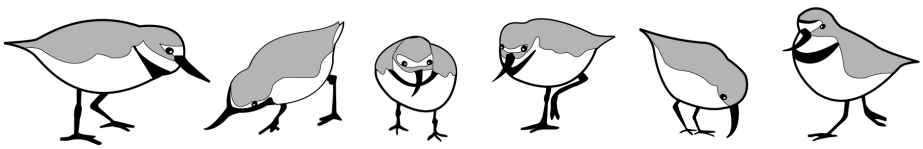
AWSG
Australasian Shorebird Conference

Auckland New Zealand

1-2 October 2016



Hosted by
Pūkorokoro Miranda Naturalists' Trust
in assossiation with Birds New Zealand
and Unitec Institute of Technology

PROGRAMME: Saturday 1 October

Session 1	***Opening and keynote address*** *Chair – Adrian Riegen*		***Page***
9:00–9:20	Welcome and conference opening		
9:20–10:10	Keynote address: John Dowding	Status of New Zealand's breeding shorebirds – the issues and the outlook	6
10:10–10:40	***Morning tea***		
Session 2	***Management*** *Chair – Phil Battley*		
10:40–11:00	Pip Wallace	Making space; managing human disturbance of wildlife in coastal areas	7
11:00–11:20	Micha Jackson	Managing artificial coastal habitats for migratory shorebirds	8
11:20–11:40	Maureen Christie	Beach-cast marine algae fishery in the South East of South Australia	9
11:40–12:00	Tony Flaherty	Natural Resource Planning for shorebird conservation	10
12:00-1:20	***Lunch***		
Session 3	***Tracking*** *Chair – Danny Rogers*		
1:20–1:40	Tony Flaherty	Tracking of Grey Plover in the East Asian-Australasian Flyway	11
1:40–2:00	David Li	Geolocator tracking of Common Redshank Tringa totanus in Singapore	12
2:00–2:20	Jon Coleman	Tracking migration of Grey-tailed Tattlers using leg flags and geolocators	13
2:20–2:40	Phil Battley	Clarifying the migrations of Red Knots from New Zealand	14
2:40–3:00	Ken Gosbell	A review of geolocator studies in Australia, 2009–2016. Where to now?	15
3:00–3:30	***Afternoon tea***		
Session 4	***Yellow Sea*** *Chair – Doug Watkins*		
3:30–3:50	Jimmy Choi	How bivalve size and quality interact to limit intake rates of Bar-tailed Godwits and Great Knots in the northern Yellow Sea	16
3:50–4:10	Peng He	Site familiarity and food availability affect the stopover site movements of migrating shorebirds	17
4:10–4:30	Jing Li	What have we found about the Spoon-billed Sandpiper in the southern Jiangsu coast in China?	18
4:30–4:50	Ying Chen* Given by Peng He	Shorebirds and their coastal wetland changes in China's Yellow Sea	19
4:50–5:10	Adrian Riegen	Shorebird surveys of the West Sea coast of the Democratic People's Republic of Korea 2009-2016	20
5:10	*End of talks*		
7:00	*Dinner at Point Chevalier RSA*		

PROGRAMME: Sunday 2 October

Session 1	***Housekeeping, keynote address and Flyway populations*** *Chair – Keith Woodley*		***Page***
9:00–9:10	Housekeeping and settling in		
9:10–9:50	**Keynote address:** Doug Watkins	Southern collaboration in the EAAFP	21
9:50–10:10	Birgita Hansen	Revision of the East Asian-Australasian Flyway Population Estimates for 37 listed Migratory Shorebird Species	22
10:10–10:40	***Morning tea***		
Session 2	***Engagement*** *Chair – Alison Russell-French*		
10:40–11:00	Amellia Formby	Wing Threads – shorebird conservation project	23
11:00–11:20	Barbara Campbell	Interspecies performances between humans and shorebirds on the EAAF	24
11:20–11:40	Arkellah Irving	A river story, a bird story and collective impact for change	25
11:40–12:00	Jean Turner	Gotta Love a Plover: fostering knowledge-building and shorebird conservation through community action	26
12:00–12:20	Ben Paris	Auckland NZ dotterel minders: the rise of a shorebird management community	27
12:20-1:20	***Lunch***		
Session 3	***Biology and local sites*** *Chair – Ken Gosbell*		
1:20–1:40	Grace Maglio	Foraging ecology of migratory shorebirds on Roebuck Bay	28
1:40–2:00	Daniel Lees	Paternal care matters: variation in male care influences chick survival in a shorebird	29
2:00–2:20	Janelle Ward	Physiological impacts of capture on godwits and knots	30
2:20–2:40	Ailsa Howard	The Banded Dotterels of South Bay, Kaikoura: the Empty Nest Syndrome	31
2:40–3:00	Amanda Lilleyman	The Northern Gap: What do we know about the status of shorebirds in Darwin, Northern Territory?	32
3:00–3:30	***Afternoon tea***		
Session 4	***Local sites and East Asian-Australasian Flyway*** *Chair – Birgita Hansen*		
3:30–3:50	Adam Leavesley	Migratory shorebirds and the LNG boom: six years of surveys in Gladstone Harbour and the Curtis Coast, Queensland.	33
3:50–4:10	Meijuan Zhao	Big birds under time stress: size-dependent strategies when migrating to and from the breeding grounds in long-distance migratory shorebirds	34
4:10–4:30	Danny Rogers	Phenology of southward migration of shorebirds in the East Asian–Australasian Flyway and inferences about stopover strategies	35
4:30	***End of scientific programme***		

Saturday 1 October

John Dowding
Keynote

Conservation status of New Zealand's breeding shorebirds: the issues and the outlook

John E. Dowding[1]
[1] DM Consultants, PO Box 36-274, Merivale, Christchurch 8146, New Zealand. jdowding@xtra.co.nz

The New Zealand avifauna has one of the highest proportions of threatened species of any avifauna globally. The 18 extant shorebird taxa that breed in New Zealand typify this; 8 are classified as Threatened, 9 as At Risk, and only 1 is Not Threatened. Three other taxa are recently extinct. The main reason for the declines and extinctions has been predation by introduced mammals, and predator control or eradication has been the single most important management tool in preserving extant taxa. Recent rat incursions on two islands have provided graphic evidence of the susceptibility of the shore plover to predation. Other issues facing New Zealand shorebirds, particularly on the mainland, include loss and degradation of habitat, a resource management system that does not always offer adequate protection, and a massive shortfall in funding for management and research. These issues are compounded by public and political ignorance (or even denial) of the state of our biodiversity and the impacts of human activities on it. Climate change will pose further challenges for coastal species and for shorebirds that breed in riverbeds. A vision to free New Zealand of introduced predators within 35 years (PFNZ 2050) has recently been announced. If realised, it would clearly be of huge benefit to biodiversity in this country, but it will face major financial, social, and technical challenges. In the meantime, many bird taxa continue to decline, and extinctions are a real (and continuing) prospect. Even if the PFNZ vision is realised, it may come too late to save one New Zealand shorebird.

Oral presentation

Making space; managing human disturbance of wildlife in coastal areas

Pip Wallace
Environmental Planning Programme, University of Waikato, Private Bag 3105, Hamilton, New Zealand. pwallace@waikato.ac.nz http://www.waikato.ac.nz/staff-profiles/people/pwallace

Human disturbance of wildlife is an under-recognised and under-regulated problem. This presentation examines intensifying human pressures impacting coastal habitat and species and discusses how law and policy are failing to keep pace with change. Traditional approaches to conservation management in protecting wildlife from disturbance are examined and limitations and challenges identified. The key problems are deficiencies in regulation of species disturbance, lack of definition of thresholds of harm that contemplate rarity and conservation status, insufficient comprehensive wildlife conservation planning and the need for innovative planning methods that address species mobility, permeable boundaries, aerial spaces and environmental dynamism. Regulatory controls including enforcing setbacks/approach distances through either enhanced species protection or 'mobile habitat' protection are recommended. Extending such implementation methods in resource management plans to identify and protect significant aerial habitat would also be of benefit.

