

SOME REFLECTIONS ON THE MATUSADONA SHORELINE

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The Zambezi Society's Co-Founder and former Director for 25 years, **DICK PITMAN**, shares his personal reflections about the shoreline of the Matusadona National Park and changing levels of Lake Kariba based on decades spent exploring the area.



Aerial photograph of the Nyamune/Kanjedza shoreline area, taken in October 2020 by Peter Wienand. All other photos by Dick Pitman.

The Zambezi's two great National Parks, Matusadona and Mana Pools share a hugely important common factor: the impact of the Kariba dam. But whereas Mana's dominant feature – the alluvial terraces (or floodplains, as they are often wrongly called) continue to flourish despite the dam, the Matusadona lowland's dominant feature – its shoreline – exists *because* of the dam. It is, in essence, a human artefact.



Ca. 1980; elephant tearing Panicum from the submerged foreshore and cleaning off the sand and silt.

I first set eyes on both of them some 40 years ago, and it seems odd to reflect, today, that Lake Kariba had only existed for 20 years at that time. Now we're celebrating its 60th anniversary. The lake filled during the 1960's and, by the time I first saw it, Kariba had been more or less full

throughout the 1970's, without any really significant fluctuations. There was very little "shoreline", as such – the water extended more or less up to the bush line – and there seemed to be little reason to anticipate any major changes in that regard.

The Matusadona I recall from those days harboured, in relative terms, comparatively little by way of wildlife concentrations. You had to work for your sightings; and inland "drives" – in direct contrast to today's scene – were often more productive; and there weren't many roads on the shoreline anyway.

This all changed dramatically in the early 1980's, when lake levels plummeted due to drought. The lake became ten metres shallower. The Matusadona has, by and large, a gently shelving shoreline, and we watched in some awe and no little apprehension as vast expanses of lake bed were exposed for the first time since Kariba filled. Islands – including Fothergill, where I spent much of my time – became peninsulas.

Waters that had lapped at the doors of tourist chalets receded out of sight and were replaced by less-than-inspiring expanses of red or grey silts populated by dead trees. Harbours dried out altogether, and boats had to be moored wherever shelter could be found. The only plus, it seemed, was the ability to harvest vast quantities of fishing tackle wrapped round previously-submerged snags.



Fothergill Island after the lake went down, ca. 1982

This was disconcerting, to say the least, and especially so to the tiny handful of tourism operators – two, to be exact – who had set up shop at a lakeside and suddenly found themselves far inland. It was also disconcerting, I might add, to boat skippers (I was among them) who equally suddenly found themselves hitting treestumps in what, until then, had been large and harmless expanses of clear water. But what also became equally clear was that – far from being the kind of timeless verity one wrongly but intuitively expects from a National Park, the Matusadona (or its lakeside portion anyway) – was really the gigantic laboratory experiment you should foresee if you suddenly plonk a 2000sq mile lake down in the midst of relatively virgin Zambezi Valley wilderness. It was a rude awakening.

The near-immediate biological response to all this was a confusing riot of new vegetation, with outbreaks of sedges, forbs, reeds and grasses, the latter including – but not limited to – the *Panicum repens* we have come to regard as a reliable dry-season food supply for grazers in the Valley portion of the Matusadona. And the result was the spectacular explosion of species such as buffalo, zebra, waterbuck and impala that persisted until the 1990's, when a combination of droughts, floods and high lake levels caused them to go into decline again.



"A confusing riot of vegetation" developed on the newly-exposed shorelines after the lake went down in the early 1980's

Bear with me. I'm – circuitously, granted – getting closer to the point that inspired me to try and write this piece. In July 2018, Lake Kariba peaked at 487m - not far off its "full supply height" of 488.50m. (NB - these levels are relative to "sea level", which is used as a constant reference point). Today, as I write, Lake Kariba is already quite low, at around 478m, or about 3m above its 475.50 minimum supply height. The question we have to ask is whether we can ever expect it to fill again, to anything near its maximum (in other words, to get 10m deeper again).

The question is somewhat confused by what may have been spillage intended to facilitate work on the dam's stilling pool. Nevertheless – barring truly spectacular climatic events - the answer may well be "No". This is because of the ever-increasing demand for power from the dam, in the absence of alternatives, caused by what seems to be an ever-ending installation of new and increased turbine capacity.

For as long as I can remember, there has been debate over Mupata Gorge, Batoka Gorge, and potential new thermal power stations. But nothing has happened, and even if it began tomorrow, construction of such alternatives is going to take a long time. These low lake levels, I'd bet good money, are here to stay for the foreseeable future, barring massive changes in climate that bring equally massive and sustained rainfall to the Zambezi catchment.

Therefore, the extended foreshore we are seeing today can be regarded as a probably permanent – and substantial - extension to the Park's land area, and a continuation of the Matusadona "living laboratory" experiment.

Now: I – and, I think, many others – have come to rely heavily on the presence of palatable grasses on the Matusadona lakeshore to provide sustenance for grazers during the dry season and pleasant "game viewing" for ourselves. The conventional wisdom is that this grass is primarily *Panicum repens* that is refreshed annually by a rising lake. But is this still true?



The Nyamune river in flood, January 2006

What sparked this all off, in my own mind, was pure (and doubtless somewhat limited) observation during our recent sojourns in the Nyamune River. I'll freely admit that my knowledge of grass species is abysmal, having for many years laboured under the belief that *Hyparrhenia* was a form of mental disorder. However, it was the elephants – followed by the baboons – that first drew my attention.; and here I should note that, due to low lake levels and a boat that draws the best part of a metre, we were moored in a little indent in a steeply sloping bank a long way, putting it mildly, from the bush line.

