

PROGRESS REPORTS

2005



FISH DIVISION
Oregon Department of Fish and Wildlife

Sand Roller Investigations in the Willamette River Drainage

This program receives federal financial assistance in Sport Fish and/or Wildlife Restoration and prohibits discrimination on the basis of race, color, national origin, age, sex or disability. If you believe that you have been discriminated against as described above in any program, activity, or facility, or if you desire further information, please contact ADA Coordinator, Oregon Department of Fish and Wildlife, 3406 Cherry Drive NE, Salem, OR, 503-947-6000, or write Office for Human Resources, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. This material will be furnished in alternate format for people with disabilities if needed. Please call 541-757-4263 to request.

ANNUAL PROGRESS REPORT

FISH RESEARCH PROJECT
OREGON

PROJECT TITLE: Sand Roller Investigations in the Willamette River Drainage

PROJECT NUMBERS: Order #134204M135

PROJECT PERIOD: 20 August 2004 - 30 June 2006

Prepared by: Paul D. Scheerer
Michael Scheu
Brian L. Bangs
Steven E. Jacobs

Oregon Department of Fish and Wildlife
3406 Cherry Drive NE
Salem, Oregon 97303

This project was financed with funds administered by the U.S. Fish and Wildlife Service.

CONTENTS

| | Page |
|--|------|
| SUMMARY..... | 1 |
| INTRODUCTION..... | 1 |
| METHODS..... | 2 |
| RESULTS..... | 3 |
| DISCUSSION..... | 8 |
| ACKNOWLEDGEMENTS..... | 10 |
| REFERENCES..... | 11 |
| APPENDIX A. Fish Species and Habitat Characteristics at Each Survey Location | 13 |

SUMMARY

The purpose of this investigation was to determine the status and distribution of sand roller *Percopsis transmontana* populations in the Willamette River basin. Sand rollers are rare and endemic to the lower Columbia River drainage, including the Willamette River and its tributaries. Historical records are scarce. In 1945, R.E. Dimick and F. Merryfield found sand rollers to be localized in the Willamette River from Albany to Springfield, Santiam River, Rickreall Creek, Mary's River, and the Coast Fork Willamette River. The Oregon State University museum collection has samples from the following Willamette River drainages: Coast and Middle Forks of the Willamette River, Mary's River, Luckiamute River, Molalla River, Mill Creek, Long Tom River, and Santiam River. Their preferred habitat is quiet backwaters and pool margins of small to large rivers, usually near vegetation and woody debris over sand. The Oregon Department of Fish and Wildlife surveyed historic and recently documented locations in 2005 to determine the current status and distribution of sandrollers in the Willamette River basin. Sand rollers were collected from at least one location in most of the major Willamette River subbasins sampled.

INTRODUCTION

The sand roller, *Percopsis transmontana*, is one of two species of teleost fish belonging to the family Percopsidae. The widespread trout-perch *P. omiscomaycus*, is found from the upper Mississippi drainage and the Great Lakes to the Yukon (Scott and Crossman 1973). The sand roller is endemic to the Columbia River drainage and has been collected from western Idaho (Pratt and Whitt 1952), southern Washington (Gray and Dauble 1979; Mongillo and Hallock 1995; Wydoski and Whitney 2003), and northern and western Oregon (Dimick and Merryfield 1945; Reimers 1963; Reimers and Bond 1967). In Oregon, the sand roller has been collected from the Columbia River, the Willamette River and several of its tributaries.

The sand roller is a small perch-like fish with spiny rays and speckles on the sides and fins. This is a small species, rarely reaching 10 cm (4 inches) long. Sand rollers have blue-green coloration, coarse (ctenoid) scales, and an incomplete lateral line. An unusual feature of this fish is that it has an adipose fin. Males tend to be smaller and more slender than the females (Katula 1992).

These fish are active nocturnally and are most often found in pool margins of low gradient reaches of small to large rivers (Gray and Dauble 1976; 1979). They are found around submerged roots, complex woody debris and brush, and undercut banks over sandy or rocky substrates (Reimers and Bond 1967; Gray and Dauble 1979). They are also found near vegetation over sand. During the day, they have been found in pools up to four meters deep in small depressions over sandy substrates (Gray and Dauble 1976). In deep rivers, observations indicate that sand rollers may exhibit diel periodicity, moving into deep waters as cover during the day and into shallow waters at night (Wydoski and Whitney 2003). Because of its secretive daytime behavior, it is not commonly encountered.

Sand roller spawning commences in the spring and continues through mid-summer (Gary and Dauble 1979; Katula 1992). Sand rollers have small (0.14-0.17 mm diameter) adhesive eggs (Carlander 1969) and are thought to spawn on gravel or other

rocky substrates (Katula 1992). Egg numbers range between approximately 1,100 and 3,400 for females 76 to 91 mm (3.0-3.6 inches) FL (Gray and Dauble 1979). Sand rollers in the Columbia River mature beginning at age 2; all were mature at age 3 (Gray and Dauble 1979). They feed principally on aquatic insect larvae (Diptera and Trichoptera) and crustacean zooplankton (Gray and Dauble 1979).

The purpose of this investigation was to determine the status and distribution of sand rollers in the Willamette River basin, to describe sand roller habitat preferences, to describe fish communities at locations where sand rollers were collected (and not collected), and to assess the effectiveness of various sampling gears/protocols.

METHODS

The Oregon Department of Fish and Wildlife's Native Fish Investigations Project conducted surveys at 56 locations in the Willamette River drainage in 2005 (Figure 1). We sampled low gradient stream habitats using baited minnow traps (23 by 46 cm with 64 mm mesh), a 1 m x 5 m seine with 64 mm mesh, or a 0.6 m diameter hoop net (3 m long consisting of 7 hoops with 32 mm mesh screening). Due to the reported nocturnal habits of sand rollers, most sampling was conducted using minnow traps fished overnight (24 minnow traps fished for approximately 18 hours). Traps were set approximately 10 meters apart, at stream locations that included the variety of cover types present at each sampling site. We identified and counted all fish captured. We measured total lengths (TL) of the sand rollers we collected at each site. We compared the numbers of sand rollers collected from traps fished during the day (4 hour set) to those fished overnight (18 hour set) at four locations containing sand rollers. We also compared the numbers of sand rollers collected using a seine with numbers collected in traps fished overnight at four locations that contained sand rollers. We measured both total length and fork length (FL) on a sample of 49 sand rollers from the Mary's River. We ran a linear regression of fork length on total length to convert our measurements to fork lengths. With these conversions, we compared our length (TL) frequency data with length-at-age (FL) data from Gray and Dauble (1979).

We recorded physical and biological habitat parameters at each site including mean water depth, maximum water depths, water temperature (°C), total wetted surface area (m²), dominant and subdominant substrate types, types of physical cover present (large woody debris, root wads, off-channel pools, submerged aquatic vegetation, overhanging terrestrial vegetation, undercut banks, pools deeper than 1.5 meters, large boulders, and bedrock channels). We also recorded the types of cover where sand rollers were collected. We used a Global Positioning System (GPS) to record site locations (UTM coordinates) and photographed each site.

We used baited minnow traps to obtain mark-recapture population estimates of sand roller at two locations. We fished the traps overnight, marked all sand rollers captured with a partial caudal fin clip, and returned them to the water. Approximately one week later, we again fished the traps overnight and recorded the total number of marked and unmarked sand rollers captured. We estimated population abundance using single-sample mark-recapture procedures (Ricker 1975). We calculated 95% confidence intervals using a Poisson approximation (Ricker 1975). Population estimates were used to estimate trapping efficiency (numbers of fish captured divided by the estimated total sand roller abundance). No block nets were used, which likely violated

the assumption of no fish immigration or emigration between the marking and recapture events.

RESULTS

Sand rollers were collected from 23 of 56 locations sampled (41%) including sites in the following subbasins: Yamhill River, Molalla River, Santiam River, Luckiamute River, Calapooia River, Muddy Creek (Linn County), Mary's River, McKenzie River, Coast Fork Willamette River, and Middle Fork Willamette River (Table 1; Figure 1; APPENDIX A).

Native fish species collected at locations containing sand rollers included (percent occurrence in parentheses): sculpins *Cottus* spp. (91%), redbreast shiners *Richardsonius balteatus* (83%), speckled dace *Rhinichthys osculus* (57%), northern pikeminnows *Ptychocheilus oregonensis* (48%), threespine sticklebacks *Gasterosteus aculeatus* (30%), largescale suckers *Catostomus macrocheilus* (22%), longnose dace *Rhinichthys cataractae* (17%), Oregon chub *Oregonichthys crameri* (17%), cutthroat trout *Oncorhynchus clarki* (9%), chiselmouth *Acrocheilus alutaceus* (4%), and rainbow trout *Oncorhynchus mykiss* (4%). Nonnative fish species collected at locations containing sand rollers included: bluegills *Lepomis macrochirus* (22%), black crappies *Pomoxis nigromaculatus* (9%), brown bullheads *Ameiurus nebulosus* (9%), pumpkinseeds *Lepomis gibbosus* (9%), largemouth bass *Micropterus salmoides* (4%), and western mosquitofish *Gambusia affinis* (4%). Crayfish were also common (67% occurrence) at locations where sand rollers were present.

Nonnative fish were present at five of the 23 locations where sand rollers were collected (22%) compared to 19 of the 33 locations where sand rollers were not collected (58%). At sand roller locations where only native fish were collected, we captured significantly larger numbers of sand rollers ($\mu = 9.8$; $SD = 3.4$) than at sites where nonnative fish were also present ($\mu = 0.8$; $SD = 0.4$) (two-tailed test, $p < 0.01$). To minimize bias related to different gear efficiencies, only those sites where minnow traps were fished overnight were included in this comparison.

When we compared the number of sand rollers captured using minnow traps fished during the day and overnight, larger numbers of sand rollers were captured overnight ($\mu = 8.0$; $SD = 6.1$) than during the day ($\mu = 1.8$; $SD = 2.9$) (two-tailed test, $p < 0.1$). Also, at two of these locations, no sand rollers were captured during the day sets. Seining was conducted at four locations where sand rollers were collected in minnow traps; no sand rollers were captured in the seines at these locations. Evidence of differential gear efficiency in the capture of sand rollers is apparent in our data; sand rollers were collected from 22 of 46 locations (48%) where minnow traps were fished overnight, compared to 2 of 6 locations (33%) where minnow traps were fished during the day and 1 of 8 locations (13%) where seines were used.