Oral presentation

Managing artificial coastal habitats for migratory shorebirds

Micha V. Jackson[1]
Chi-Yeung Choi[2] and Richard Fuller[3]
[1]School of Biological Sciences, The University of Queensland, St Lucia 4072 Qld, Australia.
m.jackson@uqconnect.edu.au
[2]School of Biological Sciences, The University of Queensland, St Lucia 4072 Qld, Australia.
c.choi@uq.edu.au
[3]School of Biological Sciences, The University of Queensland, St Lucia 4072 Qld, Australia.
r.fuller@uq.edu.au

Rapid and extensive reclamation of the intertidal zone and land use change in coastal wetlands of the Yellow Sea have driven serious migratory shorebird population declines in the East Asian–Australasian Flyway. Many of the remaining wetlands fringing the Yellow Sea are artificial, such as aquaculture ponds and salt pans, but relatively little is known about the importance of these habitats for migratory shorebirds or how to manage them effectively. Given the enormous pressure on natural coastal habitats, it is of critical importance to assess how artificial habitats can provide feeding and resting areas. In this talk I will review existing knowledge about the use of artificial habitats by migratory shorebirds in the EAAF and elsewhere, and explore the socio-economic factors crucial for management of these areas. I will then identify some of the urgent research gaps that could hamper optimal management of feeding and roosting sites in artificial habitats in the Yellow Sea, and present a research plan for addressing these.

Oral presentation

Beach-cast marine algae fishery in the South East of South Australia

Maureen Christie[1]
Doug Watkins[2], Ken Gosbell[3], Jeff Campbell[4], James Brook[5].
[1]FoSSE, VWSG, Carpenter Rocks, 5291, South Australia, Australia. twinpeppercorns@gmail.com
[2]AWSG, 99 MacKellar Cr, Cook, 2614. douggwatkins@gmail.com
[3]VWSG, AWSG, 1/19 Baldwin Road, Blackburn, 3130, Victoria, Australia. ken@gosbell.id.au
[4]FoSSE, VWSG, 22 Lindsay Street, Mount Gambier, 5291, South Australia, Australia.
sarah.jeffcampbell@bigpond.com
[5]Conservation Council of South Australia, 9 Parson Street, Goodwood, 5034, South Australia, Australia, fisheries@conservationsa.org.au

In South Australia beach-cast marine algae is a 'fishery' administered by Primary Industry and Regions SA (PIRSA) operating within one of Australia's most important sites for Ruddy Turnstone, Sanderling and Hooded Plover. The industry commenced in the early 1990's with one licensed operator, Australian Kelp Products P/L (APK), holding a licence that covered 100 km of the coast in the South East of the state. With a change of ownership in 2014 the average 79.5 wet tonnes annual harvest was planned to increase up to 10,000 wet tonnes. For AKP to obtain an export licence PIRSA had to obtain approval from the Federal Department of Environment and show that the fishery would be managed in a sustainable manner posing no significant threat to species covered under the EPBC Act. We will discuss the processes involved in negotiating new management arrangements that allow the fishery to operate but with safeguards to protect shorebirds.

Comment was first called for in March 2014 on an Assessment that lumped Beach-cast Seagrass and Marine Algae together, permitted a take rate of 75% of the beachwrack along most of the licence area using heavy machinery and gave no credible protection to migratory or resident nesting shorebirds. There were several rounds of comment, a rewritten assessment and the Minister's Declaration of an Approved Wildlife Trade Operation. An appeal was made through the Administrative Appeals Tribunal against this declaration as it offered no protection for shorebirds in the critical five weeks prior to northward migration. This Appeal was based on long term data gathered from VWSG banding, flagging and geolocators studies and AWSG count data collected by committed and dedicated volunteers.

Through a negotiation process between FoSSE, the Commonwealth Government, AKP and PIRSA a new model for the fishery was developed – no heavy machinery throughout the fishery, no harvesting on over 50% of the coast, including the Significantly Important site of Rivoli Bay, a limit on the time harvest is permitted in other important sites and exclusion of harvesting around breeding Hooded Plover pairs

Oral presentation and poster

Natural Resource Planning for shorebird conservation

Tony Flaherty
Natural Resources Adelaide & Mt Lofty Ranges, 205 Greenhill Rd, Eastwood, SA 5063,
tony.flaherty@sa.gov.au

Across Australia, there are 56 regional Natural Resource Management (NRM) organisations that act as delivery agents for Australian Government funds and Landcare programmes. Integrating coast and marine projects into these, often terrestrially focused, NRM frameworks has historically been challenging.

A national Wildlife Conservation Plan (WCP) for Migratory Shorebirds was developed under the Environment Protection and Biodiversity Act in 2006. This Plan outlined statutory commitments for migratory birds and their habitat, as well as actions to promote the conservation of migratory shorebirds, both within Australia and across the East Asian - Australasian Flyway at Local, State and National level. The WCP has recently been reviewed and a revised plan released. Arguably, long-term, targeted funding approaches are needed to maintain management of coastal wetlands and important shorebird sites.

The development of NRM planning in the Adelaide and Mt Lofty Ranges region coincided with the release of the initial Shorebird WCP. Local WCP actions were incorporated into NRM coastal programmes. Whilst still presenting challenges; regional and local organisations can work with local communities, councils and NGOS to implement local initiatives for shorebird conservation. These include research and citizen science approaches to identify of high value habitats and risk assessment, on-ground works to protect habitat and public awareness and community arts activities, input into local planning and protected area approaches.

Involvement of NGO and community expertise in shorebird research projects is essential to provide important information to help connect local people and places to their global context. Resident non-migratory shorebirds can also be an important citizens' science and awareness tool to highlight valuable habitat areas. The epic long-haul migrations these birds undertake can provide an important linchpin for better connecting people to the often undervalued saltmarsh and mudflat habitats necessary for shorebird survival. With shorebird conservation, acting locally is acting globally.

Oral presentation

Tracking of Grey Plover in the East Asian-Australasian Flyway

Tony Flaherty[1]
Clive Minton[2], Maureen Christie[3], Grace Maglio[4,] Katherine Leung[5], Ken Gosbell[6], Reece Pedler[7], Chris Hassell[8]
[1] Natural Resources Adelaide & Mt Lofty Ranges, 205 Greenhill Rd, Eastwood, South Australia 5063, Australia. tony.flaherty@sa.gov.au
[2] Victorian Wader Study Group (VWSG), 165 Dalgety Road, Beaumaris, Victoria, 3193, Australia. mintons@ozemail.com.au
[3] Friends of Shorebirds South East (FoSSE) and VWSG, Carpenter Rocks, South Australia 5291, Australia. twinpeppercorns@gmail.com
[4] Australasian Wader Studies Group (AWSG), PO Box 7419 Broome, Western Australia, 6725, Australia. gracemaglio@hotmail.com
[5] AWSG, 16C, Block 1, Hung Hom Gardens, 3 Tsing Chau Street, Kowloon, Hong Kong. katsoftdrinks@yahoo.com.hk
[6] AWSG, 1/19 Baldwin Road, Blackburn, Victoria, Australia 3130. ken@gosbell.id.au
[7] FoSSE, AWSG, PO Box 712, Roxby Downs, South Australia 5725, Australia. reece.pedler@deakin.edu.au
[8] Global Flyway Network (GFN), PO Box 3089, Broome, Western Australia 6725, Australia. turnstone@wn.com.au

Knowledge of Grey Plover migration in the East Asian Australasian Flyway is limited. Over six hundred Grey Plover have been banded in Australia since 1960, with few recoveries, and no Australian-marked birds recorded in the breeding range. A 2001 analysis of biometric data, suggested that north-western Australian Grey Plover probably utilized mainland Siberian breeding sites east of the Lena River, and that some south-eastern Australian birds may breed on Wrangel Island, off the coast of north-east Siberia. Prior to a single 2014 sighting of a bird, flagged on Wrangel Island, in Jiangsu Province, East China, there was no flyway information for Grey Plovers breeding on Wrangel Island. Satellite telemetry was undertaken using 5 g solar powered Platform Terminal Transmitters, attached using 'leg-loop harnesses'. The units were programmed to a 10 hrs ON/48 hrs OFF duty cycle. Five satellite devices on Grey Plover have been deployed north of Adelaide, South Australia since 2014. Birds demonstrated high site fidelity to locations in their non- breeding areas. Five transmitters were also deployed on Grey Plover at Roebuck Bay, north-western Australia in February 2016, as part of publically funded Pozible appeal, through the Australasian Wader Studies Group, and BirdLife Australia. In 2016, two WA and two SA birds were tracked to Arctic Siberia. Birds from both marking locations utilized sites on the Chinese Yellow Sea Coast for over fifty days. From China, birds were tracked to the Yakutia coast of Eastern Siberia. From there, the SA flagged birds flew east, to Wrangel Island in the Arctic Ocean. These are the first records of any Australian-marked bird on Wrangel Island. One WA-deployed unit and two SA deployed units continued transmissions throughout the breeding season, and all three appear to have hatched eggs successfully. It is hoped further information on migration will be forthcoming.

