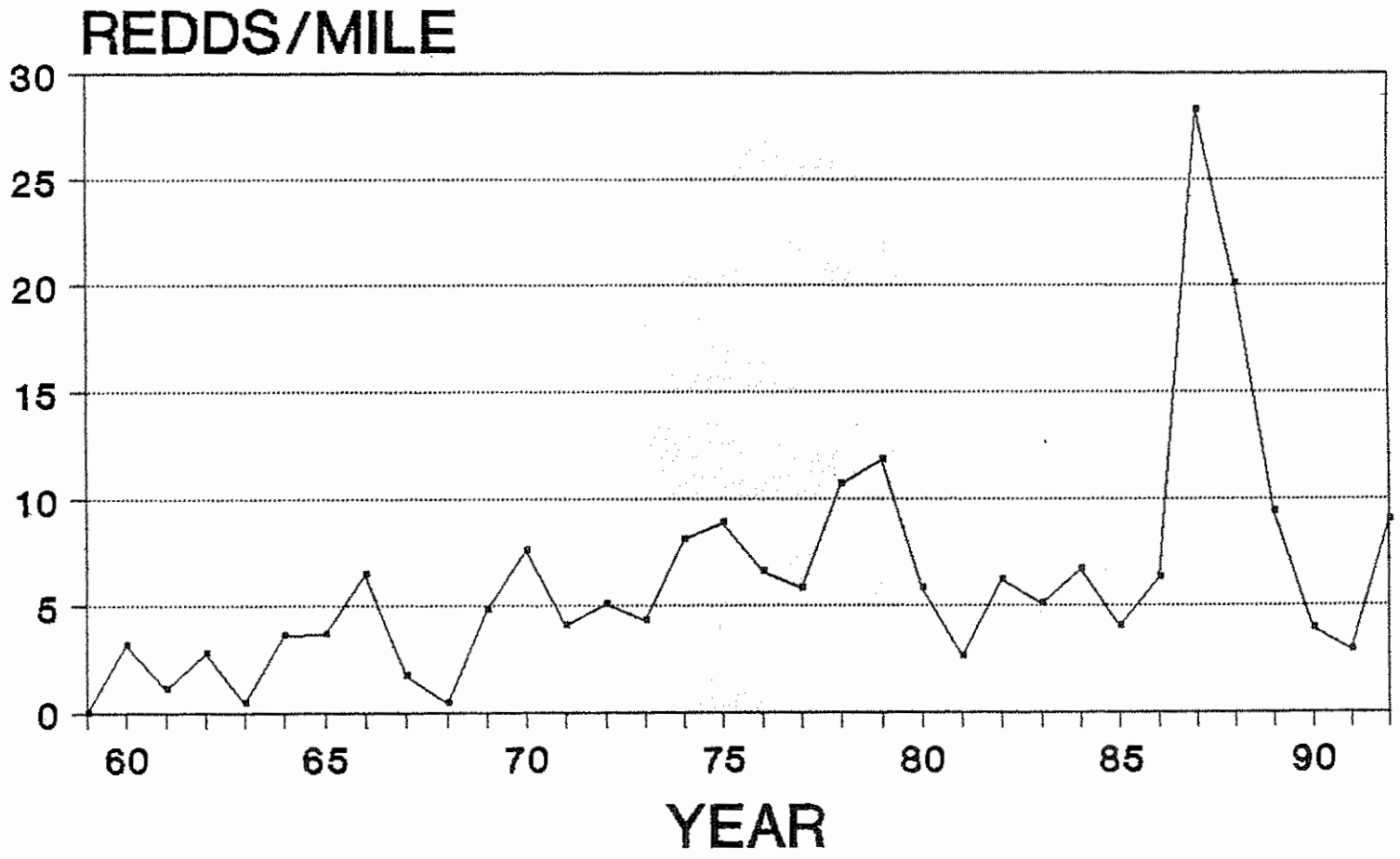
Middle Fork John Day River from headwaters to U.S. Highway 395 bridge.

Table 4.
Usual and accustomed fishing and hunting sites of the Confederated Tribes of the Umatilla Indian Reservation in the Middle Fork John Day River. (Swindell Report 1941)

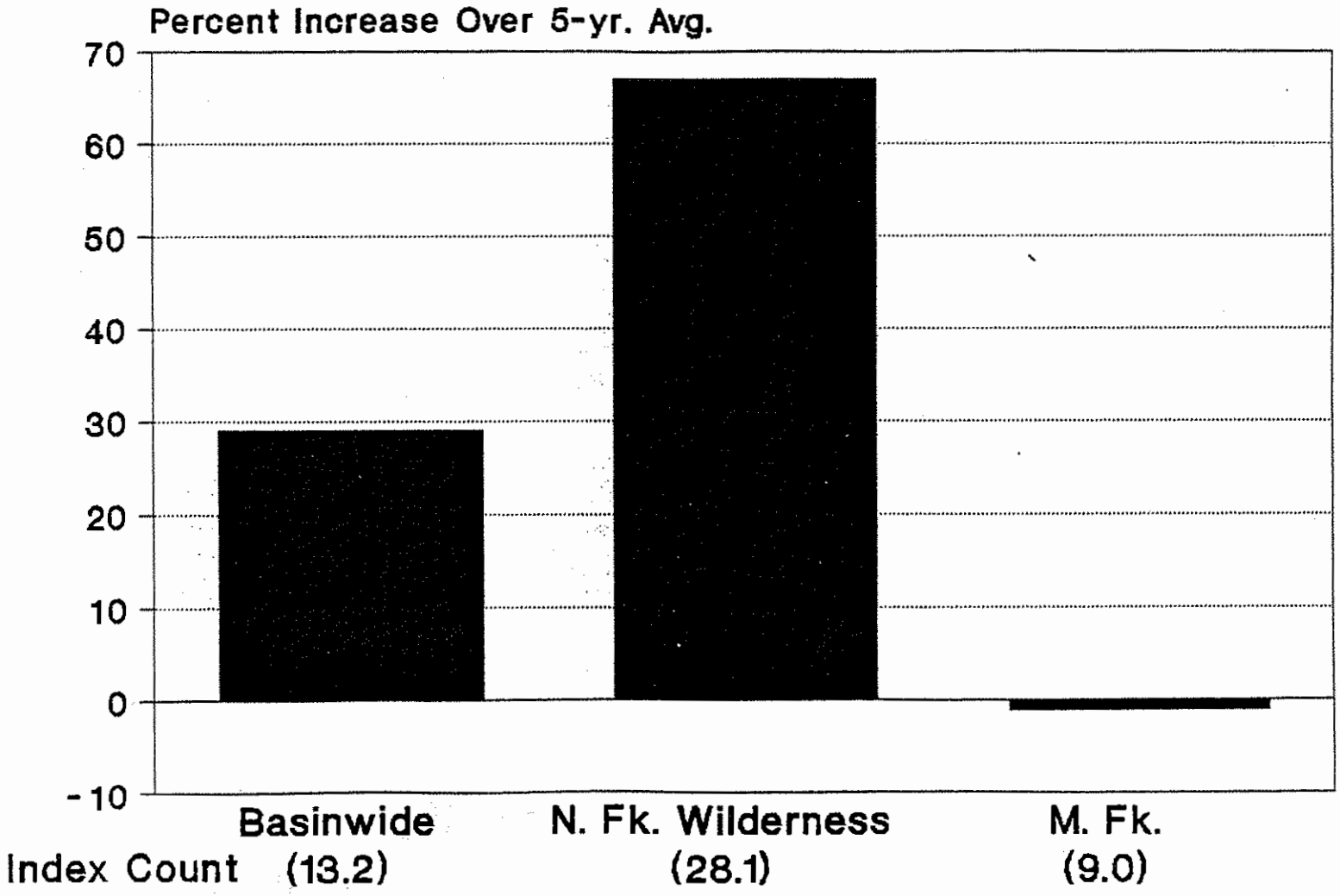
STREAM	LOCATION	INDIAN NAME	SPECIES [a]	TRIBES [b]	METHOD [c]	USAGE [d]
M Fk J.D.R.	M Fk - N Fk confl.	Pow-wa-chakt	SA	UM + CR	Weirs	No
M Fk J.D.R.	RM 30 - near Paradise Canyon	Ya-we-shin-ma	SA	UM	Weirs	No
M Fk J.D.R.	RM 55 - near Ragged Cr	Nook-sinmos-saw-us	TR, SA, HG	UM + RC	Hook and Nets	Yes
M Fk J.D.R.	RM 63 - near Caribou Cr	Tum-sque-pa	SA, TR, HG	UM + RC	Hook and Nets	No
M Fk J.D.R.	near Bates, OR	We-wa-nite	TR + HG	UM + RC	Hooks	No

a
Species harvested: SA=Salmon; TR=Trout; WF=Whitefish; HG=Hunting Grounds also.
b
Tribes which use fishing sites: UM=Confederated Tribes of the Umatilla Indian Reservation; RC=Rock Creek; CR=Columbia River; WS=Warm Springs
c
Fishing methods before 1941; present methods include grab hooks and hook and line only
d
Refers to site usage as of 1941; most sites used then are occasionally used today.

MIDDLE FK. SPR.CHINOOK
SPAWNING COUNTS



JOHN DAY WILD SPRING CHINOOK
Middle Fork Population - 1992



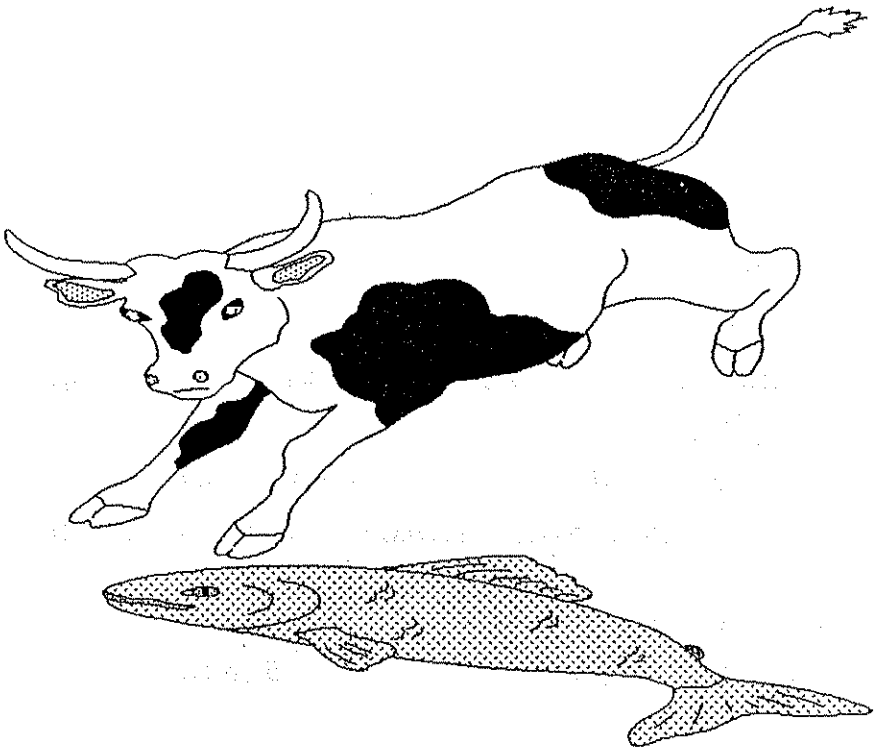
Spring Chinook
Life History Information

Preferred habitat
- Slow to moderate gradient streams
- < 63°F
- Good instream structure
- Well shaded habitat - riparian
- High water quality
- Large deep pools - adult holding
- Braided channels
- Beaver ponds
- Big wood (LOD)
- Balanced pool/riffle ratios

Reproduction
- < 58°F
- Abundant, clean, properly sized gravel
- High DO
- Clear, cold water - pollution fee
- Abundant well shaded pools for juveniles

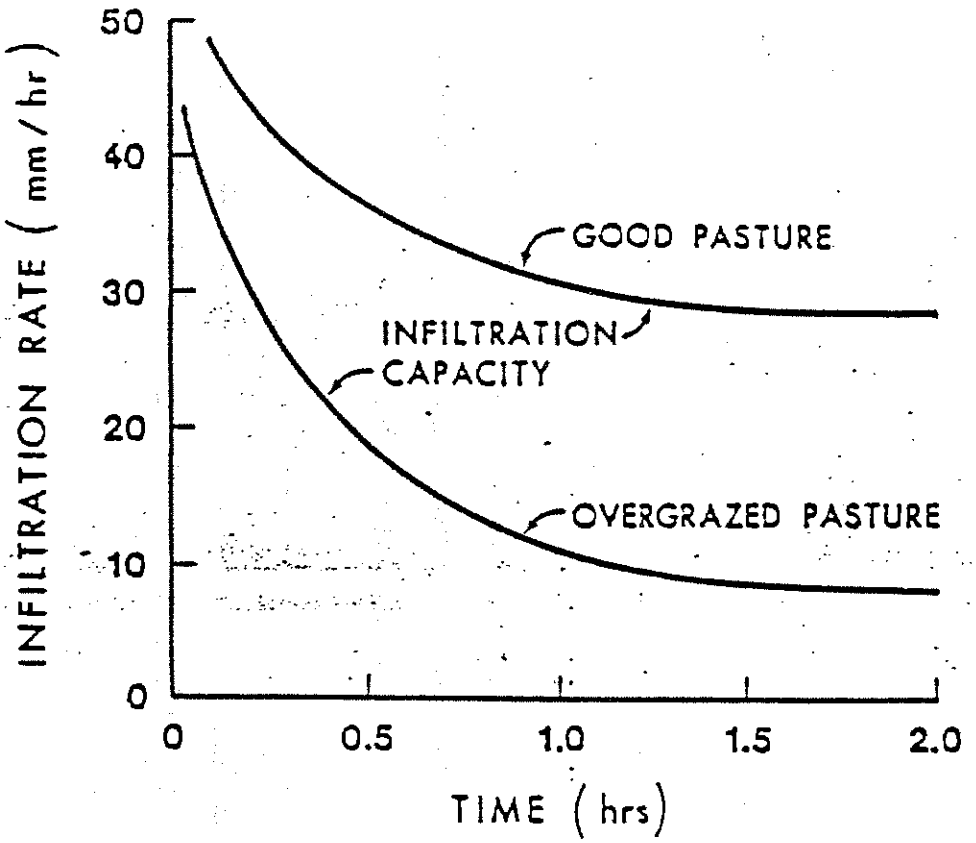
Food habits
- High invertebrate population
- Detritus
- Leaf shredders
- Terrestrial - riparian
- Food chain intact

SPRING CHINOOK
Limiting Factors



Spring Chinook
Limiting Factors

- Habitat loss
  - Riparian degradation - grazing, timber, roads, development, mining
  - Temperature problems
  - Geomorphic problems
  - Sediment - impacted gravel
  - Loss of food chain
  - Loss of beaver ponds
  - LOD loss
  - Loss of meanders - braided channel
  - Loss of pool habitat - rearing and adult
  - Loss of instream structure
  - Watershed loss-springs and cold seeps
  - Off channel habitat
- Competition and predation
  - Predators - northern squawfish, sculpin
  - Competitors - dace - shiners
- Over winter survival
- Not seeding level - 1988 research

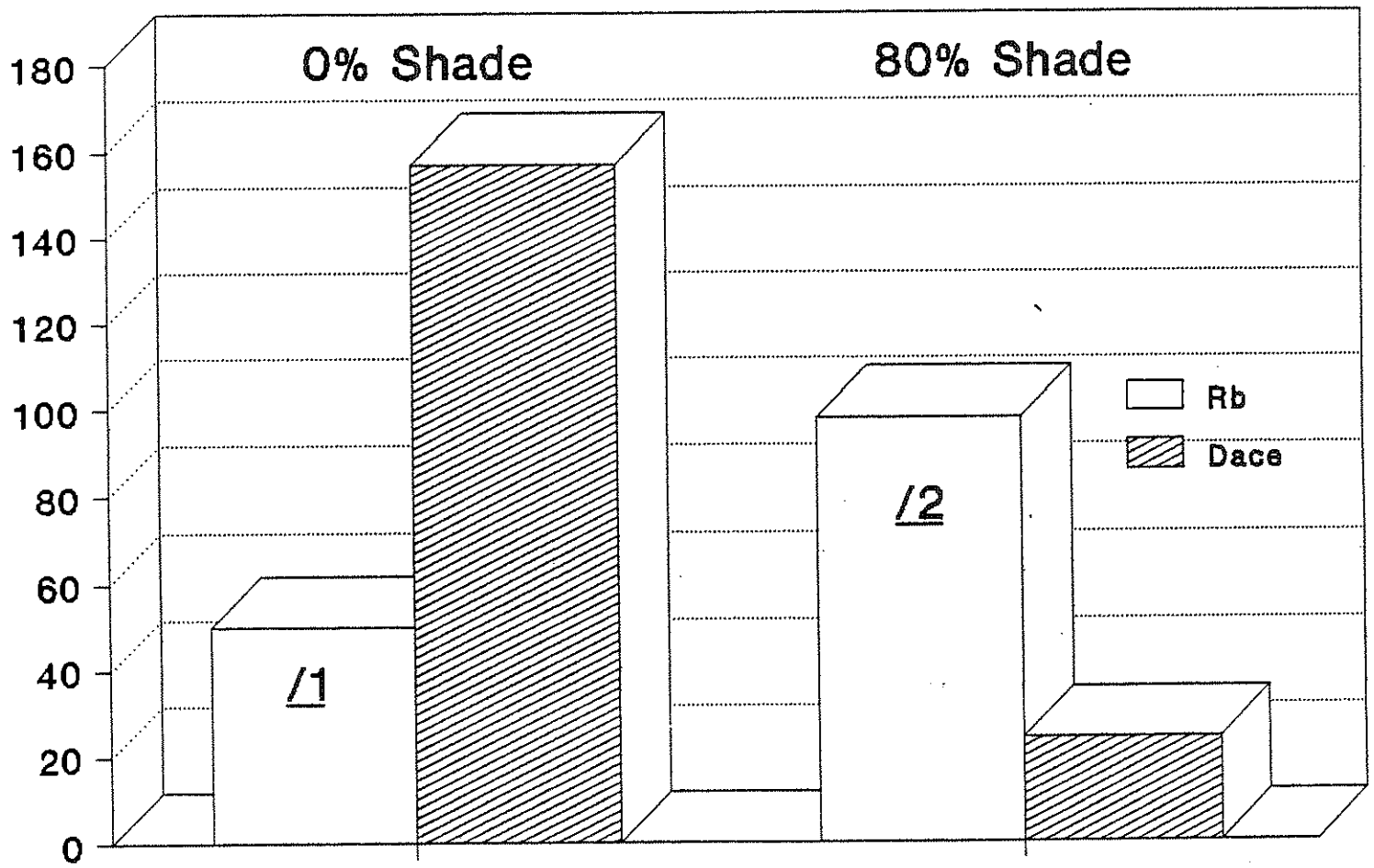


REDUCED INFILTRATION

* Grazing
* Logging
* Roads

4.1. Infiltration-capacity curves for soils subjected to different levels of grazing.

CAMP CREEK 1974-79



/1 Older age classes - 0's absent

/2 All age classes represented

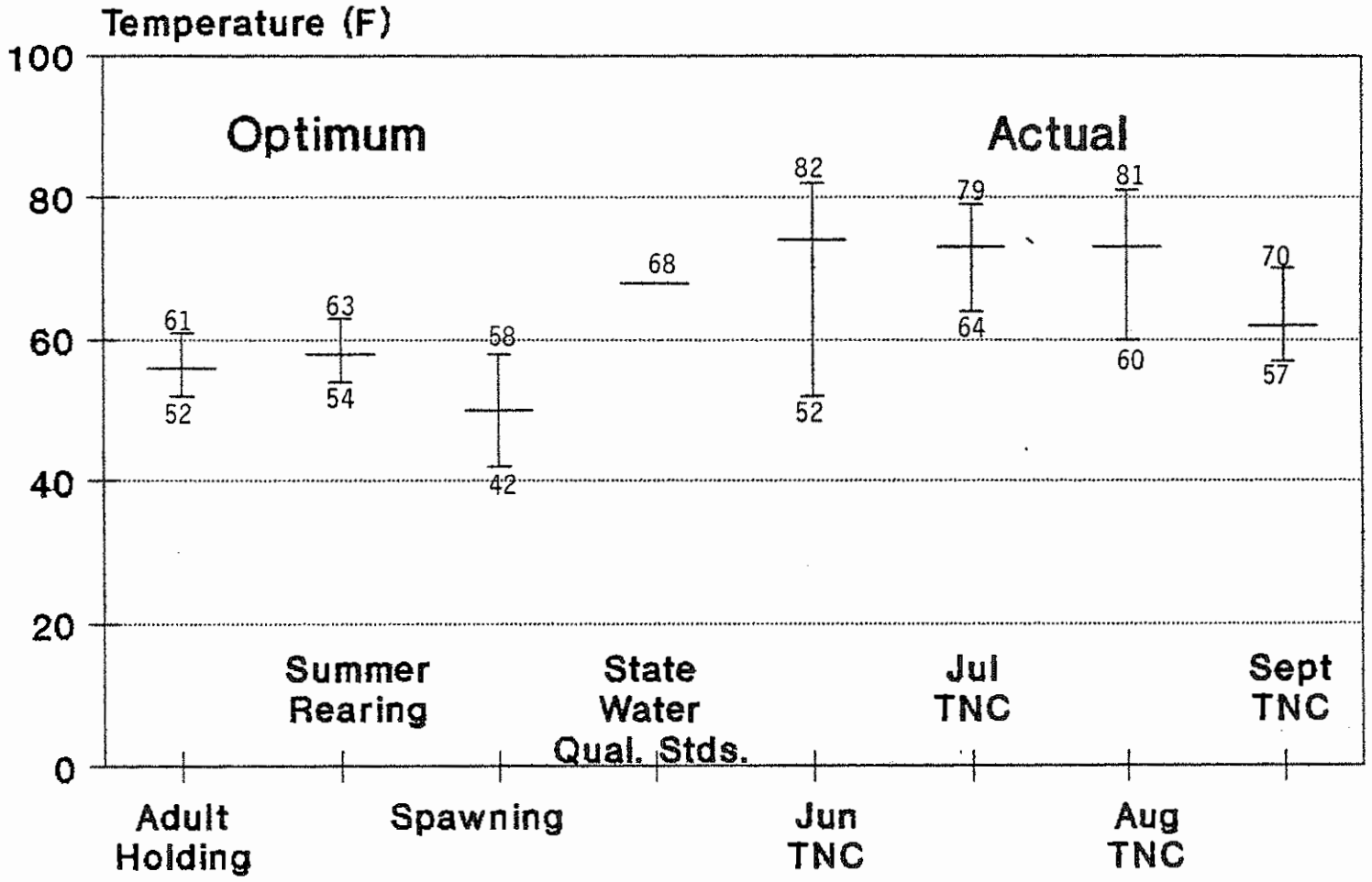
Rainbow vs Forage Fish
Camp Creek, 1974-79

	0% Stream Shade	80% Stream Shade
Rainbow	50 /1	98 /2
Dace	157	24

/1 Primarily older age class - 0's absent

/2 All age classes represented

SPRING CHINOOK
MIDDLE FORK WATER TEMPERATURES



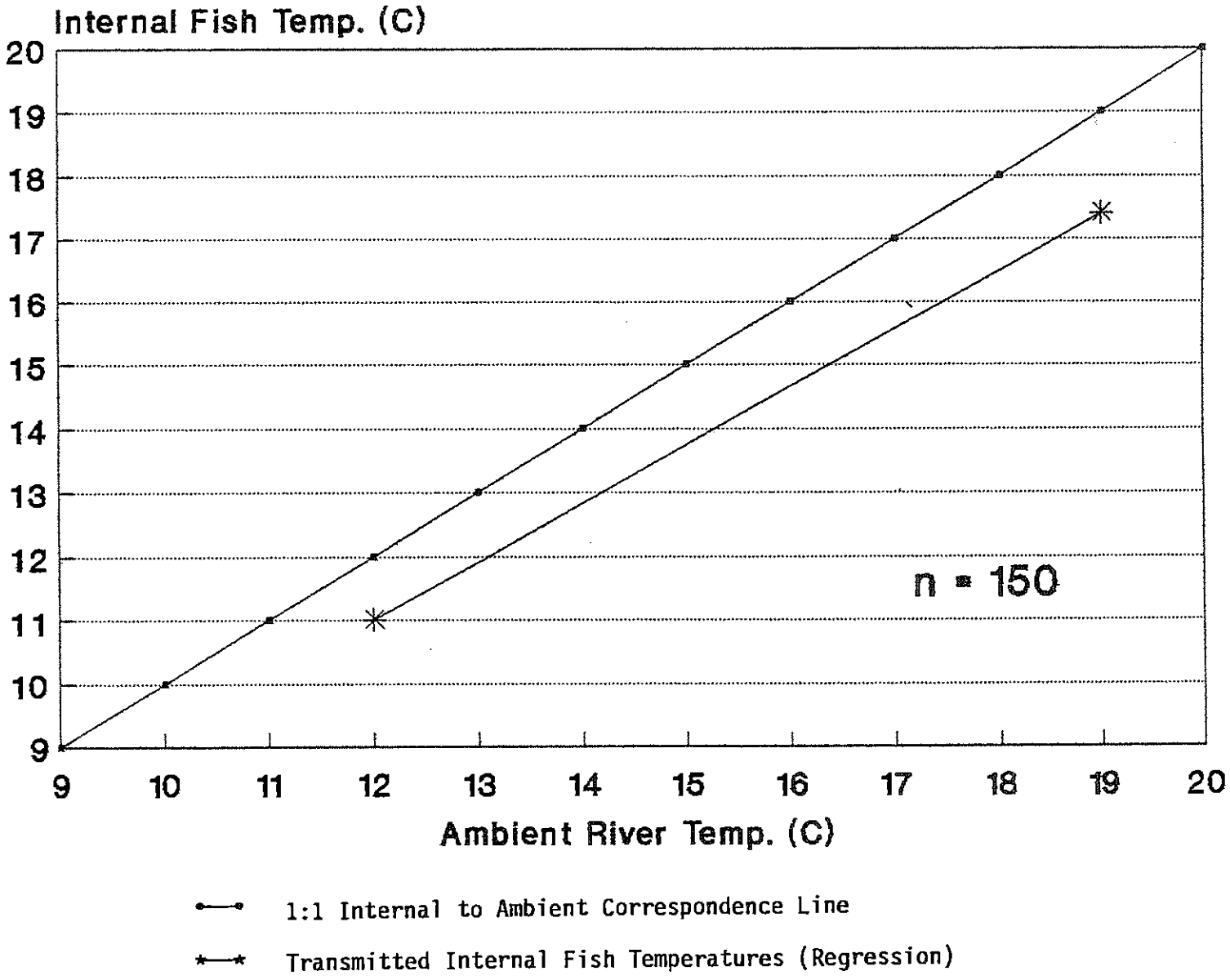
DAILY MAXIMUMS

YAKIMA SPRING CHINOOK
Behavioral Thermoregulation - Thermal Refuges

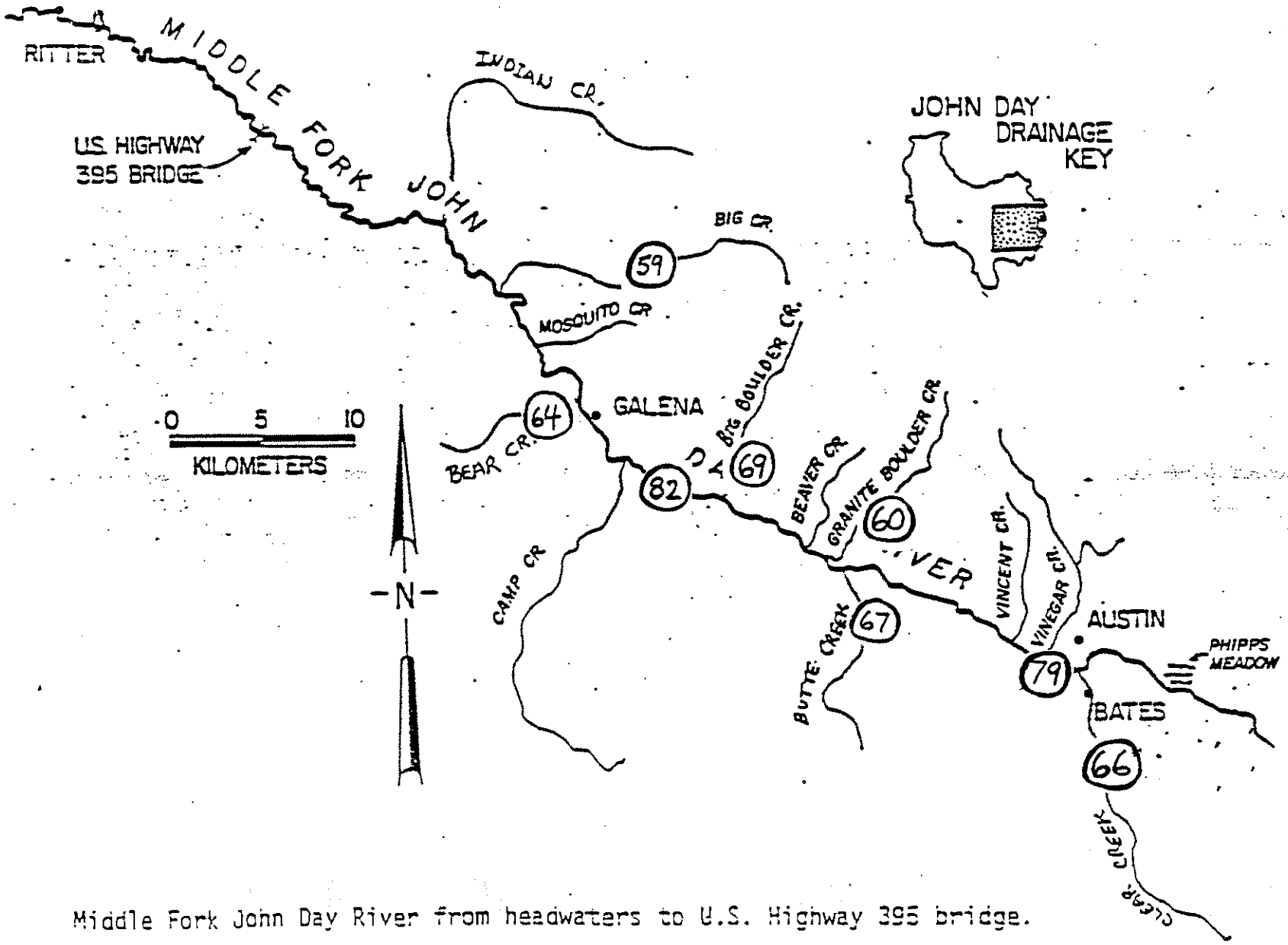
- Poikilotherms - salmonid metabolic rate bound to temp.
- Internal avg. 4.5 F less than ambient river temperature
- Thermal Refuges:
  - ✓ Large pools
  - ✓ Tributaries
  - ✓ Rock Outcroppings
  - ✓ Riparian vegetation
  - ✓ Islands (Hummocks)
  - ✓ Undercuts
  - ✓ Re-emergence of subsurface flow - seepage
- Metabolic rate doubles with each 18 F increase
- Refuges allow energy conservation for:
  - ✓ Survival
  - ✓ Gamete production
  - ✓ Mate selection
  - ✓ Redd construction
  - ✓ Spawning
  - ✓ Redd guarding
  - ✓ Egg survival

- Middle Fork
  - ✓ Cold tributaries
  - - Riparian vegetation
  - - Undercuts
  - - Springs
  - - Cold seepage
  - - Upwellings, seeps
  - - Pool distribution
  - - Rock outcroppings
  - - Islands
  - - Large wood

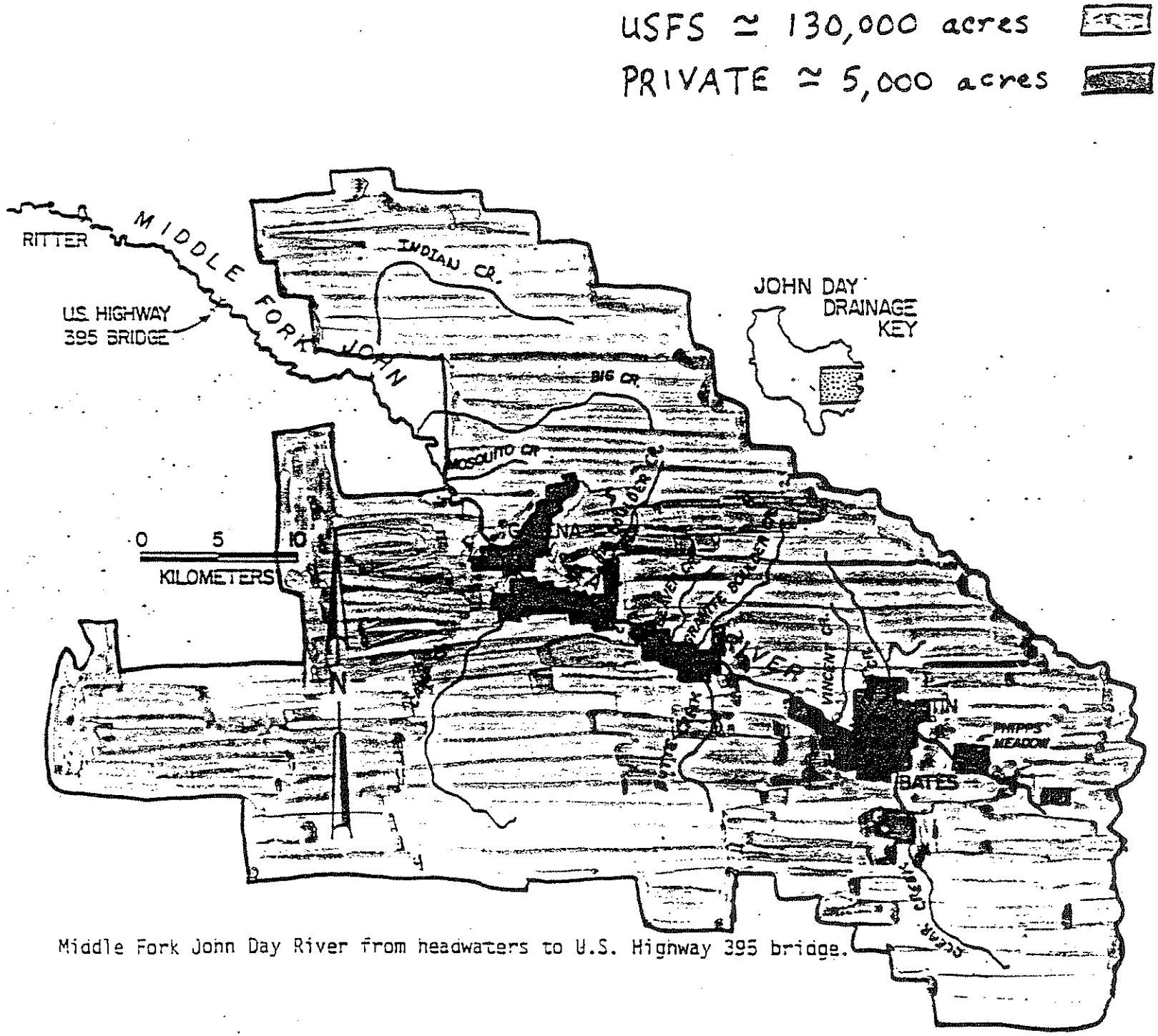
YAKIMA CHS - THERMAL REFUGES



PEAK SUMMER STREAM TEMPERATURES -- SELECT MIDDLE FORK SITES



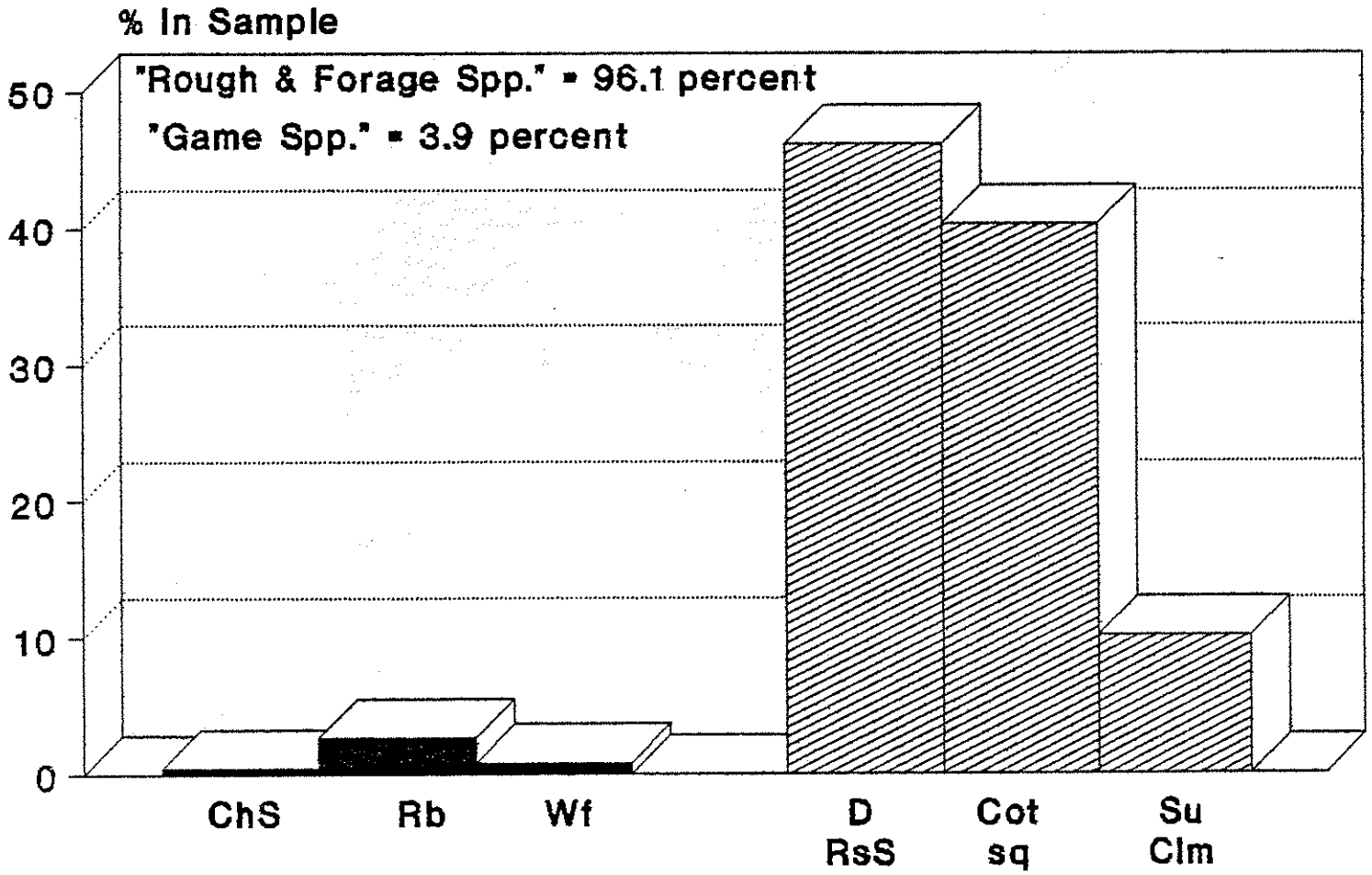
Middle Fork John Day River from headwaters to U.S. Highway 395 bridge.



Middle Fork John Day River from headwaters to U.S. Highway 395 bridge.

MIDDLE FORK JOHN DAY RIVER

Summer Fish Species Composition



Spring Chinook
Habitat Protection

Direct habitat preservation

- Lease/purchase land/habitat
- Maintain anchor areas
- Lease/purchase water
- Lease/purchase riparian
- Limit logging/roads/grazing

Spring Chinook
Habitat Restoration

Direct habitat mitigation
- Fence riparian
- LOD - big wood
- > 300 foot riparian buffers
- IWR's
- Rehab. and close roads
- Regulate timber harvest
- Regulate irrigation
- Introduce beaver

Pollution Control
- Mine effluent control
- Sediment control

Control Channelization/Riparian Loss
- Highway projects
- County projects
- FS & BLM
- Private projects

Passage
- Diversion dams
- Screen diversions
- Eliminate thermal barriers
- Bridge Cr. - Bates Pond dam

Spring Chinook
Production Potential

Greater populations probable - juveniles

- Upper Middle Fork
- Slide Creek
- Indian Creek
- Big Creek
- Camp Creek
- Big Boulder Creek
- Granite Boulder Creek
- Butte Creek
- Davis Creek
- Vinegar Creek
- Bridge Creek
- Clear Creek
- Squaw Creek

Greater populations unlikely - short-term

- Lower Middle Fork
- Eightmile Creek
- Huckleberry Creek
- Coyote Creek
- Beaver Creek
- Deerhorn Creek
- Summit Creek

Spring Chinook
Production Potential

- Benefits
  - Economics
  - Contribute to fisheries
  - Prevent ESA listing
  - Maintain gene pool
  - Indicator of habitat quality
  - Control of rough/forage species
- Other considerations
  - Chemical rehab.
  - Regulations
  - Poaching/harassment
  - Discourage competitors
  - BPA - reduction in funding

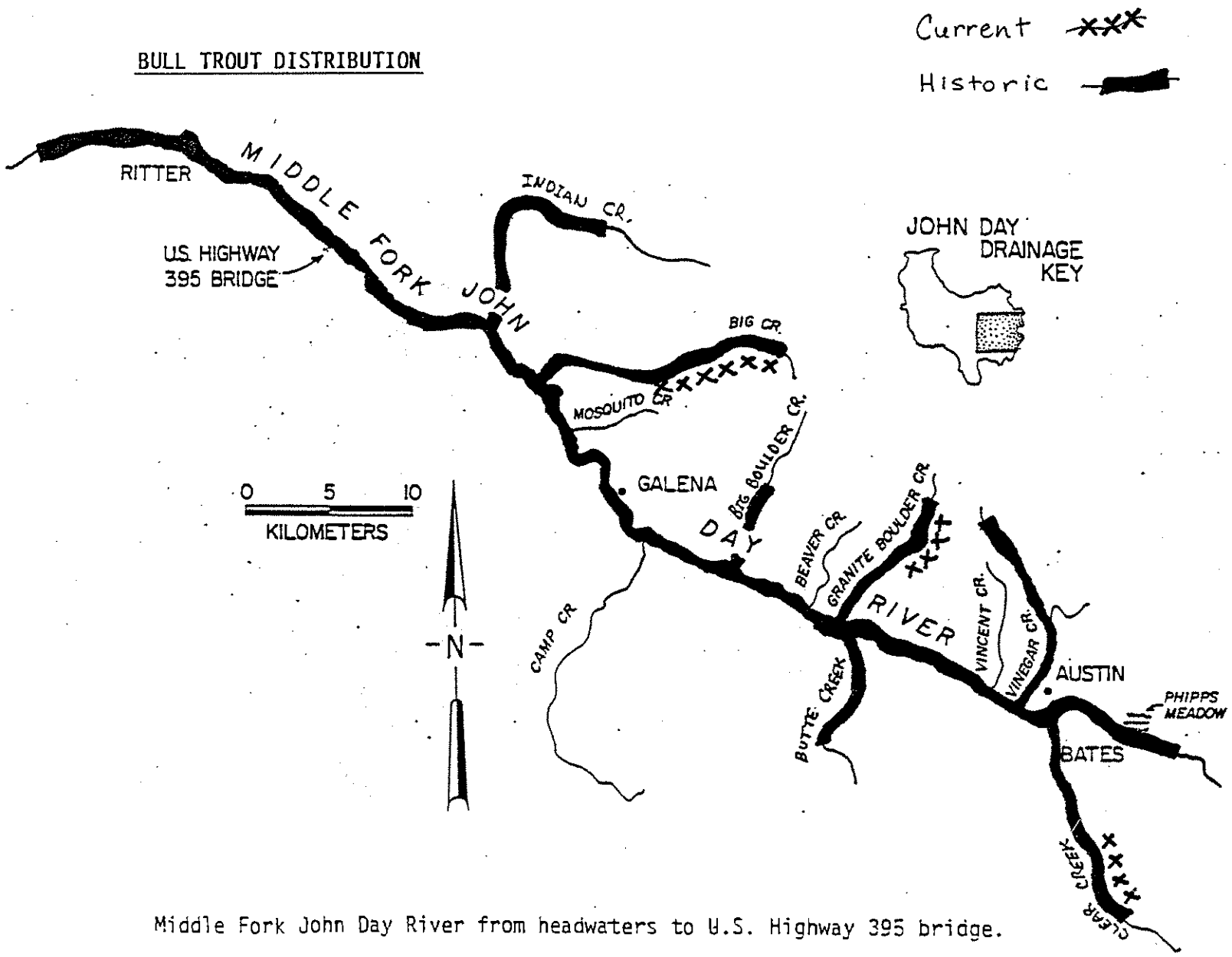
Spring Chinook
1993 Proposed Actions

- Enforce IWR's/screening/passage
- Oxbow - BPA program - riparian recovery
- TNC livestock exclusion - monitoring temperature
- Continue negotiations on Forrest Ranch
- Monitor/input on grazing AMP's/timber/salvage sales
- Acid spill restoration plan - potential funding
- Annual index counts/Federal highway project

BULL TROUT

Bull Trout
Population Status

- Historical distribution
  - Mainstem Middle Fork
  - Seasonal connection with North Fork
  - Likely connection with Columbia
  - Reported in 7 tributaries
- Petition for ESA listing
  - In Oregon as "threatened"
  - AFS - "high risk of extinction"
- 3 sites 1990-93
  - Granite Boulder - high risk
  - Clear Cr. - moderate risk
  - Big Cr. - high risk



Middle Fork John Day River from headwaters to U.S. Highway 395 bridge.

Bull Trout
Life History Information

Preferred habitat

- Cold deep water lakes and reservoirs
- Cold moderate to high gradient streams
- < 62 F
- Complex stream habitat - wood and boulders

Reproduction

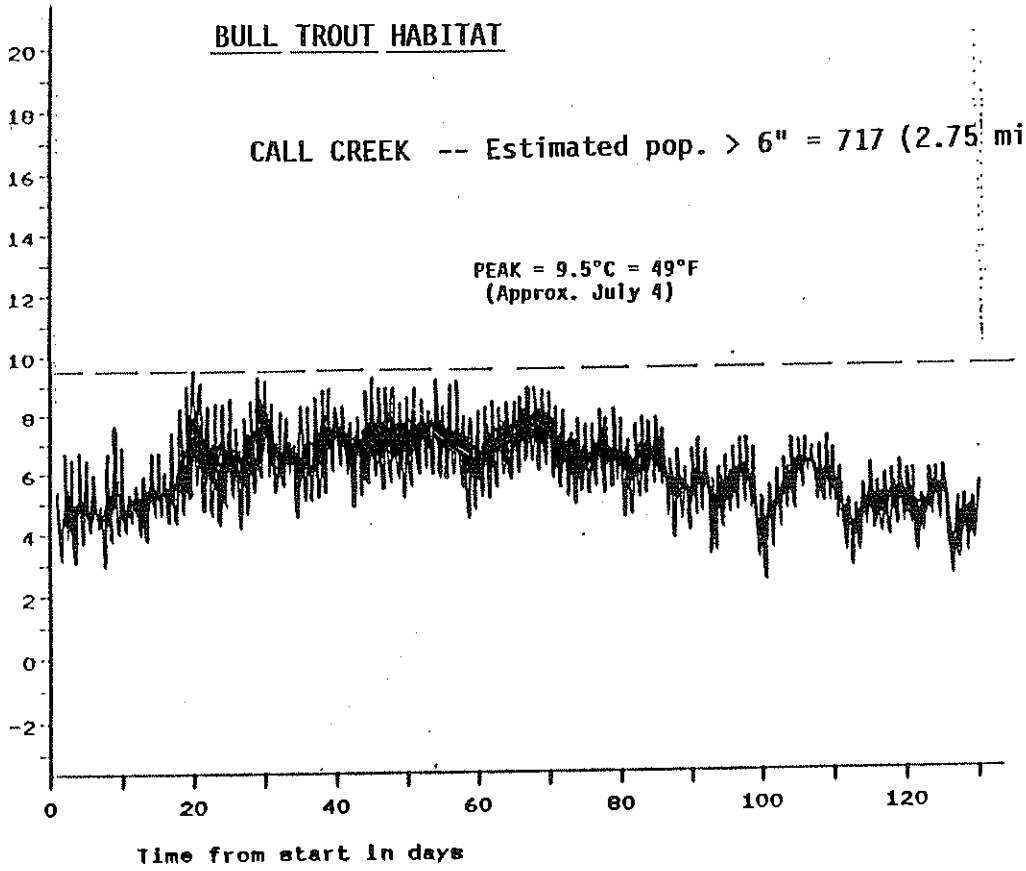
- August, September, October
- Clean high quality gravel
- Cold water < 50 F

Food habits

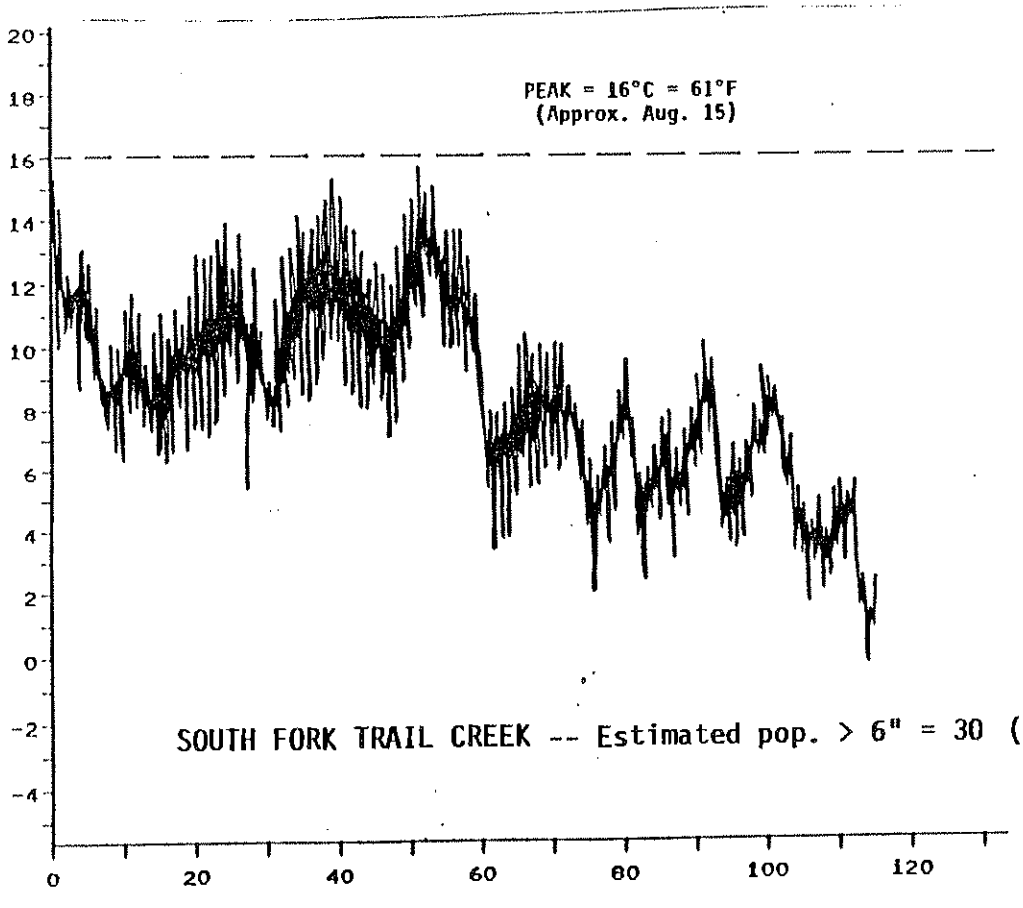
- Aquatic invertebrates - juvenile
- Piscivorous - older age classes
- Sympathic with historic large salmon runs
- Eggs, fry, smolts in historic diet
- Kokanee - Billy Chinook

Bull Trout
Limiting Factors

- Habitat loss
  - Riparian and cover
  - Big wood and boulders
  - Habitat complexity - pools
  - Sediment - spawning gravel
  - Water quality - cold water
- Food supply
  - Decline in anadromous species
  - Competition with other species
- Passage
  - Irrigation losses
  - Dams
  - Culverts
  - Environmental barriers (low flows - dewatering)
- Genetics and hybridization
  - Introduction of eastern brook trout
  - Gene pool isolation
- Overharvest/poaching

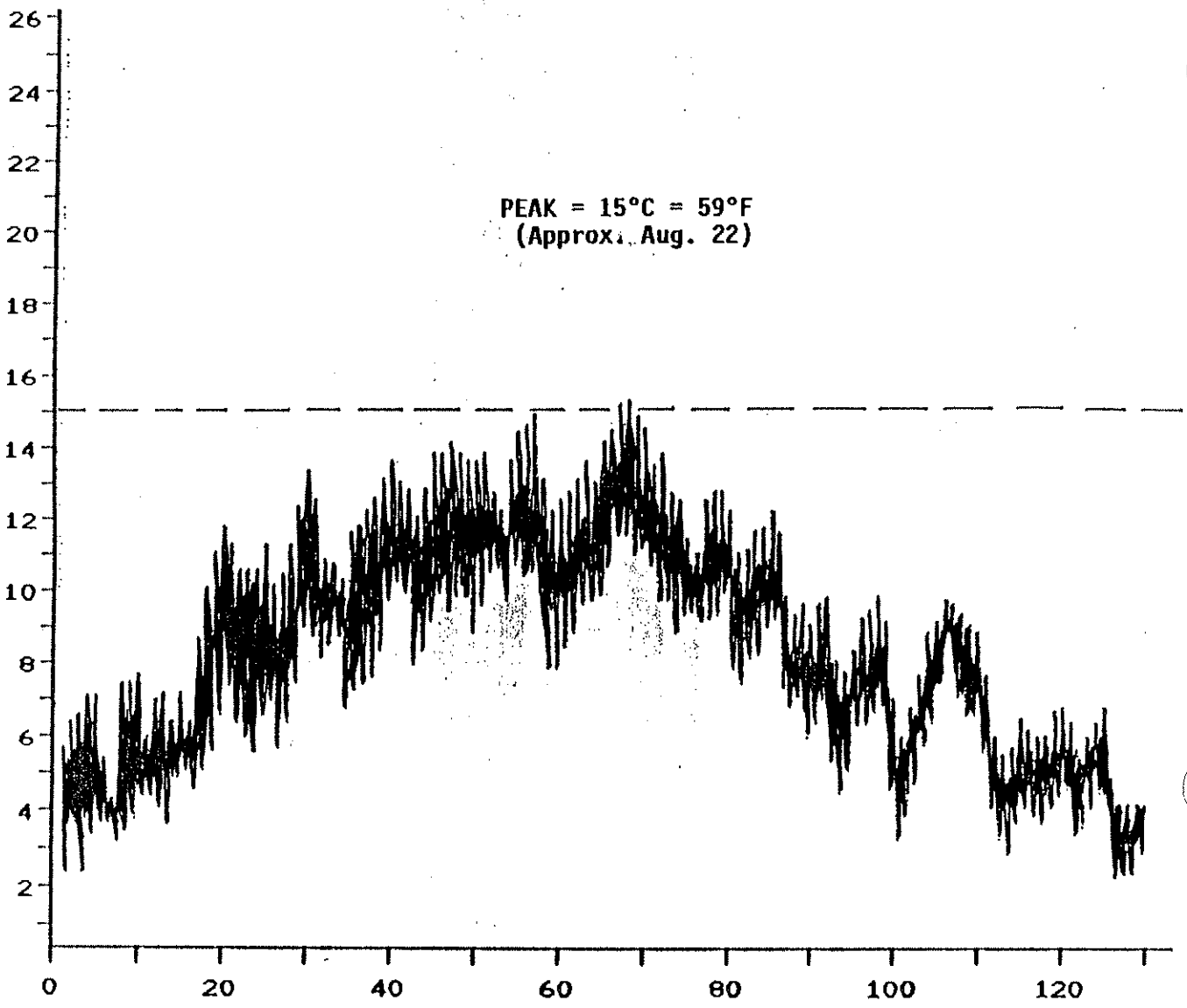


start 6/14/91



start 6/23/92

Ryan TempMentor SN902808 #001



06/13/91 17:55:00 Start Sample 0 End Sample 6293 Interval

BIG CREEK 6/14/91 10/21/91 Every 30 min.

Bull Trout

Habitat Restoration

Indigenous Ecosystems

Restore altered habitats
- Remove livestock
- No further harvest in riparian
- Put roads to bed
- Regulate mining
- Revegetate disturbed areas
- Save future big wood

● Restore passage
- Screening and passage
- Remove environmental barriers

Reestablish genetic links

● Stop BT introductions

Regulations - enforcement
- Poaching/overharvest
- Close critical production areas

● Set up anchor areas

Restore streamflow
- Buy, lease water rights
- Regulate use
- Irrigation exchange

● Regulate land use/public ownership

Bull Trout
Habitat Protection

- Prevent habitat destruction
  - Protect riparian - grazing - logging
  - Save big wood
  - Limit roads, logging, mining
  - Instream structure
  - Maintain anchor areas
  - Spawning gravel
- Barriers
  - Irrigation dams
  - Screen diversions
  - Environmental barriers
- Eliminate pollution
  - Mine effluent
  - Sediment - roads, logging
  - Temperature - spring interruption
  - D.O. - chemicals, toxic waste
  - Water quality standards
- Prevent stream alteration
- Protect streamflow
  - IWR's
  - Regulation - rate and duty
  - Buy, lease water rights
- Public Ownership

Bull Trout
Production Potential
Known Sites

Greater populations probable

- Big Cr.
- Clear Cr.
- Granite Boulder Cr.

Historic habitats - restoration probable

- Upper Middle Fork
- Indian Cr.
- Butte Cr.
- Big Boulder Cr.
- Vinegar Cr.

