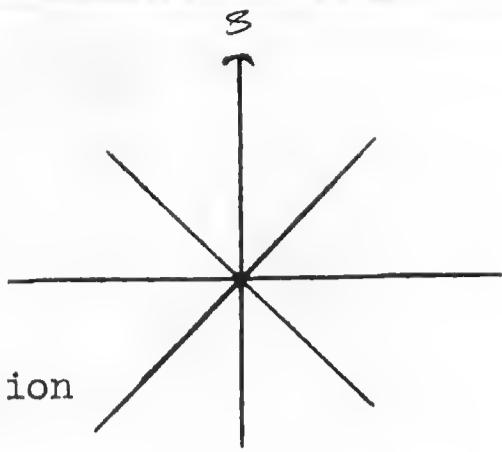


SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:  
0630-0800 *Geo Bedinger*  
0800-1000 *Smith*  
1000-1145 *Lewis*  
1145-1400 *Harrington*

Date 9 Nov. 1966  
Pg.# 1

TIME	SPECIES	#	DIR.	SPECIMEN or BAND NO.	REMARKS
0634					Sunrise begin observations
- 0655	Dark-rumped Petrel	3	S		
- 0657					Rain squall
- 0704	WRSP	1	⊙		
- 0710	Newell's	1	S		
- 0716	JFP	1	⊙		sitting on H <sub>2</sub> O
- 0724	WRSP	1	⊙		" " "
- 0730	Wedgetail	1	⊙		
- 0738	JFP	1	⊙		light phase sitting on H <sub>2</sub> O
- 0803	RTTB	2	NE		circling ship
- 0820	Shear Pet	1	⊙		
- 0827	Aerodroma	4	⊙		possibly externa
SF 0830	JFP	6	⊙		
- 0837	WRSP	1	S		
- 0908	BWP	1	S		
- 0921	JFP	2	⊙		
- 0948	Shear Pet	1	⊙		
SF 1000	JFP	20 ± 5	⊙		
- 1013	WTTTB	1	⊙		Following ship
- 1017	JFP	1	S		
- 1022	"	1	S		
- 1027	"	1	⊙		
- 1036	JFP	1	⊙		
-	wedge-tail	1	⊙		Dark Phase & feeding together
- 1040	JFP	1	S		
- 1041	JFP	1	⊙		sitting on H <sub>2</sub> O
- 1042	WTTTB				
- 1048	JFP	1	S		still following ship
- 1055	wedge-tail	1	S		light
- 1100	WTTTB	1	⊙		
- 1114	Shear Pet.	1	⊙		May be same bird as above
- 1115	wedge-tail	1	⊙		
- 1127	Brown Booby	1	S		light phase
- 1132	wedge-tail	2	⊙		Imm
- 1133	JFP	1	⊙		Following ship light phase
- 1134	BWP	1	⊙		
- 1137	wedge-tail	1	⊙		
- 1139	Brown Booby	1	S		Ad ♂
- 1155	BWP	1	SW		



SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

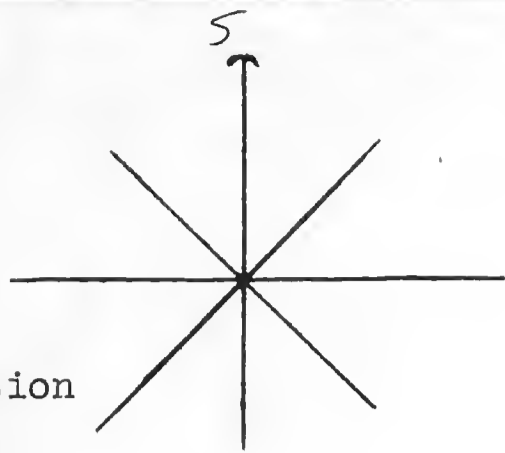
1145-1400 Harrington  
1400-1600 Palmer  
1505-1800 Harrington

Date <sup>Nov</sup> 08 ~~Oct~~ 1966  
Pg.# 2

Ship  
Direction

SPECIMEN  
or  
DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
FF 1157	Sooty T.	9			all ad
	P. externa	8+2			
	BWP	3+1			
	Kermadec	1			light.
1240	WRSP	1	S		
1245	Sooty/Slender	1	S		light underwings
1246	BWP	1			sitting on water
1250	Pterodroma sp.	1	SW		
1254	Sooty/Slender	1	S		
1258	Sooty/Slender	2	S		
1322	BWP	1	⊙		
1327	Great Frigate	1	⊙		ad ♀; chasing flying fish.
1333	P. externa	1	⊙		
1337	Black-w. Pet.	1	⊙		
1342	Brown Booby	1	S		subadult.
1402					Starella sp - 20
1418	WRSP	1	⊙		sitting on the Leach's type
1425	RTTB	1	⊙		" " "
1436	JFP	1	⊙		playing under bow
1448	BWP	1	⊙		
1454	BWP	1	S		
1509	WTTB	1	⊙		
1525	JFP	1	S		
1550	JFP	1	N		
FF 1558	Sooty Tern	5			all ad
	P. externa	2			
	Shear/pet	1			
FF 1602	Sooty T.	3			all ad
	BWP	3			
1603	Bird	1			
1612	Bird	1			
1614	Red-footed B	1	S		following ship immature
1617	Wilson's Storm Petrel	1	⊙		well observed, feet extending beyond shallowly-forked tail.
1620	Booby sp.	1	S		
1625	P. externa	1	SE		
1632	WRSP	1	⊙		
1642	Black-w. Petrel	1	⊙		
1646	Sooty Tern	1	S		adult
1651	Great Frig	1	⊙		Ad ♀ Feeding
1736	Black-w Petrel	1	⊙		
SF 1748	Sooty Tern?	12			circling high; two were flying in what appeared to be a courtship flight such as I have seen over colonies (BAH)
1753	Shear-pet	1	SE		
SF 1757	Sooty Tern	33	⊙		apparently all adults. 12 observed well - no streamers.
	Shear pet	15+5	⊙		one wedgetail identified, one JFP identified. Feeding over predatory fish
	Fairy Tern	1	⊙		
1802	Sunset				SUNSET



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

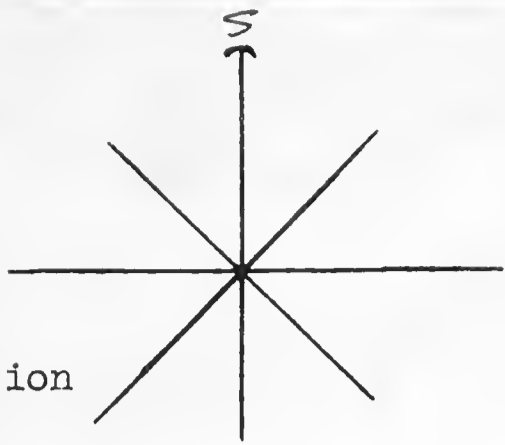
5A-0800	Smith
Bulmer	0800-1000
1000-1200	BAH
12-14	Lewis
14-16	Smith

Date 9 Nov 1966  
Pg.# 1

SPECIMEN  
or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0639					Sunrise Begin observations
0651	Sooty Shear.	1	S		light underwing
0703	JFP	1	NW		
0712	P. externa	2	<del>SW</del>		
0721	Sooty Tern	1	<del>SW</del>		
0726	Frigate sp	1	<del>SW</del>		
0731	J.F.P.	1	<del>SW</del>		
0733	Shear-Pet	2	<del>SW</del>		light underparts - fairly large - probably externa
0738	JFP	2	<del>SW</del>		
0743	JFP	1	NW		
0746	Shear-Pet	1	<del>SW</del>		light underparts
0750	Fairy Tern	1	N		
0757	Frigate sp.	1	<del>SW</del>		feeding on surface of H <sub>2</sub> O
0812	Pt. externa	1	N		
0814	WTTB	1	E		flying over ship
0816	JFP	2	S		
0824	Pterodroma externa	1	N		
0828	RTTB	1	E		sitting on H <sub>2</sub> O
0832	JFP	1	NW		
0847	BB	1	S		sub adult
0906	JFP	1	S		
0913	WRSP	1	<del>SW</del>		
0933	WTTB	1	<del>SW</del>		
0940	JFP	1	S		
0943	JFP	1	NW		
0953	BB	1	S		sub adult
C 0955	WTTB	2	<del>SW</del>		both calling
	RTTB	2	<del>SW</del>		both calling, 1 coll (WB), sub adult ♀
1018	WTTB	1	<del>SW</del>		adult - diving & catching fish.
1029	Great Frig	1	<del>SW</del>		ad ♂
1040	JFP	1	NW		
1043	Shear/pet	1	NW		light underparts
1046	JFP	1	<del>SW</del>		
FF 1120	Sooty Tern?	20-25	<del>SW</del>		Feeding flock, distant
	Shear/pet	40-50			
1126	WTTB	1	<del>SW</del>		adult
1210	RFB	1	<del>SW</del>		chasing Flying Fish & sub-ad Follows ship
1314	Sooty/sib	1	SW		
1335	RFB	1	<del>SW</del>		same as above
1427	BWP	1	S		
1442	Great Frigate	3	<del>SW</del>		AD ♀s
1448	Shear. Pet	1	<del>SW</del>		light underparts
1503	Lesser Frigate	1	<del>SW</del>		AD ♂



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

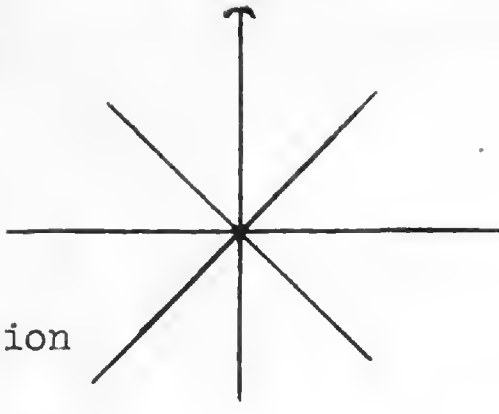
OBSERVERS:

14-16 Smith

Date 9 Nov. 1966  
Pg.# 2

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1517	JFP	1	∞		
1538	Frigate sp.	1	∞		
1546	JFP	1	∞		
1550	J.F.P.	1	∞		
1552	J.F.P.	1	∞		
1600	Shear-Pet	1	∞		
1604	RFB	1	⊙		Subadult same as above
1608	BWP	1	S		
1615	JFP	1	N		
FF 1625	Frigate Sp	1			
	Sooty Tern	11			
	Shear-Pet	40±5			
	JFP	9			
	BWP	3			
	Kermadec	1			light phase
	Phoenix Is. Pt	1			white throat
1652	JFP	1	SW		
1728	BWP	1	⊙		
	JFP	1	⊙		
1732	Kermadec	1	N		light phase
1740	Wedgetail	2	⊙		" "
1742	BWP	1	⊙		
1803	BWP	1	NW		
1808	JFP	1			
1814					SUNSET



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

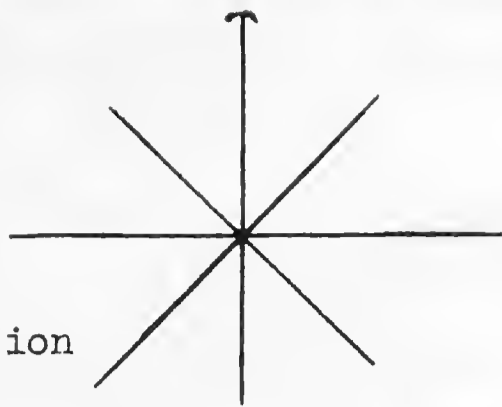
Lewis  
2000-1000 Smith

Date 10 Nov. 66  
Pg. # 1

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0636					Sunrise begin observations
0638	wedge-tail	1	ce		light phase
0643	RTTB	1	ce		
0654	BWP	1	nw		following ship
0700	Pterodroma sp	1	ce		
0706	wedge-tail	1	S		dark phase
0707	BWP	1	NW		
0708	JFP	1	NW		
0709	BWP	1	ce		
0710	BWP	1	NW		
0710	"	1	NW		
0711	"	1	ce		
0713	"	1	ce		
0714	"	1	NW		
0714	Pterodroma sp.	1	NW		far out
0716	JFP	1	ce		
0719	<del>BWP</del>	1	NW		
0724	JFP	3	ce		
0724	BWP	1-80	ce		
0725	Pterodroma sp	2	NW		
0729	BWP	1	NW		
0747	JFP	2	ce		
0748	RTTB	1	ce		following ship <del>subadult</del> subadult
SF 0750	Sooty Tern	10			9 Ad. 1 Imm
	Phoenix Is Pet	1			
	JFP	6			
	BWP	1			
0759	BWP	1	ce		
0803	BWP	1	ce		
SF 0840	Sooty tern	6	⊙		AD
	Wedgetail	8	⊙		7 light, 1 dark
	BWP	4	⊙		
0846	BWP	1	⊙		
0858	JFP	1	⊙		
0908	BWP	1	⊙		
1000	Greater Frigate	1	⊙		Ad ♂ Feeding on surface
1002	BWP	1	⊙		
1010	Great Frigate	1	⊙		Imm
	Wedgetail	3	⊙		2 light 1 dark
1018	Shear-pet	2	⊙		
1055	Pt. sp	1	⊙		Phoenix Is. size, appearing all brown above, dark upper chest, white below, white throat. (Pt. heraldica??)

Phoenix Is. size, appearing all brown above, dark upper chest, white below, white throat. (Pt. heraldica??)



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

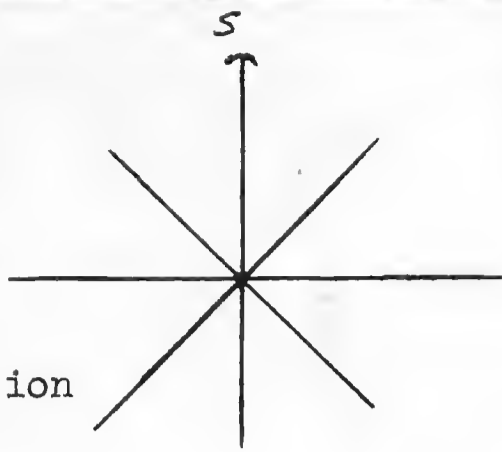
Bulmer 10-1200

1600-1800 - Smith

Date Nov 10, 66  
Pg.# 2

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1102	Shear-Pet	1	☉		large
1148	Wedgetails	2	☉		1 dark, 1 light
1150	JFP	1	☉		sitting on H <sub>2</sub> O
1205	Petrel	1	☉		A species I have never seen before unless it's an exceptionally heavy molt Tahitian Pet. Wedge-tail size, possibly slightly larger. belly and lower breast white. Breast gray-brown with white flecks. Underwing dark with thin white line up the center almost to tip. Back and dorsal area gray-brown, somewhat mottled. White patch posterior to wing similar to a Newell's. Seen sitting and feeding twice.
1212	BWP	1	☉		
1220	P. externa	1	☉		
1225	Wedgetail	1	☉		dark
1245	Phoenix/Tahitian	1	W		
1302	Black-w. Pet.	1	NW		
1303	Wedge-tail	1	☉		light in molt.
1330	Sooty/Sib	1	SW		dark under wings
1535	BWP	1	☉		
1545	Shear/Pet	1	S		looked like Wedge-tail but far out & Not Positive
1601	BWP	1	N		
1641	Phoenix Island	1	S		
5F 1655	Sooty Tern	?			at least 5 ad, rest not sure
	P. externa	3			
	P. hypoleuca	2			
1710	P. externa	1	S		
1715	Pterodroma sp.	1	S		
1729	B.W.P.	1	☉		
1745	Shear/Pet	1	☉		
1800	Sooty/Sib. She	1	S		
1818	Shear-Pet	1	☉		
1822					close observations sunset



SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

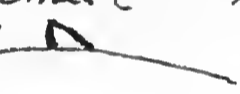
Sunrise - 0800 BAH

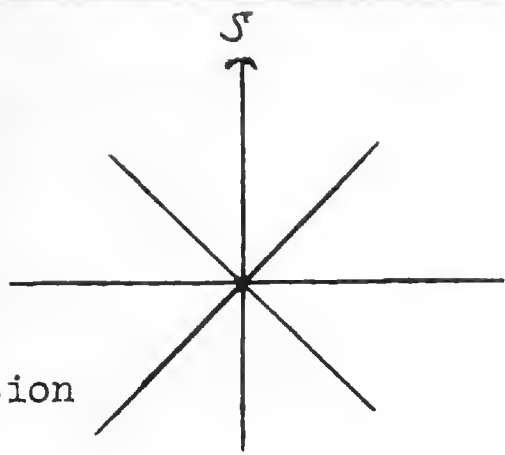
Date 11 November '66

Pg.# 1

SPECIMEN  
or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0629					Sunrise, begin observations
0629	Wedgetail	2	NE		dark phase
0632	Shear/pet	1	☉		
0634	Wedgetail	1	☉		light
0636	wedgetail	1	☉		dark, molt in primaries
0645	P. leucoptera	1	☉		
0645					Course changed to southwest.
0650	Phoenix/tahitian	1	W		
0653	Wedgetail	1	☉		dark
0655	small pterodroma	1	☉		
0700					course changed back to south.
0714	Small Pterodroma	1	☉		
0718	BWP	1	☉		
0720	Wedgetail	1	☉		dark
0720	Phoenix I Pet.	1	☉		
0725	Small pterodroma	1	N		
0731	Wedgetail	1	S		dark
0735	Pomarine Jaeger	1	W		"
0735					whales (3) - Brown - small (<20'). <del>st</del> Very slow, undulating motion. Dorsal fin  swimming together in a N-NE direction.
0742	WTTB	1			ad, circling ship
0757	wedge-tail	1	SE		dark
0800	Small Pterodroma	1	☉		
SF 0810	Sooty Tern	37	☉		Terns up high Ad
	Shear/Pet	25 ± 5	☉		
0811	wedge-tail	1	☉		light
0812	" "	1	SW		Dark
0816	BWP	2	☉		
1 0821	wedge-tail	1	W		Partial
0826	P. externa	1	NW		
0828	white-necked Petrel	1	NW		
0832	Sooty Tern	1	☉		Ad
0833	Shear/Pet	1	☉		All darks under wings, white bellies, dark backs
0840	Spotted Pet	1	S		
0843	white-necked Petrel	1	☉		
(0840)					wind increased noticeably and bird numbers decreased
0924	wedge-tail	3	☉		Follow ship 2 darks, 1 light
0930	RFB	2	☉		Ad Intermediate Phase
0932	Small Pterodroma	1	☉		
SF 0940	P. externa	5	☉		Dark
	wedge-tail	1	☉		
0945	wedge-tail	1	☉		Partial
	BWP	2	☉		
	CFS	1	☉		