The length-frequency distributions of sand rollers in the Willamette Basin varied by location (Figure 2). Fish ranged in size from 42-95 mm TL (39-87 mm FL). We found a very strong relationship between TL and FL measurements (Figure 3). Although most locations had only one definitive peak for measured lengths, these peaks frequently occurred around 45-50 mm and 60-65 mm FL. These peaks are similar to the mean sizes of age 1 (45 mm FL) and age 2 (67 mm FL) sand rollers in the lower Columbia

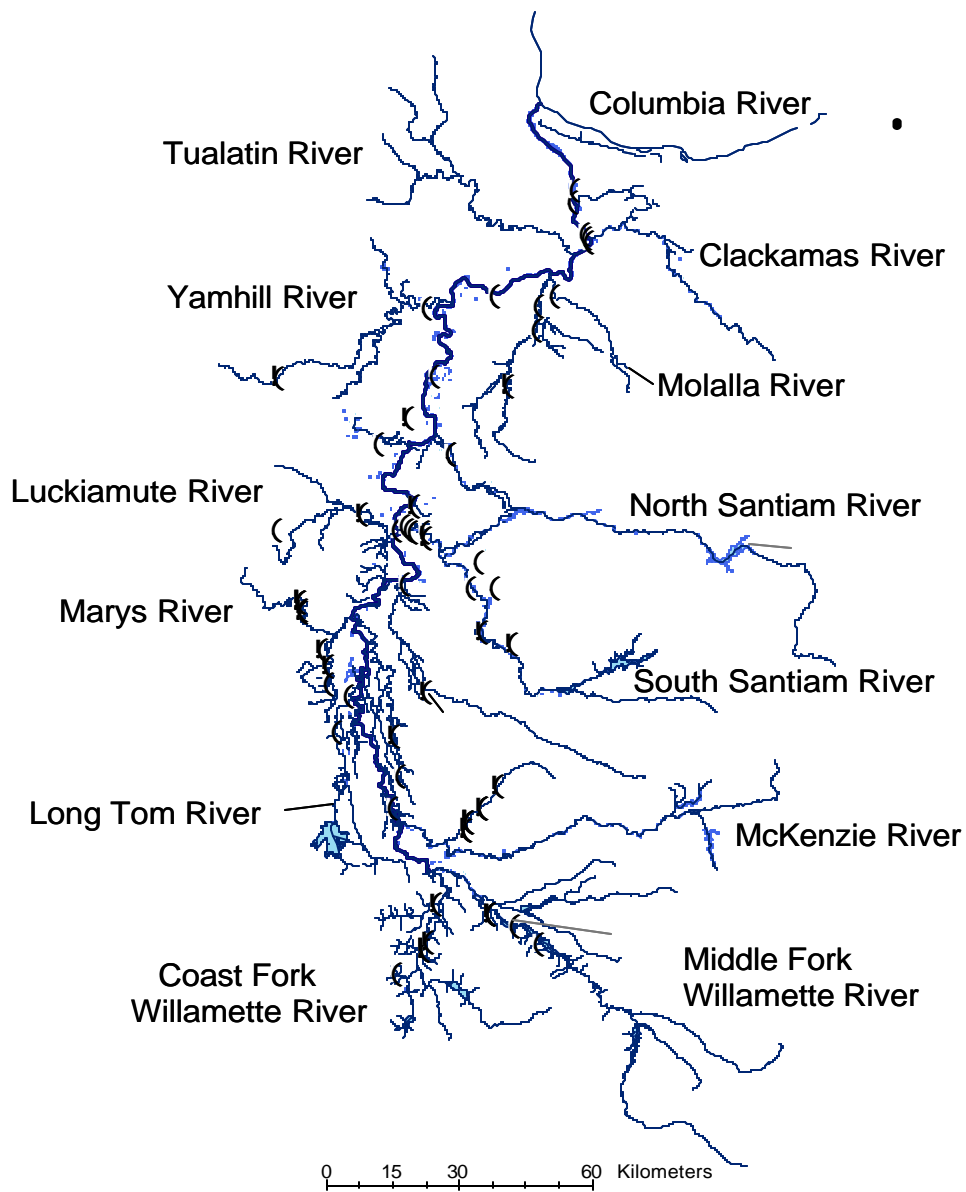


Figure 1. Survey locations for sand rollers in the Willamette River drainage in 2005. Open circles indicate sample locations where no sand rollers were collected. Closed circles indicate sample locations where sand rollers were collected.

Table 1. Numbers of sand rollers collected and presence of nonnative fish at locations surveyed in the Willamette River drainage in 2005. Sampling gear types are as follows: ON- minnow traps fished overnight, D- minnow traps fished during day, S- seine, and ON/H- hoop net fished overnight.

| Location | Map code | Subbasin | Number of sandrollers | Nonnative fish | Gear |
|---|------------|------------------------------|-----------------------|----------------|------|
| Cedar Island Alcove | CEDARISL1 | Lower Willamette River | 0 | no | ON |
| Champoeg Creek | CHAMPOEG1 | Lower Willamette River | 0 | no | ON |
| Goat Island | GOATISL1 | Lower Willamette River | 0 | no | ON |
| Meldrum | MELDRUM1 | Lower Willamette River | 0 | yes | ON |
| Mission Slough | MISS2A | Lower Willamette River | 0 | yes | ON |
| Rocky Beach | ROCKY1 | Lower Willamette River | 0 | yes | ON |
| Ross Island Channel | ROSS1 | Lower Willamette River | 0 | yes | ON |
| Yamhill River | YAMHILL1 | Yamhill River | 0 | yes | ON |
| South Yamhill River | SYAMHILL1 | Yamhill River | 52 | no | ON |
| Molalla River | MOLALLA1 | Molalla River | 0 | no | ON |
| Pudding River 1 | PUDDING1 | Molalla River | 0 | no | ON |
| Pudding River 2 | PUDDING2 | Molalla River | 0 | no | ON |
| Pudding River 3 | PUDDING3 | Molalla River | 7 | no | ON |
| Sidney Ditch | SIDNEY2 | Lower Willamette River | 1 | no | ON |
| Rickreall Creek | RICKREALL1 | Rickreall Creek | 0 | yes | ON |
| Mill Creek | MILL3 | Mill Creek | 0 | no | S |
| Mirth Lake | MILL4 | Mill Creek | 0 | yes | S |
| Santiam River 1 | I5BW2F | Santiam River | 5 | yes | ON |
| Santiam River 2 | SANT6 | Santiam River | 0 | yes | S |
| Santiam River 3 | SANT3A | Santiam River | 0 | yes | S |
| Santiam River 4 | SANT7 | Santiam River | 0 | no | S |
| Santiam River 5 | SANT8 | Santiam River | 0 | yes | S |
| Santiam River 6 | SANT9 | Santiam River | 0 | yes | S |
| South Santiam River 1 | SSR1A | South Santiam River | 0 | yes | ON |
| South Santiam River 2 | SSAN3 | South Santiam River | 1 | yes | S |
| Beaver Creek | BEAVSANT1 | South Santiam River | 0 | yes | ON |
| Hamilton Creek | HAM1 | South Santiam River | 21 | no | ON |
| Thomas Creek | THOMAS1 | South Santiam River | 0 | yes | ON |
| Luckiamute River | LUCK4A | Luckiamute River | 21 | no | ON |
| Rittner Creek | RITNER1 | Luckiamute River | 0 | no | ON |
| Calapooia River 1 | CAL5 | Calapooia River | 0 | yes | ON |
| Calapooia River 2 | CAL4A | Calapooia River | 3 | yes | ON |
| Muddy Creek | EMUD5A | Muddy Creek (Linn County) | 1 | no | ON |
| Dry Muddy Creek 1 | DMC4A | Muddy Creek (Linn County) | 12 | no | ON |
| Dry Muddy Creek 2 | DMC5A | Muddy Creek (Linn County) | 0 | no | ON |
| Marys River 1 | MARY1 | Marys River | 80 | no | ON |
| Marys River 1 | MARY1A | Marys River | 1093 ^a | no | ON |
| Marys River 2 | MARY2 | Marys River | 9 | no | ON |
| Marys River 3 | MARY3 | Marys River | 0 | no | ON |
| Beaver Creek | BEAVER1 | Marys River | 2 | no | ON |
| Bull Run Creek | BULLR2 | Marys River | 2 | no | ON |
| Muddy Creek | MUDDY1 | Marys River | 0 | yes | ON |
| Long Tom River 1 | LTOM1 | Long Tom River | 0 | no | D |
| Long Tom River 2 | LTOM2 | Long Tom River | 0 | yes | D |
| Cedar Creek 1 | CED1 | McKenzie River | 40 | no | ON |
| Cedar Creek 1 | CED1A | McKenzie River | 451 ^a | no | ON |
| Mohawk River 1 | MOH1 | McKenzie River | 0 | no | D |
| Mohawk River 1 | MOH1A | McKenzie River | 9 | no | ON |
| Mohawk River 2 | MOH2 | McKenzie River | 1 | no | D |
| Mohawk River 2 | MOH2A | McKenzie River | 2 | no | ON |
| Mohawk River 3 | MOH3 | McKenzie River | 0 | no | D |
| Mohawk River 3 | MOH3A | McKenzie River | 5 | no | ON |
| Mohawk River 4 | MOH4 | McKenzie River | 1 | no | ON |
| Green Island | GREEN1 | McKenzie River | 0 | yes | ON |
| Coast Fork Willamette River | CF11C | Coast Fork Willamette River | 1 | yes | ON |
| Camas Swale | CS4C | Coast Fork Willamette River | 4 | yes | ON |
| Silk Creek | SILK3 | Coast Fork Willamette River | 0 | no | ON |
| Lynx Hollow | LYNX1 | Coast Fork Willamette River | 6 | yes | D |
| Lynx Hollow | LYNX1A | Coast Fork Willamette River | 16 | no | ON |
| Dexter Reservoir | DEX11B | Middle Fork Willamette River | 0 | yes | ON/H |
| Rolling Riffle Arm, Lookout Pt. Reservoir | RR1C | Middle Fork Willamette River | 0 | no | ON/H |
| Lost Creek | LOST1 | Middle Fork Willamette River | 3 | no | ON |

^a Mark-recapture population estimate

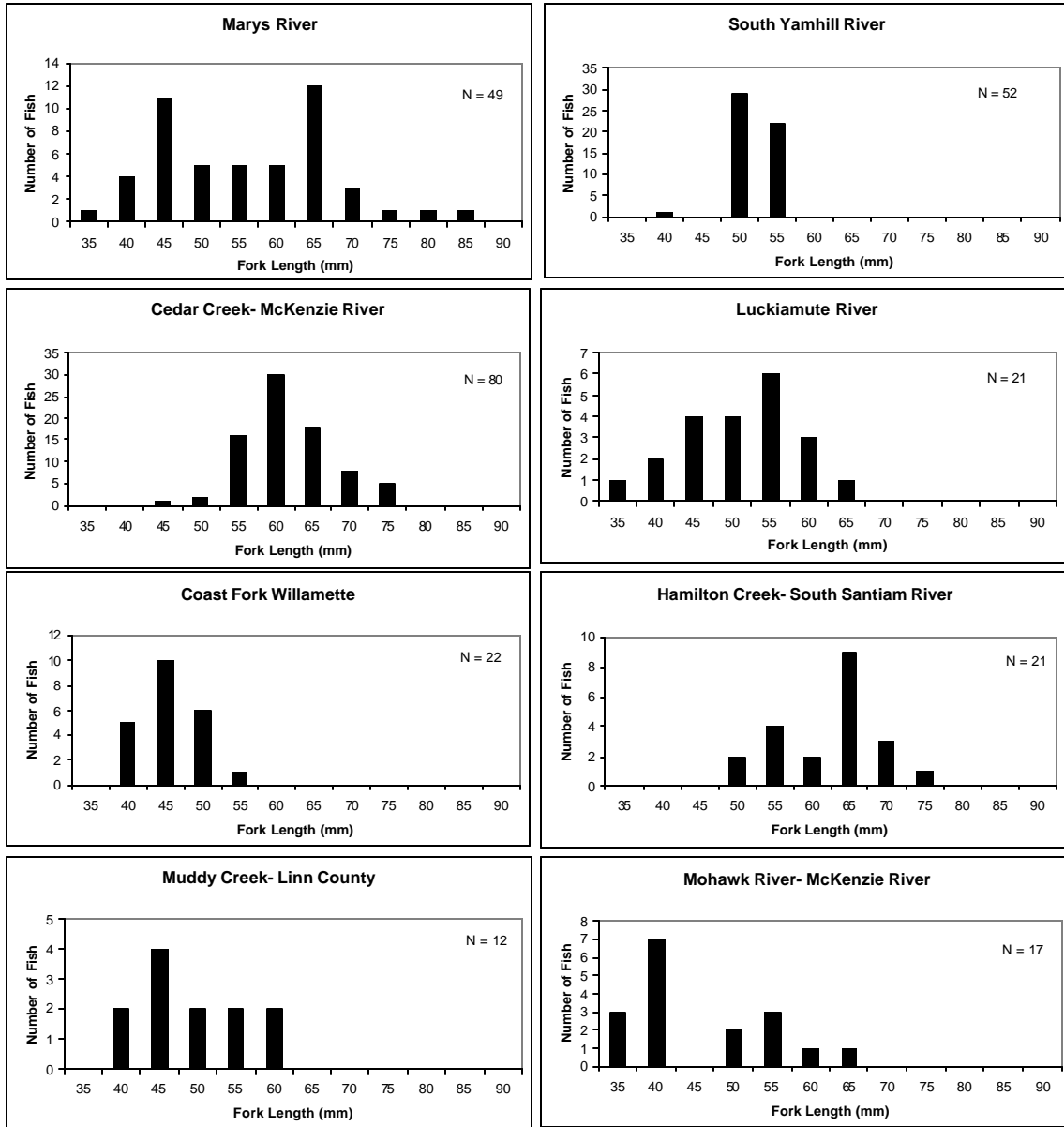


Figure 2. Length-frequency histograms for sand rollers collected using minnow traps from eight locations in the Willamette River drainage.