Oral presentation

Geolocator tracking of Common Redshank *Tringa totanus* in Singapore

David Li Zuowei
How Choon Beng, Yang Shufen, Mendis Tan Wei Hong, Benjamin Lee Chengfa, Muhammad Fadhli Bin Ahmad, Mishak bin Shunari
Sungei Buloh Wetland Reserve, National Parks Board. 301, Neo Tiew Crescent, Singapore, 718925
David_Li@naparks.gov.sg; HOW_CHOON_BENG@nparks.gov.sg; YANG_Shufen@nparks.gov.sg; MENDIS_TAN@nparks.gov.sg; Benjamin_CF_LEE@nparks.gov.sg; Fadhli_Ahmad@nparks.gov.sg; MISHAK_SHUNARI@nparks.gov.sg

Geolocation by light is a cost-effective and established method for shorebirds migration study. However, it requires recapturing of the tagged birds to recover the geolocators for data processing. The Common Redshank (*Tringa totanus*), is one of the most common shorebird species found in Sungei Buloh Wetland Reserve (SBWR), with an annual winter peak count range of 305 to 1,250 between 1993 to 2013 (SBWR, unpublished data). This species generally has a high fidelity to their wintering site. Based on the bird ringing data of SBWR from 1990 to 2013, the recapture rate for the Common Redshank is 14.7%.This is the highest amongst all the shorebird species found in the reserve (SBWR, unpublished data). With a high fidelity and recapture rate, the Common Redshank was chosen for the first Geolocator study in Singapore.

A total of 99 geolocators were deployed on Common Redshanks from 24 October 2014 to 5 March 2015, with 97 birds of at least one year in age. The same birds were also tagged with serialized engraved flags. In the following migratory season from July 2015 to April 2016, sixty of the geolocator-tagged birds were observed at SBWR (60.6%). Between 9 September 2015 to 4 March 2016, one juvenile and six adult birds of these were recaptured. Data from the six adult birds suggest that the Common Redshanks in this study breed in Tibet-Qinghai Plateau in China. Along the migration pathway, there were two major stopovers: the area inclusive of the Inner Gulf of Thailand and southeastern coast of Myanmar, and Sichuan province, China. Meanwhile, juveniles remained mostly in Singapore and/or the immediate region, including Thailand.

With the geolocator technology, we were better able to understand the migration route and breeding ground of the Common Redshank wintering in SBWR. Looking forward, we plan to apply satellite tracking technology for medium to large shorebird species such as the Whimbrel (*Numenius phaeopus*) and Common Greenshank (*Tringa nebularia*).

Oral presentation

Reference:
Burton, N.H.K. 2000. Winter site-fidelity and survival of Redshank *Tringa totanus* at Cardiff, south Wales. *Bird Study* 47: 102-112.
Buxton, N. 1988. Redshanks in the Western Isles of Scotland. *Ringing and Migration* 9: 146-152.
Clark, N.A., C.D.T. Minton, J.W. Fox, K. Gosbell, R.B. Lanctot, R.R. Porter & S. Yezerinac. 2010. The use of light-level geolocators to study wader movements. *Wader Study Group Bull.* 117(3): 173–178.
Minton, C., Gosbell, K., Johns, P., Christie, M., Klaassen, M., Hassell, C., Boyle, A., Jessop, R. & Fox, J. 2011. Geolocator studies on Ruddy Turnstones *Arenaria interpres* and Greater Sandplovers *Charadrius leschenaultia* in the East Asian–Australasia Flyway reveal widely different migration strategies. *Wader Study Group Bull.*118(2): 87–96.

Tracking migration of Grey-tailed Tattlers using leg flags and geolocators

Jonathan T. Coleman[1]
David A. Milton[2] and Hitoshi Akutsu[3]
[1] 22 Parker Street, Shailer Park, QLD, 4128, Australia (Corresponding Author)
[2] 336 Prout Road, Burbank, Qld 4156, Australia.
[3]Hitoshi Akutsu, 3-23-15 Fijusaki Narashino Chiba Japan

Queensland Wader Study Group have caught and leg-flagged Grey-tailed Tattlers *Tringa brevipes* in Moreton Bay for over ten years and more recently embarked on an attempt to use geolocators to gain more detailed information on their migratory habits. Leg-flags indicate that Queensland tattlers rely heavily on Japanese staging grounds on their northward migration but there are virtually no resightings of Queensland birds further north, or on southward migration. This easterly migration track, with minimal Yellow Sea interaction is almost certainly the reason that this species is not in decline in Queensland, unlike many of its migratory counterparts. To fill in the gaps in our knowledge of this species geolocators were used in the 2010/11 and 2011/12 Austral summers with 40 devices fitted over the two seasons. Return rates, although not significantly different to birds banded and not fitted with geolocators, were unusually low compared to previous seasons and the reasons for this are discussed. Despite this a small number of geolocators were recovered and all provided complete northward and southward tracks with one device, recovered two years later, providing an additional northward track for that individual. Each bird presented a different northward migration track staging in different locations in Japan but apparently all breeding in Kamchatka. In one case an individual took a far more westerly path, staging in the Philippines and then Japan. On southward migration birds travelled almost directly to Australia with brief stopovers in the mid Pacific. The bird that provided two northward tracks provided data suggesting that the species is not only site faithful on their non-breeding grounds but also to their staging areas and migration routes. Migration speeds, duration and synchronisation will also be presented and discussed in this presentation.

Oral presentation

Clarifying the migrations of Red Knots from New Zealand

Phil F. Battley[1]
and Simeon Lisovski[2]
[1] Ecology Group, Massey University, Private Bag 11-222, Palmerston North, New Zealand. p.battley@massey.ac.nz
[2] Department of Neurobiology, Physiology and Behavior, 196 Briggs Hall, One Shields Avenue, University of California, Davis, CA 95616-8519, USA. simeon.lisovski@gmail.com

For all the interest and banding work that there is on Red Knots, it is still unclear just how New Zealand-wintering knots migrate up and down the East Asian-Australasian Flyway. Early band records indicated that birds probably staged in northern Australia or Papua New Guinea on northward migration, but surveys in the Gulf of Carpentaria have failed to locate them. Geolocator tracking of two New Zealand birds tagged in Russia showed that they migrated direct from New Zealand to eastern Asia on northward migration; this finding is at odds with records in May of evidently newly-arrived New Zealand knots in China, as those birds must have staged elsewhere in April. According, we deployed geolocators on knots at the Manawatu Estuary in the North Island of New Zealand in 2013, retrieving 8 of 25 loggers after migration. These show indisputably that all the tracked birds did indeed have a prolonged staging period in the northern Australian/Papuan region before making their way to the Yellow Sea region in eastern Asia. Clarifying just where the staging took place is proving difficult, as there is little difference in predicted light conditions between West Papua and northern Australia. On the way south, knots made complex series of stopoffs in the Sea of Okhotsk/Sakhalin Island region, the Yellow Sea, Papua/northern Australia again, and for some birds also within-Australia movements to east or southeast Australia before eventually reaching New Zealand. The long staging period on northward migration meant that most knots spent little time in Asia. In one extreme case, a bird that was evidently of the subspecies *piersmai* that breeds on the New Siberian Islands remained in Australia until 2 June before migrating north, spent just one week in the northern Yellow Sea, and only reached the breeding grounds around 23 June. Having confirmed that some knots do indeed stage between New Zealand and Asia on northward migration, we now have to answer why others fly more than twice that distance without a stopoff on the same migration.

Oral presentation

A review of geolocator studies in Australia, 2009–2016. Where to now?

Ken Gosbell[1]
Clive Minton[2], Jon Coleman[3], Simeon Lisovski[4], Maureen Christie[5], Chris Hassell[6], Marcel Klaassen[7]
[1] Victorian Wader Study Group (VWSG) and Australasian Wader Studies Group (AWSG), 1/19 Baldwin Road, Blackburn, 3130, Victoria, Australia. ken@gosbell.id.au
[2] VWSG and AWSG, 165 Dalgetty Road, Beaumaris, Victoria 3193, Australia. mintons@ozemail.com.au
[3] Queensland Wader Study Group (QWSG), 22 Parker Street, Shailer Park, Queensland 4128, Australia. Janetandjon@hotmail.com
[4] Centre for Integrative Ecology, School of Life & Environmental Sciences, Deakin University, Locked Bag 20000 Geelong Victoria 3220, Australia. Current address XXXX USA. simeon.lisovski@gmail.com
[5] VWSG and Friends of Shorebirds South East (FoSSE), Carpenter Rocks, South Australia 5291, Australia. twinpeppercorns@gmail.com
[6] Global Flyway Network (GFN), PO Box 3089, Broome, West Australia 6725, Australia. turnstone@wn.com.au
[7] Centre for Integrative Ecology, School of Life & Environmental Sciences, Deakin University, Locked Bag 20000, Geelong, Victoria 3220, Australia. marcel.klaassen@deakin.edu.au

Australia was one of the first countries to utilise light level geolocators for tracking shorebirds. Commencing in 2009 the VWSG, AWSG, Deakin University, GFN and QWSG have deployed these instruments on a range of migratory shorebird species including Ruddy Turnstone, Eastern Curlew, Sanderling, Great Knot, Red Knot, Greater Sand Plover and Grey-tailed Tattler. Locations have included the coasts of Victoria, King Island (Tasmania), south-east of South Australia, Roebuck Bay, Broome (Northwest Australia) and Moreton Bay (Queensland). We will present a summary of retrieval and success rates as well as discuss the key findings from this extensive program. By analysing the many successful migration tracks over this period, including several multiyear tracks, a picture of the various routes and strategies will be presented. These provide information on the relative importance of a range of stopover sites, a fundamental requirement in developing conservation strategies. In addition, the data recorded by more recent geolocators has enabled an assessment of breeding locations as well as incubation strategies.

