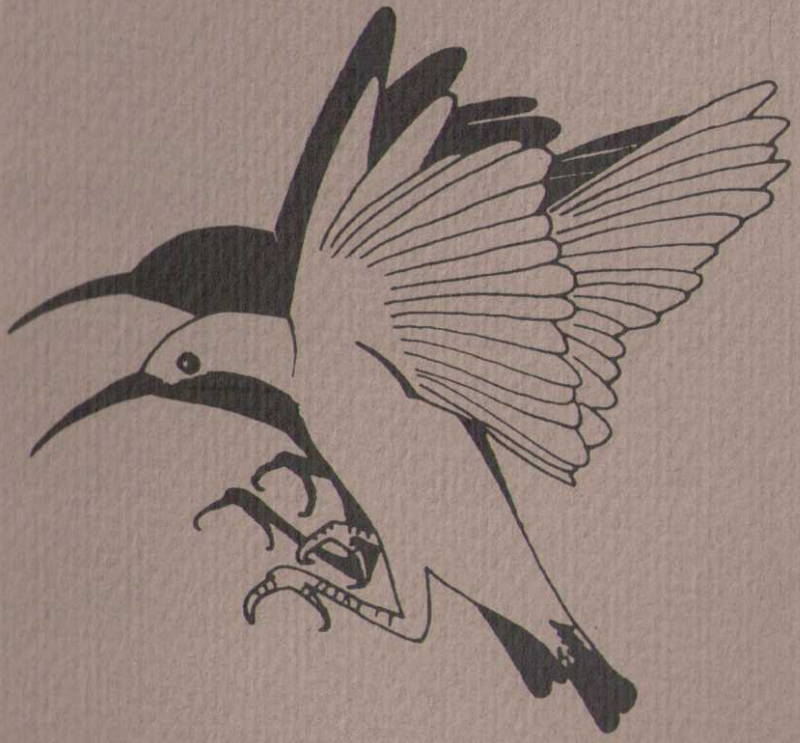
THE SUNBIRD



Journal of the
QUEENSLAND ORNITHOLOGICAL SOCIETY

Volume 29 Number 3 December 1999

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THE SUNBIRD

Volume 29 No. 3 December 1999

MOTTLED PETREL : PASSAGE MIGRATION DOWN THE EAST COAST OF AUSTRALIA IN OCTOBER 1996

PAUL WALBRIDGE and TONY ASHBY

ABSTRACT

Any substantial migration of Mottled Petrel had hitherto gone unnoticed in east Australian waters, and the extent of it can be gauged by the distance between the two venues that witnessed it in October 1996. Given the right conditions (La Nina) at the right time of year (October-November) this could happen again. With at least four vessels travelling out on a regular basis from the eastern seaboard to collect data on seabirds, this could be proven to be a regular occurrence.

INTRODUCTION

The Mottled Petrel *Pterodroma inexpectata* is a highly distinctive 'gadfly petrel' unlikely to be confused with any other except perhaps the dark forms of the Collared Petrel *P. leucoptera brevipes* to which it bears a superficial resemblance. On 26 October 1996 , thirty - seven such birds were observed on one of the regular monthly trips of the Brisbane Seabird Study Group (Walbridge & Ashby 1996). The next day, fifty-five birds were reported by the Wollongong Seabird Study Group on a regular trip out of Wollongong. These records are of particular significance because of the paucity of records before this time.

In East Australian waters the occurrence of Mottled Petrel until now has shown no conclusive pattern. All of the early records were of beach washed specimens found at sites ranging from South Ballina, New South Wales around SE Australia to Victor Harbour, South Australia (Marchant & Higgins 1990). However, with the increase in pelagic cruises from the mid - 1980s onwards, several sightings were recorded on and beyond the Continental Shelf, particularly off Tasmania. Most of these sightings have occurred from early spring to autumn (September to April). In Queensland the only previous records are of two live, beach washed birds on Moreton Island in the southeast of the state (18 February 1990, QMO.28646 and 17 December 1992, QMO.30049).

