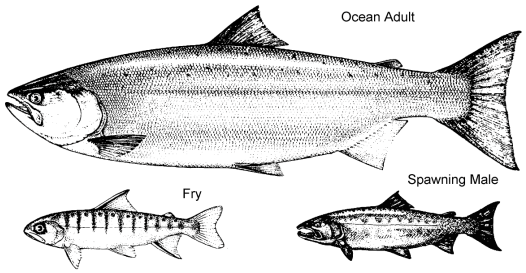

West Coast Vancouver Island Coho Salmon

Background

Coho salmon originate in streams around the north Pacific Ocean, from California and the Sea of Japan north to the Bering Strait. On the west coast of Vancouver Island (WCVI), young coho rear in streams and lakes for one and sometimes two years. Migrating to sea in the spring, some males ("jacks") will mature and return to their birthplace to spawn in the fall of the same year. The rest continue to grow rapidly, feeding on a variety of prey, usually within 1,000 km of their home stream. They return the following fall to spawn, and then die.

There may be as many as 700 distinct WCVI coho populations, most of which are located in Statistical Areas 24 to 27. Of the 200 or so populations with reported escapement, half have spawner estimates averaging fewer than 85. Only the Somass (Area 23) and San Juan (Area 17) rivers have more than 5,000 spawners, on average. Through analysis of catch and fishery harvest rate data, the total escapement of wild WCVI coho has been estimated at 70,000 to 270,000 in the 1988-94 period, with a median escapement of 180,000.

The marine survival rates of WCVI coho have generally declined to about 40 % of what they were 20 years ago. The decline was punctuated by the extremely poor survival rate of the coho that went to sea in 1993 and returned to spawn in 1994.

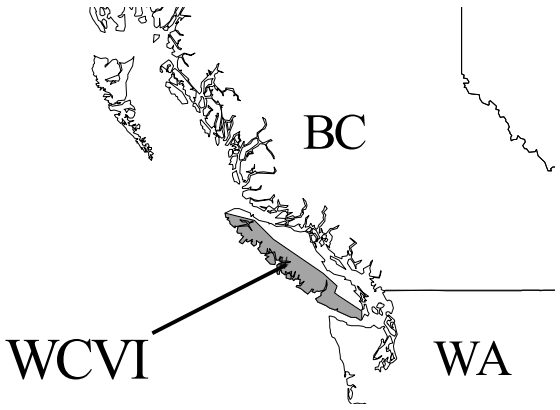

Figure 1: **West Coast of Vancouver Island (WCVI), B.C. For the purpose of this assessment the WCVI includes the area from Sooke in the south (Area 20) to Cape Scott at the north end of Vancouver Island (Area 27).**

The median annual catch of WCVI coho populations was estimated to be 464,000 between 1988 and 1994. Three major hatcheries – Nitinat River (Area 22), Robertson Creek (Area 23) and Conuma River (Area 25) – produced about 9.4 % of the total. Almost all of the catch was taken in the WCVI region by commercial troll fisheries, with recreational and aboriginal fisheries taking smaller shares.

Summary

- Marine survival of WCVI coho in 1998, as indicated by the Robertson Creek Hatchery stock, remained below the long-term average.
- Most streams showed dramatic increases in escapement during 1998, likely due to severe fishing restrictions.

The Fishery

The WCVI commercial troll fishery was the largest harvester of coho salmon in British Columbia, averaging 1.65 million salmon from 1985 to 1994. The fishery has been managed to a catch ceiling under the Pacific Salmon Treaty since 1985: 1.75 million in 1985 and 1986; 1.8

million from 1987 to 1992; 1.7 million in 1993; 1.2 million in 1995 and 1 million in 1996 (there was no ceiling in 1994). The fishery was managed by statistical strategy that called for area closures or openings if catches during the season fell below a green-line level or exceeded a red-line level.

In 1997, due to conservation concerns, there were no directed coho fisheries. Coho were caught during the WCVI chinook troll fishery, and after one week of fishing, coho encounters reached unacceptable levels and the chinook fishery was terminated as well.

In order to protect depressed coho stocks in 1998, especially those from the upper Skeena and Thompson River, two measures were taken. No directed commercial fisheries were allowed on coho salmon, while other fisheries known to intercept coho were subjected to new geographical restrictions. Under the scheme, Pacific Region waters were divided into yellow and red zones. Only in the yellow areas, where past coded-wire tag recoveries indicated depressed stocks were not prevalent, was commercial fishing for other species allowed. For WCVI, these areas included the inshore waters of Alberni Inlet and Clayoquot Sound to Quatsino Sound for the entire year, and inshore waters of Victoria to Barkley Sound and offshore waters of Barkley Sound to Quatsino Sound from October to May. These fisheries were required to release any live coho that were caught during operations.

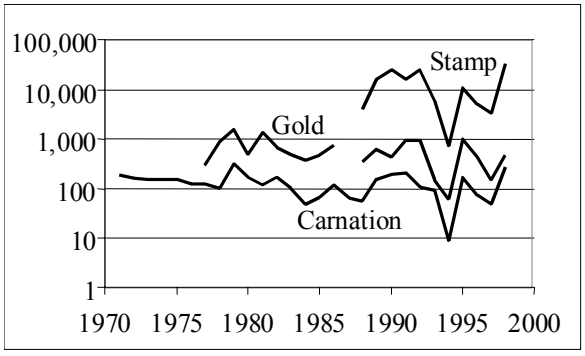

Figure 2: Escapements of adult coho to the Stamp River, Gold River and Carnation Creek, 1971 to 1998

No fishing was allowed in red zones, areas in which Thompson River coho were known to be prevalent. Red zones included inshore waters of Victoria to Barkley Sound and offshore waters of Barkley Sound to Quatsino Sound, from June to September. Rules governing fishing in the red and yellow zones have been maintained for the 1999 season.

