



CSIRO ACDP – AAHL NAMP Activities Report FY2020/21

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NAMP Testing Summary

Sentinel Herds

During the reporting period, CSIRO ACDP – AAHL received clinical samples and virus isolates originating from the following sentinel herds/locations:

Western Australia:

- Yeeda Station, Broome
- Fossil Downs Station
- Kalumburu
- Carlton Hill Station, Kununurra

Northern Territory:

- Beatrice Hill
- Douglas Daly
- Coomalie
- Victoria River

Queensland:

- Cooktown
- Capella
- Alligator Creek
- Maryborough
- East Palmerston
- Chinchilla

Sentinel herd locations, and the serotypes detected by VP2 gene sequencing for submissions received in FY20-21 are shown in Figure 1. For comparison, data from FY2018-19 & FY2019-20 is shown in Figures 2 & 3.

Figure 1. Bluetongue virus serotypes detected by sequencing from NAMP sentinel herds (FY2020-21).
Size of the pie charts are proportional to the total number of BTV TQM positive samples/isolates received.

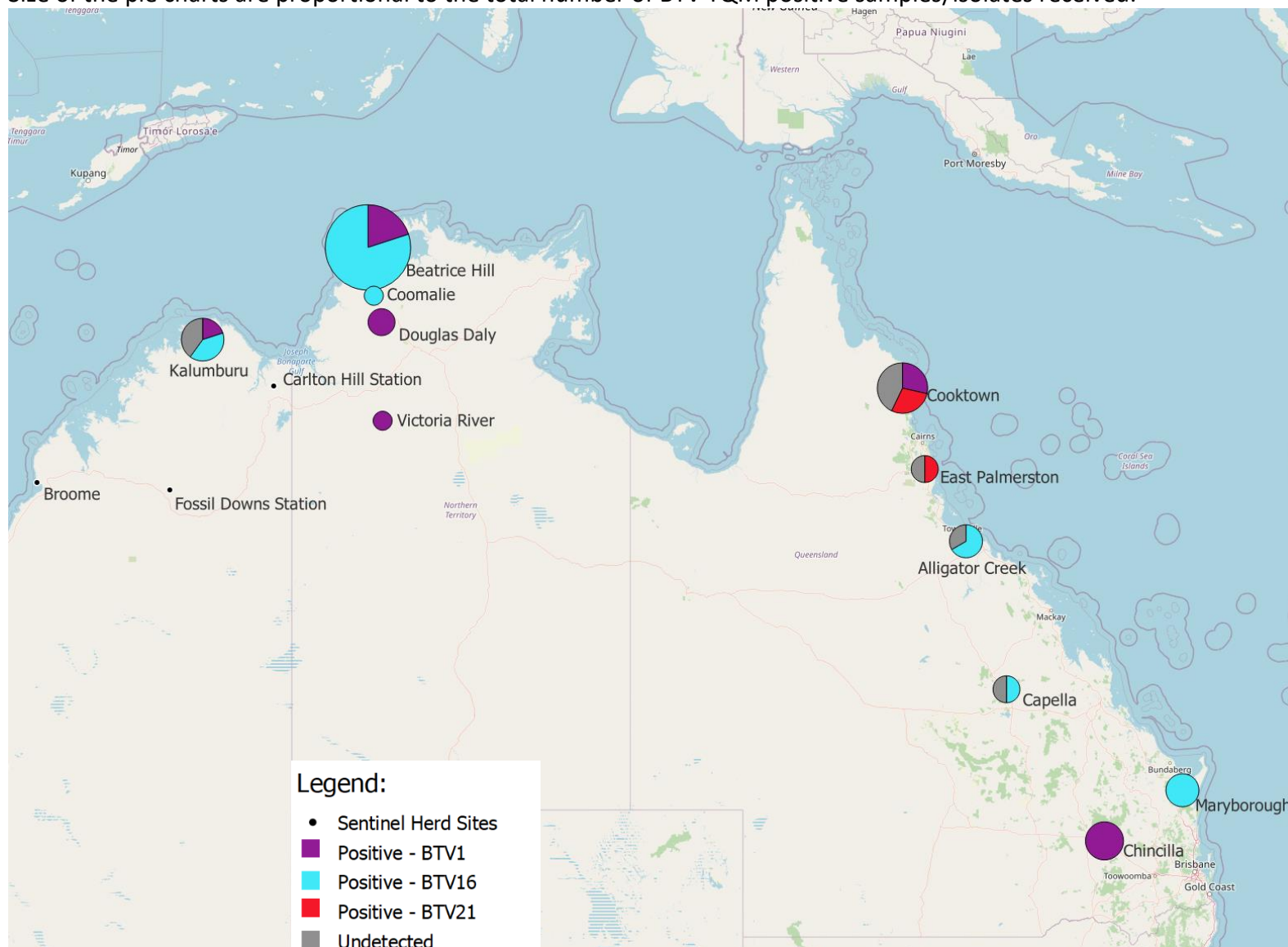


Figure 2. Bluetongue virus serotypes detected by sequencing from NAMP sentinel herds (FY2019-20).
Size of the pie charts are proportional to the total number of BTV TQM positive samples/isolates received.