On current information the Mottled Petrel is thought to return south through the central Pacific either east or west of the main islands of New Zealand to its breeding grounds, which nowadays appear to be centered around Stewart Island and the Snares group. These islands are situated to the south and southeast of the South Island, respectively, although the birds were previously thought to have bred on both the North and South Islands of New Zealand (Marchant & Higgins 1990). The birds return to their breeding grounds from the North Pacific arriving in late October and begin egg- laying in December (Warham *et al.* 1977). During the southern summer it ranges from the western Tasman down to the Antarctic ice shelf, where the main feeding grounds occur.

Post - breeding migration occurs from late April to May, taking it across the Equator to the north Pacific, with reports of the bird ranging from Japan to the west coast of North America (Ogi *et al.* 1986). The vast majority of birds appear to spend the northern summer in the Bering Sea, where they first start appearing from late June to mid-July. Ogi *et al.* (1986) estimated numbers occurring in this area to be in the order of 1.5 million birds. However, Enticott & Tipling (1997) refer to a total population of 10000 to 50000 pairs.

STUDY AREA AND METHODS

The Brisbane Seabird Study Group (BSSG) arranges monthly trips on the (18m) Seaworld research vessel, leaving the Gold Coast Seaway (27°56'S, 153°26'E) at about 07:00 h E.S.T. The boat travels in an easterly direction over the Continental Shelf and into Continental Slope waters some 50 to 90 km out to sea (Walbridge pers. obs.). The distance travelled is dependent on the prevailing weather conditions.The Wollongong Seabird Study Group (WSSG) has been organizing trips out from North Wollongong Harbour (34°26'S, 150°57'E) since 1985 (Brandis 1996) on a monthly basis on the (13m) 'Sandra K'. As for the Sea World boat the 'Sandra K' travels out in an easterly direction over the Continental Shelf and into deeper waters some 45 to 60 km out to sea (Ashby pers. obs., A. Palliser pers. comm.).

Both boats are fitted with Global Positioning Systems (GPS), and at the current available accuracy it is possible to locate birds and other features on the trip to the nearest 100m. The BSSG records the location of each bird or group of birds by GPS onto a standard record sheet. The WSSG takes GPS readings on a regular basis, usually every 30 minutes, and locates the birds in the intervening fields. The Southport vessel uses GPS default WGS 84.

The coordination of the results from the two locations has been made more convenient because of the affiliation of both groups with the Southern Oceans Seabird Study Association (SOSSA), a national seabird study group in Australia concentrating on the study of seabirds at sea. The Queensland sightings have since been authenticated by the QOSI RAC, case no. 039 (Walbridge 1997). Boat

speed measurements were calculated using GPS position and recorded time. Water temperatures were measured using the temperature measuring device on the depth sounder.

RESULTS

The number of Mottled Petrels sighted was thirty-seven off Southport on 26 October and fifty-five off Wollongong the next day. Off Southport the first bird was observed at 09:54h, and this was after fruitlessly traversing water over which the majority of birds were seen on the return trip. The last bird was seen at 12:49h, approximately 3 hours after the first sighting. Although it could be argued that the time 09:54h represents the start of a wave of birds, it is unlikely that 12:49h represents the end of a wave, but rather that the boat had moved out of the flight path. Thirty-six Mottled Petrels were seen on the return trip that started at 10:20h. The distribution of these birds is shown in Fig. 1 below. The position of the birds was determined from a GPS on the Sea World boat.

