

APPENDIX B8. LOCATION OF SPAWNING AND REARING HABITATS

1. INTRODUCTION

This appendix provides information on the location of spawning and rearing habitat for target fish species anticipated to potentially need passage at Watana Dam. The target species identified in Appendix B1 include Arctic grayling, burbot, Chinook salmon, Dolly Varden, humpback whitefish, longnose sucker, and round whitefish. With the exception of Chinook salmon, specific spawning locations for target species in the Susitna River basin and its tributaries are poorly understood. However, some generic information about the type of habitat utilized for spawning is available for the resident fish species. Similarly, there is some general information about juvenile and adult habitat utilization by the resident fish species. Some specific resident fish rearing location information is available from surveys investigating their distribution and relative abundance. Information provided in Appendix B7 (Fish Relative Abundance) also provides information on specific rearing locations where fish were collected.

2. ARCTIC GRAYLING

- Spawning
 - Spawning typically occurs in upper extents of clear, non-glacial tributaries soon after ice breakup, though spawning also documented near tributary mouths (Sundet and Wenger 1984).
- Adult Rearing
 - During the open water season, many adult grayling either remain within spawning tributaries or move to nearby tributaries to feed during summer (Delaney et al. 1981, Schmidt et al. 1983, Sundet and Pechek 1985). Use of tributary mouth, side slough and main channel habitats during the open water season was also documented.
 - Adults disperse from tributaries during early August through early October to winter holding habitats (Sundet and Wenger 1984, Sundet and Pechek 1985). Although winter use of mainstem habitat is poorly understood, some evidence main channel overwintering exists (Sundet 1986).
- Juvenile Rearing
 - Juveniles typically reside in natal tributaries for at least one year, though some age-0+ grayling were observed to move to tributary mouth habitats during late summer (Schmidt et al. 1983).

3. BURBOT

- Spawning
 - Burbot spawn from mid-January to early April. (Jennings et al. 1985)

- Specific locations of burbot spawning in the Middle and Upper River have not been identified (Jennings et al. 1985); however, some spawning is known to occur in the Middle River because larvae have been collected upstream of Talkeetna (Schmidt and Bingham 1983).
- Schmidt et al. (1983) and Sundet and Wenger (1984) suggested that tributary mouths, slough mouths, and mainstem areas with groundwater upwelling are likely burbot spawning habitat types. In the Susitna River burbot spawning likely occurs under ice-over conditions; however, areas with groundwater upwelling may be conducive to the development of open leads.
- Adult Rearing
 - Adult burbot rear in turbid mainstem water, avoid clearwater areas, and are widely distributed in the mainstem Susitna River (Schmidt and Bingham 1983)
- Juvenile Rearing
 - Little is known about the habitat utilization by burbot larvae in the Susitna River. However, during 1982 larvae were collected in silty, low velocity areas near the mouths of sloughs.

4. CHINOOK SALMON

- Spawning
 - Spawning occurs almost exclusively in tributary streams
 - During 1982 two Chinook redds were observed in the mixing zone downstream of the mouth of Cheechako Creek (ADF&G (1983)). This is the only observation of non-tributary spawning during the 1980s.
- Juvenile Rearing
 - Rearing primarily occurs in tributaries, tributary mouths, side channels, side sloughs, and upland sloughs (Figure B8-1).
 - Main channel habitat is used as a migratory corridor. The amount of extended rearing in the main channel, if any, is unknown.

5. DOLLY VARDEN

Schmidt et al (1983) and Sundet and Wegner (1984) suggested Dolly Varden primarily spawn and rear in the upper extents of tributary streams, but some rearing may occur at tributary mouths. Schmidt and Bingham (1983) suggested Dolly Varden move downstream in tributaries in the fall and upstream during the spring. Overwintering habitat for Dolly Varden is poorly understood for the Susitna River.

6. HUMPBACK WHITEFISH

Sundet and Wegner reported there are anadromous and resident stocks of humpback whitefish. Anadromous whitefish overwinter in the estuary. SunDET and Wegner (1984) also suggested humpback whitefish spawn in tributaries, but specific spawning locations were unknown. Adult humpback whitefish primarily rear at mouths of sloughs and tributaries and use the mainstem as a migration corridor (Jennings 1985).