The results have contributed to a range of conservation outcomes from flyway wide (including the development of initiatives for the Yellow Sea) to local issues (South Australia beach wrack). In addition they have been used as a resource for more detailed connectivity studies.

Recognising the constraints of geolocators the question is ‘what next’? We will discuss recent developments of geolocators and the current development of a satellite based instrument that may extend our knowledge for many other species for which geolocators cannot be used.

How bivalve size and quality interact to limit intake rates of Bar-tailed Godwits and Great Knots in the northern Yellow Sea

Chi-Yeung Choi[1*]

Phil F. Battley[1], Murray A. Potter[1], Zhijun Ma[2] and David S. Melville[3]

[1] Ecology Group, Institute of Agriculture and Environment, Massey University, Private Bag 11-222, Palmerston North, 4442, New Zealand. c.choi@uq.edu.au; P.Battley@massey.ac.nz; M.Potter@massey.ac.nz

[2] Ministry of Education Key Laboratory for Biodiversity Science and Ecological Engineering, Institute of Biodiversity Science, Fudan University, Shanghai, 200433, P. R. China. zhijunm@fudan.edu.cn

[3] 1261 Dovedale Road, R.D. 2 Wakefield, Nelson 7096, New Zealand. david.melville@xtra.co.nz

*Current address: School of Biological Sciences, University of Queensland, Brisbane, Qld. 4072, Australia.

The intake rate is commonly used as the surrogate for fitness and therefore is an important currency in the study of foraging ecology. We studied the foraging ecology of shorebirds in the northern Yellow Sea, China, and found clear behavioural evidence for the existence of a digestive bottleneck in these species when ingesting bivalves. At the population level, bivalve-reliant Great Knots showed lower foraging activity than the mixed-diet Bar-tailed Godwit. Within individual foraging bouts, the species with the greatest reliance on bivalves ingested whole (Great Knot and Red Knot) had more frequent and longer pauses in their foraging than the species with mixed diets (Bar-tailed Godwit) or that ingested only the flesh (Far Eastern Oystercatcher). Godwits feeding mostly on hard prey also had more frequent and longer pauses than those feeding on soft prey. These findings imply that the ability to process the hard shells of bivalves limits intake rates of these species, with 'penalties' of approximately 5% of foraging time in shellfish-feeding godwits and >20% in Great and Red Knots.

Intake rates (both numerical and biomass) of Bar-tailed Godwits and Great Knots were substantially lower in 2012 than 2011, despite similar numerical and biomass density of their most important bivalve prey *Potamocorbula laevis*. It seems that digestive constraints accompanied by a change in size-structure of the prey, a decrease in prey quality, and an increase in handling time and possibly searching time were the main reasons that contributed to the decline in total biomass intake rate in 2012. We conclude that prey quality, rather than quantity, principally determined the biomass intake rate of shorebirds in our study area. It is also important to take digestive constraints and the possible length of foraging period into account when studying the foraging ecology of shorebirds to allow meaningful comparison between studies and reliable estimates, especially for shorebirds that may face digestive bottlenecks at sites with very high food availability.

Oral presentation

Site familiarity and food availability affect the stopover site movements of migrating shorebirds

Peng He[1]

Hebo Peng[1,4], Chi-Yeung (Jimmy) Choi[2], David Melville[3], Xin Jin[1], Wanjuan Ke[1] & Zhijun Ma[1*]

[1]Ministry of Education Key Laboratory for Biodiversity Science and Ecological Engineering, Institute of Biodiversity Science, Fudan University, Shanghai 200438, China

[2]School of Biological Sciences, The University of Queensland, St Lucia, Queensland, Australia

[3]1261 Dovedale Road, RD 2 Wakefield, Nelson 7096, New Zealand

[4]Present address: Groningen Institute for Evolutionary Life Sciences, University of Groningen, Groningen, 9700 CC, The Netherlands

[*]Correspondence:

E-mail: zhijunm@fudan.edu.cn

Site familiarity and food availability are assumed to affect the movements of migrants at stopover sites, but few studies have examined such effects on free-ranging birds in the field. In 2012 and 2015, we studied the movements of staging Great Knots *Calidris tenuirostris* during northward migration at Yalujiang National Nature Reserve in the northern Yellow Sea, China. Using radio telemetry, we investigated the mean travel distance between roosting and foraging sites (MTD) and the core foraging area (CFA, 50% fixed kernel mudflat home range) of 19 (2012) and 15 (2015) individuals early and late in the staging period. We found that in 2012 when food was abundant, both the mean travel distance and core foraging area were lower in the late than early period. However, in 2015 when there was a dramatic decline in available food, there was no significant difference in both the mean travel distance and core foraging area between the early and late periods. These results suggest that lower site familiarity and food availability might be related to larger foraging ranges and longer commuting distances of shorebirds at stopover sites.

What have we found about the Spoon-billed Sandpiper in the southern Jiangsu coast in China?

Jing Li[1]
and Lin Zhang[1,2]
[1]Spoon-billed Sandpiper in China, Room 402, Building 131, Land 109 Quankou Road, Changning District Shanghai China 200336. Jing.li@sbsinchina.com
[2]Shanghai Birding Tour, Room 702, No.221, Land 4333, Haima Road Fengxian, Shanghai, China 201418. zhanglinastro@163.com

The intertidal mudflats in the southern Jiangsu Province in the South Yellow Sea, China, are critical stopover site for the Spoon-billed Sandpipers and Nordmann's Greenshank as well as other 56 shorebird species. Our local conservation group, called the Spoon-billed Sandpiper in China, has been working with international conservation NGOs since 2008 to conduct regular surveys and community work in the region. In 2015, the team initiated a new project to investigate the stopover ecology of the Spoon-billed Sandpiper and Nordmann's Greenshank by collecting benthos samples and quantifying the moult pattern of these shorebirds in the southern Jiangsu coast. In the same year, the team participated in the first shorebird banding project in Jiangsu and released 10 individually marked Spoon-billed Sandpipers, as well as thousand shorebirds. Earlier this year, our team found at least six Spoon-billed Sandpipers over summering in the study region, indicating the potential importance of our study area for shorebirds during boreal summer. Unfortunately, the intertidal flats in our study area are under severe pressure from coastal development projects and exotic plant invasion. This talk will present the key results from our long-term monitoring work and discuss the problems encountered during our scientific and community work.

Oral presentation

Shorebirds and their coastal wetland changes in China's Yellow Sea

Hebo Peng
Ying Chen[1], David S. Melville[2], Kun Tan[1], Hebo Peng[1], Zhijun Ma[1]*
[1] School of Life Sciences, Fudan University (Jiangwan Campus), No. 2005 Songhu Road, Shanghai, 200438, China
[2] 261 Dovedale Road, RD 2 Wakefield, Nelson 7096, New Zealand
*Corresponding author. Email: zhijunm@fudan.edu.cn

Coastal wetlands in the Yellow Sea Region provide critical and irreplaceable stopovers for migrant shorebirds using the East Asian-Australasian Flyway. In our study, spring migrant shorebird census was carried out from March to May, in 2013 and 2014 and totally 42 species and 610804 individules were recorded. Compared with the historical data, the species richness, total population, and 1% richness (species with their population exceeds 1% of biogeographic population) showed highly significant correlation with most external factors. According to demographic mechanism, shorebirds were classified into several sub-groups, such as freshwater, coastal and generalized species. Then combing coastal wetland, land claim and land-use distribution maps, I applied Generalized Linear Model to analyze the influential factors of shorebird population changes. Freshwater species showed significantly positive correlation with Farmland and Unused land. Coastal species showed significantly negative correlation with Farmland and Unused land. Generalists showed significantly positive correlation with land claim.