We were, of course on a falling lake; so there was no fringing grass or - for that matter - no eles standing in the water, pulling *Panicum* up by the roots and beating the mud off it. Come to think of it, though, I haven't seen that behaviour in a long while; but this may say more about the timing of our visits than anything else.

Anyway: the grass closest to us on the bank – whatever it was – was quite green, dense and extensive, and was seeding; and we never saw elephants feeding on it. Nor anything else, come to that, except a troop of baboons that seemed to have trekked several hundred metres from the distant bushline to feed on it, having painstakingly stripped the seeds from the stems.

Instead, the elephants, when they came – which was often – were focused on a much shorter, but obviously well-cropped grass species, further up the bank, which they equally painstakingly kicked loose with a forefoot, thus ripping it out by the roots and ate without bothering to clean it off.

At the head of the bay – which I could admittedly only examine with the aid of binos or a long camera lens – the situation seemed different, with a belt of what I assume was *Panicum* that was constantly grazed by impala and waterbuck. Zebra, however, seemed to favour apparently almost bare areas further up the catenary.



A "long shot" up the Nyamune River from our mooring. This scene was seldom bereft of mammalian wildlife, except in the very early mornings.

And we never saw elephant on that apparently lush fringing grassland. They appeared to have the same taste in grasses as the zebra; here too, they spent a lot of time grazing higher on the shoreline, just as they did close to our boat.



Same background scenery as above. Elephants appeared here every afternoon during our visits, always feeding

Ok. I'm well aware that I'm only focusing here on a tiny percentage of the Matusadona's land area, two-thirds of which lies south of the Matusadona range. One third – roughly 400sq km – lies on the Zambezi Valley flatlands, largely composed of mopane woodland with some notable outbreaks of jesse bush.

But that area is now significantly expanded by currently exposed lake shore, which as I've already noted seems likely to remain that way in view of the demands of the Kariba turbines. And those exposed shores sustain the Park's major wildlife tourism focus. Meanwhile the periodically high lake levels that we believe are necessary to maintain the much-valued grazing resource seem likely to become merely a fond memory.



High lake in September 2010 - Nyamune River, Matusadona National Park

Therefore a key question seems – to me, anyway – to be: are those fluctuating lake levels indeed still important to the foreshore grasslands? To what extent, today, are those grasslands rainfed, thus becoming independent of the vagaries of the lake?

Another factor that's been making me think about all this is the apparent differences between the extent of the lakeshore grasses during our recent trip. As can be seen from the aerial photograph introducing this post, the grasses in the Nyamune area seem to be of small extent and highly focused on bays and inlets. But – thanks to Changa Safari Camp, where we spent a welcome overnight relief from cooking our own meals and showering in still-frigid lake water – we took a "game drive" by vehicle to the Kemurara area, aka Sanyati West – one of the most gently-shelving shores in the Matusadona, and historically famous for its buffalo herds (now recovering, it's good to hear).



Buffalo in Sanyati West, during the low lake levels of the 1980's and resulting population explosion.

For today's scene in the Sanyati West area, see the photo at the foot of this post. Simply put, the whole place was apparently grass-covered, and there were elephant all over it. Is this all *Panicum*? If not, what other species are involved? How palatable are they, to the Matusadona's range of grazers? And to what extent does this cover now depend on rainfall, as opposed to periodic lake level fluctuations? The same question, incidentally, has occurred to me during occasional visits to Rhino Safari Camp, near Elephant Point on the north-western Matusadona shore, which seems to enjoy similar year-round grass cover.

We can in fact also now add the proposed Batoka Gorge dam and its possible impacts into this mix, since – of all the alternatives – this does seem to be the one that's progressing beyond the pipedream stage.

It may be that these factors have already been researched and conclusions drawn from them. I also recognise the complexities involved, that I haven't even touched on, such as nutrient availability and replenishment, soil and substrate characteristics - which are far outside my limited competence to discuss in any meaningful manner - and the ubiquitous presence of the "soak zone" that provides constant (and constantly shifting) sustenance to the entire lake shore. In short, I'm asking questions, not providing answers, and doing so as no more than an interested layman.

Nevertheless, it seems self-evident that changing Matusadona lakeshore conditions can be of critical importance to the wildlife it supports, the wellbeing of the Park, and the income it contributes to the Park's conservation via tourism. We've already had one scare associated with shoreline vegetation – the so-called "floppy trunk syndrome" that afflicted a significant number of elephant a couple of decades ago, and that was widely attributed to an as-yet-undefined exotic invader.

Subjectively, there was a perception that the problem's disappearance was linked to rising lake levels. Objectively, I've never seen any scientific examination of this perception. But the episode should remind us - once again - that we are dealing with an enormous, uncontrolled, and - in the Zambezi Valley biological context - unprecedented "laboratory experiment". We may hope that the wildlife population increases associated with past periods of low lake levels will be repeated. But ecology - or Nature, if you like - is full of surprises, and not all of them are nice, especially where human artefacts such as the Matusadona lakeshore are involved.

The new custodians of Matusadona, African Parks, have a lot on their plate, not the least being the control of ivory and other poaching across the Park's ±1400sq km. Nevertheless, I'd suggest that a research focus on the current biological status and potential futures of the Park lakeshore and its effect on wildlife populations is a clear and present need?



The Sanyati West/Kemurara shoreline after sunset, during our recent November 2020 visit.