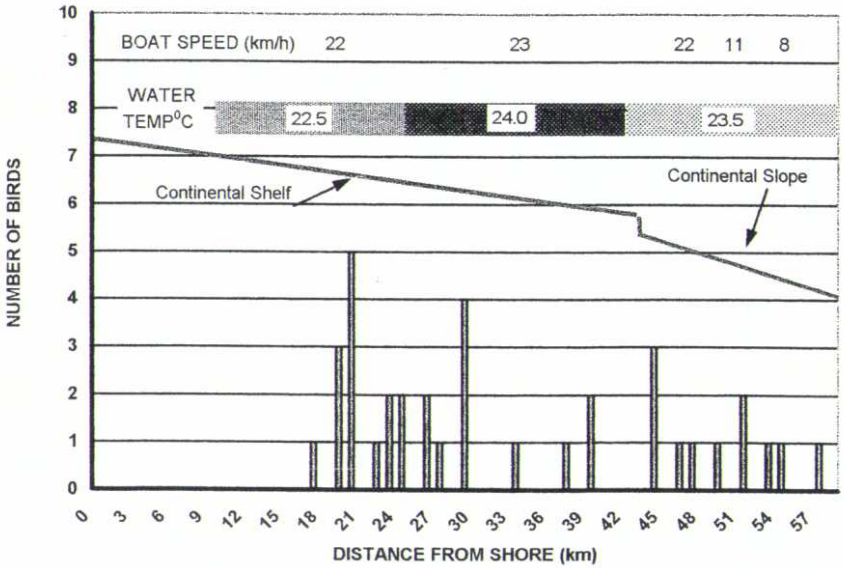

Fig. 1. Numbers and Distribution of Mottled Petrels off Southport.

Off Wollongong the birds were seen the next day with the first bird being observed at 09:00h. If we assume that this represents the start of the wave seen off Southport this means that the birds had taken some 25 hours to reach Wollongong. For this exercise a flight path distance of 800 km is assumed which

gives an average flight velocity of 32 km/h. This is close to the bird flight velocity range (33 to 44 km/h) estimated by observers at the time by comparison with the known speed of the boat.

The Southern Oscillation and other atmospheric features

The El Nino Southern Oscillation (ENSO) is a combination of oceanic and atmospheric events that are sufficiently significant to have an effect on global atmospheric circulation. ENSO can fluctuate between the two extremes of El Nino and La Nina that are each characterized by a unique set of climatic patterns (O'Neill 1995). During the El Nino phase, air pressure is greater over northern Australia than it is in the SE Pacific. For the La Nina phase the opposite is true. The Southern Oscillation Index (SOI) which is the difference in air pressure at Darwin and Tahiti is an indicator of when El Nino and La Nina phases might occur.

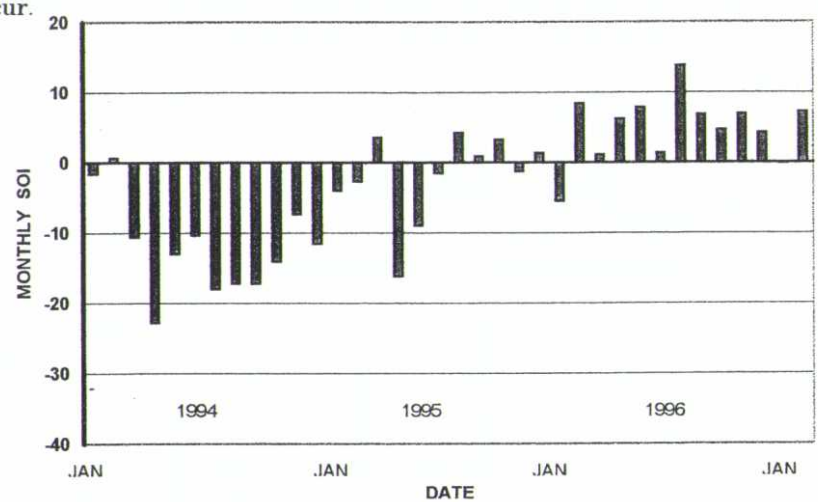

Fig.2. Southern Oscillation Index courtesy of the Bureau of Meteorology, Australia.

In the El Nino phase the difference in air pressure causes atmospheric circulation in the central Pacific to flow from the west to the east. The associated westerly winds will tend to manoeuvre trans-equatorial migratory birds to the eastern edge of their flight path. Conversely in a La Nina phase when there is a tendency for south easterly winds, trans-equatorial migratory birds could be expected to fly down the western edge of their flight path. Also in the La Nina phase, there is a flow of air southerly down the east coast of Australia that can be reinforced on a locally large scale by the occurrence of an atmospheric high cell in the central Tasman Sea.

The East Australian Current

The East Coast Current, which is a component of the East Australian Current, is a warm stream of water that flows out of the Coral Sea down the east coast of Queensland and New South Wales to Smokey Cape (32°S). The current then winds eastwards towards the North Island of New Zealand as the Tasman Front (Cresswell 1987). This current of warm water can be clearly seen on satellite images supplied by the CSIRO Division of Marine Research, Hobart. It would appear on studying Fig. 1 that for this particular migration the birds have concentrated along the warm water streams of the East Coast Current and as a consequence have occurred well onto the continental shelf.