Shorebird Surveys of the West Sea coast of the Democratic People's Republic of Korea 2009-2016

Adrian Riegen[1]
David S. Melville[2], Keith Woodley[3], Bruce Postill[4], Song I Ju, Hyo Song Hong, Song Ho Kim & Ung Pak[4]
[1]231 Forest Hill Rd, Waiatarua, Auckland 0612, New Zealand. riegen@xtra.co.nz
[2] 1261 Dovedale, RD2 Wakefield, Nelson 7096, New Zealand
[3]Pūkorokoro Miranda Shorebird Centre, RD3 Pokeno 2473, New Zealand
[4]21 Morrow Ave, St Andrews, Hamilton, 3200, New Zealand
[5]Nature Conservation Union of Korea, Kwangbok No.1 Dong, Mangyongdae District, Pyongyang, Democratic People's Republic of Korea. P.O Box 220-93-7-24

The Yellow Sea and Bohai Bay are vital staging areas for shorebirds during migrations between southern non-breeding grounds and breeding grounds in north Asia and Alaska. Since the 1990s, main shorebird sites on the coasts of China and South Korea have become relatively well known, but much less well known is the West Sea (Yellow Sea) coast of the Democratic People's Republic of Korea (DPRK). In April 2009 the first coordinated counts of shorebirds using tidal areas of the West Sea were made by a joint team from the Korean Natural Environment Conservation Fund and Pukorokoro Miranda Naturalists' Trust (PMNT) at Mundok, about 80km northwest of Pyongyang. In 2015 and 2016 further surveys were carried out by a team from PMNT and Nature Conservation Union of Korea. Areas surveyed were to the north and south of Mundok, and the latter was revisited in 2016. In 2015 a total of 20,635 shorebirds of 31 species were counted. Three species, Great Knot *Calidris tenuirostris*, Dunlin *Calidris alpina* and Bar-tailed Godwit *Limosa lapponica*, occurred in numbers that met the 1% of population criterion used by the Ramsar Convention to identify internationally important wetlands. Together, these three species accounted for 86% of the total shorebirds counted. In 2016 16,590 shorebirds were counted and three sites were identified as being internationally important for Bar-tailed Godwit and Far Eastern Curlew. In addition 4,513 Dunlin were counted. Together, these three species accounted for 85% of the total shorebirds recorded. Numbers of the key species at Mundok were very similar in 2016 to those counted in 2009 and the count dates were similar. Over the next three years it is proposed to visit coastal areas further north towards the Chinese border, including Sin Do (Island), as well as further south towards the DMZ.

Sunday 2 October

Doug Watkins
Keynote

Southern collaboration within the East Asian – Australasian Flyway Partnership

Doug Watkins[1],
Ken Gosbell[1], Alison Russell-French[1], Mark Carey[2], Bruce McKinlay[3], Keith Woodley[4] and Adrian Riegen[4]
[1] Australasian Wader Studies Group. Doug Watkins – 99 MacKellar Cr, Cook, ACT 2614, Australia. douggwatkins@gmail.com; Ken Gosbell – 1/19 Baldwin Road, Blackburn Victoria 3130, Australia. ken@gosbell.id.au; Alison Russell-French – 3 Thorn Place, Curtin, ACT 2605, Australia. alisonrf@iinet.net.au
[2] Australian Government Department of the Environment and Energy, GPO Box 787 Canberra, ACT, Australia 2601. Mark.Carey@environment.gov.au
[3] Department of Conservation, PO Box 5244 Dunedin. bmckinlay@doc.govt.nz
[4] Pūkorokoro Miranda Shorebird Centre, RD3 Pokeno 2473, New Zealand. wryplover@hotmail.com; riegen@xtra.co.nz

In November 2006 the East Asian - Australasian Flyway Partnership was established as a voluntary, non-binding initiative that brings together national governments, intergovernmental and non-government organisations to conserve migratory waterbirds and their habitats. The Partnership has grown from 16 Partners in 2006 to 35 Partners at present. At the southern end of the Flyway, four Partners (Australasian Wader Studies Group, the Pukorokoro Miranda Naturalists Trust and the New Zealand and Australia Governments) are engaging in activities that conserve migratory shorebirds that visit the southern hemisphere during the non-breeding season. Government and non-government collaboration has been important in progressing a number of Partnership objectives, including practical actions to conserve migratory shorebirds.

New Zealand Partners are contributing to the conservation of red knots and bar-tailed godwits (ssp. *baueri*) through engagement at key stopover sites in the Yellow Sea. Wwith the support from NZ Ministry of Foreign Affairs and Trade, data supplied by multi country shorebird counts, intensive banding and other research , is being used to engage with EAAFP Flyway site managers and government officials in the People's Republic of China and the Democratic People's Republic of Korea.

The Australian Government is contributing to the objectives of the Partnership through the recently released Wildlife Conservation Plan for Migratory Shorebirds under the *Environment Protection and Biodiversity Conservation Act 1999.* This national framework outlines a number of research and management actions aimed at conserving migratory shorebirds and their habitats. Australia is also leading the development of the EAAFP International Single Species Action Plan for the Conservation of Far Eastern Curlew (*Numenius madagascariensis*) which will be considered at the 9th Meeting of the Partners in Singapore, January 2017. AWSG members continue research on migratory shorebirds through leg flagging, banding, migration studies using geolocators and satellite transmitters, and count activities . Analysis of these data including Birdlife Australia's Shorebird 2020 program, the Monitoring Yellow Sea Migratory Shorebirds in Australia program and data from New Zealand and the Asian Waterbird Census (Wetlands International) have all underpinned a recent update to the shorebird population estimates of 37 species, funded by the Australian Government.

Government and non-government collaboration in the southern end of the Flyway has worked effectively to raise the profile of migratory shorebirds. However, migratory shorebird populations continue to decline as recognised by recent threatened species listings under Australian national environmental legislation and the IUCN Red List. Continuing international collaboration and cooperation between all Flyway Partners will be key to securing the future for migratory shorebirds in the East Asian–Australasian Flyway.

Revision of the East Asian-Australasian Flyway Population Estimates for 37 listed Migratory Shorebird Species

Birgita D. Hansen[1]
Richard A. Fuller[2], Doug Watkins[3], Danny I. Rogers[4], Robert S. Clemens[2], Mike Newman[5], Eric J. Woehler[5] and Dan R. Weller[6]
[1] Centre for eResearch and Digital Innovation, Federation University Australia, PO Box 663, Ballarat, Vic. 3353, Australia. b.hansen@federation.edu.au
[2] School of Biological Sciences, University of Queensland, St Lucia, Qld 4072, Australia. r.fuller@uq.edu.au, r.clemens@uq.edu.au
[3] Australasian Wader Study Group, 99 MacKellar Cr, Cook, 2614, ACT, Australia. douggwatkins@gmail.com
[4] Arthur Rylah Institute for Environmental Research, PO Box 137, Heidelberg, Vic. 3084, Australia. drogers@melbpc.org.au
[5] BirdLife Tasmania, GPO Box 68, Hobart, Tas. 7001, Australia. eric.woehler@gmail.com, omgnewman@bigpond.com
[6] BirdLife Australia, Suite 2-05, 60 Leicester Street, Carlton, Vic. 3053, Australia. dan.weller@birdlife.org.au

Migratory shorebirds in the East Asian-Australasian Flyway (EAAF) are declining rapidly. Protection of shorebird habitat across the region is critical for achieving effective shorebird conservation. The key legislative mechanism for protecting shorebird habitat in Australia is the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act is triggered when proposed actions, such as developments or land use changes, are likely to have a significant impact on important habitat for migratory shorebirds. A site is considered important if it supports 1% (international importance) or 0.1% (national importance) of the total flyway population of a species. Therefore, frequent revisions of the flyway population estimates are needed to ensure important habitat is correctly identified, particularly given the widespread population declines in the EAAF. We present an update of the population estimates for the 37 species of migratory shorebird that regularly visit Australia listed under the EPBC Act. We collated shorebird counts from the last 10 years from Australia (BirdLife Australia), New Zealand (Ornithological Society of New Zealand) and 16 countries in Asia (Asian Waterbird Census). We tailored our analytical approach for each species, and according to data availability. Many of our population estimates were higher than previous figures, because of increased count coverage, estimation of shorebird numbers in unsurveyed areas, and the use of an estimate based on breeding range size for non-coastal species. Nevertheless, ongoing population declines swamped this effect in some species, with current flyway population estimates now even lower than previous assessments. We urge the protection of all remaining important habitat for shorebirds in the EAAF.