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

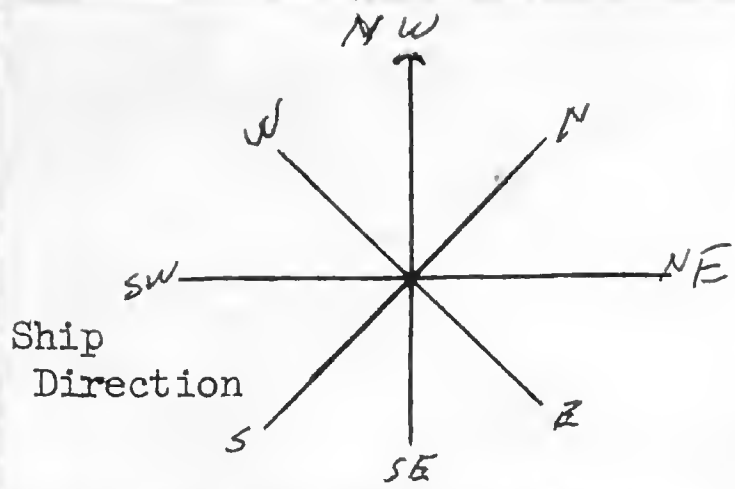
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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date NOV 16 66  
Pg.# 2

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0954	wedge-tail	1			light
0956	wedgetail	1			light
1002	BWP.	1	⊙		
SF 1004	Shear Pet	6	⊙		
1010	wedgetail	1	⊙		dark
1019	SKua	1	⊙		
1027	Phoenix Island	1	⊙		
1126	Phoenix Island	1	⊙		
1135	Shear/Pet	1	⊙		
1140	JFP	1	⊙		
1158	Phoenix Is.	1	⊙		white throat
1207	Sooty Tern	1	N		Ad
1212	BWP	1	⊙		
1222	BWP	1	⊙		
1224	Wedgetail	1	N		dark phase
1242	Bulwer's Pet	1	⊙		sitting on H <sub>2</sub> O
1245	BWP	1	N		
1250	Wedgetail	1	E		light phase
1304	BWP	1	⊙		
1306	Pip/Tat.	2	⊙		sitting on H <sub>2</sub> O
1313	RFB	1	⊙		Ad Int. phase
1318	Phoenix Is	1	⊙		sitting on H <sub>2</sub> O
1322	Shear/Pet	1	⊙		
1330	Phoenix Island	2	⊙		
1352	Fairy Tern	1	⊙		} feeding
	Haw. Noddy	1			
1400	BWP	1	⊙		feeding
1404	Fairy T.	1			
FF 1407	Fairy T.	7			feeding
	Tern sp.	1			
1408	BWP	1			ad
1412	Fairy Tern	2	⊙		
1425	Brown Booby	1			
1425					Palmyra in sight
1458	Phoenix/Tahitian	1	NE		
1459	Ruddy T	1			flying towards Island
1500					close observations





SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

1000-1200 Lewis

Date 15 November 66

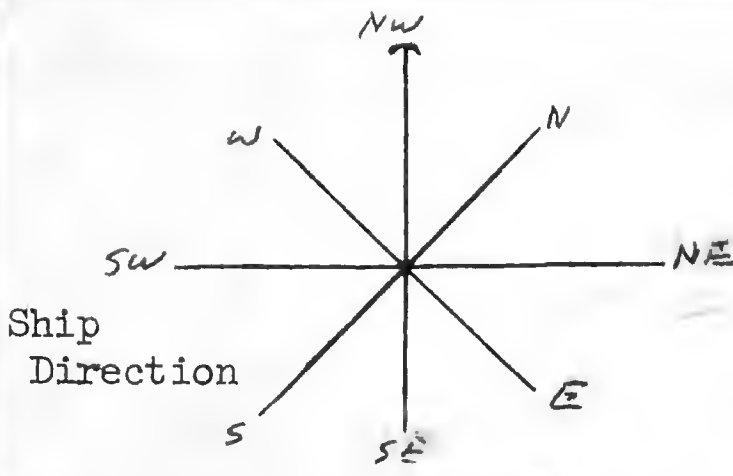
Pg.# 1

SPECIMEN  
OR

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
					Begin Observations 10 mi from Palmyra
1000					
1015	RFB	1	SW		Ad Int.
1007	wedge-tail	1	W		Darks
FF 1012	Sooty Tern?	100 ± 25			Feeding
	RFB	75 ± 15			
	Frigate sp.	2			
	Shear/Pet Fairy Tern	50 ± 10			
	Fairy Tern	3			
1015	Fairy Tern	1			Follows ship
1029	Tahitian Pet	1	NE		Observed closely - larger than Phoenix Island
1031	wedge-tail	1	SW		
1033	"	1	SW		Darks heavy Molting Backs
1036	P. externa	1	S		light
1037	RFB	1	SW		Ad Int.
1038	wedge-tail	1	SW		light
1041	RFB	2	E		Ad Int.
1046	"	1	ce		Ad Int sitting on H <sub>2</sub> O
1049	Hawaiian Noddy	1	S		
1051	RFB	1	SE		Ad Int.
1054	Fairy Tern	1	ce		
1056	wedge-tail	2	ce		light 1 dark
1059	BWP	1	ce		
SF 1000	sooty Tern	9			Ad Int.
	RFB	3			
	Fairy Tern	1			
1101	sooty Tern	1			headed toward flocks
1105	Phoenix/Tahitian	1	N		
1106	wedge-tail	1	ce		Darks
<del>1107</del>	<del>██████████</del>	<del>1</del>	<del>ce</del>		
1107	Hawaiian Noddy	1	NW		
1108	"	1	NW		
SF 1109	CNT	2			Darks
	HNT	1			
	wedge-tail	1			
	RFB	1			SA
1115	Phoenix/Tahitian	1	SW		
1117	Fairy Tern	2	ce		
1118	Phoenix/Tahitian	1	SW		
1120	Fairy Tern	1	ce		
1122	RFB	1	ce		SA follows ship
1123	"	2	NE		Ad Int
1124	"	1	"		Ad Int
1125	"	1	"		Ad Int
1125	BWP	1	"		
1130	P. hypoleuca	1	SW		
1132	RFB	1	N		Ad Int
FF 1135	Fairy Tern	31	ce		
1138	Frigate S	1	ce		

OBSERVERS:

1200-1400 Smith

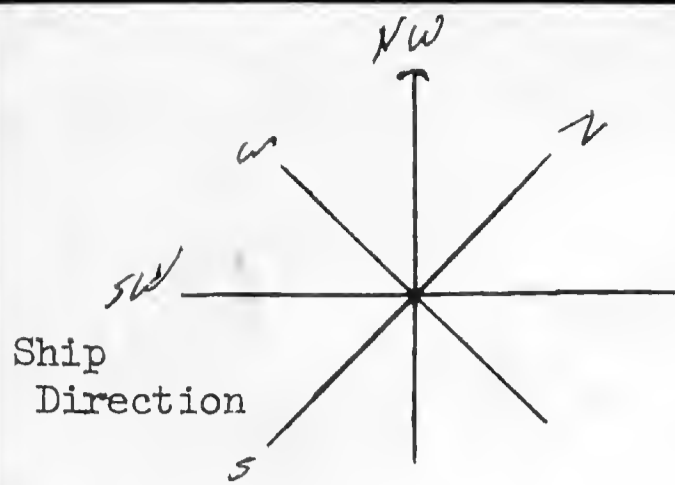


SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

Date 15 November 66  
Pg.# 2

	TIME	SPECIES	#	DIR.	SPECIMEN or BAND NO.	REMARKS
SF	1143	Sooty Tern	28			Swirl in up high
		wedge-tail	2			Dark
	1147	Frigate sp.	1	SE		
	1148	BWP	1	S		
	1149	wedge-tail	2	W		light 1 Dark
	1149	Bird	1	CE		
	1152	RFB	1	CE		Ad Int.
	1154	"	1	NE		Ad Int
	1165	wedge-tail	1	W		Dark
SF	1156	Sooty Tern	11	CE		up high
		Fairy Tern	1	CE		
	1200	P. externa	1	CE		
	1201	Fairy Tern	1	E		
	1205	wedgetail	1	SW		Dark
	1210	shear/pet	1	NE		
	1211	BWP	1	NE		
	1221	Fairy Tern	4	CE		
	1228	shear/pet	1	SW		
	1231	BWP	1	CE		
	1233	R.F.B	1	CE		subadult
	1237	BWP	1	CE		
	1238	com. Noddy	1	CE		
	1239	Fairy Tern	1	CE		feeding
	1252	Sooty Tern	1	CE		immature
	1258	RFB	2	SE		2 Ad, Int. Phase
	1310	Sooty Tern	2	CE		Ad
	1311	RFB	2	CE		Ad Int Phase
	1321	wedgetail	1	CE		Dark phase
	1329	shear/pet	3	CE		
	1330	RFB	1	CE		Ad Int. Phase
	1331	W.R.S.P.	1	CE		
	1332	RFB	6	CE		4 Ad Int Phase, 2 subadult
	1340	Phoenix Is. Pet	1	CE		
	1344	RFB	2	CE		Ad Int Phase
	1345	Sooty/Slab.	1	S		Dark underwings
	1347	" "	1	S		" "
FF	1348	Fairy Terns	11	CE		
		RFB	1	CE		Ad Int Phase
	1351	BWP	2	CE		
	1352	RFB	1	CE		Ad Int Phase
	1353	wedge tail	2	CE		Dark phase
	1354	Fairy Tern	1	CE		
	1355	wedgetail	1	CE		light phase

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SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

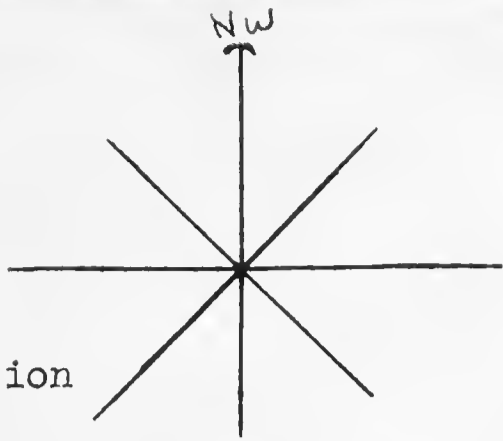
Bulmer  
BAH - 1400-1600

Date 15 Nov 66  
Pg.# 3

SPECIMEN  
or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1405	RTTB	1	⊙		fish in bill
1406	T				Rain squall
1415	RFB	4	⊙		3 Ad int. phase, 1 S. Ad
1417	Phoenix Is. Pet	1	SE		
1441	Fairy Tern	1	⊙		
1450	wedgetails	2	⊙		1 dark, 1 Light
1453	RFB	2	SE		S. Ad
1455	RFB	2	SE		Ad. int phase
1456	RFB	1	SE		" " "
1457	wedgetail	1	W		dark phase
1459	Sooty Tern	1	NW		Ad
1503	Wedgetail	1	⊙		light phase
1508	Fairy Tern	1	NE		
1511	sooty Tern	1	N		Ad
1515	Wedgetail	3	SW		1 dark
1518	Sanderling	1	⊙		landed on ship
1523	Wedgetail	1	⊙		dark phase
1525	"	1	⊙		" "
1535	Bulwers	1	NW		
1543	Wedgetail	1	⊙		light phase
1545	"	1	⊙		dark phase
1545	WRSP	1	⊙		
1546	Sooty Shear	1	SE		
1548	Wedgetail	3	⊙		
1552	"	1	⊙		light phase
1554	"	1	⊙		dark phase
1555	Phoenix Is Pet	1	⊙		
1557	Wedgetail	1	⊙		Stella 10
1558	S/sb	1	SW		dark phase
1608	Phoenix Tahiti	1	⊙		
1611	Wedgetail	1	⊙		
1620	BWP	2	⊙		dark - molt present (primaries)
1620	Phoenix Tahiti	1	⊙		
1620	Shear-pet	2	S		
1622	Wedgetail	4	⊙		dark, molt present in all. All feeding.
<del>1628</del>	Sooty T.?	3	NE		distant.
1630	Phoenix Tahiti	1	S		
FF 1635	Sooty T.	3	⊙		adults
	Tahiti Pet	1	⊙		
	Phoenix I. Pet.	1	⊙		
	Wedgetail	1	⊙		dark
	Audubon Shear.	1			



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

14-1600 BAH

16-1633 Lavis

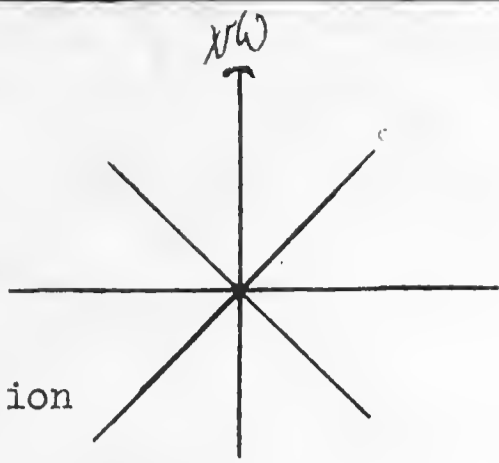
Date 15 Nov. '66

Pg.# 4

SPECIMEN

or

	TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
	1647	wedgetail	1	S		dark
	1652	"	1	S		dark
	1700	BWP	1	<del>ce</del>		
	1723	Phaethon sp	1	w		
TF	1732	RFB	7	NE		5 ad, 1 S, 1 imm
	1733	wedge-tail	1	ce		
	1744	BWP	1	ce		Partly
SF	1754	Sooty Tern	60±5			All adult
		Shear/pet.	10±5			
	1755	wedgetail	1	S		dark
	1803	wedge-tail	1	w		dark
	1807	BWP	1	ce		
	1808	BWP	1	ce		
	1808	wedgetail	1	ce		dark
	1814	Shear/Pet.	1	N		
	1830	" "	1	w		
	1833					sunset close observations



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

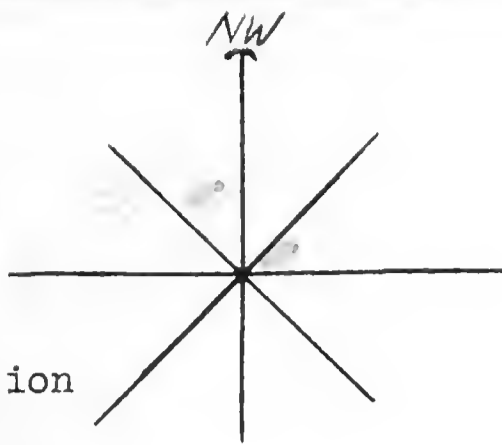
OBSERVERS:

Rulmer + Lewis

Date 15 Nov 1966  
Pg.# 1

SPECIMEN or Nocturnal Non Grid

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
2200					begin observations
2220	Shear-Pet	1			
2235	Sooty Tern	1			
2239	"	1			
2243	Birdsp	1			
2245	Shear-Pet	1			
2300	Sooty Tern	1			Ad
2305	Shear-Pet	1			probably BWP
2309	Shear-Pet	1			all Shear-Pet are the same apparently small, white below, flying high and NE
2311	Sooty Tern	1			
2325	RTTB	1			calling Sitting on the water with head under wing. Then woke up and flew around ship
2400					Close observations



SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

SR-0800 Smith  
0800-1000 Harrington  
1000-1200 Bulmer  
1200-1400 Lewis  
1400-1600 Smith

Ship  
Direction

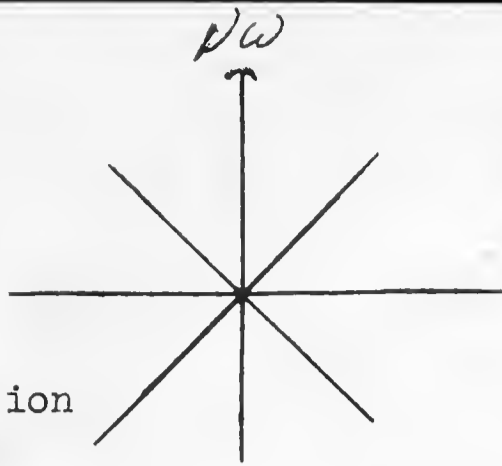
Date 16 Nov. 1966  
Pg.# 1

SPECIMEN

or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0651					Sunrise Begin Observations
0657	B.W.P.	1	NW		
0700	Shear/Pet	1			light underparts
0720	Wedgetail	1			Dark phase
TF 0724	Slenderbill	7	S		Dark underwings
TF 0735	"	19	S		" "
TF 0740	"	11	S		" "
0742	JFP	1			
0743	Slenderbill	2	S		Dark underwings
0757	Shear/Pet	1			
0806	Sooty Shear	1	S-SE		light underwings
FF 0824	JFP	2	}		all feeding over large predatory fish (tuna or dolphin)
	BWP	2			
	Dark-rump Pet.	1			
0830	Wedgetail	1			well observed close to ship. No doubt. Was next to JFP for comparison
0831	BWP	1			light
0838	Sm. Pterodroma	1			
0838	Shear/Pet.	1			
0852	BWP	1	S		
TF 0927	Slenderbill	7	S-SE		well observed; dark underwings - no doubt as to identification
TF 0939	"	24	S-SE		" " " " " " " " " " " "
0939	Wedgetail	2			light
0958	Slenderbill	3	S		travelling; dark underwings.
TF 1000	Sooty/slender	15-20	S		on horizon
TF 1003	Slenderbill	10	SW		well observed - dark underwing.
1152	BWP	2			At Last!!
1154	Wedgetail	1			light phase
1155	Pt. externa	1	S		
TF 1200	Sooty/slender	15-20	SW		edge of squall
TF 1207	"	11	SW		white underwing
TF 1218	"	22	SW		white underwing
TF 1254	"	10	SW		Paris underwings
TF 1303	"	30 ± 3	SW		Mostly Paris underwings 3 or 4 with light underwing
TF 1352	"	60 ± 6	SW		All dark underwings
1354	"	1	S		Paris underwings
1357	Fairy Tern	1	NE		white
1403	Darkrump Pet	1			seen at close range.
TF 1410	Slenderbill	59			Dark underwing
TF 1419	"	6			" "
TF 1426	"	16			" "
TF 1451	"	26	S		" "
TF 1454	"	43	S		" "
1544	Phoenix Island	1			
TF 1620	Slenderbill	62	SW		Obs. close