Benefits

- Oregon's oldest cold water species
- Provide unique recreation
- Economic
- Biological indicator
- Habitat quality indicators
- Benefit other species

Other considerations

- Chemical rehab. projects
- Fish stocking programs
- Complete inventories
  - Presence/absence
  - Populations
  - Habitat quality

Bull Trout
1993 Proposed Actions

- Habitat/Presence/Absence - R&E Surveys
- Form Working Groups With USFS, Tribes
- Life History/Limiting Factors Study - Buchanan
- Monitor/Input in Timber/Salvage Sales
- Monitor/Input on Grazing AMP's
- Acid Spill Restoration Plan - Potential Funding
- Spawning Index Counts Possible

"TOP 5" DISTRICT HABITAT PRIORITIES

1. Middle Fork - Spring Chinook/Bull Trout

2. Rock Creek Passage and Screening - Steelhead

3. Upper Mainstem - Bull Trout

4. Clear/Granite Creek - Chinook/Bull Trout

5. Camas Creek - Steelhead

NEVER GIVE UP!

Habitat Protection and Restoration Strategies
Northeast Regional Fish Management Meeting
March 30-31, 1993

District	John Day
Basin	John Day
Population	Upper Mainstem Spring Chinook
Status	Documented Depressed Population and Improving Habitat Conditions
Population Status	Wild John Day spring chinook are a stock of concern. Natural production in the upper John Day River subbasin occurs primarily upriver of Prairie City. Spawner estimates for 1991 and 1992 were 237 and 552, respectively. Population in the upper mainstem is building as riparian habitat improves.
Limiting Factors	Factors such as lack of pools, lack of shade and holding cover, eroding banks causing wide shallow channels, and high stream temperatures have been reversed through an aggressive riparian agreement program with private landowners (see strategies below).
Habitat Protection Strategies	Proposed long-term strategies for increasing spring chinook population in the upper mainstem will require watershed-level changes in land management to protect riparian vegetation and large woody debris input, to protect cold water sources, and to maintain cool water in the tributaries. Major changes in grazing and forest management practices will be necessary to protect chinook habitat.
Habitat Restoration Strategies	The BPA-funded fish habitat program has met with great success in the upper mainstem. The exclosure of 6.7 miles of riparian corridor above Prairie City and 6.3 miles from John Day to Prairie City has had dramatic effects toward reducing livestock-induced erosion and vegetation loss. Jetties, rock and juniper riprap, and check dams have also been installed for erosion control and holding pool development. Future strategies for this program will include "filling-in" ownerships lacking agreements, expanding the project area downriver to expand chinook distribution, and development of long-term protection beyond the 15-year least term of the BPA agreements. Critical short-term restoration

includes the Malheur National Forest's funding request from Congress, to restore health to Blue Mt. ecosystems. The $66 million request includes $17 million targeted for restoration in the upper mainstem John Day, of which $1.2 million would be for riparian and water quality restoration. Not all activities identified for restoration of the Blue Mountains. will be beneficial to fish habitat, however.

In addition to the above restoration, the NPPC Subbasin Plan identified several "water mgt." strategies for the increased production of spring chinook: improved irrigation efficiency, development of a Water Conservation Program with WRD, enforcement of minimum flows, and IWR's and improved seasonal distribution through watershed improvement, riparian storage, and beaver management. The Plan emphasizes habitat improvement and enhanced screening from the city of John Day to Call Creek (rm 248-278).

Production Potential

The current estimated escapement of upper mainstem spring chinook is approximately 445 fish, based on an expansion of the most recent five-year average of redd counts.

In developing the NPPC's Subbasin Plan, it was estimated that the spring chinook return to the mouth of the John Day River could be increased to 7,000 adults through restoration and enhancement of habitat. Approximately 5,950 of those fish would be needed to meet escapement goals, with the remainder going to sport and tribal harvest. Based on the current proportion of adult returns to the four subbasins in the John Day, the upper mainstem would produce approximately 1,190 of the 5,950 fish, or 20%.

Other Needed Actions

Grazing management on public lands, improved screening (update technology), irrigation efficiency, control or eliminate warm irrigation return flows which increase river temperatures above threshold levels for spring chinook. To increase total spring chinook numbers in the upper mainstem, it will be necessary to extend suitable quality summer rearing habitat farther downstream into historic use areas which are no longer usable due to high summer river temperatures.

Population Priority

We place the upper mainstem John Day River in the "<u>restoration</u>" category for spring chinook.

Habitat Protection and Restoration Strategies
Northeast Regional Fish Management Meeting
March 30-31, 1993

District	John Day
Basin	John Day
Population(s)	Mainstem Summer Steelhead/Redband Rainbow
Status	Stable Population and Habitat Varying from Degraded to Recovering
Population Status	Overlapping natural production of summer steelhead and resident redband rainbow occurs within National Forest boundaries and within private lands, in upper and lower basin mainstem tributaries. Production of resident rainbow typically extends above the upper limit of steelhead spawning, often higher onto National Forest lands, and, in some cases, above barriers to steelhead migration. Although steelhead production occurs in nearly all of the accessible perennial tributaries in the basin, a few examples of major production streams are Bridge, Beech, Canyon, Fields, Riley, Rock (Wheeler Co.), and Thritymile creeks. In recent years, Canyon, Beech, Indian, and Riley have had index counts over the basin management goal of 8.6 redds per mile, while the basinwide average has been below that goal.
Limiting Factors	The limiting factors for mainstem steelhead/rainbow tributaries vary as much as the character and land use impacts vary from the lower to the upper basin. Passage problems have affected spawning distribution in Cottonwood, Fields, Parrish, Indian, Pine, and Rock (Giliam Co.) creeks, for example. These passage problems are primarily from irrigation diversion dams (permanent or pushups) and from irrigation diversions dewatering stream channels before steelhead migrate. Temperature problems associated with loss of riparian vegetation from overgrazing and timber harvest have affected streams such as Bridge, Canyon, Bear, Pine, and Thirtymile creeks. Erosion, downcutting, and sediment problems are apparent in Kahler, Pine, Thirtymile, Bridge, and Rock (Wheeler Co.) creeks. Most of the loss of production is related to poor habitat quality and lack of stream carrying capacity.

Habitat Protection Strategies

Proposed long-term strategies for increasing steelhead/rainbow production include working to maintain the roadless and protected character of upper Rock Creek and upper Cottonwood Creek, widespread changes in grazing practices to reduce riparian impacts, and watershed-level changes in timber harvest/salvage, especially with regard to watershed and riparian protection. Long-term protection and provision of large woody debris for the future will also benefit steelhead/rainbow production. Maintaining mainstem and tributary passage through enforcement of Fill-Removal Laws will also protect steelhead production.

Habitat Restoration Strategies

Critical short-term restoration work includes riparian exclosures, pasture fencing, and instream structures to begin recovery of riparian vegetation and to provide pools and habitat diversity for survival through critical low flow, high temperature periods. Recently completed fishways have reestablished steelhead passage into upper Rock Cr. (Gilliam Co.), and into habitat that had been blocked for four decades due to diversion dams. A partial natural barrier on Thirtymile Creek was fitted with a fishway to ensure upstream passage of steelhead. Instream structures placed in Pine, Mountain, Beech, Bridge, and Canyon creeks for example, have been successful in providing habitat diversity and rearing areas during the critical periods, but long-term changes in grazing and forest management will be the key to effecting substantial steelhead/rainbow production increases.

In addition to the above strategies, the NPPC Subbasin Plan for the John Day identified several other strategies for the restoration of steelhead habitat. These include increased irrigation efficiency, development of a Water Conservation Program through WRD, enforcement of minimum flows and establishment of IWR's, and improved seasonal water through watershed improvement, riparian storage, and beaver management. Screening of the diversions on Rock Cr. (Gilliam Co.) is also identified, and will be the next priority now that adult passage structures are complete.

Production Potential

In developing the NPPC's Subbasin Plan it was estimated that the summer steelhead return to the mouth of the John Day River could be increased to 45,000 adults through restoration and enhancement of habitat. Approximately 33,750 of those fish are needed to meet escapement goals, while the remainder would go to sport and tribal harvest.

Based on the current proportion of adult returns to the four subbasins in the John Day, the mainstem would produce approximately 12,825 of the 33,750 spawning escapement or 38%.

Other Needed Actions

The following actions are necessary in order to make the habitat improvements effective: AMP updates (with reduced riparian impacts).

Population Priorities

The following mainstem steelhead/rainbow production waters should receive priority consideration:

Protection	Restoration
upper Rock Cr. (Wheeler)	Rock Cr. (Gilliam)
upper Cottonwood Cr.	Pine Cr.
upper Fields Cr.	Beech Cr. system
M. Fk. Canyon Cr.	Reynolds Cr. system
	Indian Cr.
	Canyon Cr.
	Bridge Cr. system
	Thirtymile
	lower Rock Cr. (Wheeler)
	Fields Cr.
	Kahler Cr.
	Parish Cr.
	Bear Cr.
	Butte Cr.

Habitat Protection and Restoration Strategies
Northeast Region Fish Management Meeting
March 30-31, 1993

District	John Day
Basin	John Day
Population(s)	Upper Mainstem Bull Trout
Status	Depressed, Stable Population and Stable to Improving Habitat
Population Status	Bull trout are listed as sensitive-critical statewide. Documented summer distribution (R&E) includes the upper mainstem John Day River, and Deardorff, Reynolds, North Fork Reynolds, Mossy Gulch, Rail, and Call creeks. Interchange between these tributaries may be possible at times of higher flow. No BuT/BT hybrids were found by R&E survey crews but he potential exists.
Limiting Factors	Suitable summer habitat (primarily cool water temperatures, large woody debris for cover and pools) is limiting. Call Creek, with perhaps the best BuT habitat, peaked at 49°F for the June through October period, 1991. Peak temperatures this low are rare in the John Day Basin, but necessary to maintain bull trout populations.
Habitat Protection Strategies	Proposed long-term strategies for increasing bull trout production in the upper mainstem will require watershed level changes in land management, to protect riparian vegetation and large woody debris input, to protect cold water sources, and to maintain cool water in the tributaries. Heavy participation in Forest Health salvage and restoration planning will be necessary to protect bull trout habitat from cumulative watershed effects.
Habitat Restoration Strategies	Long-term habitat protection should be emphasized over restoration. Short-term restoration projects including riparian exclosure or rest from grazing, large woody debris increases, and protection of springs and seeps could help to increase bull trout production before long-term improvements take effect.
Production Potential	No estimate has been developed for production potential of upper mainstem John Day bull trout, however minimum spawner densities were estimated following the R&E Aquatic Inventory surveys in

1990. The densities and miles of distribution for the mainstem and tributaries are shown below:

	Total Miles Distribution	Minimum Spawner Density
Main John Day River	6.50	304
Deardorff Creek	5.75	110
N. Fk. Reynolds Creek	0.50	15
Rail Creek	3.75	323
Call Creek	2.75	717

The current emphasis of John Day bull trout investigations is to establish the present suitable summer distribution.

Increases in production potential are dependent upon the increase of suitable summer habitat exhibiting water temperatures below 60°F, high pool-to-riffle ratios, low percentages of fines in spawning substrates, and high levels of large woody debris. Increases in production would also be linked to increases in salmon production and restoration/protection of salmon habitat.

Other Needed Actions

We implemented a reduction in bag limit (zonewide) to two fish per day. It will be necessary for the Forest Service to redirect its' emphasis from commodity output to protection and restoration of fish, riparian, and watershed resources, if production increases are to take place.

Population Priorities

Within the upper mainstem subbasin the following bull trout waters should receive priority considerations:

Protection	Restoration
Call Creek	upper mainstem John Day R
Rail Creek	Reynolds Creek
Deardorff Creek	Indian Creek
Roberts Creek	

A.F.S. lists the upper John Day River bull trout as "Moderate Risk of Extinction", with habitat degradation and brook trout hybridization as suppressing factors.

Habitat Protection and Restoration Strategies
Northeast Regional Fish Management Meeting
March 30-31, 1993

District	John Day
Basin	John Day
Population(s)	S. Fk. Summer Steelhead/Redband Rainbow
Status	Stable Population and Improving Habitat Condition (below Izee) (Degraded Habitat above Izee - Paulina Highway)
Population	Natural production of summer steelhead and resident redband rainbow occurs with considerable overlap in the South Fork system below Izee Falls. A few examples of major steelhead production streams are Murderers Creek, Black Canyon Creek, Deer Creek, Wind Creek, and the mainstem South Fork. Rainbow are produced in most of the perennial streams in the system. The lower Murderers Creek index count has been over ten redds mer mile the last two years, well above the basin management goal of 8.6 redds per mile.
Limiting Factors	Suitable spawning and rearing habitat is increasing in most of the steelhead production areas, primarily due to riparian protection and restoration programs underway. Deer Cr., however, is still heavily overgrazed in sections, losing stream cover and bank stability and all of the national forest lands are being heavily impacted by logging and road building. The South Fork above Izee Falls is extremely overgrazed, downcut, and lacking in pools and large woody debris for suitable rainbow habitat.
Habitat Protection Strategies	Proposed long-term strategies for increasing steelhead/rainbow production include improved riparian protection and grazing management, improved timber harvest programs, and improved irrigation management to stop erosion, to lower stream temperatures, and to provide cover for fish. Watershed-wide changes in grazing practices are necessary for long-term protection of steelhead/rainbow habitat. These changes must include a shift in livestock distribution for riparian to upland pastures, and the elimination of grazing in problem areas which cannot withstand any grazing under present conditions. Designation of Black Canyon Cr. into wilderness has protected the fish habitat in this drainage. A better

balance between timber, watershed and fisheries must also be attained in forest management.

Habitat Restoration Strategies

Critical short-term restoration work includes riparian fencing and instream structures in the upper subbasin to stop erosion, raise water tables, lower stream temperatures, and provide cover/habitat diversity for fish. Some landowners are undertaking these types of activities through SCS, Extension, and GWEB programs at the present time. The management of ODFW and BLM riparian lands along Murderers Creek and the lower South Fork has produced great success in lowering stream temperatures, stabilizing banks, restoring riparian cover, narrowing channels, and improving steelhead/rainbow production. The same level of riparian protection needs to be extended to the other private and Forest Service lands in the subbasin.

In addition to the above strategies, the NPPC Subbasin Plan for the John Day identified several other strategies for the restoration of steelhead habitat. These include increased irrigation efficiency, development of a water conservation program through WRD, enforcement of minimum flows and establishment of IWR's and improved seasonal distribution of water through watershed improvement, riparian storage, and beaver management. Passage over Izee Falls was also identified, but is not a high priority at this time.

Production Potential

In developing the NPPC's Subbasin Plan it was estimated that the summer steelhead return to the mouth of the John Day River could be increased to 45,000 adults through restoration and enhancement of habitat. Approximately 33,750 of those fish would be needed to meet escapement goals with the remainder going to sport and tribal fisheries.

Other Needed Actions

The following actions are necessary in order to make the habitat improvements effective: improved screening, AMP updates (with reduced riparian impacts), and improved passage at four irrigation dams above Izee.

Population Priorities

Within the South Fork subbasin, the following steelhead/rainbow waters should receive priority consideration:

Protection	Restoration
Black Canyon Cr.	Deer Cr.
Wind Cr.	upper mainstem S. Fk.
lower mainstem S. Fk.	upper Murderers Cr.
lower Murderers Cr.	system
system	

Habitat Protection and Restoration Strategies
Northeast Regional Fish Management Meeting
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District	John Day
Basin	John Day
Population	Middle Fork Spring Chinook
Status	Documented Depressed Population with Degraded Habitat Conditions
Population Status	Wild John Day spring chinook are a stock of concern. Present natural production occurs mainly upriver of Camp Creek, in the mainstem Middle Fork. The mainstem North Fork and upper mainstem subbasin populations are improving, while the Middle Fork shows status quo or decline. Spawner estimates for 1991 and 1992 were 135 and 414, respectively.
Limiting Factors	Suitable adult holding and juvenile rearing habitat is limited. Summer water temperatures are high due to wide, shallow character of river, and lack of riparian vegetation in several sections. Grazing of livestock and logging of tributary watersheds, cause the major impacts contributing to temperature problems. Mortality of 11 holding adult chinook occurred in late June of 1992, due to suspected temperature stress.
Habitat Protection Strategies	Strategies for habitat protection include: recovery and grazing exclosure on the Nature Conservancy's (TNC) Dunstan property; negotiation of riparian agreements/easements/purchase with landowners owning critical chinook reaches; participation and input in planning processes for timber sale, salvage sale, and restoration projects in National Forest subwatersheds; irrigation mgt., enforcement of fill/removal laws and prosecution of violations. Limiting factors addressed by these strategies include reducing temperatures by restoring riparian vegetation, narrowing and deepening stream channels by reducing livestock-induced erosion, and protecting the quality of tributary water through riparian cumulative effects recommendations on timber sales and livestock AMP's. Negotiations with private landowners for riparian agreement have produced some success thus far, with a completed agreement on the Oxbow Ranch and positive negotiations on another.

Habitat Restoration Strategies

Current restoration on the mainstem Middle Fork is limited to short reaches owned by the USFS, and on TNC's property. The Malheur National Forest is currently requesting nearly $66 million in funding from Congress, which would include $42 million for restoration in the Middle Fork subbasin. Ninety-three percent of the Middle Fork request is for fuels reduction, however, and only 2.5% is relegated to "Riparian Vegetation" and "Water Quality" restoration. Riparian pastures, exclosures, pool structures, erosion control, and vegetative plantings have all taken place as restoration in tributaries such as Camp Cr., Vinegar Cr., Vincent Cr., and on the Middle Fork below the mouth of Camp Cr. The preponderance of private ownership along the critical chinook spawning and holding reaches has slowed the recovery progress on the Middle Fork.

In addition to the above strategies, the NPPC's Subbasin plan identified several strategies for the improvement of spring chinook production. These include enforcement of angling regs. to protect spawners, improved irrigation efficiency, development of a Water Conservation Program through WRD, enforcement and establishment of minimum flows and IWR's, and improved seasonal distribution of water through watershed improvement, riparian storage, and beaver management. The plan emphasized habitat improvement from Mosquito Cr. to Summit Cr (rm 39-72). In addition, removal of Bates Pond would open up 10 miles of Bridge Creek for juvenile chinook rearing.

Production Potential

The current estimated escapement of Middle Fork spring chinook is approximately 420 fish, based on an expansion of the most recent five-year average of redd counts.

In developing the NPPC's John Day River Subbasin Plan (SBP), it was estimated that the spring chinook return to the mouth of the John Day River could be increased to 7,000 adults through the restoration and enhancement of habitat. Approximately 5,950 of those fish would be needed to meet escapement goals, with the remainder going to sport and tribal harvest. Based on the <u>current</u> proportion of adult returns to the four subbasins in the John day, the Middle Fork would produce only 595 of the 5,950 fish, or 10%. It is estimated that habitat restoration could increase the Middle Fork production to 2,700 or 39% of the basin chinook total.

)ther Needed Actions

It will be necessary for the Forest Service to redirect its' emphasis from commodity output to protection and restoration of fish, riparian, and watershed resources if production increases are to take place.

Population Priorities

Within the Middle Fork subbasin the following spring chinook waters should receive priority consideration:

Protection	Restoration
Big Creek	Mainstem Middle Fork
Big Boulder Creek	Camp Creek
Granite Boulder Creek	Slide Creek
Clear Creek	Indian Creek
Vinegar Creek	Summit Creek
Davis Creek	
Bridge Creek (with removal of Bates Pond)	

Habitat Protection and Restoration Strategies
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District	John Day
Basin	John Day
Population(s)	M. Fk. Summer Steelhead/Redband Rainbow
Status	Stable Population and Degraded Habitat
Population Status	Natural production of summer steelhead and resident redband rainbow occurs with considerable overlap in the Middle Fork John Day system. While production occurs in most of the accessible perennial streams in the subbasin, a few examples of major steelhead production waters are the Camp Creek system, Long Cr., and the mainstem Middle Fork. Several smaller tributaries such as Beaver Cr. and Deep Cr. also produce summer steelhead in good water years. The John Day Basin goal of 8.6 redds per mile in index areas has only been met in three of the last ten years (met 1986-88).
Limiting Factors	Suitable juvenile rearing habitat is limiting, especially through the critical late summer low flow, high temperature period. Summer water temperatures are high due to heavy grazing on private (mainstem) and public (tributaries) lands which have reduced riparian vegetation and de-stabilized banks causing wide, shallow stream reaches. Poor forest health and heavy logging/road building intensity has also contributed to high water temperatures. The mainstem Middle Fork could provide suitable rearing habitat if restored, however summer water temperatures and lack of shade and pools minimizes current rearing potential.
Habitat Protection Strategies	Proposed long-term strategies for increasing summer steelhead/rainbow production should be aimed at watershed-wide changes in land management (particularly timber harvest and grazing), de-emphasizing commodity output and shifting emphasis to protecting and enhancing fish, riparian, and water quality resources. Protection of the riparian zone will address water temperature problems through: (1) increased shading by vegetation, (2) reduced solar heating through channel narrowing and deepening, and (3) protection of water sources, including springs, seeps, overland, and groundwater flows.

Habitat Restoration Strategies	Critical short-term work includes purchase/ easements with private landowners to implement riparian corridors and pastures. Several tributaries on Forest Service land have been fitted with pool-forming structures (log and rock weirs) to provide habitat diversity and rearing area. The pools also provide holding areas for prespawning adult steelhead and resident rainbow. The structures do provide these values, but do not address the major deficiencies in shade and water-cooling function. Camp Creek has had several riparian exclosures an riparian pastures installed, and the vegetation and bank stabilization within these areas is successfully recovering. The restoration allowed by exclosures and intensively managed pastures needs to be extended to all of the riparian areas in the Middle Fork drainage. In addition to the above strategies, the NPPC Subbasin Plan for the John Day identified several other strategies for the restoration of steelhead habitat. These include increased irrigation efficiency, development of Water Conservation Program through WRD, enforcement of minimum flows and establishment of IWR's, and improved seasonal water through watershed improvement, riparian storage, and beaver management. Removal of the barrier at Bates Pond on Bridge Creek was also identified as a high priority.
Production Potential	In the development of the NPPC's Subbasin Plan (SBP) it was estimated that the summer steelhead return to the mouth of the John Day River could be increased to 45,000 adults, through restoration and enhancement of habitat. Approximately 33,750 of those fish would be needed to meet escapement goals, with the remainder going to sport and tribal harvest. Based on the current proportion of adult returns to the four subbasins in the John Day, the Middle Fork would provide approximately 5,062 fish, or 15%.
Other Needed Actions	Improved screening, AMP updates including riparian protection, and reduced Forest road densities are necessary in order to make the habitat improvements effective.

Population Priorities

Within the Middle Fork subbasin, the following steelhead/rainbow waters should receive priority consideration:

Protection	Restoration
Vinegar Cr.	Camp Cr. System
Deep Cr.	Mainstem Middle Fork
Beaver Cr.	(above Camp Cr.)
Granite Boulder Cr.	Long Creek System
Big Boulder Cr.	Big Creek
Bridge Cr.	
Butte Cr.	
Clear Cr.	
Davis Cr.	
Indian Cr.	

Habitat Protection and Restoration Strategies
Northeast Region Fish Management Meeting
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District	John Day
Basin	John Day
Population(s)	Middle Fork Bull Trout
Status	Documented Declining Population and Declining Habitat Conditions
Population Status	Bull trout are listed as Sensitive-Critical statewide. Documented summer distribution is limited to Big Creek, Granite Boulder, and Clear Creek. Tributary populations have become isolated with little opportunity for genetic exchange. Suitable summer habitat is lacking, due to environmental barriers. A.F.S. lists upper Middle Fork bull trout as "Probably Extinct", with Granite Boulder and Big Creek populations at "High Risk of Extinction." Habitat degradation is the overriding suppressing factor.
Limiting Factors	A variety of land management practices, including timber harvest, road building, mining, and grazing, have: (1) reduced riparian vegetation and large woody debris, (2) contributed to high summer water temperatures, and (3) created unstable banks that erode to introduce sediment into the stream, and result in wide, shallow reaches with few pools. Summer water temperatures and lack of cover create barriers to the distribution and genetic exchange between tributary populations. Declines in ChS production are directly linked to the decline of the predacious bull trout. A thermograph placed in Big Creek in the summer of 1991 peaked at 59°F, nearing the threshold for suitable bull trout habitat. Many Middle Fork tributaries peak much higher than this however.
Habitat Protection Strategies	The long-term strategy for increased bull trout production in the Middle Fork will require watershed/ecosystem level changes in land management. Major decreases in water temperatures and increases in riparian vegetation, large woody debris, and pool frequency will be necessary to protect existing populations and to link them with

other Middle Fork genetic stock. The "Forest Health" problem in the Blue Mt. area is placing heavy pressure on the Middle Fork subwatersheds; timber salvage and fuels reduction activities will increase over the next few years.

Habitat Restoration Strategies

Critical short-term restoration work includes the placement of instream structures and large woody debris by the USFS, and protection of riparian vegetation and streambanks through enclosure fencing, grazing management, and timber harvest buffers. Restoration of spring chinook habitat and juvenile production on the mainstem Middle Fork may eventually aid in restoring bull trout habitat and production. We implemented a reduction in bag limit, (zonewide) to two bull trout daily.

Production Potential

No estimate of production potential for M. Fk. bull trout has been developed, however, minimum spawner densities were estimated following the R&E Aquatic Inventory surveys in 1990. The population estimate for five miles of bull trout distribution in Big Creek was 725, while the estimate for Granite Boulder was 375 in only three-quarters of a mile of surveyed distribution. The current emphasis of John Day bull trout investigations is to establish the present summer distribution.

Other Needed Actions

M. Fk. channel restoration, AMP updates, upper Grande Ronde Plan Standards on Timber/Salvage Sales, Protection of springs/seeps, life history/limiting factors studies.

Population Priority

Within the Middle Fork subbasin, the following bull trout water should receive priority consideration:

Protection	Restoration
Granite Boulder Creek	upper Middle Fork
Big Creek	Indian Cr.
Clear Creek	Butte Cr.
	Big Boulder Cr.
	Vinegar Cr.

Habitat Protection and Restoration Strategies
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District	John Day
Basin	John Day
Population	North Fork Spring Chinook
Status	Stable Population and Stable/Protected Habitat
Population Status	Wild John Day spring chinook are a stock of concern. Natural production occurs primarily above Hwy 395. Much of the North Fork production occurs within the North Fork Wilderness boundary, and this segment of the population is increasing. The lower segment (off wilderness) is fairly stable to slightly increasing, but does not show the improvement the Wilderness has. The 1992 index count in the Wilderness was 28.1 redds/mile, the highest on record for this index. As a subbasin, the North Fork has the healthiest spring chinook run and the healthiest habitat condition in the John Day system.
Limiting Factors	Large woody debris, pool frequency, and lack of cover are potential limiting factors. Within the Wilderness, natural tree mortality is providing large wood for cover, gravel collection, and pool formation. Lack of off-channel rearing is also a limiting factor during high winter and spring flows.
Habitat Protection Strategies	Designation of the North Fork John Day Wilderness in 1984, and classification of C7 - "Special Fish Management Area" in the Umatilla National Forest Plan have provided protection and allowed recovery of the North Fork spring chinook. Participation in timber sale/salvage sale processes and in allotment management planning processes are vital to continued protection of spring chinook habitat in the North Fork. In addition to the above strategies, the NPPC's subbasin Plan identified enforcement of minimum flows and IWR's, and improved seasonal distribution of water through watershed improvement, riparian storage, beaver management, and control of poaching/harassment as key strategies for increased production of spring chinook.

Production Potential

In developing the NPPC's John Day River Subbasin Plan (SBP), it was estimated that the spring chinook return to the mouth of the John Day River could be increased to 7,000 adults through the restoration and enhancement of habitat. Approximately 5,950 of those fish would be needed to meet escapement goals, with the remainder going to sport and tribal harvest. Based on the current proportion of adult returns to the four subbasins in the John Day, the North Fork would produce approximately 2,975 of the 5,950 fish, or 50%.

Other Needed Actions

It will be necessary for the Forest Service to redirect its emphasis from commodity output to protection and restoration of fish, riparian, and watershed resources if production increases are to take place. Within the North Fork subbasin the following chinook waters should receive priority considerations:

Population Priorities

Protection	Restoration
mainstem North Fork John Day River above wilderness boundary	mainstem North Fork from from wilderness boundary downstream to Potamus Cr. Desolation Creek Camas Creek

Habitat Protection and Restoration Strategies
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District	John Day
Basin	John Day
Population	Granite/Clear Cr. Spring Chinook
Status	Documented Depressed Population with Degraded Habitat Conditions
Population Status	Wild John Day spring chinook are a stock of concern. Natural production occurs mainly in Granite Cr. up to the mouth of Clear Cr. and in the lower four miles of Clear Cr. In higher water years, spawning occurs farther up Granite Cr. into Bull Run Cr. The long-term trend in the Granite/Clear subbasin has been a decline, due to heavy mining and timber harvest activities. In the 1960s, redd counts were between 30 and 50 redds/mi. Since 1977, the annual count hasn't been over 20.
Limiting Factors	Suitable adult holding, spawning, and rearing habitat is limited. Dredge mining has reduced spawning gravels and created poor substrates for riparian vegetation. Mining and intensive timber harvest have increased sediment and reduced water quality. Activity from mining, timber, and recreational use of the area has created a harassment problem for holding adult chinook. Acid mine waste, mostly under control at present, has been a water quality problem in the past.
Habitat Protection Strategies	Long-term strategies for increasing spring chinook production include participation in timber sale/salvage and mining permit reviews, communication with Forest Practices Forester to administer riparian protection on state and private forest land, and development of catch basins to reduce leachate from mine operations reaching streams. The catch basis have been successful in improving water quality on Granite and Clear creeks. Closure of a portion of the Granite Cr. road is being considered by the USFS, to reduce disturbance of holding and spawning adult chinook. Angling regulations and intense enforcement patrols have protected spawners in recent years.

Habitat Restoration	The USFS, ODFW, and BPA have installed instream structures to catch spawning gravels, form holding pools, and provide rearing areas for juveniles. Our index counts and spot checks indicate that these structures are providing gravels for spawning, and providing pools for holding. These short-term restoration activities have not shown a significant improvement in run size, as the Granite/Clear redd counts have steadily declined. The 1992 count was up from 1990 and 1991 counts, but nothing near counts of the 1960s and early 70s. In addition to the above strategies, the NPPC Subbasin Plan identified the enforcement of minimum flows and IWR's along with improved seasonal water distribution through watershed improvement, riparian storage, and beaver management as strategies for the improved production of spring chinook.
Production Potential	The current estimated escapement of Granite/Clear Cr. spring chinook is approximately 441 fish, based on an expansion of the most recent five-year average of redd counts. In developing the NPPC's Subbasin Plan (SBP), it was estimated that the spring chinook return to the mouth of the John Day River could be increased to 7,000 adults through the restoration and enhancement of habitat. Approximately 5,950 of those fish would be needed to meet escapement goals, with the remainder going to sport and tribal harvest. Based on the current proportion of adult returns to the four subbasins in the John day, Granite/Clear Creek would produce approximately 1,190 of the 5,950 fish, or 20%.
Other Needed Actions	Logging and road building needs to be curtailed so the restoration and stabilization can occur on already impacted sections of the watershed. A better balance between Forest commodity production and salmon resources needs to be effected. The watershed cannot sustain the intensity of present alterations and still maintain quality salmon habitat.
Population Priorities	<u>Protection</u> Upper Clear Cr. <u>Restoration</u> Lower Clear Cr. Bull Run Cr. Granite Cr.

Habitat Protection and Restoration Strategies
Northeast Regional Fish Management Meeting
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District	John Day
Basin	John Day
Population(s)	N. Fk. Summer Steelhead/Redband Rainbow
Status	Stable Population and Habitat Varying from Protected to Degraded
Population Status	Natural production of summer steelhead and resident redband rainbow is widespread and occurs with considerable habitat overlap in the North Fork system. A few examples of major steelhead production waters are Wilson/Wall, Beaver/Olive, Camas/Cable/Owens, Trail, and Fox creeks. With the improvement of passage at two barriers steelhead now distribute into upper Fivemile Creek and Deer Creek to spawn. With the exception of a few basin tributaries, most index streams were below the district management goal of 8.6 redds per mile in recent years, however the populations are stable and sustaining a significant sport fishery in the basin.
Limiting Factors	Suitable rearing habitat is limiting in the North Fork subbasin, primarily due to a lack of habitat diversity and high summer water temperatures. Timber harvest, livestock grazing, and mining have reduced riparian vegetation, leading to shade and bank stability problems in non-wilderness areas. North Fork reaches and tributaries within the Wilderness and C7 (special fish management) Forest designations receive better protection and thus are providing better fish habitat. Unfortunately, considerable spawning and rearing mileage for North Fork system steelhead and rainbow lies outside of Wilderness and C7 boundaries. Dredge mining on the North Fork and in Granite/Clear creeks earlier this century, removed spawning gravels, denuded riparian zones, and restricted natural floodplain function by armoring the banks with tailing piles.
Habitat Protection Strategies	Proposed long-term strategies for increasing steelhead/rainbow production include water-shed-wide changes in grazing practices and livestock distribution, and increased protection of riparian areas in timber harvest/salvage activities. Protection of large woody debris

sources along North Fork tributaries will provide natural structure for fish cover, pool formation, organic nutrient input, and floodplain/channel function, addressing the limiting factors.

Land purchase or easements, purchase of AUM's, the use of swing allotments, and other innovative techniques should be used to reduce grazing impacts. Enforcement and establishment of minimum flows and IWR's, along with improved seasonal distribution of water through watershed improvement, riparian storage, and beaver management were developed in the NPPC's Subbasin Plan as steelhead improvement strategies.

Production Potential

In developing the NPPC's Subbasin Plan it was estimated that the summer steelhead return to the mouth of the John Day River could be increased to 45,000 adults through restoration and enhancement of habitat. Approximately 33,750 of those are needed for escapement, with the remainder going to sport and tribal harvest. Based on the current proportion of adult returns to the four subbasins in the John Day, the North Fork would produce approximately 13,838 of the 33,750 fish or 41%.

Other Needed Actions

The following actions are necessary in order to make the habitat improvements effective: AMP updates (with reduced riparian impacts), reduced open road densities on public lands, tighter administration of mining operations including a reduction in acid mine wastes, stricter riparian protection standards over and above Forest Plan standards and guidelines (Grande Ronde Plan Standards., e.g.).

Population Priorities

Within the North Fork subbasin, the following steelhead/rainbow waters should receive priority consideration:

<u>Protection</u>

Mainstem N. Fk. (Wilderness)
Upper Hidaway Cr.
Upper Cable Cr.
Upper Desolation Cr.

Clear Cr.
Granite Cr.
Mainstem N. Fk. (Non-Wilderness)
Trail Cr. System
Wall Cr. System
Camas Cr.
Lower Desolation Cr.

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District	John Day
Basin	John Day
Population(s)	North Fork Bull Trout
Status	Depressed, Stable Population and Stable/Protected Habitat
Population Status	Bull trout are listed as Sensitive-Critical statewide. Documented summer distribution (R&E) includes Clear, Crane, Desolation, S. Fk. Desolation, Baldy, S. Fk. Trail, Big Creek, Winom Creek, and the North Fork John Day River above Gutridge. No bull trout were captured from twenty-eight other tributary reaches surveyed in the North Fork system. Bull trout/brook trout hybrids were identified in S. Fk. Desolation and Crane creeks. These sub populations are likely able to intermix via connections to the North Fork during the fall to spring period. A.F.S. lists N. Fk. bull trout as "of Special Concern" (between low and moderate risk of extinction), with habitat degradation and over harvest as suppressing factors.
Limiting Factors	Ownership of most of the bull trout habitat in the North is by USFS. Much of the habitat falls within the North Fork John Day Wilderness or C7 - Special Fish Management Area. As such, the habitat has had opportunity to recover from past mining and timber harvest activities. Other areas not in wilderness or C7 are impacted by grazing, timber harvest, roads, and mining. The dredge tailing piles on the banks and on islands of the North Fork and its tributaries hinder the natural floodplain function and meandering process. Off-channel rearing areas are limited due to the high flow character of the North Fork. Suitable rearing and holding habitat in the tributaries is limited. Lack of riparian vegetation and large woody debris contributes to high summer water temperatures and limits bull trout production. Thermographs placed in Baldy Cr. and S. Fk. Trail Cr., in sections inhabited by bull trout, recorded peak temperatures of only 60°F in mid August of 1992. While 60°F is approaching the upper limit for suitable bull trout habitat, these peak

temperatures are much lower than many tributaries in the North Fork system experience, thus a shortage of cold rearing water exists.

Habitat Protection Strategies

Proposed long-term strategies for increasing bull trout production will require watershed/ecosystem level changes in land management to include intense grazing management, extraordinary riparian protection (UGRP) in timber harvest/salvage, road closures and obliteration and treatment of dredge tailing piles to allow natural floodplain function. These strategies will address the temperature, cover, and off-channel rearing deficiencies which limit production. Land management activities which change the hydrograph (snowmelt and rainfall runoff rates) need to be eliminated to prevent early and flashy runoff.

Habitat Restoration

Within C7 and wilderness areas, habitat protection is emphasized over restoration. In tributaries such as Desolation Creek, USFS has placed log and boulder weirs, forming pools and providing cover for bull trout. While these short-term measures have been considered successful land treatments which allow for natural large wood input and protection of riparian cover will be much more effective in the long-term. Improved grazing management, including exclosures and rest, will be necessary along the non-wilderness reaches of the North Fork and its tributaries. Springs and ground water seeps must also be left undisturbed and be protected.

Production Potential

No estimate of production potential for North Fork bull trout has been developed, however minimum spawner densities were estimated following the R&E Aquatic Inventory surveys in 1990. The density of BuT > 6 inches for two miles of distribution in Clear Creek was 34 fish, 50 fish per mile in 1.75 miles of Desolation Creek, and 220 fish in six miles of South Fork Desolation Creek. The current emphasis of John Day bull trout investigations is to establish the present suitable summer distribution.

Other Needed Actions

Tailing pile removal/breaching; restoration of "Forest Health", update AMP's; implementation of PIG. We implemented a reduction in angling bag limit (zonewide) to 2 fish daily.

Population Priorities

Within the North Fork subbasin the following bull trout waters should receive priority consideration:

Protection	Restoration
North Fork John Day	Trail Creek System
Big Creek	lower Desolation Cr.
Winom Creek	Crane Creek
Hidaway Creek	Granite Creek
upper Desolation Cr.	
Baldy Creek	
South Fork Desolation	

"RED FLAG" ISSUES

"RED FLAG ISSUES" - 1993

- Middle Fork Riparian Restoration Program - BPA - Oxbow
- Access - North Fork and lower mainstem - navigability
- Powerboats - BLM Recreation plan, Ad Hoc Comm.
- Forest Health - watershed effects - workload
- County Riparian Policies - Grant, Morrow - Storage
- Rock Creek passage - McCoin completed
- Cottonwood - juniper logging
- Gravel operations/M. Fk. federal highway project
- Malheur Timber Operators and P.I.N.E.

"RED FLAG" ISSUES

Middle Fork Riparian Restoration Program:

Ed Chaney completed his work but could cut no deals. Whole program now back to district. Jeff and Ken completed agreement for Oxbow Ranch. Some positive discussion with John Forrest.

ODFW and Tribes requesting $275,000 spill settlement be allocated to this effort as seed money.

We still favor purchase or easements of all critical riparian lands above Camp Creek to restore M. Fk. spring chinook.

Possible reduction in BPA funding of habitat program - major issue.

Access:

Obtained access at Bologna Creek (mainstem) and enhancement at Big Bend (N. Fk.). Monument site donated and will be developed by County and BLM in 1993.

Still need access at Clarno and Butte Creek. Lost Hay Creek access to John Day River in recent County Court decision.

Navigability issue still resolved only by site-specific court cases.

Powerboats:

BLM River Plans and powerboat issue will resurface again. Will be holding public hearings.

Our district position is for complete powerboat ban on John Day for social, safety, and biological reasons.

Forest Health:

Major issue on four NE National forests. Governor has requested that it be declared a federal disaster area. President to convene Forest Summit in April.

Salvage and road building could further exacerbate watershed and water quality issues. Watershed cumulative effects.

Sensitive (T&E) species habitats.

Tremendous increase in workload.

Local Riparian/Water Issues:

Grant County signed a new county riparian ordinance. Has gone to Land Use Board of Appeals.

New Dept. of Ag. water reservation request to SWRD filed November 18, 1992. Recommends construction of 30 new reservoirs in John Day Basin.

Grant County hires new water resource analyst, John Youngquist to build congressional package for basin, including storage.

Rock Creek Passage:

McCoin Dam fishway completed, opening StS spawning and rearing habitat which had been blocked for several decades.

Cottonwood - Juniper Logging:

Applications for cottonwood and juniper cutting operations have been received by DOF. Market for chips and "hog fuel" is creating a demand (Co-Gen plants).

Gravel Operations:

New gravel extraction sites have been proposed in the upper John Day basin.

Malheur Timber Operators and P.I.N.E.:

Local industry has formed a consortium to represent timber interests. Salaried staff are increasing participation in Timber/Salvage Sales, and requesting biological data from USFS and ODFW. Major concern about bull trout listing.

P.I.N.E. = Protecting Industries Now Endangered

Stream Access Law

Montana:

- River and streams "capable of recreation use," up to ordinary high-water mark
- Private land, by permission or failure of landowner to post land
- Allows portage outside high-water mark, around man-made barriers
- Public property provides access to high-water corridor

Oregon:

- Access hinges on "navigability" issue, within high-water marks
- "Navigability" only defined site-by-site through court cases
- Landowners do not have to post land

L A G R A N D E F I S H D I S T R I C T

STOCK STATUS

Wild Spring Chinook
Wild Summer Steelhead
Bull Trout
Wild Rainbow - Redband Trout
White Sturgeon

HABITAT RESTORATION STRATEGIES

Upper Grande Ronde River Spring Chinook
"Stream of Dreams"

DISTRICT DISCUSSION

Floodplain/Riparian Area Mining

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March 1993

Review of T&E, Sensitive, and Stocks of Concern
Northeast Regional Fish Management Meeting
March 30 - 31, 1993

District La Grande

Basin Grande Ronde

Species Spring Chinook

Status Listed as threatened under the Endangered Species Act in May 1992

Previous Assessment

Spring chinook populations have been on the decline since 1957. Spawners have declined from a peak of 7,123 fish in 1957 to 478 in 1991.

Due to declining populations the Lower Snake River Mitigation Program was initiated. Lookingglass Hatchery was constructed and put into production in 1982.

The first hatchery fish started returning to the basin in 1984.

In 1991, the highest concentration of adult fish occurred in the Minam and Wenaha rivers which are both within wilderness areas.

Hatchery fish have comprised a large proportion of carcasses recovered in the Grande Ronde basin in recent years. Analysis, using scales, and recovery of visibly marked adults, shows the percentage of hatchery adults identified on the spawning grounds ranges from 0-100% (Table 1).

All outplanting of Rapid River stocks was terminated in 1991 because of concerns about the effects of supplementation using a non-indigenous stock on wild Grande Ronde chinook.

The chinook genetic monitoring started in 1989 to monitor the nature and extent of genetic change overtime in supplemented and unsupplemented populations. Preliminary work indicated that there were some differences in the Grande Ronde Basin stocks. The Catherine Creek (GR-supplemented stock) samples indicated that it has been influenced by outplanted Carson Hatchery stocks. The Lostine River (GR-wild stock) samples indicated that it was the most distinct stock genetically of the stocks sampled. The Minam River (GR-wild stock) sample was not similar to either Catherine Creek or Lostine stocks even though there appears to be a high rate of straying. Additional samples were collected in 1991 and 1992. Analysis of the samples has not been completed.

The National Marine Fisheries Service (NMFS) study on juvenile migration timing indicated that in 1989 that the mean migration time to Lower Granite Dam of the upper Grande Ronde wild/natural

Table 1. Percent of carcasses identified as hatchery fish that were recovered from streams in the Grande Ronde basin, 1986 through 1991 (Carmichael pers. comm.)

Stream	Year											
	1986	(n)	1987	(n)	1988	(n)	1989	(n)	1990	(n)	1991	(n)
Minam R.	50.0	(14)	40.0	(5)	37.5	(8)	0.0	(7)	46.2	(13)	38.5	(13)
Wenaha R.	0.0	(2)	91.3	(23)	72.5	(40)	33.3	(3)	77.8	(9)	66.7	(15)
Lostine R.	25.0	(12)	32.0	(25)	45.5	(44)	56.3	(16)	40.0	(10)	35.0	(20)
Hurricane Cr.	-	-	80.0	(10)	100.0	(8)	33.3	(9)	66.7	(3)	50.0	(4)
Catherine Cr.	20.0	(5)	78.8	(52)	77.8	(36)	37.5	(8)	100.0	(8)	81.8	(11)
Grande Ronde R.	14.3	(7)	82.4	(34)	91.7	(24)	100.0	(1)	50.0	(12)	0.0	(3)
Bear Cr.	0.0	(2)	-	-	-	-	0.0	(1)	0.0	(1)	0.0	(1)
Lookingglass Cr.	-	-	100.0	(1)	90.0	(10)	77.8	(9)	0.0	(1)	100.0	(13)
Wallowa R.	-	-	-	-	100.0	(9)	-	-	-	-	-	-
Prairie Cr.	-	-	-	-	66.7	(6)	-	-	-	-	-	-

stock was approximately one month later than hatchery stocks and the duration of the migration extended an additional 1 to 1.5 months.

Habitat surveys conducted in 1990 by the USFS on the upper Grande Ronde River and North Fork of Catherine Creek indicated a lack of shade, hiding cover, woody debris, and some bank stability problems.

The Pacific Northwest Research Station (PNW) 1990 survey of nine streams in the upper Grande Ronde River basin indicated that eight of the streams averaged a 68% decrease in large pools since 1941. PNW indicated that the greatest losses were in streams in which the dominant land use has been grazing.

The total adult population in the upper Grande Ronde River was lost due to the Tanner Fire/Flood event, which occurred on August 8, 1989.

Sport harvest in the basin has been prohibited for the last 18 years.

Harvest continues in the winter gill net, Columbia River spring sport fishery, and the Zone 6 ceremonial and subsistence fisheries.

Most Recent Findings

The total estimated escapement in the basin for 1992 was 1,375 fish. This does not include returns to Lookingglass Hatchery (Figure 1).

Spawning ground counts conducted on the basin's ten index streams (69.7 miles) indicated an overall density of 3.6 redds/mile.

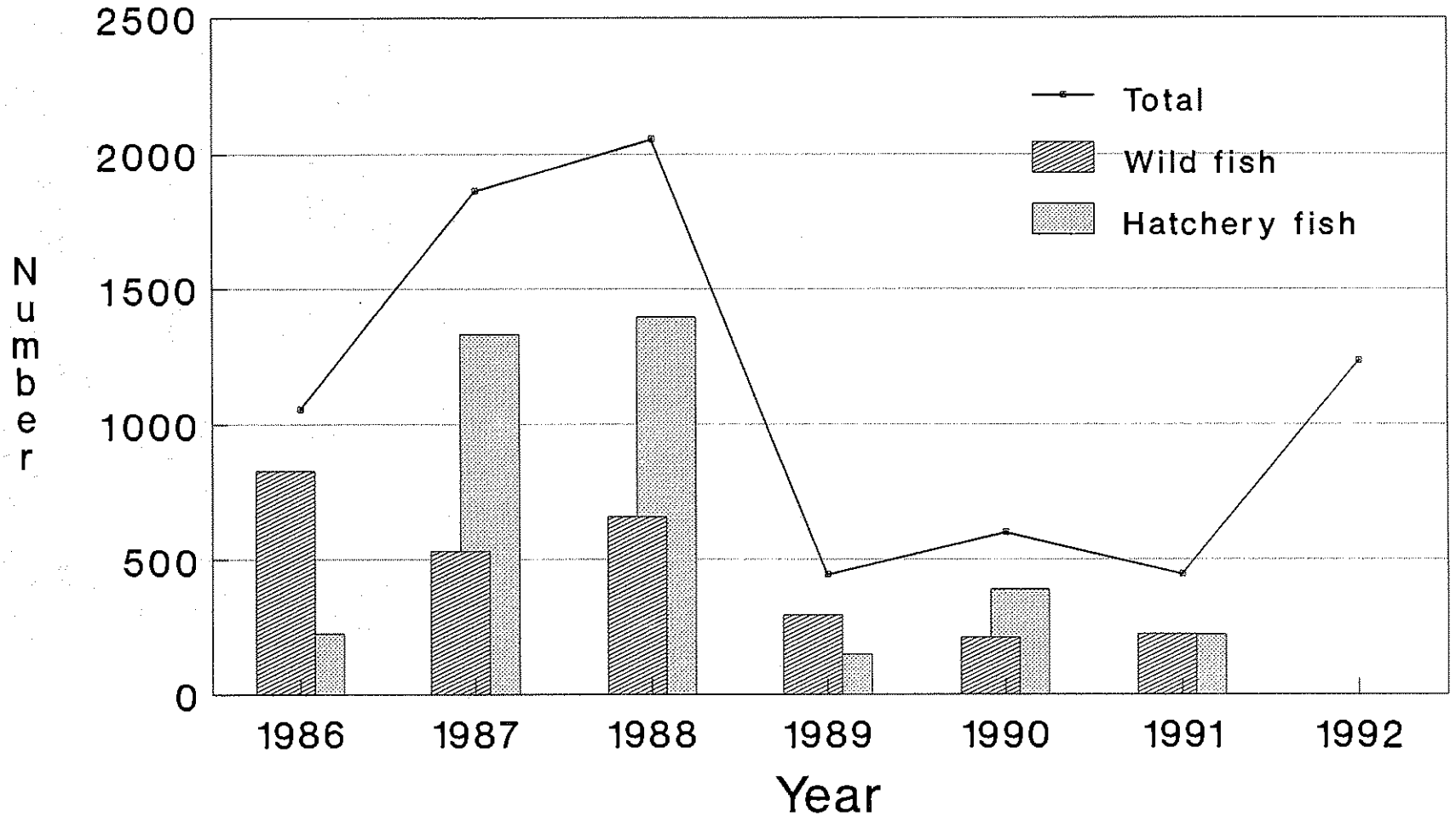
During 1992, the redds/mile calculated for spawning areas were highest on the Wenaha and Minam (7.0 and 6.0). The upper Grande Ronde, Catherine Creek, and Wallowa rivers had values of 4.0, 2.4 and 1.8 redds/mile, respectively.

We made estimates using the percentage of wild/hatchery carcasses recovered on the spawning grounds for the wild spawning escapement from 1986-1991 in the basin. The number of wild spawners has dropped from approximately 750 in 1986 to 250 in 1991 (Figures 1-8). Data for the 1992 run is not yet available.

During 1992 we reestablished the spawning ground index counts on Indian Creek (abandoned in 1979) and the Little Minam (abandoned in 1976). No redds were found on Indian Creek, 16 redds were observed on the Little Minam.

CWT's were recovered from carcasses on the spawning grounds in 1992 on the Wenaha, Minam, and Lostine rivers. Using just these recoveries, hatchery fish made up 34.2% of the carcasses recovered on the Minam, 30.6% on the Wenaha, and 5.3% on the Lostine.

Grande Ronde Basin Spring Chinook Estimated Spawning Ground Escapement



Includes: Minam R., Wenaha R., Lostine R., Hurricane Cr., Catherine Cr., Grande Ronde R. and Bear Cr.