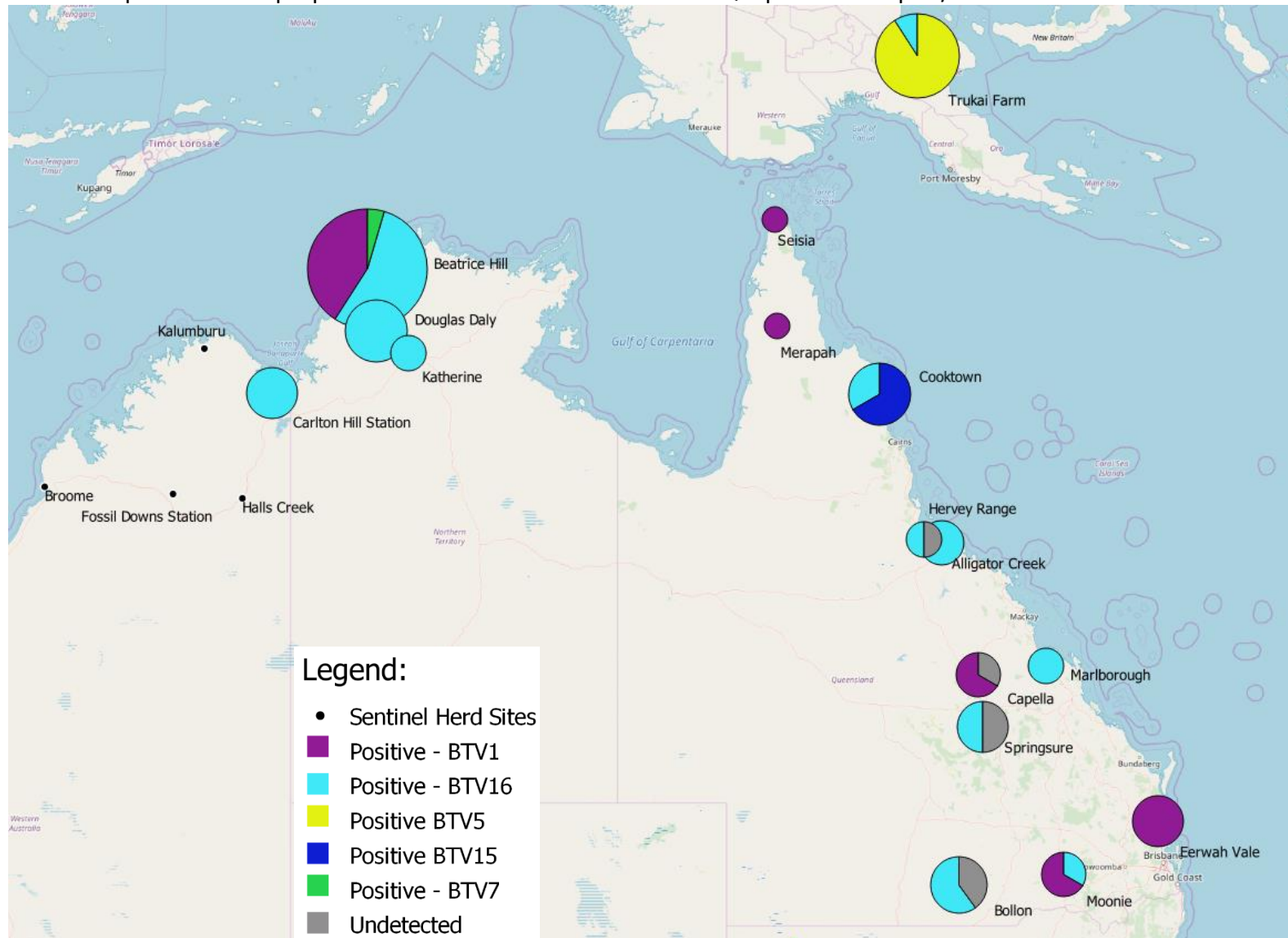
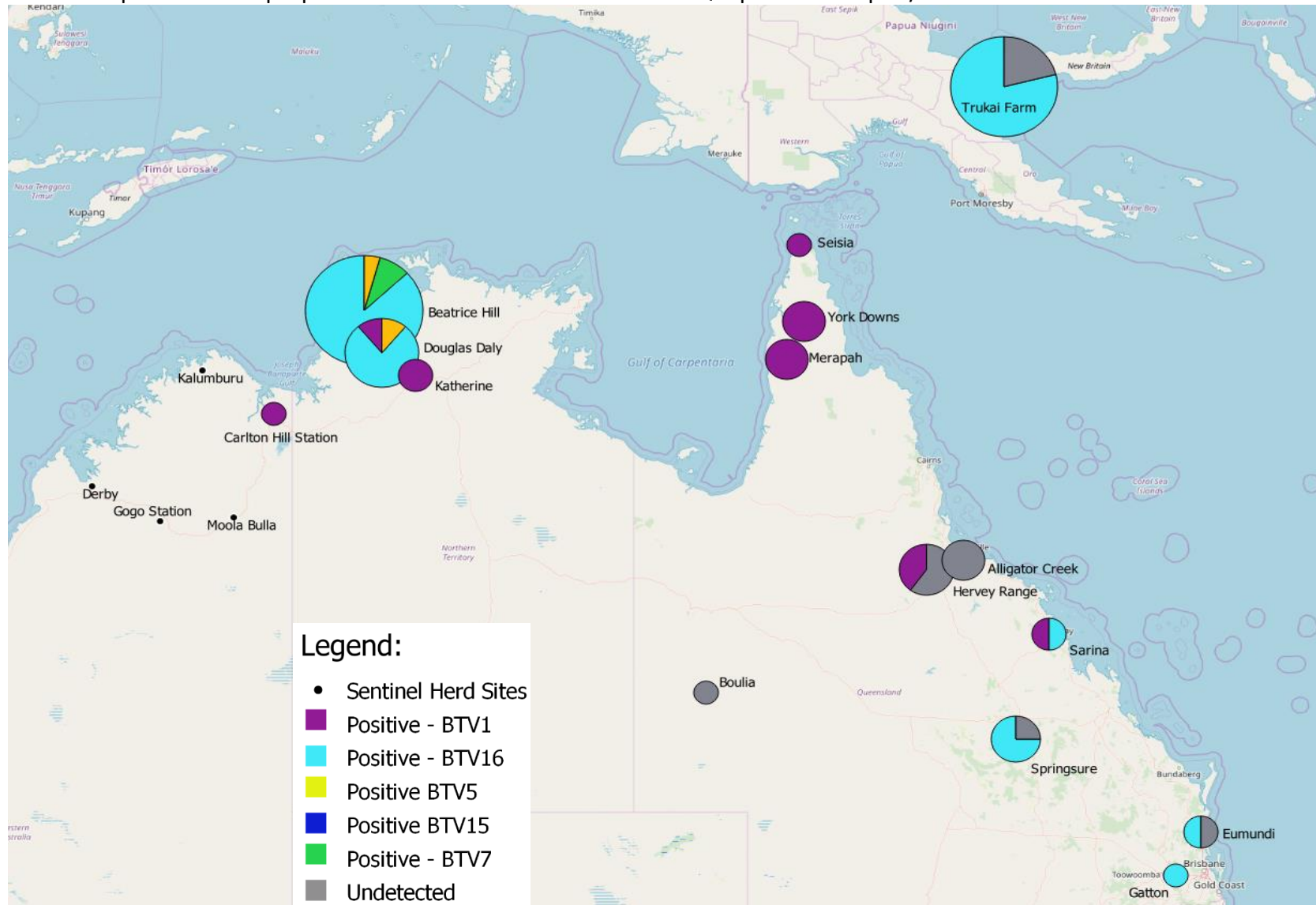


Figure 3. Bluetongue virus serotypes detected by sequencing from NAMP herds (FY2018-19).
Size of the pie charts are proportional to the total number of BTV TQM positive samples/isolates received.



