DAMS ON THE ORD RIVER – A PHOTO HISTORY

Tony Start

In the late 1800s cattlemen built fragile grass castles from the vast savannas along the Ord River in the tropical east Kimberley. Then, in the 1960s and 1970s, engineers built dams so farmers could irrigate the river's fertile floodplains. But how did these industries affect the river and its environment?

History

The first cattle arrived in the Kimberley in June 1884. At first the herd grew rapidly on the plains of seemingly endless fodder alongside the Ord River. However, there were no fences or bores and the soils were fragile. During the dry season, the growing herds congregated on river frontages for water. Within a few years the grass was gone. Even the trees died. When wet season thunderstorms burst over the bare, baked ground, the friable soils washed into the river leaving vast, eroded scars.

Eroded cattle country along the Ord River, 1960s, before rehabilitation. Photo: Alan Payne

Decades on, new pioneers envisaged bounteous, irrigated harvests from the lower Ord's huge floodplains. Dams were planned and the denuded pastoral lands further upstream were resumed and rehabilitated to prevent frightening volumes of sediment washing down the river and silting up the reservoirs. In time, Kununurra was born, two dams were built, cotton and rice, melons and mangos were planted and new-age cattlemen cherish their pastures.

Two dams

To function effectively, the irrigation scheme needs two dams. Wet season flows are stored in Lake Argyle and slowly released to maintain a constant level in Lake Kununurra (aka the Diversion Dam), from which water is diverted into irrigation channels. This is the dam you cross when driving to Kununurra.

Before the dams, the Ord was a seasonal river, flooding in the wet and dwindling to pools through the dry. With the riverside pastures gone from upstream, run-off into the river increased, floods became bigger and the riverine forests were washed away. A few old photographs show rafts of logs washed onto sand banks but there are no written records of that. Nowadays, the lower Ord flows continuously because excess water (required to drive turbines) is released from the Diversion Dam. Once again, the changes were profound.

The need to know

Nobody studied the lower Ord's riverine environment before the dams were built in the 1960s and '70s. Even that recently, there were no requirements for environmental impact assessments or environmental management plans. The region was remote, the projects were bold and 'development was good'! To be sure, water yields, agricultural potentials and rangeland erosion were studied but (officially anyway) no one was interested in environment changes that taming and tapping this mighty river would bring.

Nowadays, we realise that productive country is healthy country. We have added 'biodiversity', 'multiple-use' and 'sustainability' to our vocabulary. A water allocation plan ensures there is enough flow down the lower Ord to maintain its environmental values as well as supplying water to the farmers.

1929: the banks erode, and rafts of logs are washed up onto sandbanks. Photo: Battye Library

Building the Diversion Dam, 1962 Photo: unknown

To write that plan, it was necessary to understand the changes wrought by the dams, and to know the state of the river when the dams were commissioned. But there was no written record! This was the dilemma Tricia Handasyde and I faced in 1999.

Photographers

Soon after we began, Noel Murdoch, a touring Victorian, dropped into DEC's Kununurra office with some slides he'd taken of Ivanhoe Crossing in 1963. (This concrete causeway had been part of the main Perth to Darwin road; it's still negotiable by four wheel-drives.) They showed a sandy river bed almost devoid of trees, quite unlike the well-vegetated banks we were familiar with in 1999. We printed the images, took them to the crossing and found we could still identify rocks in exactly the same places they'd been 42 years earlier.

Had photographers unwittingly solved our problem?

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Left, Ivanhoe Crossing in 1963. Photo: Noel Murdoch. Right, same site in 2000. Photo: Tony Start. To compare, note the angle of the roadside kerb on the left-hand side, and then, on the right, the same large rocks in place. But the vegetation shows a lot of change!

We showed the photos to other people. Old-timers reminisced, younger people ooh-ed and aah-ed and word spread that we wanted to borrow and copy any old photographs. The interest people showed and the generosity with which people lent us their treasured collections was amazing.

Whilst the photographers were from many walks of life, scientists, engineers, travellers and farmers, many photographed the same scenes, particularly river crossings and so, collectively, their pictures provide a record of change at several places, all starting at least 10 years before the first dam was built.

Before the dams

Pre-1950 photos are elusive. Our earliest, taken in 1886, suggests stable banks clothed in tall, dense reeds. Sadly, there are not enough landmarks to precisely locate and re-photograph that view today. Nevertheless, there are no such reed banks today. Later pre-dams photos reveal eroding banks and large tree trunks washed-up on sand bars.