Fig. 1

Bear Creek Spring Chinook
Estimated Wild Fish Escapement

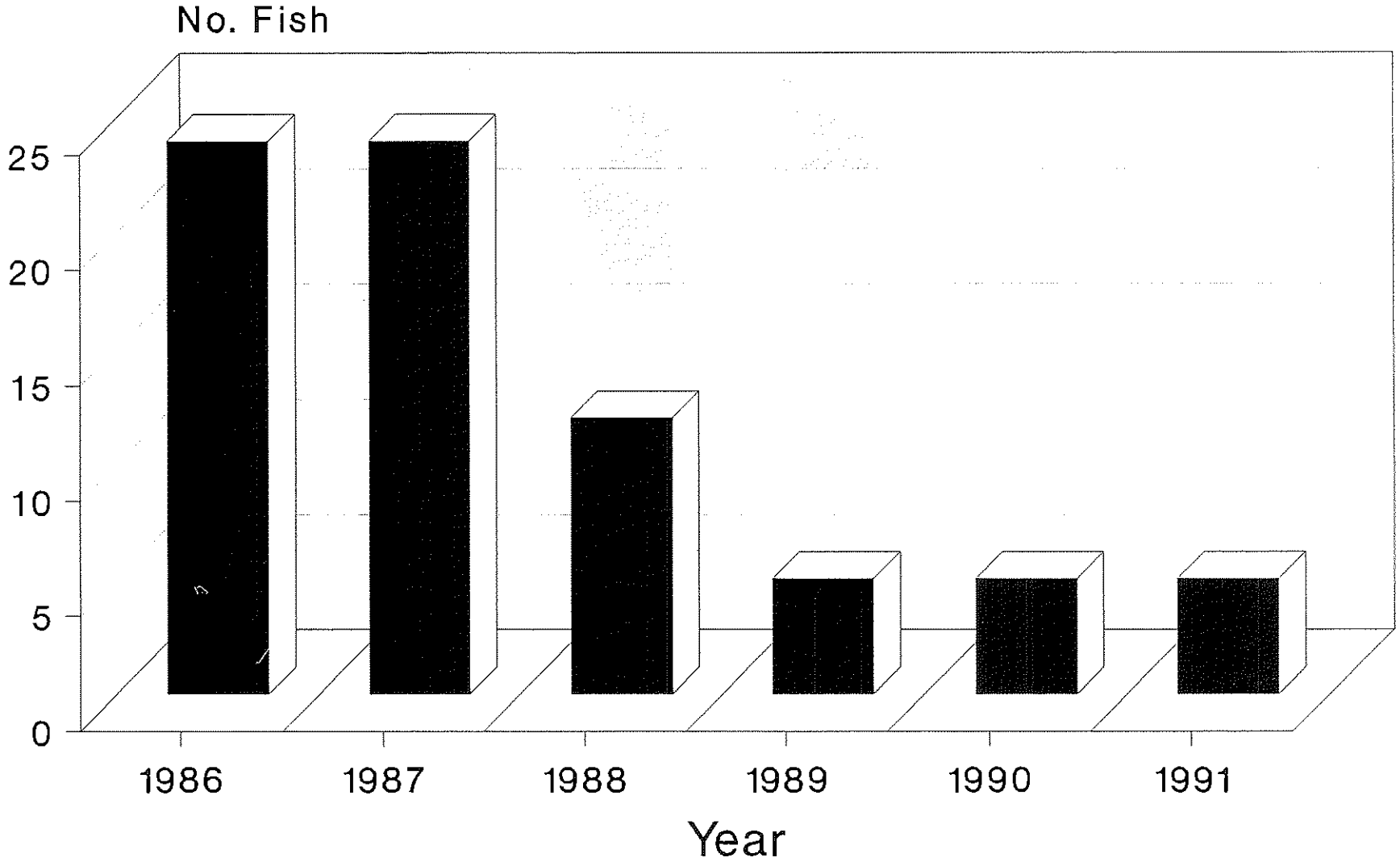


Fig. 2

Catherine Creek Spring Chinook

Estimated Wild Fish Escapement

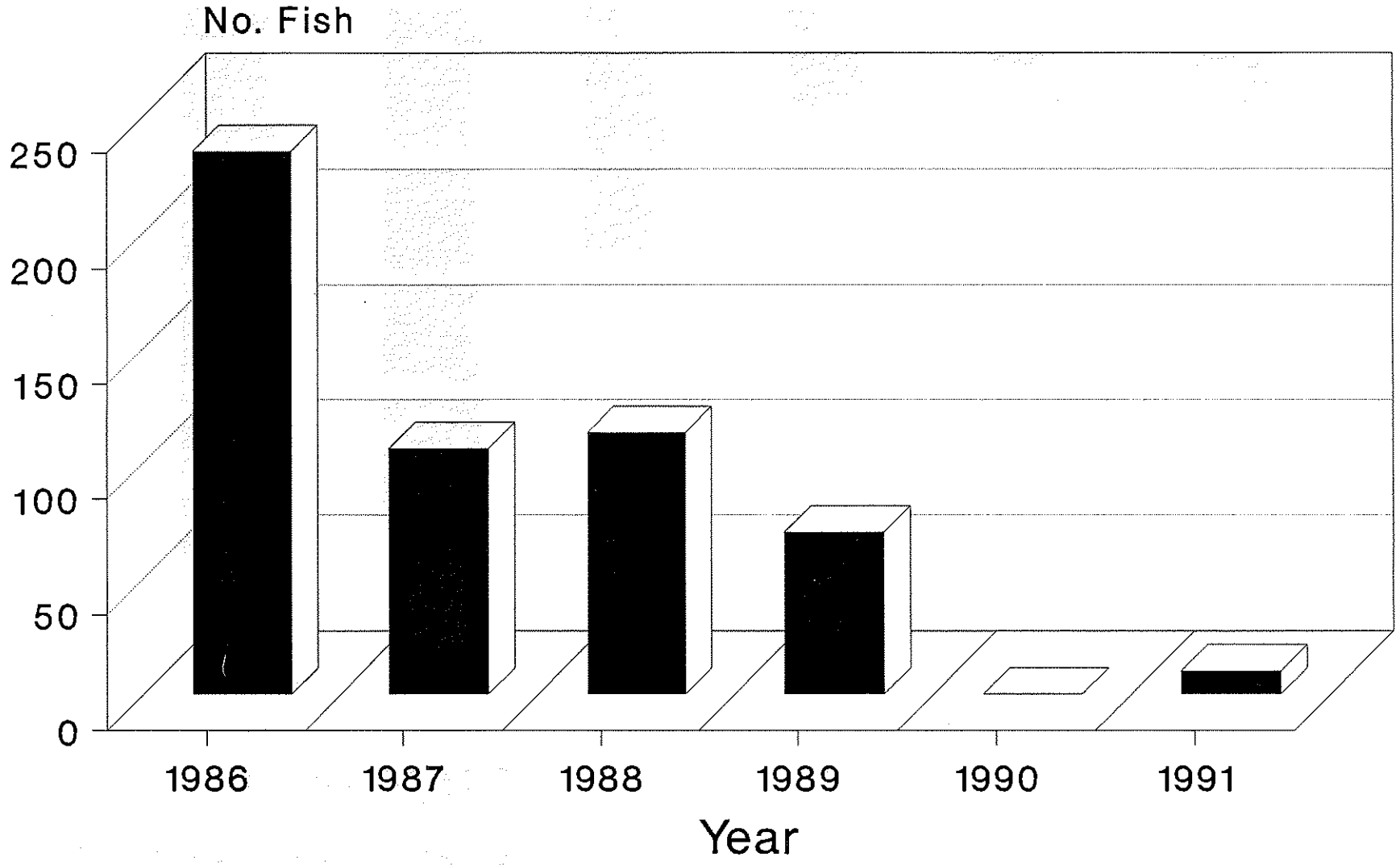


Fig. 3

Hurricane Creek Spring Chinook

Estimated Wild Fish Escapement

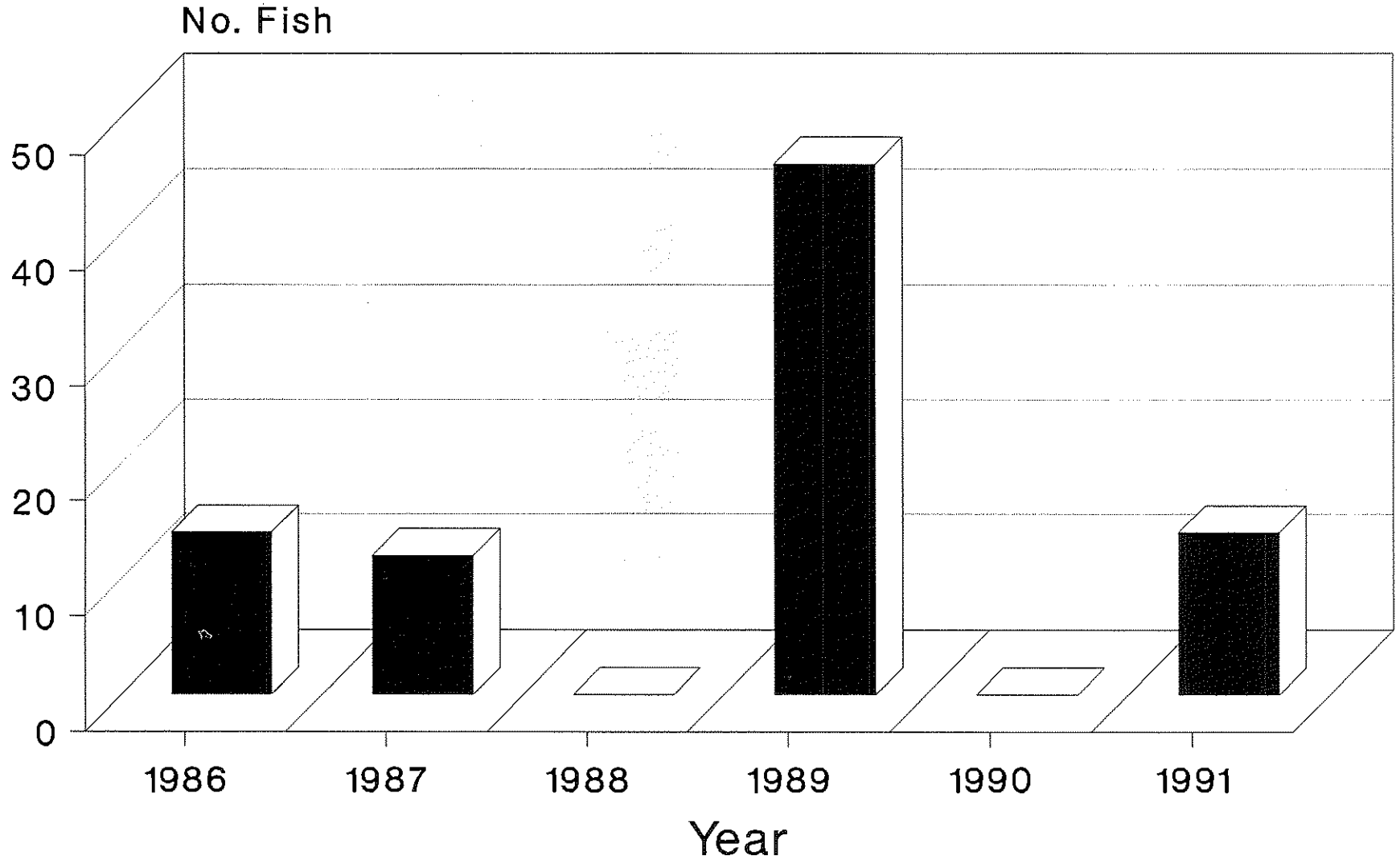


Fig. 4

Lostine River Spring Chinook
Estimated Wild Fish Escapement

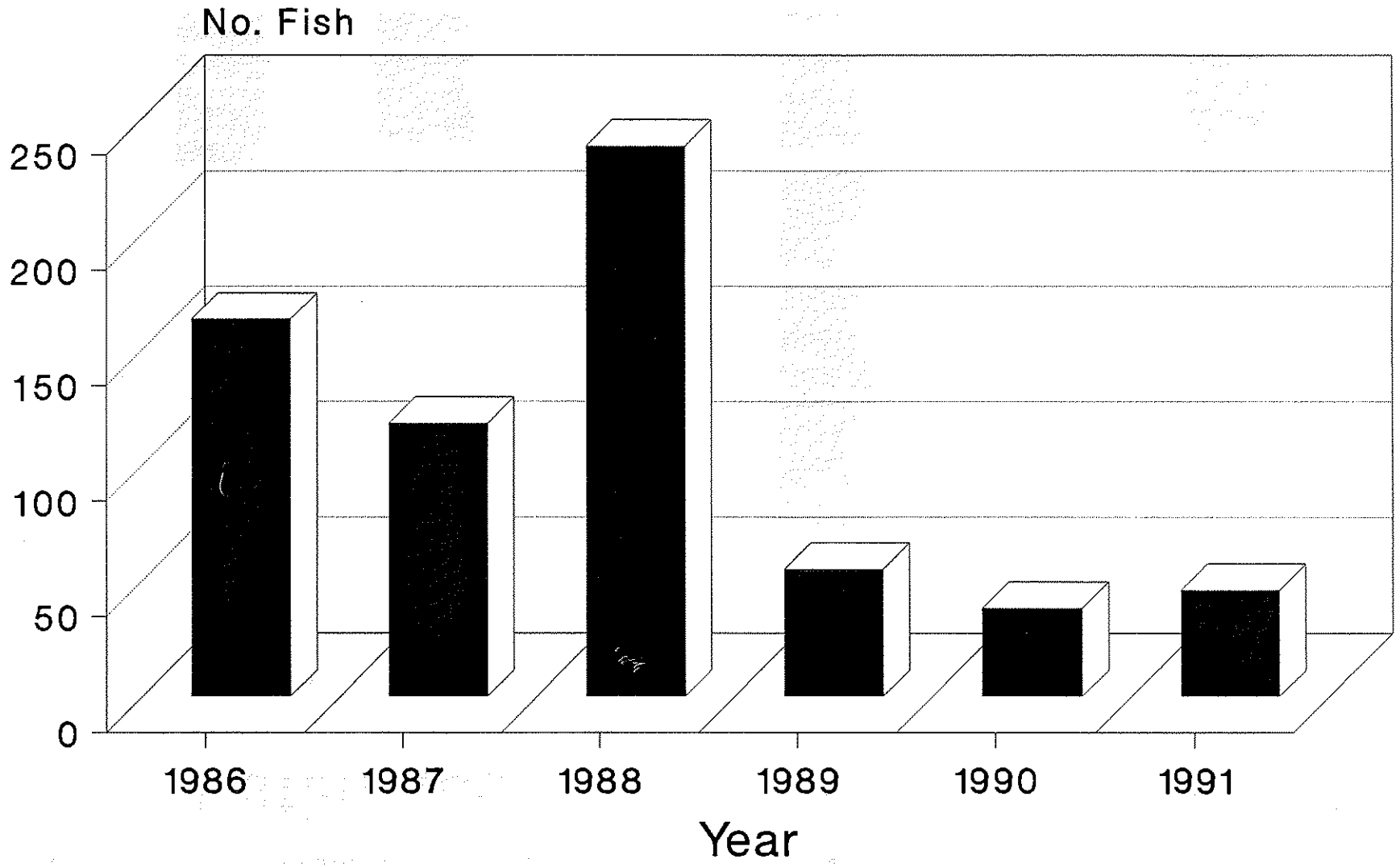


Fig. 5

Minam River Spring Chinook
Estimated Wild Fish Escapement

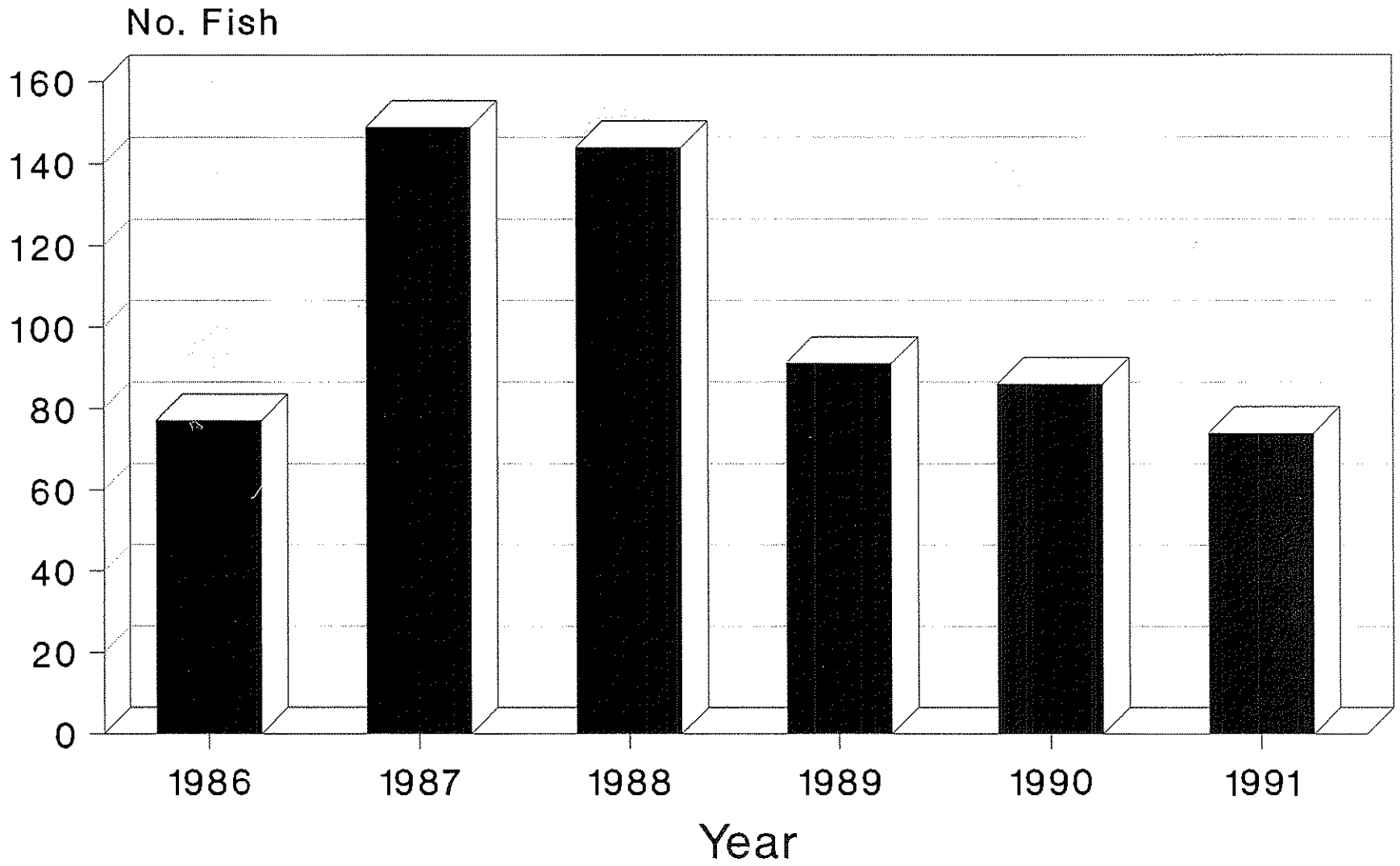


Fig. 6

Upper Grande Ronde River Spring Chinook Estimated Wild Fish Escapement

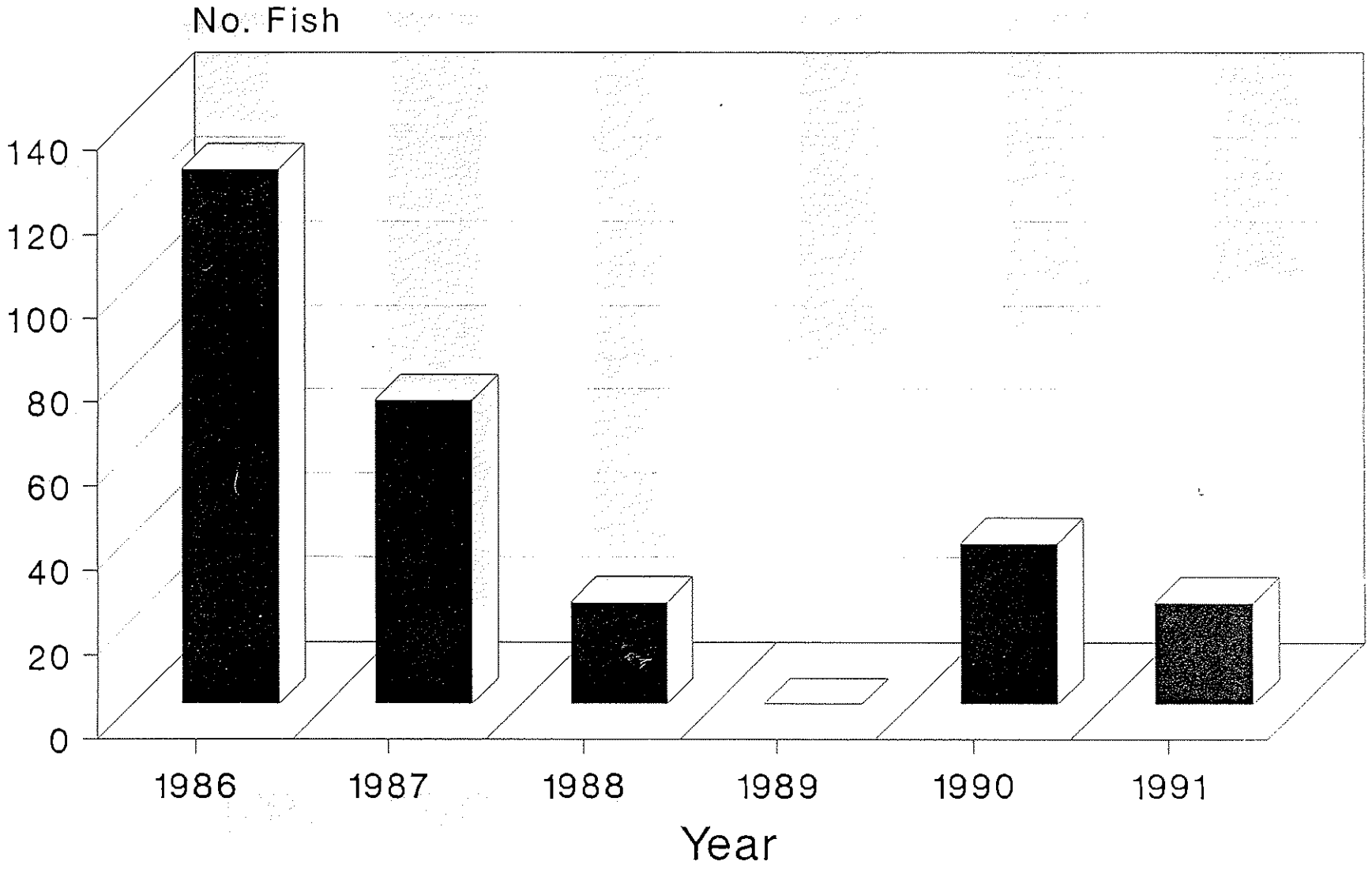


Fig. 7

Wenaha River Spring Chinook
Estimated Wild Fish Escapement

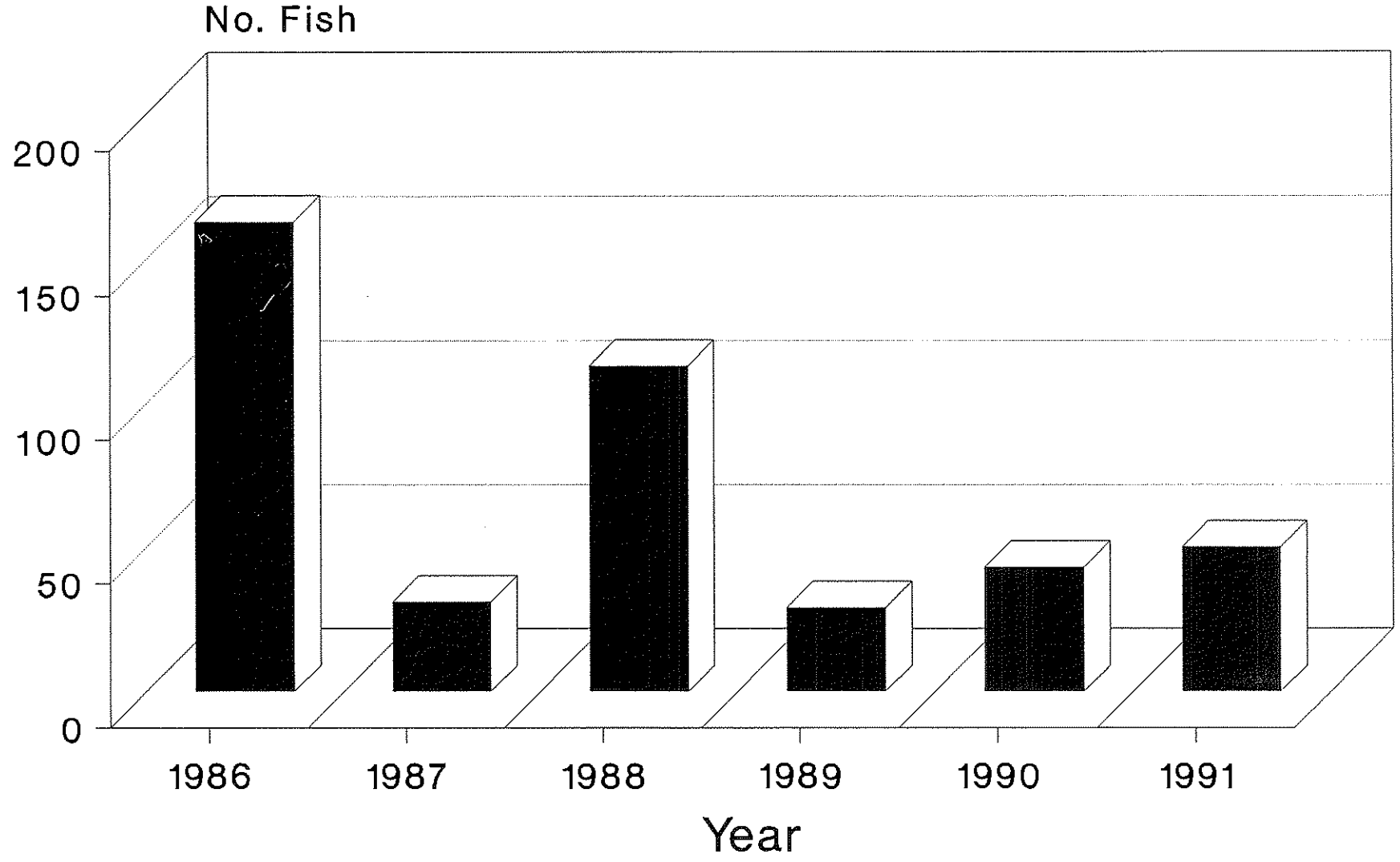


Fig. 8

University of Idaho radio tagged adult chinook at the Snake River dams in 1992. Approximately 20 adults were tracked into the Grande Ronde River. The information on adult distribution and movement as well as potential information to characterize holding habitat has not been effectively coordinated. We have not received any specific data from U of I, although their staff is willing to work on any requests we have.

Juvenile chinook passage at Lower Granite Dam was poor in 1992.

Actions

We produced a proposal with Bruce McIntosh, PNW, to do a more detailed tracking and identification of holding habitat from adults being radio tagged for U of I's passage evaluation. The study was submitted and funded by BPA for 1993. The project will be under the direction of PNW and will track radio tagged adults in the Grande Ronde, Imnaha, and John Day rivers.

Proposals to study the response of chinook and steelhead populations to changes in habitat conditions in the upper Grande Ronde River and life history patterns of both species within the entire Grande Ronde basin were submitted to RAC for approval and funding. The life history study was submitted to BPA for funding. It has since "evaporated" from the phase 3 amendment process. Both studies are identified in the Upper Grande Ronde Plan for funding and implementation.

Two smolt traps have been ordered with available ESA money. Research has been working with the USFWS to provide funding under LSC for the personnel operate the traps and do the rest of the life history studies. Currently, the availability of positions within ODFW to do the work is limiting the project.

We used the money provided by BLM for the support of life history studies in the Grande Ronde River to hire an experienced technician to locate DSM trap sites throughout the basin. A detailed report of these locations was produced.

ODFW and USFS have completed habitat surveys on most of the known spring chinook streams in the basin. Currently, ODFW and USFS data is not united in a single database. Kim Jones (R&E) has been working with the USFS to produce a unified output throughout the drainage for everyone to use.

During 1992 legal trout stocking programs were reduced and moved to minimize harassment of adult chinook while in holding and spawning areas. Anglers contacted were understanding of the change and moved their angling to the new stocking locations.

We have proposed that a pond be built on Ladd Marsh WA (just outside La Grande) as an alternative site for anglers to utilize stocked legal trout diverted from chinook streams. We have yet to overcome resistance to this idea in the wildlife division.

USFS limited access to its recreational facilities along the river in the upper Grande Ronde River during the late summer to protect spawning fish.

An OSP position was identified to focus on T&E species (BPA funded). The officer was successful working with DOF, DSL, DEQ on habitat investigations as well as intensive protection of adults on the spawning grounds. One citation was issued for illegal take.

In response to reports that the Vey Ranch (critical spawning habitat in the upper Grande Ronde) was for sale, we produced a prospectus which outlined the value of the property for fish and wildlife resources.

We produced a Biological Assessment of the Lookingglass Hatchery program as part of USFWS Section 7 consultation with NMFS. The major issue in the analysis was the spawning in the wild of Lookingglass Hatchery fish.

A tribal fishery took place on Lookingglass Creek targeted on surplus returning hatchery adults. Members of CTUIR and Nez Perce tribes harvested 175 fish. No wild fish were identified from the unmarked adults that were sampled.

Approximately 1,000 juvenile spring chinook were PIT tagged in each of five streams in the basin during the summer of 1992. PIT tagged juveniles from the upper Grande Ronde, Catherine Creek, Lostine, Minam, and Wenaha rivers will be recovered at Lower Granite Dam this spring. This should give us information on relative survival rates and migration timing.

Rapid River stock was not outplanted in the basin in 1992 because of concerns about the effects of supplementation using non-indigenous stock on wild Grande Ronde chinook. The full hatchery production (950,827 smolts) was released into Lookingglass Creek. We propose this program will continue until facilities are in place to control returning hatchery adults. The final determination will be up to NMFS.

Weirs are being designed under the NEOH program for the Wenaha and Minam rivers to stop the straying of hatchery fish into these systems.

Acclimation facilities and barriers are being designed for Catherine Creek under the NEOH program to assist in managing both wild and hatchery fish.

Continue working with BPA (NEOH) to develop acclimation, barrier, and hatchery facilities on Catherine Creek, Grande Ronde, Wenaha, Minam, and Lostine rivers.

Continue reviewing the possibility of broodstock development on the Lostine River.

The habitat crew (BPA funded) fenced 2.8 miles of stream which will protect 35 acres of riparian zone.

The Upper Grande Ronde Restoration and Monitoring Plan has been completed by the Upper Grande Ronde Fish Habitat Task Group. The La Grande Ranger District (USFS) is currently processing its implementation through the NEPA process. We are recommending it be implemented throughout the basin.

Continue being involved with the Grande Ronde Model Watershed program. The goal should be to restore habitat for both resident and anadromous fish.

Complete the Grande Ronde Basin Plan.

Continue to work cooperatively with the Tribes to provide opportunities for tribal and sport harvest using surplus hatchery returns.

Current Assessment

Runs of wild chinook returning to the Grande Ronde Basin will continue to be extremely low (Figure 8).

Forest health has the potential to further impact habitat.

Continued opposition will come from the agricultural industry on instream water rights and the timber industry for increased watershed/riparian protection standards.

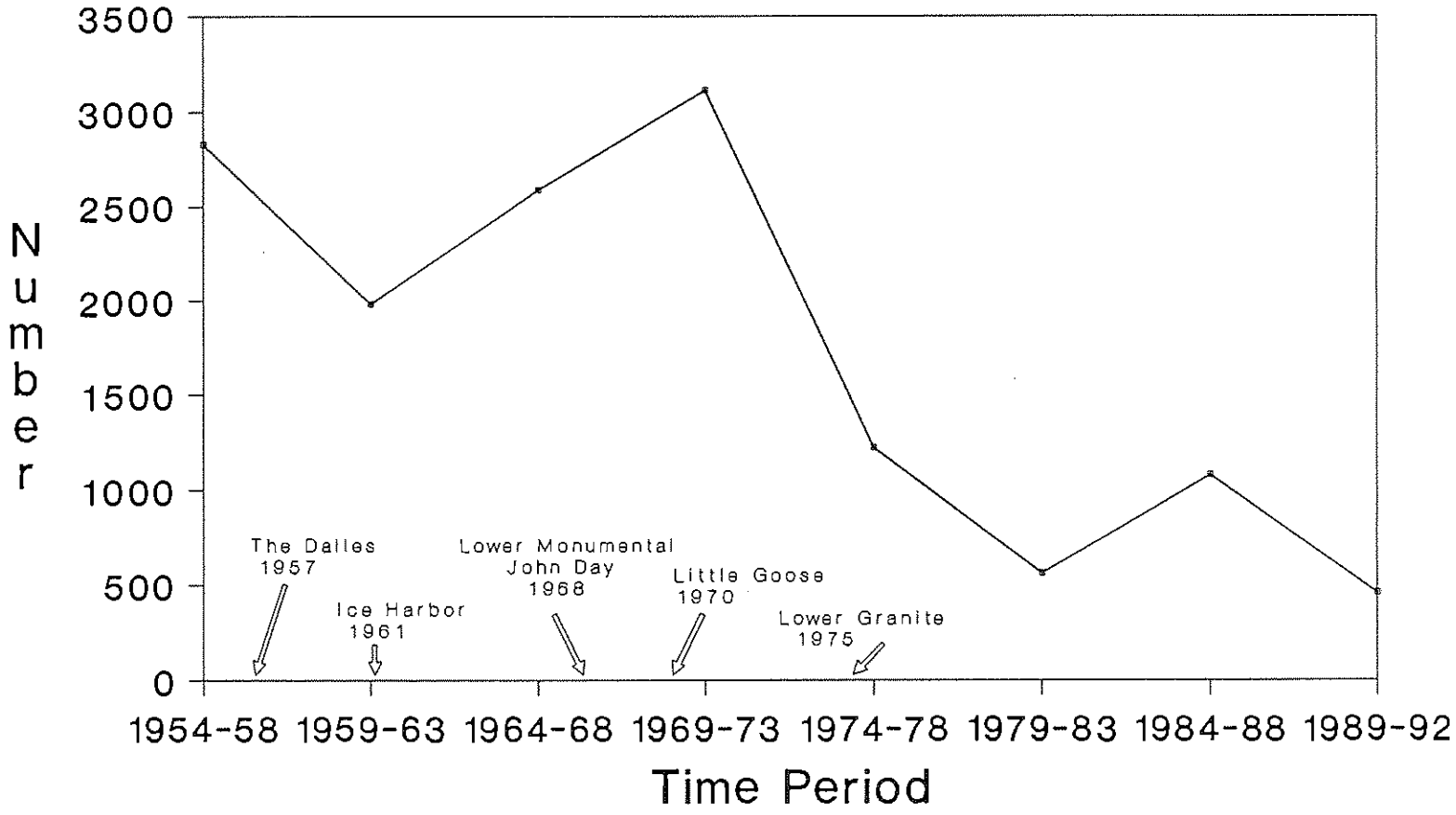
We need the information that would be provided by life history and habitat relationship studies for wild chinook in the basin in order to effectively manage this resource and its habitats.

Socially, the continued downriver catch of Grande Ronde spring chinook makes it more difficult to gain local support for efforts aimed at habitat protection and restoration.

High timber prices, concerns about forest health, and landowner concern about potential restriction because of ESA has increased the harvest of trees on private land. Current riparian protection standards are inadequate to protect habitat. We are concerned about increases in sediment and water temperature in area that already have too much sediment and high summer water temperatures. In addition, many of these areas also receive the additional impact of uncontrolled cattle grazing.

Listing under ESA has brought increased protection for riparian and instream habitat on proposed USFS activities.

Spring Chinook Escapement in the Grande Ronde River Basin 1954-92



Peak Escapement 7,123 for Grande Ronde in 1957 (Index+Ext Redds*2.4 fish/redd)

Fig. 8

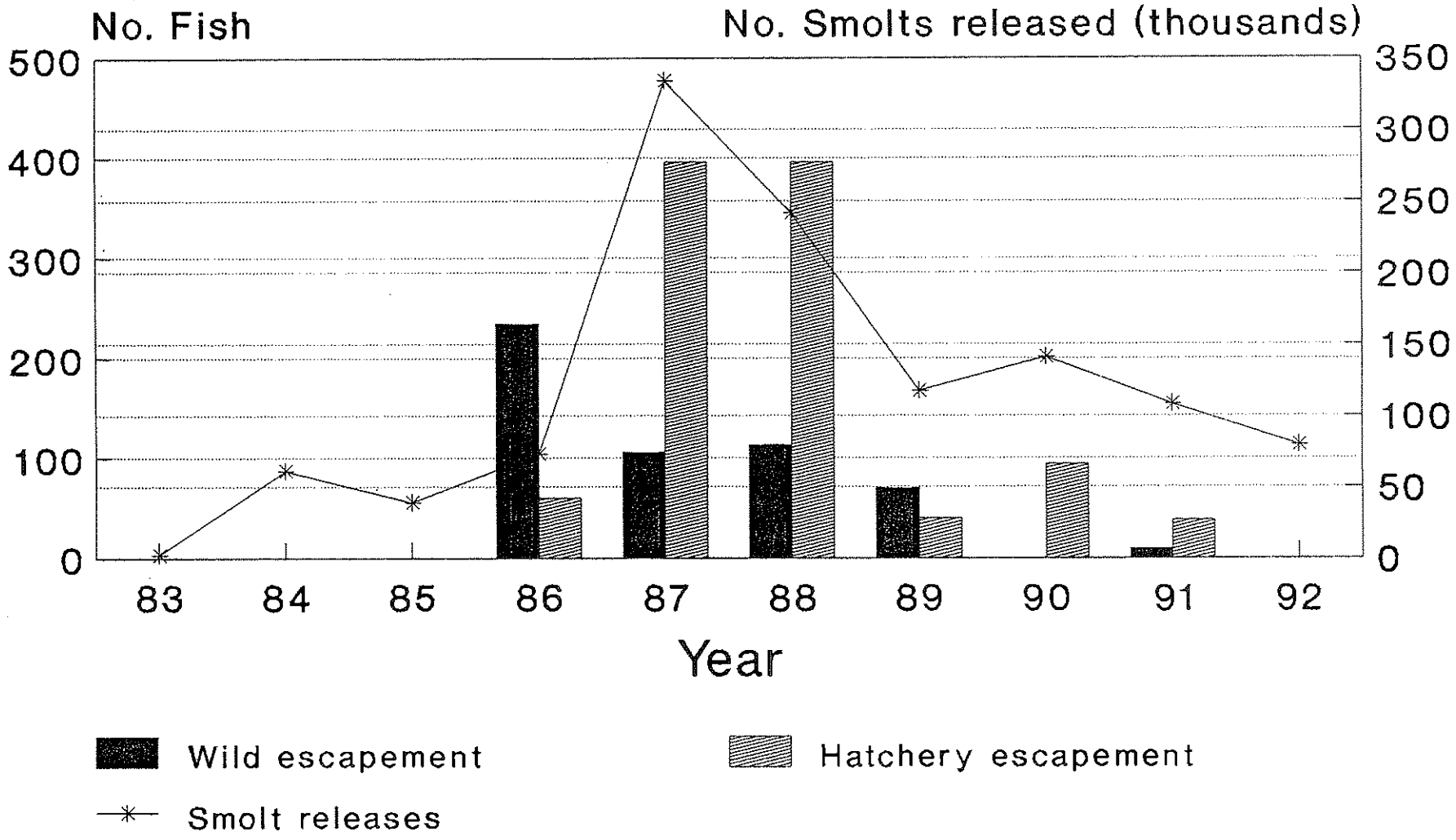
1993 returns to the upper Grande Ronde River should be extremely low because of the loss of 1989 brood caused by the Tanner fire/flood event.

Improvements in the survival of both downstream and upstream migrants in Snake and Columbia rivers will be necessary, along with habitat restoration, in order for recovery efforts to be effective.

All ODFW activities that involve or may impact listed spring chinook are under the purview of NMFS.

Catherine Creek Spring Chinook

Escapement and Smolt Releases



Smolt releases are listed by return yr.

District La Grande

Basin Grande Ronde

Species Summer Steelhead

Status Sensitive (USFS) and stock of concern (ODFW)

Previous Assessment

Summer steelhead numbers into the upper Grande Ronde drainage have been on the decline since 1985, which was one of the highest runs in recent years. Steelhead numbers were low through the 1970s, but greatly improved with the advent of the fish transportation system and good flow years on the Snake and Columbia Rivers.

Total escapement in District waters is unknown. Limited mileage and fluctuating water conditions make the accuracy of index counts variable (21.5 miles surveyed out of several hundred miles of available habitat).

Interest and catch in the steelhead fishery on the upper Grande Ronde River continues to grow. During the last three years (1989-1991) we have seen effort (angler/days) grow from 891 to 1,500. Catch during that same period has increased from 32 to 296 fish. The fishery on Catherine Creek continues at a low ebb with punch card estimates showing a catch of 50 fish during 1990.

Concern continues that we are releasing unacclimated, non-indigenous stocks into the Grande Ronde and Catherine Creek, and the potential of these fish spawning in the wild. Creel checks conducted in 1989 and 1990 indicate that hatchery fish are making up an ever increasing percentage of fish seen in the creel (1989-47%, 1990-78%, 1991-90%). Assuming that the catch reflects the composition of the run and that the same ratio of fish escape to spawn, we are exceeding the standards of the Wild Fish Policy.

Steelhead releases began in 1985. Currently, we release approximately 262,000 smolts annually into the District.

Juvenile Rb/StS were found to be widely distributed throughout the Grande Ronde and Catherine Creek drainages during the 1991 summer sampling period.

Instream water rights applied for are still pending.

Most Recent Findings

Redd Counts

During 1992 redd counts on index streams in the upper Grande Ronde River averaged 3.0 redds/mile. This average is similar

to the 3.6 redds/mile observed in the Grande Ronde drainage in the Wallowa District. This is up from the 1991 count of 1.4 redds/mile (Figure 1).

Fishery Upper Grande Ronde River	The steelhead fishery on the upper Grande Ronde River continues to grow. Stable water conditions during the spring of 1992 provided anglers the opportunity to fish continuously from February through April. During 1992 we estimated effort at 4,366 angler days, a 130% increase from 1991. Catch was estimated at 1,188 fish, a 360% increase from 1991. Catch rate was estimated to be 9.6 hours/fish. Applying a value of $30.37 per angler day for steelhead angling (angler use survey 1991) this fishery generates a value of $132,600 to the regional economy.
Fishery Catherine Creek	Catherine Creek fishery was creeled during 1992. An estimated 341 angler days were expended in the fishery to catch 320 fish. Punch card estimates for 1991 indicated a catch of 35 fish.
% of Hatchery fish in catch	The percentage of hatchery fish observed in the creel on the upper Grande Ronde continues to grow. In 1992, it is estimated that 87% of the steelhead caught were hatchery fish. This continues to heighten our concern that substantial numbers of hatchery fish may be spawning in the wild.
Snake River passage	Because of drought condition 1992 passage of summer steelhead juveniles was poor. Low flows and elevated water temperatures increased mortalities and many fish never reached the collection facilities at the Snake River dams.
Hatchery fish spawning	During the spring of 1992 hatchery and wild fish were observed by an OSU graduate student spawning together on Meadow Creek (upper Grande Ronde River).
Residuals	Sampling during the summer 1992, by research crews, found very few residual steelhead in the district. It appears, at least during 1992, residualism of steelhead smolts is not a problem in this area of the basin.

Actions

Smolt stocking	Reduced smolts stocked in Catherine Creek in 1992 and 1993 from 112,000 to 62,500.
Release sites	Moved release sites for summer steelhead smolts downstream (15 miles in the upper Grande Ronde and 12 miles in Catherine Creek) to concentrate releases in areas of high angler use, and to hopefully localize the area impacted by potential hatchery fish spawning.
Angling deadline-	Proposed a change in angling regulations for 1994 to move the upstream deadline on Catherine Creek up 6.5 miles. This will

Summer Steelhead Redd Counts in the Grande Ronde River basin 1964-92

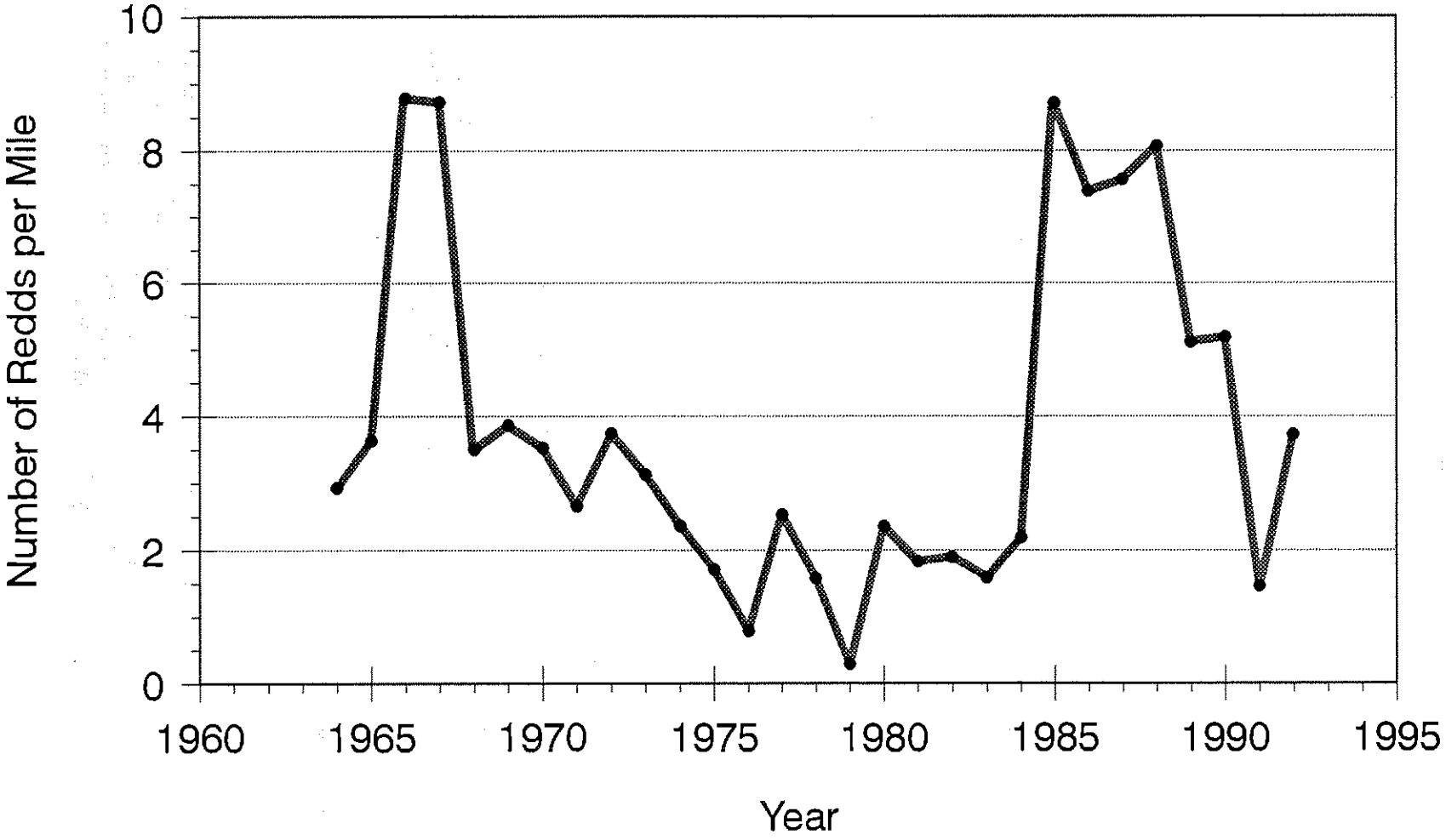


Fig. 1

Catherine Creek	provide increased angler access and facilitate this harvest of more returning hatchery fish. Effected landowners have been notified of our proposal.
U of I adult tracking	Currently, there are 20 adult steelhead in the basin which were radio tagged by the University of Idaho at one of the Snake River dams. We will be keeping close contact with the mobile tracking crews throughout the spring. This information will help to determine run timing into the upper tributaries as well as distribution of the fish on the spawning grounds.
Hatchery fish on spawning grounds	Attempt to collect or observe adult steelhead on the spawning grounds to check for hatchery fish.
Supplementation study	Have proposed seven streams within the district which could be used as part of the steelhead supplementation study. We will review the research proposal when it becomes available.
Genetic Monitoring	Currently neither Catherine Creek or the upper Grande Ronde River steelhead populations are included in the genetic monitoring program. We are proposing that the sampling be expanded to these two streams to evaluate the impact of stocking unacclimated non-indigenous fish on top of a wild population.
Life history studies	Summer steelhead are included in the life history and the fish response to changing habitat conditions study proposal submitted to RAC.
Catherine Creek creel	Statistical creel on the upper Grande Ronde will continue and should be expanded to include Catherine Creek.
OSP creel	Steelhead creel on Catherine Creek was identified as a high Oregon State Police priority during February, March, and April.
	Continue to pursue acclimation facilities on the upper Grande Ronde and Catherine Creek through NEOH.
Expanded redd counts	Cooperate with the USFS to do expanded redd counts in the upper Grande Ronde River.
Basin plan	Complete the summer steelhead section of the Grande Ronde Basin Fish Management Plan.
	Implement the Upper Grande Ronde River anadromous fish habitat protection, restoration and monitoring plan.
	Review and comment on numerous environmental actions which effect steelhead (USFS, DSL, road department, etc.).

Current Assessment

Summer steelhead in the Grande Ronde Basin are currently listed by ODFW as a species of concern and by the USFS as sensitive.

The current situation with forest health in the Blue Mountains and the proposed high levels of salvage could negatively impact the habitat in numerous steelhead streams (loss of riparian vegetation, increases in sediment).

High timber prices along with concern of landowners about potential restrictions because of salmon listing and forest health concerns has caused an acceleration of timber harvest on private lands. Current efforts to upgrade stream protection standards under the Forest Practices Act will be helpful if effective and enacted in time.

It is unknown what impacts hatchery supplementation with a non-indigenous stock is having on our wild spawning populations.

The continued drought in the Snake River Drainage will reduce available rearing areas and provide less water for passage.

Steelhead which have benefited from the collection and transportation system at the Snake River dams, may also benefit from efforts aimed at enhancing ESA spring chinook.

Habitat protection and restoration efforts on Federal lands because of the listing of salmon will help protect and restore habitat for summer steelhead.

Life history and habitat utilization information is critical when hatchery releases are intended for spawning supplementation. Currently that information is lacking.

Grande Ronde summer steelhead continue be harvested in the Zone 6 fall treaty gill net season.

District	La Grande
Basin	Grande Ronde, Powder & Snake
Species	Bull Trout
Status	Sensitive -- Petitioned for listing as endangered, October 1992

Previous Assessment

Populations in the Powder River, Pine Creek, Catherine Creek, Indian Creek, and Upper Grande Ronde River drainages appear to be confined to small areas in the headwater which have not been affected by logging activity or exposed to high angling pressure. At this time, there are no known populations in the Burnt River drainage (brook trout introduced in 1924). In addition, we have been unable to locate any bull trout in Eagle Creek (tributary of the Powder River).

Majority of the data currently being used was collected during the summer months, which gives a limited view of distribution.

Most Recent Findings

A 9.5 inch bull trout that was tagged and released above the dam at Lookingglass Hatchery in September 1991, was caught and released by a steelhead angler in March of 1992, in the Grande Ronde River just below LaGrande. The fish had traveled approximately 45 river miles. This fish was caught again (killed) by an angler in September of 1992 in the Grande Ronde River just below the mouth of Lookingglass Creek. During that one year this fish traveled a minimum of 100 miles.

Lookingglass Creek

North Powder River

An additional population has been identified on the North Powder River (RM 24.5) in the Elkhorn Mountains (USFS managed as back country). In addition, brook trout and a suspected hybrid was identified downstream of the bull trout populations. Samples were taken by a contractor working for the USFS.

Eagle Creek

Snorkel surveys at three sites on Eagle Creek during September of 1992 failed to locate any bull trout (RM 12-13.5, 17-18, and 30.5-32.5). A suspected bull trout was reported from upper Eagle Creek (in the wilderness).

Burnt River

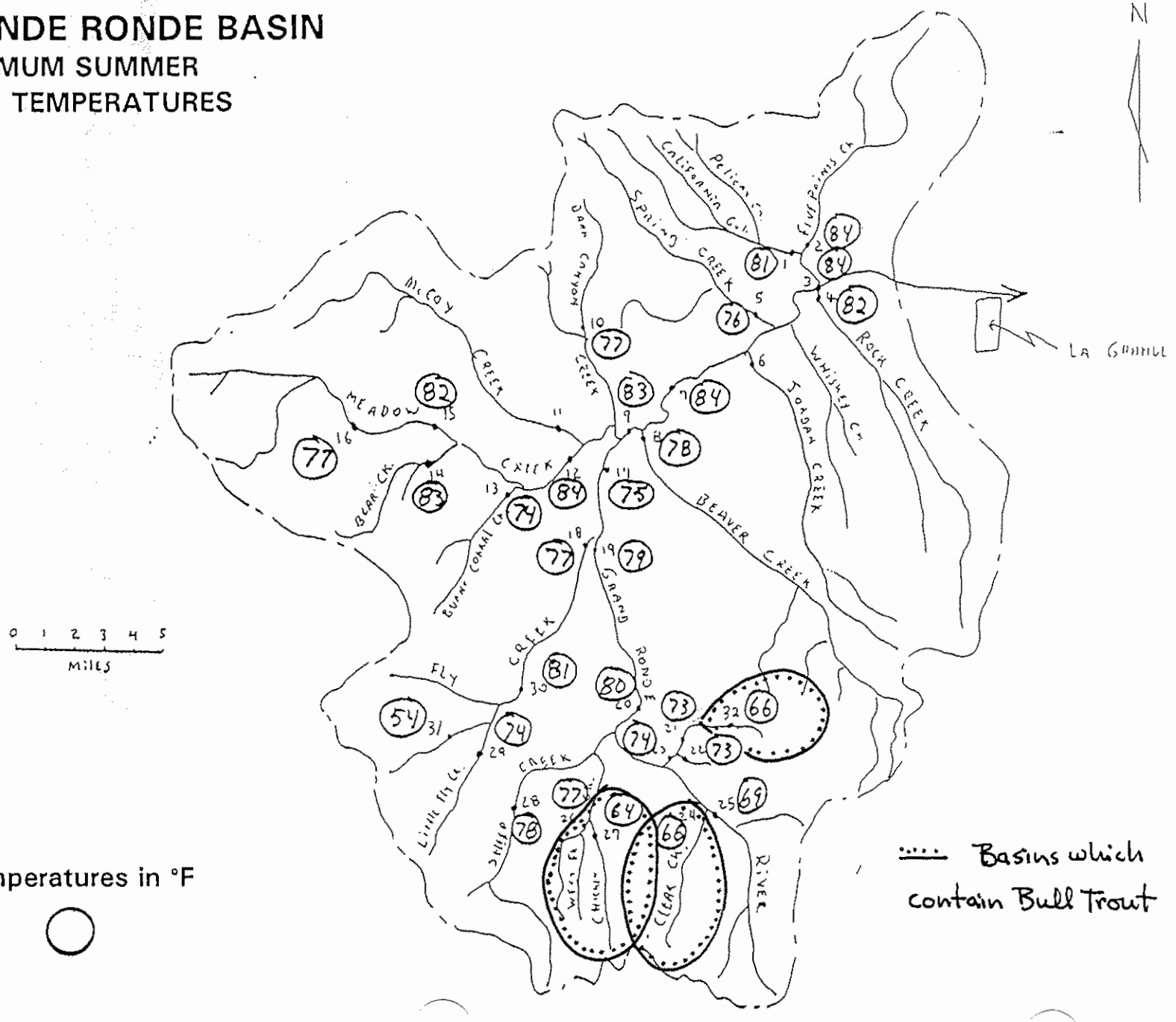
Retired ODFW management biologists, Homer Campbell, Bob Sayre and Jerry Bauer, were contacted about their rememberances of bull trout in the Burnt River. Although some admitted that time had taken its toll on their memory of details, none recalled observing bull trout in the system. These biologist have worked in this area since 1948.

Steelhead Creel	Steelhead anglers contacted on Catherine Creek mentioned they occasionally caught bull trout during the spring in the vicinity of Union.
Little Minam River	Sampling during 1991 on the Little Minam River showed population densities on reaches, which contained bull trout, of 5.1 - 12.1 fish per 100 sq.m. In addition the tributaries Boulder and Dobbin Creeks also had high densities of bull trout. Spawning was observed during this sampling in early September.
Lookingglass	1992 USFS surveys found that the habitat was in good and stable conditions, several large springs provide the majority of the flow, water temperatures were cold, and bull trout were observed from the beginning of the survey (RM 7) through RM 14. Brook trout were observed above a barrier on a tributary, Lost Creek (RM 11). The densities of fish observed were low (0.1 per 100 sq.m), but information collected was not intended to enumerate the population. ODFW surveys below the USFS sections in 1991 found an average density of 0.5/100m^2 in the sections that contained bull trout.
Actions	District assisted the trout research project in preparation of a bull trout research proposal for N.E. Oregon. Proposal was submitted to BPA as a phase four resident fish amendment. It should be considered in 1994 with potential funding in 1995.
Research Proposals	
Steelhead Creel	The summer steelhead creel program being conducted by ODFW research was modified to include asking anglers about incidental catch of bull trout. Information will help to identify the extent of fall and spring distribution and the size of the fish observed.
Harvest	Creel boxes and signs have been prepared to install this spring at campgrounds and trailheads near bull trout streams throughout the district.
R&E - USFS	ODFW and USFS crews will determine the extent of distribution, habitat quality and population numbers on as many known bull trout populations as possible during the summer of 1993.
McGraw Creek	R&E crew scheduled to investigate reported bull trout population in McGraw Creek.
Eagle Creek	Continue investigations on the Eagle Creek drainage using R&E, seasonal, and USFS personnel.
ODF	Updated DOF resource maps for Forest Practices Foresters to include bull trout distribution.

USFS	Continue commenting on USFS timber sales and grazing allotments to protect habitat. Listing petition has brought increased interest by USFS.
OSP	Creel checks for bull trout were identified as a high priority to the State Police.
Current Assessment	Habitat is stable and bull trout are abundant in the Little Minam River. High quality habitat remains in Lookingglass Creek and the Minam River. Population levels are assumed to be good, but population estimates have not been done.
	Bull trout are observed in the Grande Ronde River during the fall and spring.
	Populations in Lookingglass Creek, North Powder River, and Cracker creek are located adjacent to brook trout populations. These populations and their habitat need extra protection to reduce the potential of bull/brook trout interaction. The distribution of brook trout in Summer Creek (Lookingglass drainage) should be investigated to see if there are opportunities to eliminate them from the basin.
	We still have been unable to verify bull trout in Eagle Creek. With populations noted in district records in the 1960 and 70's, the loss of these populations would be significant.
	Populations in the Upper Grande Ronde, Indian, Catherine, Pine, and Powder drainages appear to be fragmented and at low levels. These populations may be further jeopardized by proposed timber salvage activities associated with forest health.
	Current surveys have failed to locate populations in the Burnt River drainage.
	Except for a single rememberance by OSP of a bull trout in a creek on the Burnt River, investigations of ODFW records and personnel has failed to turn up additional reference to bull trout in the basin. We are attempting to look at information on traditional fishing sites in the Burnt River of the Umatilla Tribe to see if bull trout are mentioned in their written or oral histories.