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

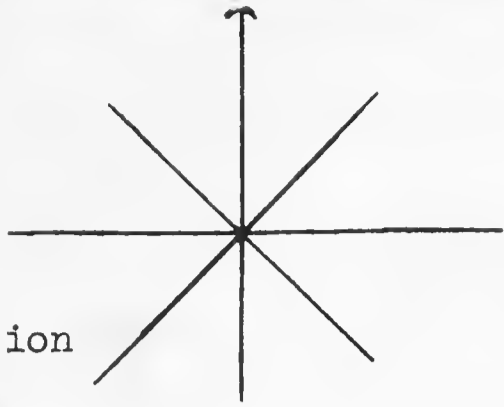
OBSERVERS:

Palmer

Date 16 Nov. 1966  
Pg.# 2

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1635	BW P	1	⊙		
TF 1636	Slenderbill	27	SE		<del>near</del> close
TF 1644	Sooty Shear	18	SW		close
1652	BW P	1	SW		
FF 1655	Sooty Tern	38	⊙		Ad
	JFP	15+3	⊙		
	Shear-Pet	5	⊙		
1738	RTTB	1	⊙		
1744	s/sb	3	SW		out far
1756	Slenderbill	2	SW		close
1758	"	1	SW		"
TF 1805	Slenderbill	18	SW		
	Sooty Shear	6	SW		
1806	RTTB	2	⊙		
1815	Sooty/slend.	1	SW		out far
1818	Shear-Pet	1	⊙		
TF 1820	Sooty Shear	6	S		
1840					Sunset.
TF 1846	<del>Sooty Shear</del> Slenderbill	6	SW		



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

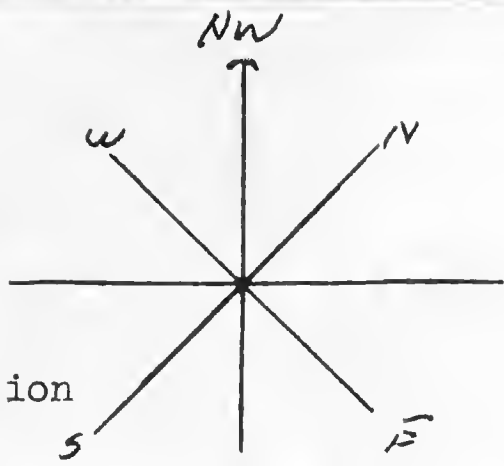
~~2200-2400~~  
BAH

Date 16 Nov '66  
Pg.# 1

SPECIMEN NOCTURNAL  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
<del>1800</del> 1010	BWP	1	<del>ce</del>		open observations
1620	shear/pet	1	ce		close observations
1830					





OBSERVERS:

0800-1000 Smith

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

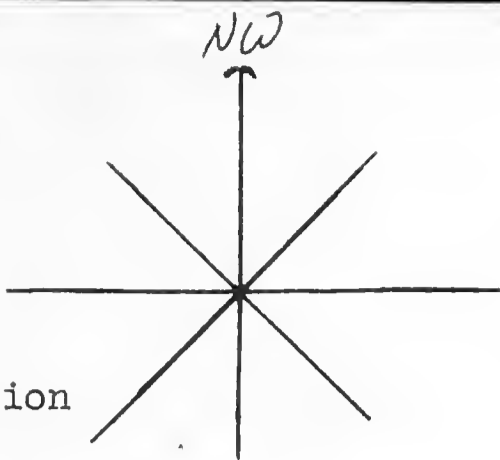
Date 17 November  
Pg.# 1

Ship Direction

SPECIMEN  
or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0706					Surviv. bog in observations
0716	Frigate sp	1	ce		
0719	BWP	1	ce		Follow ship Immature
0720	JFP	1	ce		
TF 0722	Sooty/Sib	7	SW		Far out
TF 0724	"	9	W		way out
0726	JFP	1	ce		
0731	Sooty shear.	3	SW		
FF 0735	RFB	1	ce		5A
	JFP	8	ce		
	BWP	12	ce		
	Wedge-tail	2			1 light 1 dark
TF 0743	Sooty shear	7	SW		
0743	JFP	2	N		
TF 0745	Sooty shear	5	SW		
TF 0753	"	4	SW		
0754	"	4	SW		
0803	JFP	1	ce		
0810	Slenderbill	3	S		Dark underwings
0811	Shear/Pet	1	ce		
0812	Sooty Shear	1	SE		light underwings
TF 0818	Slenderbill	19	S		Dark underwings
0828	RTTB	2	ce		feeding
TF 0834	Slenderbill	22	S		Dark underwings
TF 0843	Slenderbill	73	S		" "
TF 0845	"	25	S		" "
TF 0848	"	32	S		" "
FF 0855	Sooty tern	16	ce		Ad feeding
	<del>Wedge-tail</del>	<del>2</del>	<del>ce</del>		<del>light</del>
	JFP	8	ce		
	Wedge-tail	2	ce		
	BWP	1	ce		
TF 0900	Slenderbill	12	S		Dark underwings
TF 0913	"	17	S		" "
0915	BWP	1	ce		
0918	Sooty Shear	1	S		light underwings
0935	JFP	1	S		
0946	BWP	1	ce		
0948	BWP	1	ce		
FF 1006	BWP	4	ce		
	JFP	1	ce		
1015	BWP	1	ce		
1031	JFP	1	NE		
TF 1035	S/Sb	23	S		
TF 1037	S/Sb	5	SW		
1042	BWP	1	SW		
1052	BWP	3	ce		
	Bulwer's	1	ce		



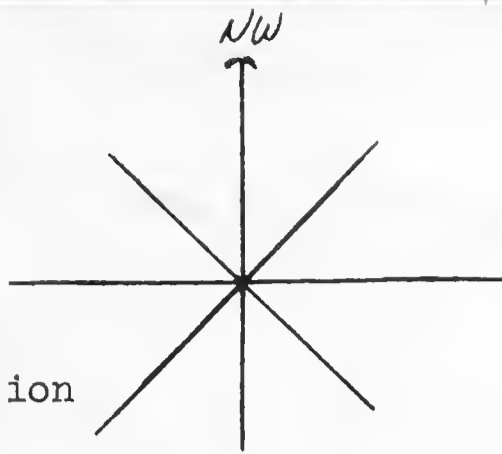
OBSERVERS:  
Bulmer  
 1200-1400 Harrington

SMITHSONIAN INSTITUTION  
 DIVISION OF BIRDS  
 AT SEA DAILY LOG - E

Date 17 Nov 1966  
 Pg.# 2

SPECIMEN  
 or

	TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
	1052	Sooty Shear	1	☉		circling without apparent direction
	1055	BWP	1	N		
	1056	JFP	1	N		
	1059	Slenderbill	25	SW		close
	1102	S/sb	1	SW		
TF	1104	S/sb	15	SW		appeared to be a mixed flock that approached ship and turned back. The birds circled until the ship was out of their way and then continued on course of positively SW!
	1127	Dark-rump	1	☉		
	1204	Shear/petrel	1	☉		good obser.
	1220	RFTB	1			over ship, adult no central tail feather
	1234	sooty/sldr.	1	SW		distant
SF	1250	Wedgetail	2	☉		light
		JFP	5			SF
		BWP	6			
	1255	Pterodroma sp.	1	☉		distant - heading for above flock.
TF	1258	Wedgetail	7	N		all light. Close; none had streamers. One with molt in lower primaries. Appears to be "gravitating" to the northward.
	1305	JFP	1	☉		
	1310	"	1	☉		
	1315	BWP	1	☉		
	1315	Haw. Noddy	1			sitting on fishball.
	1325	Sooty Shear	1	SSW		close, light underwing, large body, flight.
	1400	Sooty-slender	5	SW		distant.
	1412	"	1	SW		"
	1421	BWP	1	☉		
	1426	sooty-slender	1	SW		distant
TF	1442	" "	25 ± 5	SW		"
	1505	" "	1	SW		
	1519	BWP	1	☉		
	1520	Sooty shearwater	1	☉		close No direction established
	1525	Sooty/slb.	1	SW		way out
	1529	Slenderbill	1	SW		<del>dark underwing</del> Dark under wings
	1534	sooty/slb	2	☉		
	1535	P. Externa	1	☉		
TF	1550	Sooty/slb	6	SW		
	1551	BWP	1	N		
TF	1603	Slenderbill	7	SW		Dark underwing
	1604	Sooty/slb	1	SW		way out
	1607	Slenderbill	1	SW		
TF	1608	Sooty/slb	7	SW		
TF	1600	" "	15	SW		on horizon
	1624	" "	1	SW		
	1634	JFP	1	☉		



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

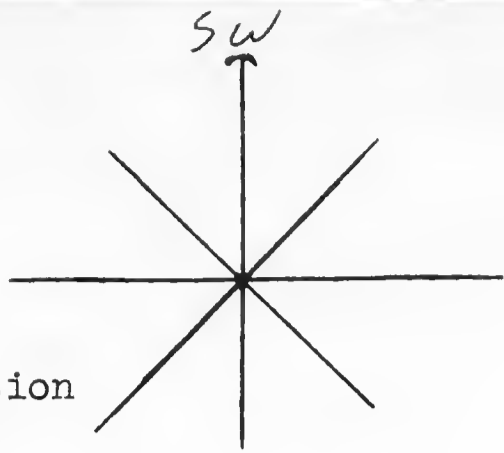
OBSERVERS:

1600-1800 Smith

Date 17 Nov  
Pg.# 3

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1647	Slenderbill	1	S		dark underwings - distant
1649	Shear-pet	1	W		
1700					Whale sp. Probably Sperm - blow ca 10' high pointed slightly forward.
1705	JFP	1	W		
1710	BWP	2	W		
1712	JFP	1	W		
1722	Pterodroma	1	W		
1728	Wedgetail	1	W		light phase
1735	Frigate sp.	2	W		
1740	BWP	1	W		
SF 1745	JFP	5	W		light phase
	Wedgetail	2	W		
1747	Pomarine Jaeger	1	W		
1801	Wedgetail	1	W		light phase
	BWP	1	W		
1820	Sooty Shear	1	SW		
TF 1822	S/Sb	11	SW		



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

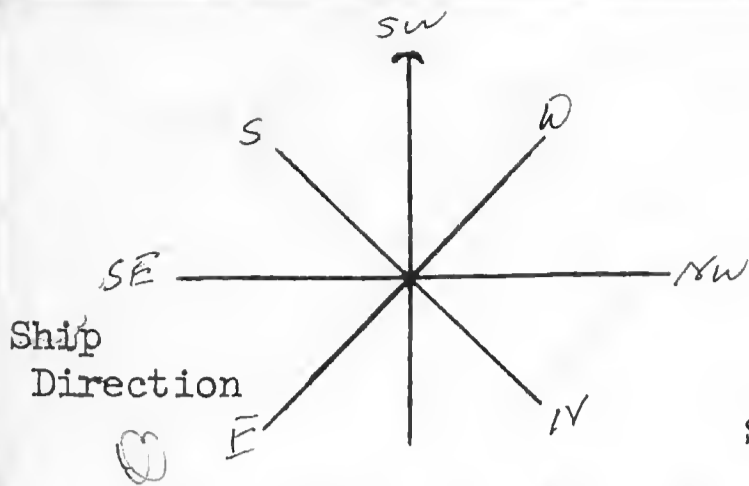
OBSERVERS:

21-2400 Lewis  
0000-0300 Sulik  
0300-0600 Bulmer  
0600 - Sunrise BAH

Date 17-18 November  
Pg.# 1

SPECIMEN or Nocturnal

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
<del>2200</del>					Begin Nocturnal Observations
2220					Course change from NW (324) To SW (224)
2236	Shear/Pet	-1			Enter Grid
2243	BWP	-1			white underneath, May be P. externa
2300	Small Pterodroma	-1			
C 0015	Storm Pet	-1			
0040	Sooty Tern	-1	∞		Flow onto light + landed under light Leach's SP
0041	Shear/Pet	-1	∞		Ad calling
0145	Sooty Tern	-1	∞		large
0208	Small Pterodroma	-1	∞		Ad
0240	Sooty Tern	-1	∞		Ad calling
0307	Wedgetail	-1	∞		light phase
0410	"	-1	∞		"
0416	W	-2	∞		"
0615	P. externa	-1	S		
0620	"	-1	S		
0620					SUNRISE
					Shear-Pet 2
					BWP 1
					Small Pterodroma 2
					Leach's Pet 1 (c)
					Sooty Tern 3
					Wedgetail 4
					P. externa 2



OBSERVERS:

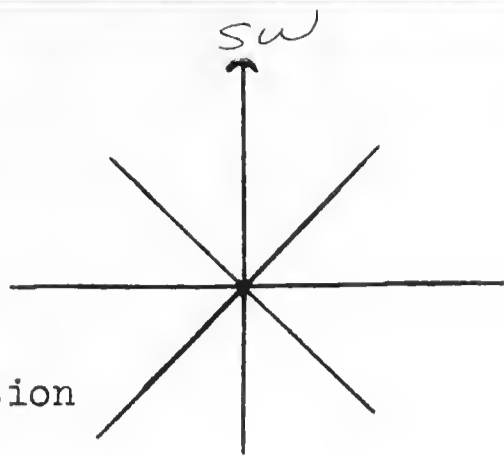
SUNRISE - 0800 Harrington  
0800 - 1100 Lewis  
1000 - 1200 Smith  
1200 - 1400 Bulmer

SMITHSONIAN INSTITUTION  
 DIVISION OF BIRDS  
 AT SEA DAILY LOG - E

Date 18 Nov 66  
 Pg.# 1

SPECIMEN  
 or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0620					SUNRISE
0635					
0635	S/Sld.	1	S		whale - blow in distance
0639	Shear-Pet	1	ee		direction positive. distant.
0645	JFP	2	N		distant
0655	"	1	NW		
0702	"	<del>1</del>	ee		
	BWP	1	ee		
0707	S/Sldr.	2	-		
0712	BWP	1	S		
0724	P. hypoleuca	1	NW		
0724	Wedgetail	1	S		light.
0734	P. externa	1	ee		
0800	P. externa	1	ee		
0810	JFP	2	NW		
0815	Mottled Pet	1	SW		
0816	P. externa	1	NW		
0819	P. hypoleuca	1	N		
0823	BWP	1	N		
TF- 0825	Slender bill	6	SW		
0828	JFP	1	NW		
0831	Phoenix/Tahiti	1	S		
TF 0834	Sooty & slender bill	8	SW		Mixed flocks turned somewhat to west when approaching ship
0836	JFP	1	ee		
0840	"	2	W		
0845	"	1	N		
0846	P. externa	1	ee		distant
0851	JFP	1	ee		
0854	"	1	NW		
0857	"	1	W		distant probably externa
0912	Pterodroma sp	1	NW		
0917	P. hypoleuca	1	NW		
0925	BWP	1	N		
0932	Mottled Pet.	1	S		
0933	BWP	1	NW		
0934	Slender bill shear	1	S		
1030	Wedgetail	1	N		light
1123	WRSP	1	ee		
1158	S/Sldr.	4	S		distant.
1332	JFP	1	NW		
1336	BWP	1	ee		
1345	BFB	1	ee		Ad
1430	"	<del>1</del>	ee		ad - same as above?
1432	JFP	2	ee		
1445	BWP	1	ee		
1520	sooty/slender	1	S		distant



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

1400-1600 BAH  
16-1800 TFL

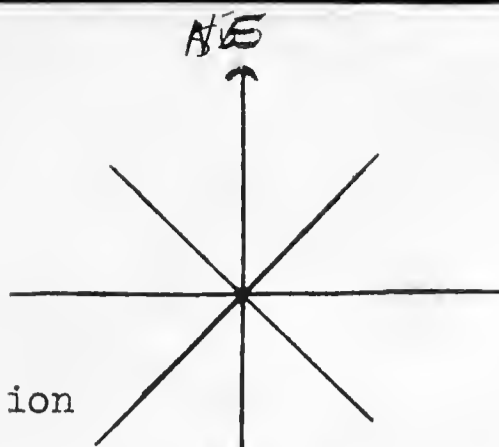
Date 18 Nov 66  
Pg.# 2

SPECIMEN  
OR

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
SF-1535	Wedgetail	1			light
	JFP	4			
	BWP	3			
	P. leucoptera?	1			all dark underwing, almost totally dark breast and belly
	Common Noddy	1			
TF 1536	s/sldr.	7	S		distant.
TF 1547	s/sldr.	25±5	S		"
TF 1604	Shear/Pet	1	SW		"
TF 1612	G. Frigate	1	NE		Ad ♂ ad.
TF 1626	RTTB	2	00		calling & courtship type flying
TF 1655	S/S/Av	3	S		No Band on bird shot but not returned
TF 1715	"	9	S		
TF 1725	Spoty Shear	1	SW		
TF 1752	Sooty/S/S	10	S		
1757					Sunset

	N	NE	E	SE	S	SW	W	NW
Sooty/Slender					60	14		
Shear-Pet							3	6
JFP			3					
BWP			2					
Phylogoua			1					
Wedgetail L.			1					
P. externa								
mottled								
Phoenix/Taiwan								
Diorchoma sp								
WR SF								
BFB								
P leucoptera								
Common Noddy								
G. Frig								
RTTB								
Sooty shear								
Slender								
								133

total birds SR to SS	: 133
Total miles SR to SS	: 114
Birds/lin. miles	: 1.17
Birds/sq. mile	: .535
Birds/5000 sq mile	: .24, 25
s/s/ per lin mi	: .666
" sq. "	: .333
Shear-Pet	: .017
JFP	: .009
BWP	: .0184
Phylogoua	: .0026
Wedgetail	: .012
P. externa	: .035
mottled	: .018
Phoenix/T.	: .017
Diorch. sp	: .009
WR SF	: .004
BFB	: .001
P leucoptera	: .004
Common Noddy	: .001
G. Frig	: .004
RTTB	: .001
Sooty shear	: .002
Slender	: .001



SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:  
 1800-2100 Smith  
 21-2400 Bulmer  
 0000-0300 BAH  
 0300-0600 TFL  
 0600-0800 Smith

Ship  
Direction

SPECIMEN  
or  
Nocturnal  
Grid

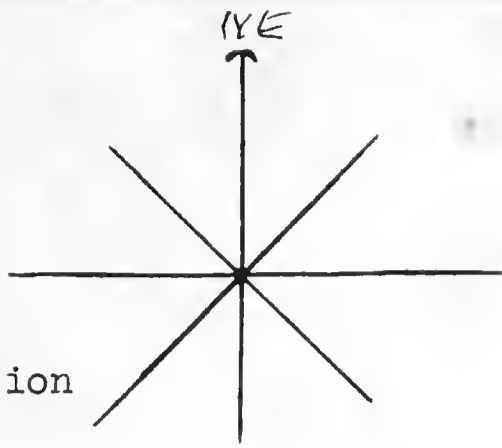
Date 18 Nov 1966  
 Pg.# 1

*Sunset, Begin obs.*

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1757	Shear/pet	-1	∞		light underwings
2047	" "	-1	∞		
2125	Shear pet	-1	∞		
2147	Sooty Tern	-1	∞		Ad calling
0130	Shear/pet	-1	?		white below.
0435	Wedgetail	-1	?		light phase
0555	wedgetail	-1	∞		following ship
0601	RITB	1	∞		" " high over head
0612	Wedgetail	-2	:		following ship light
0625					Sunrise

