

WADER BREEDING SUCCESS IN THE 2018 ARCTIC SUMMER, BASED ON JUVENILE RATIOS OF BIRDS WHICH SPEND THE NON-BREEDING SEASON IN AUSTRALIA

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INTRODUCTION

Each year wader banders in Australia attempt to collect ‘percentage juvenile’ data to measure the annual breeding success of wader populations which spend the non-breeding season in Australia. This is usually carried out in two different regions, some 3,000km apart. In South-east Australia (SEA) the Victorian Wader Study Group tries to monitor breeding success in seven different species. All birds are caught by cannon netting between mid-November and March/early April (depending on the species) on the Victorian coast, on coasts in the South-east of South Australia (around Port Macdonnell to Nora Creina) and on the Bass Strait island of King Island, Tasmania. The other area sampled, by the Australian Wader Studies Group, is in North-west Australia (NWA) – specifically in Roebuck Bay, Broome, and on the northern parts of 80 Mile Beach and the adjacent grassland plains of Anna Plains Station. Here a minimum of eight species are monitored annually.

In SEA birds were caught at a range of sites, mostly the same sites as in other recent years. No particular problems were experienced this year except that there were so few Red Knots around in the 2018/19 season that it was not possible even to make a catching attempt on them. Weather conditions etc. were also greatly improved in NWA, compared with the previous season, and this enabled all the main species to be successfully caught in adequate numbers.

This note gives the numerical data relating to the relevant catches made in the two regions during the 2018/19 wader non-breeding season. It also categorises the estimated breeding success of each population in the 2018 Arctic summer.

METHODS

There were no significant interruptions in the sampling period in 2018/2019, as there were in the preceding year (when a cyclone considerably disrupted the NWA planned fieldwork programme). The usual techniques for catching/ageing birds etc. were employed in both regions.

RESULTS & DISCUSSION

SEA

A total of 2,125 birds, of the seven species targeted for annual monitoring were caught in SEA in the sampling period (Tables 1 and 3). As usual, Red-necked Stint topped the species catch total with 655 individuals caught during the mid-November to early April monitoring period. The percentage of juveniles (9.5%) was higher than last year (3.5%) but was still well below the long-term average (14.7%). This is their second consecutive year of poor breeding success. Curlew Sandpipers have also had two successive poor breeding years, though again there was a slight improvement in the most recent year from the 2017/18 season (9.9% juveniles this year compared with 5.4% last year).

In contrast, Sharp-tailed Sandpipers appear to have had an almost miraculously successful breeding year (45.9% juveniles!). This figure may have been affected by the widespread drought conditions being experienced in inland Australia during the last year. It was certainly noticeable that there were far more Sharp-tailed Sandpipers at coastal locations during the 2018/19 season and it may be that these were preferentially (over adults) immature (juvenile) birds which were forced to the coastal regions. This high breeding productivity in the Arctic summer of 2018 means that the long-term average percentage juveniles for Sharp-tailed Sandpipers is now higher than that of Red-necked Stint and Curlew Sandpiper (16.7% compared with 14.7% and 14.5% respectively).

With two good breeding seasons in succession there was a noticeable widespread marked increase in Sharp-tailed Sandpiper summer populations throughout Victoria. In contrast, with two bad years in succession, Red-necked Stints appeared to be scarcer than usual. Surprisingly Curlew Sandpipers did not appear to be similarly effected by two successive poor breeding years, possibly because they were still benefitting from the exceptionally high breeding productivity of this species in the Arctic summer of 2016.

We always find Red Knot the hardest species to catch and monitor and in the 2018/19 non-breeding season we were only able to catch one bird in the VWSSG monitoring area. In contrast, we did well for Bar-tailed Godwits (100 caught) which are another species which it is particularly difficult to catch in adequate numbers. Unfortunately the breeding success of these Godwits – which banding/flagging has shown to be almost exclusively from the Alaskan breeding location – was very poor in the Arctic summer of 2018 (only 3.0% juveniles).

Ruddy Turnstone was the outstanding success story of this year's monitoring season. A record 596 birds were caught, mostly on two highly successful visits to King Island and one to the South-east of South Australia. It was also another particularly good breeding season for this species with 25.7% juveniles. This is the second year of particularly good breeding success for this species in the last three years. It should result in a welcome halt to declining populations of this species.

Finally another species, the Sanderling, where catching adequate samples annually seems to be becoming more difficult each year. After the complete failure to obtain a useable sample last year we had one good catch, of 100 birds, this year. They seem to have had slightly below average breeding success in the 2018 Arctic summer.

Overall, for south-east Australia, breeding success in the Arctic summer of 2018 was slightly better than the extremely poor year of 2017. Nevertheless four of the six species which were successfully monitored had breeding outcomes which were below average or worse. It is difficult to explain why, in contrast, Ruddy Turnstone and Sharp-tailed Sandpiper should have had much more successful breeding success than these other species.