UPPER GRANDE RONDE BASIN

MAXIMUM SUMMER STREAM TEMPERATURES



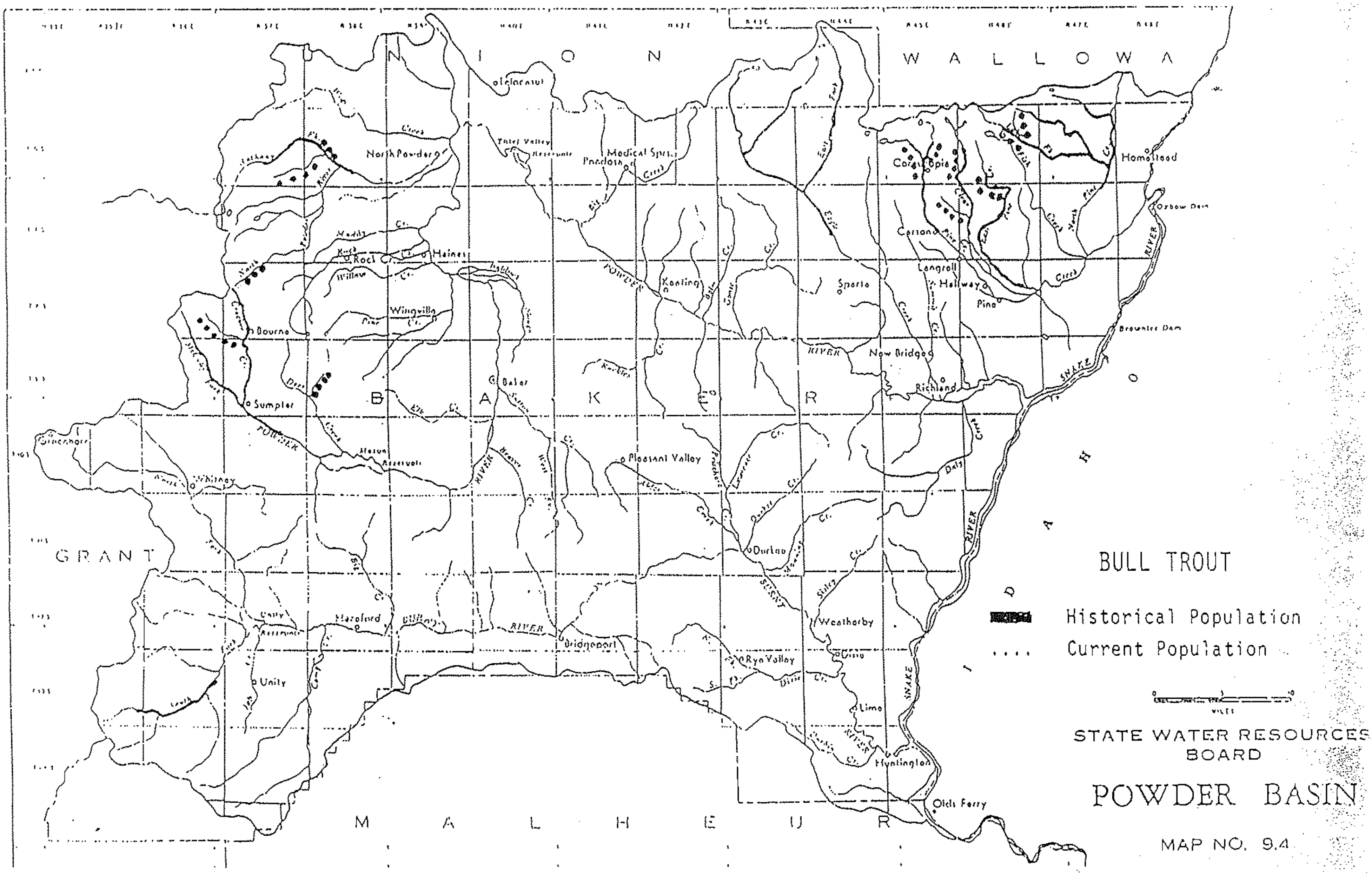
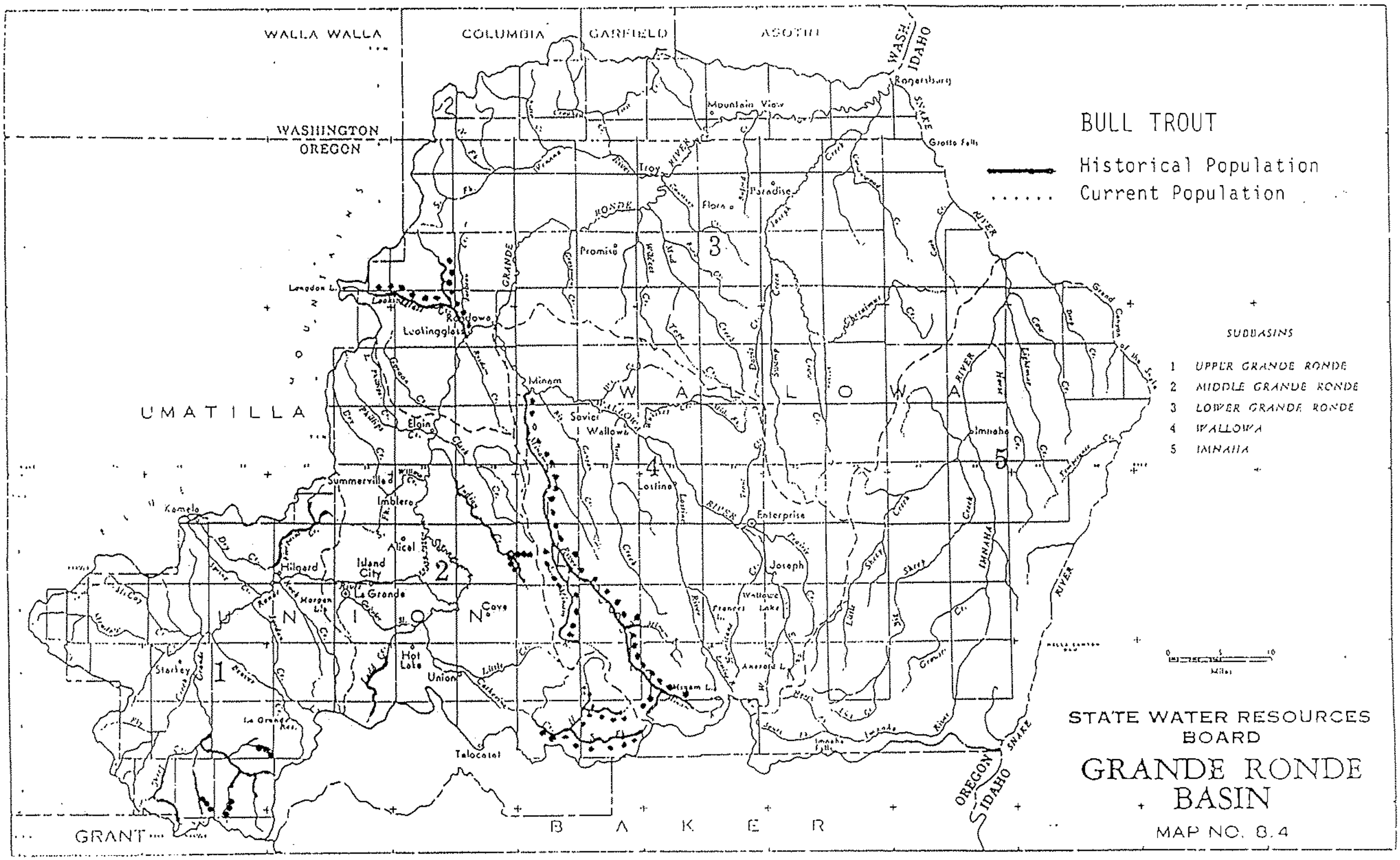

BULL TROUT
Historical Population
Current Population
STATE WATER RESOURCES
BOARD
POWDER BASIN
MAP NO. 9.4
UNION
WALLOWA
BAKER
GRANT
MALHEUR
IDAHO
North Powder
Haines
Rock Cr.
Wingville
Bourne
Sumpter
Baker
Medical Sprs.
Homestead
Oxbow Dam
Brownlee Dam
Sparta
Keating
Halfway
Pine
Carson
Cornucopia
New Bridge
Richland
Pleasant Valley
Durkee
Weatherby
Rye Valley
Unity
Whitney
Hereford
Bridgeport
Lime
Huntington
Olds Ferry
POWDER
RIVER
BURNT
SNAKE

Figure 1


BULL TROUT
Historical Population
Current Population
SUBBASINS
1 UPPER GRANDE RONDE
2 MIDDLE GRANDE RONDE
3 LOWER GRANDE RONDE
4 WALLOWA
5 IMNAHA
STATE WATER RESOURCES BOARD
GRANDE RONDE BASIN
MAP NO. 8.4
WALLA WALLA
COLUMBIA
GARFIELD
ASOTIN
WASHINGTON
OREGON
WASH.
IDAHO
UMATILLA
UNION
WALLOWA
BAKER
GRANT
Mountain View
Rogersburg
Troy
Flora
Paradise
Promise
Minam
Elgin
Summerville
Imbler
Alicel
Island City
La Grande
Cove
Hilgard
Kamela
Starkey
Hot Lake
Union
Telocaset
Lostine
Enterprise
Joseph
Wallowa
Imnaha

District	La Grande
Basin	Grande Ronde, Powder, Burnt and Snake
Species	Rainbow (Redband)
Status	Sensitive

Previous Assessment

The native trout are widely distributed throughout the District and inhabit many diverse types of habitat. They are found in both large and small streams with water temperatures ranging up to 83°F. Little is known about their specific life histories or populations.

Habitat destruction is the biggest threat to many of these populations. Activities such as channel alterations, overgrazing, mining, timber harvest, and irrigation withdrawals have contributed to the decline of these populations in the past and still do.

Current and past outplanting of hatchery trout undoubtedly has affected many of these native trout populations through inbreeding and habitat compitition.

Studies are needed to determine the effects of our hatchery outplanting program on the native species. We are annually stocking approximately 47,000 legal trout in 9 streams and 575,000 fingerling in 9 reservoirs. This is in addition to the steelhead and chinook releases.

Genetic identification work completed in 1990 indicates that many, if not most of the native trout populations, are inland redband trout. The isolated McGraw Creek population appears to be different than the inland redband and are an isolated, highly-divergent population of primitive redband, such as occur in southeast Oregon.

Most Recent Findings

Overall Distribution

Wild trout distribution surveys conducted on 65 streams in the Grande Ronde River, Eagle Creek, and Powder River drainages in 1991, indicate that the rainbow (redband) trout were wide spread and abundant in all streams surveyed except in the extreme headwaters. They were found at 125 of 176 sites sampled and in 54 of the 65 streams.

Genetic Samples Results

Genetic samples were taken in Dixie, South Fork Dixie, and Lawrence creeks in 1991, in cooperation with BLM. Analysis from OSU indicates that all populations were inland rainbows, each was a distinct local population, showed no introgression of hybridization with nonnative rainbows, and showed no evidence of unusual population bottlenecks. No differences

were detected in samples taken above and below a barrier on Lawerence Creek.

Genetic Samples Collected (BLM)

Samples were collected from throughout the district during the summer of 1992, in cooperation with BLM, for genetic analysis of eight additional populations. Fish were sent to OSU from the following streams:

Stream	Basin
Dark Canyon Cr.	Grande Ronde
Ladd Creek	Grande Ronde
Big Creek	Powder River
Sutton Creek	Powder River
Lonesome Creek	Pine Creek
North Pine Creek	Pine Creek
Summit Creek	Eagle Creek

Genetic Samples Collected (Lookingglass Creek)

The USFS from the Walla Walla Ranger District collected fish from four locations in the Lookingglass Creek drainage, and sent them to OSU for genetic analysis. Sampled streams included: Jarboe Creek (above a barrier falls), Swamp Creek, Motett Creek (above Jubilee Lake), and Lost Creek (above falls).

Helped to initiate, plan and coordinate the eastside Rainbow/Redband Workshop to address questions concerning management of this listed sensitive stock.

Actions

Creel census on wild trout was submitted as high priority to Oregon State Police.

Basin Plan

Currently working on the Grande Ronde Basin Fish Management Plan.

Comments

Review and comment on proposed federal and private timber sales, grazing plans, road construction and maintenance activities.

Participation w/Management Groups

Continue participating in the North Fork and South Fork Burnt River Coordinated Resource Management Plans, Grande Ronde Steering Committee, and the Baker County Water Advisory Board.

Screens

Continue to work on the statewide screening program.

R&E Crews

Will continue to document distribution of wild trout with the summer R&E and summer seasonal crews.

Actions Gene Conservation Groups

ODFW will organize redbands by gene conservation groups for the January 1994 review of the sensitive species list. Groups maybe delisted, remain sensitive or be considered for state T&E listing.

Snake River Population

Ken Currens, OSU Genetics Program Leader, is producing a summary document of all the Snake River populations he has

Status	examined. This document will assist us in determining gene conservation units.
McGraw Creek	During 1993 we plan to complete habitat survey, population estimate and fish distribution for the unique redband population in McGraw Creek.
Current Assessment	Redband are currently listed as a sensitive species by the State of Oregon, USFS and BLM. Current classification identifies all populations east of the Cascade Mountains as redbands. It is difficult to manage as sensitive, a species which is widely distributed and often locally abundant. Future refinement of the sensitive species list is necessary to reflect the specific populations which are in jeopardy. Current techniques and knowledge do not provide methods to differentiate between redbands and steelhead in streams which contain both. Efforts and resources will need to be coordinated between districts, region, trout program and genetics program leader to ensure that sufficient samples are taken and analyzed to determine the gene conservation units for adjusting the sensitive species list. Dollars are necessary to support samples from two streams which have trout populations above barriers.

District La Grande

Basin Snake River

Species White Sturgeon

Status Stock of Concern

Previous Assessment

Little is known about the white sturgeon populations in the three Snake River reservoirs. In Oxbow and Hells Canyon Reservoirs the populations are isolated and in Brownlee there may be some interchange with populations upstream in the Snake River.

The status of recruitment into these populations is unknown. It may be non-existent or limited. No juvenile fish have been observed.

Water quality is and will continue to be a threat to sturgeon in Brownlee Reservoir.

The catch and release fishery is growing in popularity; however, we don't know the number of anglers involved or the number of fish caught.

A sturgeon kill occurred in Brownlee Reservoir (mouth of Burnt R.) during mid-July 1990, due to poor water quality (low flow, high temperatures, low D.O). A total of 27 carcasses were recovered, which ranged from 43 to 87 inches in length.

Length frequency data (from fish kill), when compared to data from other studies in the basin, indicate that these fish ranged from 19 to 50 years in age (1941-1971 BY).

Contacts with commercial carp fishermen in 1990, revealed that not all of the sturgeon in the area (mouth of Burnt R.) were killed. Several sturgeon were caught in their seins in that area after the kill.

In 1991, Idaho Department of fish and Game stocked 40 sturgeon in Oxbow Reservoir and 104 in Hells Canyon Reservoir. The fish ranged from 12 to 15 inches in length and were PIT tagged so they can be identified during sampling. Fish Division has requested that the scheduled 1992 stocking be delayed until we can review the documentation for this introduction.

Most Recent Findings

Hells Canyon Reservoir was sampled during June 1992. Six adult sturgeon from 71 to 99 inches long were captured. Ages ranged from 43 to 92 years (reservoir impounded 26 years ago).

Hells Canyon Reservoir Sampling	The density of large fish in the catch was greater than similar samples taken in the Columbia River pools. Although gear and location of sampling should have captured juvenile fish, only a single juvenile, which was stocked by IDFG in 1991, was recovered.
Oxbow Reservoir Sampling	Oxbow Reservoir was sampled during late September 1992. No sturgeon were caught, although sampling gear and location were similar to those used on other Columbia and Snake River pools. We feel the lack of success maybe related to the time of year the sampling took place.
Oxbow Reservoir Sturgeon Recovery	A dead sturgeon was recovered in Oxbow Reservoir during the summer of 1992. The 64 inch fish was 29 years old. Oxbow Reservoir has been impounded for 32 years.
Angler Catch	Anglers on Oxbow Reservoir reported catching a small sturgeon during the summer of 1992. This fish is probably one of the 40 young sturgeon stocked by IDFW in 1991. Creel interviews did not reveal any sturgeon being caught by anglers in 1991.

Actions

Oxbow Sampling	We will return to Oxbow Reservoir during the spring of 1993 to continue our assessment work. Continued contacts with DEQ, Idaho Department of Fish and Game, and Idaho Power Company pursuing water quality monitoring for Brownlee Reservoir. We will continue these inquiries. We will work with IDFG during their 1992 sampling program on the reach of the Snake River between Swan Falls and Brownlee Reservoir.
IDFW Coordination	Discussed results of sampling and future management options with managers from Idaho Fish & Game. They will consult with ODFW before any additional juvenile sturgeon are released in the reservoirs. The Snake River sturgeon research priority setting meeting was attended. The Swan Falls reach (including Brownlee Reservoir and Snake River upstream) was identified as a high priority for future work.
Spawning Potential	USFWS was requested to assist our efforts by doing a field assessment and modeling effort to identify the potential for spawning (based on substrate and flow) on Hells Canyon and Oxbow reservoirs. USFWS was unable to assist us at this time. The fishery remains open for catch & release angling.

Current Assessment

The sampling in Hells Canyon Reservoir indicates that a population persists in this Reservoir. Sampling showed no evidence of reproduction. The USFWS sampling and modeling effort to assess the potential for reproduction should be pursued for both Oxbow and Hells Canyon reservoirs.

Collection of this data is timely with Hydro relicensing for the Hells Canyon Complex upcoming early in the next century. In addition, IDFG may potentially want to once again outplant surplus juvenile sturgeon from private hatcheries.

Additional sampling will be necessary to assess population status in Oxbow and Brownlee reservoirs.

Completion of these sampling efforts should be a high priority. If actions are necessary to retain sturgeon in these pools, then we will want to make recommendations during the relicensing process for modifications in facilities, operations or support for mitigation (trapping and stocking) to maintain these population.

The population in these reservoirs have been trapped since the dams were completed (32 years Oxbow and 26 years Hells Canyon). If natural recruitment is limited then intervention will be necessary in the next 10 years to maintain these population. Plans will need to be drafted with IDFG and IPC to ensure that populations of sturgeon will continue to exist and be available to anglers.

HABITAT PROTECTION AND RESTORATION STRATEGIES
Northeast Region Fish Management Meeting
March 30-31, 1993

District:
La Grande

Basin:
Upper Grande Ronde River (Elgin upstream)

Population:
Spring Chinook Salmon

Status:
Snake River spring/summer chinook were listed as threatened in May 1992, under the Endangered Species Act

Population Status:
The spring chinook population has shown a steady decline since the 1960s. Despite the outplanting of both adult and juvenile fish, we have seen very little response in numbers of returning adults to the upper basin.

Historic Overview:
"And may Heaven forgive Oregon for stripping her foothills of standing timber, causing the once copious creeks to dry up and disappear. If she had only planted a new tree for every magnificent specimen cut down, those foothills would be again endowed with forests". This quote was made prior to 1934 by Bertram Huffman, an early pioneer of this area. As you can see, habitat conditions have been a concern since the turn of the century.

Descriptions of this area recorded by early explorers and pioneers provides us with an idea of how this basin appeared prior to settlement in the 1860s. The creeks and the Grande Ronde River banks were described as being lined with willow and cottonwood and other underbrush. The Grande Ronde valley was known to the Indians as Cop Copi, after the cottonwoods that grew there. A large portion of the south end of the Grande Ronde Valley, between Hot Lake and Cove, was covered by a vast tule lake, which covered approximately 20,0000 acres, and drained into both Catherine Creek and the Grande Ronde River. The remainder of the valley was described as being covered with bunch grass and rye grass so tall and thick that a person could only find the cattle and horses by tracking them. Many of the accounts described the foothills and headwaters of the Blue Mountains as being covered with large pines and interspersed with meadows and abundant grazing lands.

Nearly all of the accounts mention the presence of numerous fish and wildlife species. Robert Stuart, one of the first white men in the basin, mentioned shooting a salmon on August 4, 1812 in Meadow Creek. Ben Brown, an early freighter and settler, recorded catching 18 mountain trout averaging 10 pounds on September 11, 1860, in the Grande Ronde River near Hilgard. Both the Umatilla and Nez Perce tribes caught salmon with grabhooks, for subsistence and trading at several fishing sites from La Grande upstream.

Once white men became permanently established in 1861 in the basin, the complexion of the area started changing at a rapid rate. Gold mining started in the upper basin in 1862, the first irrigation withdrawal started in 1863, State of Oregon land reclamation program started in 1870, construction of the State Ditch was completed by 1872, the railroad came to Union County in 1884, Tule Lake was drained by 1885, the first major logging activities started in 1889, and major sheep and cattle grazing in the 1890s. By the early 1900s, a basin rich in salmon and wildlife resources had become a basin rich in agricultural products.

Limiting Factors:

Habitat degradation in the basin has been caused by a multitude of activities since 1870; however, the main causes are believed to be stream channelization, livestock grazing, road building, timber harvest, and mining. The following are what we believe are the five major limiting factors within the basin:

Channel Alterations

Channel alteration activities have been ongoing since the late 1880s. A large number of streams in the basin have been channelized or constrained to where they no longer have an active flood plain and much of their sinuosity has been lost.

The State Ditch, constructed under the State of Oregon Land Reclamation Program, cut off 33 miles of the original meandering Grande Ronde River channel eliminating what we believe were juvenile rearing and adult holding waters(Figure 1). In addition, many of the adjacent sloughs were drained and many have physically disappeared as have portions of the original channel.

From the late 1880s to 1919, the Grande Ronde River was a major log driving river. Two splash dams were built on the mainstem, as well as on Dark Canyon, Meadow and Fly Creeks to provide flows to float logs downstream to the mills, Splash damming and log drives are believed to have caused considerable scouring damage to the stream channel, as well as eliminate most of the instream habitat structure. Any

structure such as large boulders, woody debris or streamside vegetation which would impede the movement of logs were removed from the channel.

With the coming of the railroad in 1919, the need to use the river as a means to transport logs disappeared. The railroad extended its tracks to the upper river and most of the major tributaries to transport logs to the mills. Most, if not all, of the tracks were located in the river and creek bottoms confining the channels and destroying the riparian areas. The practice of clearing the stream channel of large woody debris continued into the 1950s at which time the railroad was abandoned.

Additional channel alterations occurred starting in the 1920s when road building activities increased to provide access for the harvest of timber in the basin. Again these roads were built in the stream bottoms and encroached upon the channels, constricting their ability to interact with the flood plain. Since the 1920s, state and interstate highways, as well as forest and county roads, have been constructed, further altering the stream channels.

Lack of Large Pools

Numerous studies have shown that large pools are important to anadromous salmonids for all phases of their freshwater ecology. They provide rearing habitat for juvenile fish, holding habitat for adults prior to spawning, and refuge during drought, flooding and winter-icing periods.

A study documenting historical changes in anadromous fish habitat in the upper Grande Ronde River, was completed by Bruce McIntosh in 1992. He re-surveyed streams in the Upper Grande Ronde Basin and compared them to surveys conducted in 1941 by the U.S. Bureau of Fisheries (now National Marine Fisheries Service). Data indicated that the total loss of large pools/km ranged from 47 to 83 percent (Table 1). Not only has the number of pools changed over time, but also the spatial distribution. See Figures 2 & 3.

Much of the loss of large pool habitat can be attributed to land management activities, both past and present. McIntosh indicated that these activities have lead to a 59% reduction in large pools during the last 50 years.

Sedimentation

Past and present management activities such as mining, grazing and timber harvest have led to increased sediment loading over the last 50 years. Natural events such as the Tanner Fire in 1989 has also caused substantial increases in sediment loading. Cobble embeddedness in some areas is well above recommended limits (Figure 4). Although no standards for cobble embeddedness presently exists, values greater

than 35% are thought to negatively affect chinook survival. These management activities also create fine sediments which directly affect fry emergence (Figure 5).

The major sediment source upstream from La Grande is believed to be from roads(Figure 6). Road densities in the upper watershed now average about 4 miles of road per square mile of area, but exceeds 7 miles per square mile in some areas. Many of these roads are located in draw bottoms and many are not maintained.

Downstream from La Grande the major sources of sediment come from bank, sheet, and wind erosion. Recent studies estimate that approximately 15 tons of soil per acre are lost each year from agricultural land in the valley through wind and water erosion.

Past channelization and gravel mining activities have constrained the river channel and it no longer has an active flood plain to dissipate the energy of high flows. As a result, bank erosion is a major problem. Agricultural activities have also removed riparian vegetation along the river and in some cases fields are plowed to the edge of the stream bank.

With the advent of sprinkler irrigation and aerial herbicide spraying, many of the old wind breaks and fence rows have been removed or killed. The loss of these upland structures has resulted in increased wind erosion of agricultural lands and the deposition of soils in the river.

Water Temperatures

The loss of riparian vegetation has led to significant increases of temperatures, many of which exceed state water quality standards (Figure 7). It is estimated that timber harvest, grazing, agriculture, mining and road construction activities on both private and public lands have reduced overall stream shade from a potential of 80% to 28%.

A substantial increase in timber harvest and associated activities began in the 1950s (Figure 8) and in conjunction with natural occurrences such as the mountain pine beetle epidemic in the 1970s and the spruce budworm infestations in the 1980s, streamside shading was reduced significantly in the upper basin. The composition of many of the headwater riparian zones were made up of coniferous species.

Stream temperatures in the river downstream from Meadow Creek and through the Grande Ronde Valley are typically in the 70-80 degrees F. during the summer and early fall months due in part to the removal of trees in the riparian zone. R&E surveys indicated that 21% of the river was shaded from Meadow Creek downstream to La Grande and 18% of the channel through the valley floor. Once the river enters the valley,

heavy irrigation withdrawals also exacerbate the temperature problem.

Flow Regimes

McIntosh's study illustrated significant changes in the Grande Ronde River flow regime since 1904. While the annual and winter precipitation along with snow pack have decreased, the base discharge has increased. The average base discharge (mean of the 10 lowest continuous days for the water year) increased 86% (14 to 26 cfs) from 1904 through 1989 and 51% (18.5 to 28 cfs) from 1941 through 1990. The increase in base discharge and the decline in precipitation suggests that the increase is not due to climatic changes. The base discharge regime may be the result of defoliation from insect infestations and timber harvest, which reduced the transpiration rate allowing more precipitation to be retained as soil moisture, eventually being released to the stream through subsurface flow. It is believed that the adult holding and juvenile rearing capability of streams in eastern Oregon such as the Upper Grande Ronde River, is limited by the base discharge. The increased base discharge indicates there may be sufficient summer flow, but the habitat conditions necessary to utilize the increased flow are not functional.

McIntosh also indicated that the higher base flow did not translate into increased annual discharges and that base flows make up less than 3% of the annual water yield.

For the years of record (1904-89), it appears that the peak flow may be occurring as much as 30 days earlier, moving from April 10 to March 11 (Figure 9). This change in peak flow timing could also be the result of defoliation and timber harvest. Research has shown that snowfall accumulations are greater in clear-cuts and openings and melt earlier.

The shift in peak flow timing may have an effect on smolt migration from the basin. If they are forced to migrate earlier, they may not be physiologically ready; or if they don't migrate, they risk leaving when water conditions may not be good.

Habitat Protection & Restoration Strategies:

The historical perspective on how habitat conditions have changed over time and the specific requirements spring chinook will assist in defining desired future conditions and opportunities for restoration.

The UGR Plan will be used as a template in designing protection and restoration strategies to restore the natural

riparian and watershed functions in the basin to benefit spring chinook salmon.

We will use adaptive management as our principle in implementing any plans we propose. Information from inventory and monitoring and research activities will be constantly evaluated and the plans modified to reflect the most current available information. This will help to insure that the projects are both cost effective and beneficial to fish.

Although the standards and guidelines as listed in the UGR Plan provides us with good scientific information on measures necessary to accomplish our goal. The success of the program depends on the cooperation of government agencies, tribes, and private landowners. Private landowners are especially important because they control a large portion of the productive salmon habitat.

Before any landowner will become a part of the program, it will have to be demonstrated to them that they will benefit from the process. We feel we can do this by developing and promoting education programs through the Grande Ronde Model Watershed Program, Governor's Watershed Enhancement Program and the SCS Grande Ronde Valley Study. We need to get them involved in the watershed health issues and demonstrate to them that benefits such as reduced costs of irrigation, increased channel and bank stability, added property value and increased forage for livestock can be derived from anadromous fish habitat restoration. The main point that we need to convey to the landowners is that the restoration program is not designed to put them out of business, but to promote good land use practices which will benefit them as well as the fishery resource.

Another major hurdle to overcome is timber extraction in riparian areas on private lands. Major changes need to be made in the Forest Practices Act to assure sufficient shading and methods of controlling sediment. Changes to the Act may come to late. It is estimated that the majority of the private timber will be harvested within the next year and a half.

Most of our efforts to this point have been protecting and enhancing summer habitat areas, which are known to be important to the early life stages of chinook; however, there are major gaps in our knowledge on timing of juvenile migration, locations and characteristics of juvenile winter rearing habitat and fish habitat relationships. It is imperative that we implement the juvenile life history and habitat relationship studies that have been submitted. These two studies will define the salmonid life history throughout the Grande Ronde basin, which is critical to implementing an effective habitat recovery effort and a full system recovery

In the short term, we need to concentrate our efforts in the key summer habitat areas upstream from Meadow Creek, which are valuable adult holding and juvenile rearing areas. The major limiting factors in this area are heavy sediment loads and high water temperatures. Our major emphasis at this time will be to restore the natural riparian and watershed functions rather than rely strictly on in-channel engineering methods.

Since roads have been identified as the major source of sedimentation, the Forest Service started a road obliteration program in 1991. To date approximately 120 miles of road have been removed. An additional 30-50 miles are scheduled to be obliterated. The La Grande Ranger District is currently developing a road management plan which includes additional road closures.

The BPA and cooperative riparian fencing and planting programs, will be continued (Table 2)). These projects will play a major part in moderating the high summer and low winter water temperatures in the mainstem and tributary streams. To date a total of 27.1 miles (35%) of stream has been fenced and 17 miles (40%) planted. Because of the current intensity being placed on the recovery of salmon, the owner of Vey Meadow has indicated that he will construct riparian fences on the Grande Ronde River (6 mi.) and Sheep Creek (2.5 mi.) by the fall of 1993. With the completion of these fences, all the major chinook spawning areas will be protected. If for some reason, the Vey Meadow is not fenced, we will continue to pursue a conservation easement or an agreement to construct the fence.

We will continue to review and provide input on timber sales and grazing allotments within the basin.

The NMFS is currently in the process of reviewing USFS timber sales. To date 11 sales have been halted until their biological assessments are approved.

We are currently participating in the La Grande Ranger District's process of compiling a "Conservation Strategy" for the upper basin, which will provide guidelines for all future forest management practices. The strategy is derived in part from recommendations listed in the UGR Plan.

Instream water right applications have been submitted for all the major tributaries in the basin and the existing minimum flow on the mainstem was converted to an instream right.

We will continue to assist in the development and acquisition of cost-sharing funds for riparian area protection and restoration, as well as promote the purchase of easements or develop other agreements in cooperation with private landowners.

Inventory work conducted in the past has shown a downstream movement of juvenile chinook during the fall months as water temperatures cool. At this point in time it is not known where in the basin winter rearing is occurring or what type of habitat is being used. When comparing historical descriptions of the river with current conditions, the bottle neck for juvenile survival may well be winter rearing conditions rather than summer conditions. Again this is why the juvenile life history and habitat preference studies are needed

There are several potential restoration projects which could be implemented to improve both fall and winter habitat conditions in the mainstem downstream from Meadow Creek. The two most recently discussed projects are:

1. The construction of an artificial flood plain in the State Ditch to create a functional riparian zone and create sinuosity to the channel. This project would require easements or purchase of private agricultural land and the reshaping of the existing channel. The channel capacity would be designed to contain high flows, which would prevent flooding of adjacent lands and to allow enough area for the creation of a flood plain. The new flood plain would be planted with trees, shrubs and grass. Instream structures could be constructed if necessary.

2. Union County submitted a proposal to GWEB in 1992, for the reconstruction of the Grande Ronde River channel from Riverside Park to Island City. This section of the river has been drastically modified by past channelization projects (CE, ODOT) and gravel mining operations. The proposal includes bank stabilization, velocity barriers, fish habitat structures and the creation of new stream meanders.

Other ongoing inventory and monitoring activities include:

1. Index, extensive, and supplemental spawning ground surveys will be continued.

2. Habitat surveys were completed by USFS and ODFW on all salmon bearing streams and all tributaries from Meadow Creek upstream by the end of 1992.

3. Water temperatures are being continuously monitored at approximately 30 sites in the watershed by the USFS and ODFW.

4. The gauge station at La Grande was reactivated and 4 additional permanent gauge stations were installed in the upper basin. An additional 10-12 flow transects were also installed on small sub-watersheds to provide instream flow data. Data pods have been installed in

the permanent gauging stations which will provide air and water temperature and relative humidity data.

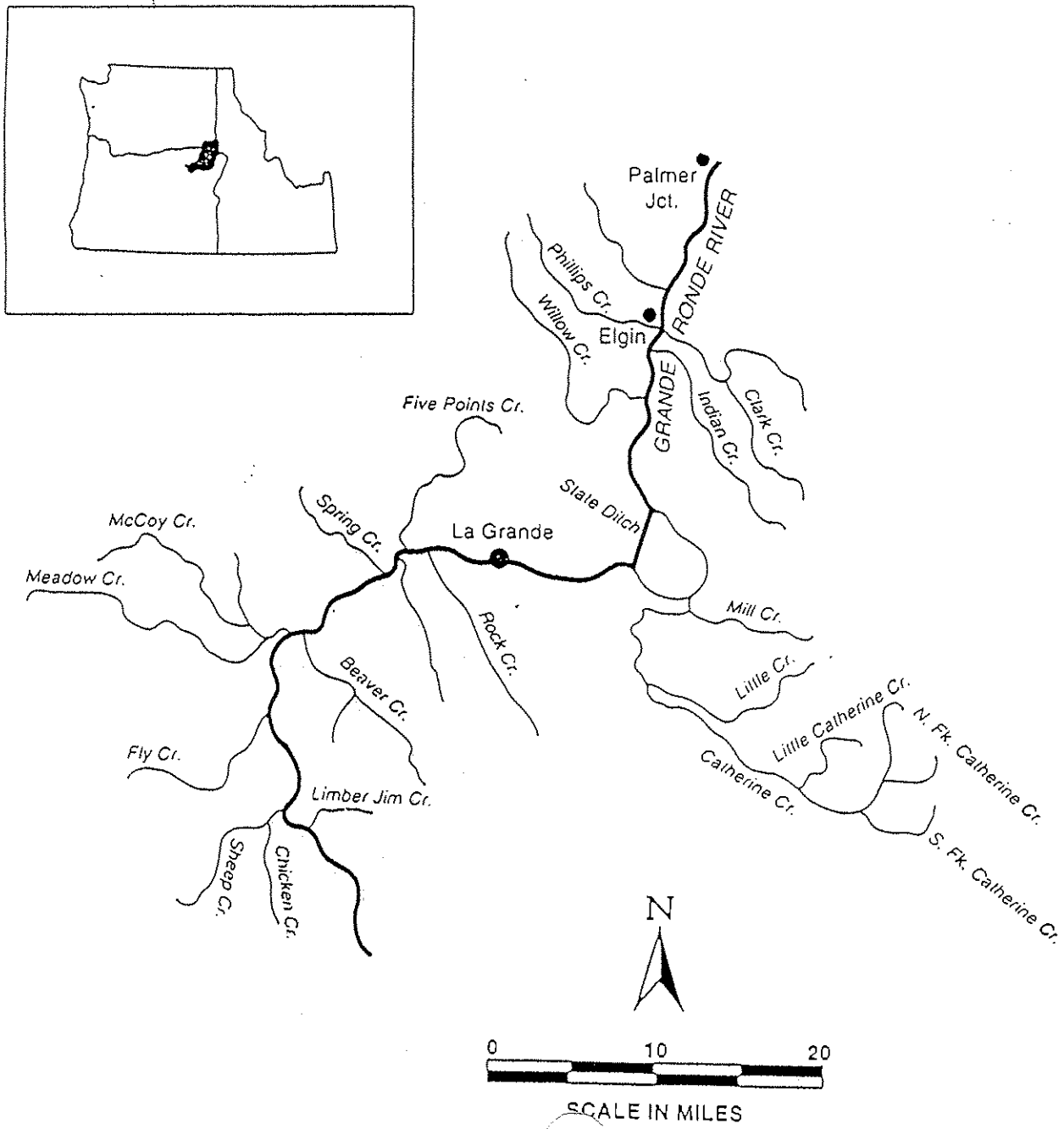
5. Research is currently being conducted (OSU-USFS) to quantify the amount of soil delivered to stream channels under a variety of conditions. Soil movement from both roads and logging disturbance will be measured and compared against that transported from undisturbed areas. This quantification will be used to derive delivery coefficients for use in a soil erosion model and will be used to help validate the model currently being used by the Forest Service.

6. A study is being conducted (OSU-USFS) with the objective to improve managers capability to restore and properly manage riparian areas. They will be studying such things as site potential of any given stream reach and succession and vegetation dynamics of riparian plant communities under various management strategies.

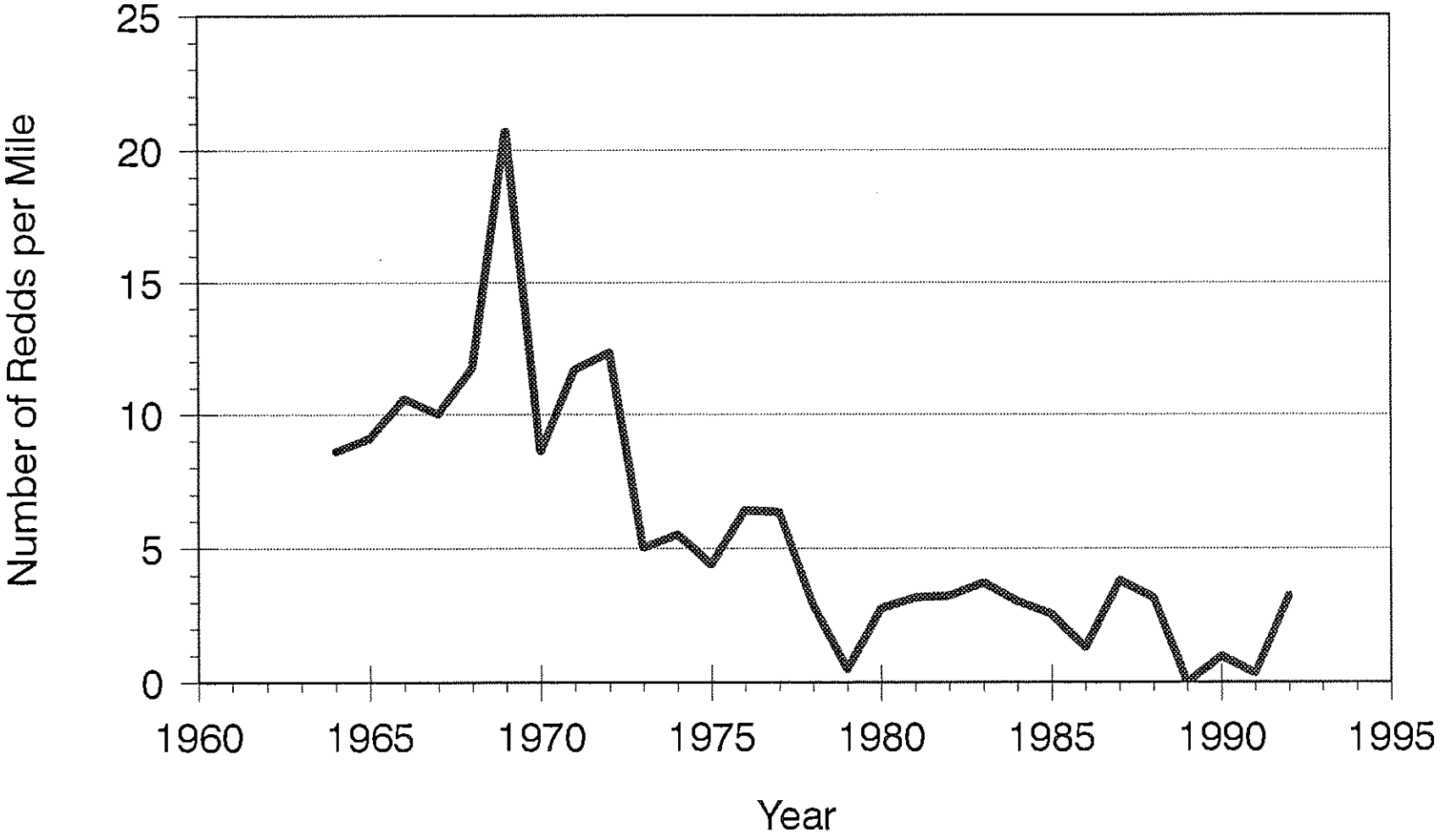
7. A meadow ecosystem study (OSU-USFS) will be started in 1993, to document the interactions between land use, channel morphology, hydrology, soils, and vegetation of meadow systems.

Production Potential:

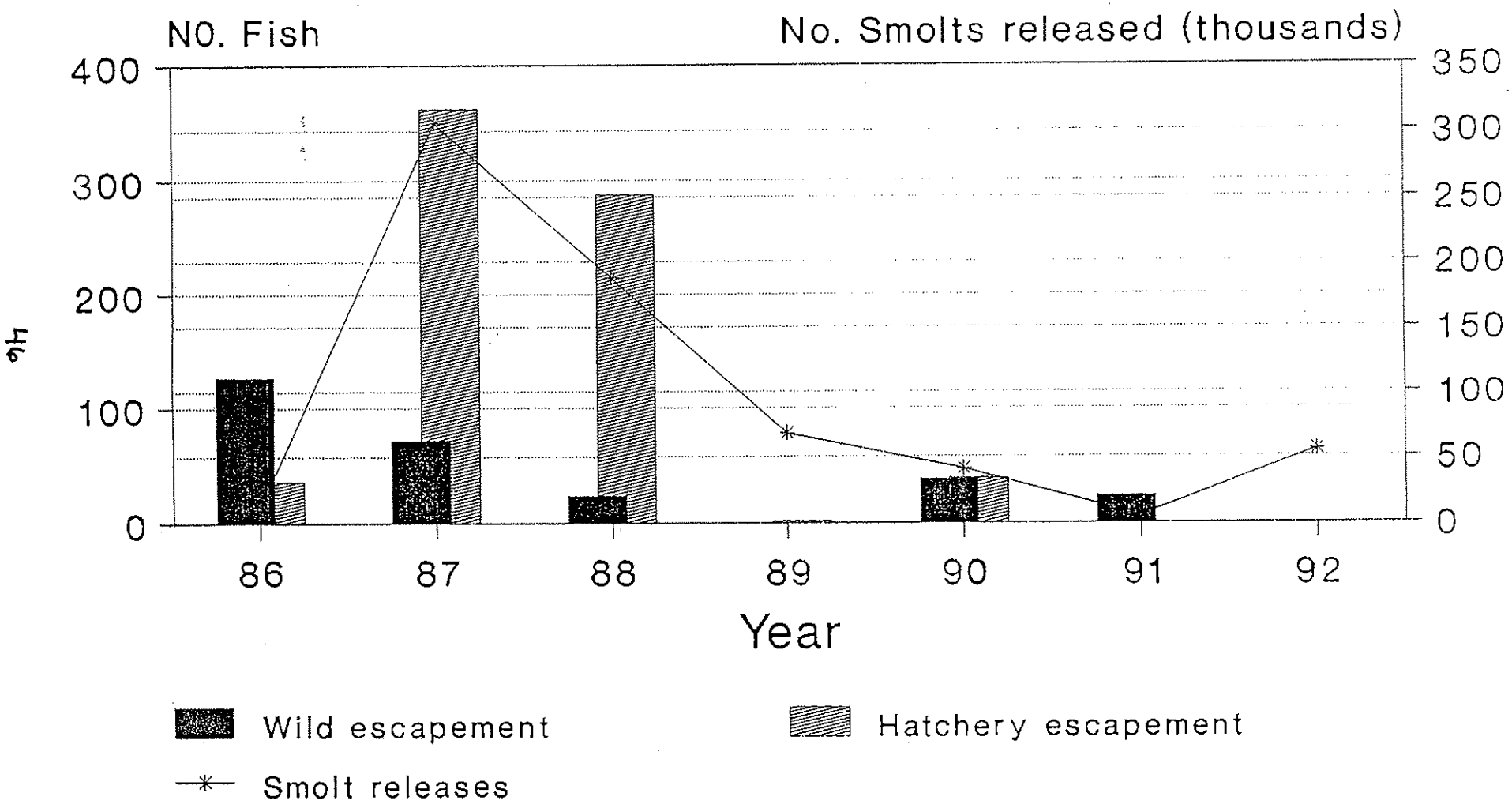
Redd counts from the last 30 years indicate a peak escapement of 730 adults in the Upper Grande Ronde River. It has been estimated that habitat has declined a minimum of 30% If habitat was restored, we could expect a minimum of 220 additional adult fish for a total escapement of 950. Recent studies and surveys by McIntosh, USFS, ODFW, and the UGR Technical Work Group, as well as the effects of the Tanner Fire, indicate that the 30% habitat loss is low. If winter rearing outside the upper basin proves to be a bottle neck, improvements in those habitats will also result in additional escapement.


Palmer Jct.
Phillips Cr.
Willow Cr.
Elgin
GRANDE RONDE RIVER
Indian Cr.
Clark Cr.
Five Points Cr.
Spring Cr.
McCoy Cr.
Meadow Cr.
La Grande
Slate Ditch
Rock Cr.
Beaver Cr.
Fly Cr.
Limber Jim Cr.
Sheep Cr.
Chicken Cr.
Mill Cr.
Little Cr.
Little Catherine Cr.
N. Fk. Catherine Cr.
Catherine Cr.
S. Fk. Catherine Cr.
N
0
10
20
SCALE IN MILES

Spring Chinook Salmon Redd Counts for the Upper Grande Ronde River 1964 - 92



Upper Grande Ronde River Spring Chinook Wild and Hatchery Escapement



Smolt releases are listed by return yr.
Includ Sheep Creek.

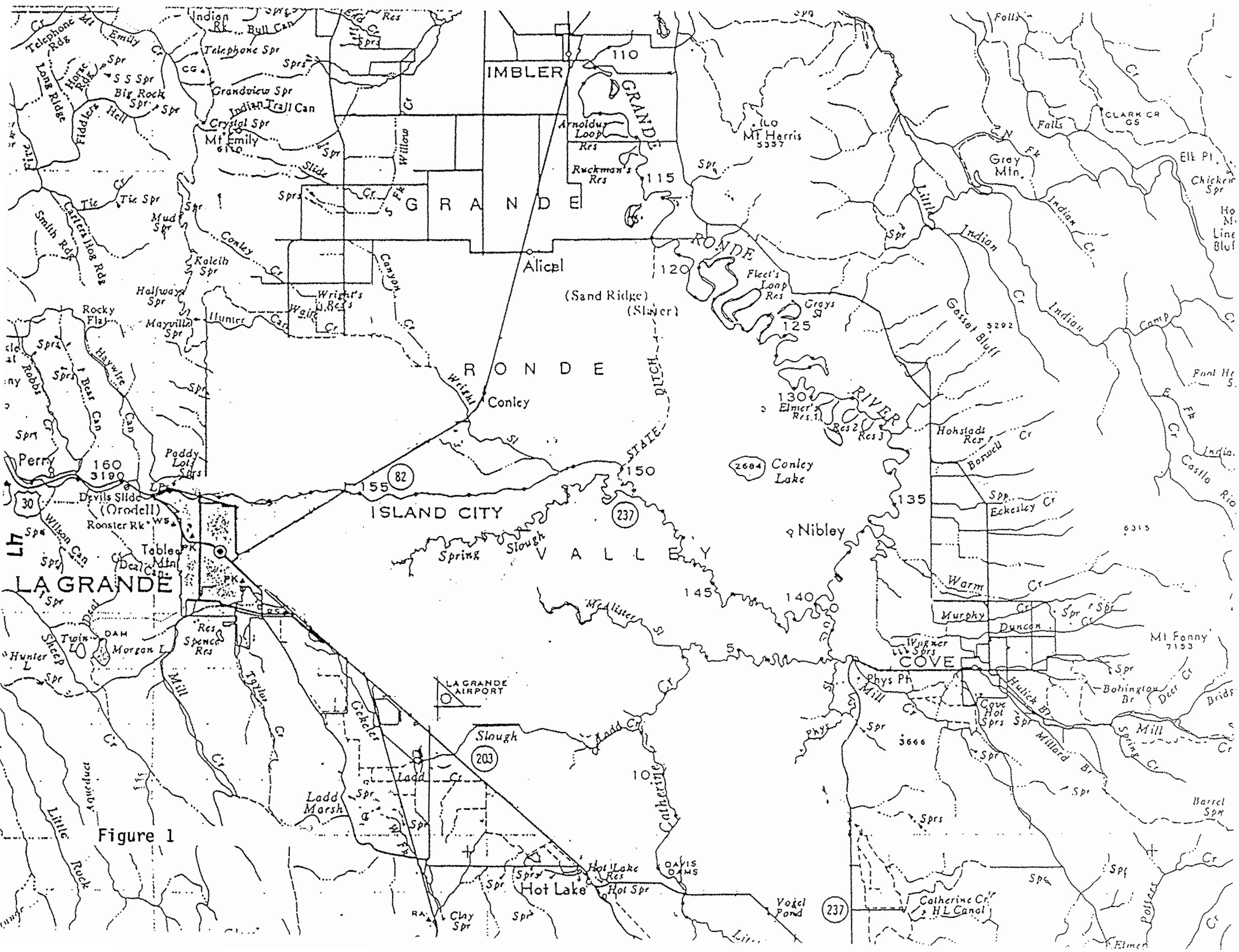

IMBLER
GRANDE
RONDE
VALLEY
GRANDE RONDE RIVER
ISLAND CITY
LA GRANDE
COVE
Alicel
Conley
Nibley
Perry
Hot Lake
Mt Emily
Mt Harris
Grey Mtn.
Mt Fanny
Conley Lake
LA GRANDE AIRPORT
STATE DITCH
(Sand Ridge)
(Slater)
Devils Slide
(Orodell)
Rooster Rk
Table Mtn
Ladd Marsh
Catherine Cr
Mill Cr
Spring Slough
McAlister Sl
Willow Cr
Indian Cr
Warm Cr
Murphy
Duncan
Hot Lake Res
Catherine Cr HL Canal
Vogel Pond
Davis Dams
Clay Spr
Phys Pt
Cove Hot Sprs
Gasset Bluff
Hohstadt Res
Fleet's Loop Res
Arnoldus Loop Res
Ruckman's Res
Elmer's Res 1
Wright's Res
Telephone Rdg
Long Ridge
Fiddlers Hell
Smith Rdg
Rocky Flat
Mayville Spr
Halfway Spr
Paddy Lott Sprs
Wilson Can
Deal Can
Twin L
Morgan L
Spence Res
Sheep Cr
Little Rock Cr
Aquaduct
Gekeler
Ladd Cr
Slough
Hulick Br
Millard Br
Bobington Br
Clark Cr GS
Elk Pt
Camp
Castle Rid
Falls
Potters
Barrel Spr
82
155
160
3190
30
237
203
110
115
120
125
130
135
140
145
150
10
5
3666
6313
5292
5337

Figure 1

47

Table 1. Changes in the number of pools/km for the Upper Grande Ronde River Subbasin, 1941 and 1990.

Stream	1941 (#/km)	1990 (#/km)	Percent Change
Five Points Creek	3.8	3.9	+3%
Rock Creek	12.0	6.4	-47%
Meadow Creek	7.3	3.5	-52%
Jordan Creek	26.2	7.4	-72%
McCoy Creek	19.1	5.1	-73%
Grande Ronde River	6.3	1.4	-78%
Beaver Creek	16.9	2.8	-83%

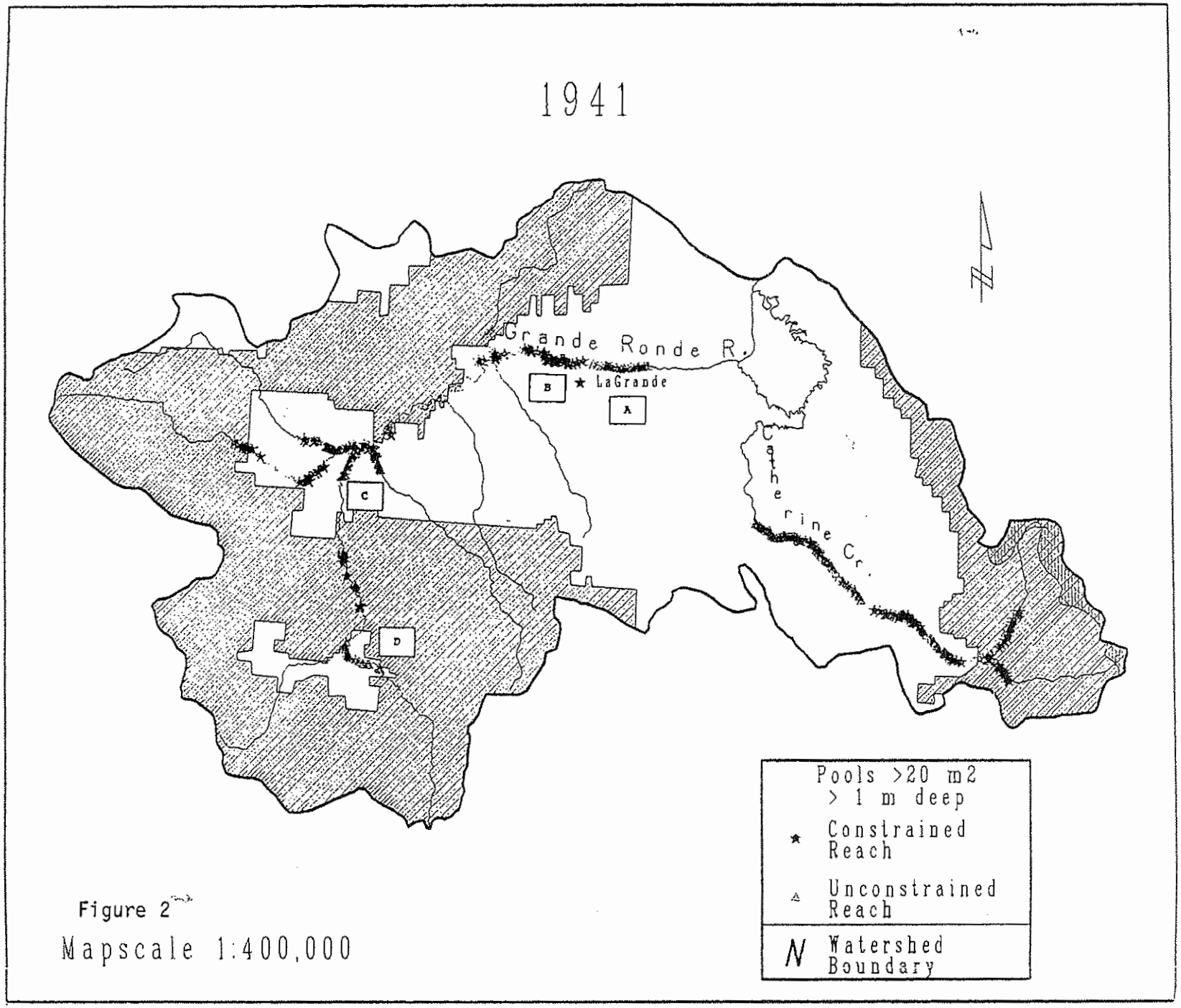


Figure 2

Mapscale 1:400,000

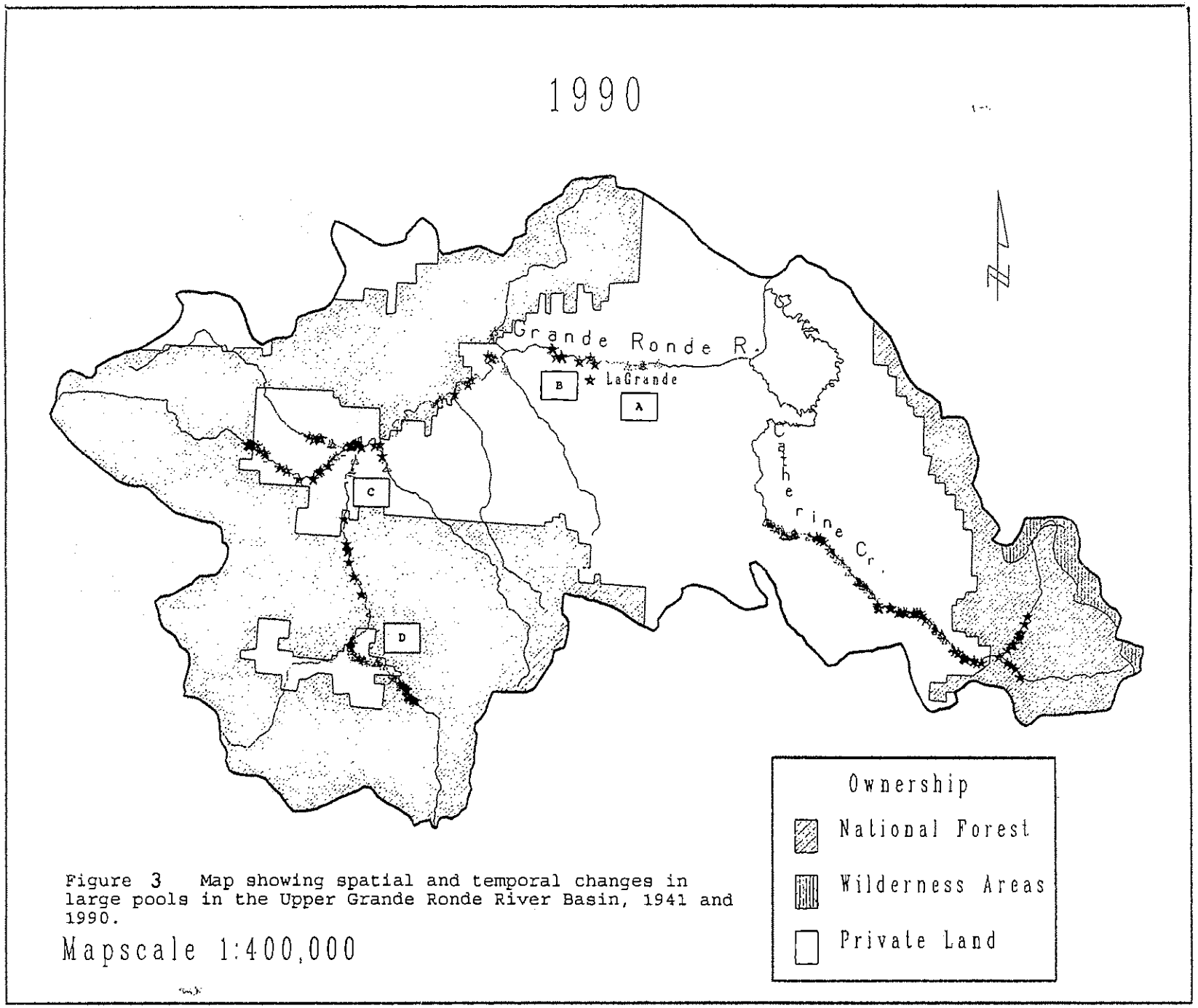
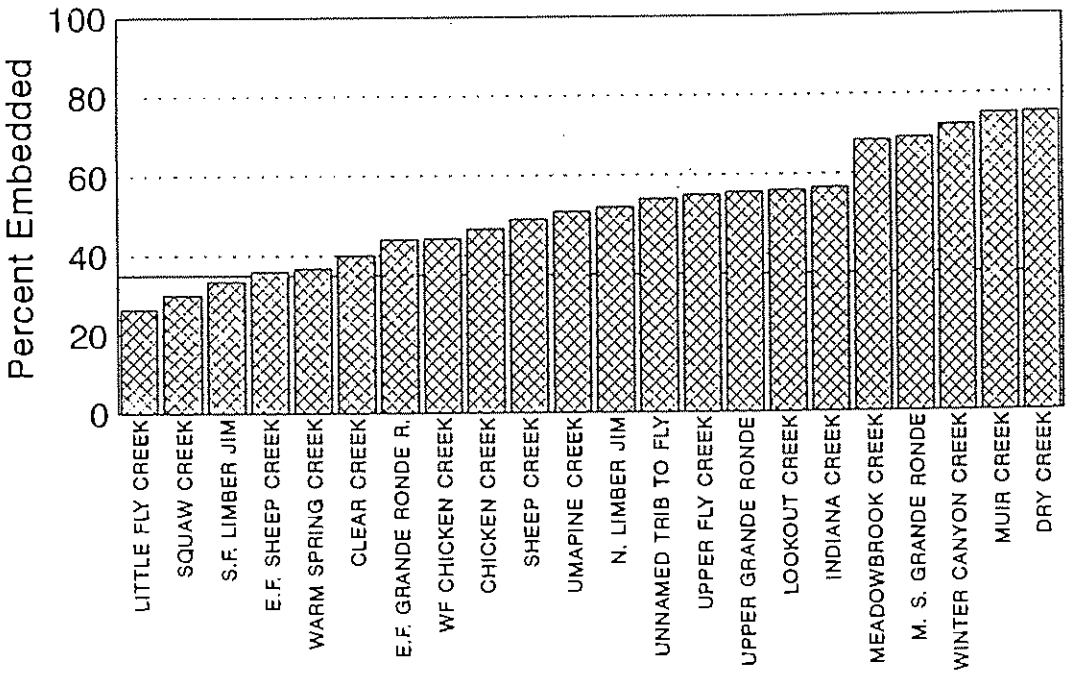


Figure 3 Map showing spatial and temporal changes in large pools in the Upper Grande Ronde River Basin, 1941 and 1990.

COBBLE EMBEDDEDNESS

WATERSHED 85



(1991 Stream Data, LaGrande R.D.)

SUBSTRATE EMBEDDEDNESS

Substrate embeddedness is the degree that larger particles (boulders, cobble or gravel) are surrounded or covered by fine sediment.No standard for cobble embeddedness exists presently, but it is known that successful spawning and fry survival for salmonid species is greatly impaired by high levels of cobble embeddedness. Values greater than 35% are thought to negatively affect salmonid production.