*1757 - Sunset  
 1800 change course*

Shear-Pet- 4  
 Sooty T 1  
 Wedge 4  
 RITB 1



SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E  
Diurnal Grid

OBSERVERS:

58-0800 Smith  
0800-1000 Bulwer  
1000-1200 BAH  
12-1400 Lewis  
14-1600 Smith  
16-1800 Bulmer

Date 19 Nov. 1966  
Pg. # 1

SPECIMEN  
or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0625					sunrise - Begin observations
0630	Shear/Pet	1	∞		
0731	" "	1	∞		light underwings
0805	JFP	1	NE		
0810	JFP	1	NW		
0811	<del>Wedgetail</del>	1	NE		<del>light</del>
0820	JFP	1	SW		
0835	Bulwer's	1	SE		
0840	JFP	3	NE		
0848	RFB	1	NE		S. Ad
0850	JFP	1	SW		
0853	JFP	1	NW		
0854	S/Sb	1	SW		
0855	JFP	1	SW		
0859	RTTB	1	∞		
1028	S/slender	1	S		distant
1050	<del>BWP</del>		∞		
1050	BWP	3	∞		
1058	WTTB	1	NE		high (150') apparently searching
1110	G. Frigate	1	∞∞∞		ad ♀
1137	Shear/pet.	1	∞		
1306	P. externa	1	NW		sitting on H <sub>2</sub> O
1310	RFB	1	∞		edge of Brim squall
1314	Bird	1	∞		edge of squall
1347	BWP	1	NW		
1352	JFP	1	N		
1354	JFP	1	N		
FF-1357	JFP	5	∞		Feeding
	Phaen. Tubation	1	∞		
1412	BWP	1	∞		
	Wedgetail	1			light
1511	JFP	2	∞		
EF-1511	BWP	1	∞		
1552	Shear/Pet	7	∞		
	JFP	8	∞		
	BWP	5	∞		
	Skua	1			
1620	Sooty Shear	3	SE		close
1624	slenderbill	1	SE		"
1626	BWP	1	NW		
1634	JFP	1	SW		
1636	JFP	1	∞		
1645	BWP	2	∞		flying together
1750	<del>Bulwer's</del>				sunset close over

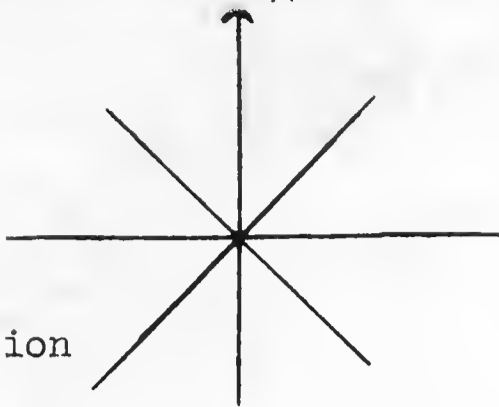


	Tot #	# in F	N	NE	E	SE	S	SW	W	NW	BPM/BPS M
Shear Pet	10	7									.083 .041
JF-P	29	13	2	5				3		2	.240 .120
Bulwer's	1										.008 .004
RFB	2										.016 .004
S/S	2						1	1			.016 .008
Sooty Shear	3					3					.025 .012
Slender "	1					1					.008 .004
RTB	1										.008 .004
WTB	1										.008 .004
BWP	14	5									.160 .058
G. Frig	1										.008 .002
P ext.	1										.008 .004
Bird	1										.008 .004
Phoenix/tahiti	1										.008 .004
Wedge	1										.008 .004
Skua	1										.008 .002
	70										

572-53 121  
 x2 = 242  
 x4 = 484

Total birds/lin mile = .531  
 " " / sq " = .289

NE NW



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

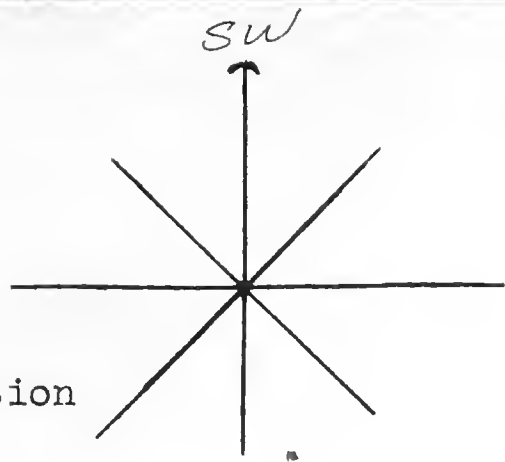
1800-2100 BA 17

SPECIMEN  
OR

Nocturnal Grid

Date 19 + 20 Nov.  
Pg. # 1

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1757					Sunset begin Nocturnal obs
1759	Newell's	-1	⊙		
1830					change course to NW
1955	Bird	-1	⊙		
2045	RFB	-1			Subadult circling ship.
2255					change course to SW
2350	Bird	-1			
0210	Shear Pet	-1	⊙		Small white below
0305	Sooty Tern	-1	⊙		Ad
0358	Shear/Pet	-1			
0628					SUNRISE - CLOSE OBSERVATIONS
					Newell's 1
					Bird 2
					RFB 1
					Shear Pet 2
					Sooty T 1



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E  
DIURNAL GRID

SPECIMEN  
or

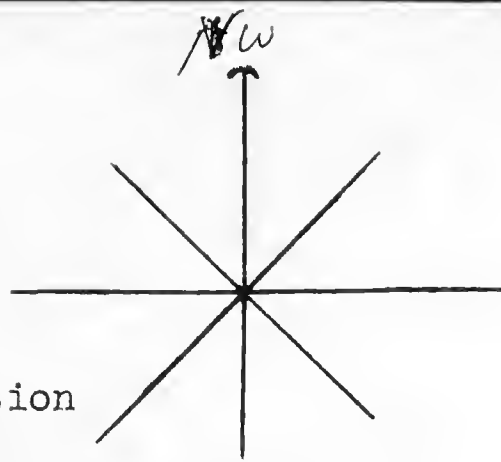
OBSERVERS:

0628-0800 Harrington  
8-10 Lewis  
10-12 Smith  
12-14 Bulmer

Date 20 Nov. 1966  
Pg. # 1

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0628					SUNRISE; begin diurnal observations
0632	Wedgetail	1	∞		light.
0653	s/sldr.	4	S		
0653	shear/petrel	1	S		distant
0654	sooty shear	1	S		close - light underwings, big body, flight, tail. Direction positive.
TF 0656	sooty/slender	6	S		distant, direction positive
TF 0701	"	10±5	S		horizon
0702	shear-pet	NW 1			small - possibly Bulwer's
0705	P. externa	1	S		
0707	BWP	1	∞		
0715	RTTB	2			adults circling ship - called
TF 0723	sooty/slender	6	S		
0726	Bird	1	∞		distant.
TF 0732	sooty/slender	11	S		"
SF 0740	Common Noddy	7			
	BFB	1			sub ad
	JFP	4			
	Wedgetail	1			light.
0746	Fairy T.	1	SE		
0748	Sooty shear	2	S		close. Field marks observed.
0807	" "	1	S		
0807	" "	3	SW		
TF 0812	sooty/slb	6	SW		
0816	wedge-tail	1	SE		light
0826	sooty shear	1	S		close observed direction positive
0847	WRSP	1	S		Leache's Type
0848	shear/pet	1	∞		distant - light underwings
0910	sooty/slb	3	S		distant direction positive
TF 0912	sooty+slb	16	S		
0918	WRSP	1	SE		
0922	sooty shear	1	S		close light underwings direction positive
TF 0925	slb shear	31	S		very close dark underwings
0929	shear/pet	1	S		" "
TF 0943	sooty+slb shear	6	S		light underwings distant
TF 0957	sooty/slb	19	S		close 4 dark underwings 2 light direction positive
TF 1012	sooty/slb	21	S		distant direction positive
1100	shear/pet	1	∞		distant
TF 1138	sooty/slb	13	S		
1147	"	1	S		
1150	"	1	S		
1150	JFP	1	∞		
1151	sooty shear	1	S		
TF 1158	s/sb	25	S		
1159	sooty shear	2	S		
1203	PT. externa	1	∞		
1254	s/sb	2	S		
1312	"	1	S		

All sooty/slender have been travelling slowly with high arcing. Quite different from rate 4 days ago, <sup>south</sup> East of grid.



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:  
200780 Palmer  
1400-1600 Harrington

Date 20 Nov 1966  
Pg.# 2

SPECIMEN  
or

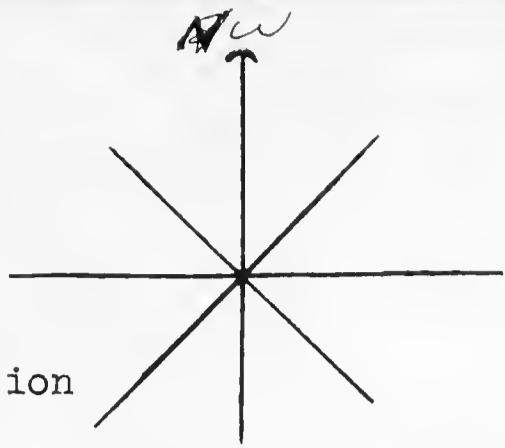
	TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
	1330	Pale-foot	1	☉		
TF	1335	S/Sb	15	S		
	1337	"	1	S		
	1345	Christmas Is Sh.	1	NE		
	1355	S/Sb	1	S		
TF	1402	Slenderbill	9	S		
	1414	Wedgetail	1	☉☉☉		light.
TF	1425	S/S/dr	14	S		distant - direct. positive
TF	1437	S/slender	20±5	S		horizon
TF	1501	Slenderbill	27	S		close - all with dark underwing, direct. positive
	1528	Wedgetail	1	NE		light.
TF	1532	Slenderbill	23	S		Fairly close - dark underwings, direct. +
	1540	Dark-rump Pet	1	☉☉		} flying together, very close to ship; DRP well observed
		BWP	1	☉		
	1551	WRSP	1	☉☉☉		
	1552	Birds	3	☉☉☉ N		
	1558	Shear-Pet	1	-		
	1605					course changed to N.W.
TF	1627	sooty/slender	15	S		distant - direction positive
TF	1630	"	10	S		"
TF	1636	"	8	S		"
	1637	"	1	S		"
TF	1640	Slenderbill	7	S		close.
TF	1645	"	17	S		"
TF	1649	S/S/dr	7	S		dist.
TF	1706	S/Sb	25	S		"
TF	1708	"	9	S		"
TF	1720	"	7	S		"
TF	1730	"	68	S		close - flocks contained about 75% slenderbill and 25% sooty 17
TF	1742	"	19	S		"
TF	1750	"	12	S		"
	1756	"	3	S		"
	1800					summed close diurnal observations

#/lin mi  
#/lin mi

~~456~~  
~~536~~

		#/lin mi							#/lin mi	#/lin mi	
		N	NE	E	SE	S	SW	W	NW		
Woodtail light	5	1	1	1	1					.039	.019
S/S	416	399				380	6			3.30	1.65
Shear/pet	7									.056	.028
P. externa	2					1				.016	.008
BWP	2									.016	.008
RTTB	2									.016	.008
Bird	4									.032	.016
CNT	7	7								.056	.028
BFB	1	1								.008	.004
JFP	5	4								.039	.019
Fairy T	1									.008	.004
Sooty Shear	12					12				.095	.048
WRS P	3				1	1				.024	.024
Pale foot	1									.008	.004
X-mat I	1									.008	.004
Slenderbill	83	83				83				1.52	.760
Dawn Rump	1									.008	.004
	<u>553</u>										
Sooty } S/S } Slend. }										4.05	2.03
Pext. } JFP }										.056	.028

Total diurnal miles - 126  
Total bird/lin mile - 4.4



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

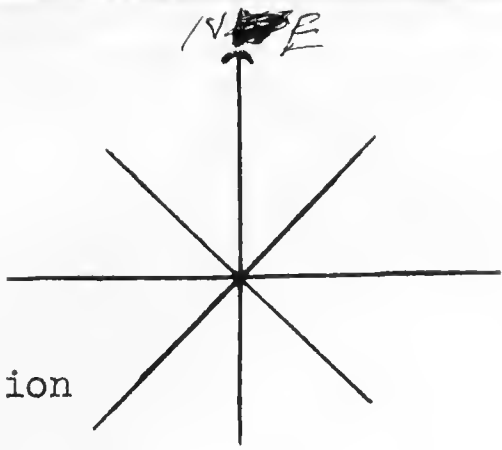
1600-2100 TJJ

Date 20-21 Nov 66

Pg.# 1

SPECIMEN *Nocturnal*  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1800					Begin Nocturnal Observations
1806	Birds	- 2			on horizon
TF 1810	sooty/s/b	- 15 ± 5	SW		
1817	" "	- 1	S		
2115					change course to NW
2215	Sooty Tern	1			ad. calling overhead.
2325	Bird	- 1			white below
0122	Shear/Pet	- 1	∞		
0320	" "	- 2	∞		white below
0633					Sunrise close observations
					Birds 3
					S/sld 16
					Sooty T. 1
					Shear/pet 2



SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

0600-0800 TSC  
0800-10 Harrington  
10-12 Palmer  
12-14 Lewis  
14-16 Harrington

Date 21 June 66  
Pg. # 1

Ship  
Direction

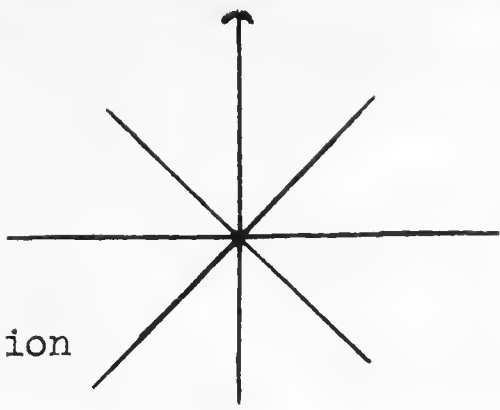
SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0633					sunrise
0634	wedge-tail	1	CE		following ship light
0648	"	1	CE		" " "
0658	Sooty/Sib	4	CE		detering around ship
0725	Shear/Pet	1	CE		
0755	G. Frigate	1	CE		ad ♀
	RFB	2	CE		1 ad light, 1 sub. } feeding together, Frig. NOT chasing RFB.
0805	Shear/Pet	2	-		
0831	S/S/dr.	5	S		fairly far away - direction positive
0854	WTTB	1			over ship
0902	Sooty Shear	1	S-SE		close - direction varying between S & SE
0928	RTTB	1	SE		ad. 1/2 mile off
0930	G. Frigate	1	CE		ad ♀ chasing flying fish
0950	"	1	CE		imm.
1015	"	2	CE		Ad + imm
FF 1122	Shear-Pet	7	SW		way out! probably Wedgies
1145	Sooty Shear	1	SW		close
1157	Phoenix Island	1	CE		close
1158	wedge-tail	1	E		dart
1211	Shear/Pet	1	CE		distal
1217	" "	1	SE		
1218	wedge-tail	1	E		light
1224	" "	1	SE		Dart/S.
1230	Shear/Pet	1	NW		
1232	RFB	1	CE		following ship SA
1238	RFB	1	CE		" " SA - new two following ship } No streamers
1238	Frigate sp	2	CE		circles high, both from
1243	wedge-tail	1	SE		dart
1252	" "	2	SE		"
1258	Sooty Shear	2	SE		close
1304	" "	1	SE		light - following ship
TF 1305	wedge-tail	1	CE		
TF 1312	Stenderbill	10	SE		close
	Sooty Shear	1	SE		
TF 1315	Sooty Shear	5	SE		sooty/sib very slow meandering flight that the determined direct flight of several days ago
1322	RFB	1	NE		Ad Int Phase
1333	Stenderbill	2	N		close
1341		1			whale larvae 30+ ft Brown
1346	wedge-tail	1	CE		following ship - light phase
1350	Sooty Shear	3	CE		Just crossing around - very slow meandering flight
1430	WRSP	1	E		
1437	E/S.	1	S		
1441	Stenderbill	1	S		
1506	Sooty Shear	1	SE		close, light underwing

100170800  
0.7



NE

Ship  
Direction
 SMITHSONIAN INSTITUTION  
 DIVISION OF BIRDS  
 AT SEA DAILY LOG - E

OBSERVERS:

14-16 RAH

16-18 FHS

Date 21 Nov. '66

Pg.# 2

SPECIMEN

or

TIME SPECIES # DIR. BAND NO. REMARKS

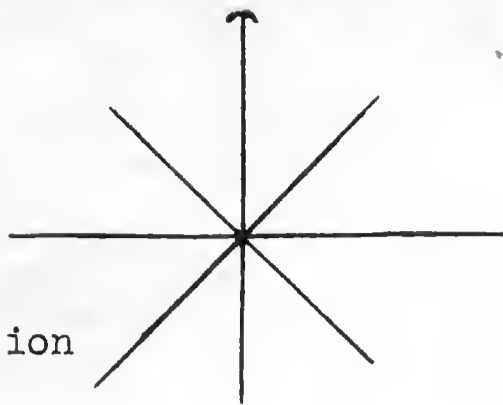
TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1526	White-neck Pet	1	ENE		
1540	P. externa.	1	W		
1634	Wedgetail	1	SE		light
1719	Xmas Is. Shear	1	Q		
C 1720	RTTB	2	Q		1 coll. F. Smith (not retrieved)
1721	Wedgetail	1	Q		light
		83			
1747					Sunset

ratio of S/S in flocks by day

	# Flocks	ratio of S/S in flocks by day							birds/lin mi.	b/29 mi.	
		N	NE	E	SE	S	SW	W			NW
Wedgetail light	7-0			1	1					.070	.035
Wedgetail dark	5-0			1	4					.050	.025
CIS	1-0									.010	.005
Sooty slender	10-0					6				.100	.050
Sooty Shear	14-6				9	1	1			.140	.070
Slender bill	13-10	2			10	1				.130	.065
Shear/pet	13-7									.130	.065
Phoenix I.	1-0									.010	.005
W. N. Pet.	1-0									.010	.005
P. externa	1-0									.010	.005
WRSP	1-									.010	.010
WTTB	1-0									.010	.005
RTTB	3-0									.030	.015
RFB	5-0									.050	.025
G. Frig	5-0									.050	.013
Frig	2-0									.020	.005
	73										
Whale	1										