As late as 1952, there were still remnant silt bars held together by dense root mats of huge paperbark trees at Button's Crossing. They were gone when we went there in 1999. In fact there are almost no large, old paperbarks on the lower Ord today but big trees are still common on tributaries where floods are less energetic.

And what of the wildlife? We know White-browed Robins and Purple-crowned Fairy-wrens were common on the lower Ord until at least 1908. The robin lives in dense riverine woodland while the wren likes pandanus and tall reed beds on river margins. By the 1950s, riverine woodlands and the robin were rare. There were no reed beds, few pandanus and the wren had apparently vanished.

Dam changes

The range of subjects people photographed was diverse; drovers with mobs of cattle, crocodiles, big floods, big fish, engineering projects and family picnics. The subjects are fascinating in themselves, but to us their value lay in the settings. The coming and going of sandbanks spoke volumes. In the foregrounds we could identify herbs and grasses and in the backgrounds we could see how extensive (or otherwise) the riparian woodland was, and even identify many of the trees.

1952-1963 – Before the dams

In the channel, sand, sometimes in thin sheets and sometimes in massive bars, came and went with the floods. There were few trees except whippy little terminalias and, less often, paperbarks, anchored to rock bars. Here and there, pockets of mixed woodland clung precariously to sheltered spots on the banks, but the photos reveal that they too were being washed away, bit by bit. Time and again, thickets of paperbark seedlings established, hedge-like, on the margins of dry-season pools and grew for a while. Inevitably, they perished, regenerated and perished again, their lifespans determined by the frequency of big floods. There were no waterlilies, bulrushes or other emergent aquatic plants in the pools that are so common now.

1963-1973 – The Diversion Dam before Lake Argyle was formed.

Alone, this dam had little effect. In the wet season, the gates were opened wide to let big floods run free before the dam itself was washed away. Remnant woodland pockets were still eroding and sapling paperbark thickets were still short-lived. In the dry, the river still dwindled to a few deep pools.

Post 1973 – The two dams

Big floods became a thing of the past and the river flowed continuously. Pockets of woodland expanded; the paperbark thickets grew on

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and forests developed alongside the channel. Bulrushes colonised the banks and, in the shallows, floating leaves of water snowflakes (*Nymphoides indica*) formed tranquil, green patchwork quilts.

Though rapid and dramatic, the process was orderly and logical. Look at the photo that shows the sand bank dumped over Ivanhoe Crossing by the '52 flood and note the small group of paperbarks growing on a rocky shelf in the water just to the rear. In 1973, the area was still a sandbar, albeit only just above water level, and the paperbarks hadn't changed much. By 1983, the bank was colonised by white dragon trees that specialise in growing fast on flood-disturbed sites. (In a couple of years they have seeded and it matters not if they're washed away then.) In the damp ground around the dragon tree stand, bullrush (its seed brought in on the wind) flourished except on the edge of the pool where the current was stronger. There, tough roots of pandanus armoured the bank.

Careful inspection of the 1983 photo reveals the tops of sapling Leichardt trees and stem-fruiting figs peeping over the dragon trees. Although they are capable colonisers of new banks, these species took more time to mature but they form the forest patch familiar today to so many visitors to Ivanhoe Crossing. However, even today, the paperbarks seen in the 1952 images, are still growing strongly on their submerged rock a few metres into the pool.

Elsewhere the succession patterns were just as orderly and just as profound but they varied in detail. Different sites had different hydrologies, different substrates and different outcomes but in one form or another, forests now line the banks of the lower Ord. Change is still progressing. In particular, *Phragmites*, a tough rush, is armour-plating the river banks in many places.

And what of the wrens and the robins? The dams came too late for the wrens, they are gone from the lower Ord but with the extensive development of riverine woodlands, the enchanting calls of the white-browed robins once more ring out from thickets and forest patches all over the place! They have even moved into riverside gardens and mango plantations.

Ivanhoe Crossing in the 1960s, showing a sandbank deposited over the road and paperbarks growing upstream on a rocky shelf in the water. Photo: Barrett

Looking back from the centre of Ivanhoe Crossing in 2001. The leaning trunks of the paperbarks seen in the 1960s photo above can just be made out in the forground of the thicket. Photo: Tony Start

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