Figure 4

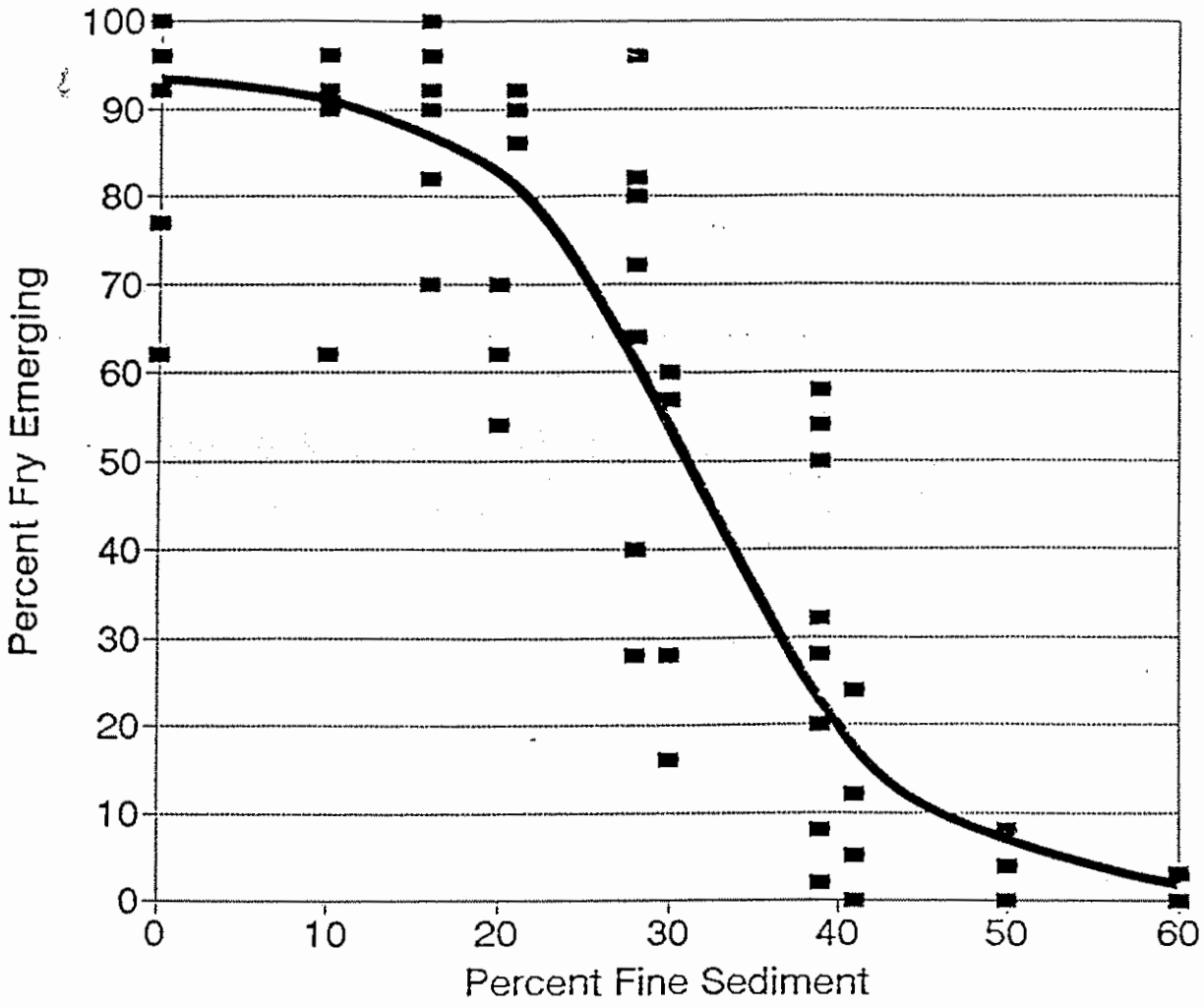


Fig. 5 Relationship between fry emergence and percent fine sediment for spring chinook salmon. (USDA Forest Service, Regions 1 and 4, 1983)

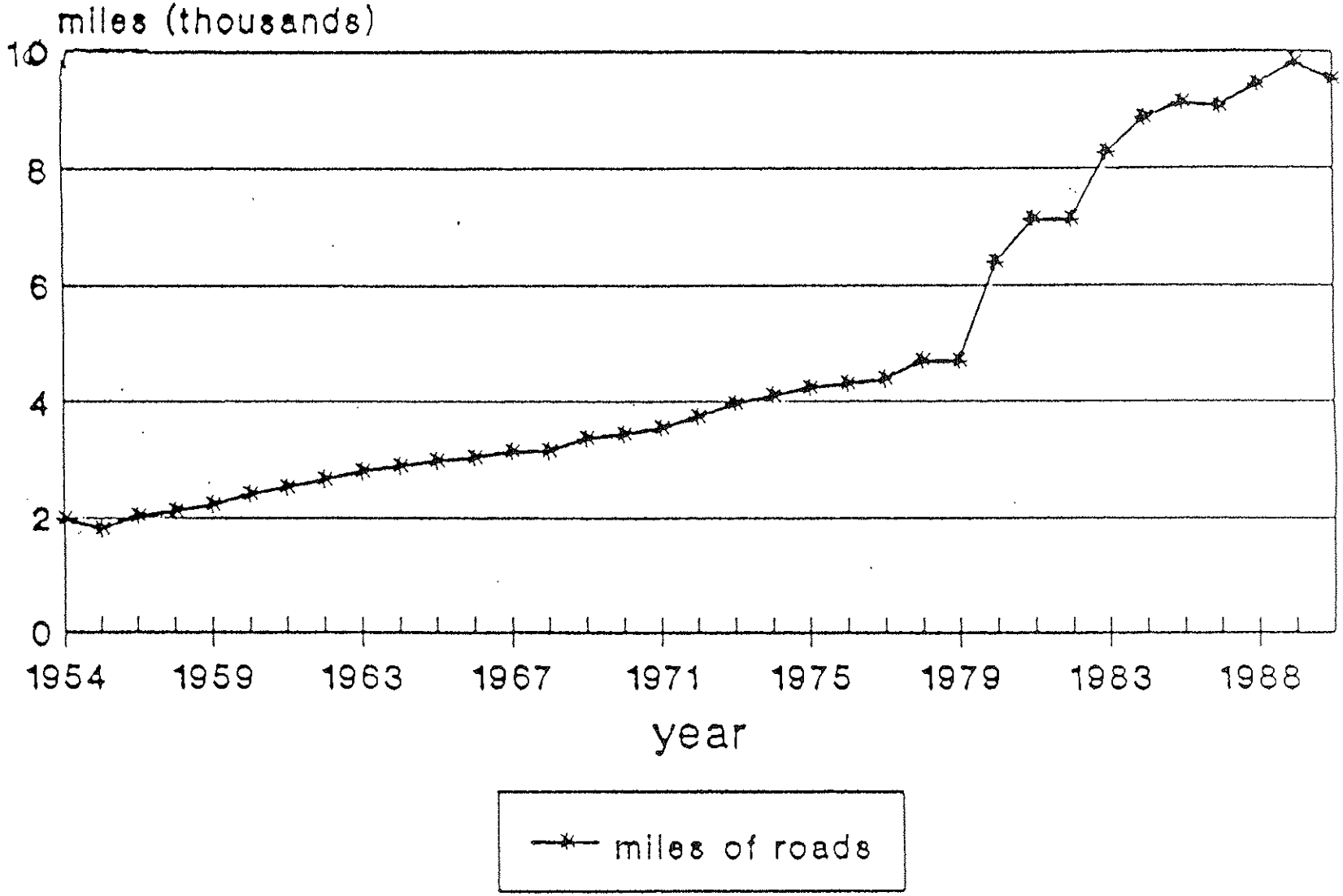


Figure 6 Miles of roads on the Wallowa-Whitman National Forest, 1954-1990.

UPPER GRANDE RONDE BASIN
MAXIMUM SUMMER STREAM TEMPERATURES

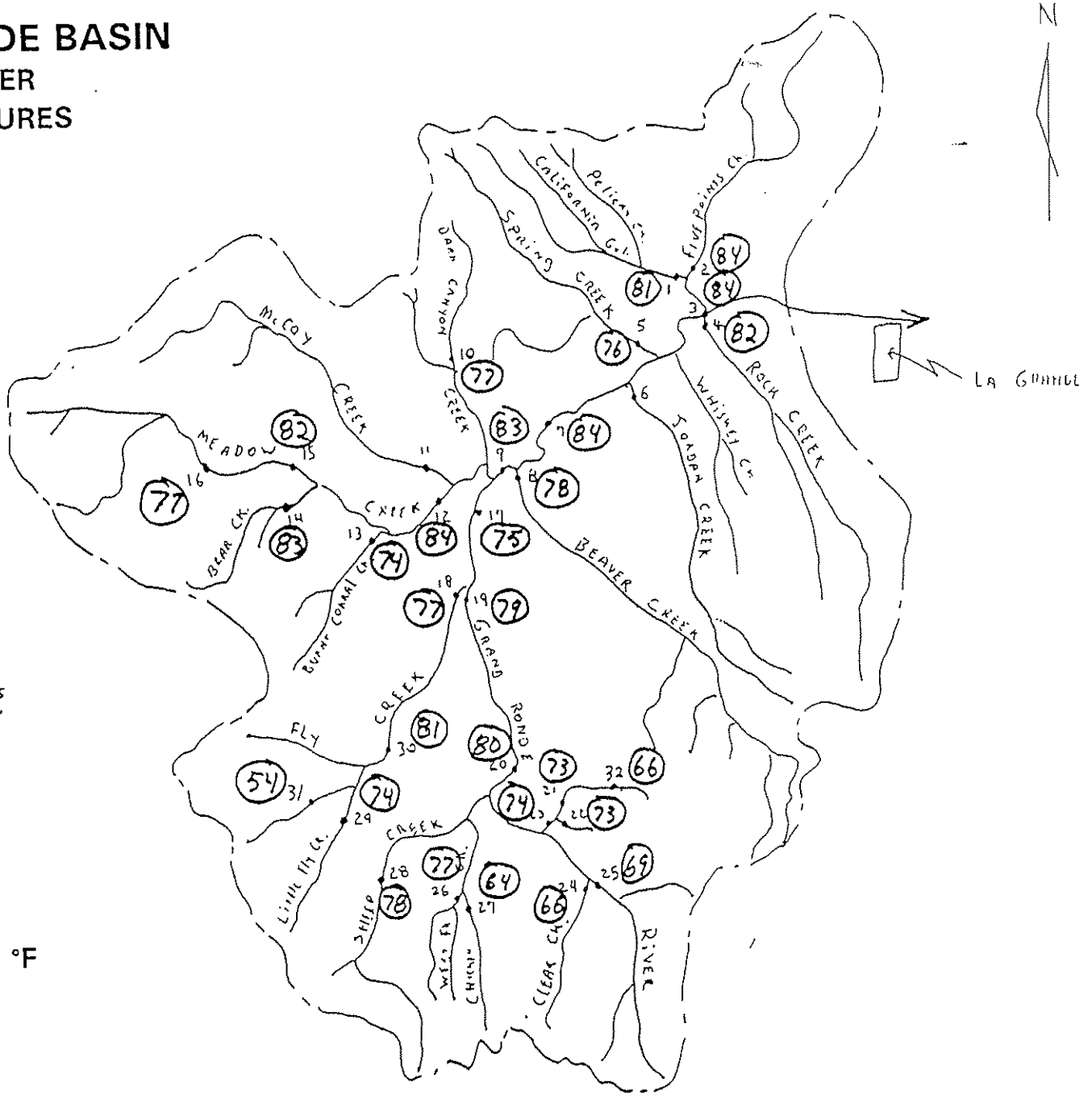


Figure 7

Temperatures in °F

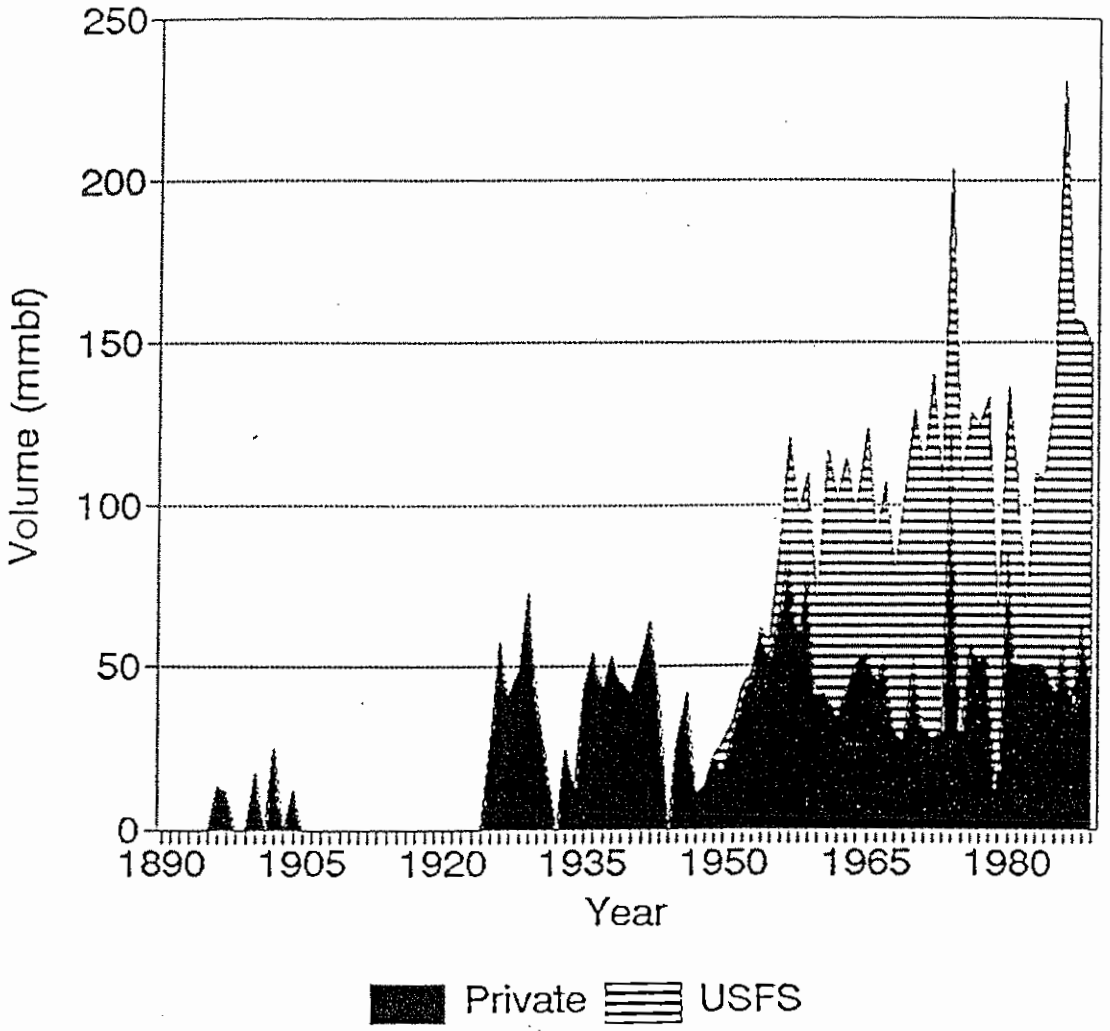


Fig. 8 Total timber harvest (million board feet) for Union County, Oregon, 1896-1989. (PNW Research Station, Corvallis, Oregon, 1990)

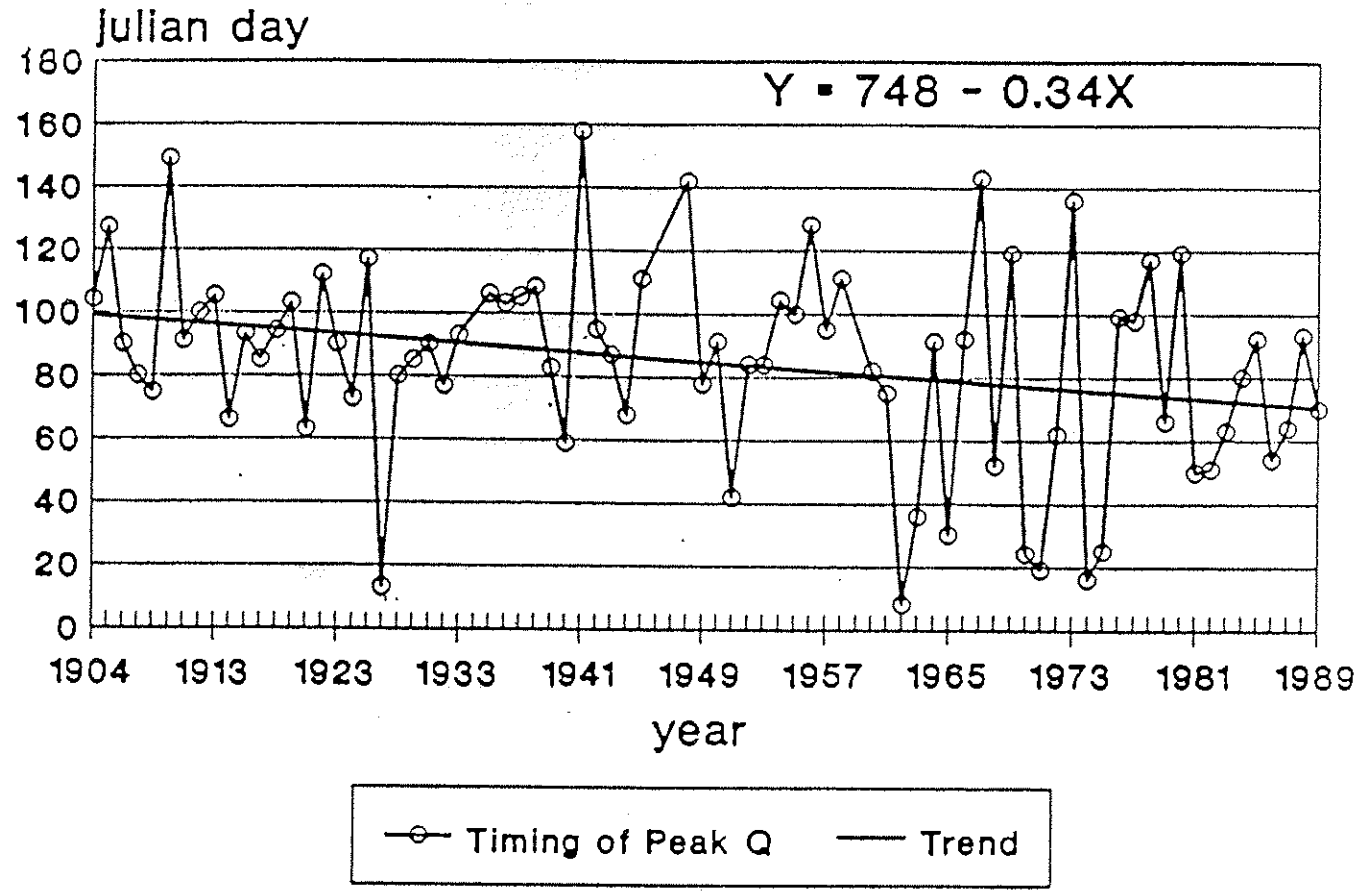


Figure 9. Trend in the timing of peak discharge based on Julian day for the Upper Grande Ronde River, 1904-1989.

Table 2 - Riparian Fencing and Planting Program within the Upper Grande Ronde Subbasin.

Stream	Miles of Riparian Work Completed		Miles of Riparian Work Not Completed	
	Fencing	Planting	Fencing	Planting
Grande Ronde River	2.0	2.0	9.0	6.0
Sheep Creek	7.5	7.5	2.5	2.0
Chicken Creek	0.0	0.0	2.0	1.0
Fly Creek	1.2	0.0	9.0	5.0
Meadow Creek	4.3	4.0	3.0	0.5
McCoy Creek	1.6	1.5	5.5	3.0
Dark Canyon Creek	1.0	0.0	2.5	0.0
Beaver Creek	5.0[1]	0.0	0.0	0.0
Jordan Creek	0.0	0.0	4.0	2.0
Whiskey Creek	1.5	0.0	2.5	2.0
Rock Creek	0.0	0.0	8.0	3.0
Spring Creek	2.5	2.0	0.0	0.0
S. Fork Spring Creek	0.5	0.0	2.0	1.0
TOTAL	**27.1**	**17.0**	**50.0**	**25.5**

[1]BPA Project to be completed in 1993

Riparian/Floodplain Mining

Recent experiences on a mining site on Pine Creek brings this issue into focus. The execution of a stream diversion to facilitate mining went awry. The project was implemented using the standard DOGAM1 25' undisturbed buffer strip. The mined land was reclaimed (hole filled with rock, covered with topsoil, and planted).

As we looked for options to move the stream away from a cutbank which had the potential for severe erosion, it became evident that a 25' buffer left no room to prescribe any mitigation (there is not enough room to put a stream the size of Pine Creek and two stream banks into 25').

In addition, neither DOGAM1 or DSL felt that the stream should run across reclaimed mining land. Their fear, and ours as well, is that the creek will eat down through and sub-out. Essentially, by mining the floodplain the stream has been channelized and is no longer free to move about in the floodplain. Buffer widths of 25' do not provide enough space to deal with problems that may arise with the stream channel (no room for management).

This is a difficult issue. We believe that floodplain mining should be limited to a zone outside of 75' from the high water mark, unless technical experts agree that reclamation is sufficient to allow the stream channel to move about in the floodplain. Reclamation in a floodplain has to be hydrologically functional, as well as look good.

La Grande District Top Five Habitat Priorities

1. Vey Meadows - fence or own

   Spring chinook spawning and rearing
   - Water temperature
   - Hiding cover
   - Sediment

2. FPA changes for riparian protection - district wide

   Spring chinook - spawning and rearing
   Summer steelhead - spawning and rearing
   Bull trout
   Rainbow trout
   Other species
   - Water temperature
   - Sediment
   - Bank stability

3. Changes to insure riparian protection from poorly managed grazing on private land - district wide

   Spring chinook
   Summer steelhead
   Bull trout
   Rainbow trout
   Other species
   - Water temperature
   - Sediment
   - Bank stability
   - Hiding cover

4. Fly Creek meadows to reduce impacts of cattle grazing

   Summer steelhead rearing and spawning
   Spring chinook rearing (downstream)
   - Water temperature
   - Sediment
   - Bank stability
   - Hiding cover

5. State Ditch - create floodplain and riparian vegetation

   Spring chinook
   Steelhead
   Bull trout
   Rainbow trout
   Other species
   - Water temperature
   - Sediment
   - Instream habitat

Stock Status Review
Northeast Regional Fish Management Meeting
March 30-31, 1993

District Umatilla

Species Bull Trout

Status Sensitive

Previous Assessment

Bull trout were believed to exist in good numbers in both the Umatilla and Walla Walla River basins through the 1960's (see Figure 1 - Historical Distribution of Bull Trout).

Aquatic inventories were completed in some of the Walla Walla River and the forks of the Umatilla River in 1991.

No bull trout were found in the South Fork Umatilla during 1991 aquatic inventories.

Most Recent Findings

A USFS survey crew completed snorkle surveys on the upper Umatilla River and forks. Good numbers of bull trout were found in the North Fork Umatilla. However, 26 adult and 12 juvenile bull trout were observed in the 11.8 miles of pool habitat surveyed in the South Fork Umatilla River, Thomas Fork, Spring Creek, and Shimmiehorn Creek (see Figure 2 - Current Distribution of Bull Trout).

Aquatic inventories (presence/absence) were completed during the summer of 1992 in the Meacham Creek drainage. No bull trout were found. However, CTUIR fisheries personnel found a dead adult bull trout eight miles up Meacham Creek in August.

CTUIR fisheries personnel electroshocked one bull trout in Buck Creek (South Fork Umatilla River tributary) in May of 1992, and one in lower Squaw Creek (mainstem tributary) last October.

An adult bull trout was caught by a tribal angler on the mainstem Umatilla River at the Thornhollow railroad bridge (rm 71) last month (February 28,1993).

Figure 1 - Historical Bull Trout Distribution

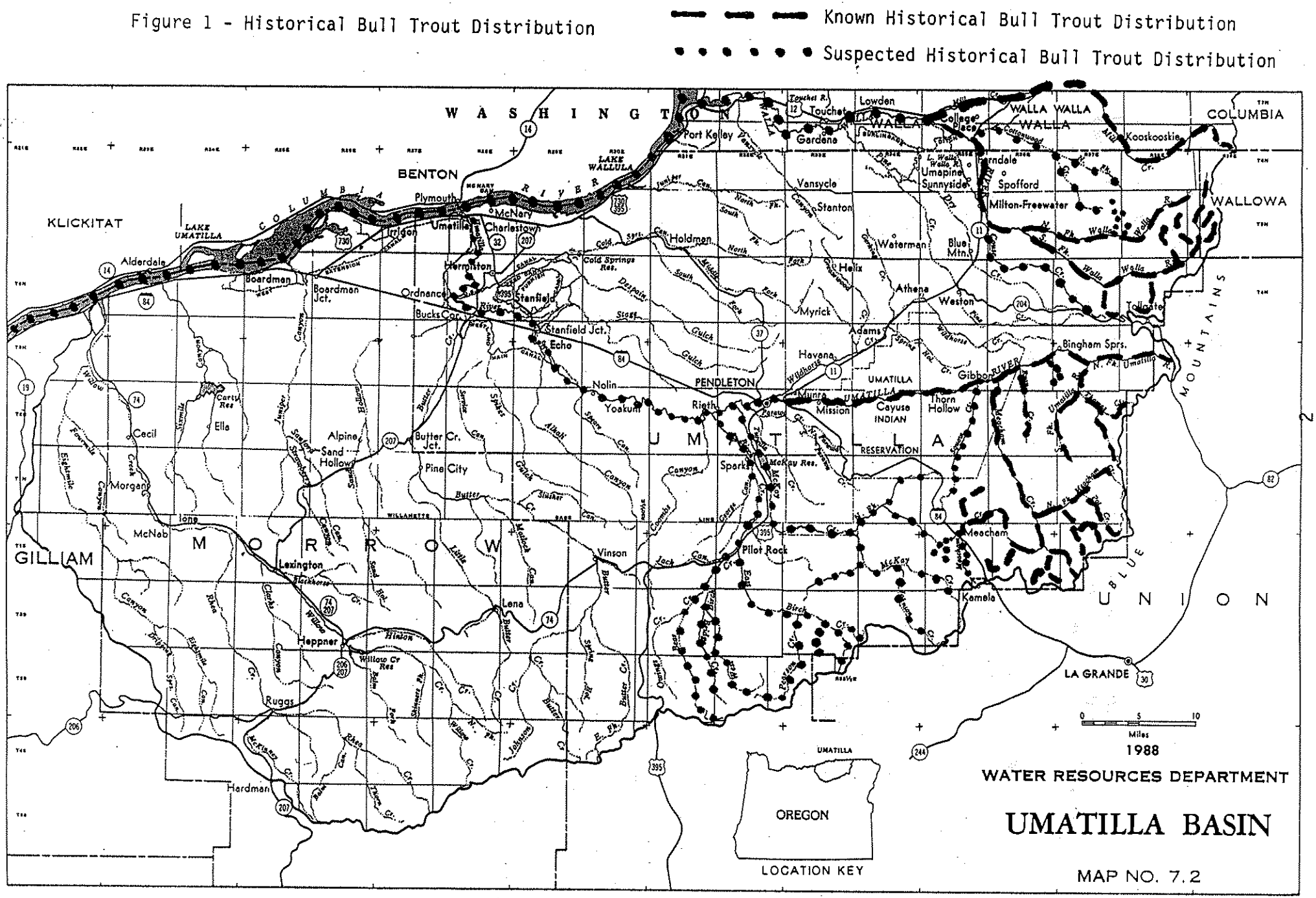
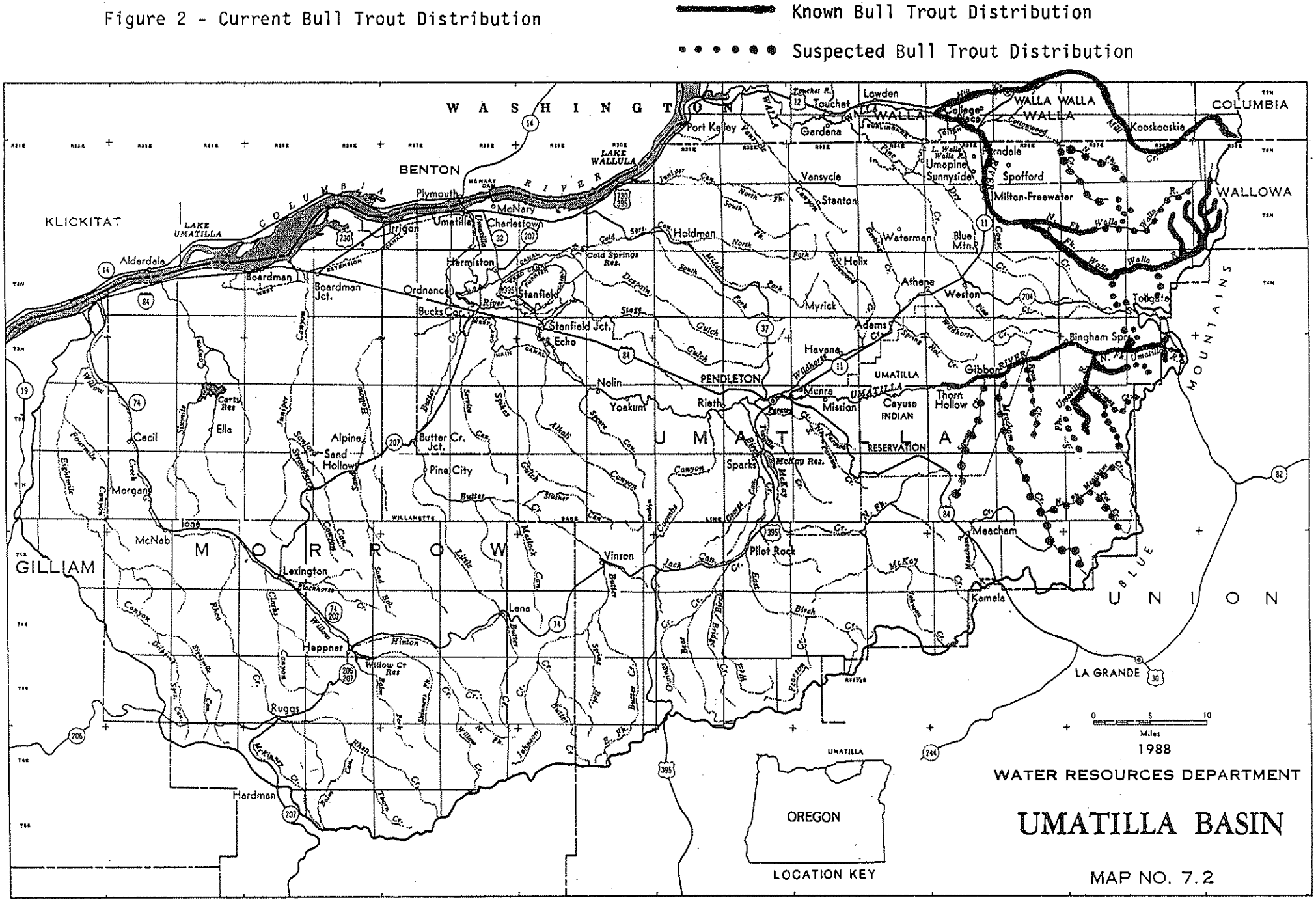


Figure 2 - Current Bull Trout Distribution



Fencing on North Fork Walla Walla River is showing good potential for riparian recovery if cattle are excluded. This should allow the small population to increase.

The BLM closed an additional 1.5 miles of road along the South Fork Walla Walla River in 1991. This action closed a total of 4.5 miles of stream to vehicle access, and decreased the angling pressure on the bull trout population. OSP patrols along this new roadless area indicate angling pressure on the South Fork may have had an impact on the bull trout population. This area is within the limits of bull trout habitat and was seeded rapidly due to the reduced angling pressure.

Habitat appears to be the limiting factor in the South Fork Umatilla drainage, and not angling pressure. Even though much of the habitat in the South Fork drainage is accessible only by hiking trails, bull trout numbers do not appear to be any higher in the roadless areas than they are along the roads.

Actions

The riparian fencing project on 1.2 miles of the North Fork Walla Walla River needs to be completed. We will pursue more fencing projects on the stream to exclude livestock.

We will begin spawning ground surveys this fall as time permits. We will conduct snorkle surveys with some limited electroshocking to determine presence/absence and abundance in selected streams with population estimates if possible.

Aquatic inventories need to be completed in streams throughout the areas of historical distribution.

Current Assessment

Although we do not have population estimates, we think the run size is greater than 300 spawners in both the North Fork Umatilla and South Fork Walla Walla rivers. We believe that the run size in both the South Fork Umatilla and North Fork Walla Walla is less than 300 spawners. However, we also think that the Umatilla River contains just one bull trout population, and that there is one bull trout population in each of the Oregon portion of the Walla Walla River and in Mill Creek. It is unlikely that there is any significant inflow of new genetic material into the Umatilla population. We think that there is some gene pool mixing between the upper Walla Walla and Mill Creek populations (see Table 1 - WFMP Compliance).

Table 1

COMPLIANCE WITH WILD FISH MANAGEMENT POLICY – MARCH 1993
Umatilla Fish District

		Compliance				Non–compliance			
Water	Species	>300 Spawn	<10% Hatch	<50% Hatch	Unk	<300 Spawn	>10% Hatch	>50% Hatch	Comments
John Day Pool	WSg **	X			X				Estimated >500 adults over 72" long
Willow Creek	Rb **	X	X				1/		1/ Possible non–compliance in hatchery
Umatilla River	StS	X		X					stocked areas
	Rb Main/Forks	X	X				2/		2/ Possible non–compliance in a 6 mile
	Rb Birch Cr				X				section of S.Fk. and mainstem.
	Rb Wildhorse Cr				X				Number unknown
	BuT	X							
	WF				X				Number unknown
	Marg. Sculpin	X							Sensitive species – limited range
	Pacif Lamprey **				X				Probable non–compliance
Butter Creek	Rb	X	X						
	Marg. Sculpin	X							Sensitive species – limited range
McKay Creek	Rb	X	X						
	Marg. Sculpin	X							Sensitive species – limited range
Juniper Canyon Cr	Rb				X				Fish presence unknown
McNary Pool	WSg				X				ODFW will research population this year
	Pacif Lamprey **				X				Probable compliance (>300 spawners)
Walla Walla River	StS	X					3/		3/ No. of WDF hatchery strays unknown
	Rb Main/Forks**	X	X				4/		4/ Possible non–compliance in a 2 mile
	BuT	X							section of S.Fk.
	WF				X				Number unknown
	Marg. Sculpin	X							Sensitive species – limited range
	Pacif Lamprey **				X				Probable non–compliance
Birch Cr	Rb				X				Number unknown
Spring Brook Cr	Rb				X				Number unknown
Pine Creek	StS		X			X			Historical run <300 spawners
	Rb				X				Number unknown
	Margined Sculpin				X				Sensitive species – limited range
Cottonwood Cr	StS		X			X			Historical run <300 spawners
	Rb		X		X				Number unknown
	Margined Sculpin				X				Sensitive species – limited range
Mill Creek	StS				X				No. & hatchery stray component unknown
	Rb	X	X						
	BuT				X				No. unknown, limited habitat area

** Differs from 1992 data

Bull trout presence in other areas of the district is unknown.

Habitat continues to be the limiting factor. Habitat quality in both the North Fork Walla Walla and South Fork Umatilla rivers is poor. Portions of both streams receive little or no angling pressure. A long term habitat enhancement program is needed.

At this time we feel no change is needed concerning bull trout stock status in the Umatilla fish district.

District Umatilla

Species Margined Sculpin

Status Sensitive

Previous Assessment

The margined sculpin is a sensitive species because of its limited known distribution.

It is common in most streams in this district.

Most Recent Findings

Mary Lanzarich, a graduate student from the College of Fisheries at the University of Washington, under the guidance of Dr. Ted Pietsch, began studying the distribution and ecology of the margined sculpin. Her study includes four sites in Washington on the Tucannon and Touchet rivers.

The margined sculpin can be differentiated from its other closely related sculpin species by counting the number of chin pores. The margined sculpin almost always has one chin pore. Its largely sympatric relative, the piute sculpin, always has two.

The margined sculpin prefers slow, shallow water habitat. The piute sculpin prefers bigger, faster water habitat.

Actions

The study will continue this summer.

Current Assessment

Populations in many streams in the district are over 300 spawners (see Table 1 - WFMP Compliance).

District	Umatilla
Species	Pacific Lamprey
Status	Sensitive

Previous Assessment

The pacific lamprey is recommended as sensitive because of the apparant reduction in population distribution and numbers. Lamprey were once commonly seen in the Walla Walla, Umatilla and Columbia rivers, but very few have been sighted in the Umatilla and Walla Walla rivers in recent years (see Table 1 - WFMP Compliance).

Most Recent Findings

Screen traps in the Walla Walla and Umatilla river systems were checked for lamprey in 1992. No ammocoetes were seen in the Umatilla system. A total of 47 ammocoetes were seen in trap boxes in the Walla Walla system (1 in the N. Fk., 20 in the S. Fk., and 26 in the mainstem Walla Walla). No adult lamprey were seen in the Walla Walla River. Very few adult lamprey (average one per year) have been seen in the Umatilla River. Lamprey are still common in the Columbia River. Brad Eby with the Corps of Engineers at McNary Dam reports that large numbers (thousands) of ammocoetes migrate downstream during years when Columbia River flows exceed 220,000 cfs. This has occurred three times in the last ten years.

Actions

Fish screen traps will be checked for lamprey ammocoetes in 1993. We will continue to watch for adults also.

Current Assessment

No streams in the district except the Columbia River are believed to have over 300 spawners.

District Umatilla

Species Inland Redband Trout

Status Possible Species of Concern

Previous Assessment

Redband trout populations in areas not inhabited by steelhead appear to be healthy.

We are uncertain about the status of redband trout populations where they co-exist with steelhead.

We are uncertain about WFMP compliance in areas where we stock Cape Cod rainbow. These areas are also inhabited by steelhead (see Figure 3 - Inland Redband Trout Distribution).

Most Recent Findings

We are concerned about the potential impacts of residual hatchery smolts on our native populations. Large numbers of anadromous smolts are currently being stocked in areas used by wild redband trout. However, many areas inhabited by native trout are not stocked with hatchery smolts of any kind.

Actions

We eliminated one release of legal rainbow trout in both the Umatilla and Walla Walla rivers (a total of 4,200 fish).

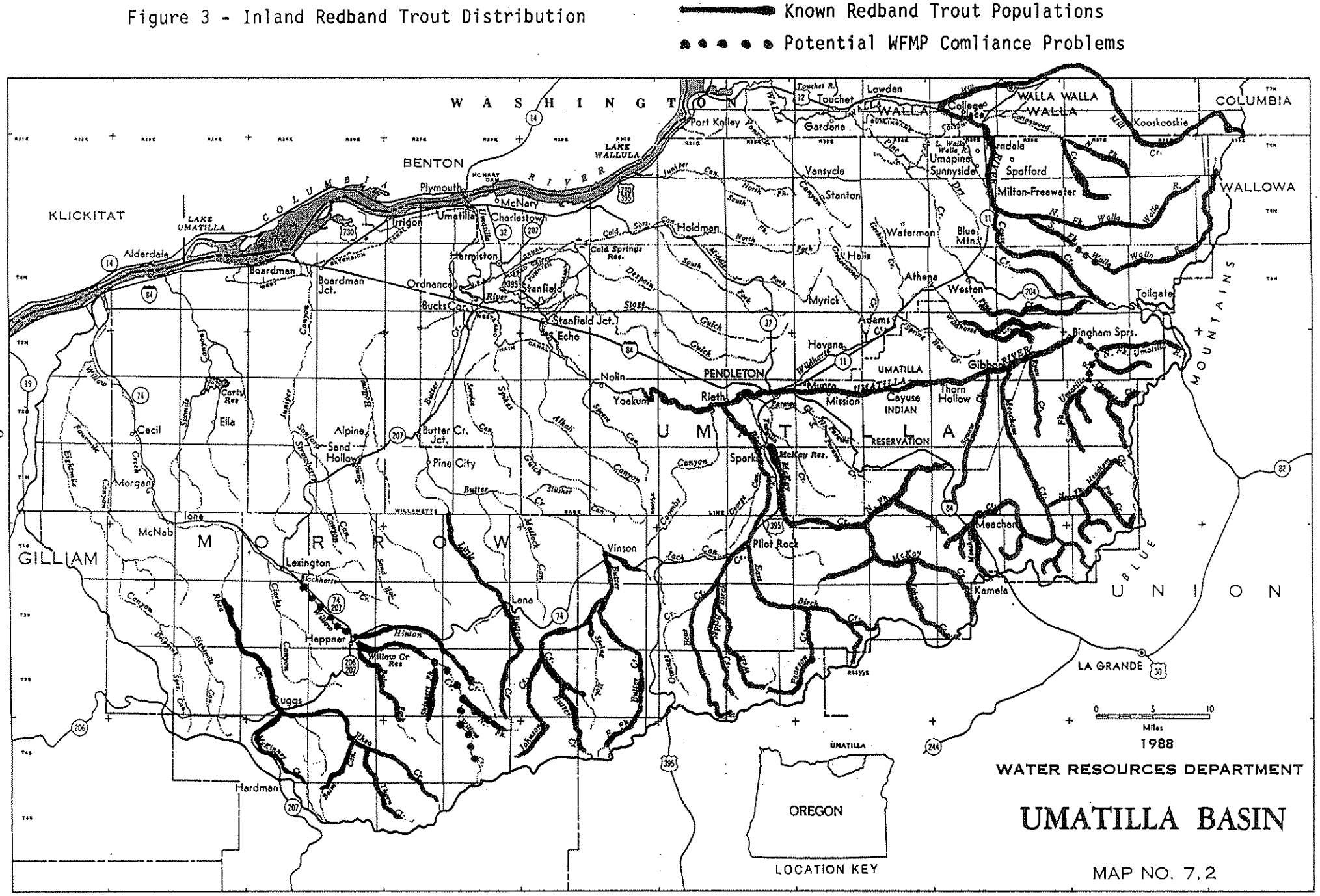
Creel census efforts were increased by ODFW and OSP on both the Umatilla and Walla Walla rivers in areas of potential WFMP non-compliance.

We still need to measure the effects of anadromous and rainbow hatchery releases on our wild redband populations to determine compliance with the WFMP. The Northeast Oregon Hatchery Plan has identified the need for genetic assessment.

Current Assessment

Redband populations in the Umatilla district appear to be in compliance with the WFMP. The three areas of uncertainty due to hatchery rainbow releases include short reaches of the Umatilla River, Walla Walla River, and Willow Creek (see Table 1 - WFMP Compliance & Figure 3 - Inland Redband Trout Distribution).

Figure 3 - Inland Redband Trout Distribution



District Umatilla

Species Summer Steelhead

Status Possible Species of Concern

Previous Assessment

Columbia River summer steelhead stocks obviously need to be watched with some concern, but listing of Umatilla and Walla Walla stocks does not appear to be needed at this time (see Figure 4 - Distribution of Summer Steelhead).

Most Recent Findings

The 1992 wild A run steelhead count over Bonneville was 42,200 (48,765 in 1991 & 25,264 in 1990).

Since the Umatilla run generally follows the wild A run component over Bonneville Dam, we expected an average run this year. However, it appears the 1992 Umatilla steelhead run will be below the ten year average. The count to date is 725 (March 24, 1993) (see Table 2 - Summer Steelhead Returns to Threemile Dam).

At the end of February, the steelhead count at Threemile Dam was 297 - the lowest on record for that date. We think cold weather and low water temperatures in the Umatilla and Walla Walla rivers kept the fish out in the Columbia River for most of this winter. Water temperatures ranged from 33 - 40 F during January and February this year.

Emergency angling regulations were adopted for the Umatilla and Walla Walla rivers this season.

In the past ten years, steelhead runs in the Umatilla River have ranged from 768 to 3,436, and averaged around 2,500 fish per run year. Hatchery contributions to the Umatilla have been approximately 20 percent of the run over the past five years.

Steelhead runs in the Walla Walla River are unknown. A fish trap was installed in the Nursery Bridge Dam fish ladder to assess run timing and stock size. The count to date is 262 (March 24, 1993 - see Table 3 - 1992-93 Summer Steelhead Returns to the Nursery Bridge Dam Fish Trap - Walla Walla River).

In the past ten years, Walla Walla River punch card data has shown a relatively constant catch rate of

Figure 4 - Summer Steelhead Distribution

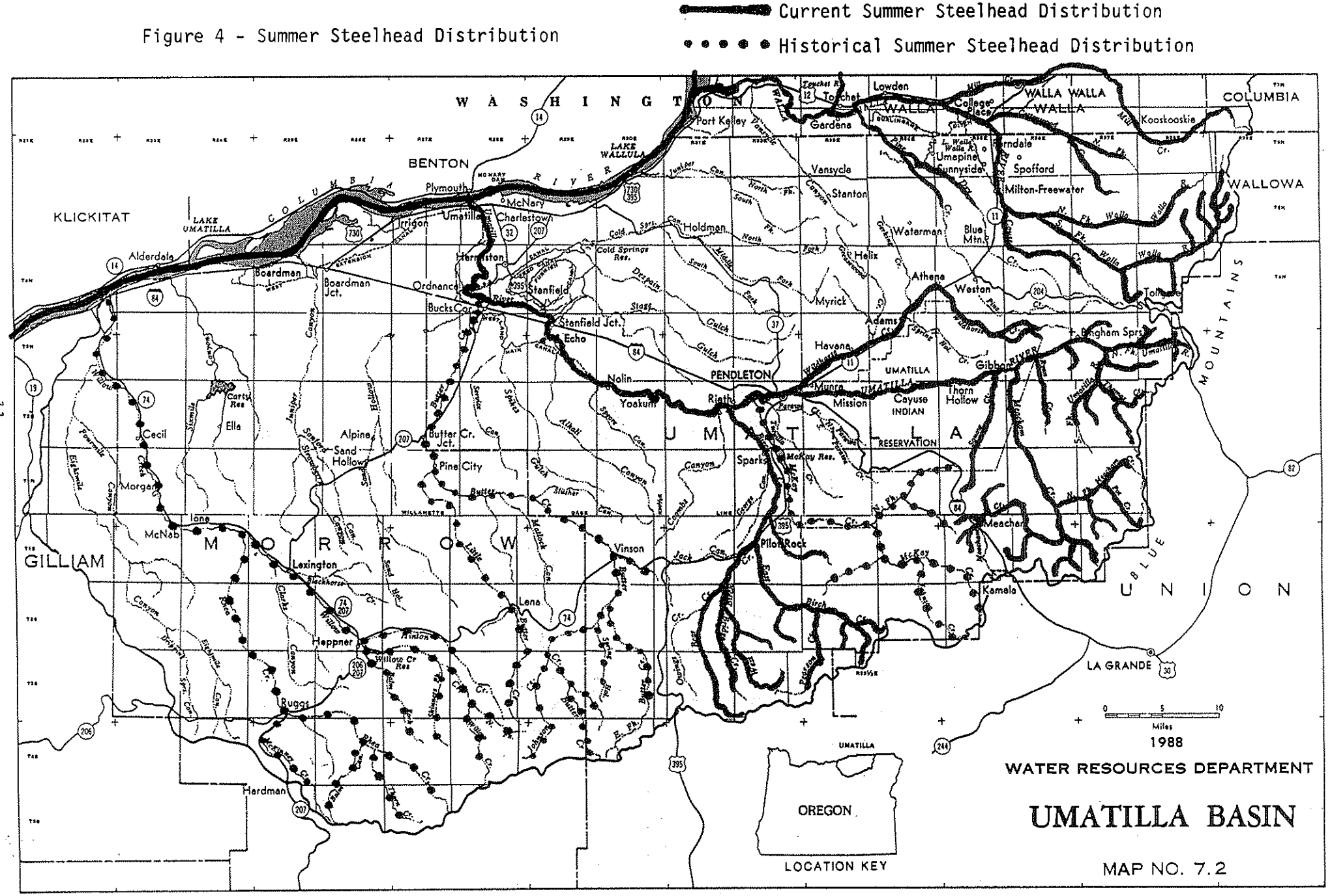


Table 2

ADULT SUMMER STEELHEAD

Threemile Dam, Umatilla River

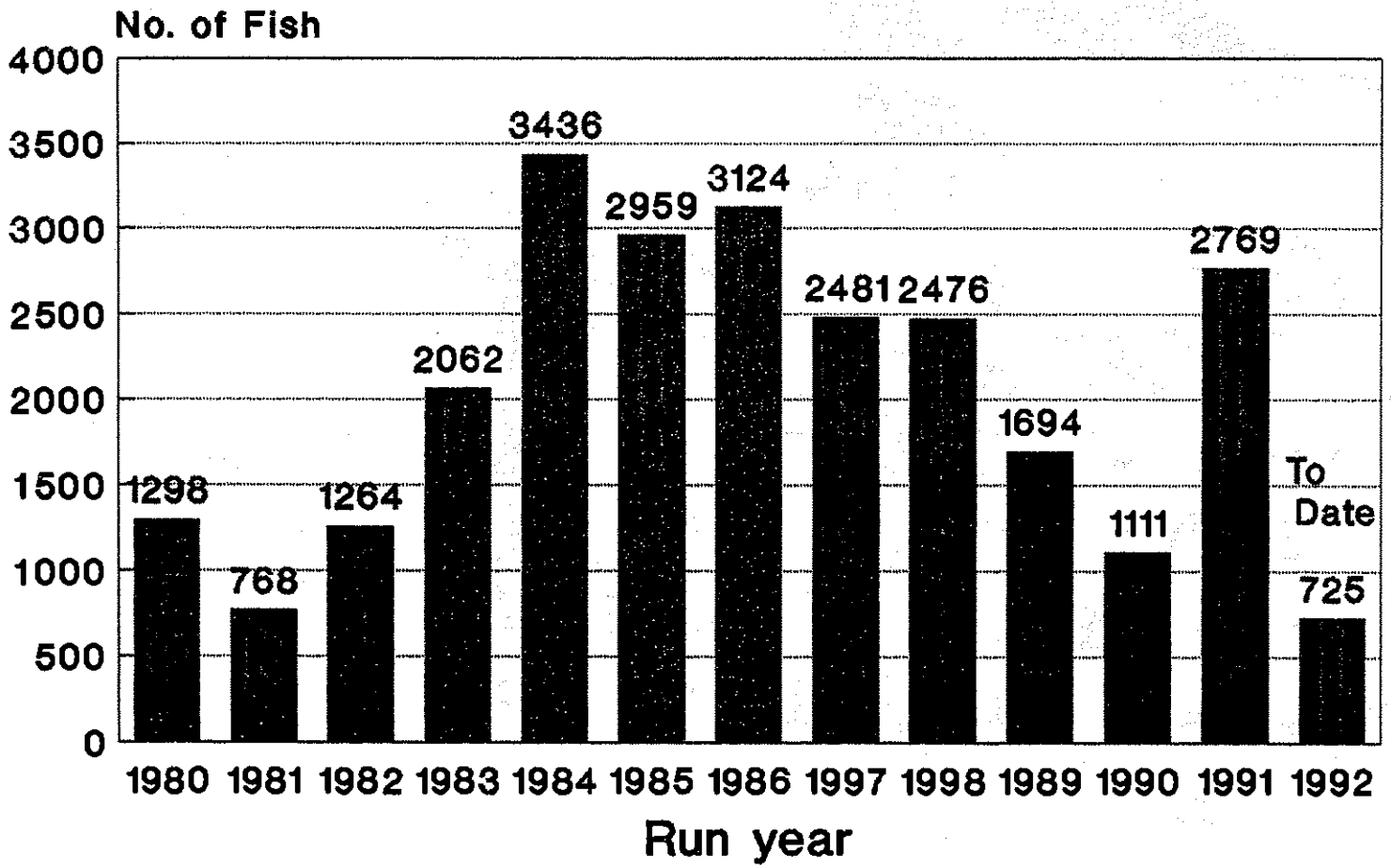


Table 3

1992-93 SUMMER STEELHEAD RETURNS TO THE NURSERY BRIDGE DAM FISH TRAP-- WALLA WALLA RIVER

Date	Number Trapped Total	Wild	Hatch	Released Upstream Total	Wild	Hatch	Sacrifice Hatchery	Trapping Mortalities Wild	Hatch	Total M	F	Sex Wild M	F	Hatchery M	F
1-23	1	1		1	1						1		1		
1-28	1	1		1	1					1		1			
1-30	2	2		2	2					2		2			
1-31	3	3		3	3					2	1	2	1		
Jan	7	7		7	7					5	2	5	2		
2-01	2	2		2	2					1	1	1	1		
2-02	3	3		3	3					1	2	1	2		
2-03	3	3		3	3						3		3		
2-04	1	1		1	1						1		1		
2-05	1	1		1	1						1		1		
2-09	1	1		1	1						1		1		
2-10	2	2		2	2					1	1	1	1		
2-12	4	4		4	4					1	3	1	3		
2-13	2	2		2	2					1	1	1	1		
2-14	6	6		6	6					4	2	4	2		
Feb	25	25		25	25					9	16	9	16		
3-05	6	6		6	6					1	5	1	5		
3-06	7	7		7	7					2	5	2	5		
3-07	11	11		11	11					2	9	2	9		
3-08	7	7		7	7					1	6	1	6		
3-09	9	9		9	9					1	8	1	8		
3-10	6	6		6	6					2	4	2	4		
3-11	3	3		3	3						3		3		
3-12	7	7		6	6			1 - F		1	6	1	6		
3-13	5	5		5	5					1	4	1	4		
3-14	4	4		4	4					1	3	1	3		
3-15	6	6		6	6					2	4	2	4		
3-16	16	16		16	16					8	8	8	8		
3-17	8	8		8	8					3	5	3	5		
3-18	51	50	1	50	50		1			13	38	13	37		1
3-19	25	25		25	25					9	16	9	16		
3-20	19	19		19	19					5	14	5	14		
3-21	6	8		8	6						6		6		
3-22	10	10		10	10					2	8	2	8		
3-23	23	22	1	23	22		1			4	19	4	18		1
3-24	1	1		1	1						1		1		
Mar	230	228	2	229	227		2	1 - F		58	172	58	170		2
Cum Mar	262	260	2	259	259		2	1 - F		67	187	67	185		2

approximately 200 fish per year. That number should be much lower this year due to the low number of steelhead in the fishery during the shortened angling season.

Actions

A creel census is being conducted on the Walla Walla River to estimate the number of steelhead bypassing the fish trap. All trapped fish receive an opercle punch.

One partial passage barrier was laddered, and one was removed from the Umatilla basin. Negotiations are being conducted for the removal of another partial passage barrier on the mainstem Umatilla River, and one on the mainstem Walla Walla River.

At least six more obstacles are partial barriers to upstream passage in the Umatilla district. All are Birch Creek irrigation diversions with either no ladder, or inadequate ladders.

Eighteen irrigation diversions need to be screened in the Umatilla ~~basin~~ District. Fifteen of these are on Birch Creek. One is needed on the mainstem Umatilla near the forks. The other two are just upstream from the fish trap on the Walla Walla River.

The two unscreened irrigation diversions (39.64 cfs and 0.5 cfs) on the Walla Walla River are scheduled to be fitted for temporary screens in April. Both diversions will apparently become obsolete in two years when the proposed irrigation district implements one of several conservation plans. The screen and trap on the Little Walla Walla River needs to be remodeled and replaced.

Two mainstem Umatilla River rotary fish screens (on the Dillon and Holeman ditches) are being replaced this year.

Current Assessment

A total of 210,000 steelhead smolts were released into the Umatilla River in 1992. This is three times as many as in past years. Hatchery returns in the fall of 1994 could exceed 50 percent of the run. Current angling regulations require the release of all unmarked steelhead in the Umatilla River.

There is limited information on steelhead numbers in the Walla Walla River. Data from the fish trap will help us assess the status of the run. We think that numbers are low (over 300 spawners), but stable (see Table 1 - WFMP Compliance).

District Umatilla

Species White Sturgeon

Status Possible Species of Concern

Previous Assessment

Research in the Columbia River pools above Bonneville Dam confirmed that exploitation rates were much too high in the John Day pool.

Treaty seasons were reduced in 1991, but length and bag limits remained the same.

Sport fishing regulations were changed to restrict daily bag limits and size of legal sturgeon in 1991.

Most Recent Findings

Research continued during 1992 to further define population numbers and age groups. Research indicates that there are approximately 500 sturgeon over 72 inches long, and another 500 between 48 and 72 inches long in the John Day pool. We believe the population of spawning size sturgeon is around 600 fish. This may represent a change in WFMP compliance (see Table 1 - WFMP Compliance).

Angling pressure apparently continued to drop in the John Day pool during 1992 due to reduced catch rates during the past few years.

Actions

Flow augmentation for ESA salmon will increase the flows through the John Day pool this spring and summer. The US Army Corps of Engineers plan to lower the John Day pool (to between elevation 262.5 & 263.5) to enhance juvenile and adult salmonid migration. This should increase the available white sturgeon spawning habitat in the John Day pool.

Research will take place above McNary Dam in 1993. This will provide needed information on the sturgeon population in the McNary pool, and the free flowing river habitat upstream.

Current Assessment

If continued, increased flows during the spring in the Columbia River will have positive long term effects on the white sturgeon population in the John Day pool.

Recent changes in harvest regulations, continued flow augmentation, and further research should allow us to avoid the need for listing white sturgeon populations in the John Day and McNary pools.