NWA

Wader populations which spend the non-breeding season in NWA had breeding outcomes which were generally below those of populations in SEA (Tables 2 and 4). Of the eight species monitored annually (those species shown in Table 2, excluding Ruddy Turnstone, Oriental Pratincole and Oriental Plover) only one (Terek Sandpiper) had an above average breeding success in the Arctic summer of 2018. Outcomes for four species were particularly poor, with percentage juveniles in single figures (Table 2). One can only presume that the weather conditions and/or other breeding parameters were poor. Overall 1,561 waders were caught during the breeding success assessments in 2018/19.

Bar-tailed Godwits has a particularly bad breeding outcome (2.0% juveniles) in the 2018 breeding season. This is the second successive year with an extremely low breeding productivity. It was noticeable how relatively few Bar-tailed Godwits were present at high tide roosts, particularly along the area of 80 Mile Beach adjacent to Anna Plains Station. Gone are the days when the instruction to the cannon netting team was to 'avoid catching any more Bar-tailed Godwit'!

Great Knot also had another poor breeding year in 2018 (5.5% juveniles). It is now nine years since the average percentage juveniles was exceeded in this species.

In absolute terms Red Knot fared even worse (1.5% juveniles) during the most recent breeding season. However this species is prone to rather wide fluctuations in breeding success from year to year and it was only two years ago that 21.6% juveniles were present in the summer populations in NWA.

Red-necked Stints in NWA had a second successive poor breeding year, as they have done in SEA.

The string of low annual productivity results continued in the Greater Sand Plover. It is seven years now since the long-term average percentage juveniles was exceeded.

Terek Sandpiper and Grey-tailed Tattler both continued their run of results which can swing quite markedly from year to year. Both had relatively good breeding success in 2018.

It is interesting that although the sample of Ruddy Turnstone was only small (16) in NWA they appeared to have had good breeding success in 2018. Similar high breeding success figures were also obtained for this species in SEA in the 2018/19 non-breeding season.

Figures are also included for Oriental Pratincole and Oriental Plover, two grassland species at Anna Plains/80 Mile Beach which are not usually caught in sufficient numbers each year to be part of the regular monitoring programme. Both seem to have had relatively poor breeding success in 2018, but the norm for each species is of course not known at the present time.

We hope for a repeat in the 2019/20 season of the good catching opportunities we had for such species in NWA in breeding success.

CONCLUSION

It was disappointing that the overall breeding success results in the 2018/19 season were not a lot better in either SEA or NWA than the very poor results experienced in 2017/18. We will continue to monitor 'percentage juveniles' in the usual way in the 2019/20 non-breeding season. Let us hope this brings a significant improvement in the 2019/20 year.

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As usual, the results are dependent on the fieldwork efforts of the Victorian Wader Study Group and the Australasian Wader Studies Group (especially the NWA 2019 Expedition). Their perseverance, often in adverse weather conditions, continues to be key to obtaining adequate data for an accurate assessment of annual breeding success.

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Table 1. Percentage of juvenile (first year) waders in cannon-net catches in south-east Australia 2018/2019.

Species	No. of catches			Juveniles		Long-term average* % juvenile (years)	Assessment of 2018 breeding success
	Large (>50)	Small (<50)	Total caught	No.	%		
Red-necked Stint <i>Calidris ruficollis</i>	2	7	655	62	9.5	14.7 (41)	Poor
Curlew Sandpiper <i>C. ferruginea</i>	2	2	395	39	9.9	14.5 (39)	Below Average
Bar-tailed Godwit <i>Limosa lapponica</i>	1	0	100	3	3.0	20.9 (30)	Very Poor
Red Knot <i>C. canutus</i>	0	1	(1)	1	-	54.4 (20)	-
Ruddy Turnstone <i>Arenaria interpres</i>	3	21	596	153	25.7	16.3 (29)	Very Good
Sanderling <i>C. alba</i>	1	3	112	13	11.6	14.4 (27)	Below Average
Sharp-tailed Sandpiper <i>C. acuminata</i>	1	2	266	122	45.9	16.7 (35)	Exceptionally Good

All birds cannon-netted in the period 2th November to 25th March except Sharp-tailed Sandpiper and Curlew Sandpiper to end February only and some Ruddy Turnstone and Sanderling to early April and one Sanderling catch in late April (2015) .

*Includes the 2018/2019 figures.

Table 2. Percentage of juvenile (first year) waders in cannon-net catches in north-west Australia 2018/2019.

