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THE VALUE OF OLD PHOTOGRAPHS

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IN a recent *Wildlife Notes*, Penny Hussey provided a very useful guide to photography as a method for recording changes in vegetation. To illustrate how effective the technique can be, she reproduced some 'then and now' photographs showing changes over time. Understandably, her article focussed on how to set up photo-points that will give you useful base lines from which you (or others after you) can monitor the results of your land management. However, the photos illustrated another point. Your old snap shots could be vital clues to better environmental management. Even those old pictures of somewhere far away that you took on holiday when the kids were still kids. Here's an example.

In 1960, when work started on the Ord River diversion dam near present day Kununurra, environmental impact assessments were unknown. Even in 1970/71 when the 'top' dam was built to create Lake Argyle, Australia's largest artificial water body, there was no requirement for an environmental impact assessment. To be sure, the devastated condition of pastoral land in the upper Ord catchment was recorded because erosion from that landscape threatened to silt up the dams that were being planned. Similarly, the soils of the lower Ord flood plain were mapped and assessed for their irrigated agricultural potential. Eventually, the upper Ord's eroded lands were resumed and rehabilitated while much of the lower Ord's flood plain was cleared and irrigated. However, nobody documented the hundreds of kilometres of riverine vegetation that was affected by these developments. That task only began in the 1990s, long after the dams had changed it.

In a nutshell, the dams created four hydrological zones, which are summarised in the following table.

'River' section	Pre dams hydrology	Hydrological effect of dams	Effect on Vegetation
Upper Ord	Seasonal river, huge floods	Unchanged	Unchanged
Lake Argyle	Seasonal river, huge floods	Replaced by lake with fluctuating water levels	Drowned.
Diversion Dam	Seasonal river, huge floods	Replaced by lake with stable water levels	Drowned
Lower Ord	Seasonal river, huge floods	Permanent flow, small floods	high banks deprived of floods, channel margin always damp

The hydrology of the lower three zones has changed radically since the dams were built. Inevitably, that must have caused huge changes to the riverine environments. But what are they? Although we can see what's there today we have no written record from which to measure the difference. If only someone had set up photo-points! The issue is not just academic. Today, we are more aware of our dependence on a healthy environment and we take more care to evaluate the consequences of

Ivanhoe Crossing, June 1953. *Prior to construction of the dams upstream, the river was subject to huge floods in the wet season and dried back to pools during the dry season. Note the large sand bar which was deposited across the approach to 'the crossing' in the 1952/53 wet season. Photographer: W.A.C.Wright.*

Ivanhoe Crossing, August 1963. *Vegetation similar to 1953 photo. The large sand bar deposited in the 1952/53 wet season has been moved on. Photographer: A.Harris.*

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altering it. With the prospect of trebling the irrigated area, the State is developing a Water Allocation Plan for the lower Ord. The plan will have to take into account Environmental Water Requirements (EWRs). So, how much water does the environment need? Clearly it would be easier to determine that if we knew how the environment had been affected by the changes that followed the building of dams 30 to 40 years ago.

I said nobody set up photo points and it is true that nobody did that with the intention of being able to measure change. However, lots of people took photos of the river. Some of them were pioneer tourists, some were engineers working on the dams or other projects and some were researchers investigating potential crops, farming techniques and insect pests. Their photographic subjects ranged from big crocs, big floods and big barramundi to family picnics, construction sites and beautiful scenery. Perhaps the most exciting were of the river in flood, 18 metres deep and hundreds of metres wide, lapping the top of the bank at the research station, but the most artistic ones are undoubtedly those of drovers on horseback taking mobs of cattle across the river on their way to Wyndham.