Habitat Protection and Restoration Strategies
Umatilla Fish District

Priority #1

Basin	Umatilla
Population	Birch Creek Wild Summer Steelhead
Status	Possible Species of Concern - Declining Habitat Problems
Population Status	Population appears to be stable at this time, but declining habitat warrants continued concern.
Limiting Factors	a) There are 15 unscreened diversion ditches in the Birch Creek drainage (see Figure 5 - Unscreened Diversions in Birch Creek). They impact downstream passage of juveniles and adults. b) Remove or improve six diversion structures on Birch Creek to facilitate fish passage - three on the mainstem, one on East Birch Creek, and two on West Birch Creek (see Figure 6 - Partial Passage Barriers in Birch Creek). All six are passage barriers to upstream migrating adults and juveniles at low flows, but two could be barriers to some fish at all flows. c) Habitat limiting factors in the Birch Creek drainage include high summer water temperatures, low summer stream flows, poor quality riparian areas, poor fish habitat diversity, and unstable stream channels. Stream survey data collected in 1989 is indicative of these problems (see Table 4 - Birch Creek Habitat Survey Data Summary, 1989). Temperature data from East Birch Creek show that weekly average maximum stream temperatures increases significantly downstream, and are frequently above 70 degrees F in the summer (see Figure 7 - Weekly Average Maximum Temperature in East Birch Creek, 1992). Land uses including agriculture, grazing, logging, and roading have increased the impact these limiting factors. Recently, the large scale removal of dead and dying timber caused by drought and insect infestations on both public and private land has exacerbated these problems.

Figure 5 - Unscreened Diversions in Birch Creek.

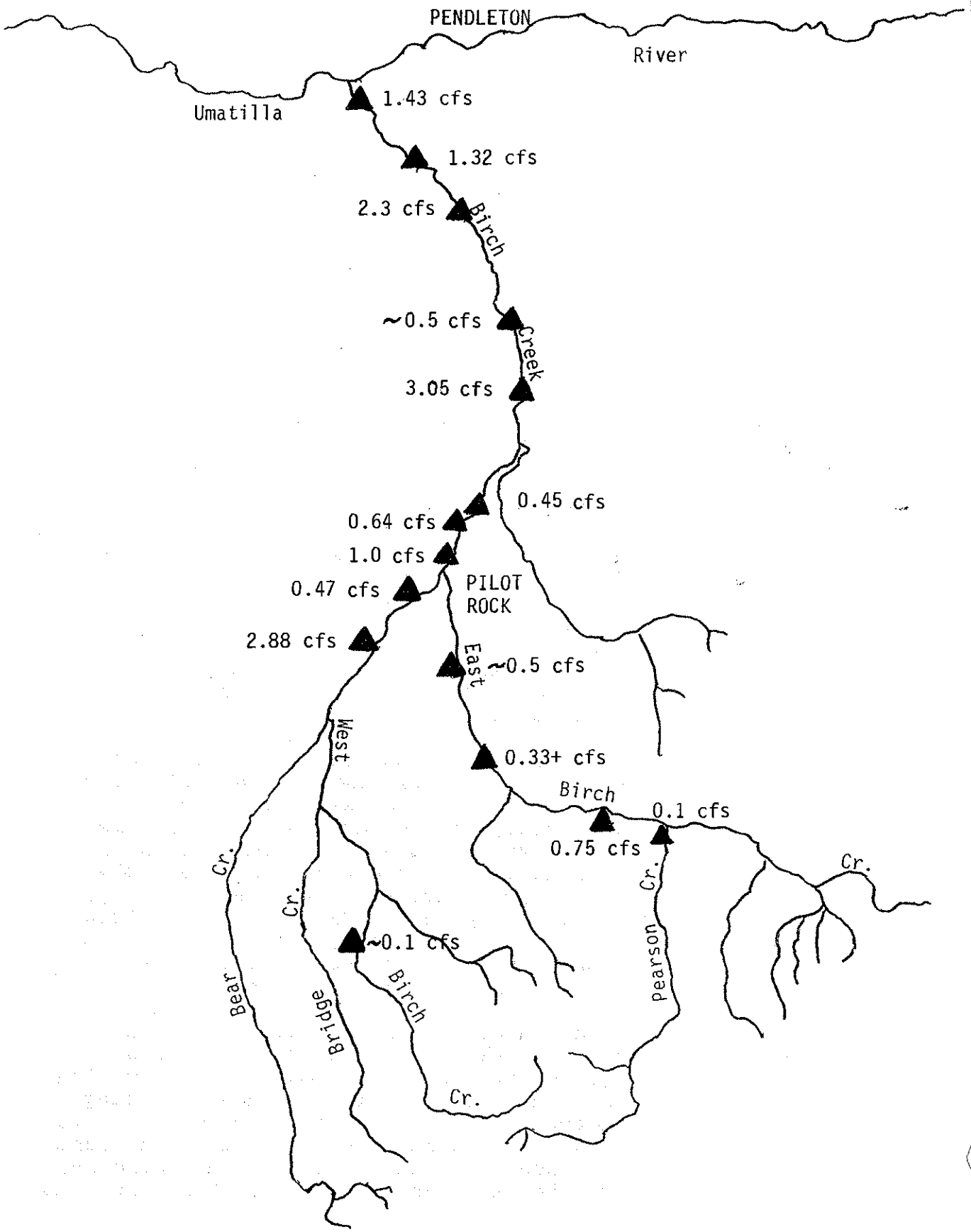


Figure 6 Partial Passage Barriers in Birch Creek

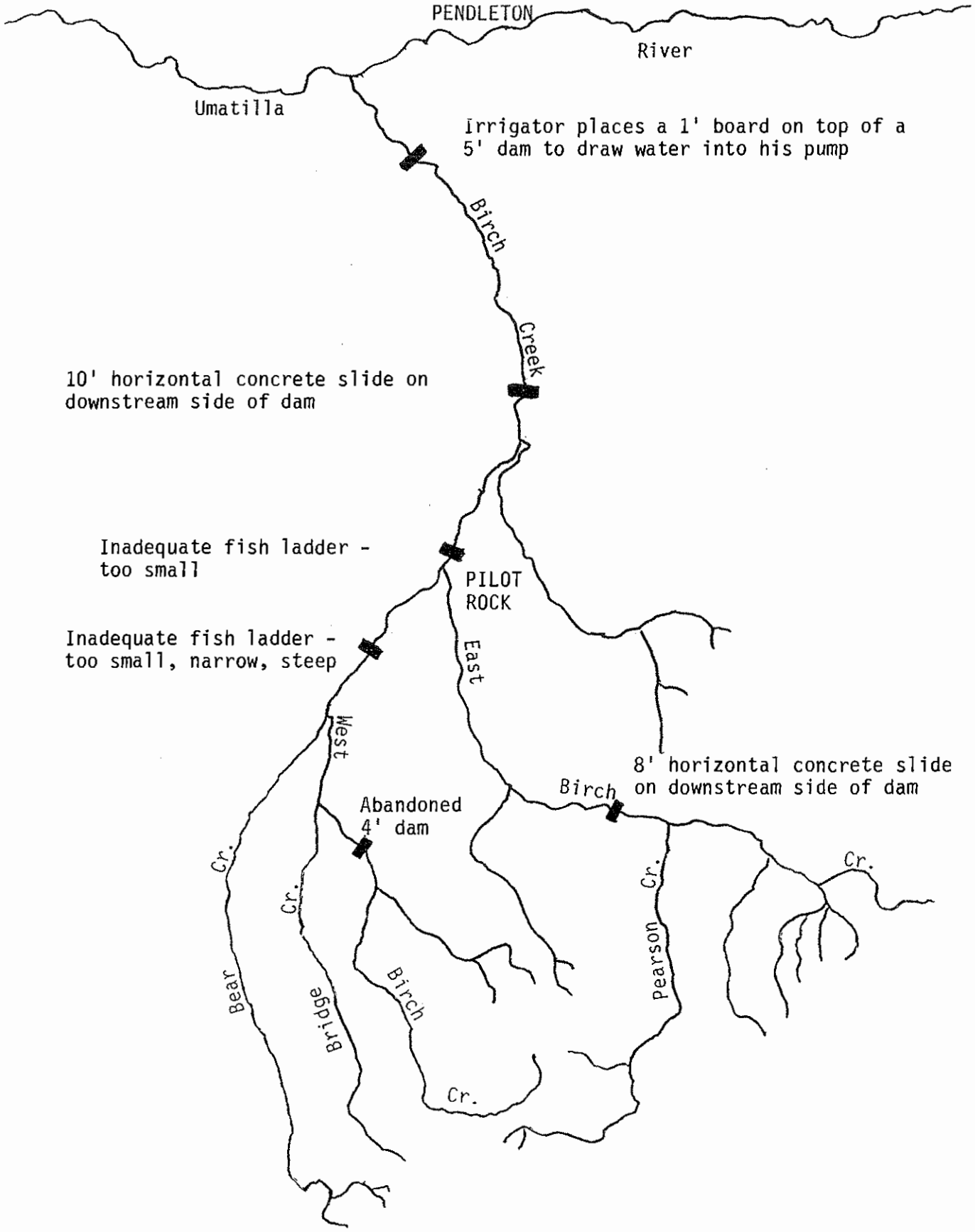


Table 4. Habitat survey data collected from the Birch Creek drainage in 1989.

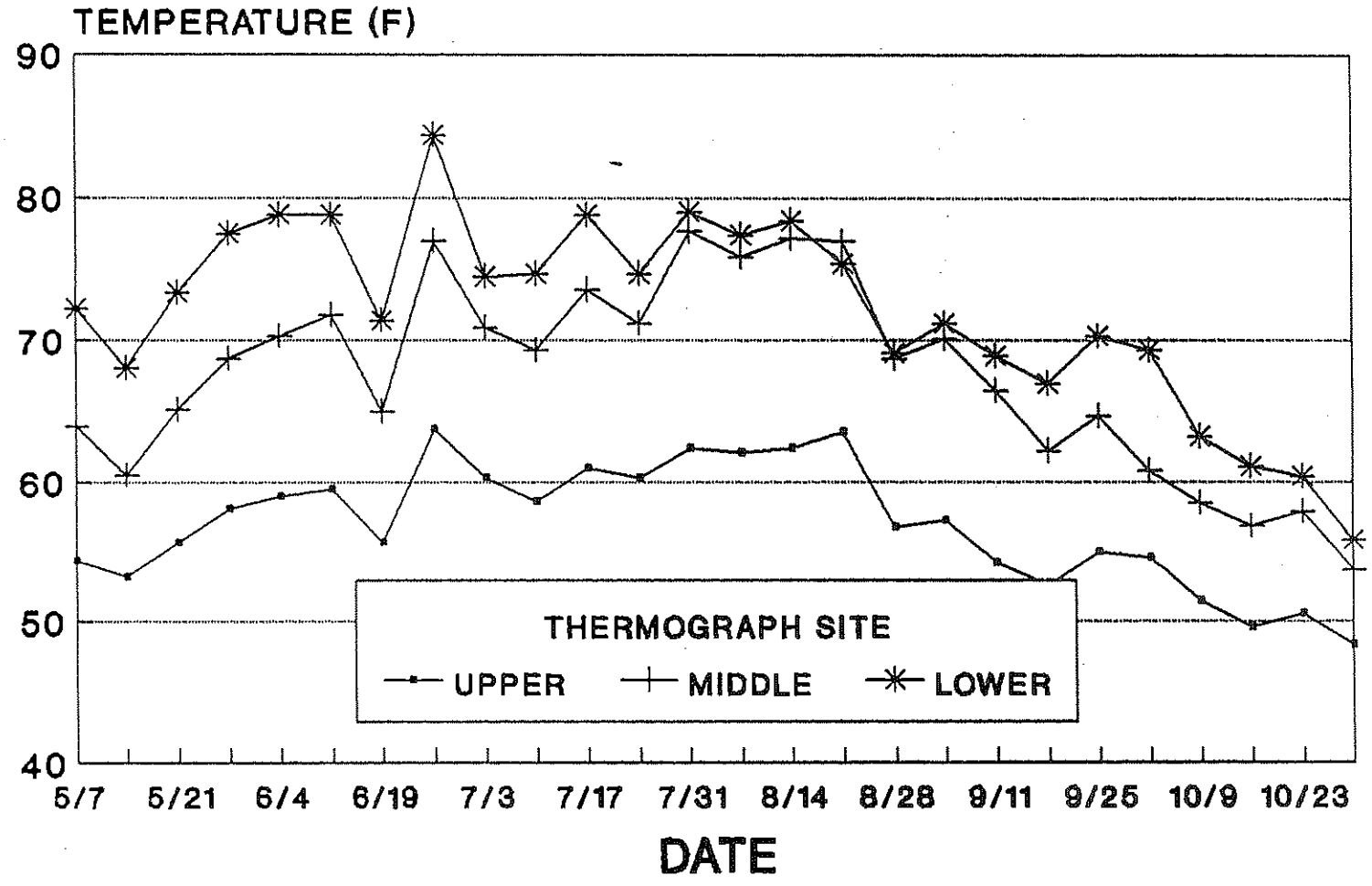
STREAM	RIPARIAN VEGETATION /1 <5 FT TALL DEC	RIPARIAN VEGETATION /1 <5 FT TALL CON	RIPARIAN VEGETATION /1 >5 FT TALL DEC	RIPARIAN VEGETATION /1 >5 FT TALL CON	ORGANIC DEBRIS INDEX /2	SHADE (%)	FLOW FEATURES (%) POOL	FLOW FEATURES (%) RIFFLE	FLOW FEATURES (%) GLIDE RUN
MAINSTEM	27.7	0.0	26.0	1.9	0.2	21.7	35.3	48.4	16.1
EAST FORK	28.9	0.2	36.1	2.0	1.0	42.0	16.8	55.0	28.1
WEST FORK	22.4	0.2	29.8	1.3	0.2	32.0	15.7	50.1	34.2

/1 Percent of area within 20 feet of stream covered by riparian vegetation.
/2 A classification considering size and quantity of wood debris. Optimum is 4.

Figure 7

EAST BIRCH CREEK

WEEKLY AVERAGE MAXIMUM TEMPERATURE



1992

Habitat Protection Strategies	a) Screens were installed in the Birch Creek basin in the late 1940's by the Oregon Game Commission, but were removed in 1950's. NMFS had plans and funds to install screens in the Birch Creek basin in 1992, but priorities shifted when chinook in the Grande Ronde basin were listed under ESA. The NE Region Screens Crew estimates they will be in the Grande Ronde basin for another five years. Birch Creek might not get fish screens until 1998. b) Improved passage would allow both juveniles and adults to migrate freely throughout the basin at all flows. Two partial passage barriers in Birch Creek were eliminated in 1992. c) Coordination and education with private landowners in regard to fill and removal laws and riparian management remain paramount to the protection of fish habitat within the Birch Creek drainage. The district coordinated with 22 landowners regarding fill and removal activities. Two major fill and removal violations (totalling 3/4 mile) occurred in the basin over the past two years. In both cases the landowners cooperated with the district to prepare and implement restoration plans. Contacts with landowners regarding the merits of sound riparian management are on-going.
Habitat Restoration Strategies	a) If funds become available, the screens crew could get to Birch Creek in two years (1995). b) Reconstruct ladders at two dams, build ladders or jump pools at two dams, and completely remove two dams. The landowners have been contacted and are aware of the passage problems. We are working with them to solve the problems. c) Limiting factors are being addressed in the Birch Creek drainage through the implementation of fish habitat improvement projects funded by the Bonneville Power Administration. However, current funding for this program is for maintenance of existing projects only. Since 1987 approximately 8.5 miles of stream and 209.6 acres of riparian habitat have been protected from livestock grazing. Instream work (habitat diversity and channel stability improvements) has been completed on 6.5 miles of stream. Total program cost to date is $992,298. Projects have been completed on 15 percent of the area

identified for implementation. Much work remains to be done.

Strategies for restoration of fish habitat within the Birch Creek drainage under the BPA funded program include restoring riparian vegetation, improving habitat diversity, and improving channel stability. Vegetation restoration has been addressed through the construction of riparian corridor fencing to exclude livestock, vegetative plantings, and the protection of eroding streambanks. Habitat diversity improvements have been made through the instream placement of rock jetties, habitat boulders, and large woody debris. Channel stability improvements have been made through revegetation efforts, and the placement of rock structures including boulder strings, jetties, toe of slope rocks, and riprap.

Production Potential

a) The number of wild smolts that die each year due to the 15 unscreened diversions in Birch Creek is unknown. During 1970 statewide planning surveys it was estimated that Birch Creek produced approximately 15 percent of the total Umatilla River wild steelhead run. Screening would benefit the Umatilla wild steelhead run.
b) It is currently possible that juveniles could become stranded below the dams and be subjected to inferior habitat conditions during low flows. Adults are not able to navigate these structures during low flows. We believe production would significantly improve if these passage problems are solved.
c) Monitoring data at one East Birch Creek site suggest that flooding in 1991 caused further degradation of instream and riparian habitats. Comparison of habitat monitoring transect data collected in 1989 and 1992 shows an increase in channel width, decrease in channel depth, and reduction in pool habitat (see Tables 5 & 6 - Habitat Monitoring Transects on East Birch Creek, 1989 & 1992). These data also show an increase in solar radiation reaching the stream. If further damage from flooding ceases for a period of time, it would be expected that the habitat will recover under the treatment strategies used. However, with the large scale removal of timber on both public and private land in the drainage, intense flood events are anticipated to occur

Table 5. Land features, flow features, and channel dimensions in 1989 and 1992 from habitat monitoring transects on East Birch Creek.

	LAND FEATURE (FT)			FLOW FEATURE (%)			CHANNEL DIMENSION (FT)			
YEAR	FLOOD PLAIN	BANK	ACTIVE CHANNEL	POOL	GLIDE RUN	RIFFLE	CHANNEL DEPTH	CHANNEL WIDTH	DISTANCE BANKS	WATER RATIO
1989	48.7	15.0	36.3	27.5	17.5	55.0	4.44	27.5	38.9	39.3
1992	43.7	19.2	37.0	0.0	31.8	68.2	3.64	28.1	46.0	-20.6

Table 6. Changes in land features, flow features, and channel dimensions from 1989 to 1992 from habitat monitoring transects on East Birch Creek.

	LAND FEATURE (FT)			FLOW FEATURE (%)			CHANNEL DIMENSION (FT)			
TRANSECT NUMBER	FLOOD PLAIN	BANK	ACTIVE CHANNEL	POOL	GLIDE RUN	RIFFLE	CHANNEL DEPTH	CHANNEL WIDTH	DISTANCE BANKS	WATER RATIO
T-1	-18.2	0.6	17.6	-6.7	80.0	-73.3	-3.00	12.7	13.1	-17.9
T-2	-17.6	8.2	9.2	-5.6	72.2	-66.7	-3.84	6.7	12.7	-20.6
T-6	10.1	-1.3	-8.7	0.0	-16.7	16.7	-1.82	-5.5	-6.3	-15.6
T-7	-2.7	-1.3	3.9	-27.8	-16.7	44.4	-1.87	2.2	1.5	12.4
T-16	-5.8	4.1	1.7	-33.3	83.3	-50.0	-0.16	-1.9	4.5	4.2
T-17	2.8	-16.0	13.2	0.0	88.9	-88.9	0.04	9.4	-2.0	-20.1
T-18	-1.6	3.9	-2.3	0.0	-37.5	37.5	-0.58	-1.6	1.2	53.7
T-19	8.6	-9.3	0.7	-8.3	0.0	8.3	-0.28	0.5	-6.6	113.2
T-20	-2.5	1.3	1.1	-100.0	0.0	100.0	0.08	0.1	2.0	7.4
T-21	-2.8	3.8	-1.0	-45.5	90.9	-45.5	0.00	-0.8	2.5	14.3
T-22	-6.3	15.2	-9.0	-38.9	-27.8	66.7	-0.07	-7.1	4.9	3.7
T-27	-5.5	12.8	-7.3	-27.8	0.0	27.8	0.02	-6.2	4.6	-0.8
T-28	-7.3	14.8	-7.4	-37.5	0.0	37.5	0.48	-4.8	4.8	21.9
T-29	-21.5	20.3	1.3	-25.0	-25.0	50.0	0.05	0.8	13.4	13
T-30	-5.0	4.8	0.3	-35.3	-42.1	82.4	0.90	0.3	6.3	-1.9
MEAN	-5.0	4.1	0.9	-26.1	16.3	9.8	-0.67	0.3	3.8	13.5

at relatively frequent intervals. Given this problem, the potential for these projects to improve habitat conditions has decreased. However, these projects have the potential to make long term improvements in habitat condition, and protect it from further degradation.

Other Needed Actions: Forest harvest activities need to be carefully designed and implemented. This basin could benefit considerably from a stronger Forest Practices Act and an effective Agricultural Practices Act.

Priority #2

Basin: Umatilla River

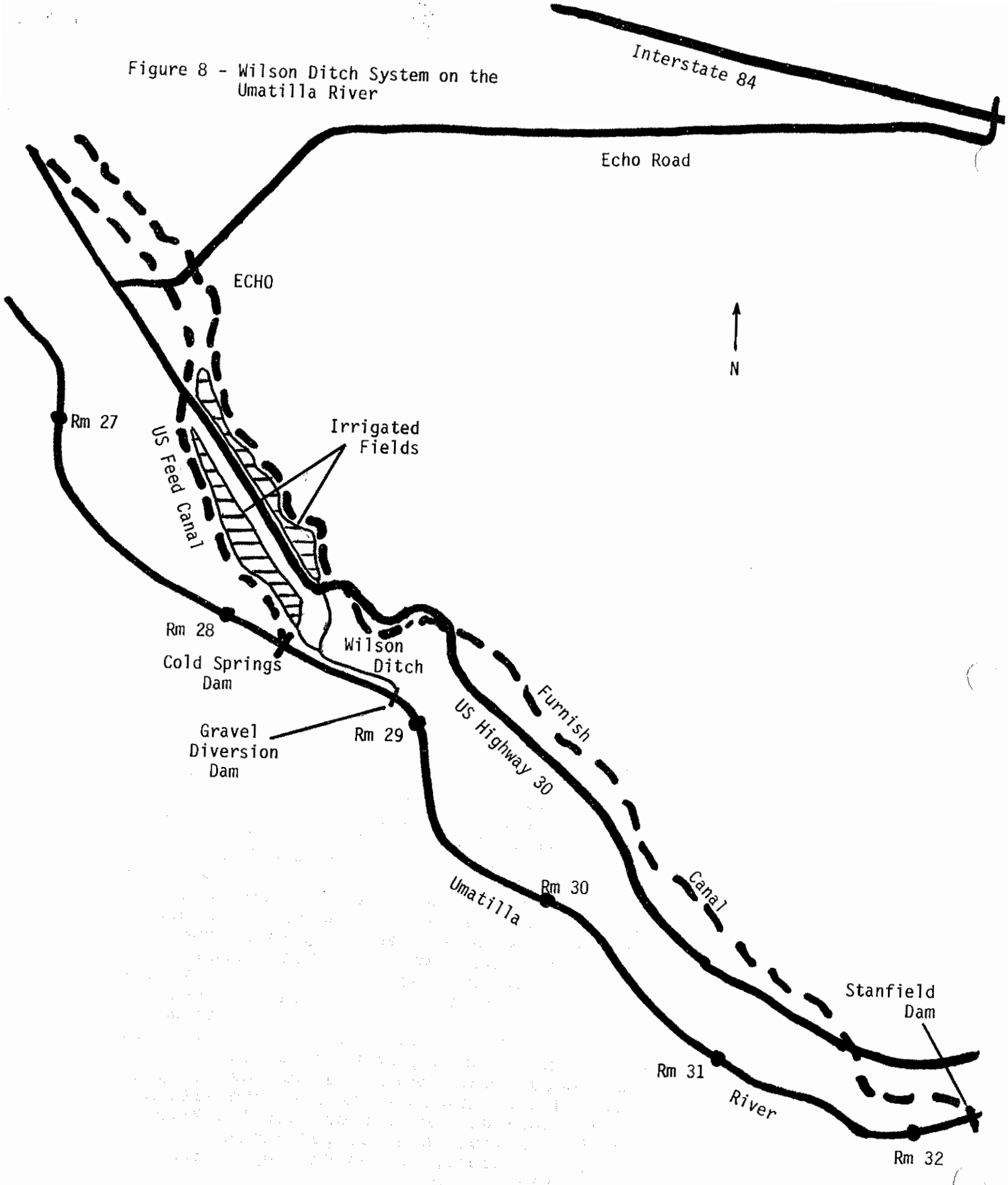
Population: Umatilla River juvenile anadromous fish

Status: Stable

Population Status: Anadromous smolts migrating downstream in the Umatilla River must pass by many irrigation diversions en route to the mouth of the river.

Limiting Factors: One of the diversions in the lower river takes water into the Wilson ditch system (see Figure 8 - Wilson Ditch System on the Umatilla River). The Wilson ditch has two fish screens, both with bypass pipes. The ditch flows parallel to the Umatilla River for approximately 1/4 mile, then forks. The screens are located a few yards below the forks. Ice flows and floods have damaged and degraded the bed of the ditch above the forks. Now the west fork ditch screen elevation is too high for the canal, and the flow in the ditch will not turn the fish screen. The irrigator has to lift the west fork screen to get water to his field. This kills downstream migrating juvenile anadromous fish. The irrigator pushes up a gravel dam to divert water into the Wilson ditch. One-quarter mile of Umatilla River riparian habitat is destroyed annually by bulldozers reconstructing the upper ditch after spring floods.

Figure 8 - Wilson Ditch System on the Umatilla River

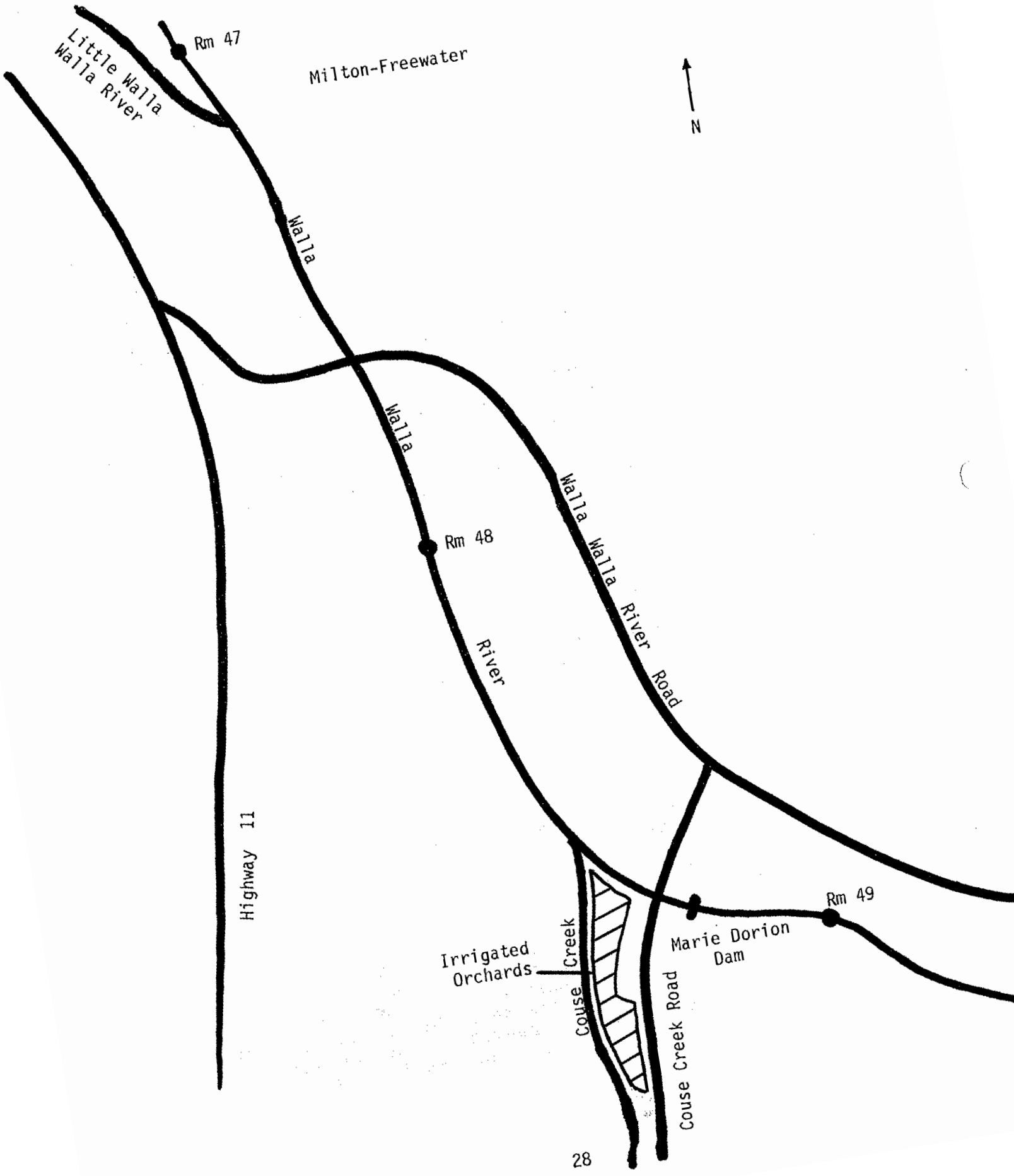


Habitat Protection Strategies	The long-term solution proposed to the irrigator and the local irrigation district is to eliminate the upper section of the Wilson ditch system that parallels the Umatilla River, and run a short pipe from the Furnish Canal to the Wilson ditches. This would eliminate the need for annual ditch reconstruction by the irrigation district. The irrigation district is considering this option.
Habitat Restoration Strategies	The short-term solution proposed to the irrigator is to run a short pipe from below the east fork screen over to the west fork, and eliminate the need for the west fork screen. The irrigator supports this option.
Production Potential	Either proposed solution eliminates the loss of fish bypassing the screen on the west fork, and facilitates smolt passage through the lower Umatilla River. However, the long-term solution would allow the riparian recovery process to begin in that reach of the river, and could provide some water for the instream flow right.
Other Needed Actions	It does not appear that operation of the Wilson ditches will change this year due to higher priority fish screen problems. In the interim, we will continue to work with the irrigator and the irrigation district to reduce these problems.

Priority #3

Basin	Walla Walla River
Population	Bull Trout, Redband Trout, Summer Steelhead, Whitefish
Status	Sensitive, Species of Concern, & Stable
Situation	Marie Dorion Dam used to provide water for a power plant which served the communities of Milton and Freewater (see Figure 9 - Marie Dorion Dam on the Walla Walla River). The city of Milton-Freewater uses the six foot dam now to service two small water rights.

Figure 9 - Marie Dorion Dam on the Walla Walla River

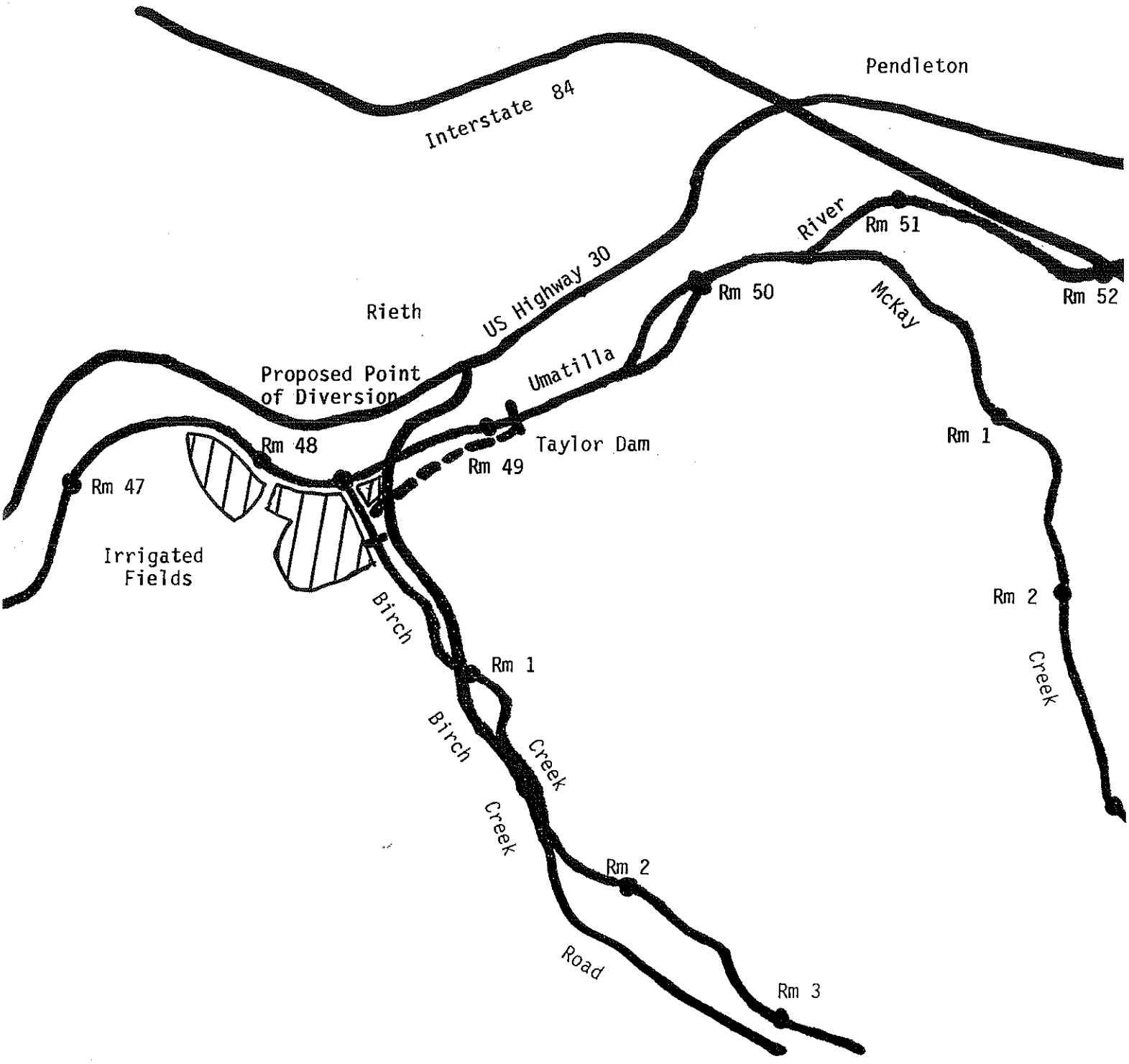


Limiting Factors	The dam is a passage barrier to all fish at some flows. It is passable on the south side at moderate to high flows. When the irrigators call for water in the spring, the city places a stop log across the south side of the dam to draw water into their pumps. The jump pool is not deep enough for fish to pass over the dam and the board. An impassible barrier is created if this occurs prior to the end of the adult steelhead run.
Habitat Protection Strategies	Two options have been considered to solve this conflict. One is to construct a series of steps below the dam. The other is to completely remove the dam, and provide water to the irrigators another way.
Habitat Restoration Strategies	Construction of the steps would be very costly, and they might fill with gravel. Complete removal would require structural reinforcement of the dike upstream due to channel down cutting. NMFS engineers recommended that the dam be removed. The city has agreed to provide water to the irrigators from another existing location. The Corps of Engineers and the flood control district are also involved in the process, and are being consulted.
Production Potential	Each summer the dam becomes a partial passage barrier to migrating fish. The Little Walla Walla River two miles downstream diverts the entire river each summer. Fish can be stranded in the two mile stream reach for as long as seven months before higher flows provide better passage conditions. This is especially hard on bull trout. Removal of the dam would allow all fish to migrate freely throughout the free flowing river all year long.
Other Needed Actions	The flood control district needs to ask the Corps to remove the dam. The Corps needs to approve the project. The dike upstream from the dam needs to be reinforced. The area steelhead club has some money and access to equipment and manpower to implement the project. BPA has indicated they might help fund this project. A site needs to be identified for disposal of the concrete.

Priority #4

Basin	Umatilla
Population	Wild Bull Trout, Redband Trout, Summer Steelhead, Whitefish, and Hatchery Steelhead, Coho, Spring & Fall Chinook Salmon
Status	Sensitive, Species of Concern, & Stable
Situation	The Taylor dam is located on the Umatilla River between Pendleton and the mouth of Birch Creek (see Figure 10 - Taylor Dam on the Umatilla River). The irrigator has applied for another point of diversion (POD) for her water rights. She is currently pumping from the proposed POD (in the Umatilla River at the mouth of Birch Creek), and has abandoned the five foot concrete dam.
Limiting Factors	The dam is a passage barrier to migrating fish at low flows. Water leaks under the dam during low flows. The dam is also a deterrent to boat traffic.
Habitat Protection Strategies	The landowner has agreed to allow ODFW to remove the dam once the POD change is approved. Funding for this project may come from BPA. Removal of the dam would allow all fish to migrate freely throughout the river at all flows.
Habitat Restoration Strategies	Water Resources needs additional information from the irrigator before final approval for the POD change is given. The POD change involves five water rights on two streams - two from the Umatilla River and three from Birch Creek. Water Resources wants to know exactly where each of the water rights can be applied. Since there is a new gaging station in Birch Creek on the irrigator's property and a Umatilla River gaging station a few miles upstream in Pendleton, monitoring water usage at the new POD should be fairly simple.
Production Potential	Approval of this point of diversion change will create three benefits to the fishery: First, it will allow ODFW to remove the partial passage barrier in the Umatilla River. Second, the irrigator's Birch Creek water rights allow her to use almost all the stream during low flows. The new point of

Figure 10 - Taylor Dam on the Umatilla River



diversion will allow all of her Birch Creek water to reach the Umatilla River. This will help wild steelhead smolts reach the Umatilla, provide a little more attraction water for adults during low water years, and protect the aquatic life in this reach of stream. The third benefit would be to open another section of the river to improved boat access.

Other Needed Actions

The irrigator needs to submit the requested information to the Water Resources Department. WRD needs to approve the POD change. ODFW needs to sign an agreement with the irrigator, secure funding for removal of the dam, and award a contract for the job.

Umatilla River Flow Augmentation
Umatilla Fish District Topic of Choice

Umatilla River flows during 1993 will include the ability to use the Bureau of Reclamation Phase I water exchange pumps below Threemile Dam. This will provide a maximum of 140 cfs additional flow, a minimum of 35 cfs, and an average of 85 cfs (from water year 1988 to 1991 data, Oregon Department of Water Resources). This will improve both attraction and passage flows for fish during the irrigation season (April 1 - October 15).

Tables 11 through 14 show the flows available for water years 1988 through 1991. Note the different scales used for the spring and fall periods. The different scales enhance the ability to recognize relative changes during the fall when all flows are much lower than in the springtime.

For 1993, it appears we will also have approximately 12,000 acre-feet of stored water in McKay Reservoir to augment Umatilla River flows. This storage is being provided by an agreement with the Westland and Stanfield irrigation districts.

We have discussed flow augmentation with the Confederated Tribes of the Umatilla Indian Reservation. Our first priority for this water is in May. Additional flows in May would benefit both spring chinook adults and smolts of all species. The past four years of flow data indicate this could take from 0 to 4,200 acre-feet to provide a minimum flow of 250 cfs below Threemile Dam.

Our second priority for water is during the month of October when steelhead, fall chinook and coho adults would benefit. This would likely take from 3,200 to 12,000 Acre-feet to provide a minimum flow of 250 cfs below Threemile Dam.

The next priority would be additional flows in late April and the first half of June. If this does not use all the water (because of the apparent good water year we are experiencing), we will add flow in September. September flows have been short 6,000 to 11,000 acre-feet of maintaining 250 cfs.

It appears likely that we will meet or exceed our springtime flow needs this year without using McKay storage. The storage will be used to improve flows in the fall for adult fish passage to Threemile Dam.

Figure 11

Umatilla Flows with PHASE I

Water Year 1988

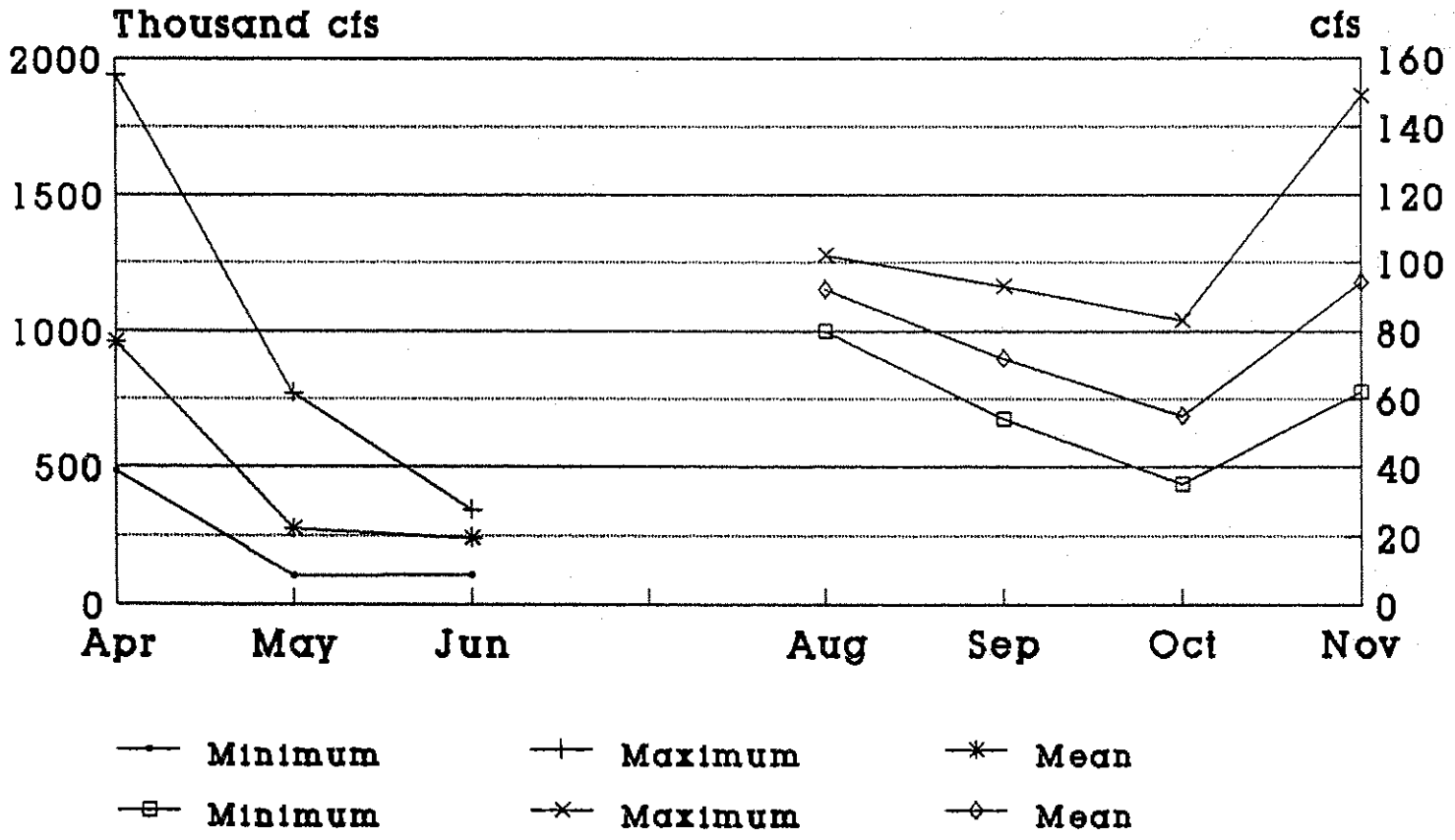


Figure 12

Umatilla Flows with PHASE I

Water Year 1989

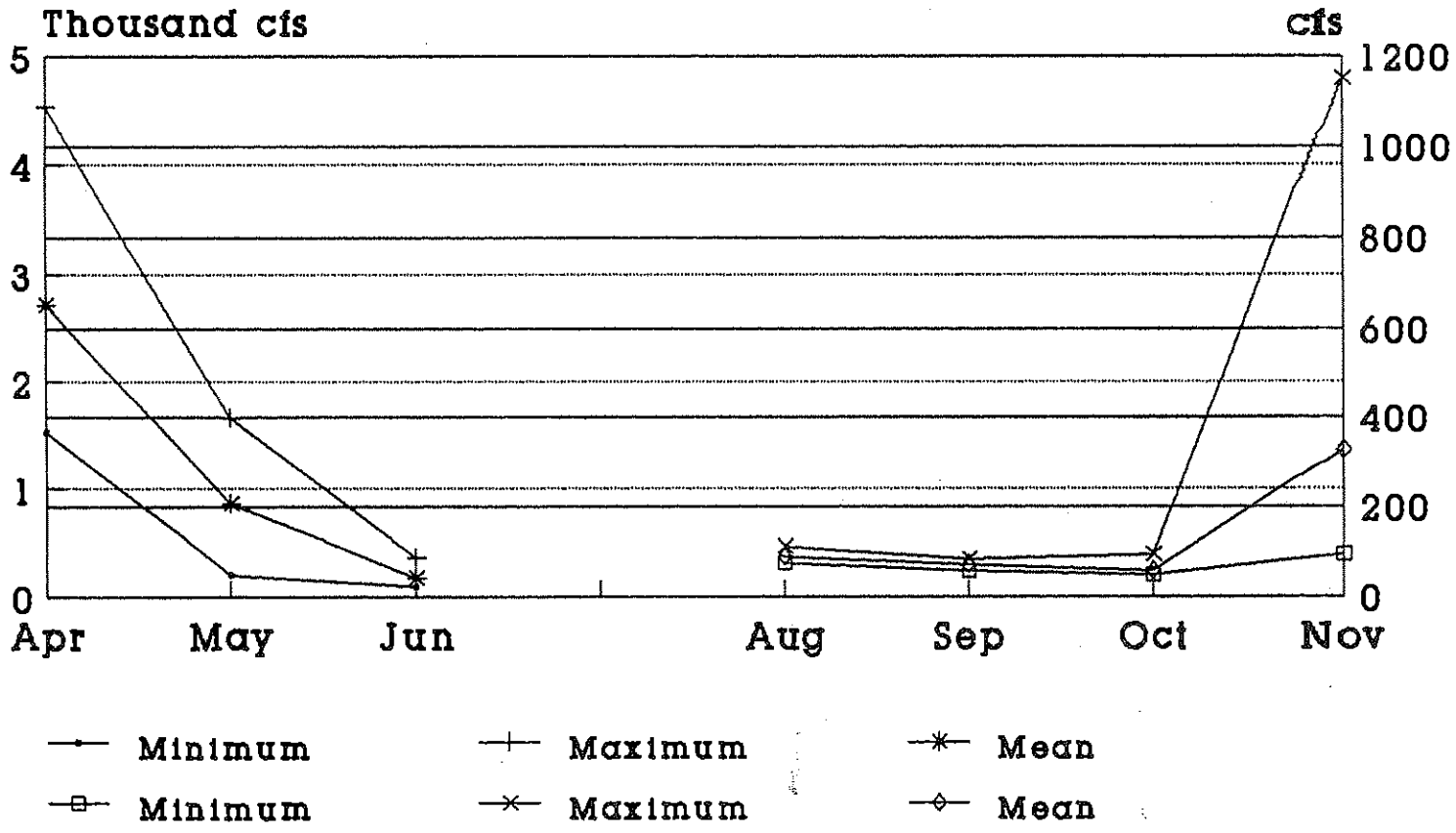


Figure 13

Umatilla Flows with PHASE I

Water Year 1990

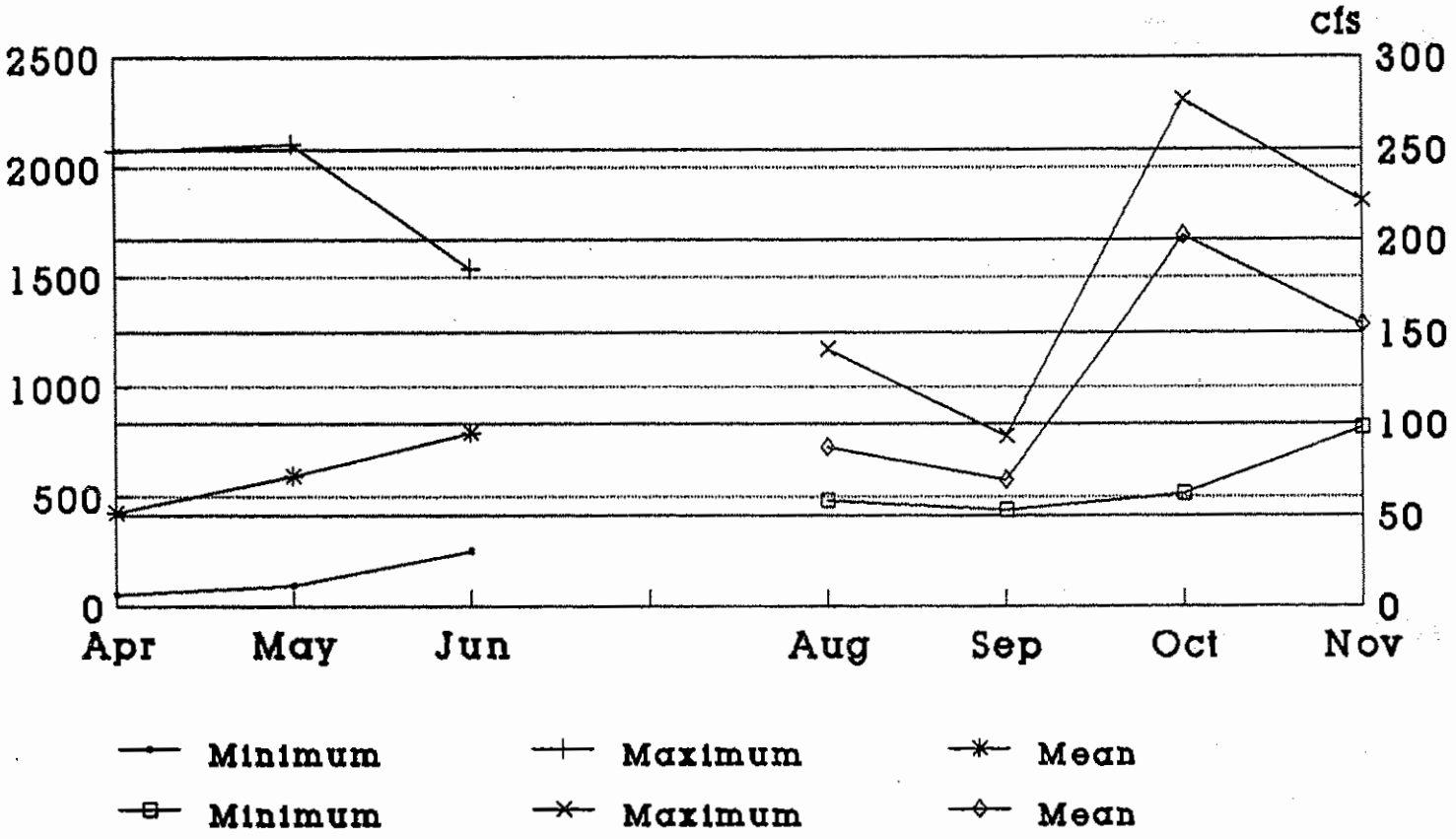
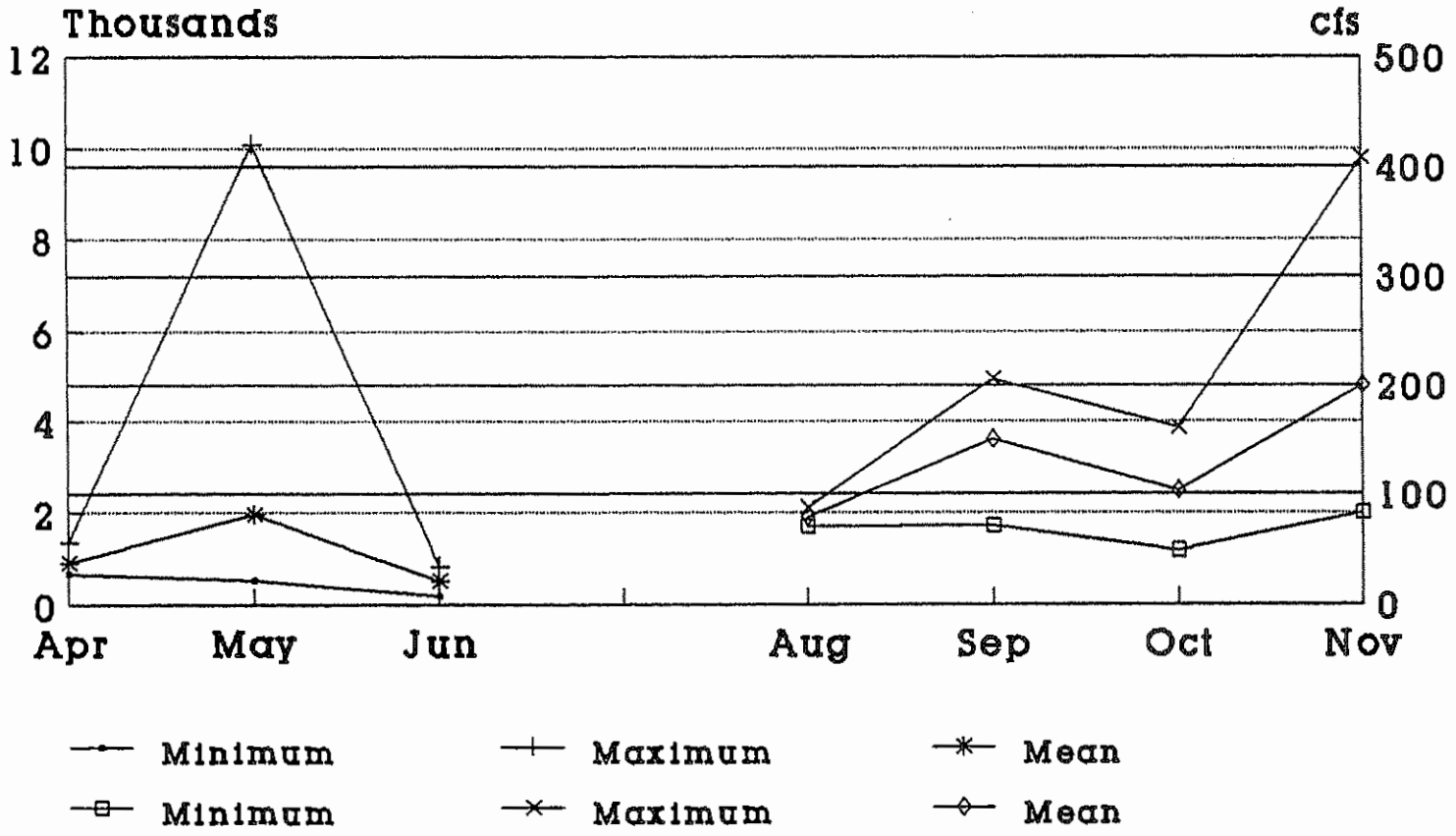


Figure 14

Umatilla Flows with PHASE I

Water Year 1991



By 1995, flows in November and through the storage season can be enhanced by avoiding Umatilla River withdrawls for storage at Cold Springs Reservoir. Cold Springs storage water will be replaced with Columbia River water through the Bureau of Reclamation Project Phase II. By 1997, Stanfield Irrigation District's total McKay Reservoir storage (37,400 acre-feet) will be available to augment flows.

The Hermiston Development Corporation (HDC) is also planning a project which could provide another 14,000 to 28,000 acre-feet of McKay Reservoir storage water (half or all of Westland Irrigation District's McKay Reservoir storage). The HDC proposal is still in the planning stages, but appears likely to proceed.

These opportunities in total could provide over 60,000 acre-feet of storage in McKay Reservoir for fish. This would provide all our desired flows, except during the most serious drought years when extreme low flows occur the same year as a partial fill of the reservior.

WALLOWA DISTRICT
1993 STOCK STATUS REVIEW

- Lamprey
- Fall Chinook
- Spring Chinook
- Bull Trout
- Summer Steelhead
- Kokanee
- White Sturgeon

STOCK STATUS REVIEW - 1993
WALLOWA FISH DISTRICT
LAMPREY

RECENT FINDINGS AND ACTIVITIES

- Historically large numbers of lamprey inhabitated the Wallowa and Imnaha river drainages. Little data is available on historic and current distribution or numbers of these fish.
- Screens checkers reported removing netfulls of amocetes from trap boxes in the 1960's and early 1970's.
- Accounts by ODFW employees suggest a gradual decline in numbers through the 1970's and early 1980's.
- Only one recent citing is recorded. A screens crew member reported finding one 2 inch lamprey in a trapbox on Bear Creek in 1992.
- We sampled eleven sites within the Wallowa River and Joseph Creek drainages during September 1992. Sites were selected as representing lamprey rearing habitat. No lamprey were found.

PLANNED ACTIVITIES

- Continue sampling effort and include Wallowa tributaries

RECOMMENDATIONS

- Locally sufficient data is available to recommend this species should be considered as a candidate for T and E listing.
- We need to investigate passage facilities on Columbia and Snake rivers. Lamprey proofing devices installed at ladders years ago may still be in place.