# FF (1)  
 # TF (2)

Total Diurnal miles: 100  
 Birds/lin mile .830



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:  
J. Bulmer

Nocturnal Grid

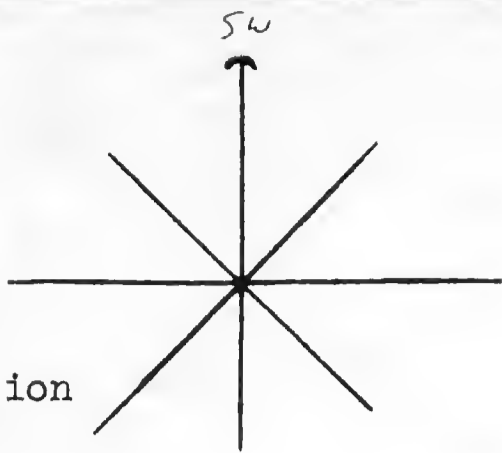
Date 21-22 Nov  
Pg.# 1

SPECIMEN  
or

TIME SPECIES # DIR. BAND NO. REMARKS

1800					Sunset begin Nocturnal obser.
1800	G. Frigate	1	⊙		Ad ♀
1830					under way after failure to retrieve RTTB
1945	Bird sp	1	⊙		white below
2020	Shear-Pet	1	⊙		Ad calling
2055	Sooty Tern	2	⊙		edge of rain
2235	Shear/Pet	1			
2318	BWP	1	NE		
2325	BFB	1	⊙		Ad
0015	Shear/Pet	1	⊙		light underneath
1225	"	1	⊙		edge of the light may have taken off from
1227	"	1	⊙		sitting on H <sub>2</sub> O
1228	"	1	⊙		
1229	BWP	1	⊙		landed in H <sub>2</sub> O
1232	Shear/Pet	1	⊙		
0055	BFB	1	⊙		Ad follows ship
0110	Shear/Pet	1	⊙		
0215	BFB	1	⊙		
0245	Bird	1			up high
0445	P. externa	1	⊙		storm or Bulwers
0450	Petrel	1	⊙		overhead.
0505	Bird	1	⊙		
0535	Tropicbird sp	1	⊙		
0613	RTTB	1	⊙		
0637					Sunrise

G. Frig 1  
Bird 3  
Shear-pet 9  
Sooty T 2  
BWP 2  
BFB 2  
RFB 1  
P. externa 1  
Tropic Sp. 1  
RTTB 1



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

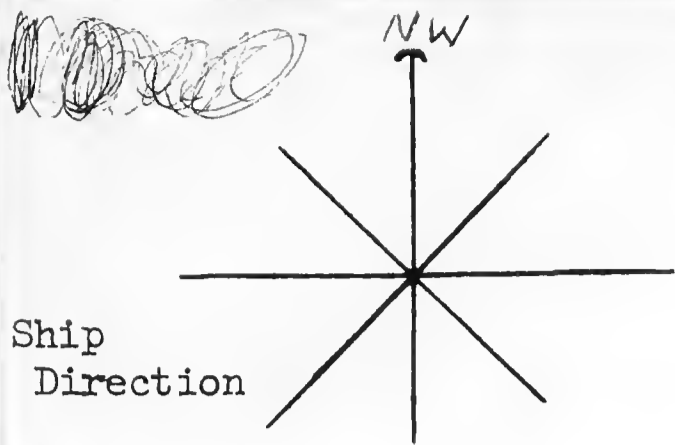
OBSERVERS:

0600-0800 Bulmer  
0800-1000 Smith  
10-12 SAH  
~~12-14 Bulmer~~

Date 22 Nov. 1966  
Pg. # 1

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0637					Sunrise
0638	Wedgetail	2	⊙		light
0643	G. Frigate	1	⊙		
0650	Wedgetail	4	⊙		light
+F 0700	Slenderbill	22	S		close (dark underwing)
0701	wedgetail	1	S		light
0703	"	3	S		"
0704	S/Sb	1	S		
0705	Wedgetail	2	S		light
0707	"	4	S		"
0708	"	3	S		"
0708	Sooty Shear	2	S		close (white underwing)
0709	Wedgetail	1	S		light
0712	Frigate Sp	1	⊙		
0730	Shear-Pet	1	?		Way out
0740	" "	1	S		possibly S/Sb
0742	Slenderbill	1	S		
0743	White-necked Pet	1	⊙		beautiful
0745	Wedgetail	1	S		light
TF 0748	S/Sb	25 ± 5	S		
	Sooty Shear	7	S		
	Shear-Pet	1	S		white below and apparently migrating with S/Sb. to far out
0750	Wedgetail	1	E		light
0818	Frigate sp.	2	⊙		
0820	S/Sb	2	S		
0821	Slenderbill	1	S		Dark underwings (close)
FF 0824	Frigate sp	2	⊙		hovering
	Shear/Pet	20 ± 5	⊙		feeding
0826	Wedgetail	2	⊙		light phase
0830	Shear/Pet	3	⊙		
0832	Wedgetail	2	⊙		light
0859	" "	1	⊙		"
TF 0943	WRSP	3	⊙		
TF 0945	Slenderbill	58	S		dark underwings close
TF 0955	"	74	S		" "
0958	Shear/Pet	1	⊙		
1023	RITB	1	⊙		high over ship; adult, no central rectrices.
1039	Pterodroma	1	⊙		
1130	Wedgetail	1	W		light



SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

12-14 Bulmer  
14-16 Lewis  
16-18 Harrington

Date 22 Nov.  
Pg. # 2

SPECIMEN  
or

9, 10, 11mm

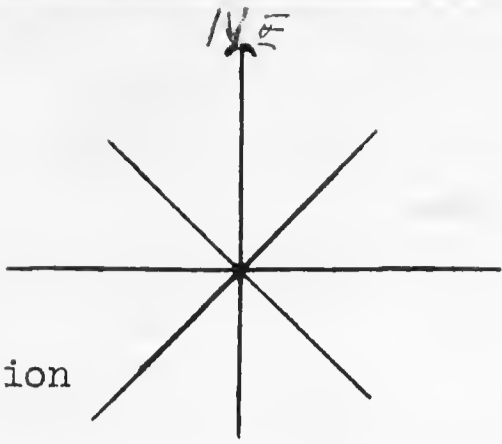
TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
FF 1215	Sooty Tern	9			all shear-pets gathered in a small area on the water with small fish jumping Sooty Terns hovering above
	Sooty Shear	12			
	Pt. externa	7			
	BWP	3			
	Wedgetail	5		light	
	Kermadec	1		light	
1218	White-necked Pt	1	⊙		
1248	Wedgetail	1	⊙		?
1324	"	1	⊙		light
FF 1330	Sooty Tern	9	⊙		Ad
	" "	1			imm
	Pt. externa	7			White-necked + Juan Fernandez
	BWP	10±2			
	Phoenix Isk	3			
	Wedgetail	15±3			light
SF 1436	sooty Shear	9	S		circling & feeding - sitting on H <sub>2</sub> O as they
TF 1440	sooty/sib	10±2	W		Moved along
1442	P. externa	1	SW		distant
1446	wedge-tail	1	N		light
1512	WNP	1	S		
1523	G. Frigate	2	∞		♂ & Ad, ♀ chasing ♂ continued for over 3 mins.
1545	WRSP	1	∞		
FF 1600	JFP	1			
	BWP	5			
	PIP	1			
	P. leucopura	3			
SF 1632	Sooty/slender	10±2			horizon - appeared to be searching flock, gravitating to the south. Frequently milling, then moving on to S.
1637	am. pterodroma	1	∞		
JF 1650	sooty/slender	6	S		
JF 1656	"	8±2	?		
1703	Sooty Shearwater	1	S		
1704	Sooty Tern	1	S		Ad
TF 1705	S/sib Shear	19	S		distant
1710					course changed TO NW
1721	JFP	1	∞		
1730	RITB	1			subad over ship.
1745	sooty Shearwater	1	S		light underwings
1750	JFP	1	∞		
1804					SUNSET

430

	#	# in Flocks	N	NE	E	SE	S	SW	W	NW	no direct	birds/lin mi	birds/lin mi
Wedgetail - light	-	49	20									.399	.200
" - dark	-	0	0										
Phase N.R.	-	2	0									.016	.008
Sooty/Slender	-	81	72				63	10		8		.650	.325
sooty	-	32	28				20			12		.320	.160
Slender	-	156	154				156					1.270	.635
<del>Kermadec</del>	-	1	1									.008	.004
Phoenix I.	-	4	3									.032	.016
Shear/Pet	-	27	21									.220	.110
WNP	-	3	0				1					.024	.012
JFP	-	3	2									.024	.012
P. externa	-	16	14					1				.130	.650
BWP	-	18	18									.146	.073
WWP	-	3	3									.024	.012
WRSP	-	4	0							4		.032	.032
G. Frig	-	3	0									.024	.006
Frig sp	-	5	2									.041	.010
RITB	-	2	0							2		.016	.008
Sooty T ad	-	19	18				1					} → .163 .082	
imm	-	1	1										
Small Pterodroma	-	1	0									.008	.004
Total		430											

Total diurnal miles: 123

Birds/lin mile: 3.49



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

SS-2100 Smith

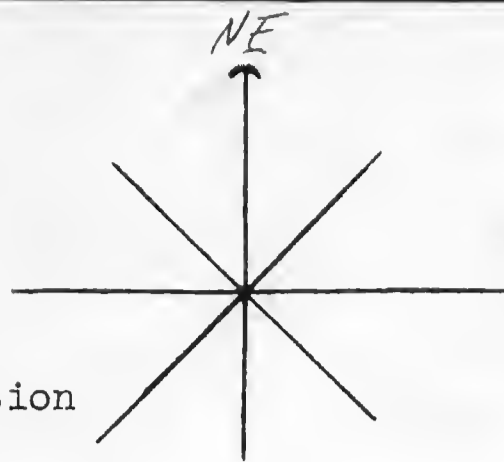
Date 22-23 Nov  
22 Nov 1966  
Pg.# 1

SPECIMEN Nocturnal Grid  
or

TIME SPECIES # DIR. BAND NO. REMARKS

1804					Sunset Begin Observations
2200					F. Smith was here from 6 to 9 - but the birds weren't.
0020	Sooty Tern	-1	000		change course to 045° ad. calling.
0305	Bird	-1	000		
0327	WRSP	-1	000		0330 Drifting
0331	BWP	-1	000		I missed
0350					under way
0420					drifting
0425	Shear/Pet	-1			
0430	"	-1			
0432	"	-1			
0520					under way (we failed)
0635	wedgetail	-4	NE		tight no streamers
0638					sunrise

Sooty T. 1  
BWP 1  
WRSP 1  
BWP 1  
Shear/pet 3  
Wedgetail 4



OBSERVERS:

Balmer 0600-0800

Smith 0800-1200

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

Date 23 Nov. 1966

Pg.# 1

SPECIMEN

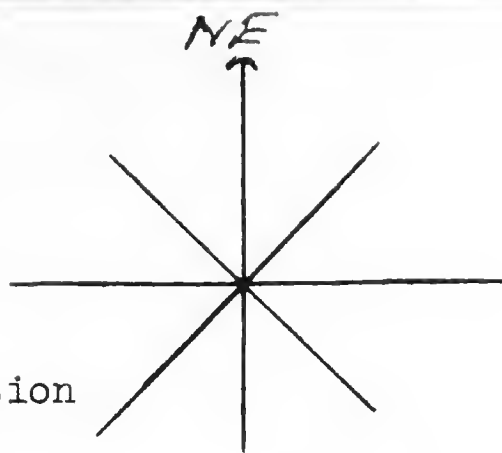
or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0638					Sunrise
0645	Pt. externa	1	⊙		
0653	Wedgetails	3	N		light
0658	RTTB	1	⊙		
0705	wedgetail	2	⊙		light
	JFP	1	⊙		
0713	JFP	1	E		
	Pt. sp	1	⊙		small
	WRSP	1	⊙		
0718	Sooty Shear	1	SE		
FF 0720	Frigate sp	2			} feeding over 8 whales probably sperm whales <del>mostly wedgetails</del>
	Skua	1			
	Shear. Pet	30 ± 5			
0745	Sooty Shear	1	S		
SF 0752	Pt. externa	4	⊙		
	Wedgetail	3			
C 0758	ATTB	3	⊙		calling & circling high over ship 1 call F. Smith
0800	ATTB	1	∞		joined above group
FF 0810	wedgetail	5	⊙		light
	JFP	3	∞		
					0805 - stopped to pick up bird 0920 - underway again
SF 0933	JFP	3	∞		
	Wedgetail	2			light
0938	ATTB	3	∞		Ad - circling ship probably same three seen earlier
0940	JFP	1	NE		
0950	wedgetail	1	∞		light
1000	RTTB	3	∞		joined above group; now six circling
1003	wedgetail	3	∞		light
	Tahitian Pet	1	⊙		
1010	Wedge-tail	2	E		Dark
1015	JFP	1	NE		
1019	BFB	1	NE		Ad
1022	P. externa	1	E		
1025	WTTB	2	⊙		very high
1033	Frigate sp.	1	∞		
1039	wedge-tail	1	E		
1054	CNT	1	⊙		sitting on log



1803  
638



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

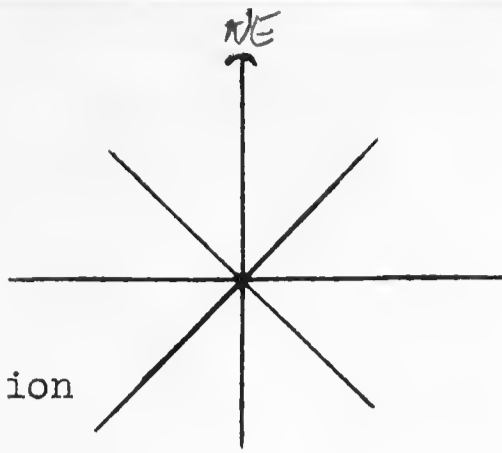
OBSERVERS:

1145-1400 Harrington

Date 23 Nov. 66  
Pg.# 2

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1100	JFP	1	NW		
1110	Sooty/slb	2	SE		Feeding steadily
FF 1115	JFP	6	all		Circling & sitting in H <sub>2</sub> O
FF 1120	JFP	9			} Feeding over flying fish } chasing JFP was successful
	BWP	3			
	wedge-tail	2			
	G. Frigate	1			
	Kermadec	1			
	WNP	1			
1129	BWP	1	NW		
1130	RTTB	2			Following ship
1143	JFP	1	all		
1145	JFP	3	all		} Together
	Kermadec	1	all		
1149	G. Frig.	1	all		ad ♂ chasing flying fish
FF 1155	Sooty Tern?	20±10			When flock first sighted was believed to have been Sooties over it. Course of ship was altered and approached flock. apparently sooties took off as not present. Sighting (of Sooties) as a whole considered unreliable.
	Shear-Pet	25			
1246	JFPet	2	all		
1321	RTTB	1	all		Ad
1325	BWP	1	all		
1325	P. externa	1	all		
1327	Tropicbird sp.	1			sitting out H <sub>2</sub> O
1340	Bird	1			horizon distant
1342	shear/pet	1			light phase
1347	Wedgetail	1	all		" "
1354	"	1	E		" "
1402	"	1	E		" "
1512	JFP	1	NW		
1515	Sooty Shearwater	1	SE		light underwings saw close
FF 1530	Sooty Tern	2	all		} Shear/Pets alternately flying & sitting in water - fish (small) jumping
	Fairy Tern	2			
	JFP	10			
	BWP	6			
	wedgetail	12			
	Kermadec	1			
	G. Frigate	1			Ad ♀
1549 15	P. externa	1	WW		



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

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Date 23 Nov 1966  
Pg.# 3

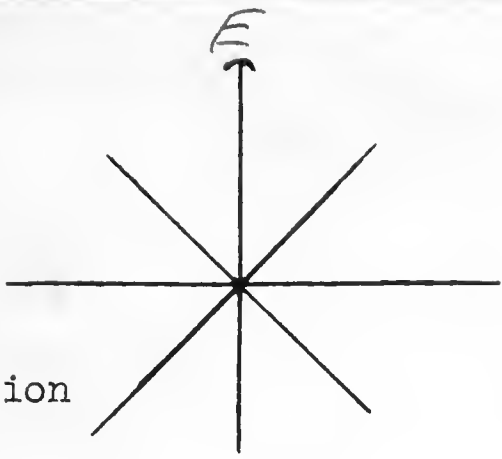
SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
SF-1555	Wedgetail	12	∞		light
	JFP	10			
	BWP	3			
1607	Sooty Shear	1			
	JFP	1	∞		
1625	JFP	1	E		
1635	JFP	1	∞		
1652	Davis-Bonap Petrel	1	SW		close - like wedgetail with white forehead
1700					course change to EAST
1711	Frigate	1			circling high.
1713	RTTB	1			sitting on H <sub>2</sub> O.
1803					Sunset

	Tot ±	<del>35</del>	N	NE	E	SE	S	SW	W	NW
Light Wedge dark	- 49	35	3		3					
S/S	- 2	0				2				
Sooty	- 4	0				2	1			
Slender	0	0								
P. externa	- 8	4			1					1
JFP	- 56	41		2	2					2
WNP	- 1	1								
P. hypoleuca	0									
BWP	- 14	12								1
Shear/Pet	- 56	55								
Bird	- 1	0								
SKUA	- 1	1								
RTTB	- 13	0								
NTTB	- 2	0								
Tropic AP	- 1	0								
G. Frig	- 3	2								
<del>Tahiti Petrel</del>	- 1				1					
			N	NE	E	SE	S	SW	W	NW
Soot T	- 22	22								
CNT	- 1	0								
Fairy	- 2	2								
Tahiti	- 1	0								
Phoenix										
Kermadec	- 3	3								
Dark Lomp	- 1									
Phred. sp.	- 1	0								
WRSP	- 1	0								
Fing. sp	- 4	2								
	250									

Whales 8

Total miles 96  
 BPL mi 2.6  
 PBP Sq mi 1.3



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

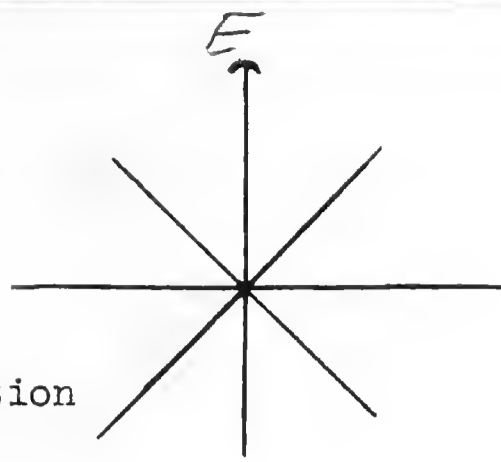
OBSERVERS:

