

PETER HICKS LECTURE 2007

Peter Hicks on Climate Change and how it may affect the Peel Region (Notes by Judy Trembath)

Peter began by paying tribute to Professor Stephen Hopper who gave such a brilliant lecture in Mandurah last September on Biodiversity and said he would be using some of his data in this lecture. Peel Harvey Catchment, stretching from Narrogin to the coast, contained the internationally recognised one of 25 hot spots for its biodiversity. The acronym OCBIL (old climatically buffered landscape) he used to describe our and YODFLS to describe wetlands.

The southwest fauna and flora consists of 7000 species of vascular plants, 3000 of which are endemic. Many of these have been discovered in the last few years. We are in a unique and vulnerable environment.

In the last 400,000 years we have had 4 ice ages and in the past 200 years Temperatures and CO₂ have increased and this together with methane and other gasses have led to an increase in greenhouse effect. Australia produces 30 tons (Greenhouse gasses) per person, one of the highest in the world, the world average being 2 tons. Australia because of a small population contributes 1.5 % of annual global Greenhouse Gas, CO₂

Climate change is inevitable, we can expect T to increase by 5 degrees if we can't reduce greenhouse gasses. Biodiversity research is needed now, the DOE Report is based on 10 years old research data. By the end of the century there will be biodiversity loss, woodland decline, increased salinity, more introduced weeds, less fresh water and the seasons will have altered. Highly mobile species may dominate. It is predicted that rainfall will continue to decrease by 20-30% and that by 2030 run-off could cease. In the last 25 years there has been an annual decline in rainfall with more summer rain and less winter, autumn and spring rainfall.

By the year 3000 we can expect biodiversity and ecosystem loss, woodland decline, increased salinity, more introduced weeds, less fresh water, seasons will alter, and highly mobile species may dominate. In the Peel Harvey Catchment he gave temperature and rainfall data lists of Mandurah, Narrogin, Dwellingup. There has been a .8% increase in T since 1900, Mandurah consistent with that trend. Rainfall shows great variability with an annual decline in the last 25 years with more summer rain but less in autumn, winter and spring. In the Peel/Harvey it is predicted a decrease of 20-30%, which could mean that run-off could cease. There is a need for research and management of run-off from scarp.

He then spoke of the DSS (Decision Support System). To assess Biodiversity change including vegetation trends. An example is Tuart decline where Edwards is doing a PHD in Tuart decline, studying 46 sites Busselton to Yanchep. Boreholes north of Mandurah since 1977 show no great change but in the south water-tables in Yalgorup have declined. In the Peel/Harvey there is a decline in vegetation condition which includes Tuart, Wandoo and Rudis. A desktop study shows an 85% decline in remnant vegetation in Peel Harvey Catchment.

Sea Level Rise: worst case scenario is a 7 metre rise. From 1900-2000 an increase of 20cms in sea level. By 2100 expected increase of .09 to .88 metre relative to 1990, and the PH of the seawater has also risen. Every decade we can expect 2-3 cm sea level rise. Bruun (1962) calculates the shoreline loss due to sea level rise as 1 centimetre increase in sea-level results in 1 metre loss of shoreline. An example of what might happen is at Swanbourne Beach where the beach has receded 40 metres in 50 years. What can be expected is double the water entering the estuary through the Dawesville Cut, the effects will be non linear but we can expect more intense storm events and greater frequency, that is 1-100 to become 1-17 years.