Oral presentation

Wing Threads – shorebird conservation project

Amellia Formby
The University of Western Australia, School of Animal Biology, 35 Stirling Highway, Crawley, WA 6152. wingthreads@gmail.com

In April 2016, I started learning to pilot a microlight aircraft with the intention to fly the Australian migratory route of the Red-necked stint from Melbourne to Broome to promote urgent action for shorebird conservation. After witnessing the spectacle of hundreds of thousands of shorebirds carpeting 80-Mile Beach in Australia's northwest earlier this year, I have been moved to experience their journey first hand in the hope that future generations may one day too witness this breath-taking sight. By mimicking the Red-necked Stint's epic feat of endurance, I aim to shape a narrative that will inspire awe and motivate people to become involved in change. I believe a female pilot staging a cross-continental flight in a lightweight aircraft will create a spectacle large enough to capture the attention of a broad international audience outside the scientific and birdwatching communities already engaged with this issue.

Leading up to the flight, I will build this audience through a blog titled '*Wing Threads*' to share my experiences learning to fly, volunteering in shorebird conservation and creating artwork, as well as highlight current shorebird research, promote artists and exhibitions, and profile women in aviation. Applying my credibility, skills and experience as a qualified zoologist and artist, I aim to collaborate with people from science, aviation and the arts to create a documentary film and organise a group art exhibition to raise vital funds for shorebird conservation groups. In pursuit of this goal, I have begun to mobilise a wide network of professional contacts from across Australia and the UK for promotional and logistical support.

After I successfully perform this flight, I intend to pursue my ultimate goal of flying a microlight the length of the EAAF from Australia to Siberia to complete the Red-necked stint's journey.

Oral presentation

Auspications at Werribee

Barbara Campbell

PhD candidate, Sydney College of the Arts, The University of Sydney; Programme Co-ordinator, Department of Theatre and Performance Studies, Building A20, The University of Sydney New South Wales 2006, Australia. barbara.campbell@sydney.edu.au

Most professional scientists and citizen scientists who spend long periods of their life with shorebirds in the field will admit to a love of their subjects, the birds themselves. Which came first, the chicken or the egg (if you'll excuse the analogy)? Did the love generate the time commitment or did the time commitment increase the love? Like the difficulty of the chicken/egg riddle, the answer lies somewhere between the two end points. I suggest it lies in the interaction between species: shorebirds and humans. That interaction we can call performance.

My doctoral research over the last four–five years has been in the creative arts. My methodology stems from my practice as a Performance artist (the capital *P* referring to the standard way Performance has been understood as a cultural or aesthetic activity). And yet most of my fieldwork has been with birds and humans who have been performing together in certain places at certain times outside the capital P Performance arenas. Over time the waders and "waderologists" have challenged me to rethink my own definitions and practice of Performance.

In this conference paper I will present some of my findings on human-shorebird performance from the fieldwork conducted at Melbourne Water's Werribee Treatment Plant by the Victorian Wader Study Group (VWSG) each December. I will frame the VWSG activities in terms of the Roman practice of "augury" (an important divinatory practice based on the observation of birds) to show how precisely the catching and banding program is *performed*.

Oral presentation with slide presentation

A river story, a bird story and collective impact for change

Arkellah Irving
Community Involvement and Planning Coordinator, Adelaide International Bird Sanctuary. Protected Areas Unit, Conservation and Land Management Branch, Department of Environment, Water and Natural Resources, South Australian Government, GPO Box 1047 Adelaide, SA 5001, Australia.
Arkellah.Irving@sa.gov.au

The Adelaide International Bird Sanctuary is a unique safe haven for shorebirds, many of which are truly remarkable – migrating each year between Australia and the northern hemisphere. Over many years, volunteers, local communities and non-government organisations have strived to protect this internationally significant area, the shorebirds and their fragile habitat. In 2014, the South Australian Government got behind the community's conservation efforts by committing nearly $4 million to creating the Adelaide International Bird Sanctuary. The Sanctuary encompasses over 60 km of coastline north of Adelaide.

To be effective, conservation requires a coordinated effort across public and privately owned land. That's why the Adelaide International Bird Sanctuary is not defined by fences and boundaries. Rather it is a landscape where local communities, volunteers, government, non-government organisations, and land managers can work together towards shorebird conservation and enhancing community. A diverse range of land uses including salt production, horticulture, recreation and manufacturing have coexisted alongside conservation in the landscape for many years. Enhancing conservation in parallel with sustaining other land uses is a cornerstone of the Sanctuary concept.

The Adelaide International Bird Sanctuary is not a park, however the most critical areas of habitat are being provided with long-term protection through the creation of a national park within the Sanctuary. While conservation will be a priority, the national park will also become a focal point for people, who will be able to enjoy the area in much the same way as they always have. They will also be able to enjoy improved facilities, learn about Kaurna culture, and gain an appreciation of the role that the area plays in global shorebird conservation.

To establish the Adelaide International Bird Sanctuary, community and Government have created a mission statement: The Adelaide International Bird Sanctuary is an important area that safeguards native species, helps to develop a thriving economy, enhances the wellbeing of all visitors and expands global conservation efforts. People are driving the establishment of the Adelaide International Bird Sanctuary through a new way of working together and achieving shared outcomes – an approach called Collective Impact. Collective Impact in the Bird Sanctuary is the bringing together of local townships, international experts, Kaurna elders, farmers, local government, tour operators and so many more – all towards a common agenda for the birds and the people. This approach recognises that many people have a role to play in making an impact for things that matter, in this case protecting shorebirds and creating opportunities for people. Through the collective impact of partners and local communities, the Adelaide International Bird Sanctuary will assist in the protection of shorebirds and demonstrate the philosophy that people connecting with nature, strengthen communities and enhance nature.

Gotta Love a Plover: fostering knowledge-building and shorebird conservation through community action

Jean Turner[2]
Emma Stephens[1]
[1]Coast Estuary and Marine Officer, Natural Resources Adelaide and Mount Lofty Ranges, hosted by City of Holdfast Bay, Glenelg, South Australia, Australia. EStephens@holdfast.sa.gov.au
[2]Samphire Coast Icon Project Stewardship Officer, BirdLife Australia, Port Adelaide, South Australia Australia. jean.turner@birdlife.org.au

Two of Australia's most charismatic resident shorebird species, the Hooded Plover (*Thinornis cucullatus*) and Red-capped Plover (*Charadrius ruficapillus*), live along the coast of South Australia's (SA's) Adelaide and Mount Lofty Ranges (AMLR) region. Both are subjects of volunteer-based citizen science programs supported by AMLR Natural Resources Management Board and BirdLife Australia's Beach-nesting Birds Program. Hooded Plovers have a restricted distribution, the eastern subspecies preferring high-energy beach habitats. In AMLR region they occur only on the Fleurieu Peninsula, where less than 50 adults remain. With a national population of 3,000, the Eastern Hooded Plover is listed as Vulnerable under the Federal Environment Protection Biodiversity Conservation Act 1999, and SA's National Parks and Wildlife Act 1972. The 2015 National Threatened Species Summit nominated Hooded Plovers as one of 12 Australian species to improve the trajectory of by 2020. Red-capped Plovers are more generalist, occurring in coastal and inland wetlands throughout Australia. In AMLR region they overlap with Hooded Plovers in the south, but their stronghold is the low-energy 'Samphire Coast' of northern Gulf St Vincent. Significant numbers (> 1% national population) have been recorded in the Samphire Coast and their status is considered 'Least Concern', although recent counts suggest they are declining. Both species are present year 'round on the AMLR coast and their breeding seasons coincide with the busiest time on our beaches. Nests and chicks of both species are well camouflaged, but vulnerable to increasing coastal pressures, particularly disturbance by people and dogs. Our monitoring programs have different goals but similar approaches, relying on skilled volunteers supported by coordination and mentoring. We will outline results of the two programs and how they build knowledge and foster conservation action. When agencies, NGOs, volunteers and the community connect, the result empowers people and inspires positive change to improve the plight of shorebirds.

