

## Curriculum Vitae

James Douglas Cave

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November 2010

### Career Goal

My career goal, with the Pacific Salmon Commission, is to supervise, and continue to work with, a team that has excelled in the international management of Fraser River sockeye and pink salmon.

### Education

Simon Fraser University, Burnaby, B.C.

**MSc. Biology**, April, 1988.

**Masters Thesis:** The contribution of environment and heredity to differences in freshwater growth between Birkenhead River and Weaver Creek sockeye salmon (*Oncorhynchus nerka*).

University of British Columbia, Vancouver, B.C.

Graduate Courses in Fisheries and Ichthyology. 1979-1981:

University of British Columbia, Vancouver, B.C.

**BSc. Marine Biology**. April, 1978.

**Honours Thesis:** The seasonal and diel variation and the zonal distribution of the newston in Bamfield Inlet.

### Relevant Employment History

**1988-Present, Head, Stock Monitoring, Pacific Salmon Commission:**

**Note** that I am eligible for retirement, December 31, 2011. Although I am currently uncertain as to when I will retire, I am focusing my attention towards ensuring that my work on reconstruction methods, run-size analysis, analysis of test fishing and abundance information and other quantitative methods are well understood by other members of the Staff for the purpose of succession planning.

#### **Duties and Responsibilities:**

Under the general direction of the Chief of the Fisheries Management Division, I am responsible for the administration of the Stock Monitoring program. This

includes the overall supervision and budget process for the Test Fishing Program, the Hydroacoustic Program, and the Hells Gate Observation Program. The staff includes one Research Scientist (RES-3) 2 permanent biologists (Bi-3 and B-2) two Hydroacoustics Technicians (EG-5, EG-3), 18+ seasonal field workers and 12+ test fishermen. The Test Fishing Program involves the collection and analysis of catch-per-unit-effort (CPUE) and biological data, and the computation of catchability ( $q$ ), to index the abundance of Fraser River sockeye and pink salmon stocks. The Hydroacoustic Program involves the estimation of daily passage of sockeye and pink salmon stocks at Mission, B.C. The Hells Gate Program involves index counts of salmon passing Hells Gate, B.C.

My analytical duties include the analysis of fishery harvest rate and effort data and the reconstruction of daily abundance of Fraser sockeye and pink salmon in the fishery management areas surrounding Vancouver Island and northern Puget Sound. During the pre-season planning process, the Pre-season Planning Model, which I developed, is used to develop fishing plans to achieve harvest and conservation goals of Fraser River sockeye and pink salmon. The results of the model enable the Parties to focus on the sometimes-conflicting goals of fisheries management. During the in-season management period I am responsible for the reconstruction of the daily abundance of migrating salmon using data which includes commercial catches, test fishing CPUE, Johnstone Strait diversion and estimates of daily passage at Mission. I have developed a time-density model (cumulative normal model) to estimate the run-size of salmon stocks from cumulative reconstructed abundance. My in-season duties also include providing advice and recommendations to the Chief of the Fisheries Management Division concerning run-size of salmon stocks and fishing regulations.

I initially worked on the application of Bayesian methods to run-size estimation in 1988 with Ray Hilborn and continued this work with Carl Walters and Bill Gazey. I view Bayesian methods to be integral to the future direction of fisheries management and I continue this work with Dr. Catherine Michielsens, an acknowledged world expert in these methods.

Since 1986, I have participated in numerous meetings with the Fraser River Panel and Fraser River Panel Technical Committee. As required, I have made written and oral presentations to the Fraser River Panel and the Fraser River Panel Technical committee.

#### **1986-1987, Project Biologist, Pacific Salmon Commission:**

Reporting to the Chief of the Fisheries Management Division, I was responsible for the administration of the Test Fishing Program, the duties of which are outlined above. Other duties included analysis of fishery data for assessment of run-size and fishery planning.

#### **1981-1985, Project Biologist, International Pacific Salmon Fisheries Commission:**

Reporting to the Chief, Management Division, I was responsible for various work, including the administration of the Test Fishing Program, the duties of which are outlined above, and the Unreported Landings Program. The purpose of the unreported landing program was to estimate landings of sockeye and pink salmon that were not recorded on fish-slips. From 1983-1985 I developed the prototype versions of the fishery planning model and the time-density run-size model (cumulative normal) currently in use. In addition, I supervised the spawning ground enumeration of sockeye in the Birkenhead River.

**1978-1980, Field Assistant, International Pacific Salmon Fisheries Commission:**

I participated in fieldwork in test fishing, port sampling and spawning ground enumeration. In 1980, I was a field supervisor and participated in office work.

**Other Employment History:**

During university (1975-1978) I worked as an aquarist with the Vancouver Public Aquarium, and gained considerable knowledge on the identification of the marine fishes of British Columbia. In May-June, 1978, I was a teaching assistant for the Fish Biology course with J.D. McPhail at Bamfield Marine Station. In January-March, 1979, I worked with the Groundfish Program (hydroacoustics) at Department of Fisheries and Oceans, Nanaimo Biological Station.

**Publications**

Cave, J.D., and W.J. Gazey. 1994. A preseason simulation model for fisheries on Fraser River sockeye salmon (*Oncorhynchus nerka*). Can. J. Fish. Aquat. Sci., 51: 1535-1549.

Pacific Salmon Commission (PSC). 1995. Pacific Salmon Commission run-size estimation procedures: an analysis of the 1994 shortfall in escapement of late-run Fraser Sockeye salmon. Technical Report No. 6. PSC. 179p.  
(Contributing author)