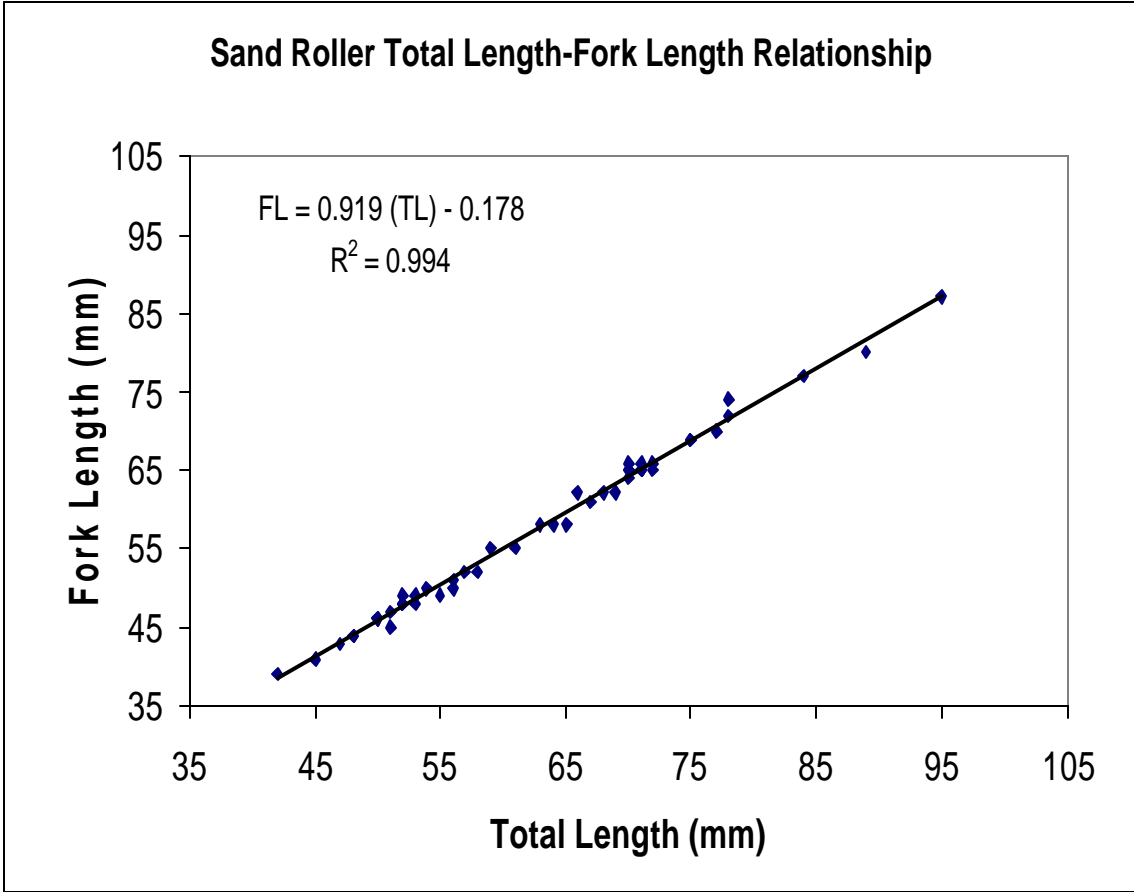


Figure 3. Relationship between fork length and total length of sand rollers collected in the Mays River drainage.

River (Gray and Dauble 1979). Likely overlap in length-at-age complicates interpretation of the length histograms.

Population estimates obtained in segments of Cedar Creek and the Mary's River indicate that our trapping methods (24 minnow traps fished overnight) captured a small proportion of the total population. We estimated 451 sand rollers (95% CI: 183-902) in Cedar Creek, but captured only 40 (8.9% of estimate) when we marked fish and 43 (9.5% of the estimate) when obtained our estimate. We estimated 1,093 sand rollers (95% CI: 542-2,049) in the Mary's River, but captured only 80 (7.3% of estimate) when we marked fish and 101 (9.2% of the estimate) when obtained our estimate. These results suggest that our trapping protocols were not very efficient at capturing sand rollers and that fish may be locally abundant at some locations, despite our low capture rates.

Sand rollers were captured primarily near large wood, rootwads, and undercut banks (Figure 4). These cover types were common at the locations sampled. Sand rollers were occasionally captured in off-channel pools, deep pools (>1.5 m), and associated with submerged vegetation. In many cases, a combination of cover types was present (i.e. rootwads and deep pools, or undercut banks and overhanging vegetation) where sand rollers were captured. Sand rollers were primarily associated with sand or gravel substrates, typical of the low gradient stream segments sampled (Figure 5).

DISCUSSION

Sand rollers were collected from locations throughout the Willamette River Basin. Our sampling targeted areas where sand rollers had been collected in the past, including locations for sand rollers catalogued in the OSU museum collection, as well as locations reported (mostly unpublished) by other fisheries biologists working in the drainage.

Minnow traps fished overnight appeared to be an effective method for determining the presence of sand rollers in small to medium sized low gradient tributaries to the Willamette River. This is consistent with reports that sand rollers are active nocturnally and infrequently encountered during daylight hours (Gray and Dauble 1976; 1979). Minnow traps fished during the day and seining were less effective. These methods did not capture sand rollers at several sites where their presence was confirmed using minnow traps fished overnight. We did not capture any sand rollers from locations sampled in the mainstem Willamette River. Other fisheries biologists have reported collecting them in recent years from these habitats using backpack electrofishing (Randy Wildman OSU, personal communication), boat electrofishing (Friesen et al. 2003), or large beach seines (Schroeder and Kenaston 2004). Minnow traps may be less effective in these large mainstem habitats than the gears employed by these biologists. However, electrofishing can be more harmful to the fish and is often restricted where listed fish are present. A trade-off exists between capture efficiency and potential fish injury or mortality.

Sand rollers were frequently associated with complex cover (large wood, rootwads, or undercut banks) over sand or gravel substrates. Sites where complex cover was absent frequently yielded no sand rollers. Although others have reported sand rollers to either occur as solitary individuals or to be territorial (Gray and Dauble

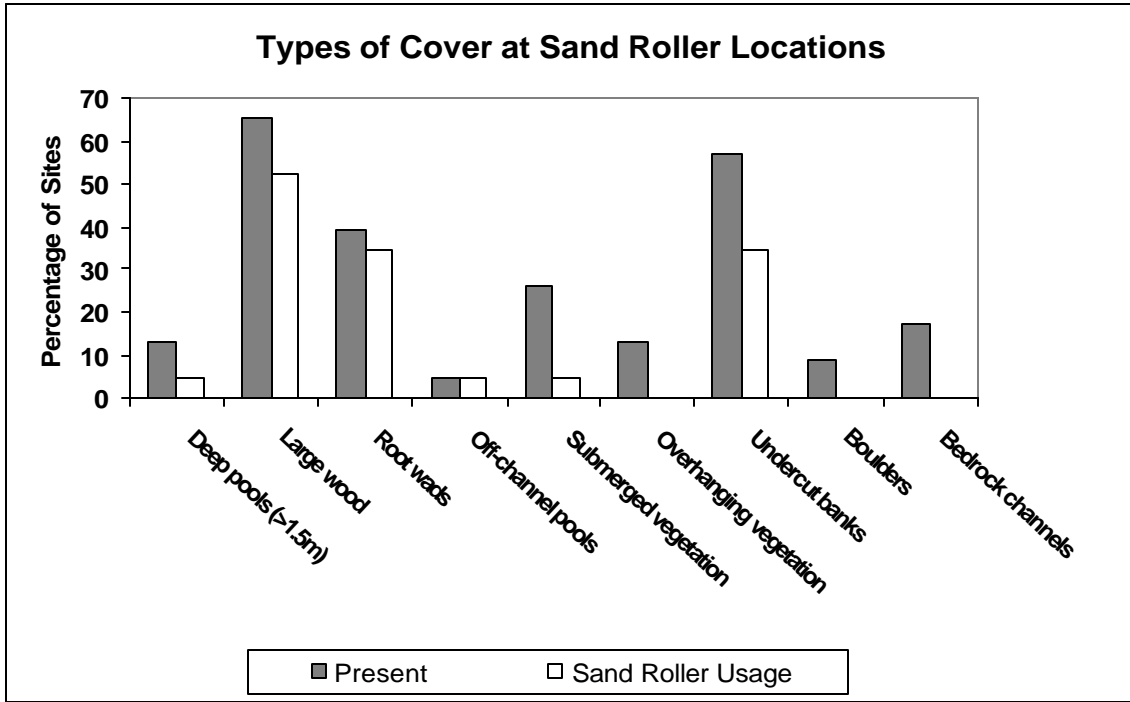


Figure 4. Types of instream cover present at locations containing sand rollers and cover utilized by sand rollers. Note: most locations had more than one type of cover present.

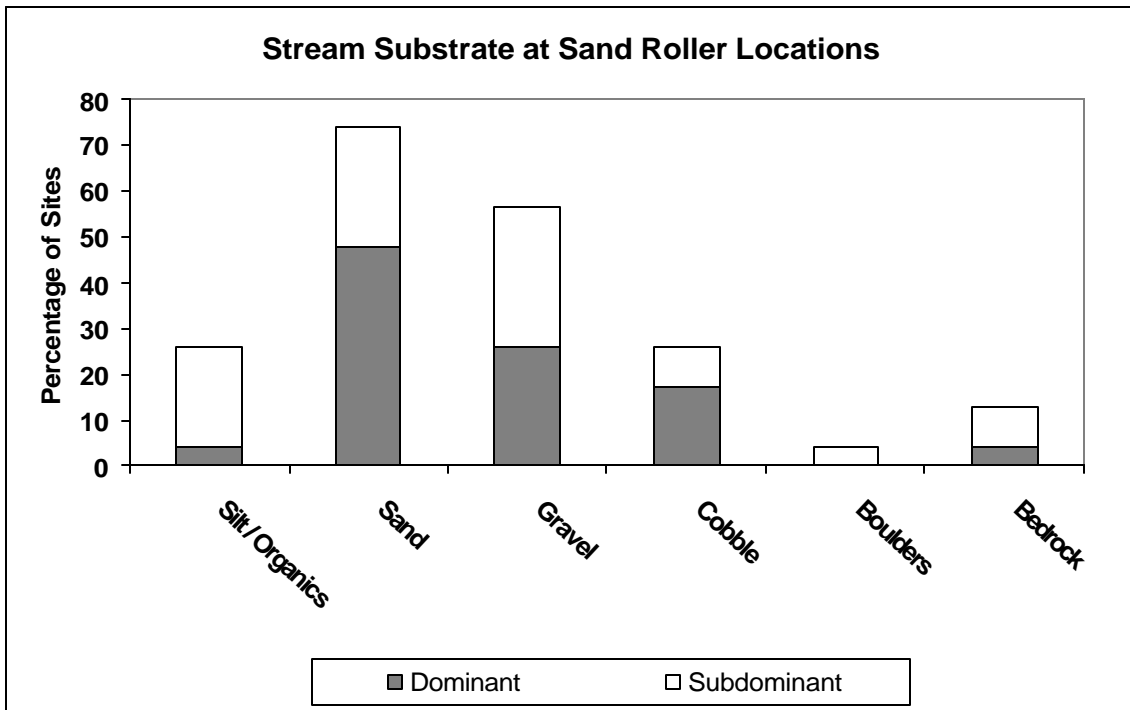


Figure 5. Dominant (most common) and subdominant (second most common) substrate types at locations occupied by sand rollers in the Willamette River drainage.

1976, Wydoski and Whitney 2003), at locations where we captured larger numbers of sand rollers (>20 fish), it was common for us to capture ten or more fish in a single trap. This may suggest that sand rollers school and/or exhibit substantial movement during the night.

This species is highly vulnerable to predation because of its small size, especially if adequate cover is lacking. Zimmerman (1999) and Poe et al. (1991) reported predation on sand rollers by walleye *Stizostedion vitreum*, smallmouth bass, northern pikeminnows, and channel catfish *Ictalurus punctatus*. We captured larger numbers of sand rollers in habitats where nonnative fish were not collected, and captured substantially lower numbers in habitats where nonnative fish were present.