Oral Presentation

Auckland NZ dotterel minders: the rise of a shorebird management community

Ben Paris & Jacinda Woolly
Address and emails

For years, many Auckland community members have been monitoring NZ dotterels (*Charadrius obscurus*) on their local beaches. Many individuals in isolation have managed their populations, but there was no way for them to share this knowledge and experience, except for through existing relationships and reliance on a few key volunteers. An electronic mailing list was started to collate the breeding data the community were collecting, and then send it back to the various monitoring groups and individuals across the Auckland region. This has provided four years of very valuable data to allow views of trends across many different locations. There are now more than 90 recipients on the Auckland NZ dotterel minders newsletter mailing list. This mailing list soon developed to the groups and individuals requesting a forum to allow them to present findings, share news and get support for innovative management techniques from each other. In 2016 the Auckland NZ dotterel forum ran its third annual event in Omaha, which was organized in collaboration with Auckland Council, Birds NZ and the Omaha Shorebird Protection Trust. Over 60 people attended to hear the latest NZ dotterel news, as well as to share innovative and novel ideas for management and monitoring. This format has shown it is very important for the community members working on the ground to hear from experienced scientists and practitioners, to understand how individual efforts fit into a regional (and national) population context, and gain inspiration for ongoing volunteer work.

Foraging ecology of migratory shorebirds on Roebuck Bay

Grace Maglio
PO Box 7419, Broome, Western Australia, 6725. gracemaglio@hotmail.com

Each year 100,000 waders of more than 20 species use Roebuck Bay as their wintering ground, feeding on the intertidal mudflats, rich with marine invertebrates. However, little is known about the diet and feeding behaviour of migratory shorebirds using Roebuck Bay, which is essential for their effective future conservation. Previous foraging studies of migratory shorebirds on Roebuck Bay have focused on knot and godwit species. Foraging ecology of the other species in the bay remains unstudied. Further, with the exception of a recent study into the effects of Lyngbya (blue-green algae) blooms on Bar-tailed Godwit feeding ecology, studies on foraging behaviour in this region have not been conducted for 10 years, presenting an opportunity to monitor any changes in diet and foraging behaviour that may have occurred.

Between April 2015 and March 2016 I carried out a broad study of foraging behaviour and diet of migratory shorebirds in Roebuck Bay, North Western Australia, using a combination of video footage analysis, benthos sampling and collection of faecal samples. From this study, I present preliminary findings of the foraging behaviour and diet and comparisons between 10 shorebird species. This study observed several shorebird species feeding opportunistically on an unexpected variety of marine invertebrates, highlighting crabs as being a prominent component of their diet. Other interesting records include Grey Plovers eating sea cucumbers and Bar-tailed Godwits eating brittle stars.

Oral presentation

Females abandon care when survival of young is guaranteed

Daniel Lees [1]
Craig D. H. Sherman[2], Kristal Kostoglou[1], Laura X. L. Tan[1], Grainne S. Maguire[3], Peter Dann[4] and Michael A. Weston[1]
[1]Deakin University, Geelong, Australia. Centre for Integrative Ecology, Faculty of Science, Engineering and the Built Environment, School of Life and Environmental Sciences, Melbourne Campus, 221 Burwood Highway, Burwood, Victoria 3125, Australia. lees@deakin.edu.au, knkostog@deakin.edu.au, lxtan@deakin.org.au, mike.weston@deakin.edu.au
[2]Deakin University, Geelong, Australia. Centre for Integrative Ecology, Faculty of Science, Engineering and the Built Environment, School of Life and Environmental Sciences, Waurn Ponds Campus, 75 Pigdons Rd, Waurn Ponds, Victoria 3216, Australia. craig.sherman@deakin.edu.au
[3]BirdLife Australia, Suite 2-05, The Green Building, 60 Leicester Street, Carlton, Victoria 3052, Australia. grainne.maguire@birdlife.org.au
[4]Research Department, Phillip Island Nature Parks, PO Box 97, Cowes, Phillip Island, Victoria 3922, Australia. pdann@penguins.org.au

The 'mixed-strategy' form of parental care involves desertion of the young by a parent of either sex. In such species there is the potential for competition between the parents over the continuation of care of the young. This male-female competition may evoke a 'trade-off' where a parent forgoes care of the current young in favour of an increase in investment of future young. We studied whether the amount of male and female care in the Red-capped Plover *Charadrius ruficapillus* varies, how the age of the young influences any variation in the amount of parental care and if any variation in parental care influences the survival of the young. We radio-tracked 42 Red-capped Plover broods and examined chick survival and the amount of both male and female parental care. Female and male parental care were both significantly correlated with chick age; females cared for chicks for the first half of rearing, then abandoned the brood for the male to take over for the second half of chick rearing. Additionally, chick survival increased significantly as total parental care (the combination of male care and female parental care) increased. The abandonment of the brood by females and increase in care by males seems correlated with the development of chicks to a stage where the likelihood of mortality has plateaued and survival to fledging is almost a certainty.

Understanding “cramp” in waders

Janelle M. Ward[1]
[1] Wildlife Health Solutions. 38 Cross Street, Raglan. wildlifehealthsolutions@gmail.com

Capture myopathy is a metabolic syndrome seen as a complication of capture and handling in mammals and birds. The condition has been reported in a wide variety of species from birds to bears, dolphins to zebra. Often termed “cramp” in wading birds, the condition can lead to significant debilitation or death. The struggling and extreme exertion due to pursuit and capture can create a physiological cascade of effects, with resulting heart and skeletal muscle damage and systemic complications that are potentially fatal. Muscle damage results in stiffness, ataxia, weakness, and partial or complete paralysis: inability to walk or fly are common presenting signs in affected birds. Diagnosis is based on clinical signs and alterations in blood biochemistries, including elevation of the muscle-specific enzyme creatine kinase. Treatment of myopathy can be time-consuming and costly, but has been successful in some cases. Fluid therapy, supportive care, physiotherapy and adequate nutritional supplementation are essential treatments. Prevention of myopathy requires knowledge of the species susceptibility and risk factors for that species. Current knowledge of capture myopathy in birds indicates that overexertion, struggling, energy depletion and traumatic injuries are responsible for the initiating damage and attention should be brought to minimising these factors in capture operations.

The Banded Dotterels of South Bay, Kaikoura: the Empty Nest syndrome

Ailsa Howard[1]
Lindsay Rowe[2]
Forest and Bird (Kaikoura Branch)
[1]1 Maui St, Kaikoura, New Zealand 7300. ailsa@fishnet.co.nz,
[2]11 Margate St, Kaikoura, New Zealand 7300. lindsay.jan.rowe@xtra.co.nz

The South Bay beach of Kaikoura Peninsula provides a nesting habitat that is highly favoured by the Banded Dotterel *Charadrius bicinctus* (Tuturiwhatu). The combination of the beach and adjacent racecourse appear to provide a particularly rich food source, and this is backed up by the influx of mostly juvenile flocks from other areas that arrive on the beach around mid-December and remain until autumn dispersal.

Casual observations over three breeding seasons between 2012 and 2014 suggested dotterels had minimal nesting success. Members of the local branch of Forest and Bird have committed to a 5-year formal study of dotterel nesting on this beach to quantify and improve nesting outcomes. In the first year of study (breeding season 2015–16), 20 nests were found within a 1.2 km stretch of beach. We caught and colour-banded 6 adults, and banded 14 chicks of which 9 were later recaptured and colour-banded. Our study showed that is likely that only one bird fledged from these 20 nests. It is possible that predation is a major cause of egg and chick loss, and traps are already being put in place for the 2016-17 breeding season.

As a beach where recreational use is high, we hope through education, and predator control, to vastly increase the chances of nesting success for the dotterels of South Bay. Weed and predator explosion in braided-river habitat may lead to a rapid decline of Banded Dotterel numbers nationally. The coastal enclaves therefore, may become particularly important for the long term survival of the species.

The Northern Gap: What do we know about the status of shorebirds in Darwin, Northern Territory?

Amanda Lilleyman[1]
Stephen T. Garnett[1], Danny I. Rogers[1,2], and Michael J. Lawes[1]
[1]Research Institute for the Environment and Livelihoods, Charles Darwin University, Darwin Northern Territory 0909, Australia. amanda.lilleyman@cdu.edu.au
[2]Arthur Rylah Institute for Environmental Research, Heidelberg, Victoria, Australia.

Understanding how and why a population changes over time is fundamental to strategically managing threatened species. We know from monitoring programs that migratory shorebirds that visit Australia each year are rapidly declining. Shorebird status and population trends are known for most parts of Australia, but there is a knowledge gap along the northern Australian coastline. With coastal development increasingly becoming a major threat to shorebirds on non-breeding grounds, it is crucial that we understand the current status of migratory shorebirds in the developing Darwin harbour in northern Australia. Shorebird population size in the Darwin region of the Northern Territory has changed since monitoring began in the 1980s. Some species have declined notably and others have increased, often in contrast to species trends elsewhere in Australia – we examine the current and historical population trends of a community of migratory shorebirds in the Darwin Harbour region using long-term monitoring data. We evaluate these trends in the context of conserving shorebirds in a developing harbour.