High pressure cell in the Tasman Sea.

A high pressure cell was present in the Tasman Sea from 23 October to 25 October, with the centre at 40°S and the isobars skewed up to the northwest by a front over Victoria. This high pressure cell would have produced easterly winds at the top end of the study area and northwesterly winds south of Wollongong.

DISCUSSION

Mottled Petrels are transequatorial migrants returning each year from the north - central Pacific to waters south of New Zealand. Depending on the path taken, birds can fly down the east coast of Australia, the mid - Tasman, the west coast of New Zealand or the east side of New Zealand. The pathway may be influenced to a large degree by the Southern Oscillation. The SOI had been positive for some 10 months before the appearance of the Mottled Petrels on this occasion, indicating a weak to moderate La Nina phase for this period. On their flight south, the birds would have encountered easterly winds at the equator, thus sending them down the west side of the Coral/Tasman Sea.

In the Coral Sea, a high pressure cell in the central Tasman Sea was directing easterly winds on to the coast of Australia and thus tending to send the birds down this coastal route. The birds also appeared to be concentrated along the warm streams of the East Coast Current thus positioning them well onto the continental shelf. For all of this southern part of their journey the birds would have been accumulating westerly deviations from the 'plumb line' between their start point in the northern Pacific Ocean and their destination at the breeding islands south of New Zealand. These deviations would have been conveniently reduced because, as they flew south of Wollongong, they would have encountered the northwest wind component of the high pressure in the Tasman Sea, thus giving them a free ride to the breeding islands below New Zealand.

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SPECIMEN RECORDS OF WHITE-NECKED PETREL AND BLACK-WINGED PETRELS IN QUEENSLAND

DAVID STEWART and IAN GYNTHER

On 19 March 1993, one White-necked Petrel *Pterodroma cervicalis* and two Black-winged Petrels *P. nigripennis* were found as beach-washed derelicts on Main Beach, North Stradbroke Island, south-eastern Queensland. Weather conditions prior to the discoveries consisted of several days of strong south-east winds associated with a cyclonic depression (Cyclone Roger). All three specimens had recently washed onshore, though in varying stages of decomposition, and have been donated to the Queensland Museum. The White-necked Petrel was found 6.3 km south of Point Lookout (27° 29' 21"S, 153° 30' 52"E; QMO.30022), and the Black-winged Petrels were found 4.2 and 20.1 km south of Point Lookout, respectively (27° 28' 13" S, 153° 31' 20"E; QMO.30081 and 27° 38' 51" S, 153° 27' 44"E; QMO.30029). The only other specimens found beach-washed along the 33 km of beach surveyed were two Crested Terns *Sterna bergii*.

White-necked Petrel

The upperwing, mantle, back, uppertail coverts and tail of the White-necked Petrel are grey, with a distinct dark 'M' shaped marking across the upperwings, formed by blackish outer primaries and adjacent coverts, a blackish diagonal bar across the innerwing coverts from the carpal joint to the scapulars, and a blackish rump. The outer two tail feathers are white, producing a white edge to the tail. The crown, nape and eye patch are black, forming a small dark cap which is separated from the grey mantle by a broad white collar across the hind-neck. The remainder of the head is predominantly white. The underparts are white, except for grey sides to the upper breast, beginning in front of the base of the leading edge of the wing, forming a partial collar. The underwings are white with a narrow blackish trailing-edge to the primaries and secondaries. The dark trailing edge of the primaries becomes broader towards the outer primaries, and fades to grey and eventually white basally on each feather. Other plumage characteristics include a narrow blackish leading edge on the outer underwing which broadens towards the carpal joint and a narrow black diagonal bar tapering from the carpal joint towards the body. The bill, feet and distal section of the legs are black, with the legs becoming flesh coloured proximally. The specimen of White-necked Petrel was a large individual, with several of its measurements slightly exceeding the range limits for the combined sexes provided for the species by Marchant & Higgins (1990, Table 1).

