



### **Fluctuations in the catch of King George Whiting**

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Catches of King George whiting were plentiful in Victorian bays and inlets around 1974 and again in the late 1990s, yet now the catches are much lower. A MAFRI research team has been looking at these variations in catches of King George whiting over the past 40 years. The research was aimed at finding out how much of this variation was due to the environment and whether we could use environmental variables to predict whiting numbers in the future.

One of the clues to the fluctuating numbers of King George whiting was their remarkable life history. For their first three to five months, the tiny fish are at the mercy of the currents and the winds, drifting from their spawning grounds in Bass Strait into Victoria's bays and inlets. The whiting remain in protected seagrass beds for 2-3 years and by the age of about 5 years, they make their way back to their spawning grounds in Bass Strait where they stay for the rest of their adult lives. What became obvious to the research team was that yearly variations in current patterns in Bass Strait could have significant effects on the number of larval fish arriving in the bays and inlets.

Historical catches of King George whiting were compared with 30 years of computer modelled predictions of Bass Strait currents and other climate data such as rainfall, sea surface temperatures, and the warm water (El Niño) and cool water (La Niña) southern oscillation cycles. The research showed that in years with strong westerly winds, there were good catches of large whiting three to five years later. Strong westerly winds would bring in more nutrients from the southern ocean, providing a rich food supply to feed the larval fish.

There were strong westerlies in 1994 and 1995, resulting in the catch of large number of larval fish in the bays and inlets. This corresponded to some of the best recreational and commercial catches of whiting ever recorded in the period 1997 to 1999. In contrast, numbers of larval fish settling in the bays and inlets were very low in 1998 and 1999, and the prediction of a decline in the catch in 2001 is beginning to come true.

Another interesting relationship found was that between the ocean warming cycle (La Niña) and the whiting catch. Research showed that La Niña years led to increased catches about one year later, suggesting that this climate variation was affecting juvenile fish that were soon to reach legal size. A possible explanation was that the increased rainfall of a La Niña year introduces more nutrients into the bays that stimulate more food production of the worms and shellfish that are eaten by the juvenile whiting.

A study of aerial photographs from the past 50 years was also undertaken to see whether the amount of seagrass in Port Phillip Bay had changed over that period and whether this could have had an affect on the whiting catches. For the sites investigated, the seagrass had either remained steady or had increased over time. This, said Greg Jenkins, could also be partially responsible for bigger whiting catches in the bay.

The research showed that fluctuations in the catch of King George whiting could be largely attributed to environmental conditions rather than as a result of fishing pressure. Armed with this information, fisheries managers could now make predictions of catch up to five years in advance. Last year, MAFRI found large numbers of young whiting entering the bays and inlets, so with all else being equal, 2002 and 2003 should see whiting numbers increase.