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SPECIMEN *Nocturnal*  
or

Date *23-24 Nov*  
Pg. # \_\_\_\_\_

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
<del>1840</del> 0640	Booby sp	1	—		
<del>1855</del> <del>0655</del>	Booby sp	1	—		same as above?
<del>2040</del> 0840	Sooty Tern	1	—		ad approached from W
<del>2136</del> 0436	" "	1	oe		Ad calling
0330	shear-pet	1	@		white below
0610	Bird	1	—		
0622	S/sknd.	1	S		
0630	"	1	S		
0631					<u>SUNRISE</u>



Ship Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

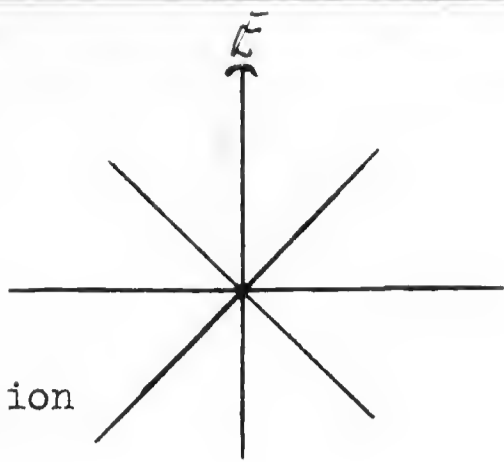
OBSERVERS:

0600-0800 LSA/H  
0800-1000 TSL

Date 24 Nov. 1966  
Pg. # 1

SPECIMEN Non-grid  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0631					SUNRISE - one Turkey seen scrambling over horizon.
0639	S/Sldr	2	S		medium
0646	Wedgetail	1	☉		light,
0650	"	2	☉		"
0651	"	2	☉		"
0658	Sooty Shear	2	S		close
0700	Wedgetail	4	☉		light
0741	Wedgetail	2	S		
0756	S/Sldr	1	S		
FF 0802	RFB	7±2	S		FF
	Shear/pet	25±5			
0837	Sooty/S/b	2	S		
0846	Wedge-tail	1	NE		light
0850					change course - depart grid (point calcite)
0857	Sooty Shearwater	1	SE		close well observed, very slow wandering
0906	Sooty/S/b	2	SE		flight, light underwings
0910	Wedge-tail	1	S		light underwings
0914	Sooty/S/b	3	S		
0919	Sooty/shearwater	1	S		close light underwings
0920	"	2	S		" " "
0927	P. hypoleuca	1	E		
0933	Small Pterodroma	2	☉		
0937	BWP	1	☉		
1008	CNT	1	☉		
1009	White-necked Petrel	1	☉		close
1020	Frigatesp	1	☉		
	RFB	1	☉		4th light phase
1022	Sooty Shear	1	SE		
1024	BWP	2	☉		
	Kermadec	1	☉		light phase close
1028	sooty shear	1	S		
1103	PWP	1	☉		dark
	Wedgetail	1	☉		
1106	JFP	1	☉		
1108	Wedgetail	1	☉		light
1110	Leach's STB	1	☉		Sitting on the black line in white runway



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

Bulmer

Date 24 Nov 66

Pg.# 2

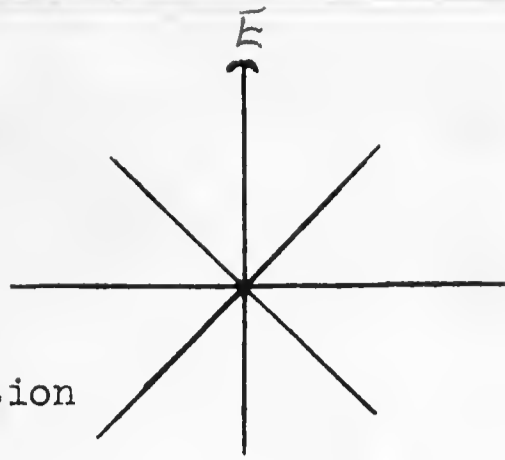
SPECIMEN

or

Winged

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1125	Sooty Shear	3	SW		
1128	BWP	1	SW		
1157	WRSP	1	<del>SW</del>		
1225	P. externa	1	↑		
1227	<del>St. Shear</del> Sooty Shear	3	<del>SW</del>		milling.
1245	G. Frigate	1			
1248	Bird	1	—		
1300	"	1	—		
1303	Sooty Shear	1	S		
1305	" "	1	S		
1314	N.Z. Shear.	1	S		
1320	Sooty S.	3	S		
1328	Wedgetail	1	<del>SW</del>		light
1330	Sooty S.	1	S		
1335	Wedgetail.	1	<del>SW</del>		light
1345	Sooty S.	1	S		
1347	G. Frigate	1	E		ad ♀
1350	SKUA	1	SE		
1352	Sooty Shear.	1	S		
1352	" "	1	"		
1352	" "	<del>1</del>	"		
1358	Wedgetail	1	<del>SW</del>		light
1403	BFB	2	<del>SW</del>		Ads alternately flying & sitting on water
1430	WRSP	1	<del>SW</del>		
TF 1431	Sooty Shearwater	5	S		light underwings - close
1435	BWP	1	<del>SW</del>		
1440	sm Petrel	1	<del>SW</del>		
1443	Sooty Shearwater	1	S		distant
1445	" "	2	S		light underwings - close
1450	Wedgetail	1	<del>SW</del>		light
1451	Sooty Shear	1	S		light underwings - close
1455	" "	1	S		distant
1502	" "	1	S		light underwings - close
1504	" "	1	S		
1506	" "	1	S		
1509	BWP	1	S		
1511	Sooty Shear	1	S		
1512	JFP	1	S		
1515	Sooty Shear	1	S		distant
1522	Wedgetail	1	<del>SW</del>		light
1528	Sooty Shear	3	S		distant



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

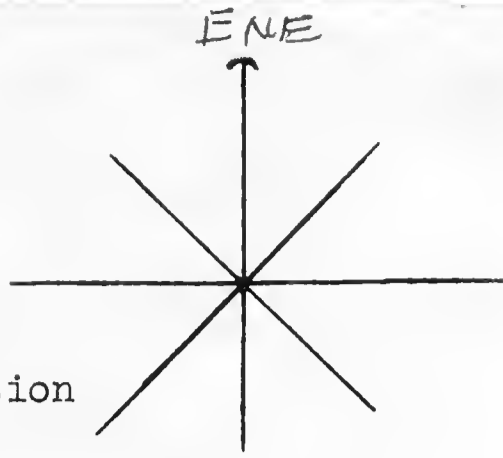
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Date 24 Nov 1966  
Pg.# 3

SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1533	Sooty Shear	2	S		light underwings - close
1557	" "	1	S		" "
1558	" "	1	S		
1559	" "	1	S		close
1615	" "	4	S		
1616	BWP	1	@		
1617	Soot Shear	1	S		
1620	" "	2	S		
1625	" "	1	S		
1645	" "	3	S		
1659	" "	1	S		
1720	Wedgetail	1	E		light
1724	BWP	1	SF		
1733	White Neck Petrel	1	@		
1734					Sunset





Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

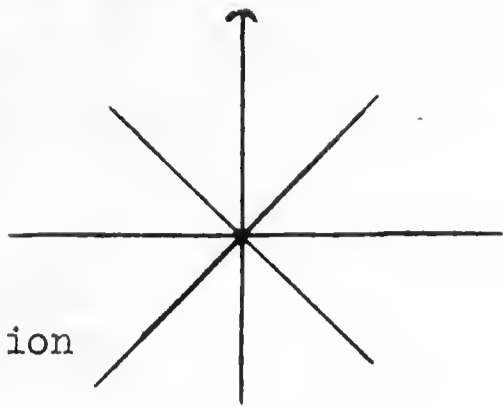
2200-2300 TJL  
2300-0030 BAH

Date 24-25 Nov 66  
Pg. # 1

SPECIMEN or Nocturnal Non-Grid

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
2200					Begin observations
2235	RFB				Following ship A.1
0030					Close observations

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Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:

SR-1500c Smith  
Palmer

Date 25 Nov 1966  
Pg. # 1

SPECIMEN  
or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS	
0717					Sunrise - Begin Observations	
0721	RTTB	1	Q		Ad circling ship	
0742	sm. Pterodroma	1	NE			
0805	WRSP	1	Q			
0825	BWP	1	Q			
0840	WRSP	1	Q			
	Sooty Shear	1	S			
0851	" "	1	S			
0907	Shear/Pet	6	S		good chance of a N.2. Shearwater but not positive	
0948	G. Frigate	1	Q		Ad ♀	
0955	Fairy Tern	1	Q			
	Wedgetail	2	Q		light	
	JFP	1	Q			
0909	Sooty Shear	1	S			
1010	G. Frigate	1	SW		Ad ♂	
1016	"	1	Q		Ad ♂	
1024	Sooty Shear	1	S			
1031	BWP	1	S			
1035	wedge-tail	1	S		light	
1105	JFP	1	SE			
1123	BWP	1	Q			
FF 1130	Sooty Tern	40 ± 5			Feeding over Tuna	
	Fairy Tern	8				
	RFB	11				2 SA, 1 Int Phase, 7 Ad light phase
	Sooty Shear	10				light
	wedge-tail	20 ± 5				
	JFP	50 ± 10				
	BWP	15 ± 3				
	Shear/Pet	40				
	G Frigate	1			Ad ♂	
	Tern sp	10 ± 3				
1140	Sooty Shearwater	1	S			
1153	"	1	S			
1158	P. externa	1	NE			
1206	Shear/Pet	1	Q			
1215	Bird	1				
1300	G. Frigate	1	SE			
1320	WRSP	2				
1400	sm. Pterodroma	1	SE			
1402	BWP	1	Q			
1416	Shear/Pet	3	Q		100 Rain Squall	
1450	Sooty Shear	2	SW		distant	

OBSERVERS:

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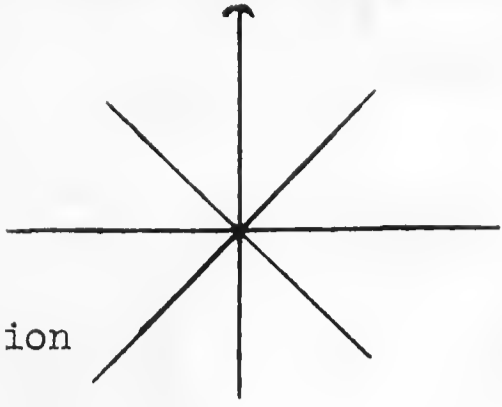


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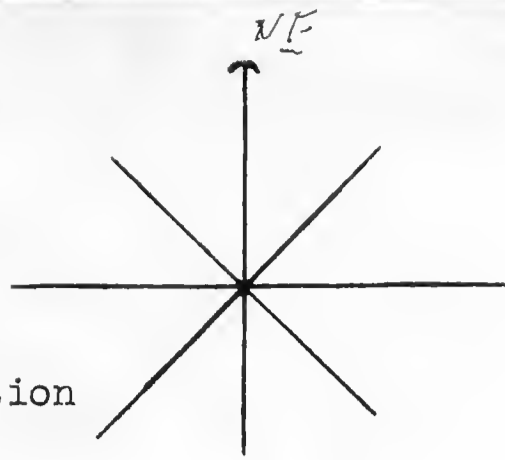
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SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

Ship  
DirectionDate 25 Nov  
Pg.# 2SPECIMEN  
or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
1453	WRSP	1	☉		
1505	Sooty Shear	1	S		distant
1513	BWP	1	☉		
	wedgetail	1	☉		light
1514	Shear/Pet	1	☉		probably New Zealand Shear
1615	WRSP	1	☉		
1618	wedgetail	2	☉		light in Rain Squall
1627	BWP	2	☉		
	RTTB	1	☉		
1630	Wedgetail	2	☉		light
1632	WRSP	1	☉		
1637	RTTB	1	☉		
1643	RTTB	1	☉		
1645	WRSP	1	☉		
1651	BWP	1	☉		
1655	Bird	1	S		
1700	BWP	1	☉		
1725	wedgetail	1	☉		
1740	Sooty Shear	1	S		
1745	BWP	1	☉		
1753	Sooty Shear	1	S		
1757	" "	1	S		
1759	" "	1	S		
1803	" "	1	S		
1805	RFB	1	☉		Following ship SA
1807	Sooty Shear	2	S		
1821					Sunset close observation



Ship  
Direction

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

OBSERVERS:  
C. Cooper - J. Bulmer

Date 26 Nov. 1966  
Pg. # 1

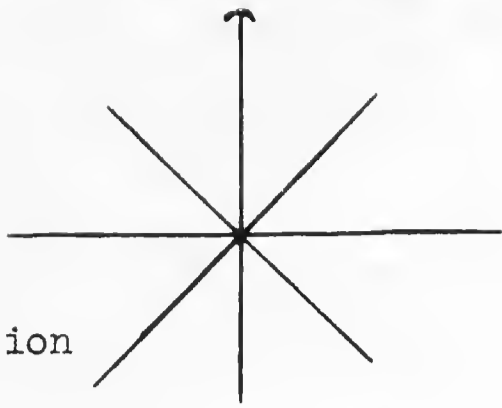
SPECIMEN  
or

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0707					Sunrise
0835	Wedgetail	1	<del>NE</del>		light
0938	BWP	1	<del>NE</del>		
0950	BWP	1	NE		
1014	JFP	1	S		
1023	Shear/pet	1	S		
1028	BWP	2			following ship
1030	JFP	1	SE		
1031	RTTB	1	<del>NE</del>		
1102	G. Frigate	1	<del>NE</del>		adu
1135	"	1	<del>NE</del>		ad ♂ chasing flying fish.
1135	Wedgetail	1	<del>NE</del>		light
1135	Phoenix/stahiti	1	<del>NE</del>		close: no doubt that it was 1 of 2, but wind vibration prevented specific identification: <i>NOTA KERMADEC.</i>
1200	Shear/Pet	1	<del>NE</del>		
1203	Pendroma sp	1	<del>NE</del>		
1250	JFP	1	<del>NE</del>		edge of Sgull
1358	Shear/pet	1	<del>NE</del>		
SF 1545	Sooty Tern	9	NE		Ad
	" "	1	NE		imm - positive (not L.T. Jaeger)
	Wedgetail	3	NE		light
	Dark rump	1	NE		good comparison with wedgetails, good look
1607	RFB	1	N		<del>SEA</del> heavy molt on wings
1642	Shear/Pet	1	<del>NE</del>		
1650	BWP	1	<del>NE</del>		
1658	White NP	1	<del>NE</del>		
1807					Sunset Close observations

OBSERVERS:

Lewis

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA DAILY LOG - E

Ship  
Direction

Date 27 Nov 66

Pg. # 1

SPECIMEN

or

TIME SPECIES # DIR. BAND NO. REMARKS

TIME	SPECIES	#	DIR.	BAND NO.	REMARKS
0656					Sunrise begin observations
0656	RFB	1	ce		Roosting on TV camera unbanded subad
0743	wedgetail	1	ce		light
0750	" "	2	ce		" following ship } together
0750	BFB	1	ce		Immature
0920	Shear-Pet	2	@		
	Pom. Jaeger	1	@		imm. dark
0942	wedgetail	1	@		light
0944	sooty tern	2	NW		Ad
0948	wedgetail	1	@		light
0948	RFB	1	NE		imm
SF 1016	Sooty Terns	7	X		Ads
1017	Darkrumped Pt	1	X		
1035	Pom. Jaeger	1	SW		
1108	Wedgetail	1	W		light
1215	CNT	2	E		
1242	wedgetail	2	N		light
1250	"	2	N		light - 1 defecating.
1255	BFB	1	@		ad.
1307	wedgetail	1	ce		light.
TF 1335	Sooty Tern	4			3 ad, 1 imm.
	Pterodroma	2			
	wedgetail	16			all light.
	CNT	4			
1413	P. Jaeger	3			follow. ship. (2 light, 1 dark)
1441	Sooty Shear	3	S		close
1540	BFA	1	ce		following ship
1550	wedgetail	1	ce		light
1613	"	1	@		"
1637	"	1	@		" feeding; diving in the H <sub>2</sub> O from 4' up
1645	"	1	@		"
1700					close observations

Date 18 November Ship <sup>USS</sup> George Eastman (AG-39) Cruise No. \_\_\_\_\_

Organization POBSP Recorder Bridge - AG-39

Sunrise: Time 0637 Position: Lat. 19-10, Long. 158-30

Sunset: Time 1802 Position: Lat. 17-13, Long. 159-06

Miles travelled from 0000 hours to sunrise = 59

Miles travelled from sunrise to sunset = 123

Miles travelled from sunset to 2400 hours = 63

TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1. 0000 (7-5 Alced)	DR	20 17.5 N	158-13 W
2. 0600	Celestial	19-16.5	158-27 W
3. 1200	Celestial	18-14	158-45.8 W
4. 2000	Celestial	16-54	159-11 W
5.			