The species was first recorded in Australia on 20 February 1983, from Point Lookout (Stewart 1984). Since this original observation, a small number of birds have been recorded from Queensland and New South Wales (reviewed in Marchant & Higgins 1990). The apparent increase of this species in eastern

TABLE 1. Measurements of White-necked Petrels (mm).

	Noosa Heads QMO.28455	Noosa Heads QMO.28415	North Stradbroke Is QMO.30022	Range limits for combined sexes[1] (n=54)
Wing	305	308	314	299.0-322.5
Tail	132	130	141	121.4-142.0
Culmen	35.8	35.6	40.2	34.5-38.8
Tarsus	38	40	42	36.7-46.0
Middle toe & claw	54	47.3	58	47.0-56.3

[1]data derived from Marchant & Higgins (1990)

Australian waters has followed an increased number of observations of this species in New Zealand waters, which may be related to the elimination of Goats *Capra hircus* from the breeding site on Macauley Island (Jenkins 1980). The Queensland Museum has a further two specimens from Queensland beaches, both from Noosa Heads (26° 23'S, 153° 06'E), collected on 1 April 1989 and 9 April 1989 (QMO.28455 and QMO.28415, respectively).

Black-winged Petrels

The plumage of the two Black-winged Petrels is very similar, with the upperparts of these birds being light grey, with a dark 'M' shaped marking across the upperwings and rump. This is formed by blackish outer primaries and adjacent coverts, a blackish diagonal bar across the innerwing coverts from the carpal joint to the scapulars, and a blackish rump. A dark patch in front, below and behind the eye is separated from the grey crown by a narrow white supercilium. The underparts are white with a partial grey collar extending down the sides of the upper breast. The underwings are white with a broad dark trailing edge to the secondaries and primaries. The dark trailing edge of the primaries becomes broader towards the outer primaries, forming a distinct dark wing tip. Other features are a broad black leading edge on the outer underwing, and a broad black diagonal bar tapering from the carpal joint towards the body. The bill, feet and distal section of the legs are black, with the legs becoming pinkish proximally. All measurements taken of these two Black-winged Petrel specimens are within the ranges derived from data in Marchant & Higgins (1990, Table 2).

The Black-winged Petrel is a common 'cookilaria' of the Pacific Ocean, and breeds on many of the western South Pacific islands (Jenkins & Cheshire 1982), with an expansion into the Australasian region (Powlesland 1985). The Queensland Museum has several specimens from Queensland: Fitzroy Reef (23°

TABLE 2. Measurements of Black-winged Petrels (mm).

	North Stradbroke Is QMO.30029	North Stradbroke Is QMO.30081	Range limits for combined sexes[1] (n=91)
Wing	224	233	215-236.5
Tail	98	Absent	94.1-108
Culmen	23.1	25.8	21.2-29.2
Tarsus	31	32	29.1-33.2
Middle toe & claw	39	40	33.8-40.7

[1]data derived from Marchant & Higgins (1990)

37'S, 152° 10'E), 15 May 1992; Lakes Creek, Rockhampton (23° 23'S, 150° 34'E), 27 March 1990; Fraser Island (25° 31'S, 153° 08'E), 8 January 1976 and 12 March 1996; Peregian Beach (26° 29'S, 153° 06'E), 18 February 1977; Main Beach, North Stradbroke Island, 31 January 1974; and Southport Spit (27° 58'S, 153° 25'E), 3 February 1990. Other records include a beach-washed derelict from Bribie Island (26° 57' S, 153° 07'E; Marchant & Higgins 1990), and sight records from Heron Island (23° 26'S, 151° 55'E; Reid 1964, Kikkawa & Boles 1976), North West Island (23° 18'S, 151° 42'E; Griffin 1980) and Point Lookout (27° 26'S, 153° 33'E; Smyth & Corben 1984).