In summary, sand rollers were found in medium to large, low gradient streams over sand and gravel stream substrates. Large woody debris, rootwads, and undercut banks were identified as important habitat types. Management practices to protect sand roller habitats should minimize land use activities that would reduce the presence of large wood, roots, and undercut banks. Restricting the introduction and movements of nonnative fish is also advised. Future research and monitoring should include periodic surveys to reassess sand roller distribution and further testing of alternate gear types to improve sampling efficiency.

ACKNOWLEDGEMENTS

We gratefully acknowledge the assistance of T. Friesen, G. Galovich, A. Herlihy, D. Huff, W. Hunt, K. Kenaston, S. Mamoyac, D. Markle, G. Reeves, K. Reis, C. Stein, M. Wade, and R. Wildman for providing detailed records of recent sand roller collections. We thank the numerous private landowners who granted us permission to survey on their properties, J. Weybright for his assistance in gaining access and sampling in the Mohawk River, M. Reesman for her assistance in sampling the lower Willamette River, and E. Gilbert for GIS assistance. Financial support was provided by the U.S. Fish and Wildlife Service.

REFERENCES

- Carlander, K. D. 1969. Handbook of freshwater fishery biology. Vol. 1: Life history data on freshwater fishes of the United States and Canada, exclusive of the Perciformes. Iowa State University Press, Ames. 752 pp.
- Dimick, R. E., and F. Merryfield. 1945. The fishes of the Willamette River system in relation to pollution. Oregon State College, Engineering Experiment Station Bulletin 20, Corvallis.
- Friesen, T. A., H. K. Takata, J. S. Vile, J. C. Graham, R. A. Farr, M. J. Reesman, and B. S. Cunningham. 2003. Relationships between bank treatment/near shore development and anadromous/resident fish in the lower Willamette River. Oregon Department of Fish and Wildlife Annual Report (2001-2002) to the City of Portland.
- Gray, R. H., and D. D. Dauble. 1979. Biology of the sand roller in the central Columbia River. Transactions of the American Fisheries Society 108:646-649.
- Gray, R. H., and D. D. Dauble. 1976. New distribution records and notes on life history and behavior of sand roller, *Percopsis transmontana* (Eigenmann and Eigenmann). Syesis 9:369-370.
- Katula, R. 1992. The Northwestern *Percopsis*, the sand roller. American Currents, North American Native Fish Association, summer 1992.
- Mongillo, P. E., and M. Hallock. 1995. Resident nongame fish investigations 1993-1994. Annual Report IF95-04, State of Washington Department of Fish and Wildlife, Olympia.
- Poe, T. P., H. C. Hansel, S. Vigg, D. E. Palmer, L. A. Prendergast. 1991. Feeding of predaceous fishes on out-migrating juvenile salmonids in John Day reservoir, Columbia River. Transactions of the American Fisheries Society 120:405-420.
- Pratt, V. S., and C. R. Whitt. 1952. First record of the percopsid fish, *Columbia transmontana*, from Idaho. Copeia 1952:267-268.
- Reimers, P. E. 1963. New downstream distribution record for the sand roller, *Percopsis transmontana*, in the Columbia River. Fish Commission of Oregon Research Briefs 9:64.
- Reimers, P. E., and C. E. Bond. 1967. Distribution of fishes in tributaries of the lower Columbia River. Copeia 1967:541-550.
- Ricker, W. E. 1975. Computation and interpretation of biological statistics of fish populations. Fisheries Research Board of Canada, Bulletin 191. 382 pp.
- Schroeder R. K. and K. R. Kenaston. 2004. Spring Chinook Salmon in the Willamette and Sandy Rivers. Annual Progress Report, F-163-R-09, Oregon Department of Fish and Wildlife, Salem, Oregon.

- Scott, W. B., and E. J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Bulletin 184. 966 pp.
- Wydoski, R. S., and R. R. Whitney. 2003. Inland fishes of Washington. Second edition. University of Washington Press, Seattle. 322 pp.
- Zimmerman, M. P. 1979. Food habits of smallmouth bass, walleyes, and northern pikeminnow in the lower Columbia River basin during outmigration of juvenile anadromous salmonids. Transactions of the American Fisheries Society 128:1036-1054.

APPENDIX A

Fish Species and Habitat Characteristics at Each Survey Location

Sites are sorted by subbasin then listed alphabetically by map code. Codes for salmonids are:
CT= cutthroat trout *Oncorhynchus clarki* and RB= rainbow trout *O. mykiss*.

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | COAST FORK WILLAMETTE SIDE CHN | MAP CODE | CF11C |
| BASIN | COAST FORK WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 498954 |
| DATE | 7/11/2005 | NORTHING | 4857992 |
| ACCESS | I-5 BRIDGE XING S OF CRESWELL | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--|-----------------------|---------|
| SURFACE AREA (m2) | 1344 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | COBBLE |
| WATER TEMPERATURE (C) | 18.5 | SUBDOMINANT SUBSTRATE | BOULDER |
| COMMENTS: | MARGIN HABITAT DOWNSTREAM OF CHUB SITE | | |
| AVAILABLE COVER: | | | |

LARGE WOOD

SUBMERGED VEGETATION

OFF-CHANNEL POOL

Sand Roller Habitat Preferences:

LARGE WOOD

OFF-CHANNEL POOL

Native Fish Species Present:

| | | | |
|-----------------|----|-------------------------|----|
| SAND ROLLERS | 1 | LARGESCALE SUCKERS | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 22 |
| COTTIDS | | CHISELMOUTH | |
| REDSIDE SHINERS | 9 | LAMPREY | |
| SPECKLED DACE | 39 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 14 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|--|
| BLUEGILL | 1 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|------------------------|
| SITE NAME | LYNX HOLLOW | MAP CODE | LYNX1 |
| BASIN | COAST FORK WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 498103 |
| DATE | 7/11/2005 | NORTHING | 4856295 |
| ACCESS | STATE PARK, HWY 99 DAVIDSON RD | GEAR: | MINNOW TRAPS (3-4 HRS) |

Habitat Characteristics:

| | | | |
|-----------------------|--------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 4780 | | |
| AVERAGE DEPTH (m) | 0.7 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | COBBLE |
| COMMENTS: | STATE PARK GREENWAY SITE | | |

AVAILABLE COVER:

- LARGE WOOD
- UNDERCUT BANKS
- SUBMERGED VEGETATION

Sand Roller Habitat Preferences:

- LARGE WOOD
- SUBMERGED VEGETATION

Native Fish Species Present:

| | | | |
|---------------------|----------|-------------------------|---|
| SAND ROLLERS | 6 | LARGESCALE SUCKERS | 2 |
| OREGON CHUB | 2 | THREESPINE STICKLEBACKS | 8 |
| COTTIDS | | CHISELMOUTH | |
| REDSIDE SHINERS | | LAMPREY | |
| SPECKLED DACE | 4 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 1 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|--|
| BLUEGILL | 2 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | LYNX HOLLOW | MAP CODE | LYNX1A |
| BASIN | COAST FORK WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 498103 |
| DATE | 7/12/2005 | NORTHING | 4856295 |
| ACCESS | STATE PARK, HWY 99 DAVIDSON RD | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 4780 | | |
| AVERAGE DEPTH (m) | 0.7 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | COBBLE |
| COMMENTS: | STATE PARK GREENWAY SITE, OVERNIGHT | | |

AVAILABLE COVER:

LARGE WOOD
UNDERCUT BANKS
SUBMERGED VEGETATION

Sand Roller Habitat Preferences:

LARGE WOOD
SUBMERGED VEGETATION

Native Fish Species Present:

| | | | |
|---------------------|-----------|-------------------------|----------|
| SAND ROLLERS | 16 | LARGESCALE SUCKERS | 3 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 1 |
| COTTIDS | 1 | CHISELMOUTH | |
| REDSIDE SHINERS | 1 | LAMPREY | |
| SPECKLED DACE | 8 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 11 | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------------|----------|--------------------------|
| SITE NAME | CAMAS SWALE | MAP CODE | CS4C |
| BASIN | COAST FORK WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | CAMAS SWALE | EASTING | 500716 |
| DATE | 7/11/2005 | NORTHING | 4866815 |
| ACCESS | SHORT MOUNTAIN LANDFILL | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 1374 | | |
| AVERAGE DEPTH (m) | 0.7 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 21 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | SHORT MOUNTAIN LANDFILL | | |

AVAILABLE COVER:

LARGE WOOD
BOULDERS
UNDERCUT BANKS

Sand Roller Habitat Preferences:

UNDERCUT BANKS
LARGE WOOD

Native Fish Species Present:

| | | | |
|---------------------|----------|-------------------------|---|
| SAND ROLLERS | 4 | LARGESCALE SUCKERS | |
| OREGON CHUB | 2 | THREESPINE STICKLEBACKS | 1 |
| COTTIDS | 1 | CHISELMOUTH | |
| REDSIDE SHINERS | 7 | LAMPREY | |
| SPECKLED DACE | 10 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 1 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|----|------------------|----|
| BLUEGILL | 20 | BULLHEADS | |
| PUMPKINSEED | 61 | COMMON CARP | |
| CRAPPIE | 1 | W. MOSQUITOFISH | 10 |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | SILK CREEK | MAP CODE | SILK3 |
| BASIN | COAST FORK WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | SILK CREEK | EASTING | 491911 |
| DATE | 7/11/2005 | NORTHING | 4850129 |
| ACCESS | COTTAGE GROVE-LORANE HIGHWAY | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|----------------|-----------------------|---------|
| SURFACE AREA (m2) | 325 | | |
| AVERAGE DEPTH (m) | 0.4 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 21 | SUBDOMINANT SUBSTRATE | BOULDER |
| COMMENTS: | LORANE HIGHWAY | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | UNDERCUT BANKS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|---------------------|----|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 11 | CHISELMOUTH |
| REDSIDE SHINERS | 1 | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|----------------------------|----------|--------------------------|
| SITE NAME | CEDAR ISLAND ALCOVE | MAP CODE | CEDARISL1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 529241 |
| DATE | 7/25/2005 | NORTHING | 5025876 |
| ACCESS | MAINSTEM, RM 23.2 | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|------------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 100 | | |
| AVERAGE DEPTH (m) | 0.9 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 25 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | SAMPLED WITH ODFW DISTRICT BY SLED | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|---------------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: NO FISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------|----------|--------------------------|
| SITE NAME | CHAMPOEG CREEK | MAP CODE | CHAMPOEG1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 509560 |
| DATE | 7/26/2005 | NORTHING | 5010626 |
| ACCESS | CHAMPOEG STATE PARK | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|---------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 360 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 22 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | CHAMPOEG STATE PARK | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | UNDERCUT BANKS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|-----------------|----|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 11 | CHISELMOUTH |
| REDSIDE SHINERS | | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------|----------|--------------------------|
| SITE NAME | GOAT ISLAND | MAP CODE | GOATISL1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 530338 |
| DATE | 7/25/2005 | NORTHING | 5024038 |
| ACCESS | MAINSTEM, RM 24 | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|------------------------------------|-----------------------|---------|
| SURFACE AREA (m2) | 900 | | |
| AVERAGE DEPTH (m) | 0.4 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 24.5 | SUBDOMINANT SUBSTRATE | BOULDER |
| COMMENTS: | SAMPLED WITH ODFW DISTRICT BY SLED | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | BOULDERS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|-----------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: NO FISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------|----------|--------------------------|
| SITE NAME | MELDRUM | MAP CODE | MELDRUM1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 529916 |
| DATE | 7/25/2005 | NORTHING | 5025058 |
| ACCESS | MAINSTEM, RM 25 | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|------------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 600 | | |
| AVERAGE DEPTH (m) | 0.4 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 23 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | SAMPLED WITH ODFW DISTRICT BY SLED | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | BOULDERS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|---------------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | 8 |