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0100	20-07	158-13 W				
0200	19-57	158-19				
0300	19-47	158-21				
0400	19-37	158-23				
0500	19-27	158-25				
0600	19-16.5	158-27				
0700	19-06	158-29				
0800	18-55	158-33				
0900	18-45	158-36				
1000	18-34	158-39				
1100	18-24	158-42				
1200	18-14	158-45.8				
1300	18-04	158-49				
1400	17-54	158-52				
1500	17-44	158-55				
1600	17-34	159-02				
1700	17-24	159-05				
1800	17-14	159-08				
1900	17-04	159-11				
2000	16-54	159-14				
2100	16-44	159-17				
2200	16-34	159-20				
2300	16-23	159-23				
2400	16-13	159-26				

5-23  
6 0 23

41  
10 20 30  
20 20  
1 30

Date 9 NOV 1966 Ship GEORGE EASTMAN (JAL 39) Cruise No. \_\_\_\_\_

Organization P.O.B.S.P. Recorder Enriquez (Chief Pomine)

60 32 110

Sunrise: Time 0639 Position: Lat. 15-12N, Long. 159-45W

Sunset: Time 1811 Position: Lat. 13-16.5N, Long. 160-17W

11 32

Miles travelled from 0000 hours to sunrise = 65

Miles travelled from sunrise to sunset = 121

Miles travelled from sunset to 2400 hours = 61

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	16-13.2N	159-23W
2.	0800	CELESTIAL	14-58N	159-49W
3.	1200	CELESTIAL	14-15N	160-00W
4.	2000	CELESTIAL	12-56N	160-20W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.	Ship speed
0000	16-13.2N	159-23W					9.4 Knots
0100	16-04	-26					10.4
0200	15-54	-29					9.8
0300	15-45	-33					9.4
0400	-36	36					10.4
0500	-26	39					9.8
0600	-17	43					10.4
0700	-07	46					9.5
0800	14-58	159-49					11.4
0900	-47	-52					11.2
1000	-36	-54					10.4
1100	-26	-57					11.4
1200	14-15	160-00					10.4
1300	05	-03					10.4
1400	13-55	-05					10.4
1500	-45	-08					10.4
1600	-35	-10					10.4
1700	-25	-13					10.4
1800	-15	-15					10.4
1900	-05	-18					9.2
2000	12-56	160-20					} average 10.5
2100	12-46	21					
2200	12-35	22					
2300	12-25	22					
2400	<del>00</del> 12-14	160-23					



Date 10 NOV 1966 Ship GEORGE EASTMAN (YAG 39) Cruise No. \_\_\_\_\_

Organization UCRSP Recorder Waybridge (Chief Scientist)

7  
60144.0  
43

Sunrise: Time 0636 Position: Lat. 11-03N, Long. 160-33

Sunset: Time 1820 Position: Lat. 09-08.5N, Long. 161-01W

11-41

Miles travelled from 0000 hours to sunrise = 72

Miles travelled from sunrise to sunset = 118

Miles travelled from sunset to 2400 hours = 59

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE	
1.	0000 0600	DR	12-14N 11-10N	160-23W 160-33W	celestial from plot sheet
2.	0800	CELESTIAL	10-49N	160-34.5W	
3.	1200	CELESTIAL	10-10N	160-45W	
4.	2000	CELESTIAL	08-52.5N	161-05W	
5.					

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.	Ship speed
0000	12-14 N	160-23 W					
0100	12-03 N	160-25					} aver. 10.7
0200	11-53	160-26					
0300	11-42	160-28					
0400	11-32	160-30					
0500	11-21	160-32					} average 10.5
0600	11-10 N	160-33 W					
0700	10-59	160-34					
0800	10-49 N	160-35 W					} average 10.1
0900	10-39	160-38					
1000	10-30	160-40					
1100	10-20	160-43					} average 9.7
1200	10-10 N	160-45 W					
1300	10-00	46					
1400	09-51	50					
1500	09-41	53					
1600	09-32	55					} 11.0
1700	09-22	58					
1800	09-12	161-00					
1900	09-03	03					} 11.0
2000	08-53 N	161-05 W					
2100	43	09					
2200	33	11					
2300	23	14					
2400	12-12 N	161-17 W					

(41)

Date 11 Nov 1966 Ship GEORGE EASTMAN (YAG 39) Cruise No. \_\_\_\_\_

Organization \_\_\_\_\_ Recorder \_\_\_\_\_

Sunrise: Time 0629 Position: Lat. 07-20N, Long. 161-35

Sunset: Time 1829 Position: Lat. Palmyra, Long. \_\_\_\_\_

Miles travelled from 0000 hours to sunrise = 56

Miles travelled from sunrise to <sup>Palmyra</sup> sunset = 91

Miles travelled from sunset to 2400 hours = \_\_\_\_\_

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	08-12N	161-17 W
2.	0800	CELESTIAL	07-06N	161-39 W
3.	1200	CELESTIAL	06-29.5N	161-55 W
4.	1700	VISUAL	PALMYRA 05°-04'N	162-06 W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	8-12 N	161-17 W				
0100	8-04	-20				
0200	7-56	-23				
0300	7-47	-25				
0400	7-39	-28				
0500	7-31	-31				
0600	7-23	-34				
0700	7-14	-36				
0800	07-06 N	161-39 W				
0900	06-57	43				
1000	-48	47				
1100	-39	51				
1200	06-29.5 N	161-55 W				
1300	22	57				
1400	15	59				
1500	08	162 01				
1600	01	03				
1700	05-04'N	162-06 W				
1800						
1900						
2000						
2100						
2200						
2300						
2400						

10.4

av. speed 8.7

9.3

7.4

Date 15 Nov 1966 Ship GEORGE EASTMAN ( ) Cruise No. \_\_\_\_\_

Organization NOBSP Recorder Richard (George Eastman)

Sunrise: Time \_\_\_\_\_ Position: Lat. PALMYRA, Long. \_\_\_\_\_

Sunset: Time 1833 Position: Lat. 07-04N, Long. 163-12.2 W

Miles travelled from 0000 hours to sunrise = —

Miles travelled <sup>W/W</sup> from sunrise to sunset = 108

Miles travelled from sunset to 2400 hours = 57

0173.00  
72

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0800	PALMYRA	05° 52	162 39
2.	1200	D.R.	06-04N	162-36.5 W
3.	2000	CELESTIAL	07-16.5 N	163-22 W
4.				
5.				

Hourly Positions:

Time    Latitude    Longitude    Wind Dir.    Wind Sp.    Wave Dir.    Wave Hgt.

0100						
0200						
0300						
0400						
0500						
0600						
0700						
0800						
0900	05-57	162-09				
1000	05-30	19				
1100	06-00	28				
1200	06-04	162-37	115°	17 KNT	115	2'
1300	13	42				
1400	22	48				
1500	32	53				
1600	41	59				
1700	50	163-04				
1800	59	09	113	12	095	3'
1900	07-08	163-15				
2000	16	22				
2100	24	28				
2200	32	35				
2300	40	41				
2400	07-49	163-48	095	10	085	3

8.5 knots  
7.5 knots  
10.5 knots

Date 16 NOV 1966 Ship GEORGE EASTMAN (YAL 37) Cruise No. \_\_\_\_\_

Organization \_\_\_\_\_ Recorder Phineas (U.S.C. Geog. Survey)

Sunrise: Time 0651 Position: Lat. 08-47N, Long. 164-20

Sunset: Time 1839 Position: Lat. 10-27N, Long. 165-49W

Miles travelled from 0000 hours to sunrise = 69

Miles travelled from sunrise to sunset = 133.5

Miles travelled from sunset to 2400 hours = 54

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	07-49N	163-48W
2.	0800	CELESTIAL	08-57N	164-29W
3.	1200	CELESTIAL	09-32.5N	164-52.8W
4.	2000	CELESTIAL	10-38N	165-58.5W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
	07-49	163-48				
0100	58	53				
0200	08-06	58				
0300	15	164-03				
0400	23	08				
0500	32	13				
0600	40	18	110	16	070	3
0700	49	23				
0800	08-57	164-29				
0900	09-06	35				
1000	-15	41				
1100	-24	47				
1200	09-33	164-53	120	15	080	3
1300	41	01				
1400	49	09				
1500	57	18				
1600	10-05	26				
1700	13	34				
1800	21	42	115	14	090	3
1900	29	50				
2000	10-38	165-59				
2100	11-46	06				
2200	10-54	12				
2300	11-03	18				
2400	11-10	166-24	100	17	090	3

10 knots

10.8

11.8

NW

Date 17 Nov 1966 Ship GEORGE ENSIGN (VME 39) Cruise No. \_\_\_\_\_

Organization POBSP Recorder Chef Pokua (QMC)

Sunrise: Time 0706 Position: Lat. 12-07N, Long. 167-09

Sunset: Time 1840 Position: Lat. 13-48N, Long. 168-20W  
0706 13-55 168-26

Miles travelled from 0000 hours to sunrise = 72

Miles travelled from sunrise to sunset = 123

Miles travelled from sunset to 2400 hours = 43

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	11-10N	166-24W
2.	0800	CELESTIAL	12-15N	167-15W
3.	1200	CELESTIAL	12-47.5N	167-31.2W
4.	2000	CELESTIAL	14-08N	168-34W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	11-10	166-24				
0100	18	30				
0200	26	37				
0300	34	43				
0400	42	50				
0500	50	56				
0600	58	167-02	100	13	090	3
0700	12-06	-09				
0800	12-15	167-15				
0900	23	21				
1000	31	27				
1100	39	23				
1200	12-48	167-38	085	21	085	5
1300	57-22	44 45				
1400	13 06 12	50 53				
1500	15 18	168-37 00				
1600	24 30	168-03 07				
1700	33 30	09 14				
1800	42 48	15 21	110	17	090	5
1900	<del>51</del>	<del>21 28</del>				
2000	14 00 58	27 28				
2100	1408	168-34				
2200	16	41				
2300	24	168-48				
2400	37	55				
2400	14-17	169-02 W	090	17	100	3

NOTE: REMEMBER CHECKS 1 HR AT 1900W TO RUN FATHOM W. 11 (X) TIME 2000

av. speed 10.4 knots  
 10. knots  
 10.3  
 10.1

Date 18 NOV 1966 Ship GEORGE EASTMAN (YAL 39) Cruise No. \_\_\_\_\_

Organization P.O.B.S.P. Recorder Fin (RMC)

Sunrise: Time 0620 Position: Lat. 13-34N, Long. 169-53W

Sunset: Time 1757 Position: Lat. 12-10N, Long. 171-11W

DR

Miles travelled from 0000 hours to sunrise = 66

Miles travelled from sunrise to sunset = 114

Miles travelled from sunset to 2400 hours = 55

TIME OF FIX      TYPE OF FIX      LATITUDE      LONGITUDE

TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1. 0000	DR	14-17N	169-02W
2. 0800	CELESTIAL	13-21.5N	170-05W
3. 1200	CELESTIAL	12-47N	170-32.5W
4. 2000	DR CELESTIAL	12-24N	171-28W

5. DR - dead reckoning; didn't quite figure, no BAH used 12°20' below

Hourly Positions:

Time      Latitude      Longitude      Wind Dir.      Wind Sp.      Wave Dir.      Wave Hgt.

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	14-17	169-02				
0100	-10	10				
0200	-03	18				
0300	13-56	26				
0400	-49	34				
0500	-43	42				
0600	-36	50	060	24	060	06
0700	-29	58				
0800	13-22	170-05				
0900	13	12				
1000	04	19				
1100	55	26				
1200	12-47	170-33	070	17	065	05
1300	39	41				
1400	31	49				
1500	23	57				
1600	15	171-05				
1700	11	09				
1800	04	15	075	18	070	05
1900	12-11	21				
2000	12-18	171-29				
2100	12-25	171-35				
2200	12-32	171-42				
2300	12-39	171-45				
2400	12-45	171-38	075	26	070	06

7.0  
4.0  
7.0

10.5  
11.2  
10.0  
10. (approx)

Date 19 Nov 1966 Ship GEORGE EASTMAN ( ) Cruise No. \_\_\_\_\_

Organization POBSP Recorder Potina (QMC)

Sunrise: Time 0625 Position: Lat. 13-28N, Long. 170-51W

Sunset: Time 1750 Position: Lat. 14-57N, Long. 169-44W

Miles travelled from 0000 hours to sunrise = 64

Miles travelled from sunrise to sunset = 121

Miles travelled from sunset to 2400 hours = 70

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE	
1.	0000	DR	12-45N	171- <del>46</del> <sup>38</sup> W ←	changed to 171-38 by B.A.H.
2.	0800	CELESTIAL	13-39N	170-38W	
3.	1200	CELESTIAL	14-09N	170-17W	
4.	2000	CELESTIAL	15-13N	169-34W ←	any chance this was 24'?
5.					

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.	
	12-11S	171-38					
0100	-52	-31					10.1
0200	-59	-23					
0300	-05	-16					
0400	-12	-08					
0500	-19	-01					
0600	-26	70-53	067	25	067	5	
0700	-32	-46					
0800	13-39	170-38					9.2
0900	-47	-33					
1000	-54	-28					
1100	14-02	-22					
1200	14-09	170-17	090	18	065	8	10.1
1300	17	11					
1400	25	05					
1500	33	169-59					
1600	41	53					
1700	49	47					
1800	57	41	098	23	070	5	
1900	15-05	169-34					12.5
2000	15-13	169-34					
2100	21	43					
2200	29	52					
2300	35	170-02					
2400	15-29	170-10	060	21	070	5	

Date 20 NOV 1966 Ship GEORGE EASTMAN (19639) Cruise No. \_\_\_\_\_

Organization POBSP Recorder Pohina (QMC)

Sunrise: Time 0628 Position: Lat. 14-35N, Long. 170-56W

Sunset: Time 1800 Position: Lat. 13-32N, Long. 172-35

Miles travelled from 0000 hours to sunrise = 70

Miles travelled from sunrise to sunset = 126

Miles travelled from sunset to 2400 hours = 62

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	15-29N	170-10W
2.	0800	CELESTIAL	14-24N	171-08W
3.	1200	CELESTIAL	13-53.5N	171-47W
4.	2000	CELESTIAL	13-46N	172-52W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	15-29	170-10				
0100	21	170				
0200	13	24				
0300	05	32				
0400	14-57	40				
0500	49	47				
0600	41	54	075	23	070	05
0700	33	01				
0800	14-24	171-08				
0900	17	18				
1000	09	28				
1100	02	38				
1200	13-54	171-47	070	17	070	04
1300	46	56				
1400	38	172-05				
1500	30	14				
1600	13-23	172-22				
1700	13-24	172-27				
1800	31	172-35	075	15	080	05
1900	39	172-43				
2000	13-46	172-52				
2100	13-53	173-00				
2200	14-03	172-54				
2300	14-10	172-49				
2400	14-16	172-43	095	20	080	05

10.9

12.3

11.7

9.5

10 knots

1620-20

21.5



Date 21 Nov 1966 Ship GEORGE EASTMAN (YAG 39) Cruise No. \_\_\_\_\_

Organization POBSP Recorder Polina (QMC)

Sunrise: Time 0633 Position: Lat. 15-00N, Long. 172-02W

Sunset: Time 1747 Position: Lat. 16-08N, Long. 170-47

Miles travelled from 0000 hours to sunrise = 60

Miles travelled from sunrise to sunset = 100

Miles travelled from sunset to 2400 hours = 59

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	14-16N	172-43W
2.	0800	CELESTIAL	15-10.5N	171-51W
3.	1200	CELESTIAL	15-37.5N	171-22W
4.	2000	CELESTIAL	16-19N	170-57W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	14-16	172-43				
0100	23	-37				
0200	30	-30				
0300	37	-24				
0400	44	-17				
0500	51	-11				
0600	58	-04	069	12	060	05
0700	15-05	171-58				
0800	15-11	171-51				
0900	18	44				
1000	25	37				
1100	31	30				
1200	15-38	171-22	060	13	060	05
1300	45	-14				
1400	52	-05				
1500	59	170-57				
1600	16-06	170-48				
1700	16-13	170-54				
1800	14	25	050	10	090	04
1900						
2000	16-19	170-57				
2100	25	171-04				
2200	33	-10				
2300	16-41	-17				
2400	16-40	171-23	007	14	010	02

16:17  
17:20-18:30  
18:30

7.5  
9.9  
11  
1730-1830, Not under way  
Speed ca. 4 knots  
Speed ca. 9

Date 22 NOV 1962 Ship GEORGE EASTMAN (4637) Cruise No. \_\_\_\_\_

Organization P.O.B.S.P. Recorder Pohina (DMC)

Sunrise: Time 0637 Position: Lat. 15-48N, Long. 172-14W

Sunset: Time 1803 Position: Lat. ~~15-32N~~, Long. 173-50W

14-32 (185)

Miles travelled from 0000 hours to sunrise = 75

Miles travelled from sunrise to sunset = 123

Miles travelled from sunset to 2400 hours = 63

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	16-40N	171-23
2.	0800	CELESTIAL	15-36N	172-30W
3.	1200	CELESTIAL	15-06N	173-01W
4.	2000	CELESTIAL	14-46N	174-03.2W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	16-40	171-23				
0100	32	-31				
0200	24	-40				
0300	16	-48				
0400	08	-57				
0500	16-00	172-05				
0600	15-52	-13	025	17	010	02
0700	44	-22				
0800	15-36N	172-30				
0900	-29	38				
1000	-21	46				
1100	-14	55				
1200	15-06	173-01	020	19	010	04
1300	14-58	19				
1400	14-50	17				
1500	14-42	25				
1600	14-34	33				
1700	14-26	173-40				
1800	14-32	73-49.50	027	16	030	03
1900	14-39	57				
2000	14-46	174-03				
2100	14-56	174-07				
2200	15-06	174-11				
2300	15-13	174-06				
2400	15-20	174-00	355	2.4	020	04

11.5  
10.7  
11.2  
10.2

↓  
1710 ekm

Date 23 NOV 1966 Ship USCGC CASPER (YAL 57) Cruise No. \_\_\_\_\_

Organization POBSP Recorder Pohina (Qmc)

Sunrise: Time 0631 Position: Lat. 15-45N, Long. 173-34W

Sunset: Time 1842 Position: Lat. 16-53N, Long. 172-25W

Miles travelled from 0000 hours to sunrise = 35

Miles travelled from sunrise to sunset = 90

Miles travelled from sunset to 2400 hours = 60

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	15-20N	174-00W
2.	0800	CELESTIAL	15-55N	173-24W
3.	1200	CELESTIAL	16-13N	172-55W
4.	2000	CELESTIAL	16-57N	172-20.5W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	15-20	174-00				
0100	27	173-52				
0200	34	46				
0300	15-42	173-38				
0400	15-44	173-36				
0500	15-49	173-31				
0600	15-50	173-29	000	12	325	04
0700	15-53	173-27				
0800	15-55	173-24				
0900	15-58	173-17				
1000	16-00	173-10				
1100	16-08	173-03				
1200	16-15	172-55	260	14	340	03
1300	16-22	172-49				
1400	16-28	172-40				
1500	16-34	172-39				
1600	16-40	172-34				
1700	16-46	172-29				
1800	16-53	172-23				
1900	55	13				
2000	16-57	172-03				
2100	59	171-53				
2200	17-01	171-42				
2300	03	171-32				
2400	17-05	171-21				