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FIRST RECORD OF ELEGANT PARROT FOR QUEENSLAND

M.J. CARTER and T. SHIMBA

On 7 June 1998, while searching for the Grey Grasswren *Amytornis barbatus* about 10 km north of the Wompah Gate in south-west Queensland (28°56'S, 142°10'E), Tadao Shimba found a male Elegant Parrot *Neophema elegans*. He got to within 10 m of the bird which was perched in lignum. Using a Nikon F3 camera with an 800 mm telephoto lens, he obtained several colour photographs on Fuji Provia slide film. His report of the sighting, which included two of the photographs, has been accepted by the Q.O.S.I. Records Appraisal Committee (case #055). The voting was five in favour to one against.

The accompanying plate is one of the submitted photographs. This reveals a small, basically greenish, parrot with a short, stubby bill and a longish, tapered tail. These are the characters of *Neophema*, a genus which has six species, but only two, Elegant Parrot and Blue-winged Parrot *N. chrysostoma*, have the wholly bright yellow cheeks possessed by this bird (Eades & Marsack 1998). The bill and cere are black, indicating that it was an adult bird. The critical identification criteria (Higgins 1999, Eades & Marsack 1998), as seen in the field and observable in the photograph, are as follows.

1) The general colouration was greenish with a strong golden or yellowish tinge typical of Elegant Parrot. Blue-winged Parrot is more olive.

2) The lighter coloured upper strip of the two-tone blue frontal band extended above, and to just behind, the eye. This is diagnostic of adult male Elegant Parrot.

3) The pattern of the folded wing in which the coverts were mostly greenish, with a light blue band separating the green from the dark blue outer edge, is diagnostic of Elegant Parrot. In adult Blue-winged Parrot, the wing-coverts are entirely (males), or almost entirely (females), blue.

The dissenting Q.O.S.I. Records Appraisal Committee member was concerned about the presence of blue on the 'shoulder'. Although it may be hidden when the wing is tucked into the body feathers, blue in the carpal region is quite normal for adult Elegant Parrots. See, for instance, photographs of Elegant Parrot by Len Robinson in Eades (1998).

According to Higgins (1999), there are no previous records of Elegant Parrot for Queensland. This occurrence was over 300 km east-northeast of the northernmost part of the Flinders Ranges in South Australia, where the species is common and resident (Higgins 1999). The status of Elegant Parrot in New South Wales is uncertain. The distribution map in Higgins (1999), shows that they occur along the lower reaches of the Darling River in the south of that state, but the text claims there are no acceptable records for New South Wales. South-western

Queensland is at the northern limit of the non-breeding range of the Blue-winged Parrot, a species with similar food and habitat requirements (Higgins 1999).

It should be noted that a 'stop-press' report of this occurrence in Cameron (1998) was wrong in two respects. Firstly, only one bird was seen, not "a small flock", and the location was 10 km north of the Wompah Gate, not "5 km into Queensland from the Adelaide Gate".

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POSSIBLE CO-OPERATIVE FISHING BY SILVER GULLS *LARUS NOVAEHOLLANDIAE*

BRIAN MACKNESS

Silver Gulls *Larus novaehollandiae* are known to eat a variety of fish (Barker & Vestjens 1989). These are obtained by various means including scavenging (Sedgwick & Sedgwick 1950), diving (Oliver 1922, Falla 1924), opportunistic feeding (Carruthers 1969) and kleptoparasitism (Serventy *et al.* 1971, Domm & Recher 1973, Hulsman 1976, Smith 1991).

Other species of birds have been observed acting co-operatively in order to obtain fish. These include Australian Pelicans *Pelecanus conspicillatus*, Little Black Cormorants *Phalacrocorax sulcirostris*, Little Pied Cormorants *P. melanoleucos* and Pied Cormorants *P. varius* (Carruthers 1969). Pelicans, in particular, are known to work in groups to herd fish by creating underwater turbulence with their feet (Rand 1954). Silver Gulls have not been recorded acting co-operatively. If anything, they spend a great deal of their time taking part in intraspecific aggressive behaviour and have developed a highly complex series of displays for this purpose (Wheeler & Watson 1963, Carrick & Murray 1964).