Queensland

Samples Received:

Location	Sample Type		
	WHOLE BLOOD (EDTA/LITH HEP)	PLASMA/SERUM	VIRUS ISOLATES/ CELL CULTURE SUPERNATANTS [†]
Alligator Creek	3	3	-
Capella	2	2	-
Cooktown	7	4 (3 [^])	-
Maryborough	3 (10 [#])	3	-
East Palmerston	3	3	-
Chinchilla	14	4	-
TOTAL	30 (10[#])	19 (3[^])	-

[^] An additional 3 plasma samples were received, however were not tested due to the likely presence of maternal antibodies

[#] An additional 10 historical whole blood samples were received and tested as part of an investigation into low level BTV-5 SNT titres.

[†] NB: 3 historical isolates were submitted to confirm serotype.

Testing Performed:

Location	Serology			Molecular	Sequencing	
	cELISA	BTV SNT PANEL (inc. 18 serotypes)	BTV SNT Serotype 15*	BTV TQM PCR	Genotype Sequencing (VP3)	Serotype Sequencing (VP2)
Alligator Creek	3	3	-	3	3	3
Capella	2	2	-	2	2	2
Cooktown	4	4	-	7	7	7
Maryborough	3	3	-	3 (10 [#])	3	3 (9 ⁺)
East Palmerston	3	3	-	3	2	2
Chinchilla	4	4	-	14	4	4 (2 ⁺)
Grand Total	19	19	-	32 (10[#])	21	21 (11⁺)

*BTV-15 SNT is performed on cELISA negative samples, as the cELISA is known to have reduced sensitivity to antibodies to BTV-15.

[#] An additional 10 historical whole blood samples were received and tested as part of an investigation into low level BTV-5 SNT titres.

⁺ Specifically assessed by VP2 sequencing for evidence of BTV-5 infection. No other serotypes were assessed.

Results by Location:

Agent detection

Location	Serotype (by sequencing)				Genotype (by sequencing)		
	BTV1	BTV16	BTV21	Undetected	Australia A	Malaysia A	Undetected
Alligator Creek	-	2	-	1	3	-	-
Capella	-	1	-	1	1	-	1
Cooktown	2	-	2	3	6	1	-
Maryborough	-	3	-	(9 ⁺)	3	-	-
East Palmerston	-	-	1	1	1	1	-
Chinchilla	4	-	-	(2 ⁺)	4	-	-
Grand Total	6	6	3	6 (11⁺)	18	2	1

+ Specifically assessed by VP2 sequencing for evidence of BTV-5 infection. No other serotypes were assessed.

Serology

Location	cELISA			SNT
	Indeterminate	Negative	Positive	Dominant Serotypes detected
Alligator Creek	-	-	3	21*
Capella	-	-	2	21
Cooktown	-	-	4	1, 16, 21
Maryborough	-	-	3	16, 21 (4 [^] , 5 [^])*
East Palmerston	-	-	3	1, 16, 21
Chinchilla	-	-	4	1 (4 [^] , 5 [^])*
Grand Total	-	-	19	

* Broad reactivity observed

[^] Minor reactions

Western Australia

Samples Received:

Location	Sample Type		
	WHOLE BLOOD (EDTA/LITH HEP)	PLASMA/SERUM	BLOOD CLOT
Broome	-	1	-
Carlton Hill Station	4	6	1
Fossil Downs Station	3	3	-
Kalumburu	134	114 (19 [^])	(133 ^{\$})
TOTAL	141	124 (19[^])	1 (133^{\$})

[^] A additional 19 sera were received, however were not tested due to age

^{\$} Not tested, as EDTA blood was also available for agent detection.

