Sound portion of this ESU are estimated primarily by spawner surveys conducted by WDFW in index reaches of selected streams (PFMC 1990). Only three rivers have long-term (extending back to the 1930's or 1940's) escapement data from which to estimate trends. Long-term trap counts at Baker River and White River generally showed declining trends in the 1960's and 1970's, with some evidence of recovery in the 1980s. The number of adults passed above the hatchery racks on the Samish River showed neither increasing nor decreasing trends over a 55-year period. More recent spawner survey data are available for numerous rivers within the range of this ESU, but no reliable breakdown of natural and hatchery production is available for these data. Of the stocks examined for this review, two stocks had significant downward trends, five had significant upward trends, and the remainder had no significant trend.

Ocean exploitation rates on wild coho from the Deschutes River, Snohomish River, and Big Beef Creek declined from the late 1970s through the mid-1980s and have increased since then, but have remained in the range of 0.3 to 0.5. Total exploitation rates have shown no apparent trend, but have fluctuated in the range of 0.6 to 0.9. The average hatchery contribution rate for stocks monitored and reported by the PFMC for the period 1981 to 1992 has been 62 percent, with Nooksack/Samish and South Puget Sound stock complexes managed for, and clearly dominated by, hatchery production.

Bledsoe et al. (1989) examined changes in run sizes of Puget Sound salmon since 1896. They failed to find a statistically significant general decline in run sizes for wild runs of coho salmon in this period, although they did report a dramatic 85-percent decline of coho salmon terminal runs in the south sound from 1935 to 1975, which they attribute at least in part to increasing catch in non-terminal fisheries. Overall catch of coho salmon in Puget Sound fisheries shows a substantial decline from 1896 to the early 1940s, but this is largely attributed to the prohibition of fishing for this species with purse seines and fish traps starting in 1935. Overall catch within Puget Sound has increased gradually since that time, but has not returned to earlier levels, possibly as a result of greater interceptions of coho salmon in ocean fisheries (Bledsoe et al. 1989). Of further note is the fact that between 1972 and 1993, the average size of fish in the terminal landings has undergone a sharp decline from an average of about 4 kg to about 2 kg. This dramatic decline in average fish size, which could result from any of several causes, could seriously reduce the fecundity and fitness of naturally-reproducing fish.

The range of the ESU that includes Puget Sound coho salmon extends into southern British Columbia, for which NMFS has not received detailed abundance information. Northcote and Atagi (in preparation) have reviewed abundance trends for all salmon species in various regions of British Columbia. Two of their regions include fish that are part of this ESU. Coho salmon have shown both historical (1800's to 1953–92 average) and recent (1953 to 1992) declines both on Vancouver Island and along the south-central British Columbia coast (excluding the Fraser River). In both areas, the historical decline was roughly two-fold. On Vancouver Island, coho salmon escapements have recently declined from more than 300,000 in the mid-1950's to about 150,000 at present. Along the south-central coast, escapement declines in the same period have been more dramatic, from about 500,000 in the mid-1950's to less than 100,000 at present. This is a much more severe decline than the trends documented in the U.S. portion of the ESU. Northcote and Atagi did not address levels of hatchery production for British Columbia coho salmon. However, there has been a substantial increase in coho salmon releases from British Columbia hatcheries since 1975 (Hilborn and Winton 1993).

The stock assessment by Nehlsen et al. (1991) identified three coho salmon stocks in this region as at high risk of extinction, and one (Nooksack River) to be possibly extinct. The assessment by WDF et al. considered stocks in this region to range from healthy to critical in status, predominantly of mixed origin, and predominantly of composite production. None of the stocks in this region that they identify as healthy were of strictly native origin. Two stocks (Deer Creek and Sumas/Chilliwack) were identified as of native origin with wild production, but of unknown status.

Systematic assessments of fish habitat conditions have not been routinely conducted within Washington state. Hence it is difficult to directly assess general trends in habitat conditions, either throughout the state or within individual regions or watersheds. However, some general relationships between land use and habitat changes have been well documented. Salmon production is strongly tied to freshwater habitat conditions, which continue to be destroyed or degraded in Puget Sound.

Human population growth is probably the best overall measure of disturbance to freshwater salmonid ecosystems, because accompanying land use changes can adversely affect freshwater and marine habitats in a variety of ways; examples include reduced infiltration of water into the soil due to increases in impervious surfaces and loss of forest habitats, simplification of stream channel structure, changes in flow patterns, water quality degradation, loss of stream bank cover, loss of wetland habitats, dissociation of wetlands from stream channels, and loss of gravel sources due to bank stabilization. These changes affect all anadromous salmonids, but have particularly severe impacts on coho salmon. The population of Washington state has grown from about 1 million in 1910 to over 5 million today, and is expected to reach 7 million by 2020, with over 70 percent of this total residing in western Washington. Population densities have increased from 1.1 people/mi^2 for the entire state in 1880 to 725, 496, and 232 people/mi^2 in King, Kitsap and Snohomish Counties, respectively, in 1990. The counties encompassing the Snohomish, Stillaguamish, Skagit and Hood Canal systems have some of the highest growth rates and population densities statewide, and land use changes in those systems have drastically altered historic habitat conditions.

The areal extent of estuarine wetlands in Puget Sound is one of the few habitat characteristics for which there are historical records that can be compared to results of current surveys. During the last century, the Snohomish, Stillaguamish, and Skagit Rivers have lost 75 to 90 percent of their delta wetlands, and substantial losses (34 percent of wetlands) have also occurred in the relatively rural Skokomish River delta. The loss of freshwater wetlands, which may be even more critical to juvenile coho salmon, has not been quantified, but is extensive and continues at present.

Timber harvest and associated road building can adversely affect fish habitat in a number of ways, including disturbance of forest soils and increased erosion, more frequent landslides and debris torrents. Past logging practices have removed riparian vegetation, which increases stream temperatures and decreases the amount of large, woody debris in streams, a critical component of coho salmon habitat. The volume of timber harvest in Washington increased from approximately 3.5 billion board feet per year in the 1950's to about 5.5 billion board feet per year during much of the 1970's and 1980's. The vast majority of timberlands in Puget Sound have been logged at least once, and many areas have experienced