On 19 February 1999 at 1200 h, two Silver Gulls were observed swimming slowly up a freshwater stormwater outfall at Dicky Beach near Caloundra (26° 48'S 153° 09'E), south-east Queensland. A small school of approximately fifteen small fish was seen swimming upstream towards the gulls. As soon as the birds saw the fish, they rapidly increased their rate of paddling as well as apparently changing the orientation of their feet. This resulted in each bird pivoting around in a circle. The action of the feet created an underwater turbulence in close proximity to each gull, and each was visible from the stream bank. The fish were effectively corralled on two sides and swam around within the arc demarcated by the turbulence. Another gull flew in and assumed the same behaviour, effectively triangulating the school of fish. All three gulls paddled their feet, maintaining the circular pivoting but moving their heads regularly to keep in eye contact with the fish. Each time a gull completed a rotation, it struck at the water and attempted to capture fish although all attempts were unsuccessful. This behaviour continued for several minutes. One gull then ceased paddling in a circle and then swam upstream. The other soon followed, with the final bird flying off to rest on the sand.

Silver Gulls have been seen using their feet to capture food in two different ways. Wheeler & Watson (1963) recorded an observation by D. Morgan of a Silver Gull where ". . .every now and again it would stop swimming and work its feet rapidly while stationary, meanwhile pecking into the water about its head". This action was interpreted by Morgan as being used to produce an up-current that carried

particles of food and perhaps shrimps from deeper water to the surface, where they could be more easily captured by the gull.

Wheeler & Watson (1963) also described another behaviour called 'puddling' where gulls worked in a line along the edge of waves or shallow mud pools, moving their feet rapidly up and down to force worms and larvae to the surface. None of these previously described behaviours are similar to those observed at Caloundra and the interpretation that this was a collaborative effort needs closer examination. Given that Silver Gulls, in general, spend so much of their time trying to rob food from other birds, whether they be other Silver Gulls or other species (Hulsman 1976, Dann 1979, Smith 1991), it would seem unlikely that such seemingly co-operative behaviour forms part of their display repertoire. When a mixed species group of birds was seen engaging in a co-operative fish drive, the Silver Gulls present took no part in the drive, but opportunistically captured injured or panic-stricken fish that came to the surface (Carruthers 1969).

The most parsimonious interpretation of the behaviour is that the presence of the fish swimming in close proximity to the gulls elicited a concomitant behavioural response in both fish and birds that resulted in the fish being corralled. The position of the birds relative to each other and to the fish was probably a congruence of both the schooling behaviour of the fish and a natural distancing mechanism innate in the gulls. The gulls then opportunistically tried to catch the fish.

If the gulls were acting co-operatively, then this is yet another record of such behaviour amongst birds commonly found on coastal watercourses such as pelicans and cormorants. Pink-eared Ducks *Malacorhynchus membranaceus* have also been recorded concentrating plankton in this manner (Marchant & Higgins 1990).

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particles of food and perhaps shrimps from deeper water to the surface, where they could be more easily captured by the gull.

Wheeler & Watson (1963) also described another behaviour called 'puddling' where gulls worked in a line along the edge of waves or shallow mud pools, moving their feet rapidly up and down to force worms and larvae to the surface. None of these previously described behaviours are similar to those observed at Caloundra and the interpretation that this was a collaborative effort needs closer examination. Given that Silver Gulls, in general, spend so much of their time trying to rob food from other birds, whether they be other Silver Gulls or other species (Hulsman 1976, Dann 1979, Smith 1991), it would seem unlikely that such seemingly co-operative behaviour forms part of their display repertoire. When a mixed species group of birds was seen engaging in a co-operative fish drive, the Silver Gulls present took no part in the drive, but opportunistically captured injured or panic-stricken fish that came to the surface (Carruthers 1969).

The most parsimonious interpretation of the behaviour is that the presence of the fish swimming in close proximity to the gulls elicited a concomitant behavioural response in both fish and birds that resulted in the fish being corralled. The position of the birds relative to each other and to the fish was probably a congruence of both the schooling behaviour of the fish and a natural distancing mechanism innate in the gulls. The gulls then opportunistically tried to catch the fish.

If the gulls were acting co-operatively, then this is yet another record of such behaviour amongst birds commonly found on coastal watercourses such as pelicans and cormorants. Pink-eared Ducks *Malacorhynchus membranaceus* have also been recorded concentrating plankton in this manner (Marchant & Higgins 1990).

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