STOCK STATUS REVIEW
WALLOWA FISH DISTRICT
SNAKE RIVER FALL CHINOOK

RECENT FINDINGS AND ACTIONS

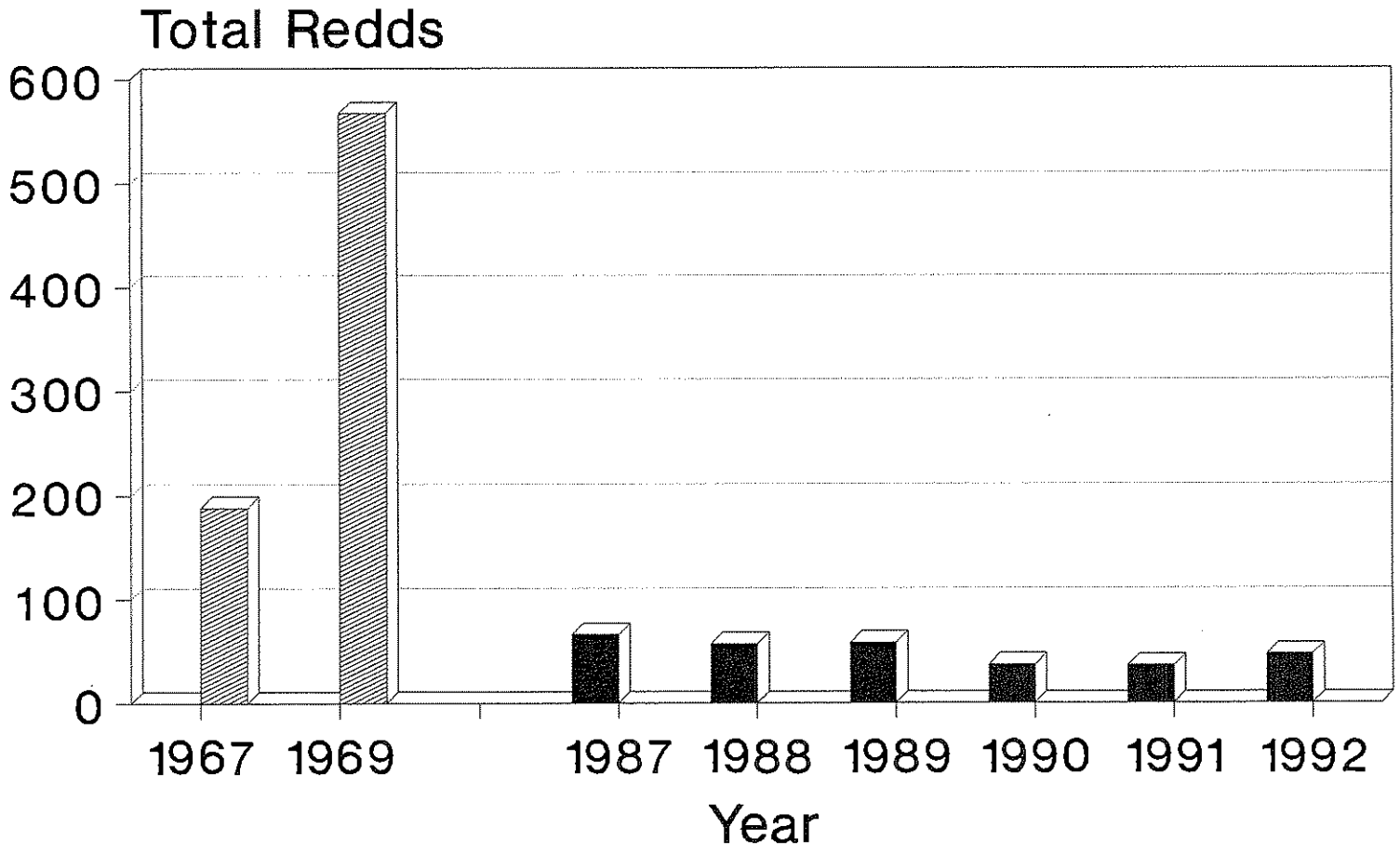
- Through early November 825 fall chinook adults and 98 jacks were counted over Lower Granite Dam. This represents an increase over the 618 adults in 1991 and the 10 year average of 637.
- Of the 96 fall chinook adults radio tagged at Ice Harbor Dam 56% fell back.
- Of 20 adults radio tagged at Lower Granite Dam 32% fell back.
- Many of these fall back fish eventually ended up spawning in the Columbia and 15 ended up in the Yakima River.
- Helicopter surveys accounted for 45 redds in the Snake River during the normal November through mid-December survey period and an additional 2 redds during a later survey. This represents a moderate increase over counts made the last several years (Attachment).
- Counters observed 3 redds in the lower Imnaha River and 5 in the Lower Grande Ronde River.
- A survey made in October to look for early spawning fish extended well up into the Grande Ronde system but identified no redds.
- A total of 43 carcasses were recovered including 2 from the Imnaha and 3 from the Lower Grande Ronde. All were unmarked since marked fish were sorted out at Lower Granite this year. Genetic monitoring work found no differentiation between fish collected from the Snake River above Lower Granite dam and those collected lower in the system.
- Hydrologic and habitat data was collected from a number of redds in an effort to accurately identify habitat parameters required by spawning fall chinook.
- This year, due to lower, less turbid flows, efforts to identify deep water redds accounted for no redds in addition to those identified from the air.
- Divers surveyed spawning gravel below Lower Monumental Dam where fall chinook eggs were discovered last year but found nothing.
- Facilities in the Snake River collected and transported 6,931 subyearling chinook compared to over 17,000 last year. Most of that collection occured during June and early July.

PLANNED ACTIVITIES

- Continue coordination with other agencies involved in Snake River fall chinook investigations.

Snake River Fall Chinook Redds

Asotin to Hells Canyon Dam



STOCK STATUS REVIEW - 1993
WALLOWA FISH DISTRICT
IMNAHA SPRING CHINOOK

RECENT FINDINGS AND ACTIONS

- Lower Granite Dam counts for 1992 included 21,391 spring chinook and 3,008 summer chinook as compared to the ten year average counts of 18,040 and 4,873, respectively. Most Imnaha chinook are counted as summers. The 1992 count is the lowest summer period count since 1980.

- Index redd counts for the Imnaha drainage included; zeros for Lick Creek and Big Sheep Creek and 75 for the Imnaha River. These counts represent fewer redds than the one each observed in Lick and Big Sheep in 1991 and about 50% more than any of the last three years for the Imnaha (Attachment).

- Extensive redd counts in the basin accounted for zero redds in Lick Creek, three in Big Sheep Creek and 118 in the Imnaha River.

- Supplemental surveys conducted one week after index and extensive surveys indicated a 43 and 322 % increase in the number of redds visible in two reaches of the Imnaha River. It appeared that lower than normal flows delayed spawning in 1992.

- Several additional redds discovered by a USFS habitat survey crew in the lower reaches of Big Sheep Creek likely resulted from a 1990 outplant of 79,952 Imnaha smolts in lower Big Sheep Creek.

- As a result of unmarked hatchery chinook returns to the weir, wild/hatchery estimates are based on ratios of marked to unmarked in release groups. Returns to the weir included 160 wild and 685 hatchery fish (Attachment). Of these 34 wild and 195 hatchery fish were used as brood stock (15% wild), 108 wild and 351 hatchery fish were released above the weir (24% wild) and 67 hatchery and 1 wild fish were killed (Attachment).

- Based on mark recoveries an estimated 92 wild and 18 hatchery fish moved above the weir without being trapped. The overall spawner ratio above weir was 35% wild. This represents the lowest wild/hatchery ratio above the weir since the hatchery program began.

- Carcass recoveries below the weir, which included a much higher wild component, and redds counted there indicated that the Imnaha natural spawning population as a whole averaged about 50/50 wild to hatchery.

- Distribution of spawners within the Imnaha has shifted the past two years toward an increased percentage of spawning below the wier.

- During June a severe convection storm in the North Fork Imnaha drainage resulted in numerous debris slides. These slides deposited large quanities of soil and debris in the North Fork. The Imnaha River ran muddy for a week. As a result of the turbidity we were unable to treat holding adults to prevent fungal infection. Pre-spawning mortality at the Gumboot facility included 40 % for wild females, 27.9 % for hatchery females and about 16 % for males.

- Based on the estimated number of adults above the weir this year it took 4.2 adults to produce one redd. This figure compared to previous estimates of 2.9 and 3.2 adults per redd in 1990 and 1991, respectively, suggusts that natural spawners also underwent substantial pre-spawning mortality.

- In an effort to reduce further erosion from the Imnaha slide areas we pursued grass seeding the disturbed soil with the USFS. Since the area of concern was all within wilderness the Forest Service at the Region level decided to implement no remedial measures.

- It appeared from a tour of the area that historic sheep grazing contributed to the intensity of the slides in some areas. Grazing at the level observed in 1991 did not appear to be a problem. However, only one of four bands which normally use the area grazed it in 1991.

- Nez Perce began Imnaha natural production study including trapping and PIT tagging of smolts. Data is not yet available.

- University of Idaho radio tagged adult spring chinook at Ice Harbor Dam. A number of those fish entered the Imnaha. Data is not yet available.

- Habitat inventory completed by the USFS included all federal and most private land within the chinook distribution use area of Big Sheep Creek.

PLANNED ACTIVITIES

- 158,000 1991 brood smolts to be released this year.

- 469,000 1992 brood fingerling on hand for 1994 release.

- Nez Perce Tribe wants to explore release of some smolts in Big Sheep and Lick creeks in 1994.

- Predicted 1993 run includes 295 hatchery and 180 wild adults.

- Reduced 1993 brood smolt goal to 260,000 in an effort to; 1) minimize impacts on the wild population in terms of broodstock needs (for every wild female allowed to pass above the weir we effectively increase natural spawners by four fish), 2) provide a balanced program, wild/hatchery, in the future, 3) reduce the number of future surplus hatchery fish and 4) meet M and E goals.

- Trapping strategies for 1993 include;
1) no more than 30 % by age and sex of the natural fish will be retained for hatchery brood stock,
2) no more than 50 % of fish "passed" above the weir will be of hatchery origin and
3) naturally produced fish will comprise a minimum of 30 % of the fish used for hatchery brood stock.

- Strategy 2 will, however, be exceeded if expected hatchery surplus becomes reality. This would involve passing an addditional 20 to 40 hatchery females. If the trend of the past few years for a higher proportion of wild fish spawning below the weir and among non-trapped fish above the weir continues we will remain well within compliance of Wild Fish Management Policy guidelines for the Imnaha population as a whole. This action will reqire a variance from NMFS since it is outside the program outlined in our existing permit request.

- Because of the continued threat of sediment from the slides discussed earlier chinook held for brood stock will be transported, held and spawned at Lookingglass Hatchery.

- Matrix spawning strategies will again be used in order to maximize genetic combinations expressed in the 1993 brood.

- We plan to continue the close monitoring of spawner distribution and wild/hatchery ratios.

- OSP will provide high priority enforcement presence for the Imnaha chinook holding and spawning areas.

- NPT plans for the first full year of their natural production and survival study includes; estimation of the number of naturally produced 1991 brood smolts migrating from the Imnaha this spring (mark/recapture estimate), estimation of survival for hatchery and wild smolts from the lower Imnaha to Lower Granite Dam and snorkle surveys to determine abundance of rearing 1992 brood fish relative 1991 and future broods.

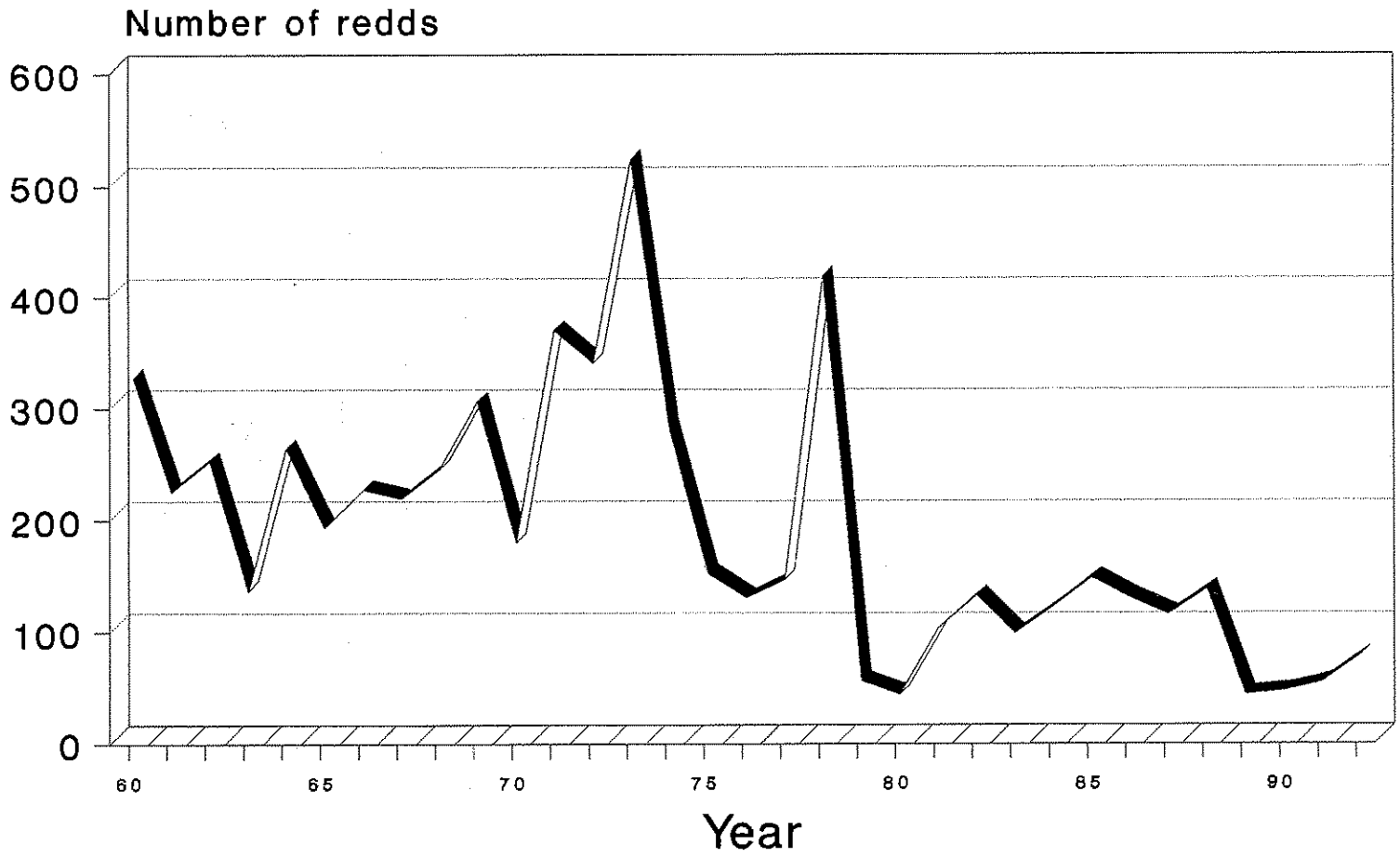
- USFS plans call for reducing stocking density on Big Sheep cattle allotment by 60%.

- USFS timber sale program is currently on hold until they can get section 7 permits from NMFS.

- Schedule a September tour of the upper Imnaha with the District Ranger and wildlife and range staff to observe the results of 1993 grazing.

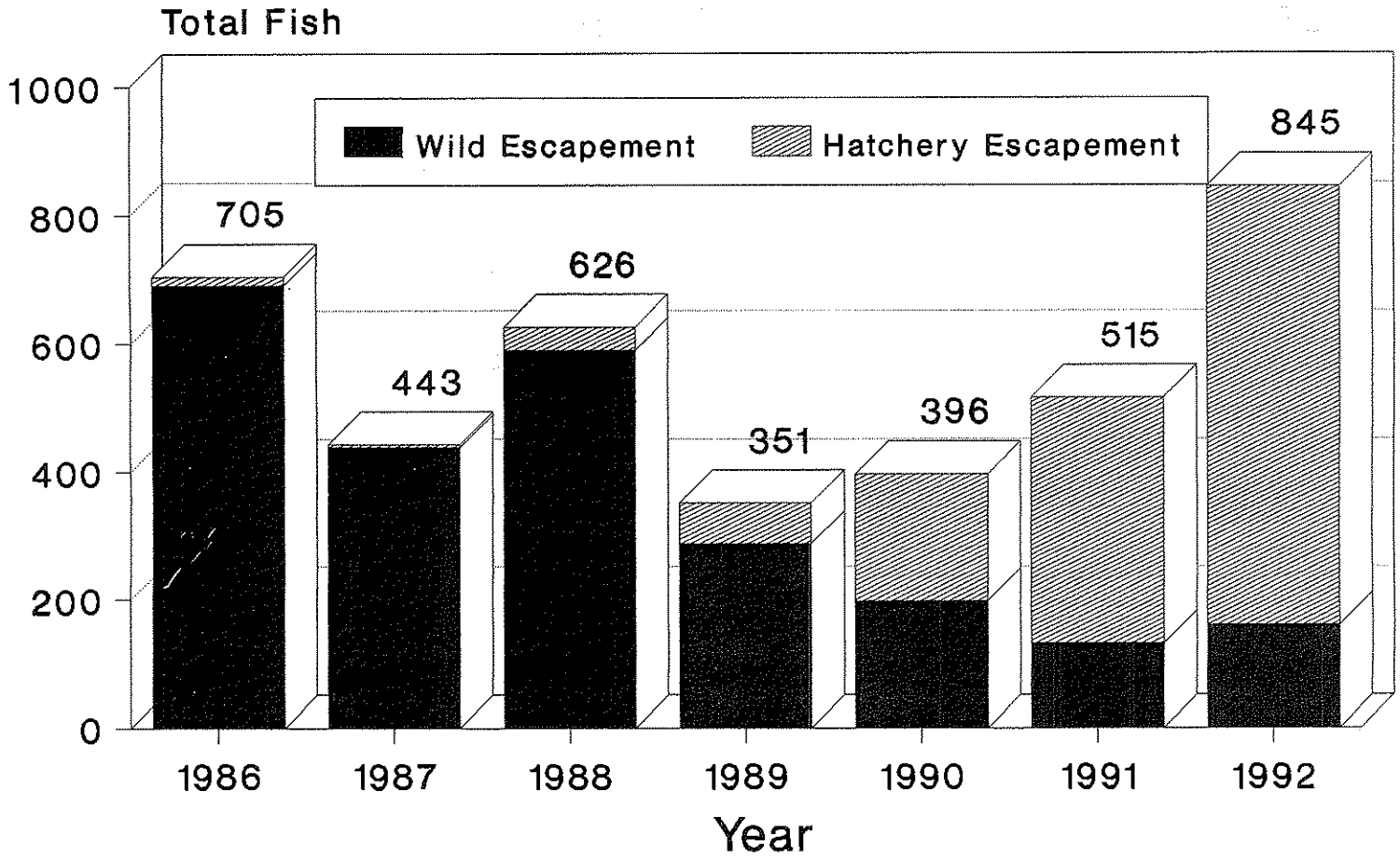
- We will be working with USFS to see that an acceptable native seed supply is on hand to address emergency situations like the Imnaha slides as they occur.

Imnaha River
Spring Chinook Index Surveys



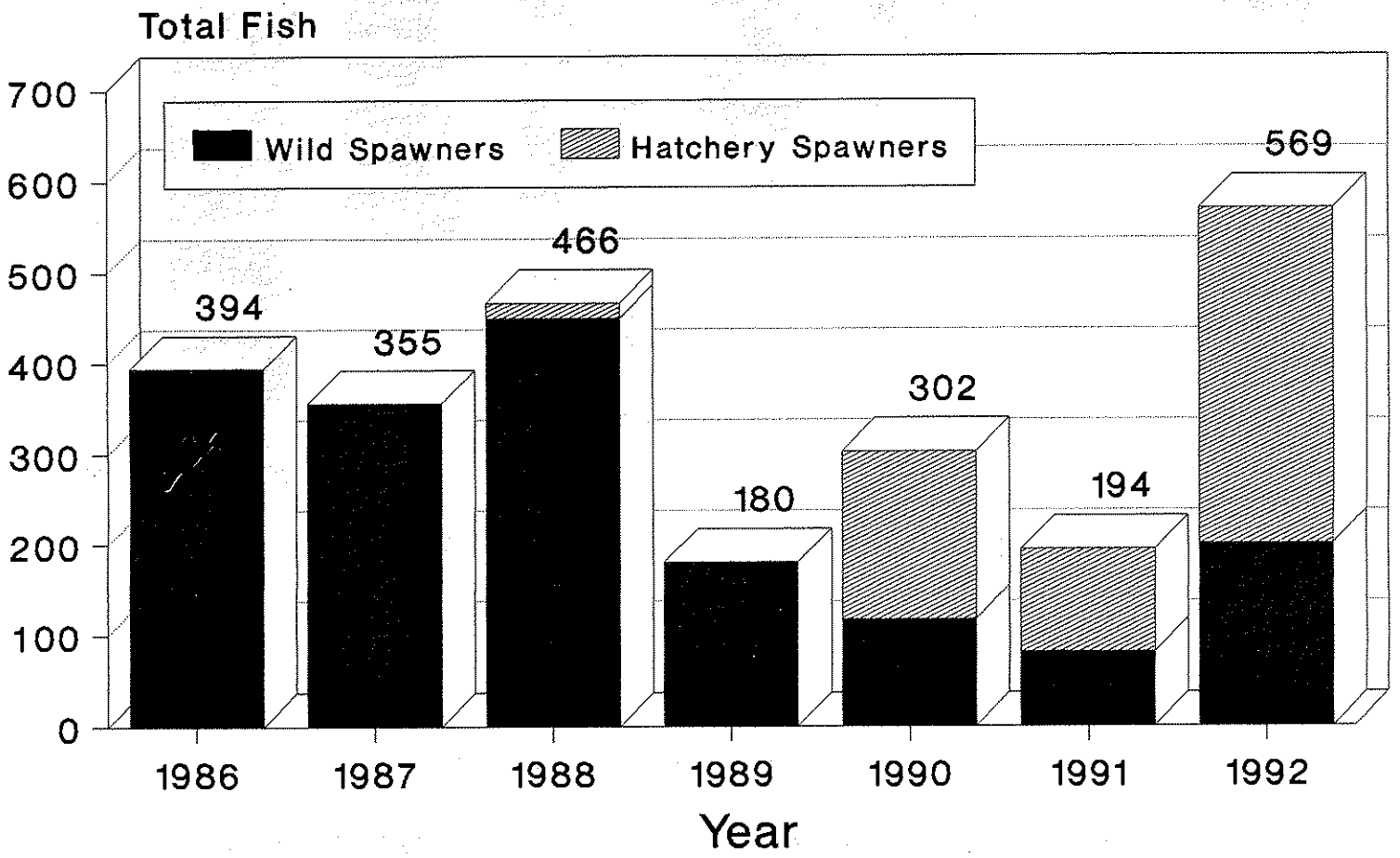
Imnaha River Spring Chinook

Trapped at the weir



Imnaha River Spring Chinook

Natural spawners released above the wier



STOCK STATUS REVIEW - 1993
WALLOWA FISH DISTRICT
BULL TROUT

RECENT FINDINGS AND ACTIONS

- We collected fish density information from eight streams. Sampling included: two-pass removal estimates using electrofishing gear, length measurement on all fish collected and stage of maturity on a subsample of bull trout. Streams sampled included Deer, Little Bear and Hurricane creeks in the Wallowa drainage and McCully, Little Sheep, Big Sheep, Lick and Salt creeks in the Imnaha drainage (Attachment).

- Bull trout were discovered above a barrier in Hurricane Creek. Previous information on this population suggested it may have been extinct due to past chemical treatment and introduction of brook trout.

- 1992 sampling in Deer Creek also identified a previously undetected population of bull trout.

- Density estimates ranged between 0 and 71.25 bull trout per 100 m.sq.(Attachment). Relatively low densities were found in Little Bear, Hurricane and McCully creeks. Moderate densities were found in Salt and Big Sheep creeks. While high densities were found in upper Deer and Lick creeks. Although reports indicate bull trout are present in the system, our sampling discovered none in Little Sheep Creek.

- While sample size was limited, data appear to be consistant with expectations based on population type, interaction with other fish and habitat condition.

- It appears that some of the between stream difference in bull trout density is related to: 1)interaction with brook trout (Hurricane) and 2)lack of a fluvial life history (Big Sheep above the diversion and McCully). Upper reaches of most streams with fluvial populations had substantially greater densities of 0 age fish than comparable areas within the distribution of entirely resident populations. This accounted for much of the between stream differences in overall bull trout density.

- Habitat condition appears to be impacting two of the sampled populations. While fluvial life history is not precluded in Little Bear and Salt creeks, data suggests 0 age/older age ratios comparable to those observed in resident populations (low recruitment).

- Lack of suitable spawning gravel, poor egg survival or lack of access for fluvial adults could each explain the relatively low recruitment.

- Recent watershed changes in the Salt Creek drainage related to a 1989 fire and subsequent salvage logging undoubtedly increased sediment load and probably temperatures in that stream. Little Bear Creek also suffers from increased sediment load due to past timber management activities in the drainage. Increased sedimentation of spawning gravel could easily explain the apparent low recruitment in these two areas.

- Availability of spawning gravel and presence of barriers to upstream migration can be determined by a habitat inventory planned for Salt Creek and review of USFS data already available for Little Bear Creek.

- Lower recruitment,however, does not appear to be substantially affecting density of older age fish in these two areas, at least at this point in time.

- Trend for sediment input in these systems "should" be downward with the increased efforts by USFS to eliminate project impacts on spring chinook.

- A combined sample of 16 fish sacrificed to determine stage of maturity suggested that bull trout from area streams are maturing at approximately 160 mm.(Attachment).

- Conservative expansions based on; useable habitat, densitiy,length frequency (Attachment), and size at matutity data, suggests that Deer and McCully creeks and Big Sheep Creek below the diversion (including Lick and Salt creeks) each contain greater than 300 spawners.

- USFS completed habitat inventory on the middle reach of Deer Creek, lower Big Sheep Creek and Upper Bear Creek.

- Slides in the upper Imnaha which affected chinook survival undoubtedly impacted bull trout populations in that system.

PLANNED ACTIVITIES

- Continue investigations of bull trout populations and habitat to the extent funding is available, including:
    - Density information
        - Upper Imnaha
        - Upper Bear Creek
        - Hurricane Creek
    - Distribution sampling
        - Hurricane Creek
        - McCully Creek
        - Little Sheep Creek
        - Big Sheep Creek
        - Lick Creek
    - Habitat Inventory
        - Salt Creek
        - North and Middle Forks of the Imnaha
        - Cliff Creek
        - McCully Creek
    - Presence/Absence sampling
        - Dry Creek
        - Summit Creek
- Maintain increased OSP presence in the Imnaha and Wenaha
- Focus habitat protection efforts for bull trout in the Little Bear and Big Sheep drainages
- Begin collection voluntary creel data from all bull trout streams.

- Investigate the impacts of operation of the Big Canyon facility on bull trout migration.

- Review habitat inventory data on Little Bear Creek to determine availability of spawning habitat.

- Recommend Salt and Little Bear creeks as streams for monitoring of temperatures and sediment to USFS hydrologist.

RECOMENDATIONS - PROVISIONAL LIST

- Hurricane Creek bull trout should be listed as two populations, one above and one below the barrier, both with spawner population - unknown.

- Deer Creek should be listed as having a bull trout population with greater than 300 spawners.

- McCully Creek and Big Sheep Creek populations above and below the diversion each contain greater than 300 fish and should be considered in compliance.

Table 2. Estimated density of bull trout in Imnaha and Wallowa drainage tributaries sampled in 1992.

Stream	Site number	Size class*	Estimated density (fish/100m sq.m)
Deer Creek	1	A	0
		B	0
	2	A	0
		B	2.73**
	3	A	30.08
		B	18.17
Little Bear Creek	1	A	0
		B	0
	2	A	0.59
		B	7.11
Hurricane Creek	1	A	0
		B	0.15
	2	A	0.13
		B	0.51
Big Sheep Creek	1	A	0
		B	0
	2	A	18.32
		B	5.61
	3	A	0
		B	7.4
Salt Creek	1	A	5.87
		B	18.77
Lick Creek	1	A	0.66
		B	0
	2	A	55.49
		B	15.76
Little Sheep Creek	1	A	0
		B	0
	2	A	0
		B	0
McCully Creek	1	A	1.74
		B	7.84
	2	A	0.57
		B	7.35
	3	A	0
		B	5.79

*Size class A = 1-75mm, B = 76-300mm.

**Estimate based on minimum population estimate, pass 1 catch < pass 2 catch.

Table 3. Mean length, variance and maximum length of bull trout sampled from several Imnaha and Wallowa drainage tributaries, 1992.

Stream	Sample size	Mean length	Standard deviation	Maximum length
Deer Creek	54	113.1	52.08	250
Little Bear Creek	11	118.7	29.50	171
Hurricane Creek	6	165.0	77.10	263
Big Sheep Creek	45	134.7	61.16	245
Salt Creek	39	123.1	42.26	240
Lick Creek	112	71.0	26.02	181
McCully Creek	37	158.4	39.80	225

Table 4. Size, sex and stage of maturity of bull trout sample from Deer, Big Sheep, Salt, Lick, and McCully creeks, 1992.

		Stage of Sexual Maturity		
Length (mm)	Sex	immature	maturing	mature
125	?	X		
128	?	X		
132	?	X		
148	M		X	
153	F		X	
159	?	X		
161	F		X	
162	F			X
162	F			X
163	F			X
168	F			X
173	F			X
193	M			X
205	M			X
215	F			X
245	M			X

*Samples taken from Deer (4), Big Sheep (6), Salt (2), Lick (2), and McCully (2) creeks.

Fig. 2. Length frequency of bull trout collected from Deer Creek September 1992.

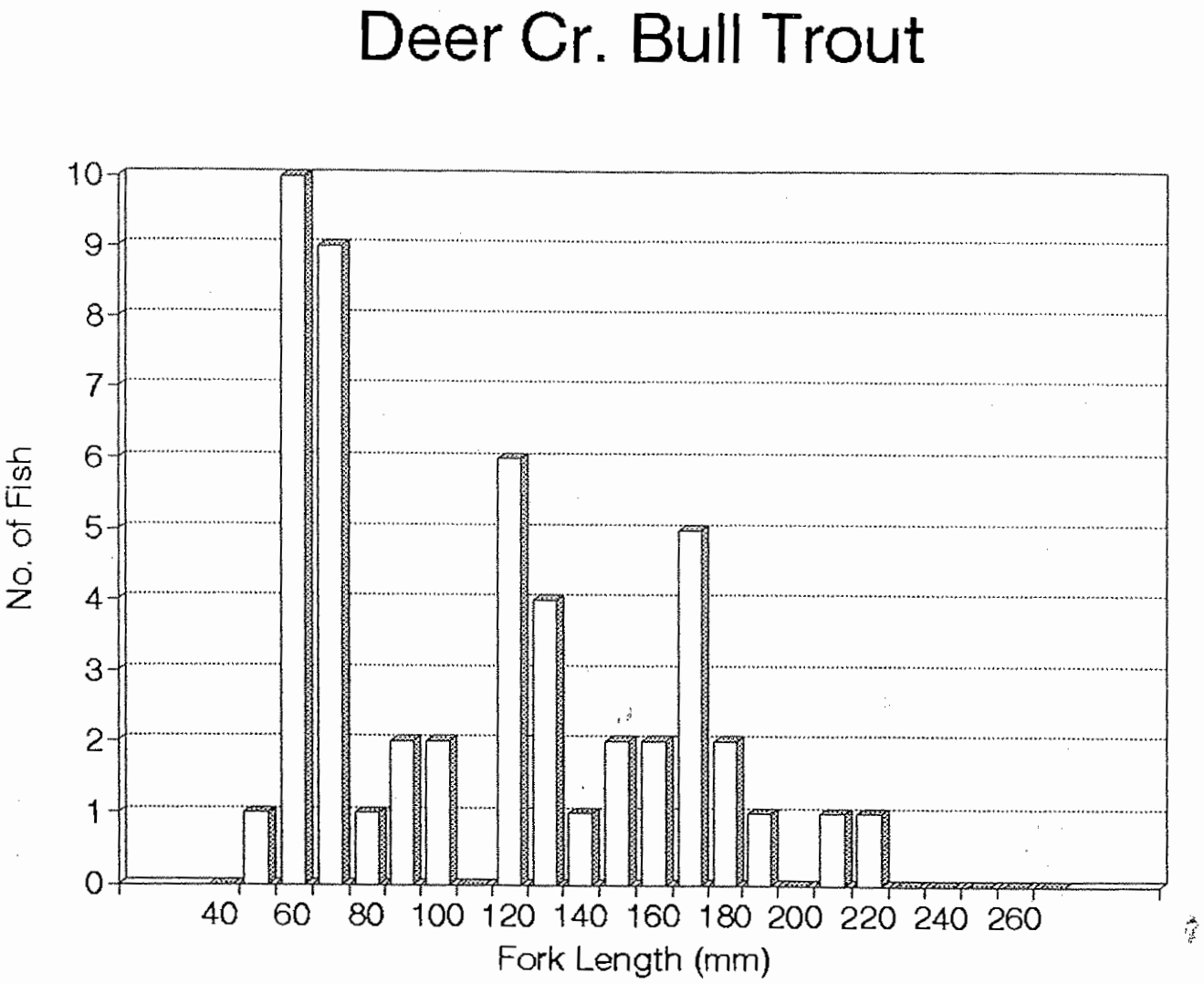


Fig. 3. Length frequency of bull trout collected from Little Bear Creek September 1992.

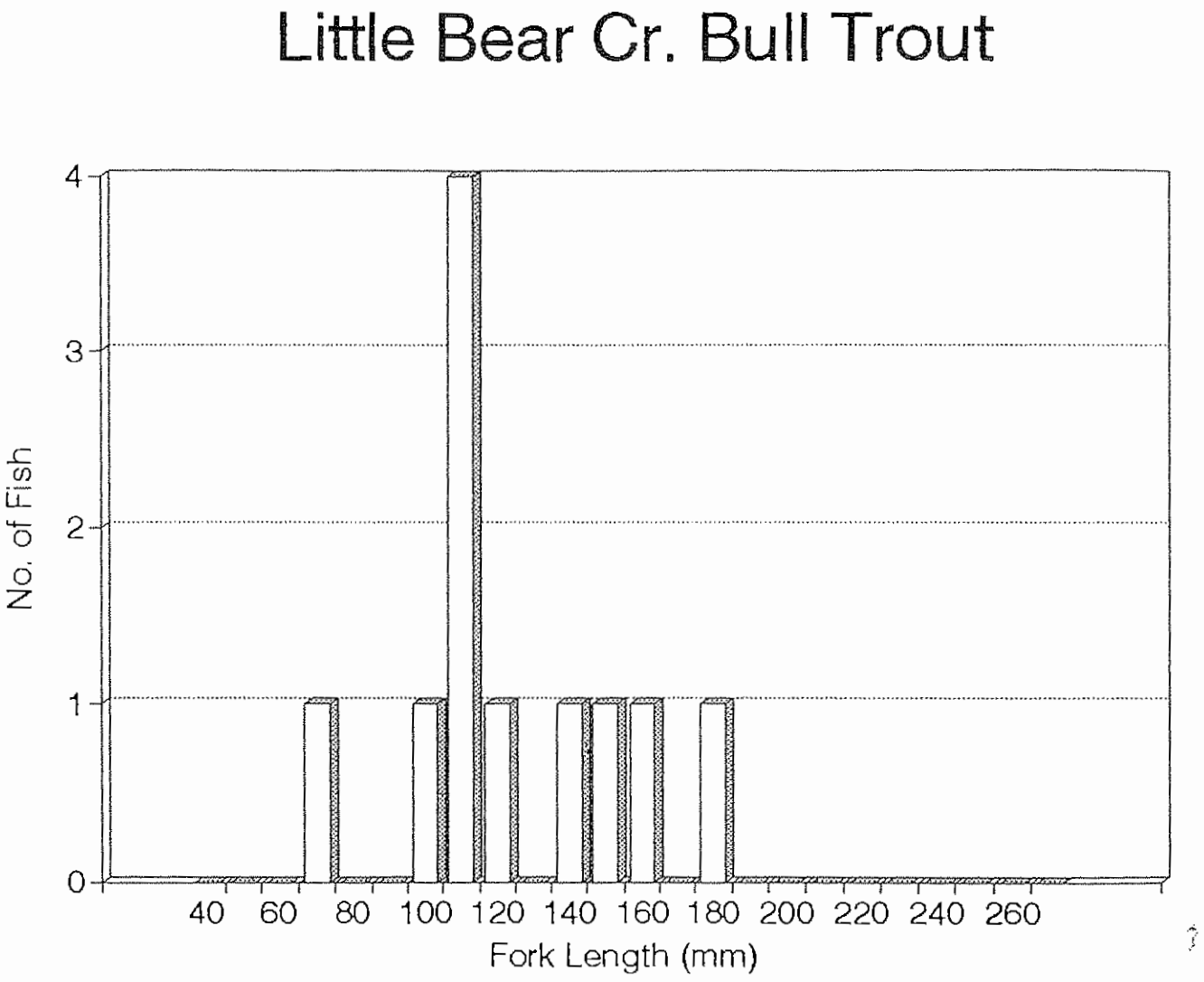


Fig. 4. Length frequency of bull trout collected from Hurricane Creek September 1992.

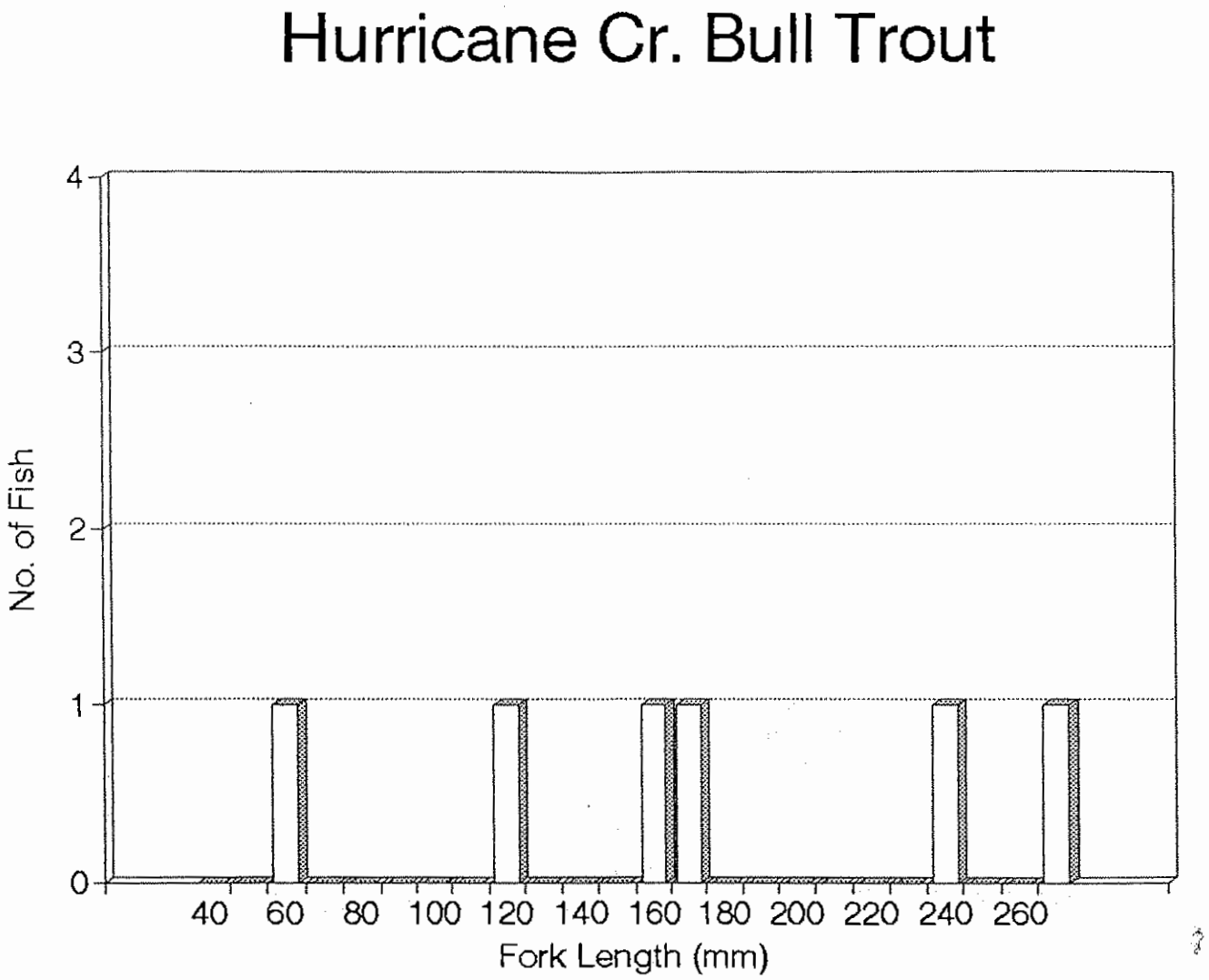


Fig. 5. Length frequency of bull trout collected from Big Sheep Creek (above canal diversion) September 1992.

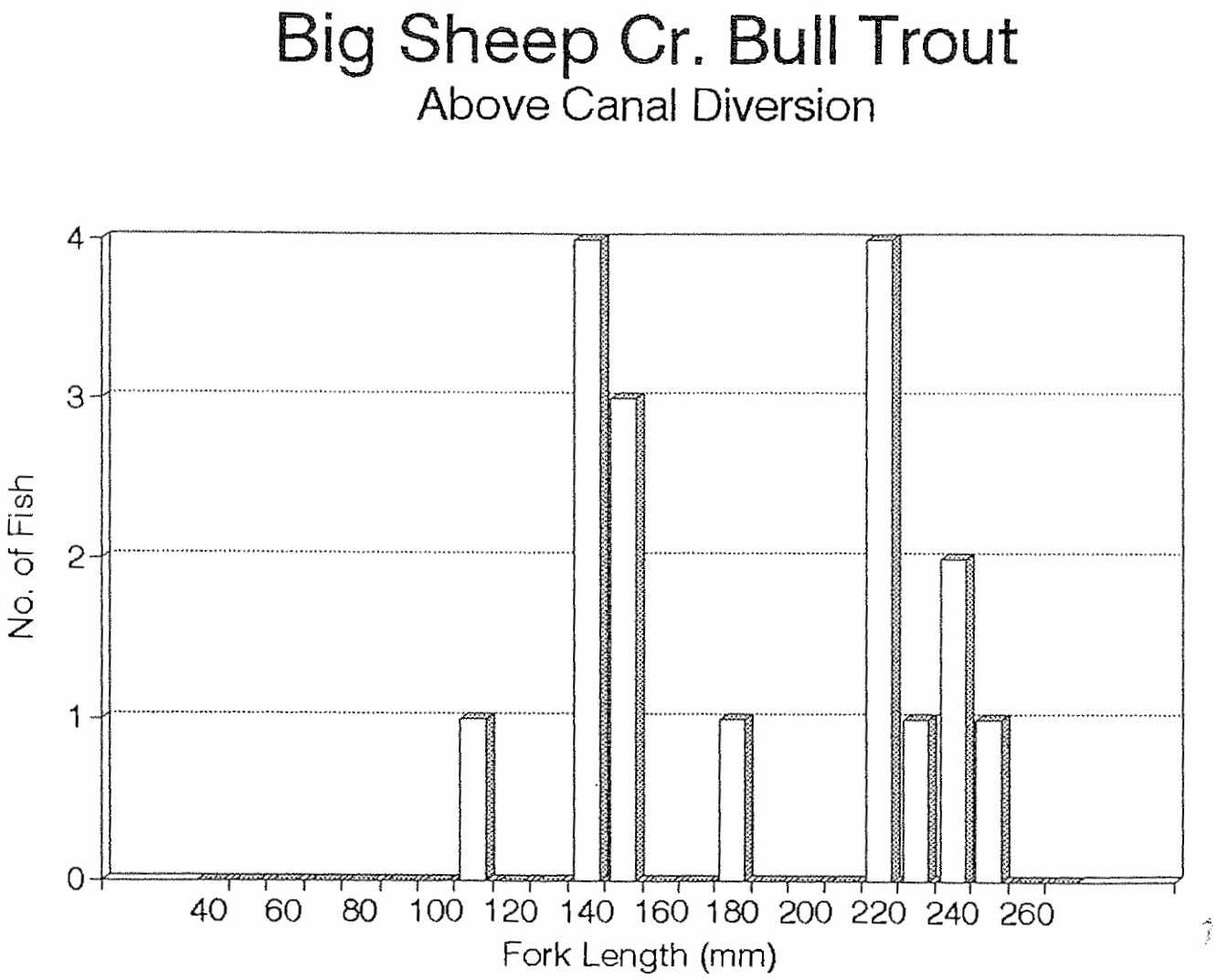


Fig. 6. Length frequency of bull trout collected from Big Sheep Creek (below canal diversion) September 1992.

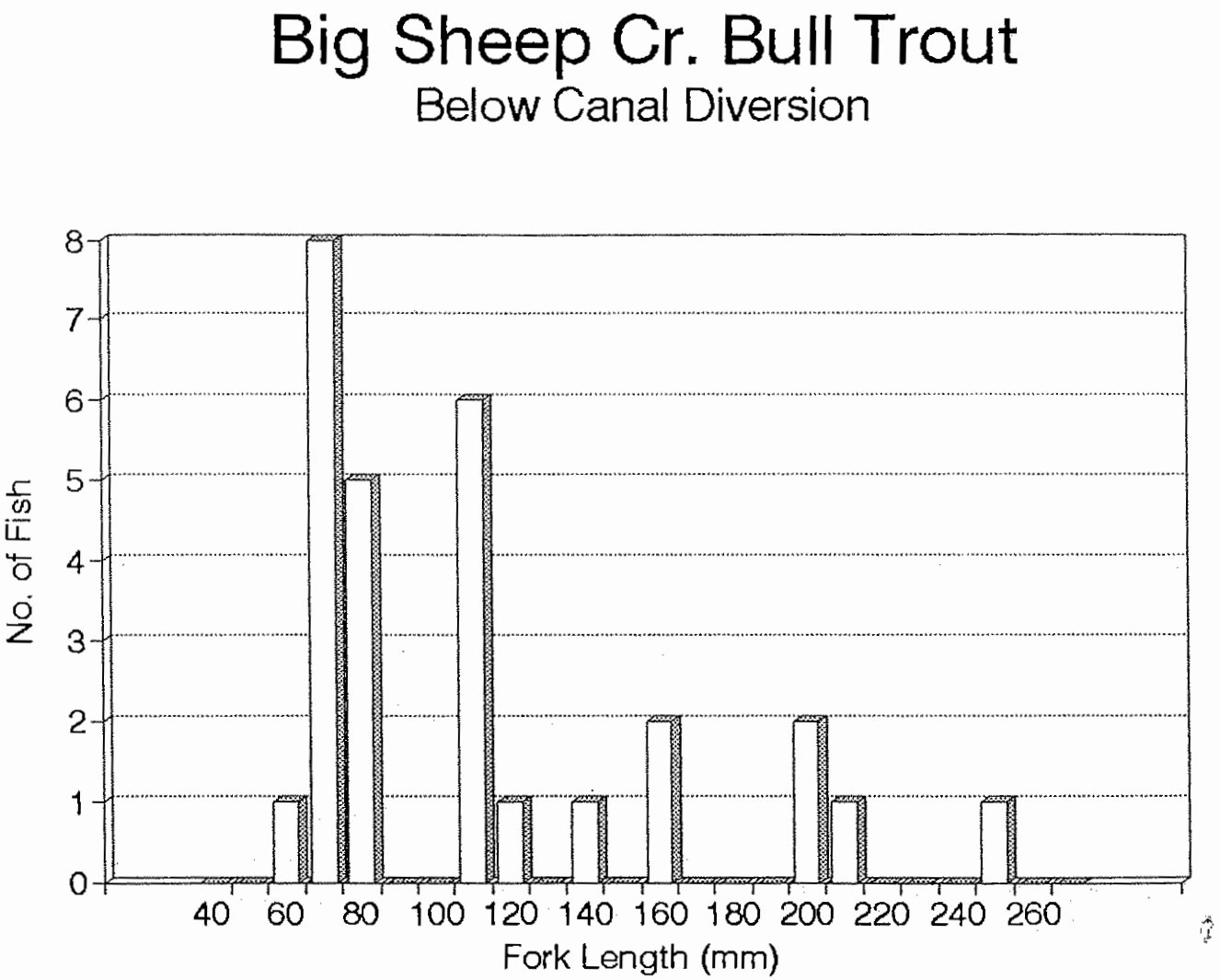


Fig. 7. Length frequency of bull trout collected from Salt Creek September 1992.

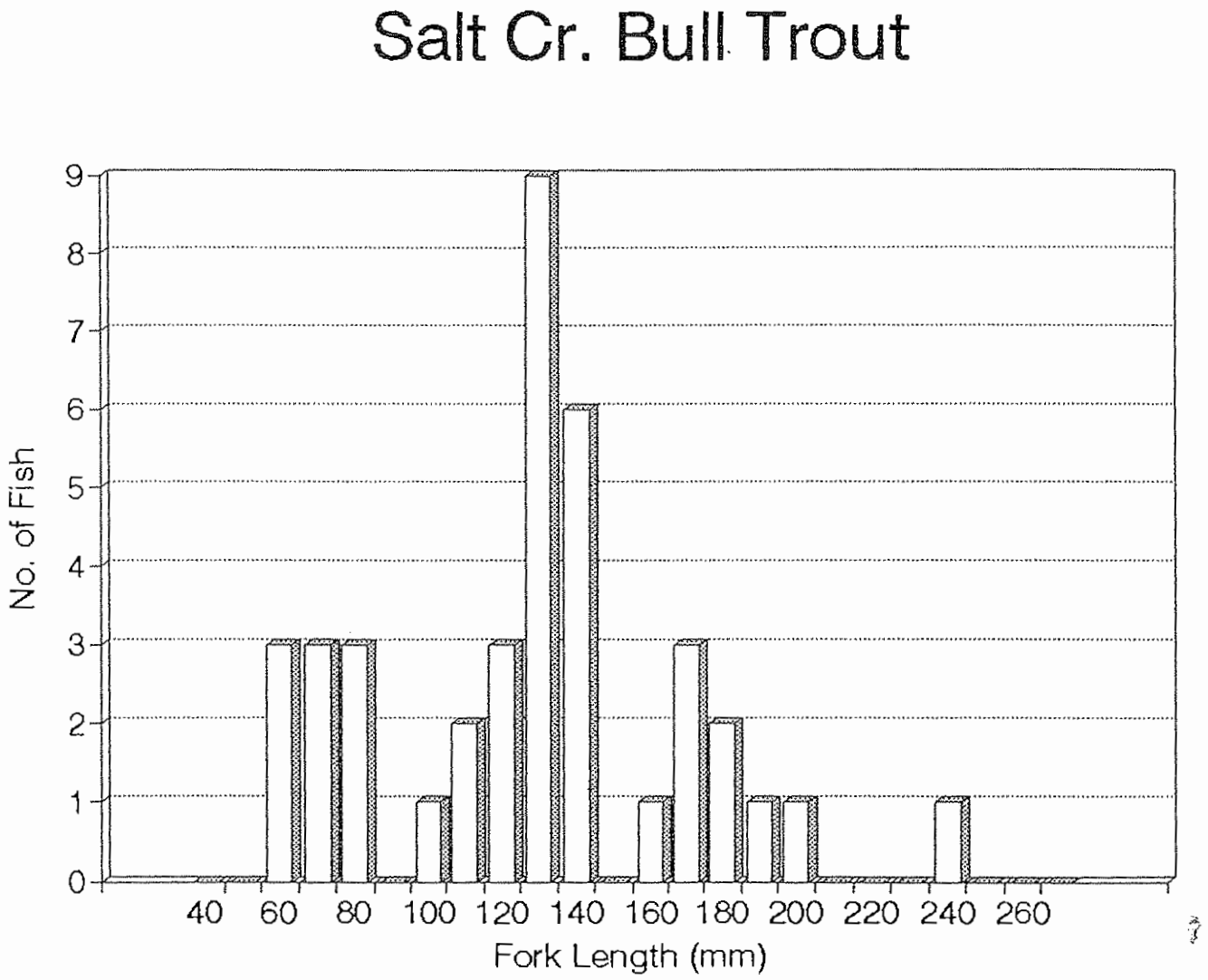


Fig. 8. Length frequency of bull trout collected from Lick Creek September 1992.

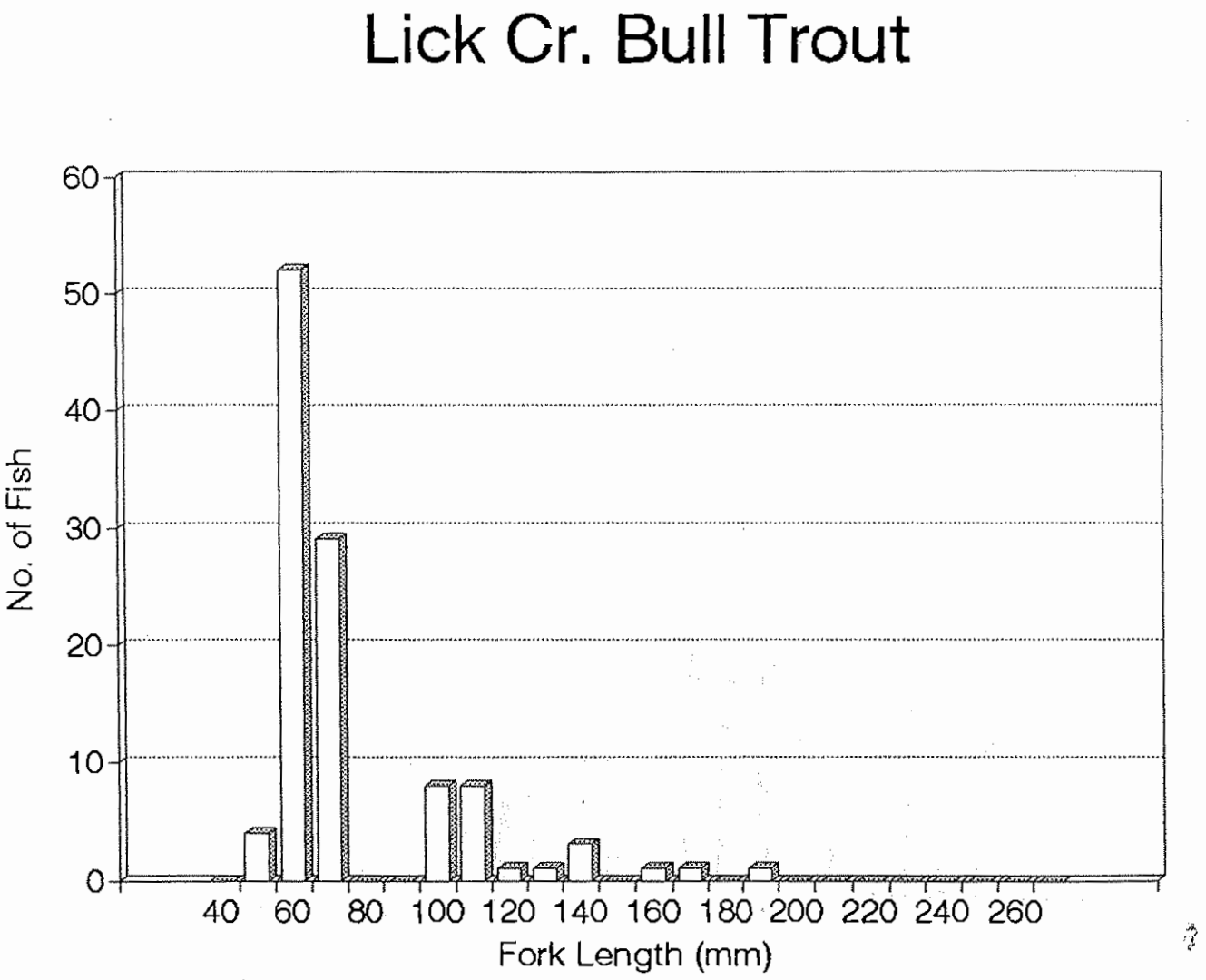
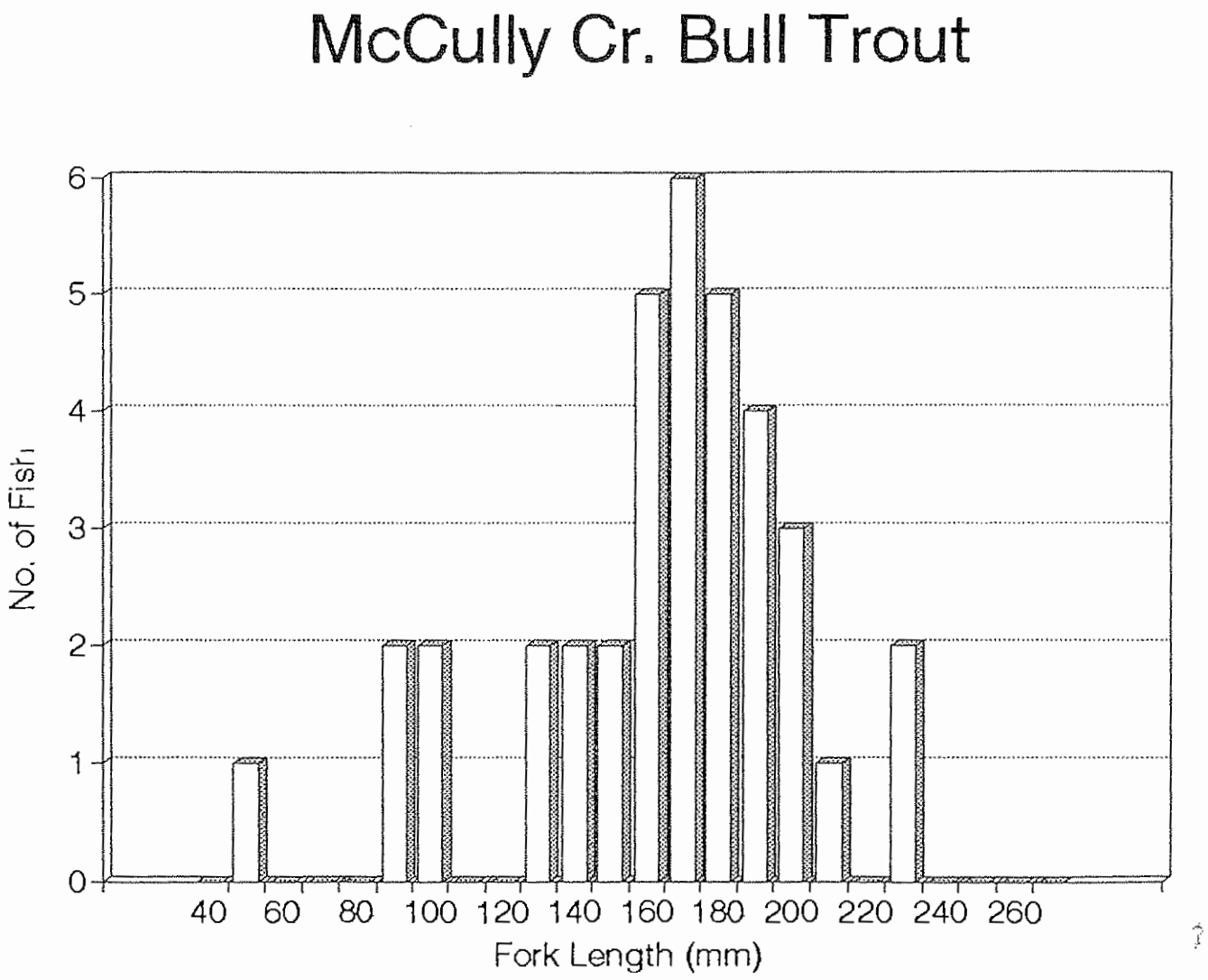


Fig. 9. Length frequency of bull trout collected from McCully Creek September 1992.