Oral presentation

Migratory shorebirds and the LNG boom: six years of surveys in Gladstone Harbour and the Curtis Coast, Queensland

Leavesley, A.J.
Wildlife Unlimited Pty. Ltd., PO Box 255, Bairnsdale, Victoria 3875, Australia; Australian Wader Studies Group
leavesleya@yahoo.com.

Gladstone Ports Corporation (GPC) obtained approval for a major port development, the Western Basin Dredging and Disposal Project in July 2010. The project involved dredging of new shipping channels and berths in Port Curtis (Gladstone harbour) and construction of a 265ha land reclamation on an adjacent mud flat. A condition of the approval was that GPC conduct a Port Curtis and Port Alma Ecological Research and Monitoring Program for 10 years. A major focus of the program is migratory shorebirds. Migratory shorebird monitoring commenced in January 2011 with an intensive phase involving two summer surveys in January and February, a northward migration survey in March, a winter survey in August and a southward migration survey in October. This was to take place for two years followed by six annual summer surveys and finishing with another two years of intensive surveying. Migratory shorebird abundance on the Curtis Coast in summer has been relatively stable during the study, with 12,058 ± 979 individuals. Abundance in October appears to be greater than summer suggesting that the Curtis Coast is an important site during the southward migration. The apparent stability in the total abundance of migratory shorebirds hides considerable variation in species abundance and distribution. A total of 24 migratory shorebird species have been recorded. Of these, the abundance of four (Eastern Curlew, Grey-tailed Tattler, Whimbrel and Terek Sandpiper) has been consistently >1 percent of the East Asian-Australasian Flyway population estimates, suggesting that the region is of international importance for them. Development at Gladstone appears to have disrupted birds in the immediate vicinity but the coincidence of disturbance of many different types has made it difficult to draw firm conclusions.

Oral presentation

Big birds under time stress: size-dependent strategies when migrating to and from the breeding grounds in long-distance migratory shorebirds

Meijuan Zhao[1]
meijuanz@deakin.edu.au; meijuanzhao1@gamil.com
Maureen Christie[2] twinpeppercorns@gmail.com
Jon Coleman[3] Janetandjon@hotmail.com
Chris Hassell[4] turnstone@wn.com.au
Ken Gosbell[2] ken@gosbell.id.au
Simeon Lisovski[1] simeon.lisovski@gmail.com
Clive Minton[2] mintons@ozemail.com.au
Marcel Klaassen[1] marcel.klaassen@deakin.edu.au

[1] Centre for Integrative Ecology, School of life and environmental Science, Deakin University, Geelong, Australia.
[2] Victorian Wader Study Group
[3] Queensland Wader Study Group
[4] Global Flyway Network, PO box 3089, Broome, Australia

Migrants have been hypothesised to use different migration strategies between seasons: a time-minimization strategy during their inbound migration towards the breeding grounds and an energy-minimization strategy during their outbound migration towards the wintering grounds. Given the equivocal support for this hypothesis, we propose body size as another key factor in shaping migratory behaviour in addition to season. Specifically, since body size is expected to correlate negatively with maximum migration speed, we hypothesise that large species are not only likely to adopt a time-minimization strategy during inbound migration, but also during outbound migration. We tested this idea using individual tracks across six long-distance migratory shorebird species (family Scolopacidae) along the East Asian-Australasian Flyway varying in size from 50–800g lean body mass. During inbound compared to outbound migration, the shorebirds generally covered similar distances, but they migrated faster, used fewer staging sites, and tended to use longer step length. These seasonal differences are consistent with the prediction that a time-minimization strategy is used during inbound migration, whereas an energy-minimization strategy is used during outbound migration. However, the seasonal difference in average migration speed tended to progressively disappear with an increase in body size, supporting our hypothesis that larger species tend to use time-minimization strategies during both inbound and outbound migration.

Oral presentation

Phenology of southward migration of shorebirds in the East Asian–Australasian Flyway and inferences about stopover strategies

Danny Rogers[1]
and Chi-Yeung Choi[2]

[1] Arthur Rylah Institute for Environmental Research, 123 Brown Street, Heidelberg, Victoria 3084, Australia. drogers@melbpc.org.au
[2] School of Biological Sciences, University of Queensland, Brisbane, Queensland 4072, Australia. c.choi@uq.edu.au

The southward migration strategies of shorebirds remain poorly understood in the East Asian–Australasian Flyway, yet understanding such strategies is critical to shorebird conservation. We estimated passage dates of 28 species of shorebird from count data at 15 sites where counts had been carried out at weekly to monthly intervals through the arrival or departure periods. These data were analysed using "Thompson models". Our estimates of passage dates were consistent with available tracking data, giving us confidence that the modelled estimates were accurate. For large-bodied shorebirds, modelled departure dates from the northern Yellow Sea were similar to arrival dates throughout Australia, and their arrival dates in different regions in Australia were also similar, suggesting they flew directly from Asian staging areas to Australian non-breeding areas, or stopped only very briefly on the way. In contrast, small-bodied species apparently made multiple stops, especially in northern Australia, during their migration to their final non-breeding destinations. These differing patterns suggest that larger species in this Flyway depend on a small number of staging sites, whereas smaller species migrate in shorter steps and require additional staging sites between the northern Yellow Sea non-breeding grounds in Australasia. It is likely that some of these sites have not as yet been discovered, and that conservation of small shorebird species requires a more complete accounting of unknown and understudied staging sites.

A full version of this paper is published in: Choi, C-Y., Rogers, K.G., Gan, X., Clemens, R.S., Bai, Q-q, Lilleyman, A., Lindsey, A., Milton, D.A., Straw, P., Yu, Y-t, Battley, P.F., Fuller, R.A. and Rogers, D.I. 2016. Phenology of southward migration of shorebirds in the East Asian – Australasian Flyway and inferences about stop-over strategies. *Emu* 116: 178-189

Oral presentation

Hooded Plover (eastern) *Thinornis rubricollis rubricollis* recovery on Phillip Island, Victoria, Australia

Rosalind Jessop
Sharon Woodend, Peter Dann, Paula Wasiak, Jarvis Weston and Jon Fallaw

Phillip Island Nature Parks, PO Box 97, Cowes. Victoria. 3922. Australia.
rjessop@penguins.org.au

The Hooded Plover (eastern) *Thinornis rubricollis rubricollis* lives south eastern Australia and associated with ocean and bay beaches with sandy substrate. The density in Victoria is low with the total population estimated at 570 individuals (Garnett *et al.* 2011). The Australian Federal Government lists it conservation status as vulnerable as does the state of Victoria. On Phillip Island the population declined by 58% between 1981 and 1997 (Baird & Dann 2003).

Important contributing factors to the normally low breeding success were the high rate of egg and hatchling loss due to predation by the introduced Red Fox, dogs and native birds. Disturbance caused by dogs and people was also a factor. Disturbance can cause abandonment/loss of nests, as well as restrict the time that chicks can feed.

Since 1981 the Phillip Island Nature Parks has been running Hooded Plover Watch. This is a community-based initiative aimed at monitoring and improving Hooded Plover breeding success. Volunteers help monitor nest sites and educate island residents and visitors about the importance of keeping themselves and dogs away from nesting and chick rearing areas. The Hooded Plover Watch program is conducted from late spring to early autumn. Counts of all birds on beaches are held quarterly to monitor the species in the long term (commenced 1992).

The results from this program are outstanding. Hooded Plover are now once again nesting in most of their 16 historical nesting locations on the island. Numbers of birds in winter counts have increased from a low of 11 to 36. To maintain a sustainable population we are aiming for a long-term average of at least 0.47 chicks fledged per pair. From a low of 0 is the early 1990's Phillip Island has trended above 0.47 since 2007-08 and the trend in fledged per pair has increased over this period.

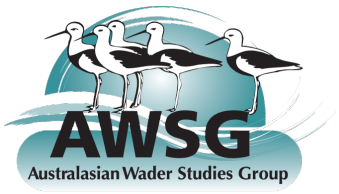
It is hoped that other volunteer warden programs developed along these lines across the southern coast of Australia will have similar success and together we are able to prevent further declines in this species.

Baird, B. & Dann, P. 2003. The breeding biology of Hooded Plovers, *Thinornis rubicollis*, on Phillip Island, Victoria. *Emu*. 103:323-328.:
Garnett, S., Szabo, J. & Dutson, G. 2010. The Action Plan for Australian Birds 2011. CSIRO Publishing.

Poster presentation


Pukorokoro
Miranda
Naturalists'
Trust


Unitec
Institute of Technology
TE WHARE WĀNANGA O WAIRAKA


AWSG
Australasian Wader Studies Group


SIRTRACK