7. LONGNOSE SUCKER

Based upon ADF&G reports from 1983 and 1984 (Schmidt et al. 1983, SunDET and Wenger 1984) Jennings (1985) summarized the following: *“In the Talkeetna-to-Devil Canyon reach (RM 98.6-152), longnose suckers are primarily associated with tributary and slough mouths, although the mainstem is also used throughout the open-water season. The major overwintering and juvenile rearing areas of this species are unknown. The mouths of Trapper Creek (RM 91.5) and Sunshine Creek and side channel (RM 85.7) are known spawning areas.”*

8. ROUND WHITEFISH

Based upon ADF&G reports from 1983 and 1984 (Schmidt et al. 1983, SunDET and Wenger 1984), Jennings (1985) summarized the following: *“Round whitefish were found in tributaries and sloughs more often than mainstem areas in 1982 and 1983. The mainstem is used for some spawning and juvenile rearing, and as a migrational corridor..... This species spawns in the mainstem and at tributary mouths in October. During 1981 through 1983, nine spawning areas were identified upstream of Talkeetna. Mainstem sites were: RM 100.8, 102.0, 102.6, 114.0, 142.0 and 147.0. Round white fish may also spawn in tributaries, such as Indian River and Portage Creek. Juvenile round whitefish rear mainly in the mainstem and sloughs. Slow velocities and turbid water are apparently preferred. Overwintering areas of round whitefish have not been identified.”*

9. REFERENCES

- ADF&G (Alaska Department of Fish and Game). 1983. Adult Anadromous Fish Investigations: May - October, 1982. Alaska Department of Fish and Game, Susitna Hydro Aquatic Studies, Anchorage, Alaska. 275 pp.
- Delaney, K., D. Crawford, L. Dugan, S. Hale, K. Kuntz, B. Marshall, J. Mauney, J. Quinn, K. Roth, P. Suchanek, R. Sundet, and M. Stratton. 1981. Resident fish investigation on the Upper Susitna River. Phase I Final Draft Report, Alaska Department of Fish and Game Susitna Hydro Aquatic Studies. Prepared for Alaska Power Authority, Anchorage, Alaska. 157 pp. APA Document # 316.
- Dugan, L.J., D.A. Sterritt, and M.E. Stratton. 1984. The Distribution and Relative Abundance of Juvenile Salmon in the Susitna River Drainage above the Chulitna River Confluence. In: Schmidt, D., S.S. Hale, D.L. Crawford, and P.M. Suchanek. (eds.) Part 2 of Resident and Juvenile Anadromous Fish Investigations (May - October 1983). Prepared by Alaska Department of Fish and Game. Prepared for Alaska Power Authority, Anchorage, AK. 59 pp.
- Jennings, T.R. 1985. Fish Resources and Habitats in the Middle Susitna River. Woodward-Clyde Consultants and Entrix. Final Report to Alaska Power Authority. 175 pp.
- Schmidt, D., and A. Bingham. 1983. Synopsis of the 1982 Aquatic Studies and Analysis of Fish and Habitat Relationships. Alaska Department of Fish and Game, Susitna Hydro Aquatic Studies, Anchorage, Alaska. 185 pp.
- Schmidt, D., S. Hale, D. Crawford, and P. Suchanek. 1983. Resident and Juvenile Anadromous Fish Studies on the Susitna River Below Devil Canyon, 1982. Prepared by Alaska Department of Fish and Game for the Alaska Power Authority. 303 pp.
- Sundet, R.L., and M.N. Wenger. 1984. Resident Fish Distribution and Population Dynamics in the Susitna River Below Devil Canyon. Part 5 In: Schmidt, D.C., S.S. Hale, and D.L. Crawford. (eds.) Resident and Juvenile Anadromous Fish Investigations (May - October 1983). Prepared by Alaska Department of Fish and Game. Prepared for Alaska Power Authority, Anchorage, AK. 98 pp.
- Sundet, R. L., and S. D. Pechek. 1985. Resident fish distribution and life history in the Susitna River below Devil Canyon. Part 3 (97 pages) in Schmidt, D. C., S. S. Hale, and D. L. Crawford, eds., Resident and juvenile anadromous fish investigations (May - October 1984). Report No. 7, Alaska Department of Fish and Game Susitna Hydro Aquatic Studies. Prepared for Alaska Power Authority, Anchorage, Alaska. APA Document # 2837.
- Sundet, R. L. 1986. Winter resident fish distribution and habitat studies conducted in the Susitna River below Devil Canyon, 1984-1985. Report No. 11, Part 1, Alaska Department of Fish and Game Susitna Hydro Aquatic Studies. Prepared for Alaska Power Authority, Anchorage, Alaska. 80 pp. APA Document # 3062.