Species	No. of catches		Total caught	Juveniles		Long-term average* % juvenile (years)	Assessment of 2018 breeding success
	Large (>50)	Small (<50)		No.	%		
Great Knot <i>Calidris tenuirostris</i>	4	2	758	42	5.5	10.5 (21)	Poor
Bar-tailed Godwit <i>Limosa lapponica</i>	1	2	103	2	2.0	9.8 (21)	Very Poor
Red-necked Stint <i>C. ruficollis</i>	0	6	118	10	8.4	18.3 (21)	Poor
Red Knot <i>C. canutus</i>	0	4	66	1	1.5	15.1 (20)	Very Poor
Curlew Sandpiper <i>C. ferruginea</i>	0	8	58	8	13.8	17.2 (21)	Below Average
Ruddy Turnstone <i>Arenaria interpres</i>	0	1	16	4	(25.0)	-	(Probably Very Good)
Non-arctic northern migrants							
Greater Sand Plover <i>Charadrius leschenaultii</i>	1	9	225	34	15.1	21.4 (21)	Below Average
Terek Sandpiper <i>Xenus cinereus</i>	0	7	34	9	26.5	13.2 (20)	Very Good
Grey-tailed Tattler <i>Heteroscelus brevipes</i>	0	7	45	7	15.7	18.7 (20)	Average
Oriental Pratincole <i>Glareola maldivarum</i>	1	2	113	7	6.2	-	Poor?
Oriental Plover <i>Charadrius veredus</i>	0	6	25	1	(4.0)	-	(Poor?)

All birds cannon-netted in period 1 November to mid-March

*Includes the 2018/19 figures

Table 3. Percentage of juvenile (first year) birds in wader catches in south-east Australia 1998/1999 to 2018/2019.

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	Average (last 21yrs)
Ruddy Turnstone <i>Arenaria interpres</i>	6.2	29	10	9.3	17	6.7	12	28	1.3	19	0.7	19	26	10	2.4	38	17	2.3	28.6	7.0	25.7	15.1
Red-necked Stint <i>Calidris ruficollis</i>	32	23	13	35	13	23	10	7.4	14	10	15	12	20	16	22	17	19	6.0	31.3	3.8	9.5	16.6
Curlew Sandpiper <i>C. ferruginea</i>	4.1	20	6.8	27	15	15	22	27	4.9	33	10	27	(-)	4	3.3	40	5.1	1.9	47.6	5.4	9.9	16.5
Sharp-tailed Sandpiper <i>C. acuminata</i>	11	10	16	7.9	20	39	42	27	12	20	3.6	32	(-)	5	18	19	16	8.9	(-)	27.8	45.9	19.9
Sanderling <i>C. alba</i>	10	13	2.9	10	43	2.7	16	62	0.5	14	2.9	19	21	2	2.8	21	14	6.8	17.5	(-)	11.6	14.9
Red Knot <i>C. canutus</i>	(2.8)	38	52	69	(92)	(86)	29	73	58	(75)	(-)	(-)	78	68	(-)	(95)	(100)	(100)	90.3	33.3	(-)	58.8
Bar-tailed Godwit <i>Limosa lapponica</i>	41	19	3.6	1.4	16	2.3	38	40	26	56	29	31	10	18	19	45	15	26.7	12.5	20.4	3.0	22.5

All birds cannon-netted between 15th November and 25th March, except Sharp-tailed Sandpiper and Curlew Sandpiper to end February only and some Ruddy Turnstone and Sanderling to early April and one Sanderling catch in late April (2015). Averages (for 21 years) exclude figures in brackets (small samples) and include 2018/2019 figures

Table 4. Percentage of juvenile (first year) birds in wader catches in north-west Australia 1998/1999 to 2018/2019

Species	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	Average (last 21yrs)
Red-necked Stint <i>Calidris ruficollis</i>	26	46	15	17	41	10	13	20	21	20	10	17	18	24	15	19	10	11.1	17.2	6.8	8.4	18.3
Curlew Sandpiper <i>C. ferruginea</i>	9.3	22	11	19	15	7.4	21	37	11	29	10	35	24	1	1.9	23	18	0.7	40.3	8.1	13.8	17.2
Great Knot <i>C. tenuirostris</i>	2.4	4.8	18	5.2	17	16	3.2	12	9.2	12	6	41	24	6	6.6	5	6	5.7	9.0	2.6	5.5	10.5
Red Knot <i>C. canutus</i>	3.3	14	9.6	5.4	32	3.2	(12)	57	11	23	12	52	16	8	1.5	8	13	2.7	21.6	5.4	1.5	15.1
Bar-tailed Godwit <i>Limosa lapponica</i>	2.0	10	4.8	15	13	9.0	6.7	11	8.5	8	4	28	21	8	7.6	17	5	10.3	11.0	3.0	2.0	9.8
Non-arctic northern migrants																						
Greater Sand Plover <i>Charadrius leschenaultii</i>	25	33	22	13	32	24	21	9.5	21	27	27	35	17	19	28	21	20	10.5	12.4	13.2	15.1	21.4
Terek Sandpiper <i>Xenus cinereus</i>	12	(0)	8.5	12	11	19	14	13	11	13	15	19	25	5	12	15	12	9.2	5.8	3.8	26.5	13.2
Grey-tailed Tattler <i>Heteroscelus brevipes</i>	26	(44)	17	17	9.0	14	11	15	28	25	38	24	31	20	18	16	19	8.9	14.5	7.3	18.7	18.7

All birds cannon-netted in the period 1 November to mid-March. Averages exclude figures in brackets (small samples) but include 2018/2019 figures.