In addition, recreational fishers were not allowed to retain coho in 1998. In yellow zones, fishing was permitted for other species with length and limit restrictions. In red zones, recreational fishing was not allowed, except for inshore areas as described by the fishing regulations, again with length and limit restrictions

One exception to the non-retention of coho occurred in 1998. A large return of coho enabled a sport fishery to catch coho in the non-tidal portion of the Stamp River during the fall. Catch was highly variable, with good catches of more than 10 fish a day obtained below Stamp Falls in late September and early October.

Resource Status

Assessments of WCVI coho populations are based on information from a set of indicator stocks (Fig. 2). Carnation Creek, located near Bamfield, is the primary source of information on wild stocks. The best escapement data other than those from Carnation Creek come from an annual census of coho on the Gold River and fishway counts at Stamp Falls in the Somass River system. The only place where tagging allows measurement of exploitation rate (Fig. 3) and marine survival (Fig. 4) is the Robertson Creek Hatchery on the Somass River system. Catch distributions are also monitored at the Conuma River and Nitinat River hatcheries. Starting in 1995, annual fry and adult salmon surveys (Fig. 5) have been conducted on 30 to 40 WCVI streams in order to compare abundance in non-indicator systems.

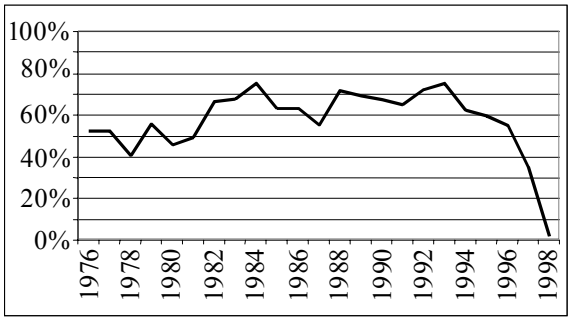

Figure 3: **Exploitation rate (proportion of returning adult coho caught by fisheries) of Robertson Creek Hatchery (on Somass system) coho, 1976 to 1998.**

Escapements to Carnation Creek and Gold River have varied but no consistent trend has been observed since monitoring began in 1971. Based on these indicators, the long-term exploitation rate of 65 to 70 % measured at Robertson Creek Hatchery has not been excessive in the last 25 years. There has been a marked decline in marine survival over this period. The low marine survival of Carnation Creek coho and subsequent low escapement levels have been compensated by higher freshwater survivals. This may be a general WCVI phenomenon that has allowed these stocks to remain relatively healthy.

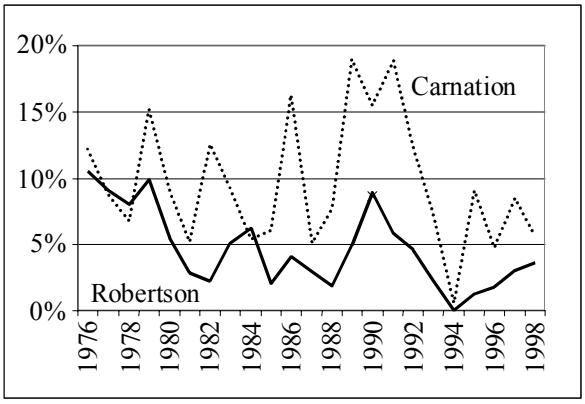

Figure 4: **Estimated marine survival at Robertson Creek Hatchery and Carnation Creek.**

Coho escapements for WCVI rivers rose dramatically in 1998. In some cases, record high escapements were seen, double or triple the 1995-97 average escapements.

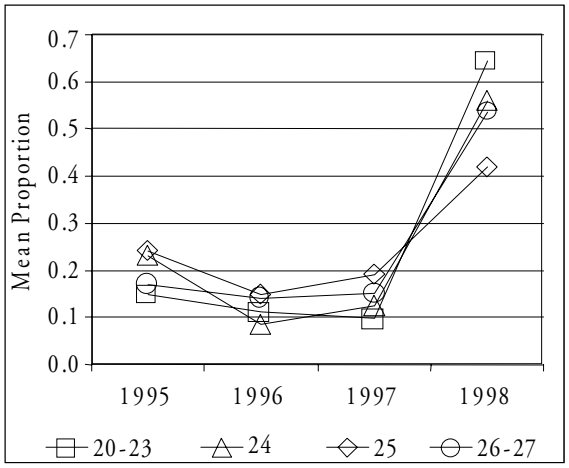

Figure 5: **Estimates of coho escapements, by Area, to streams surveyed by snorkel method, 1995 to 1998. Each year's escapement to a stream was expressed as the proportion it represented of the four year total escapement to the stream. Proportions were averaged by year over all streams in the Area.**

Outlook

Fishing restrictions that began in 1998 have resulted in more coho reaching WCVI rivers to spawn. However, the impact of the new rules cannot be assessed until the 1999 fry surveys are completed and analyzed.

Although not considered depressed compared with coho in other areas, WCVI coho stocks must be closely monitored during poor marine survival periods to ensure that sufficient numbers reach the spawning grounds. New forecasting methods are under development to predict subsequent adult returns. The survival in 1999 is expected to be slightly lower than in 1997 and 1998. The forecast abundance of coho from the WCVI in 1999 is 450,000, although this estimate is uncertain.

Management Considerations

Since marine survival remains poor for this and particularly other coho stock assemblages present in the WCVI area, fishing restrictions are likely to continue.

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