10. FIGURES

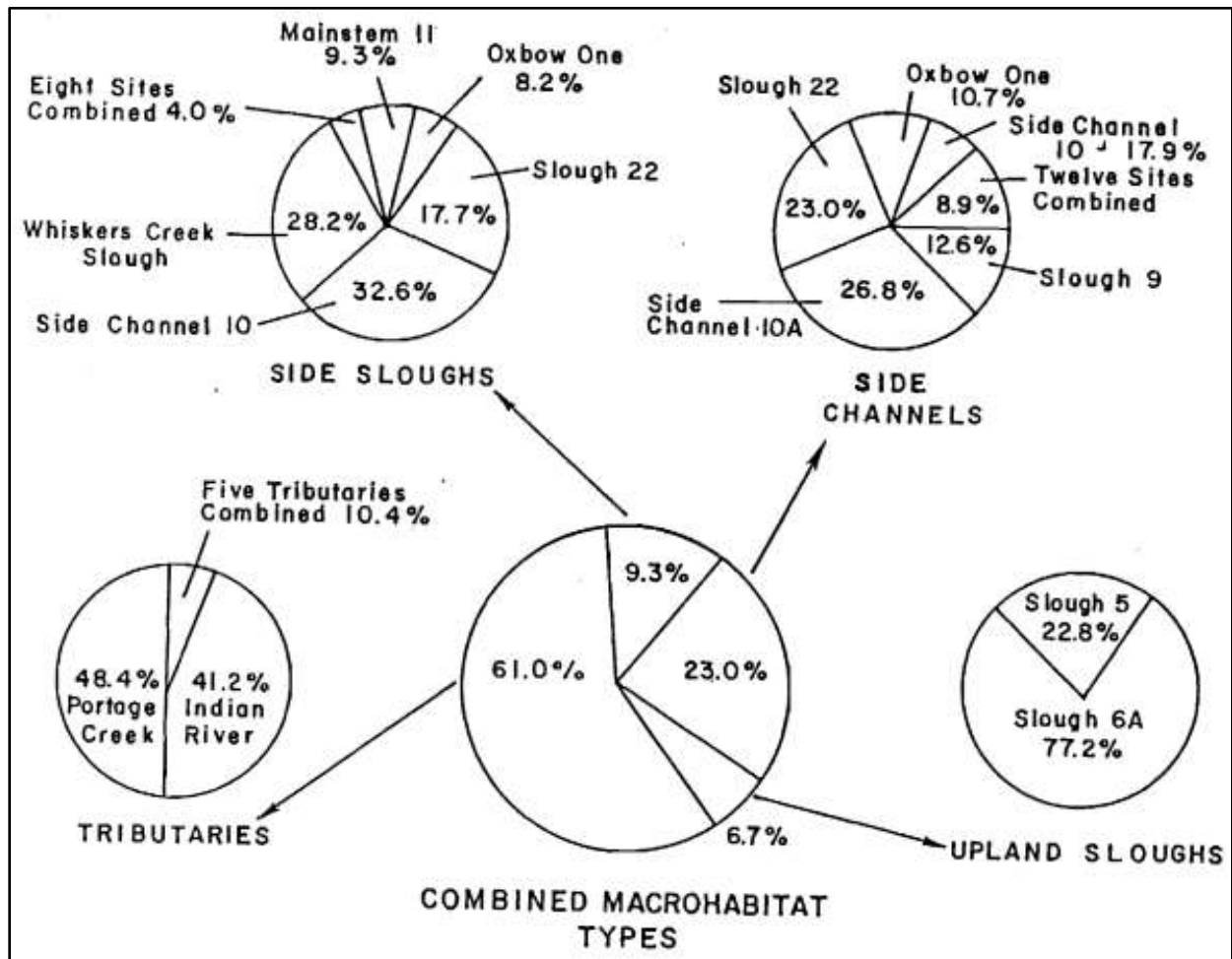


Figure B8-1. Density distribution and juvenile Chinook salmon by macrohabitat type on the Susitna River between the Chulitna River confluence and Devils Canyon, May through November 1983. Percentages are based on mean catch per cell. Source: Dugan et al. (1984).