Unwittingly, those photographers also captured and stored away a mass of information about the riverine environment and so we have been borrowing historical photographs from anybody who lived or passed by the area. We now have a bulging collection of photos that tell many stories. As an example, we'll concentrate this story on the 20 kilometres down stream from the diversion dam. We have more than 200 colour photos of that section, taken between 1952 and 1990 (as well as a few older ones and many modern ones). Thus our collection starts ten years before the first dam was built and includes the ten years between that and building the second dam.

Not only do we have a rich supply of photos, but there were three spots which appealed to many of the photographers, in effect giving us series of photos taken over the last fifty years from three *de facto* photo-points. They are Bandicoot Bar, the rock bar on which the diversion dam was built (completed) in 1963, the Frank Wise Institute of Tropical Agriculture (better known to the older photographers as the Kimberley Research Station or, simply, KRS) and Ivanhoe Crossing.

And what changes have occurred? The building of the diversion dam had little effect because its storage capacity was very modest and its huge steel gates had to be lifted to let the river run freely whenever there was a big flood. Floods were the main drivers that shaped the river's sediment beds and its vegetation and they continued to play that role below the dam. The photos show us that from 1953 to 1973, below the dam, sand bars, annual plants and sapling paperbarks came and went but besides them, and a few trees that could anchor themselves in rocky places, there was very little vegetation in the riverbed. Most of the riparian vegetation was near the tops of the banks, and along gullies flowing into the river.

However all that changed after 1973 when the Lake Argyle filled. Waterlilies, cumbungi and several other aquatic plants rapidly colonised the shallows and forests grew along the channel margins. At Ivanhoe crossing, visitors picnic under a forest of figs and Leichardt trees that are ten metres tall. Understandably, they look at us disbelievingly when we tell them that this spot was a bare sandbank in 1973. But the photos prove it. You'll know what we mean when you look at these pictures.

So why did Lake Argyle have so much effect? Lake Argyle has the capacity to absorb flows from over 90% of the catchment. Water is released at a rate that keeps

Ivanhoe Crossing, 1972. *Vegetation similar to 1953 and 1963 photos however erosion of the far bank appears to have increased. The 'top' dam has been completed and the flow of the river will from now on be controlled. Photographer: M.Folkard*

Ivanhoe Crossing, April 2001. *For almost 30 years, downstream of Lake Argyle the river has flowed all year and floods have been controlled. The increase in vegetation along the river is enormous. The group of paperbarks growing to the left of the sweeping curve in 'the crossing' visible in the previous 3 photos are now obscured by a forest of figs and Leichhardt trees. Photographer: A.N.Start*

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the level of the diversion dam constant so that water can be diverted into distributary channels for irrigation while also allowing some water to be released all the time into the lower Ord. Thus, the wild river that boasted roaring floods in the wet season and retreated to a series of big pools during the dry, now flows perpetually and no longer sees those huge floods that stripped vegetation from all but the higher banks. To be sure, there are still floods but they are modest by old standards, even when the spillway overflows and all the excess has to be released. This newfound stability has allowed prolific riverine vegetation to develop. In turn, it has provided habitat for many animals that were rare or absent before the dams.

The moral of this story? Please treasure your old photographs, particularly ones that depict some feature that can be identified, so that you or others can re-visit the spot and take another photo of the same view. Better still, have a copy made that can be archived by a historical society or a DCLM office in the area where you took the photo in the first place. Maybe, even the Battye Library. We found some very valuable photos there.

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Further Reading

Hussey, BMJ, 2001. Photographic monitoring of vegetation. *Wildlife Notes* **No. 9**

Start A.N. and Handasyde, T. (in press). Using photographs to document environmental change: The effects of dams on the riparian environment of the lower Ord River. Australian Journal of Botany.

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Did you know?

..... why cormorants perch with their wings outspread?

They are drying their feathers. Cormorants are strong swimmers and hunt their prey underwater.

Their plumage is not water-repellent, so without air trapped between the feathers they are less buoyant and so can swim underwater more easily. But the feathers need to be dried off between swims. It's also possible that the sun's heat helps to control skin parasites.