Non-native Fish Species Present:

| | | |
|-----------------|------------------|----|
| BLUEGILL | BULLHEADS | |
| PUMPKINSEED | COMMON CARP | |
| CRAPPIE | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | BANDED KILLIFISH | 22 |
| SMALLMOUTH BASS | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------|----------|--------------------------|
| SITE NAME | MISSION LAKE SLOUGH | MAP CODE | MISS2A |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 496527 |
| DATE | 7/27/2005 | NORTHING | 4991681 |
| ACCESS | UPSTREAM MISSION LAKE | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 4500 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 26 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | MISSION STATE PARK | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | SUBMERGED VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|-----------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | | | |
|-----------------|----|------------------|-----|
| BLUEGILL | 77 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | 100 |
| LARGEMOUTH BASS | 5 | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | ROCKY BEACH | MAP CODE | ROCKY1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 526567 |
| DATE | 7/25/2005 | NORTHING | 5033444 |
| ACCESS | PIONEER PARK UPSTREAM, RM 16.7 | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|------------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 850 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 24.5 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | SAMPLED WITH ODFW DISTRICT BY SLED | | |
| AVAILABLE COVER: | BOULDERS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|---------------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | | |
|-----------------|------------------|----|
| BLUEGILL | BULLHEADS | |
| PUMPKINSEED | COMMON CARP | |
| CRAPPIE | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | BANDED KILLIFISH | 25 |
| SMALLMOUTH BASS | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-------------------------------|----------|--------------------------|
| SITE NAME | ROSS ISLAND CHANNEL | MAP CODE | ROSS1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 526947 |
| DATE | 7/25/2005 | NORTHING | 5036026 |
| ACCESS | RM 14, PORTLAND PIONEER PK DS | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|------------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 3500 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 12 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | SAMPLED WITH ODFW DISTRICT BY SLED | | |
| AVAILABLE COVER: | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|-----------------|---|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 1 | CHISELMOUTH |
| REDSIDE SHINERS | | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | | |
|-----------------|---|------------------|
| BLUEGILL | | BULLHEADS |
| PUMPKINSEED | | COMMON CARP |
| CRAPPIE | | W. MOSQUITOFISH |
| LARGEMOUTH BASS | | BANDED KILLIFISH |
| SMALLMOUTH BASS | 1 | |

Other: SHAD

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | SIDNEY DITCH | MAP CODE | SIDNEY2 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 493060 |
| DATE | 7/20/2005 | NORTHING | 4960736 |
| ACCESS | SIDNEY ROAD, W OF ANKENY NWR | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 630 | | |
| AVERAGE DEPTH (m) | 1.2 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 22 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | SIDNEY ROAD / WATER DIVERSION | | |

AVAILABLE COVER:

- UNDERCUT BANKS
- BEDROCK CHANNELS
- OVERHANGING VEGETATION

Sand Roller Habitat Preferences:

- UNDERCUT BANKS

Native Fish Species Present:

| | | |
|---------------------|---|-------------------------|
| SAND ROLLERS | 1 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 2 | CHISELMOUTH |
| REDSIDE SHINERS | 3 | LAMPREY |
| SPECKLED DACE | 1 | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------|----------|---------|
| SITE NAME | MILL CREEK 1 | MAP CODE | MILL3 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MILL CREEK | EASTING | 500637 |
| DATE | 7/19/2005 | NORTHING | 4973163 |
| ACCESS | CASCADE GATEWAY PARK | GEAR: | SEINE |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------|-----------------------|--------|
| SURFACE AREA (m2) | 1500 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 20.5 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | CASCADE GATEWAY PARK | | |
| AVAILABLE COVER: | | | |
| LARGE WOOD | | | |
| UNDERCUT BANKS | | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|-----------------|----|-------------------------|------|
| SAND ROLLERS | | LARGESCALE SUCKERS | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | |
| COTTIDS | | CHISELMOUTH | |
| REDSIDE SHINERS | 10 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | RB 1 |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 50 | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------|----------|---------|
| SITE NAME | MILL CREEK 2 | MAP CODE | MILL4 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MILL CREEK | EASTING | 500637 |
| DATE | 7/19/2005 | NORTHING | 4973193 |
| ACCESS | CASCADE GATEWAY PARK | GEAR: | SEINE |

Habitat Characteristics:

| | | | |
|-----------------------|------------|-----------------------|--------|
| SURFACE AREA (m2) | 700 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 20 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | MIRTH LAKE | | |
| AVAILABLE COVER: | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|-----------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | | | |
|-----------------|----|------------------|---|
| BLUEGILL | 16 | BULLHEADS | 1 |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | 4 | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------------|----------|--------------------------|
| SITE NAME | MOLALLA RIVER | MAP CODE | MOLALLA1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MOLALLA RIVER | EASTING | 523025 |
| DATE | 7/25/2005 | NORTHING | 5011225 |
| ACCESS | HIGHWAY 99E CROSSING, CANBY | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------|-----------------------|---------|
| SURFACE AREA (m2) | 1900 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | COBBLE |
| WATER TEMPERATURE (C) | 26 | SUBDOMINANT SUBSTRATE | BOULDER |
| COMMENTS: | HIGHWAY 99E | | |
| AVAILABLE COVER: | | | |
| | BOULDERS | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|---------------------|----|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 70 | CHISELMOUTH |
| REDSIDE SHINERS | | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | PUDDING RIVER 1 | MAP CODE | PUDDING1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | PUDDING RIVER | EASTING | 519648 |
| DATE | 7/25/2005 | NORTHING | 5008710 |
| ACCESS | HIGHWAY 99E CROSSING, AURORA | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------|-----------------------|---------------|
| SURFACE AREA (m2) | 720 | | |
| AVERAGE DEPTH (m) | 1.2 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 24.5 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | HIGHWAY 99E | | |
| AVAILABLE COVER: | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|-----------------|---|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | | CHISELMOUTH |
| REDSIDE SHINERS | 2 | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------|----------|--------------------------|
| SITE NAME | PUDDING RIVER 2 | MAP CODE | PUDDING2 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | PUDDING RIVER | EASTING | 519404 |
| DATE | 7/26/2005 | NORTHING | 5002782 |
| ACCESS | WHISKEY HILL ROAD | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|---------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 480 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 22 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | WHISKEY HILL ROAD, S. OF AURORA | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|-----------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: NO FISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------|----------|--------------------------|
| SITE NAME | PUDDING RIVER 3 | MAP CODE | PUDDING3 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | PUDDING RIVER | EASTING | 513487 |
| DATE | 7/26/2005 | NORTHING | 4989806 |
| ACCESS | SARATOGA ROAD BRIDGE | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 361 | | |
| AVERAGE DEPTH (m) | 0.9 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 21 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | SARATOGA RD/CHURCH RD, MT. ANGEL | | |
| AVAILABLE COVER: | | | |
| LARGE WOOD | | | |
| BOULDERS | | | |

Sand Roller Habitat Preferences:

LARGE WOOD

Native Fish Species Present:

| | | |
|---------------------|-----------|-------------------------|
| SAND ROLLERS | 7 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | | CHISELMOUTH |
| REDSIDE SHINERS | 6 | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | 25 | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|----------------------------|----------|--------------------------|
| SITE NAME | RICKREALL CREEK | MAP CODE | RICKREALL1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | RICKREALL CREEK | EASTING | 484527 |
| DATE | 7/27/2005 | NORTHING | 4974872 |
| ACCESS | MORROW ROAD NEAR RICKREALL | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|---|-----------------------|--------|
| SURFACE AREA (m2) | 598 | | |
| AVERAGE DEPTH (m) | 0.7 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 24.5 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | MORROW ROAD CROSSING, EAST OF RICKREALL | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | BOULDERS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|---|-------------------------|---|
| SAND ROLLERS | | LARGESCALE SUCKERS | 1 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | |
| COTTIDS | 3 | CHISELMOUTH | 1 |
| REDSIDE SHINERS | | LAMPREY | |
| SPECKLED DACE | 1 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 4 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|--|
| BLUEGILL | 1 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|----------------------------|----------|--------------------------|
| SITE NAME | SOUTH YAMHILL RIVER | MAP CODE | SYAMHILL1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | YAMHILL RIVER | EASTING | 461547 |
| DATE | 7/27/2005 | NORTHING | 4990246 |
| ACCESS | HIGHWAY 18, MCMINNVILLE | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--------------------------|-----------------------|---------|
| SURFACE AREA (m2) | 4200 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | BEDROCK |
| WATER TEMPERATURE (C) | 24 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | HIGHWAY 18, ANGELLA PARK | | |
| AVAILABLE COVER: | | | |

BOULDERS
LARGE WOOD
DEEP POOL

Sand Roller Habitat Preferences:

LARGE WOOD
DEEP POOL

Native Fish Species Present:

| | | | | |
|---------------------|-----------|-------------------------|----|---|
| SAND ROLLERS | 52 | LARGESCALE SUCKERS | | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | | |
| COTTIDS | 8 | CHISELMOUTH | | |
| REDSIDE SHINERS | | LAMPREY | | |
| SPECKLED DACE | | SALMONIDS | CT | 1 |
| LONGNOSE DACE | | | | |
| N. PIKEMINNOW | | | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | YAMHILL RIVER | MAP CODE | YAMHILL1 |
| BASIN | LOWER WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | YAMHILL RIVER | EASTING | 494573 |
| DATE | 7/27/2005 | NORTHING | 5007386 |
| ACCESS | DAYTON BOAT RAMP, ALDEN PARK | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 4392 | | |
| AVERAGE DEPTH (m) | 1.3 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 25 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | DAYTON BOAT RAMP | | |
| AVAILABLE COVER: | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|-----------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | | |
|-----------------|----|------------------|
| BLUEGILL | 33 | BULLHEADS |
| PUMPKINSEED | | COMMON CARP |
| CRAPPIE | | W. MOSQUITOFISH |
| LARGEMOUTH BASS | | BANDED KILLIFISH |
| SMALLMOUTH BASS | | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | GREEN ISLAND | MAP CODE | GREEN1 |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 490046 |
| DATE | 7/6/2005 | NORTHING | 4889513 |
| ACCESS | GREEN ISLAND RD, MCK. R. TRUST | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 19933 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 20.5 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | OLD MCK CHANL, MCKENZIE RIVER TRUST | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | SUBMERGED VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|---|-------------------------|----|
| SAND ROLLERS | | LARGESCALE SUCKERS | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 46 |
| COTTIDS | 5 | CHISELMOUTH | |
| REDSIDE SHINERS | 1 | LAMPREY | |
| SPECKLED DACE | 1 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 1 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|-----|
| BLUEGILL | 6 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | 10 |
| CRAPPIE | | W. MOSQUITOFISH | 100 |
| LARGEMOUTH BASS | 4 | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | CEDAR CREEK | MAP CODE | CED1 |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | CEDAR CREEK | EASTING | 512600 |
| DATE | 7/6/2005 | NORTHING | 4865129 |
| ACCESS | GEORGE GRIER PROPERTY, 66TH ST | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--|-----------------------|--------|
| SURFACE AREA (m2) | 5365 | | |
| AVERAGE DEPTH (m) | 0.9 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | GEORGE GRIER, 66TH STREET, SPRINGFIELD | | |

AVAILABLE COVER:

- SUBMERGED VEGETATION
- ROOTWAD
- LARGE WOOD

Sand Roller Habitat Preferences:

- ROOTWAD
- LARGE WOOD

Native Fish Species Present:

| | | | |
|---------------------|-----------|-------------------------|-----|
| SAND ROLLERS | 40 | LARGESCALE SUCKERS | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 101 |
| COTTIDS | 2 | CHISELMOUTH | |
| REDSIDE SHINERS | 35 | LAMPREY | |
| SPECKLED DACE | 2 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | CEDAR CREEK | MAP CODE | CED1A |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | CEDAR CREEK | EASTING | 512600 |
| DATE | 7/14/2005 | NORTHING | 4865129 |
| ACCESS | GEORGE GRIER PROPERTY, 66TH ST | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 5365 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 16 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | M-R POPULATION ESTIMATE | | |
| AVAILABLE COVER: | | | |

- SUBMERGED VEGETATION
- ROOTWAD
- LARGE WOOD

Sand Roller Habitat Preferences:

- ROOTWAD
- LARGE WOOD

Native Fish Species Present:

| | | | |
|---------------------|------------|-------------------------|----|
| SAND ROLLERS | 451 | LARGESCALE SUCKERS | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 12 |
| COTTIDS | 3 | CHISELMOUTH | |
| REDSIDE SHINERS | 101 | LAMPREY | |
| SPECKLED DACE | 6 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|------------------------|
| SITE NAME | MOHAWK RIVER 1- GOLF COURSE | MAP CODE | MOH1 |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | MOHAWK RIVER | EASTING | 506681 |
| DATE | 7/5/2005 | NORTHING | 4884942 |
| ACCESS | GOLF COURSE- SUNDERMAN RD BC | GEAR: | MINNOW TRAPS (3-4 HRS) |