Testing Performed:

Location	Serology			Molecular	Sequencing		Isolation and Typing	
	cELISA	BTV SNT PANEL (inc. 18 serotypes)	BTV SNT Serotype 15*	BTV TQM PCR	Genotype Sequencing (VP3)	Serotype Sequencing (VP2)	Isolation	Virus Isolate Typing Assay
Broome	1	1	-	-	-	-	-	-
Carlton Hill Station	6	6	-	5	-	-	-	-
Fossil Downs Station	3	3 [#]	-	3	-	-	-	-
Kalumburu	60 [#]	42 [#]	18 [#]	134	5 [#]	5 [#]	5 [#]	2
Grand Total	70[#]	52[#]	18[#]	142	5[#]	5[#]	5[#]	2

*BTV-15 SNT is performed on cELISA negative samples, as the cELISA is known to have reduced sensitivity to antibodies to BTV-15.

[#]Additional Results pending

Results by Location:

Agent detection

Location	Serotype (by sequencing)			Genotype (by sequencing)			Isolation	
	BTV1	BTV16	Undetected	Australia A	Malaysia A	Undetected	Negative	Positive
Kalumburu [#]	1	2	2	1	2	1	3	2
Grand Total[#]	1	2	2	1	2	1	3	2

[#]Additional Results pending

Serology

Location	cELISA			SNT
	Indeterminate	Negative	Positive	Dominant Serotypes detected
Broome	-	-	1	21 [^]
Carlton Hill Station	2	-	4	1, 16, 21 [!]
Fossil Downs Station	1	-	2	Results pending
Kalumburu [#]	2	18	40	16, 21* (4 [^])
Grand Total	5	18	47	

[^] Minor reactions

[#] Additional results pending

*Broad reactivity observed

! full SNT panel could not be completed due to sample volume

Northern Territory

Samples Received:

Location	Sample Type
	VIRUS ISOLATES
Beatrice Hill	20
Douglas Daly	2
Coolmalie	1
Victoria River	1
TOTAL	24

Testing Performed:

Location	Molecular	Sequencing		Isolation and Typing	
	BTV TQM PCR	Genotype Sequencing (VP3)	Serotype Sequencing (VP2)	Isolation ⁺	Virus Isolate Typing Assay
Beatrice Hill	20	20	20	20	20
Douglas Daly	2	2	2	2	2
Coomalie	1	1	1	1	1
Victoria River	1	1	1	1	1
Grand Total	24	24	24	24	24

+ Isolates received may be passaged prior to VNT

Results by Location:

Agent detection

Location	Serotype (by sequencing)		Genotype (by sequencing)		Virus Isolate Typing Assay	
	BTV1	BTV16	Australia A	Malaysia A	Serotype 1	Serotype 16
Beatrice Hill	4	16	4	16	4	16
Douglas Daly	2	-	2	-	2	-
Coomalie	-	1	1	-	-	1
Victoria River	1	-	1	-	1	-
Grand Total	7	17	8	16	7	17

Test numbers

Samples Received:

Location	Sample Type			BLOOD CLOTS
	WHOLE BLOOD (EDTA/LITH HEP)	PLASMA/SERUM	VIRUS ISOLATES/ CELL CULTURE SUPERNATANTS	
Queensland	30 (10) [#]	19 (3 [^])	-	-
Western Australia	141	124 (19 [^])	-	1 (133 ^{\$})
Northern Territory	-	-	24	-
TOTAL	171 (10)[#]	143 (22[^])	24	1 (133^{\$})

[#] An additional 10 historical whole blood samples were received and tested as part of an investigation into low level BTV-5 SNT titres.

[^] Additional sera received, however were not tested due to age

^{\$} Not tested, as EDTA blood was also available for agent detection

Testing Performed:

Location	Serology		Molecular	Sequencing		Isolation and Typing	
	cELISA [^]	BTV SNT [*]	BTV TQM PCR [^]	Genotype Sequencing (VP3)	Serotype Sequencing (VP2) ^{**}	Isolation ⁺	Virus Isolate Typing Assay ^{##}
Queensland	19	342	42	21	32	-	-
Western Australia	70 [#]	964 [#]	142	5 [#]	5 [#]	5 [#]	26
Northern Territory	-	-	24	24	24	24	312
Grand Total	89	1,306	208	50	61	29	338

^{*}18 SNTs/panel (15 Australian + 3 for cross reactions)

^{**}Only 1 test recorded/sample (regardless of # primer sets used)

[#] Further results pending

[^] Generally repeated testing to confirm result prior to follow-up testing (and to determine OD/Ct)

^{##} VNT performed on both isolates received and isolates grown at ACDP. 13 VNTs/isolate

⁺ Isolates received may be passaged prior to VNT