The proportion of Dunlins in summer plumage increased steadily throughout the study period. This enabled us to identify the subspecies from the colour of the mantle feathers (Ferns & Green 1979). Subspecific origin could be determined in this way for 325 birds out of a total of 407 adult Dunlins caught. None of these birds belonged to the alpina subspecies. The majority 192 (59%) were schinzii, the rest 133 (41%) being arctica. These results are in accordance with the short average values for wing-length and bill-length of Dunlins caught during the expedition.

Food and feeding. The highest densities of foraging waders were found on the mudflats in the northern part of the intertidal area. The total biomass of macrobenthic invertebrates in this area averaged about 20 g ash-free dry weight per m^2 in March 1981, but the waders consumed a considerable proportion of the standing crop during that month (Report of the Netherlands Morocco Expedition 1981, in prep). Hence, in the absence of macrobenthic production, depletion of the food source might become a serious problem later in the season. In order to get some information on macrobenthic production, samples from one area were taken at regular (two week) intervals. These data are not yet fully analysed, but it was obvious at first sight that there was an enormous spatfall of a small tellinid bivalve Abra tenuis. Hopefully the data will allow us to calculate minimum growth rates of these animals and other potential prey species such as Nereis diversicolor, Scrobicularia plana and Scrobicularia cottardi.

The results of the expedition will be published fully in an expedition report.

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NOTES ON 'DISABLED' WADERS IN EAST ASIA

by David S. Melville

The occurrence of disabilities in western Palearctic waders seems to be relatively low, but has been little documented. Damage to the legs and feet of Oystercatchers Haematopus ostralegus by wool has been documented by Dare and Mercer (1968), there are a number of records of waders being caught by bivalve molluscs (e.g. Anon 1974, Summers & Whitelaw 1978), and Smith (1980) noted Red-necked Phalaropes Phalaropus lobatus with damaged abdomens.

The incidence of disabled waders in the Far East has received no attention, apart from records from Fiji (Manson-Bahr 1956). All waders which I caught in mist nets in Hong Kong (1976-1980) and Thailand (1980-1981) were examined for injuries and abnormalities and the results are listed below. Totals of birds examined and details of disabilities are presented separately for the two areas as, in most cases, it is likely that different populations are represented in the samples. Most waders in Hong Kong were caught on spring passage in April/May. In Thailand, birds were caught in each month, except December, between September and April inclusive, thus including part of both spring and autumn passages as well as the wintering population.

Results

The numbers of waders examined and found disabled are listed in Table 1. The proportion found disabled was very similar in Hong Kong and Thailand. Details of the disabilities are listed below, with apparent congenital deformities included in brackets. Abbreviations used are: HK=Hong Kong, Th=Thailand, L=Left, R=Right, IT=Intertarsal joint.

Kentish Plover. Th: blind left eye.

Lesser Sand Plover. Th: L leg broken + healed; L leg amputated c20mm below IT, IT damaged; R leg broken + healed just above foot, foot at right-angles to leg; L leg broken, foot still attached by tendon but rotten; R leg amputated c10mm below IT; R leg amputated just below IT; L leg amputated 15mm below IT; inner + centre toes R foot missing; broken outer toe R foot, healed; L foot damaged + partly paralysed, claw centre toe missing; L back of skull appeared to be cracked but healed, bird healthy; (claws of R foot growing sideways, toes normal).

Greater Sand Plover. Th: ball R foot swollen + outer toe missing claw, L tarsus bent inwards in 'U'-shape.

Lesser Golden Plover. Th: R leg amputated halfway along tarsus.

Grey Plover. Th: R leg broken + healed above IT.

Red-necked Stint. HK: R leg broken + healed, outer claw missing both feet. Th: large lumpy swelling on R tibia - leg broken and healed?

Long-toed Stint. Th: ('wart' on top of head giving 'tufted' appearance, not attached to skull).

Curlew Sandpiper. HK: ball R foot damaged. Th: blind L eye; R leg amputated just below IT; R foot amputated; outer toe L foot missing.

Broad-billed Sandpiper. HK: claw + end joint inner L toe amputated. Th: all three toes L foot missing claw and end joint.

Common Snipe. HK: outer toe R foot missing claw.

Bar-tailed Godwit. HK: R tibia freshly broken.

Redshank. HK: (undershot bill, mandible 43mm, maxilla 39.5mm). Th: L leg broken + healed just above IT; R leg amputated just below feathering; L leg broken + healed 20mm above IT; L leg broken IT joint; end all toes L foot missing; blind L eye; R naris damaged; hole in pectoral muscle just below clavicle, approx. 10mm x 5mm x 5mm deep, cause unknown, fully feathered; (undershot bill, mandible 44mm, maxilla 32.5mm).