STOCK STATUS REVIEW - 1993
WALLOWA FISH DISTRICT
SUMMER STEELHEAD

RECENT FINDINGS AND ACTIONS

- Since the 89-90 run year counts over Lower Granite have tracked wild and hatchery escapement components seperately. For completed count years wild steelhead have made up from 17.3 to 19.1 % of the escapement above Lower Granite Dam, 17 to 24 k fish (Attachment). Columbia Basin Fish Management Plan Goals call for 30,000 wild steelhead escapement above Lower Granite.

- 1992 annual index area redd counts remained depressed at 3.6 redds/mile. This, however, represents an increase from the 12 year low of 1.6 redds/mile observed in 1991 (Attachment).

- Lower than normal stream flows affected the ability of spawners to reach all or a protion of some index areas. This undoubtedly reduced observed index redd density to some extent.

- Several weeks of additional field work were involved in collection of spawning survey data during 1992. Additiional information was collected on redd density in the Imnaha and Lower Grande Ronde population areas and for wild/hatchery ratios in the Wallowa, Imnaha and Lower Grande Ronde areas.

- Low streamflows and low snow pack during 1992 allowed us to count redds and observe fish in several District waters where flows normally preclude counts. We made counts in several population areas where previous data is very limited including Carrol (4.0 redds/mi), Gumboot (14.1), and Lick (9.6) creeks in the Imnaha drainage and Mud (3.0) and Wildcat (11.0) creeks in the lower Grande Ronde drainage.

- The Joseph Creek system, which includes most of our index count areas, exhibited the lowest redd density of any population sampled (Attachment). Based on past years and this years data fewer stray hatchery fish spawn in the Joseph Creek drainage than elsewhere in the District. While habitat condition in the Joseph Creek system remains less productive than in some other streams,it remains our best area for monitoring wild escapement

- We observed and identified to origin 40 spawning steelhead. Of these 34 were wild and 6 were hatchery fish. By population area percentage of wild included; 100% (3 of 3) for the Wallowa, 94% (17 of 18) for Joseph Creek, 82% (14 of 17) for the Imnaha and 0% (0 of 2) for the Lower Grande Ronde. Based on these samples it appears that we are in compliance with Wild Fish Policy guidelines in Joseph Creek (10%) and the Imnaha (30%)in terms of percent hatchery strays. Data from other areas is questionable due to small sample size (Attachment).

- IMNAHA STEELHEAD - Returns to the Little Sheep facility included; hatchery - 404 males and 385 females, wild - 50 males amd 78 females.

- Released above - hatchery, 89 males and 95 females, wild, 37 males including 12 that were live spawned and released and 38 females (30 % wild).

- 25 wild males, including 12 live spawned, and 33 wild females were included along with 188 hatchery males and 144 hatchery females in the 1992 Imnaha stock brood (15% wild).

- At Big Canyon a total of 254 males and 288 females were collected including 23 wild males and 16 wild females. All wild fish, 14 hatchery males and 24 hatchery females were released above the weir (approximately 50/50 wild/hatchery ratio). Our plans for Deer Creek include its use as part of the proposed steelhead supplementation study. This stream under its current 50/50 hatchery/wild management and properly investigated should provide some insite into our questions regarding a "non-indigenous" hatchery population and wild population interaction and resultant productivity.

- Preliminary findings from residual smolt sampling by LSRCP Evaluation personel indicates that; 1) acclaimated and direct stream releases are residualizing at simular rates and 2) while 10% of summer sampled and 5% of fall sampled residuals contained fish, none of the 546 residuals sampled contained chinook.

- Although several good fencing projects were on line for 1993 we lost BPA funding to continue habitat improvement work in the Joseph Creek drainage.

- We provided fencing materials for two projects one on Prairie Creek completed last spring the other on the Wallowa River scheduled for completion this spring. Both projects utilized upland game bird funds.

- Wild escapement for 1993 should exceed 1992 based on preliminary indications from dam counts.

PLANNED ACTIVITIES

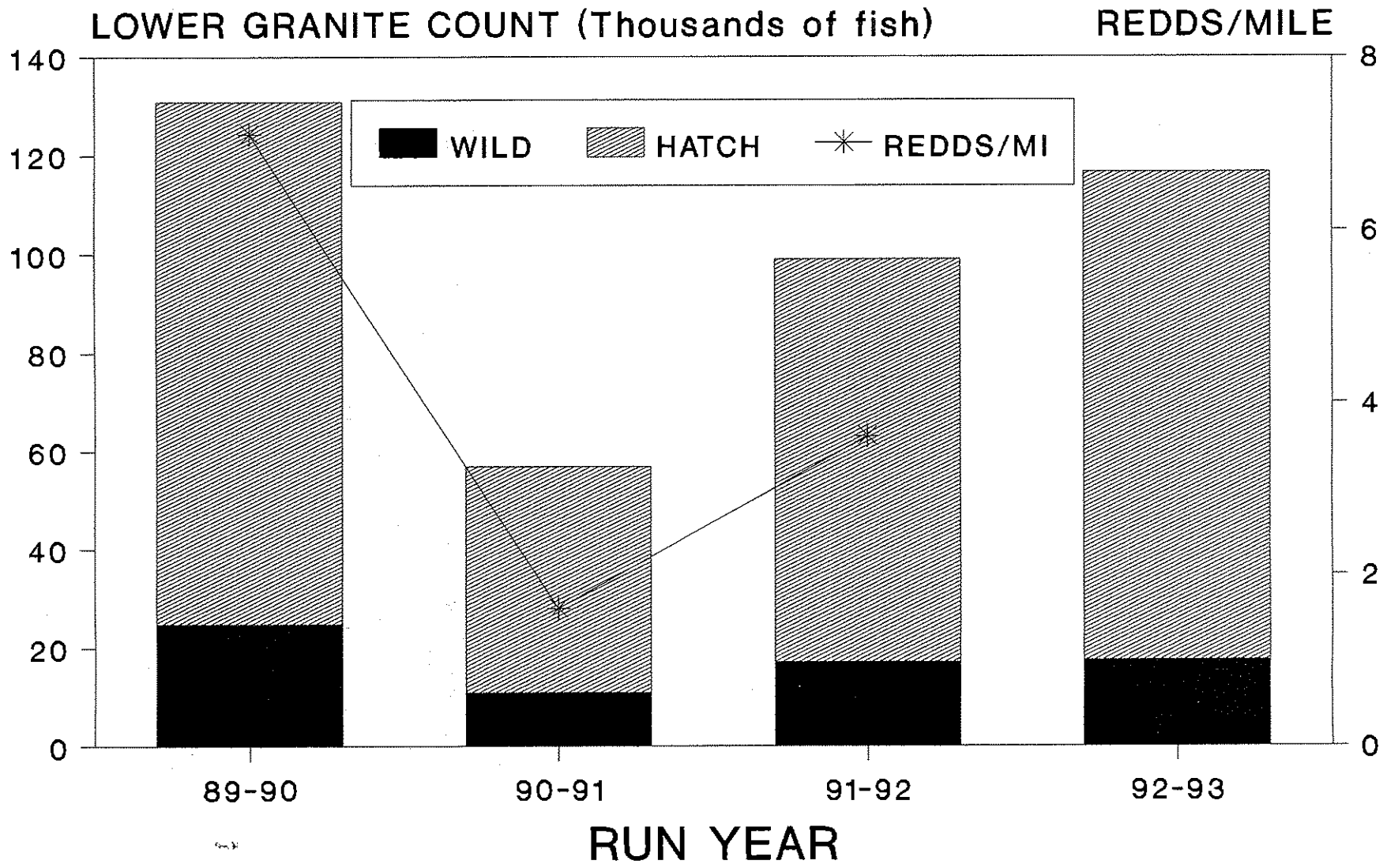
- Continue efforts to improve inventory on all populations both in terms of redd counts and wild/hatchery ratios.

- LSRCP Evaluation will continue investigating the residual steelhead smolt abundance, distribution and food habits.

- Little Sheep expected return for 1993 includes 1,097 hatchery and 150 wild steelhead. We plan to modify adult collection at Little Sheep to approximate a 10% wild component in the brood stock (130 females and 170 males needed for brood, total including 30 wild) and a seeding level above the weir comparable to 1992 (250 spawners) with a 50/50 rather than a 30/70 wild/ hatchery ratio (Attachments).

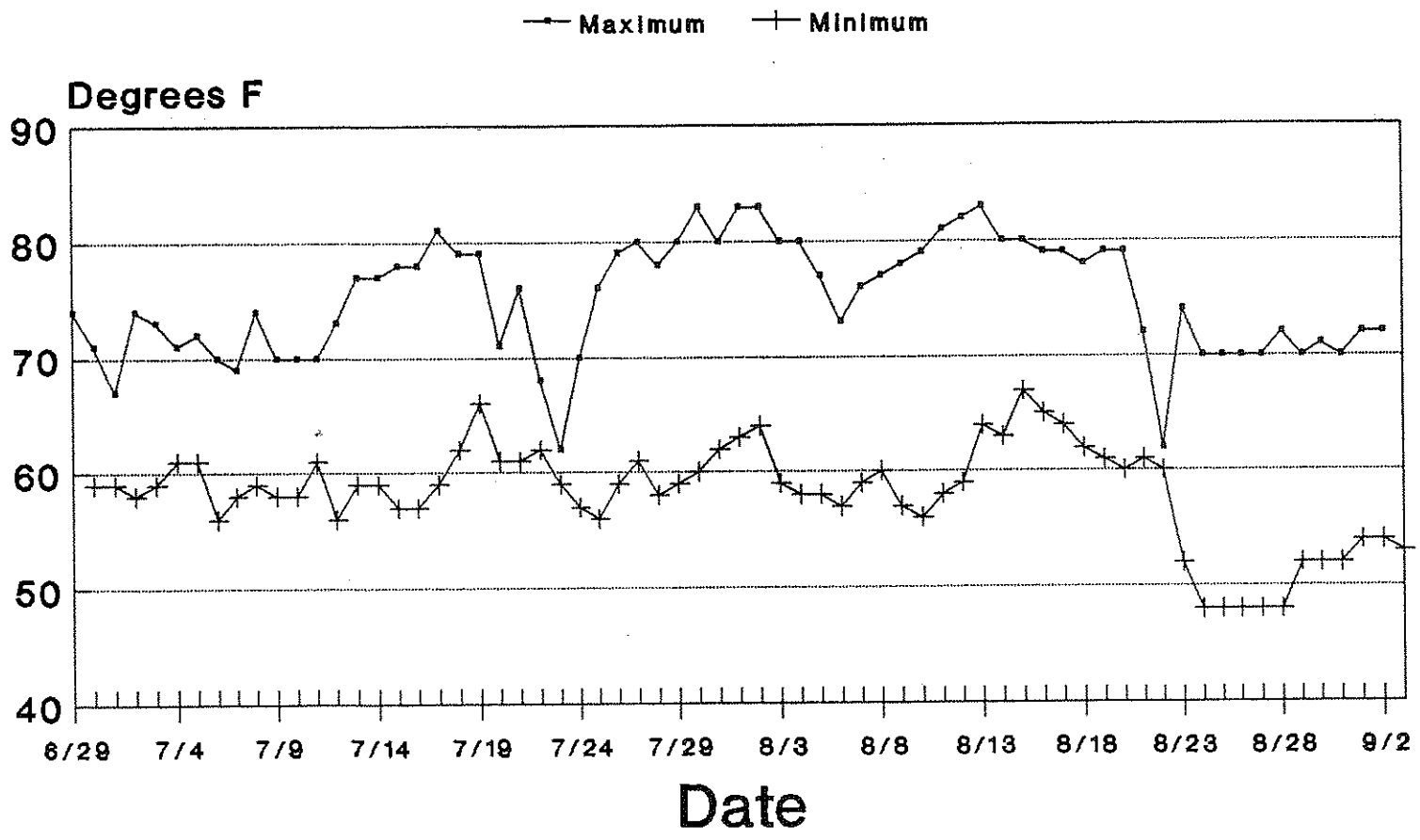
- Expected returns to Wallowa - 1800 and Big Canyon - 600. We plan to continue releases of hatchery fish above the weir at Big Canyon (50/50 wild/hatchery ratio) in order to maintain it as an area for comparison in the planned supplimentation study (Attachment).

STEELHEAD DAM AND REDD COUNTS
1990 - 1993



1992-1993 COUNTS THROUGH EARLY DECEMBER

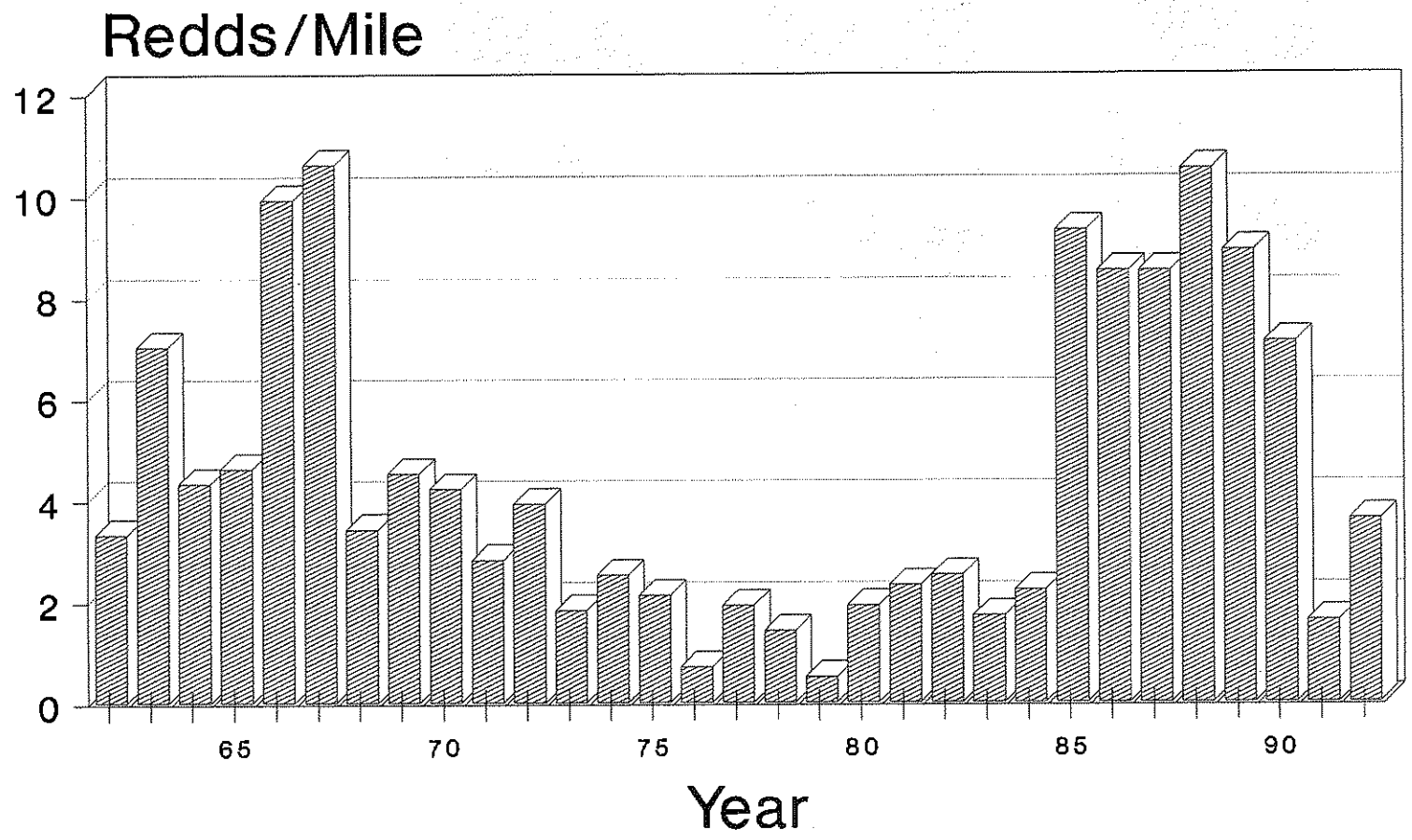
Joseph Creek Temperature
June 29 through September 3, 1992



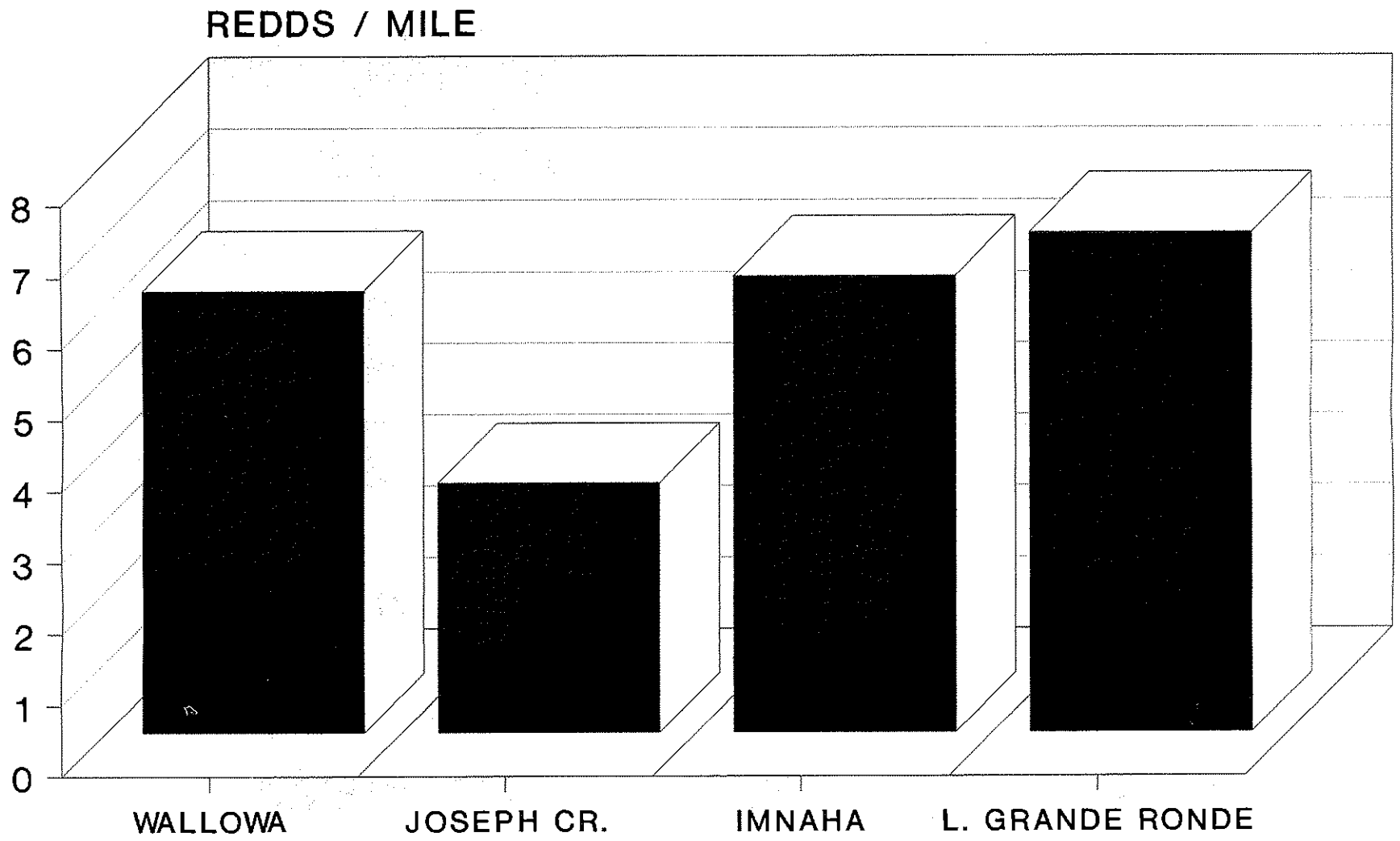
Stream Mile 44

Wallowa District Steelhead

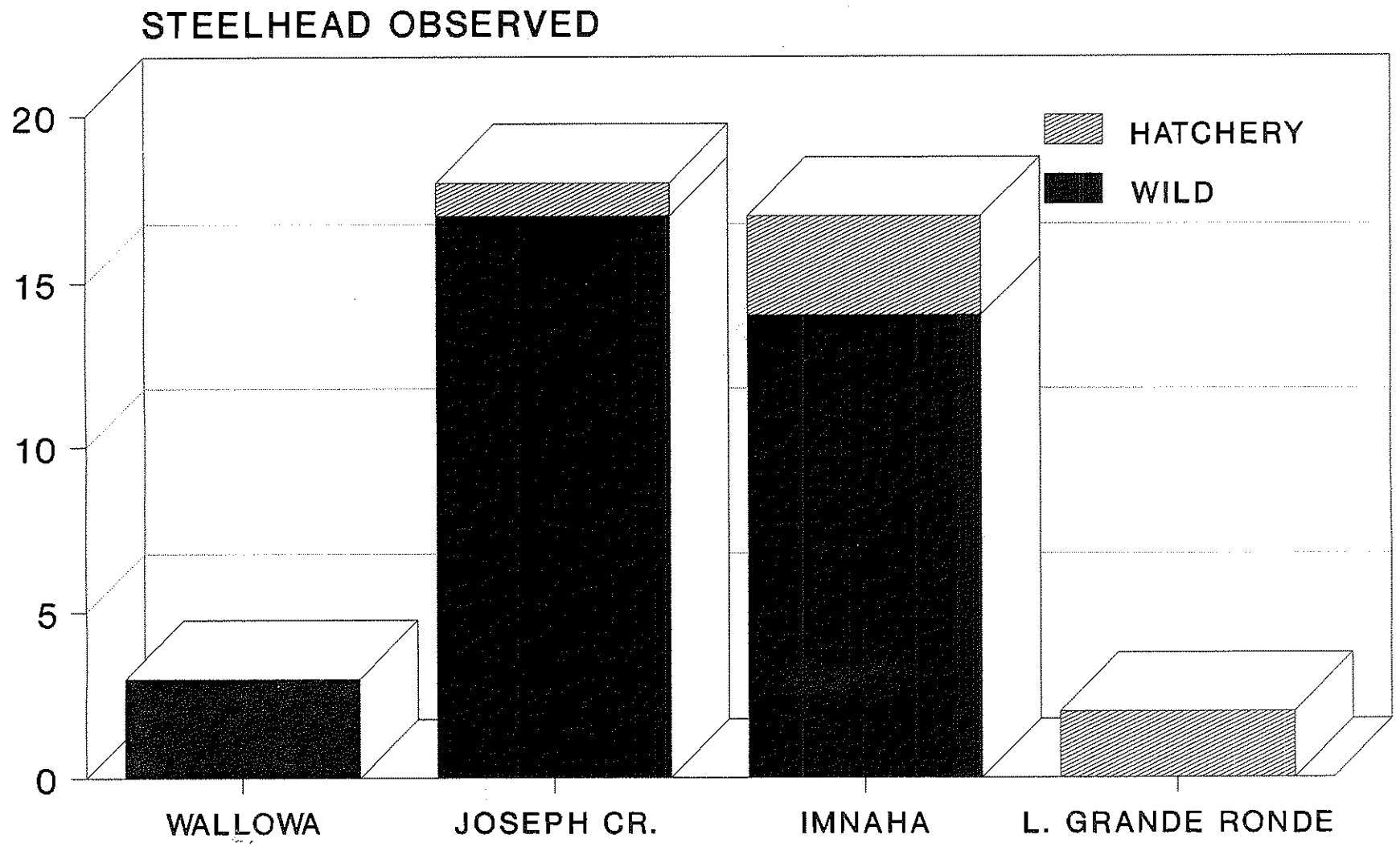
Spawner Index Surveys



STEELHEAD SPAWNING COUNTS
BY POPULATION 1992

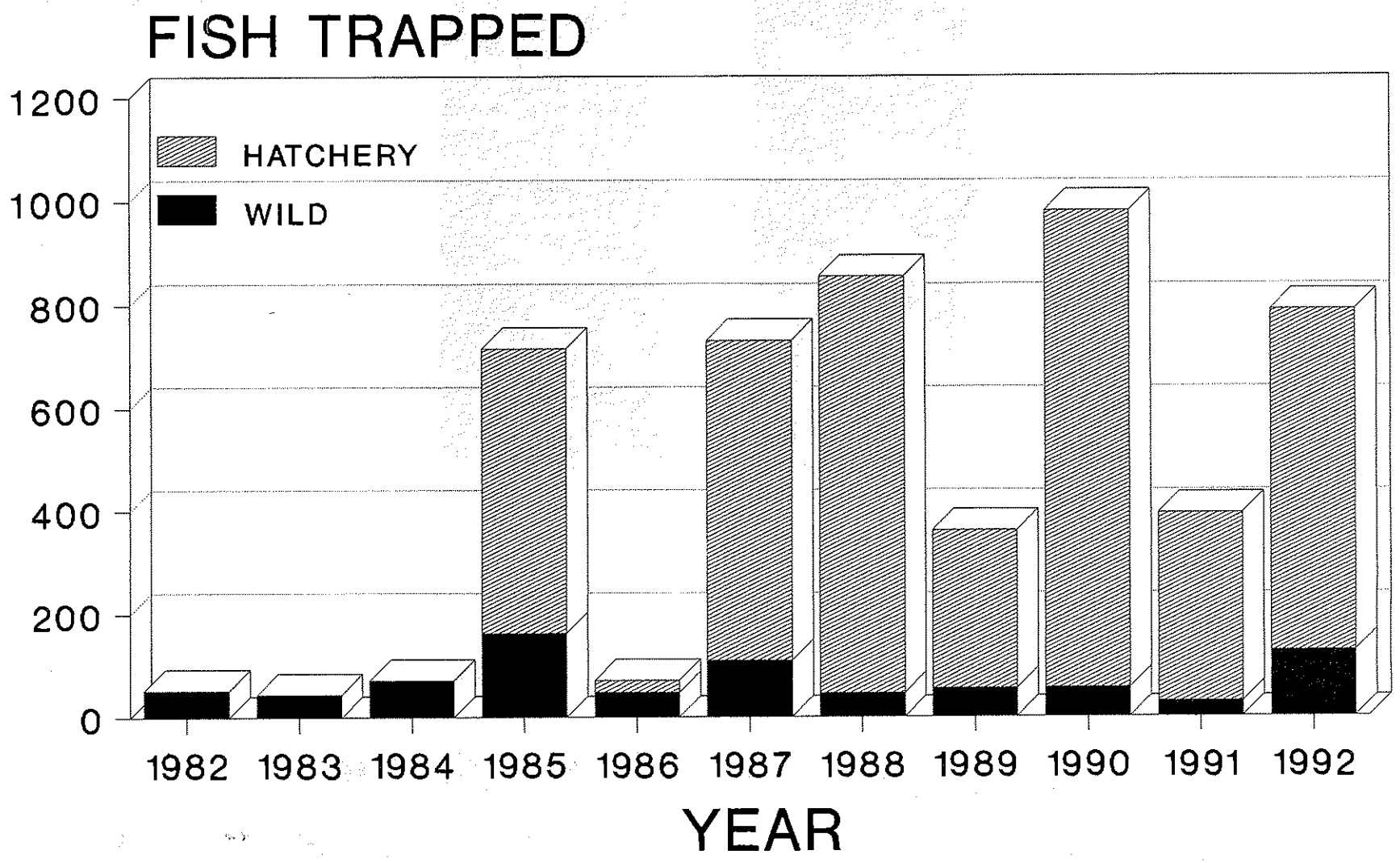


WILD / HATCHERY RATIOS
ON SPAWNING COUNTS



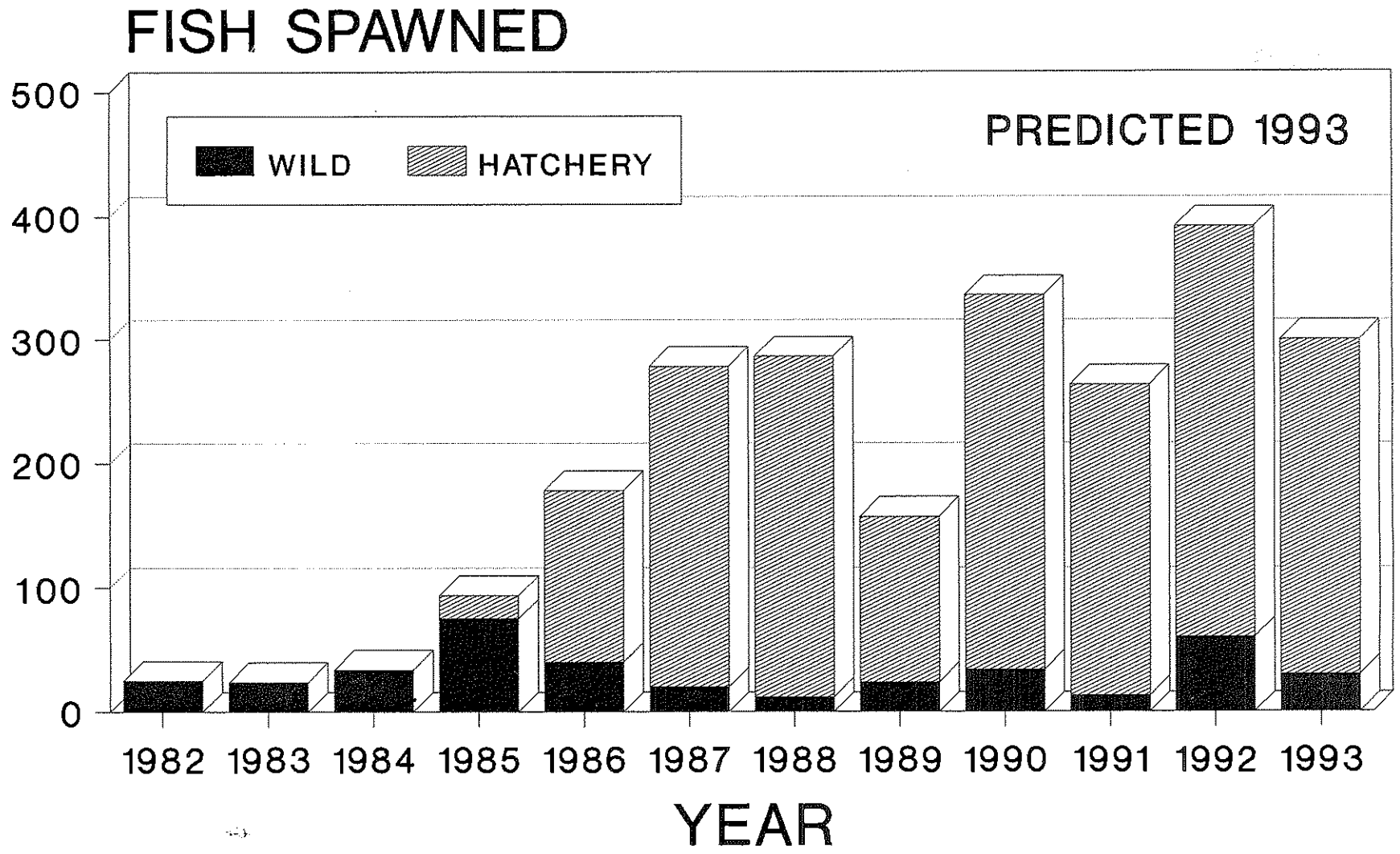
LITTLE SHEEP CREEK

Steelhead Returns 1982 - 1992



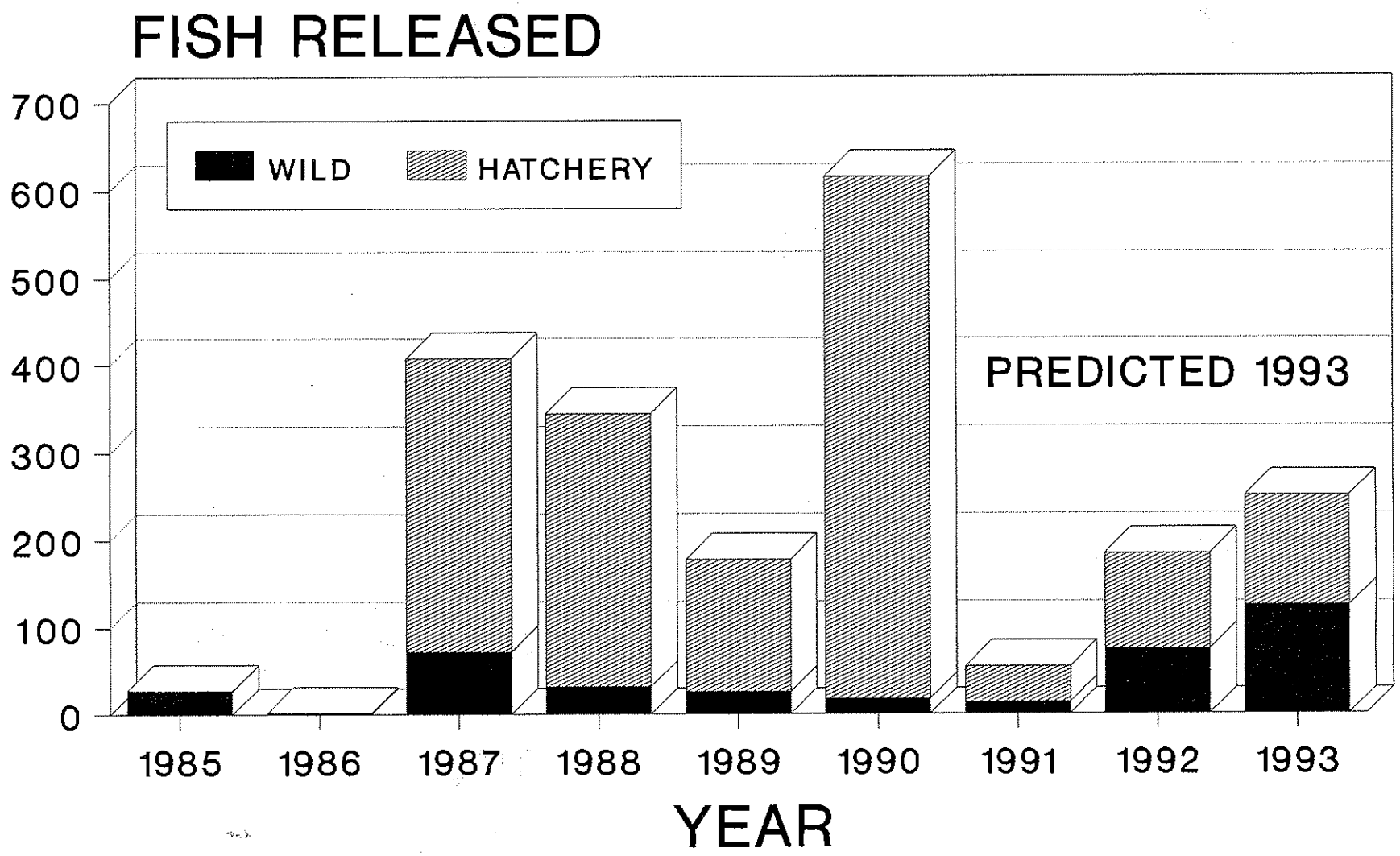
LITTLE SHEEP CREEK

Steelhead in Brood



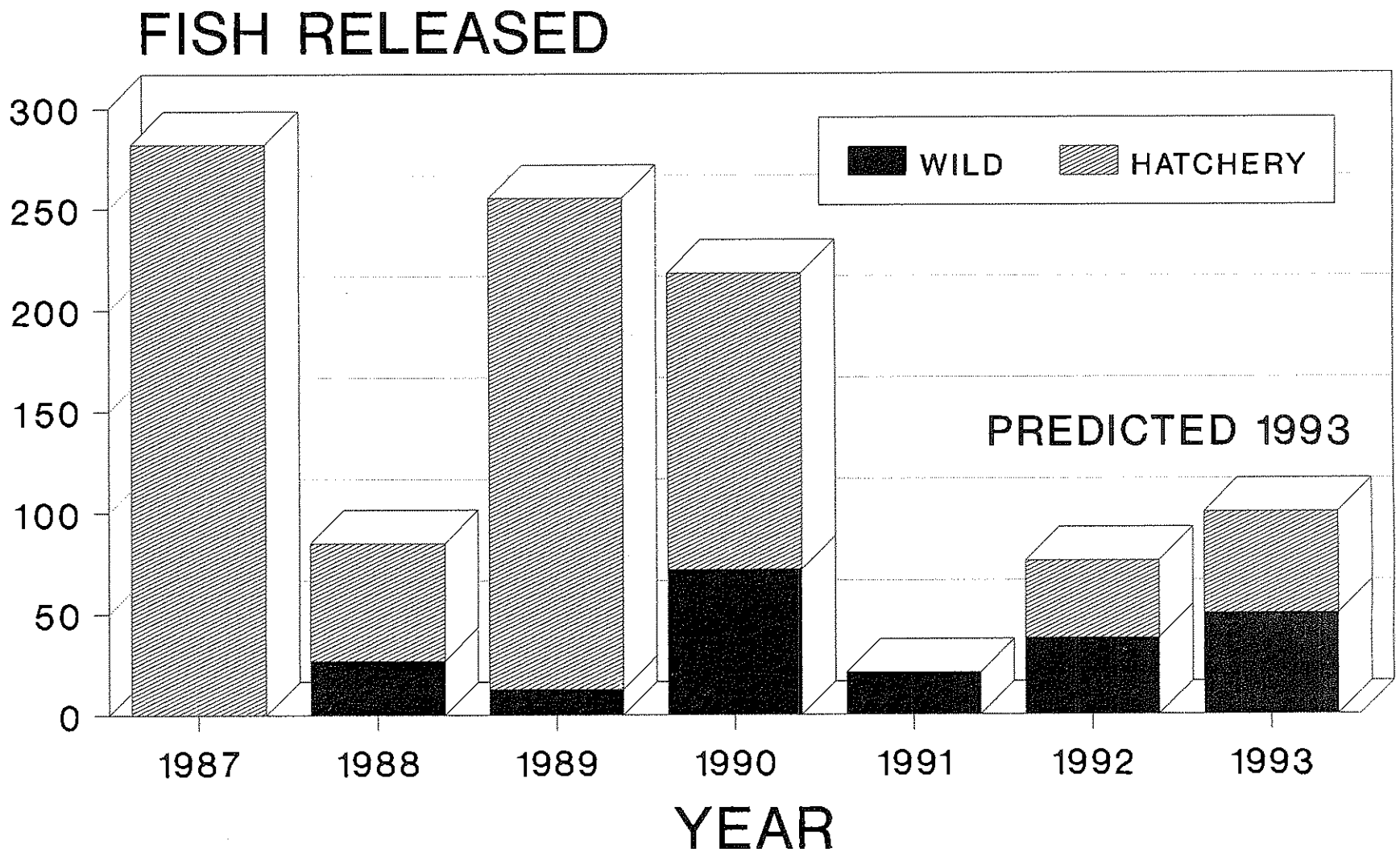
LITTLE SHEEP CREEK

Steelhead Above Weir



BIG CANYON / DEER CREEK

Steelhead Above Weir



STOCK STATUS REVIEW - 1993
WALLOWA FISH DISTRICT
WALLOWA LAKE KOKANEE

RECENT FINDINGS AND ACTIVITIES

- We conducted creel surveys during May - June, 1992. Boat angler catch rates increased to 1.36 kokanee per angler hour, the highest we have recorded since 1987. Angler effort and harvest also increased to 24,419 angler hours and 25,072 kokanee. The majority of kokanee harvested were eight to ten inches in length with individuals as large as 22 inches making up a small percentage of the total harvest. We are unsure of the reason for increased angler success after five consecutive years of decline (Attachment).

- We conducted annual sampling of kokanee spawners from the Wallowa River in late September. We were joined by Sam Onjukka (Fish Pathology) and University of Idaho personnel and collected samples for size, age (otoliths), disease monitoring, electrophoresis, and mitochondrial DNA analysis. Spawner size was similar to 1990 and 91. We have not received results from aging and genetic analysis.

- We have stocked 10,000 marked kokanee fingerlings annually since 1990 in response to decreasing catch rates. Our objectives were to monitor the harvest of marked fish and determine stocking rates necessary to maintain the fishery in the event that the natural population continues to decline. We have not observed any of these fish in anglers' creels or on spawning grounds. We did receive reports of three marked fish (9 to 11 inches) from the 1990 release being caught by anglers in 1992.

- We continued to examine stomachs of kokanee from angler catches. Results in 1992 were similar to previous years with copepods and aquatic insects being the most common food items. We observed no Mysis in kokanee stomachs in 1992 (Attachment).

- Seasonal employees completed a summary of size composition of kokanee examined in creel surveys from 1986 through 1992. Results track well with catch rates for 1986-89 (ie. increasing size with decreasing catch rates), however, results for 1990-92 suggest that factors other than abundance are affecting kokanee size (Attachment).

PLANNED ACTIVITIES

- Continue May - June creel surveys. Continue to monitor size, food habits, and marked fish during creel surveys.

- Increase stocking rate to 20,000 marked kokanee annually.

Note: The success of our stocking/monitoring program requires a District workforce capable of maintaining current levels of creel sampling.

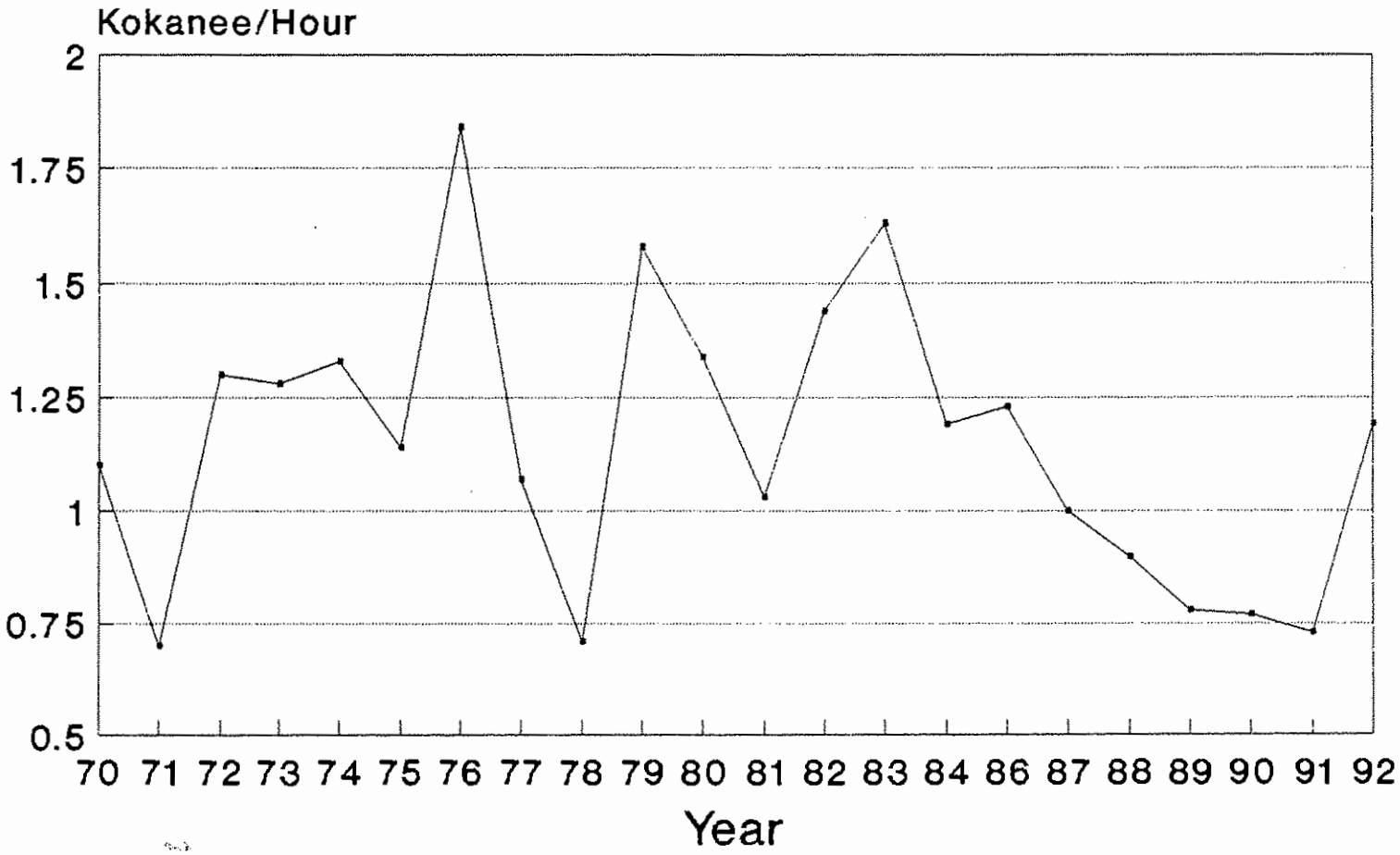
- Collect and compare scales and otoliths from kokanee in the 1993 fishery to check accuracy of previous aging with

scales. Use otoliths from spawners for future assessment of size/age relationships.

- Use size/age data in conjunction with models developed for Idaho lakes to estimate kokanee abundance.

- Collect samples of plankton and Mysis in late summer to monitor annual abundance.

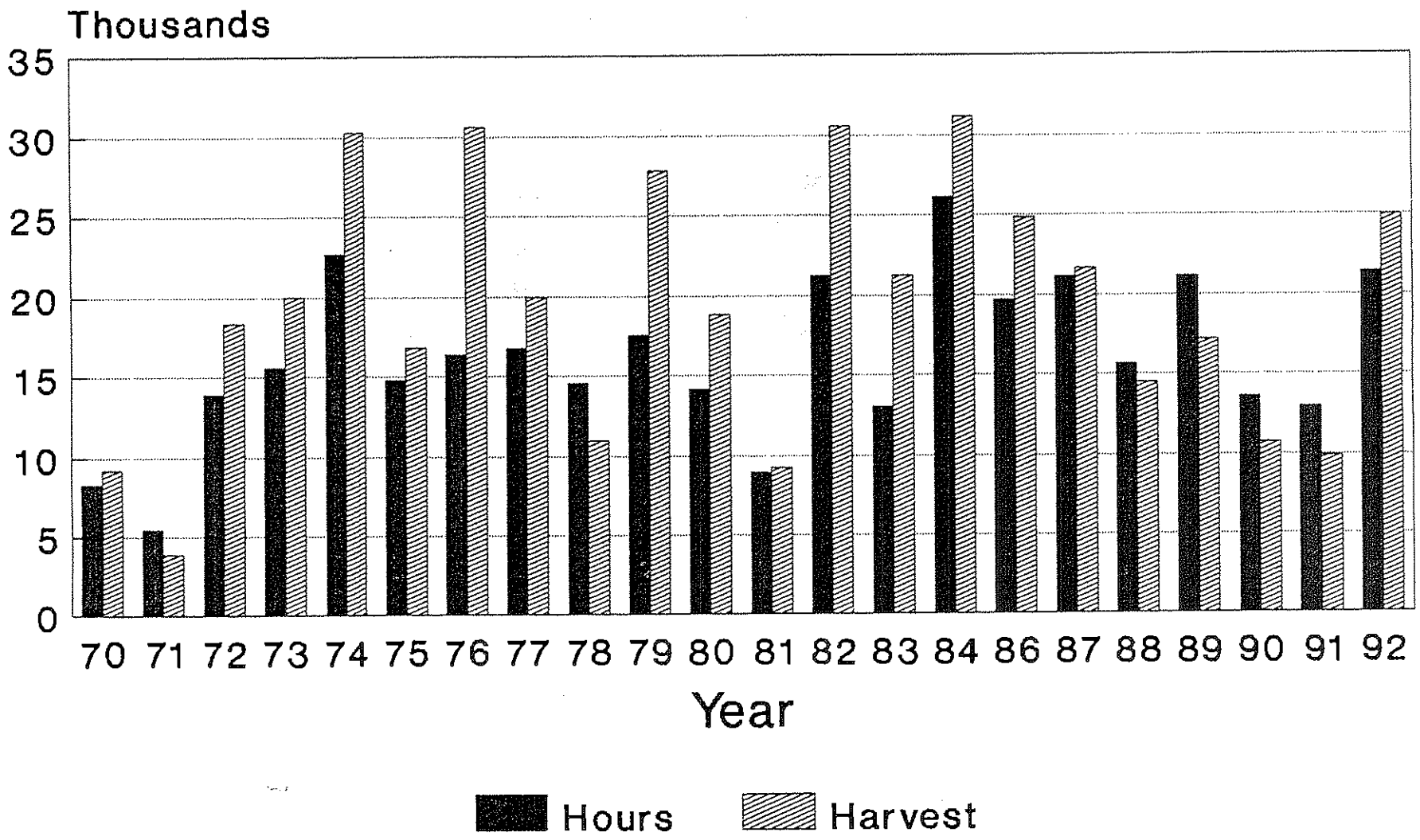
Wallowa Lake Kokanee
Boat Angler Catch Rates



May-June

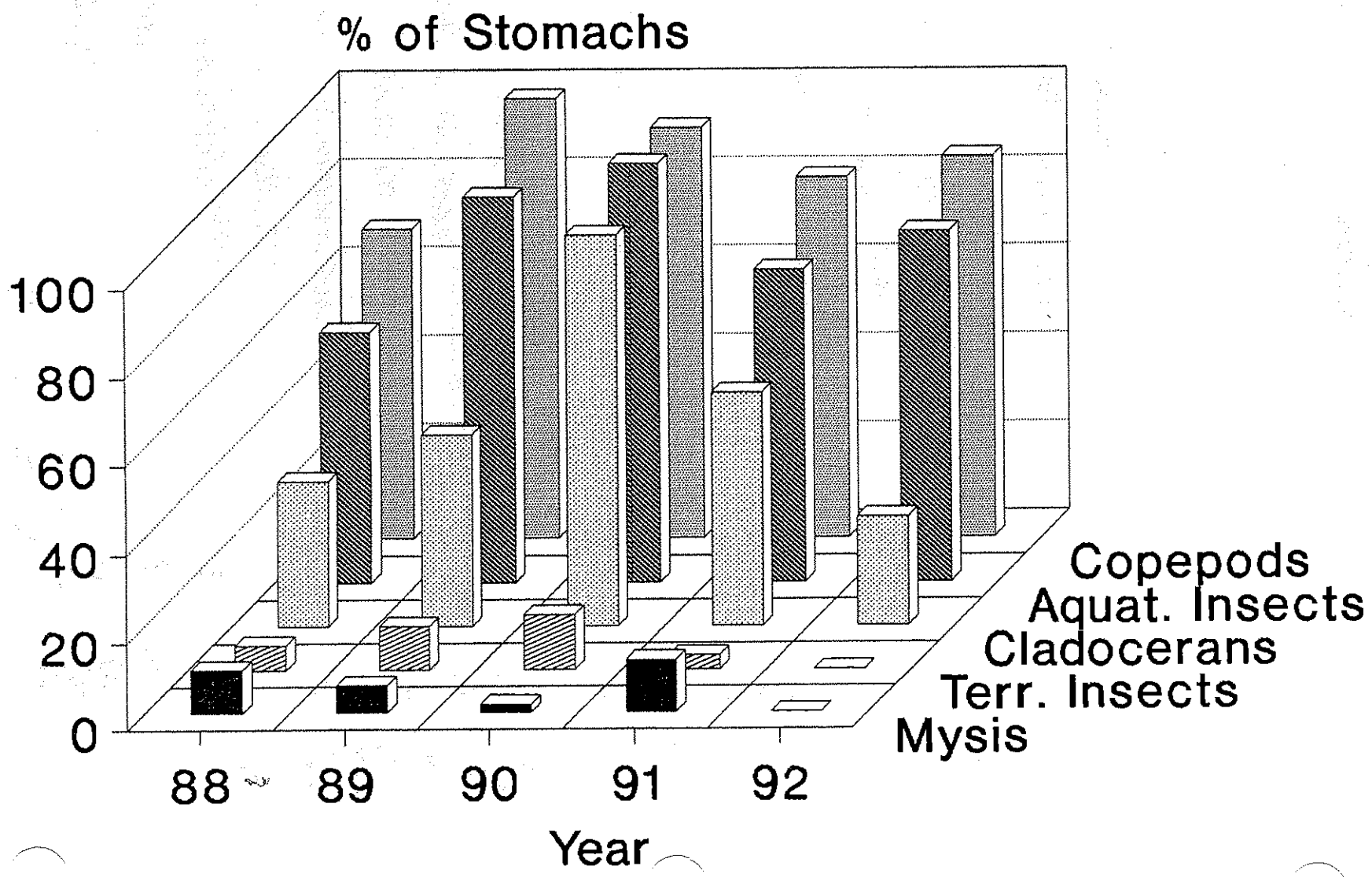
Wallowa Lake Kokanee

May-June Boat Angler Use and Harvest



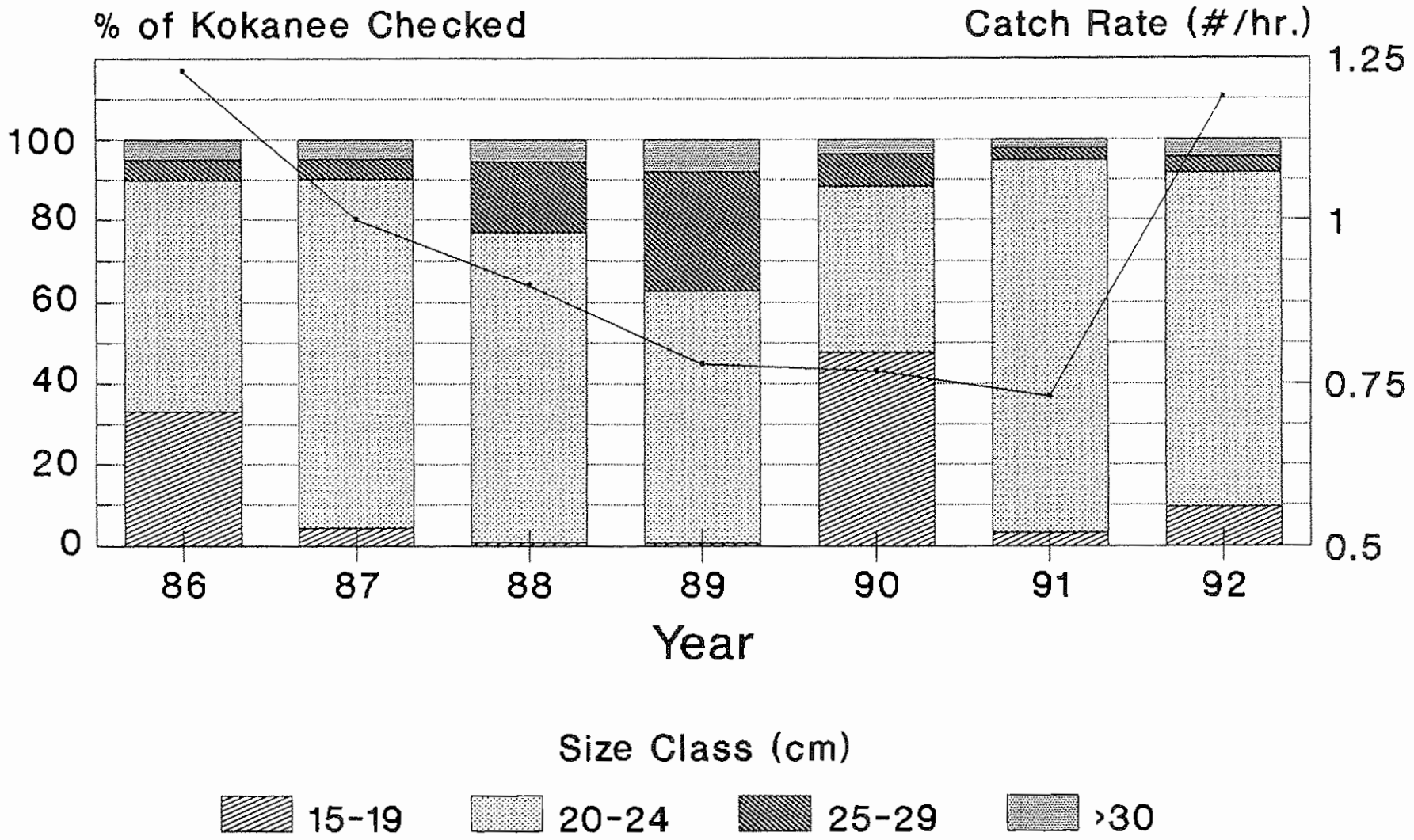
Wallowa Lake Kokanee

Food Habits



Wallowa Lake Kokanee

Catch Rates and Size



STOCK STATUS REVIEW - 1993
WALLOWA FISH DISTRICT
STURGEON

FINDINGS AND ACTIONS

- The OSP again concentrated conciderable effort on Snake River sturgeon enforcement. The outcome was simular to that in 1991, they could not identify any major enforcement problems associated with regulations protecting Snake River sturgeon. Although reports of illegal take continue to occur, the best information available suggests the occurance of illegal take is relatively low and is probably occurring earlier in the year than when our past enforcement efforts were focused.

PLANNED ACTIVITIES

- Maintain sturgeon as a high priority for enforcement.
- Shift enforcement efforts to earlier in the year