Habitat Characteristics:

| | | | |
|-----------------------|------------------|-----------------------|--------|
| SURFACE AREA (m2) | 3984 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | NEAR GOLF COURSE | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | BEDROCK CHANNELS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|-----------------|---|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 1 | CHISELMOUTH |
| REDSIDE SHINERS | 2 | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | MOHAWK RIVER 1- GOLF COURSE | MAP CODE | MOH1A |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | MOHAWK RIVER | EASTING | 506681 |
| DATE | 7/6/2005 | NORTHING | 4884942 |
| ACCESS | GOLF COURSE- SUNDERMAN RD BC | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 3984 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | NEAR GOLF COURSE, KVAL TV FILMED | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | BEDROCK CHANNELS | | |

Sand Roller Habitat Preferences:

LARGE WOOD

Native Fish Species Present:

| | | |
|-----------------|---|-------------------------|
| SAND ROLLERS | 9 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 8 | CHISELMOUTH |
| REDSIDE SHINERS | 1 | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | 1 | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|------------------------|
| SITE NAME | MOHAWK RIVER 2- JCT MCGOWAN CK | MAP CODE | MOH2 |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | MOHAWK RIVER | EASTING | 507219 |
| DATE | 7/6/2005 | NORTHING | 4886731 |
| ACCESS | CONFLUENCE MCGOWAN CK | GEAR: | MINNOW TRAPS (3-4 HRS) |

Habitat Characteristics:

| | | | |
|-----------------------|------|-----------------------|--------|
| SURFACE AREA (m2) | 4250 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 18.5 | SUBDOMINANT SUBSTRATE | SAND |

COMMENTS: WALTERS PROPERTY, SUNDERMAN ROAD

AVAILABLE COVER:

- ROOTWAD
- LARGE WOOD

Sand Roller Habitat Preferences:

ROOTWAD

Native Fish Species Present:

| | | |
|-----------------|---|-------------------------|
| SAND ROLLERS | 1 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 2 | CHISELMOUTH |
| REDSIDE SHINERS | | LAMPREY |
| SPECKLED DACE | 1 | SALMONIDS |
| LONGNOSE DACE | 2 | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | MOHAWK RIVER 2- JCT MCGOWAN CK | MAP CODE | MOH2A |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | MOHAWK RIVER | EASTING | 507219 |
| DATE | 7/5/2005 | NORTHING | 4886731 |
| ACCESS | CONFLUENCE MCGOWAN CK | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--|-----------------------|--------|
| SURFACE AREA (m2) | 4250 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 18.5 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | WALTERS PROP., SUNDERMAN RD, OVERNIGHT | | |
| AVAILABLE COVER: | | | |
| ROOTWAD | | | |
| LARGE WOOD | | | |

Sand Roller Habitat Preferences:

ROOTWAD

Native Fish Species Present:

| | | |
|-----------------|----|-------------------------|
| SAND ROLLERS | 2 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 10 | CHISELMOUTH |
| REDSIDE SHINERS | 2 | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | 2 | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|------------------------|
| SITE NAME | MOHAWK RIVER 3- JCT PARSONS CK | MAP CODE | MOH3 |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | MOHAWK RIVER | EASTING | 510036 |
| DATE | 7/5/2005 | NORTHING | 4889862 |
| ACCESS | CONFLUENCE PARSONS CREEK | GEAR: | MINNOW TRAPS (3-4 HRS) |

Habitat Characteristics:

| | | | |
|-----------------------|-----------------------|-----------------------|---------|
| SURFACE AREA (m2) | 2883 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | BEDROCK |
| COMMENTS: | PENNY JORDAN 933-2867 | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | UNDERCUT BANKS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|---------------------|----|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 4 | CHISELMOUTH |
| REDSIDE SHINERS | 1 | LAMPREY |
| SPECKLED DACE | 12 | SALMONIDS |
| LONGNOSE DACE | 2 | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | MOHAWK RIVER 3- JCT PARSONS CK | MAP CODE | MOH3A |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | MOHAWK RIVER | EASTING | 510036 |
| DATE | 7/6/2005 | NORTHING | 4889862 |
| ACCESS | CONFLUENCE PARSONS CREEK | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------------------|-----------------------|---------|
| SURFACE AREA (m2) | 2883 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | BEDROCK |
| COMMENTS: | PENNY JORDAN 933-2867, OVERNIGHT | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | UNDERCUT BANKS | | |

Sand Roller Habitat Preferences:

UNDERCUT BANKS

Native Fish Species Present:

| | | | | |
|-----------------|---|-------------------------|----|---|
| SAND ROLLERS | 5 | LARGESCALE SUCKERS | | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | | |
| COTTIDS | 8 | CHISELMOUTH | | |
| REDSIDE SHINERS | 4 | LAMPREY | | |
| SPECKLED DACE | 2 | SALMONIDS | RB | 1 |
| LONGNOSE DACE | 3 | | | |
| N. PIKEMINNOW | | | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | MOHAWK RIVER 4- JCT SHOTGUN CK | MAP CODE | MOH4 |
| BASIN | MCKENZIE RIVER | ZONE: | 10T |
| SUBBASIN | MOHAWK RIVER | EASTING | 513790 |
| DATE | 7/6/2005 | NORTHING | 4895095 |
| ACCESS | CONFLUENCE SHOTGUN CREEK | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|---------------------------------|-----------------------|---------|
| SURFACE AREA (m2) | 2640 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 16 | SUBDOMINANT SUBSTRATE | BEDROCK |
| COMMENTS: | LEE DOWNING PROPERTY, OVERNIGHT | | |

AVAILABLE COVER:

LARGE WOOD
UNDERCUT BANKS
DEEP POOL

Sand Roller Habitat Preferences:

LARGE WOOD

Native Fish Species Present:

| | | |
|-----------------|----|-------------------------|
| SAND ROLLERS | 1 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 12 | CHISELMOUTH |
| REDSIDE SHINERS | 7 | LAMPREY |
| SPECKLED DACE | 33 | SALMONIDS |
| LONGNOSE DACE | 7 | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|----------|
| SITE NAME | DEXTER RESERVOIR | MAP CODE | DEX11B |
| BASIN | MIDDLE FORK WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | DEXTER RESERVOIR | EASTING | 518251 |
| DATE | 7/6/2005 | NORTHING | 4862375 |
| ACCESS | ACOE PARK DS POWERHOUSE | GEAR: | HOOP NET |

Habitat Characteristics:

| | | | |
|-----------------------|---------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 10000 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | SILT/ORGANICS |
| WATER TEMPERATURE (C) | 20.5 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | SET NEAR STUMPS IN NE RESERVOIR | | |
| AVAILABLE COVER: | SUBMERGED VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|---------------------|---|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | 1 | THREESPINE STICKLEBACKS |
| COTTIDS | 1 | CHISELMOUTH |
| REDSIDE SHINERS | 6 | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | | |
|-----------------|---|------------------|
| BLUEGILL | 1 | BULLHEADS |
| PUMPKINSEED | | COMMON CARP |
| CRAPPIE | | W. MOSQUITOFISH |
| LARGEMOUTH BASS | | BANDED KILLIFISH |
| SMALLMOUTH BASS | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|----------|
| SITE NAME | LOOKOUT PT RES- ROLLING RIFFLE | MAP CODE | RR1C |
| BASIN | MIDDLE FORK WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | LOOKOUT POINT | EASTING | 523878 |
| DATE | 7/6/2005 | NORTHING | 4858094 |
| ACCESS | ROLLING RIFFLE ARM | GEAR: | HOOP NET |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 1500 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 20.5 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | ROLLING RIFFLE ARM, W SIDE | | |
| AVAILABLE COVER: | | | |
| | SUBMERGED VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|-----------------|---|-------------------------|---|
| SAND ROLLERS | | LARGESCALE SUCKERS | 4 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | |
| COTTIDS | | CHISELMOUTH | |
| REDSIDE SHINERS | 1 | LAMPREY | |
| SPECKLED DACE | 3 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 4 | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | LOST CREEK | MAP CODE | LOST1 |
| BASIN | MIDDLE FORK WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | LOST CREEK | EASTING | 512599 |
| DATE | 7/6/2005 | NORTHING | 4865131 |
| ACCESS | ELIJAH BRISTOW STATE PARK | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--------------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 2076 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | COBBLE |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | DOWNSTREAM BRIDGE E. BRISTOW ST. PK. | | |

AVAILABLE COVER:

- UNDERCUT BANKS
- LARGE WOOD
- ROOTWAD

Sand Roller Habitat Preferences:

- ROOTWAD
- UNDERCUT BANKS

Native Fish Species Present:

| | | | |
|---------------------|----------|-------------------------|----------|
| SAND ROLLERS | 3 | LARGESCALE SUCKERS | 1 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | |
| COTTIDS | 5 | CHISELMOUTH | |
| REDSIDE SHINERS | 20 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | CT |
| LONGNOSE DACE | | | 1 |
| N. PIKEMINNOW | | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|----------------------------|----------|--------------------------|
| SITE NAME | CALAPOOIA RIVER 1 | MAP CODE | CAL5 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 490941 |
| DATE | 7/13/2005 | NORTHING | 4942224 |
| ACCESS | BRYANT ROAD, PARK AT MOUTH | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-----------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 3486 | | |
| AVERAGE DEPTH (m) | 0.9 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 23 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | MOUTH OF CALAPOOIA RIVER UPSTREAM | | |

AVAILABLE COVER:

- LARGE WOOD
- OVERHANGING VEGETATION
- BOULDERS

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|----|-------------------------|---|
| SAND ROLLERS | | LARGESCALE SUCKERS | 5 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | |
| COTTIDS | 1 | CHISELMOUTH | |
| REDSIDE SHINERS | 1 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 60 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|----|------------------|--|
| BLUEGILL | 11 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | 2 | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | 2 | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | CALAPOOIA RIVER 2 | MAP CODE | CAL4A |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | CALAPOOIA RIVER | EASTING | 496688 |
| DATE | 7/13/2005 | NORTHING | 4916828 |
| ACCESS | LINN WEST RD, UPST SODOM DITCH | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 1925 | | |
| AVERAGE DEPTH (m) | 1.1 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 24 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | LINN-WEST ROAD, TURN MORSE BROS. | | |

AVAILABLE COVER:

LARGE WOOD
ROOTWAD
BOULDERS

Sand Roller Habitat Preferences:

LARGE WOOD
ROOTWAD

Native Fish Species Present:

| | | |
|---------------------|----------|-------------------------|
| SAND ROLLERS | 3 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 1 | CHISELMOUTH |
| REDSIDE SHINERS | 2 | LAMPREY |
| SPECKLED DACE | 35 | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | 60 | |

Non-native Fish Species Present:

| | | |
|-----------------|---|------------------|
| BLUEGILL | | BULLHEADS |
| PUMPKINSEED | | COMMON CARP |
| CRAPPIE | 1 | W. MOSQUITOFISH |
| LARGEMOUTH BASS | | BANDED KILLIFISH |
| SMALLMOUTH BASS | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-------------------------|----------|--------------------------|
| SITE NAME | DRY MUDDY CREEK 2 | MAP CODE | DMC4A |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | EAST MUDDY CREEK | EASTING | 491226 |
| DATE | 7/11/2005 | NORTHING | 4981231 |
| ACCESS | DALE RD BRIDGE CROSSING | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|---------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 344 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 19.5 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | DALE ROAD BRIDGE CROSSING | | |
| AVAILABLE COVER: | | | |
| | UNDERCUT BANKS | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