Marsh Sandpiper. HK: R leg broken + healed. Th: R foot missing central claw; (tarsus bent inwards on both legs, especially R, possible rickets?).

Wood Sandpiper. Th: end all toes L foot amputated, mid toe 18mm cf. 35mm mid toe R foot; claw missing R centre toe; damaged R centre toe.

Red-necked Phalarope. HK: R leg amputated at IT, L leg amputated just below feathers (Melville in press).

Table 1. Numbers of waders examined and found disabled in East Asia. Numbers in brackets refer to apparent congenital deformities.

	Hong Kong		Thailand	
	No. examined	No. disabled	No. examined	No. disabled
Kentish Plover *Charadrius alexandrinus*	20	0	61	1
Lesser Sand Plover *C.mongolus*	6	0	914	11(1)
Greater Sand Plover *C.leschenaultii*	13	0	40	1
Lesser Golden Plover *Pluvialis dominica*	3	0	27	1
Grey Plover *P.squatarola*	1	0	4	1
Red-necked Stint *Calidris ruficollis*	149	1	66	1
Long-toed Stint *C.subminuta*	4	0	89	(1)
Curlew Sandpiper *C.ferruginea*	66	1	116	4
Broad-billed Sandpiper *Limicola falcinellus*	9	1	44	1
Common Snipe *Gallinago gallinago*	33	1	3	0
Bar-tailed Godwit *Limosa lapponica*	1	1	1	0
Redshank *Tringa totanus*	29	(1)	255	8(1)
Marsh Sandpiper *T.stagnatalis*	6	1	44	1(1)
Wood Sandpiper *T.glareola*	5	0	90	3
Red-necked Phalarope *Phalaropus lobatus*	7	1	0	0
Other species*	58	0	34	0
Total (excluding congenital deformities)	410	7(1.7%)	1788	33(1.8%)

* Other species examined, but not suffering from disabilities: Eastern Collared Pratincole *Pratincola maldivarum* HK 2; Little Ringed Plover *Charadrius dubius* HK 2; Th 2; Knot *Calidris canutus* HK 2; Temminck's Stint *C.temminckii* Th 2; Sharp-tailed Sandpiper *C.acuminata* HK 9; Spoon-billed Sandpiper *Eurynorhynchus pygmeus* HK 2; Pintail Snipe *Gallinago stenura* Th 1; Swinhoe's Snipe *G.megala* HK 4; Black-tailed Godwit *Limosa limosa* HK 1, Th 4; Whimbrel *Numenius phaeopus* HK 3, Th 2; Spotted Redshank *Tringa erythropus* HK 4; Greenshank *T.nebularia* Th 6; Terek Sandpiper *Xenus cinereus* HK 9, Th 1; Common Sandpiper *Actitis hypoleucos* HK 19, Th 9; Grey-rumped Sandpiper *Heteroscelus brevipes* HK 1; Turnstone *Arenaria interpres* TH 7.

Discussion

I have no direct evidence as to the causes of disabilities among waders in the Far East. Smith (1980) recorded Red-necked Phalaropes Phalaropus lobatus with damage to the abdomen ' as if attacked by crabs or fish'. I am unaware of any records of crabs attacking birds but tropical mudflats often support large crab populations which might attack waders. In Fiji, Manson-Bahr (1956) estimated that 10% of Wandering Tattlers Heteroscelus incanus, as well as a few Lesser Golden Plovers Pluvialis dominica and Bar-tailed Godwits Limosa lapponica had amputated legs, which he attributed to the Giant Clam Tridacna gigantea. The shores of mainland S. E. Asia are largely of silt and sand, so it seems unlikely that many of the birds in the present study would be regularly exposed to Tridacna clams, which inhabit coral areas and are thus generally restricted to offshore islands and reefs in the South China Sea. However, smaller bivalves may account for many of the amputated toes noted above.

Legal protection of waders in East Asia ranges from a total hunting ban (Hong Kong), through all species being fully protected except two 'game' birds (Japan), and all species being classed as game and afforded some protection (West Malaysia), to only seven species receiving any protection (Indonesia). Thailand gave partial protection to a few 'game' species and no protection to the remainder until early 1981, when non-game waders were protected. In practice, because of lack of enforcement, such legal status offers little, if any, protection and 'hunting' (in all forms) is widespread in most countries, though shooting is reduced in those countries with strict arms control (e.g. Malaysia).

Waders are often caught commercially (legally and illegally), and I have seen monofilament nylon 'mist nets' used in China, Hong Kong and Thailand. Such nets have no 'pocket' and rely on the birds becoming entangled. My own observations reveal that such nets are often left unattended for hours at a time and may be 'abandoned' for days on end (presumably when the operator has found another, more rewarding, occupation). The result is that any birds which are caught are left to die or struggle free. The use of such nets could account for many of the broken legs recorded.

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