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# Predicting King George Whiting Catches in Victorian Bays and Inlets

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*The results of 10 years of DPI research are showing that monitoring of the settlement and survival of small juvenile King George whiting can be used to predict the strength of future fisheries for this species in some Victorian bays and inlets.*

Catches of King George whiting in Victoria's bay and inlet fisheries vary from year to year, reflecting natural variation in the supply of larval fish from open coastal spawning areas and in the numbers of small juvenile fish that settle into and survive in bay and inlet nursery habitats.

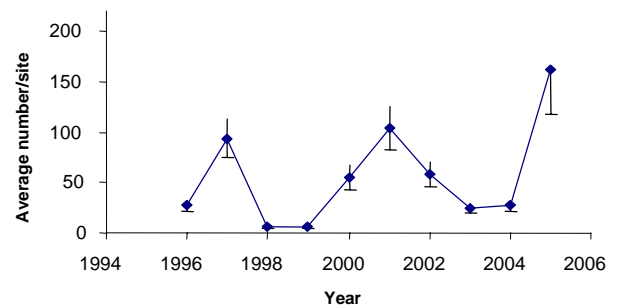
The King George whiting fishery in Port Phillip Bay is largely based on immature fish, which first enter the Bay and settle into seagrass beds when the fish are about 2 cm long (see photo below).



Monitoring the arrival and settlement of King George whiting into Port Phillip Bay seagrass nursery habitats is undertaken each year between August and November.

Fisheries scientists from Department of Primary Industries (DPI), funded by Fisheries Victoria, count the number of newly settled King George whiting in eight sites around Port Phillip Bay at Grassy Point, Blairgowrie, Rosebud, Ricketts Point, Altona, Kirk Point, Eastern Beach (Geelong) and Grand Scenic (Point Henry).

### King George whiting recruitment in Port Phillip Bay.



In 2005, the number of small juvenile whiting settling in the Bay was the strongest recorded since monitoring began in the mid 1990s (see graph above).

This is good news for keen King George whiting fishers and devotees of this sought-after table fish, who can expect catches of King George whiting to peak in Port Phillip Bay in two to three years time.

The abundance of King George whiting fluctuates from year to year. Catches of King George whiting were plentiful in Victorian bays and inlets in the late 1980s and again in the late 1990s, yet now the catches are much lower than these peaks.

The reasons for these fluctuations can be found in the remarkable life history of King George whiting.

For the first three to five months of their lives, whiting larvae are at the mercy of currents and winds, drifting from their open coastal spawning grounds west of Cape Otway into Victoria's large central coast bays and inlets. Yearly variations in these westerly current and wind patterns have major effects on the number of small juvenile King George whiting arriving to settle in Port Phillip Bay and Western Port bay.

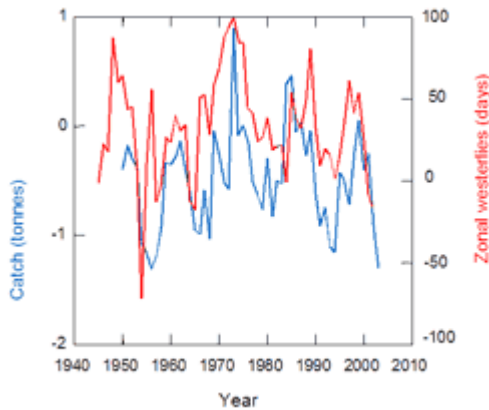
Historical records indicate that catches from commercial bay and inlet King George whiting fisheries appear to fluctuate on about an 8 to 12 year cycle. These cyclic



## Predicting of King George Whiting Catches in Victorian Bays and Inlets.

catch fluctuations seem to match closely with cycles in the strength of westerly winds over Victoria, except that there is a lag of several years between the wind cycle and the catch trends. This suggests that the wind cycle is influencing the number of very young whiting arriving to settle in Victoria's central coast bays, which subsequently affects catches a few years later.

### Graph showing the link between westerly winds and King George whiting catch.



Overall it seems that years of strong westerly winds coincide with more larvae arriving in Port Phillip Bay. This could be a result of stronger wind driven currents transporting whiting larvae into Bass Strait, or possibly higher survival of larvae in Bass Strait due to increased water temperature or food.

Interestingly, the strength of the King George whiting fishery cannot be predicted in all Victorian bays and inlets from the settlement of small juvenile fish.

DPI researchers have been sampling King George whiting recruitment at six sites located in Corner Inlet/Nooramunga for the last four years. They found virtually no newly settled whiting in the 2005 survey, or for any of the previous three annual surveys.

These results suggest that the numbers of small juvenile King George whiting settling in Corner Inlet are extremely low when compared with that in Port Phillip Bay. It seems increasingly likely that older juveniles, either from the nursery areas of Port Phillip Bay and Western Port bay or from elsewhere in Bass Strait, are migrating into Corner Inlet and this migration is sustaining the King George whiting fishery in Corner Inlet.

Also influencing the numbers of whiting that survive and grow large enough to enter bay and inlet fisheries is the availability of nursery habitat.

Seagrass is very important in providing both food (the small crustaceans living in the seagrass) and protection from predators for juvenile King George whiting.

Aerial mapping of seagrass in Port Phillip Bay shows a long-term increase in seagrass in the Bay from the 1950s to the end of the 1990s, matching the trend in the commercial whiting catch.

Recent mapping in Port Phillip Bay has shown a decline in seagrass since about 2000 (probably part of a natural cycle). Researchers are interested to see whether this will have any impact on the whiting catch over the next few years.

In Western Port bay, the same 8-12 year cyclic fluctuations in commercial whiting catches have been observed, but the long-term upward trend in catches since the 1940s stopped in the mid 70s and has since been declining. The mid to late 70s is the period when there was a major loss of seagrass in Western Port bay. Interestingly, in recent years, there is evidence of some return of seagrass in Western Port bay, which may partly explain the reports of improved whiting fishing from that bay at the present time.

Being able to forecast strong or weak year classes entering the fisheries is vital to ensure sustainable fishery management through adapting management arrangements to suit the circumstances.

### Further Information

For more information about this project, please contact Greg Jenkins at DPI Queenscliff Centre on (03) 5258 0333.

Fisheries Research and Education Notes are available on the web at the following address: [www.dpi.vic.gov.au](http://www.dpi.vic.gov.au) Follow the prompts to Fishing and Aquaculture and then to Publications and Fisheries Notes. The notes are listed under the heading Research and Education.

*The previous version of this Information note was published in August 2006.*

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