UNDERCUT BANKS
LARGE WOOD

Native Fish Species Present:

| | | | |
|-----------------|----|-------------------------|---|
| SAND ROLLERS | 12 | LARGESCALE SUCKERS | 2 |
| OREGON CHUB | 16 | THREESPINE STICKLEBACKS | |
| COTTIDS | | CHISELMOUTH | |
| REDSIDE SHINERS | | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 28 | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|----------------------|----------|--------------------------|
| SITE NAME | DRY MUDDY CREEK 1 | MAP CODE | DMC5A |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | EAST MUDDY CREEK | EASTING | 491542 |
| DATE | 7/11/2005 | NORTHING | 4897108 |
| ACCESS | BOWERS ROAD CROSSING | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-----------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 144 | | |
| AVERAGE DEPTH (m) | 0.5 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 21 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | BOWERS ROAD BRIDGE CROSSING | | |
| AVAILABLE COVER: | SUBMERGED VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|----|-------------------------|---|
| SAND ROLLERS | | LARGESCALE SUCKERS | |
| OREGON CHUB | 10 | THREESPINE STICKLEBACKS | 2 |
| COTTIDS | 2 | CHISELMOUTH | |
| REDSIDE SHINERS | | LAMPREY | |
| SPECKLED DACE | 2 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|----------------------------|----------|--------------------------|
| SITE NAME | MUDDY CREEK (LINN CO.) | MAP CODE | EMUD5A |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | EAST MUDDY CREEK | EASTING | 490021 |
| DATE | 7/11/2005 | NORTHING | 4906273 |
| ACCESS | HIGHWAY 99 BRIDGE CROSSING | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-----------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 672 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | COBBLE |
| WATER TEMPERATURE (C) | 20 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | HIGHWAY 99E BRIDGE CROSSING | | |

AVAILABLE COVER:

LARGE WOOD
UNDERCUT BANKS
ROOTWAD

Sand Roller Habitat Preferences:

UNDERCUT BANKS

Native Fish Species Present:

| | | |
|-----------------|---|-------------------------|
| SAND ROLLERS | 1 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 7 | CHISELMOUTH |
| REDSIDE SHINERS | 5 | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | 1 | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|---------------------------|----------|------------------------|
| SITE NAME | LONG TOM RIVER 1 | MAP CODE | LTOM1 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | LONG TOM RIVER | EASTING | 476575 |
| DATE | 7/14/2005 | NORTHING | 4906979 |
| ACCESS | WATER TRT PLANT IN MONROE | GEAR: | MINNOW TRAPS (3-4 HRS) |

Habitat Characteristics:

| | | | |
|-----------------------|------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 3360 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 22 | SUBDOMINANT SUBSTRATE | COBBLE |
| COMMENTS: | PARK OFF HIGHWAY 99 | | |
| AVAILABLE COVER: | OVERHANGING VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|-----------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: NO FISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|------------------------|
| SITE NAME | LONG TOM RIVER 2 | MAP CODE | LTOM2 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | LONG TOM RIVER | EASTING | 479517 |
| DATE | 7/14/2005 | NORTHING | 4915280 |
| ACCESS | SLOUGH NEAR MOUTH, EUREKA RD | GEAR: | MINNOW TRAPS (3-4 HRS) |

Habitat Characteristics:

| | | | |
|-----------------------|--------------------------------|-----------------------|---------|
| SURFACE AREA (m2) | 2464 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | BOULDER |
| WATER TEMPERATURE (C) | 21 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | EUREKA ROAD, SLOUGH NEAR MOUTH | | |
| AVAILABLE COVER: | | | |
| | BOULDERS | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|---------------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | | | |
|-----------------|----|------------------|---|
| BLUEGILL | 11 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | 1 |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------------|----------|--------------------------|
| SITE NAME | LUCKIAMUTE RIVER | MAP CODE | LUCK4A |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | LUCKIAMUTE RIVER | EASTING | 481183 |
| DATE | 7/19/2005 | NORTHING | 4958440 |
| ACCESS | HELMICK STATE PARK, HWY 99W | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 37835 | | |
| AVERAGE DEPTH (m) | 0.9 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 23.5 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | HELMICK STATE PARK | | |
| AVAILABLE COVER: | | | |

LARGE WOOD

ROOTWAD

OVERHANGING VEGETATION

Sand Roller Habitat Preferences:

ROOTWAD

LARGE WOOD

Native Fish Species Present:

| | | |
|---------------------|-----------|-------------------------|
| SAND ROLLERS | 21 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 2 | CHISELMOUTH |
| REDSIDE SHINERS | 18 | LAMPREY |
| SPECKLED DACE | 5 | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | 16 | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | RITTNER CREEK | MAP CODE | RITNER1 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | LUCKIAMUTE RIVER | EASTING | 462011 |
| DATE | 7/19/2005 | NORTHING | 4953989 |
| ACCESS | GAGE ROAD, KESECKER PROPERTY | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------|-----------------------|---------|
| SURFACE AREA (m2) | 904 | | |
| AVERAGE DEPTH (m) | 0.2 | DOMINANT SUBSTRATE | BEDROCK |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | BURBANK ROAD, GAGE ROAD | | |
| AVAILABLE COVER: | | | |
| | BOULDERS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | | |
|---------------------|----|-------------------------|----|---|
| SAND ROLLERS | | LARGESCALE SUCKERS | | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | | |
| COTTIDS | 5 | CHISELMOUTH | | |
| REDSIDE SHINERS | 11 | LAMPREY | | |
| SPECKLED DACE | 31 | SALMONIDS | CT | 1 |
| LONGNOSE DACE | | | | |
| N. PIKEMINNOW | | | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | BEAVER CREEK | MAP CODE | BEAVER1 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MARYS RIVER | EASTING | 474646 |
| DATE | 7/12/2005 | NORTHING | 4922587 |
| ACCESS | TYEE WINERY, GREENBERRY ROAD | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 714 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | GREENBERRY ROAD, DAVE BUCHANAN | | |

AVAILABLE COVER:

- LARGE WOOD
- UNDERCUT BANKS
- SUBMERGED VEGETATION

Sand Roller Habitat Preferences:

- UNDERCUT BANKS

Native Fish Species Present:

| | | |
|-----------------|---|-------------------------|
| SAND ROLLERS | 2 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 8 | CHISELMOUTH |
| REDSIDE SHINERS | | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | BULL RUN CREEK | MAP CODE | BULLR2 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MARYS RIVER | EASTING | 473047 |
| DATE | 5/11/2005 | NORTHING | 4926122 |
| ACCESS | BELLFOUNTAIN ROAD- T. MURPHY | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-----------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 1265 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 12.5 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | TOM MURPHY'S PROPERTY | | |

AVAILABLE COVER:

- LARGE WOOD
- UNDERCUT BANKS
- OVERHANGING VEGETATION

Sand Roller Habitat Preferences:

- LARGE WOOD

Native Fish Species Present:

| | | | |
|-----------------|----|-------------------------|----|
| SAND ROLLERS | 2 | LARGESCALE SUCKERS | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 31 |
| COTTIDS | 8 | CHISELMOUTH | |
| REDSIDE SHINERS | 13 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | MARYS RIVER 1 | MAP CODE | MARY1 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MARYS RIVER | EASTING | 467887 |
| DATE | 7/12/2005 | NORTHING | 4837598 |
| ACCESS | CARDWELL HILL ROAD, PEARCY'S | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--|-----------------------|--------|
| SURFACE AREA (m2) | 2088 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | COBBLE |
| WATER TEMPERATURE (C) | 18.5 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | 24362 CARDWELL HILL RD, FIN CLIPS, PATHO | | |
| AVAILABLE COVER: | | | |

UNDERCUT BANKS
LARGE WOOD
ROOTWAD

Sand Roller Habitat Preferences:

UNDERCUT BANKS
ROOTWAD

Native Fish Species Present:

| | | |
|---------------------|-----------|-------------------------|
| SAND ROLLERS | 80 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 7 | CHISELMOUTH |
| REDSIDE SHINERS | | LAMPREY |
| SPECKLED DACE | 5 | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | 4 | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | MARYS RIVER 1 | MAP CODE | MARY1A |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MARYS RIVER | EASTING | 467887 |
| DATE | 7/21/2005 | NORTHING | 4837598 |
| ACCESS | CARDWELL HILL ROAD, PEARCY'S | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 2088 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | COBBLE |
| WATER TEMPERATURE (C) | 19 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | M-R POPULATION ESTIMATE | | |

AVAILABLE COVER:

UNDERCUT BANKS
LARGE WOOD
ROOTWAD

Sand Roller Habitat Preferences:

UNDERCUT BANKS
ROOTWAD

Native Fish Species Present:

| | | |
|---------------------|-------------|-------------------------|
| SAND ROLLERS | 1093 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 6 | CHISELMOUTH |
| REDSIDE SHINERS | 6 | LAMPREY |
| SPECKLED DACE | 6 | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | 6 | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------------------|----------|--------------------------|
| SITE NAME | MARYS RIVER 2 | MAP CODE | MARY2 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MARYS RIVER | EASTING | 468299 |
| DATE | 7/12/2005 | NORTHING | 4935253 |
| ACCESS | KIRK SCHROEDER, MARYS RIVR EST | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 425 | | |
| AVERAGE DEPTH (m) | 0.9 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 19.5 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | IRIS CIRCLE, MARYS RIVER ESTATES | | |

AVAILABLE COVER:

UNDERCUT BANKS
LARGE WOOD
ROOTWAD

Sand Roller Habitat Preferences:

ROOTWAD
UNDERCUT BANKS

Native Fish Species Present:

| | | |
|---------------------|----------|-------------------------|
| SAND ROLLERS | 9 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 2 | CHISELMOUTH |
| REDSIDE SHINERS | 1 | LAMPREY |
| SPECKLED DACE | 9 | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | 2 | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|-------------------------------|----------|--------------------------|
| SITE NAME | MARYS RIVER 3 | MAP CODE | MARY3 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MARYS RIVER | EASTING | 468411 |
| DATE | 7/12/2005 | NORTHING | 4935595 |
| ACCESS | JANET LEHMAN, MARYS RIVER EST | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------------------|-----------------------|---------|
| SURFACE AREA (m2) | 780 | | |
| AVERAGE DEPTH (m) | 0.4 | DOMINANT SUBSTRATE | BEDROCK |
| WATER TEMPERATURE (C) | 19.5 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | IRIS CIRCLE, MARYS RIVER ESTATES | | |
| AVAILABLE COVER: | | | |
| | BEDROCK CHANNELS | | |
| | DEEP POOL | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|-----------------|---|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 5 | CHISELMOUTH |
| REDSIDE SHINERS | 1 | LAMPREY |
| SPECKLED DACE | 9 | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|--------------------------|
| SITE NAME | MUDDY CREEK | MAP CODE | MUDDY1 |
| BASIN | MID-WILLAMETTE RIVER | ZONE: | 10T |
| SUBBASIN | MARYS RIVER | EASTING | 474661 |
| DATE | 7/12/2005 | NORTHING | 4918441 |
| ACCESS | FINLEY NWR BRIDGE, REFUGE RD | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 1232 | | |
| AVERAGE DEPTH (m) | 1 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 20.5 | SUBDOMINANT SUBSTRATE | SILT/ORGANICS |
| COMMENTS: | FINLEY REFUGE ROAD, BRIDGE CROSSING | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | UNDERCUT BANKS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | |
|---------------------|---|-------------------------|
| SAND ROLLERS | | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 2 | CHISELMOUTH |
| REDSIDE SHINERS | | LAMPREY |
| SPECKLED DACE | | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | | |

Non-native Fish Species Present:

| | | | |
|-----------------|--|------------------|---|
| BLUEGILL | | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | 4 |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|---------------------------------------|----------|--------------------------|
| SITE NAME | SANTIAM RIVER 1 (INTERSTATE 5) | MAP CODE | I5BW2F |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 496051 |
| DATE | 5/18/2005 | NORTHING | 4953491 |
| ACCESS | HIGHWAY I-5 MP 240.66 | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|---------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 6000 | | |
| AVERAGE DEPTH (m) | 1.5 | DOMINANT SUBSTRATE | SILT/ORGANICS |
| WATER TEMPERATURE (C) | 13 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | POPULATION ESTIMATE | | |
| AVAILABLE COVER: | | | |
| SUBMERGED VEGETATION | | | |
| LARGE WOOD | | | |

Sand Roller Habitat Preferences:

SUBMERGED VEGETATION

Native Fish Species Present:

| | | | |
|---------------------|----------|-------------------------|----|
| SAND ROLLERS | 5 | LARGESCALE SUCKERS | 10 |
| OREGON CHUB | 580 | THREESPINE STICKLEBACKS | 49 |
| COTTIDS | 8 | CHISELMOUTH | 14 |
| REDSIDE SHINERS | 6 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | | | |

Non-native Fish Species Present:

| | | | |
|-----------------|----|------------------|---|
| BLUEGILL | 16 | BULLHEADS | 1 |
| PUMPKINSEED | 5 | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------------|----------|--------|
| SITE NAME | SANTIAM RIVER 6 | MAP CODE | SANT 9 |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 498091 |
| DATE | 7/21/2005 | NORTHING | 494932 |
| ACCESS | FLOAT I-5 BC TO BUENA VISTA | GEAR: | SEINE |

Habitat Characteristics:

| | | | |
|-----------------------|-------------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 3933 | | |
| AVERAGE DEPTH (m) | 0.7 | DOMINANT SUBSTRATE | SILT/ORGANICS |
| WATER TEMPERATURE (C) | 19.5 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | BACKWATER AND BEAVER POND LEFT BANK | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | SUBMERGED VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|----|-------------------------|----|
| SAND ROLLERS | | LARGESCALE SUCKERS | 12 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 85 |
| COTTIDS | 61 | CHISELMOUTH | 54 |
| REDSIDE SHINERS | 27 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 51 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|----|
| BLUEGILL | 9 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | 50 |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------------|----------|---------|
| SITE NAME | SANTIAM RIVER 3 | MAP CODE | SANT3A |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 492589 |
| DATE | 7/21/2005 | NORTHING | 4954560 |
| ACCESS | FLOAT I-5 BC TO BUENA VISTA | GEAR: | SEINE |

Habitat Characteristics:

| | | | |
|-----------------------|---------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 1584 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SILT/ORGANICS |
| WATER TEMPERATURE (C) | 19 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | DOWNSTREAM OF RR CROSSING | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|----|-------------------------|------|
| SAND ROLLERS | | LARGESCALE SUCKERS | 9 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 1906 |
| COTTIDS | 18 | CHISELMOUTH | |
| REDSIDE SHINERS | | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 30 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|----|
| BLUEGILL | 2 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | 4 |
| CRAPPIE | | W. MOSQUITOFISH | 10 |
| LARGEMOUTH BASS | 1 | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------------|----------|---------|
| SITE NAME | SANTIAM RIVER 2 | MAP CODE | SANT6 |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 495266 |
| DATE | 7/21/2005 | NORTHING | 4954802 |
| ACCESS | FLOAT I-5 BC TO BUENA VISTA | GEAR: | SEINE |

Habitat Characteristics:

| | | | |
|-----------------------|------------------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 2640 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SILT/ORGANICS |
| WATER TEMPERATURE (C) | 16 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | NEAR MORGAN CREEK CONFLUENCE | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|----|-------------------------|-----|
| SAND ROLLERS | | LARGESCALE SUCKERS | 21 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 262 |
| COTTIDS | 75 | CHISELMOUTH | |
| REDSIDE SHINERS | | LAMPREY | |
| SPECKLED DACE | 3 | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 1 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|--|------------------|-----|
| BLUEGILL | | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | 120 |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------------|----------|---------|
| SITE NAME | SANTIAM RIVER 4 | MAP CODE | SANT7 |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 491743 |
| DATE | 7/21/2005 | NORTHING | 4955110 |
| ACCESS | FLOAT I-5 BC TO BUENA VISTA | GEAR: | SEINE |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------|-----------------------|--------|
| SURFACE AREA (m2) | 10000 | | |
| AVERAGE DEPTH (m) | 1.1 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 19 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | BACKWATER RIGHT SIDE | | |
| AVAILABLE COVER: | | | |
| | SUBMERGED VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|-----|-------------------------|-----|
| SAND ROLLERS | | LARGESCALE SUCKERS | 360 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 4 |
| COTTIDS | 3 | CHISELMOUTH | 155 |
| REDSIDE SHINERS | 5 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 145 | | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------------|----------|---------|
| SITE NAME | SANTIAM RIVER 5 | MAP CODE | SANT8 |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | | EASTING | 490774 |
| DATE | 7/21/2005 | NORTHING | 4956001 |
| ACCESS | FLOAT I-5 BC TO BUENA VISTA | GEAR: | SEINE |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------|-----------------------|---------------|
| SURFACE AREA (m2) | 16835 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SILT/ORGANICS |
| WATER TEMPERATURE (C) | 20.5 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | BACKWATER RIGHT BANK | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |
| | SUBMERGED VEGETATION | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|-----|-------------------------|----|
| SAND ROLLERS | | LARGESCALE SUCKERS | 18 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 31 |
| COTTIDS | 124 | CHISELMOUTH | 77 |
| REDSIDE SHINERS | 87 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 119 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|----|
| BLUEGILL | | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | 3 |
| CRAPPIE | | W. MOSQUITOFISH | 53 |
| LARGEMOUTH BASS | 2 | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other:

Sand Roller Sampling Summary

| | | | |
|-----------|--------------------|----------|--------------------------|
| SITE NAME | BEAVER CREEK | MAP CODE | BEAVSANT1 |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | SOUTH SANTIAM | EASTING | 511616 |
| DATE | 7/18/2005 | NORTHING | 4942036 |
| ACCESS | FISH HATCHERY ROAD | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|--------------------|-----------------------|--------|
| SURFACE AREA (m2) | 304 | | |
| AVERAGE DEPTH (m) | 0.8 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 21 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | FISH HATCHERY ROAD | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|-----------------|---|-------------------------|--|
| SAND ROLLERS | | LARGESCALE SUCKERS | |
| OREGON CHUB | | THREESPINE STICKLEBACKS | |
| COTTIDS | | CHISELMOUTH | |
| REDSIDE SHINERS | 2 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 1 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|---|
| BLUEGILL | | BULLHEADS | 5 |
| PUMPKINSEED | 1 | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|----------------------|----------|--------------------------|
| SITE NAME | HAMILTON CREEK | MAP CODE | HAM1 |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | SOUTH SANTIAM | EASTING | 516137 |
| DATE | 7/18/2005 | NORTHING | 4928716 |
| ACCESS | BELLANGER SCALE ROAD | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|---------------------|-----------------------|--------|
| SURFACE AREA (m2) | 550 | | |
| AVERAGE DEPTH (m) | 0.6 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 21 | SUBDOMINANT SUBSTRATE | COBBLE |
| COMMENTS: | BELANGER SCALE ROAD | | |

AVAILABLE COVER:

- LARGE WOOD
- ROOTWAD
- DEEP POOL

Sand Roller Habitat Preferences:

- ROOTWAD
- LARGE WOOD

Native Fish Species Present:

| | | |
|---------------------|-----------|-------------------------|
| SAND ROLLERS | 21 | LARGESCALE SUCKERS |
| OREGON CHUB | | THREESPINE STICKLEBACKS |
| COTTIDS | 12 | CHISELMOUTH |
| REDSIDE SHINERS | 8 | LAMPREY |
| SPECKLED DACE | 4 | SALMONIDS |
| LONGNOSE DACE | | |
| N. PIKEMINNOW | 2 | |

Non-native Fish Species Present:

| | |
|-----------------|------------------|
| BLUEGILL | BULLHEADS |
| PUMPKINSEED | COMMON CARP |
| CRAPPIE | W. MOSQUITOFISH |
| LARGEMOUTH BASS | BANDED KILLIFISH |
| SMALLMOUTH BASS | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|------------------------------|----------|---------|
| SITE NAME | SOUTH SANTIAM RIVER 2 | MAP CODE | SSAN3 |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | SOUTH SANTIAM | EASTING | 508918 |
| DATE | 7/14/2005 | NORTHING | 4931410 |
| ACCESS | LEBANON BOAT RAMP | GEAR: | SEINE |

Habitat Characteristics:

| | | | |
|-----------------------|----------------------|-----------------------|--------|
| SURFACE AREA (m2) | 900 | | |
| AVERAGE DEPTH (m) | 0.5 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 18 | SUBDOMINANT SUBSTRATE | GRAVEL |
| COMMENTS: | BOAT RAMP IN LEBANON | | |
| AVAILABLE COVER: | | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

LARGE WOOD

Native Fish Species Present:

| | | | |
|---------------------|-----------|-------------------------|-----------|
| SAND ROLLERS | 1 | LARGESCALE SUCKERS | 2 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 28 |
| COTTIDS | 42 | CHISELMOUTH | |
| REDSIDE SHINERS | | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | | | |

Non-native Fish Species Present:

| | | | |
|-----------------|----------|------------------|--|
| BLUEGILL | 6 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | 2 | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|-------------------------------|----------|--------------------------|
| SITE NAME | SOUTH SANTIAM RIVER 1 | MAP CODE | SSR1A |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | SOUTH SANTIAM | EASTING | 506031 |
| DATE | 7/18/2005 | NORTHING | 4941804 |
| ACCESS | HIGHWAY 226, SANDERSON BRIDGE | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-----------------------------------|-----------------------|--------|
| SURFACE AREA (m2) | 4822 | | |
| AVERAGE DEPTH (m) | 0.7 | DOMINANT SUBSTRATE | GRAVEL |
| WATER TEMPERATURE (C) | 18.5 | SUBDOMINANT SUBSTRATE | SAND |
| COMMENTS: | SANDERMAN BRIDGE, HWY 226, SLOUGH | | |
| AVAILABLE COVER: | | | |
| | SUBMERGED VEGETATION | | |
| | LARGE WOOD | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | | | |
|---------------------|----|-------------------------|-----|
| SAND ROLLERS | | LARGESCALE SUCKERS | 25 |
| OREGON CHUB | | THREESPINE STICKLEBACKS | 317 |
| COTTIDS | 21 | CHISELMOUTH | |
| REDSIDE SHINERS | 5 | LAMPREY | |
| SPECKLED DACE | | SALMONIDS | |
| LONGNOSE DACE | | | |
| N. PIKEMINNOW | 42 | | |

Non-native Fish Species Present:

| | | | |
|-----------------|---|------------------|--|
| BLUEGILL | 1 | BULLHEADS | |
| PUMPKINSEED | | COMMON CARP | |
| CRAPPIE | | W. MOSQUITOFISH | |
| LARGEMOUTH BASS | | BANDED KILLIFISH | |
| SMALLMOUTH BASS | | | |

Other: CRAYFISH

Sand Roller Sampling Summary

| | | | |
|-----------|-----------------------|----------|--------------------------|
| SITE NAME | THOMAS CREEK | MAP CODE | THOMAS1 |
| BASIN | SANTIAM RIVER | ZONE: | 10T |
| SUBBASIN | SOUTH SANTIAM | EASTING | 507759 |
| DATE | 7/18/2005 | NORTHING | 4948117 |
| ACCESS | GILKEY COVERED BRIDGE | GEAR: | MINNOW TRAPS (OVERNIGHT) |

Habitat Characteristics:

| | | | |
|-----------------------|-----------------------|-----------------------|---------|
| SURFACE AREA (m2) | 2244 | | |
| AVERAGE DEPTH (m) | 1.8 | DOMINANT SUBSTRATE | SAND |
| WATER TEMPERATURE (C) | 23 | SUBDOMINANT SUBSTRATE | BOULDER |
| COMMENTS: | GILKEY COVERED BRIDGE | | |
| AVAILABLE COVER: | | | |
| | BOULDERS | | |
| | UNDERCUT BANKS | | |

Sand Roller Habitat Preferences:

Native Fish Species Present:

| | |
|-----------------|-------------------------|
| SAND ROLLERS | LARGESCALE SUCKERS |
| OREGON CHUB | THREESPINE STICKLEBACKS |
| COTTIDS | CHISELMOUTH |
| REDSIDE SHINERS | LAMPREY |
| SPECKLED DACE | SALMONIDS |
| LONGNOSE DACE | |
| N. PIKEMINNOW | |

Non-native Fish Species Present:

| | | |
|-----------------|----|------------------|
| BLUEGILL | 11 | BULLHEADS |
| PUMPKINSEED | | COMMON CARP |
| CRAPPIE | | W. MOSQUITOFISH |
| LARGEMOUTH BASS | | BANDED KILLIFISH |
| SMALLMOUTH BASS | | |

Other: CRAYFISH



**3406 Cherry Ave. NE
Salem, Oregon 97303**