

## Appendix 7: Crocodiles in the Lakefield-Rinyirru waterholes

1. The Lakefield-Rinyirru National Park encompasses an important area of tidal- and non-tidal wetlands in the central/eastern part of CYP. It is more comparable in physiography to parts of the Gulf Plains than it is to other parts of the eastern Cape.
2. No surveys of the numerous billabongs and lagoons in the Lakefield-Rinyirru National Park were completed during the 2016-19 surveys. Some were planned for the 2020 program which was suspended. However, Mark Read's survey teams completed a series of spotlight surveys between 1997 and 2003 that confirmed the waterholes had a considerable number of estuarine crocodiles, some at very densities, and that they continued to cohabit the area with a substantial population of freshwater crocodiles.
3. Considerable numbers of animals were identified only as 'eyes-only' sightings. The EO were allocated to *C. porosus* and *C. johnstoni* in proportion to their respective ratios in those that were identified positively as one species or the other. While this allocation method is problematical, it is the only practical adjustment possible.
4. The estimated densities of non-hatchling estuarine crocodiles in the various waterholes varied from 0 to over 15/km and averaged 3.3/km over the 110km of waterholes surveyed (Table 1). The size class distribution for all sized *C. porosus* across all waterways and years of survey was as shown below:

Size class (ft) and Count													
1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	15-16
67	43	36	23	17	8	16	11	7	7	5	1	3	1

5. The National Park clearly supports a healthy population that is nesting successfully in these mostly upstream waterholes. The counts of NH over 2-3ft, categorised into Small, Medium, Large and Very Large crocodiles, amount to 84, 34, 16 and 1 – giving proportions of 62% S, 25% M, 12% L and 0.7% VL. If we compare those proportions with those in Figure 1 for the Queensland population as a whole, they are comparable to the proportions seen elsewhere in the 1984-89 and 1999-2004 survey eras, suggesting this somewhat different habitat did not follow a markedly different trajectory from counterpart areas elsewhere.
6. It also indicates that the National Park is serving an important role as a source of recruitment on eastern coast of CYP, which is not well-blessed with high quality crocodile habitat.

Table 1. Counts and non-hatchling density of identified *C.porosus* and EO allocated to *C.porosus* from surveys of waterholes in Lakefield National Park.

Waterway	Identified NH <i>C.porosus</i>	Identified NH + EO allocated to <i>C. porosus</i>	Total Transect km	NH density per km <i>C. porosus</i>
<b>Barrow Creek Waterhole</b>				
2003	0	0	0.34	0.00
<b>Catfish Waterhole</b>				
1997	4	8	1.71	4.56
1999	16	27	1.71	15.76
2003	12	22	1.69	13.28
<b>Devil Devil Waterhole</b>				
1997	4	6	1.50	3.73
<b>Kalpower Waterhole</b>				
1988	2	2	6.10	0.39
1997	8	14	6.00	2.25
1999	4	10	6.10	1.61
2003	8	13	6.10	2.11
<b>Kennedy Bend Waterhole</b>				
1999	7	14	3.20	4.25
2000	5	6	2.30	2.81
2003	3	7	1.50	4.57
<b>Little Kennedy Lake</b>				
1999	3	4	1.50	2.67
<b>Melaleuca Swamps</b>				
1997	3	10	2.00	4.93
1999	2	4	3.00	1.21
<b>Mick Finn Waterhole</b>				
1999	1	2	1.30	1.32
<b>Midway Waterhole</b>				
1997	4	7	2.81	2.33
1999	3	5	2.70	1.75
2003 (2 surveys combined)	5	8	3.40	2.34
<b>Old Faithful Waterhole</b>				
1997	4	6	1.60	3.97
1999 (2 surveys combined)	3	11	2.80	3.75
2000	0	0	1.70	0.00
<b>Pelican Lake</b>				
1999	4	5	1.90	2.81
<b>Seven Mile Waterhole</b>				
1997	16	42	8.60	4.85
1999	15	23	7.80	2.94
2000	10	25	8.90	2.85
2003	7	20	8.80	2.23
<b>Six Mile Swamp</b>		<b>0</b>	<b>0.40</b>	<b>0.00</b>
1999	0	0	0.40	0.00
<b>Twelve Mile Waterhole</b>		<b>9</b>	<b>6.40</b>	<b>1.60</b>
1997	2	6	1.60	3.54
1999	1	3	2.40	1.25
2000	0	0	2.40	0.00

<b>Two Mile Waterhole</b>		<b>22</b>	<b>5.70</b>	<b>3.78</b>
1999	9	12	2.90	3.99
2000	2	10	2.80	3.57
<b>Total</b>	<b>167</b>	<b>329</b>	<b>109.56</b>	<b>3.25</b>

Figure 1.