10.4  
alternately drift  
run.  
8.3knts  
10.4  
10.5

7.1  
7  
7.4

Date 24 NOV 1966 Ship GEORGE EASTMAN (SAG 32) Cruise No. \_\_\_\_\_

Organization POBSP Recorder \_\_\_\_\_

Sunrise: Time 0631 Position: Lat. 17-17N, Long. 170-10W

Sunset: Time 1730 Position: Lat. 17-47N, Long. 168-33W

Miles travelled from 0000 hours to sunrise = 68

Miles travelled from sunrise to sunset = 94

Miles travelled from sunset to 2400 hours = 62

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	17-05N	171-21W
2.	0500	DR	17-20N	169-55W
3.	1200	CELESTIAL	17-29N	169-23W
4.	2000	<del>CELESTIAL</del> LORAN	<del>17-56N</del> 17-56N	168-12.5W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	17° 05' N	171° 21' W				
0100	17° 06' N	171° 10' W				
0200	17° 08' N	170° 59' W				
0300	17° 10' N	170° 48' W				
0400	17° 12' N	170° 37' W				
0500	17° 14' N	170° 26' W				
0600	17° 16' N	170° 15' W				
0700	17° 18' N	170° 05' W				
0800	17° 20' N	169° 55' W				
0900	17° 23' N	169° 47' W				
1000	17° 25' N	169° 39' W				
1100	17° 27' N	169° 31' W				
1200	17° 29' N	169° 23' W				
1300	17° 33' N	169° 14' W				
1400	17° 37' N	169° 05' W				
1500	17° 41' N	168° 56' W				
1600	17° 44' N	168° 47' W				
1700	17° 47' N	168° 38' W				
1800	17° 50' N	168° 29' W				
1900	17° 53' N	168° 21' W				
2000	17° 56' N	168° 12.5 W				
2100	17° 60' N	168° 01' W				
2200	18° 03' N	167° 10' W				
2300	18° 06' N	167° 21' W				
2400	18° 09' N	167° 31' W				

9 knots  
NE

Date 25 NOV 1966 Ship USC GEORGE EASTMAN (AGOS) Cruise No. \_\_\_\_\_

Organization \_\_\_\_\_ Recorder \_\_\_\_\_

Sunrise: Time 0717 Position: Lat. 18-26N, Long. 166-46W

Sunset: Time 1821 Position: Lat. 18-53N, Long. 165-10W

Miles travelled from 0000 hours to sunrise = 47

Miles travelled from sunrise to sunset = 96

Miles travelled from sunset to 2400 hours = 56

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	18-09N	167-31W
2.	0100	LORAN	18-28N	166-39W
3.	1200	LORAN	18-40.5N	165-58W
4.	2000	LORAN	18-57.5N	164-56.5W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	18° 09' N	167° 31' W				
0100	11					
0200						
0300	19					
0400	17					
0500	20					
0600	23	55				
0700	26	46				
0800	18-28	166-39				
0900	32	29				
1000	35	19				
1100	38	09				
1200	18' 40.5N	165° 58' W				
1300	43	50				
1400	45	42				
1500	47	35				
1600	49	28				
1700	51	21				
1800	53	13				
1900	55	05				
2000	18° 57.5N	164° 56.5W				
2100	01					
2200	04					
2300	07					
2400	19° 10' N	164° 15' W				

ADVANCE CHECKS 1 HR AT 0100  
 TO CONFIRM WITH 10 CW TIME ZONE

8.9  
 7.0  
 10.9

Date 26 NOV 1966 Ship GEORGE EASTMAN (YAG 39) Cruise No. \_\_\_\_\_

Organization \_\_\_\_\_ Recorder \_\_\_\_\_

Sunrise: Time 0707 Position: Lat. 19-30N, Long. 163-21W

Sunset: Time 1807 Position: Lat. 20-03N, Long. 161-54W

Miles travelled from 0000 hours to sunrise = 56

Miles travelled from sunrise to sunset = 89

Miles travelled from sunset to 2400 hours = 52

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	<del>19-10N</del> 20-00N	164-15W <del>163-00W</del>
2.	0800	LORAN	19-33N	163-14W
3.	1200	LORAN	19-42N	162-40W
4.	2000	LORAN	20-08N	161-37W
5.				

Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	19° 10' N	164° 15' W				
0100						
0200						
0300						
0400						
0500						
0600	19 28	31				
0700						
0800	19° 33' N	163° 14' W				
0900	19° 35' N	05				
1000	19° 37' N	162-56				
1100	19° 39' N	162° 48' W				
1200	19° 42' N	162° 40' W				
1300	19° 46' N	162° 33' W				
1400	19° 50' N	162° 25' W				
1500	19° 53' N	162° 17' W				
1600	19° 56' N	162° 09' W				
1700	19° 59' N	162° 01' W				
1800	20° 02' N	161° 53' W				
1900	20° 05' N	161° 45' W				
2000	20° 08' N	161° 37' W				
2100	20° 11' N	161° 29' W				
2200	20° 14' N	161° 21' W				
2300	20° 17' N	161° 13' W				
2400	20° 20' N	161° 04' W				

Date 27 NOV 1966Ship GEORGE EASTMAN (YAG 37)

Cruise No. \_\_\_\_\_

Organization \_\_\_\_\_

Recorder \_\_\_\_\_

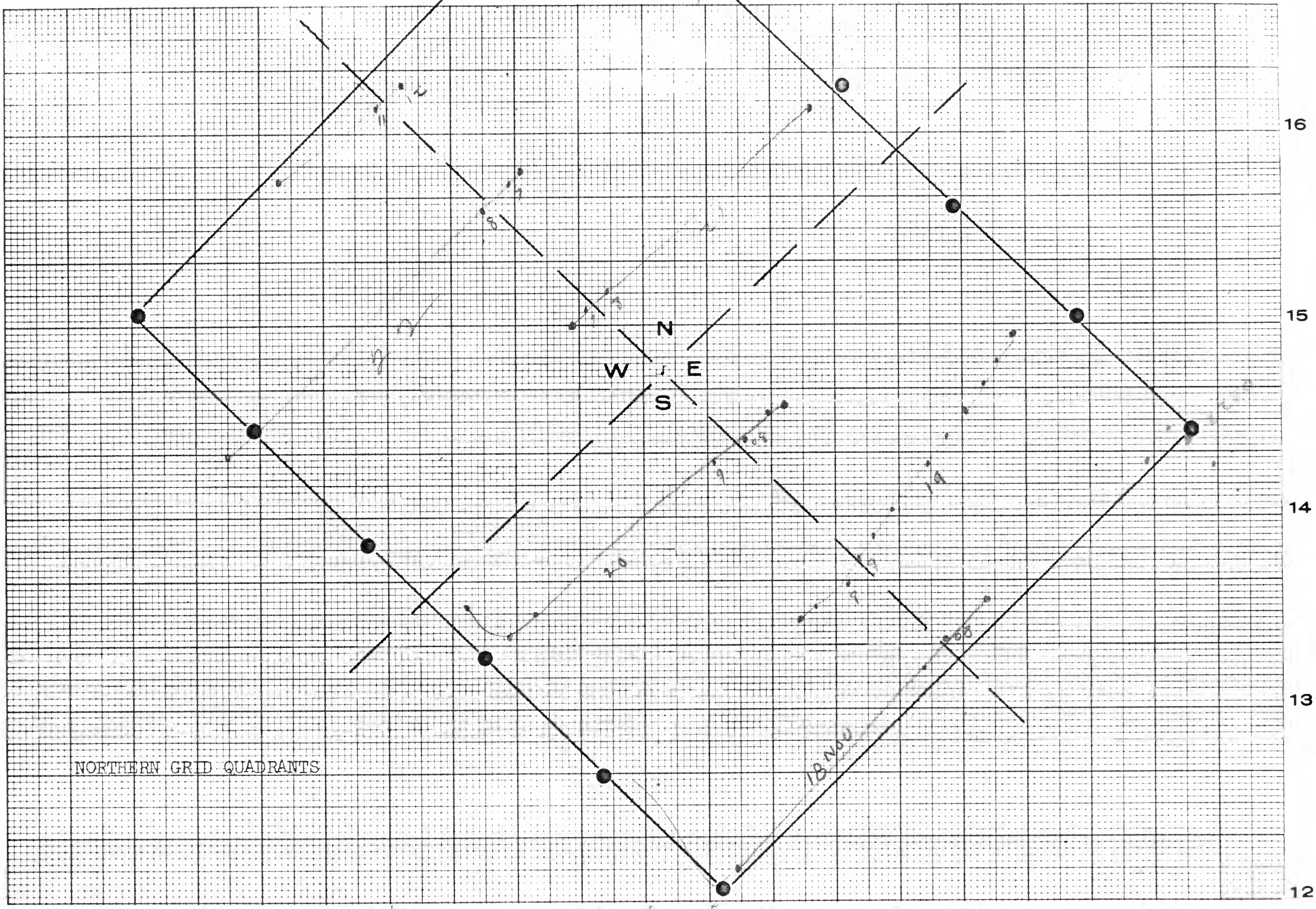
Sunrise: Time 0656 Position: Lat. 20-46N, Long. 16-05WClose Obs  
Sunset: Time 1700 Position: Lat. 21° 11' N, Long. 158° 15' WMiles travelled from 0000 hours to sunrise = 51Miles travelled from sunrise to <sup>Close Obs.</sup> sunset = 112

Miles travelled from sunset to 2400 hours = \_\_\_\_\_

	TIME OF FIX	TYPE OF FIX	LATITUDE	LONGITUDE
1.	0000	DR	20-20N	161-04W
2.	0800	CELESTIAL	20-48.5N	159-53.5W
3.	1200	LOBBY	20-51N	159-10W
4.	1930	DR	21-16	157-55
5.				

## Hourly Positions:

Time	Latitude	Longitude	Wind Dir.	Wind Sp.	Wave Dir.	Wave Hgt.
0000	20° 20' N	161° 04' W				
0100	20° 24' N	160° 55' W				
0200	20° 28' N	160° 46' W				
0300	20° 32' N	160° 37' W				
0400	20° 36' N	160° 28' W				
0500	20° 39' N	160° 19' W				
0600	20° 42' N	160° 11' W				
0700	20° 45' N	160° 02' W				
0800	20° 48.5' N	159° 53.5' W				
0900	20° 49' N	159° 42' W				
1000	20° 50' N	159° 31' W				
1100	20° 50.5' N	159° 20' W				
1200	20° 51' N	159° 10' W				
1300	20° 53' N	159° 59' W				
1400	20° 59' N	158° 48' W				
1500	21° 03' N	158° 37' W				
1600	21° 07' N	158° 26' W				
1700	21° 11' N	158° 15' W				
1800						
1900						
2000						
2100						
2200						
2300						
2400						



NORTHERN GRID QUADRANTS

*November 1966*

REF 20x20 TO INCH  
 11 5 11



DEPARTMENT OF THE NAVY

SHIP WEATHER OBSERVATION SHEET

George Eastman (YAG-39)

DATE FROM 7 Nov - 27 Nov 1966

AT MESSAGE FROM Oahu - Palmyra - Northern Grid - Oahu

TABLE I

TIME (GMT)	WINDS ESTIMATED		VIS (STAT)	WEATHER (Symbol)	BAROMETER (Inches)	TEMPERATURE (Degrees Centigrade)			CLOUDS			SEA WATER TEMP (Degrees Centigrade)	SEA WAVES			
	Direction (True)	Force (Knots)				Dry Bulb	Wet Bulb	Winds (Tenths)	Height (Feet)	Base	Direction (True)		Period (Seconds)	Height (Feet)		
00																
01																
02																
03																
04																
05																
06																
07																
08																
09																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																

TABLE II  
SYNOPTIC OBSERVATIONS

TIME (GMT)	TYPE OF MESSAGE	POSITION OF SHIP				LATITUDE (N/S)	LONGITUDE (E/W)	WIND (Force)	WIND (Direction)	PRESSURE (Inches)	TEMPERATURE (C)	CLOUDS				SEA STATE	REMARKS
		Latitude	Longitude	Altitude	Surface							Base	Top	Amount			
00																	
01																	
02																	
03																	
04																	
05																	
06																	
07																	
08																	
09																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
24																	
25																	
26																	
27																	

8 Nov

66

Time	Local	GMT												
(400)	00													
	347	6	6	OVC	29.97	78	76	9	1200	ST	83	350	4	2
01	347	6	6	OVC	29.97	78	76	8		ST		350		
02	085	4	6	OVC	29.98	78	75	7		ST/CU		080		
03	085	3	6	OVC	30.00	77	75	8				085		
04	215	3	6	OVC	29.98	77	75	6				215	5	
05	216	4	6	OVC	30.00	78	76	6				215		
06	050	7	8	BKN	29.96	80	75	6	1500	CU	85	070		3
07	083	15	10	SCT	29.95	80	74	5	2000	CU	84	070		3
08														
09														
10	050	15	8	BKN	29.96	80	75	6	1500	CU	85	<del>070</del>	5	3
11	050	15	10	SCT	29.95	80	74	5	2000		84			
12	083	15	10	BKN	29.95	80	74	8	1500	SC	84			
13	085	14	10	SCT	29.92	79	75	3	2000		85			
14	085	14	10	SCT	29.92	79	74	3					4	
15	068	10	10	SCT	29.92	79	75	2	1600			090	4	
16	080	8	10	SCT	29.93	78	75	3	4000			080	5	
17	085	10	10	OVC	29.95	78	75	10	1000	CU		080		
18	040	10	7	OVC	29.96	76	73	10	1200	ST	84	120		
19	092	10	10	BKN	29.97	80	75	8	1500	CU		120		
20	092	18	12	SCT	29.96	82	74	4	2000			120		
21	092	18	12	SCT	29.96	82	75	15				120		
22	134	16	12	SCT	29.96	82	75	7				134	4	
23	085	18	10	SCT	29.92	84	77	4				130	4	

TIME  
Local GMT  
1400 00

1800

20

21

095	16	10	SCT	29.91	83	76	6	3000	CU	86	110	4	3
095	↓			.90	84	↓	6			86	110	4	↓
080	↓			.90	84	↓	6			86	110	4	↓
092	20			.92	82	74	4			84	105	3	5
095	17			.93	81	74	4			84	↓		↓
075	17			.94	80	73	4			84	↓		↓
072	19			.94	↓	73	3		SC	84	↓		↓
072	8			.95	↓	73	4		SC	84	↓		4
050	13		BICN	.96	↓	74	4	2000	CU	85	070		4
053	15		BICN	.96	79	74	2	1800		85	095		5
080	19		BICN	.92	78	73	2	1800		84	095		↓
	19		SCT	.91	79	78	2	2000		85	↓		↓
	18			.90	78	77	2			85	↓		↓
	17			.89	77	76	2			85	↓		↓
050	14			.83	79	74	2			85	090		↓
050	↓			.86	79	↓	2			85	090		↓
16 060	↓			.88	80	↓	2			85	070	2	3
053	↓			.90	80	↓	3	1800		84	060		5
18 063	19			.90	80	75	4	2000			↓		5
049	14			.91	80	74	4	<del>2000</del>			↓		5
20 060	15		BICN	.92	81	75	6	1600			↓		4
060	13		BICN	.90	81	75	6	1800			↓		4
060	18		SCT	.94	82	75	3	1800		86	070	4	4
21 080	18		SCT	.86	82	75	3	1800		83	070	4	

10 Nov '66

TIME

Local GMT

Local	GMT														
1400	00	080	18	10	SCT	29.86	82	75	3	1900	CU	86	070	4	4
		068	17			.81	↓	76	3			86	065		4
		075	↓			.81	↓	76	4			86	080		5
		075	↓			.82	81	75				87	080		5
		086	16			.85	80	74				88	086		5
		086	↓			.86	80	73	↓		CU/st	86	086		4
		068	↓			.88	82	74	5		SC	85	080		4
		070	18			.88	81	74	↓			86	080		
		065	15		↓	.87	80	73	↓			86	080		
		090	11		BKN	.87	80	75	6	1500		86	080		
		055	15		BKN	.87	80	75	6	1800	↓	86	080		
		060	13		SCT	.85	↓	75	4		CU	86	070		
		062	14			.84	↓	76	4		CU	86			
		050	<del>15</del>			.82	↓	75	1	2000	SC	86			
		050	15			.81	↓	75	1		SC	86			
		048	14			.80	78	75	2		CU	86			
1600		050	14			.81	80	76	3	1800		86			3
		055	14			.82	80	76	3			86			3
		075	20		BKN	.85	82	76	6	2000		86	080	3	4
		075	17		BKN	.86	82	77	5			86			
2000		075	18		BKN	.85	82	77	5			86			
		075	18		BKN	.85	82	77	5			86			
		085	15		SCT	.83	84	77	3			86	085	2	2
		070	13		SCT	.80	86	78	4			86	080	2	2

11 NOV.

TIME

Local GMT

Local	GMT														
1400	00	070	13	10	SCT	29.80	86	78	4	2000	CU	86	080	2	2
		110	11		↓	.70	87	79	3	↓	↓	86	080	↓	↓
		110	11		↓	.78	83	80	3	↓	↓	87	080	↓	↓
		053	7		BICK	.76	80	80	5	↓	↓	↓	060	↓	↓
		060	8		SCT	.78	80	80	3	↓	↓	↓	040	↓	↓
		060	9		↓	.80	84	75	2	↓	↓	↓	040	↓	↓
		056	6		↓	.81	83	75	1	1800	↓	88	050	↓	↓
		098	4		↓	.82	80	75	1	↓	↓	↓	050	↓	↓
		095	4		↓	.82	80	75	1	↓	↓	↓	050	↓	↓
		180	2		↓	.83	79	75	4	↓	↓	↓	100	↓	↓
		180	2		↓	.83	79	75	4	↓	↓	↓	100	↓	↓
		150	3		CLK	.83	81	75	0	—	—	↓	150	↓	↓
		150	4		CLK	.83	82	75	0	—	—	87	150	↓	↓
		150	3		BCK	.79	82	74	3	2000	CU	88	150	↓	↓
		110	10		Sct	.81	82	76	4	↓	↓	↓	150	↓	↓
		100	11		↓	.83	82	76	4	↓	↓	↓	150	↓	↓
16		120	9		↓	.84	83	76	4	↓	↓	↓	150	↓	↓
		130	15		↓	.85	82	75	4	↓	↓	↓	150	↓	↓
		120	12		↓	.86	82	76	5	↓	↓	↓	150	↓	↓
		100	7		↓	.87	82	76	5	↓	↓	↓	150	↓	↓
20		100	14		BNN	.88	82	76	8	1800	↓	↓	150	↓	↓
		102	11		BKN	.87	83	74	6	↓	↓	↓	150	↓	↓
		093	6		↓	.86	83	77	4	↓	↓	↓	140	↓	↓
		086	6		↓	.84	84	77	5	↓	↓	↓	135	↓	↓

15 Nov. '66

Local time	GMT X-time														
1400	00	190	5.2	8	Bkn	29.80	81	76	9	1500	CU	84	170	3	4
		145	3.5			.76	84	77	8	2000		84	165	2	3
		100	4.3			.76	82	75	8			85	165	2	
		100	2.6			.76	82	76	8			84	165	2	
		90	2.6			.81	81	77	8			84	160	2	
		90	2.6	6		.81	81	77	8			84		2	
		160	.8	7		.80	80	76	2			84		2	
		108	2.6			.80	80	76	2			84		2	
		002	5.2			.80	82	76	2			84	165	2	
		051	3.5			.80	81	76	2			84		2	
		093	5.2			.84	78	76	8			84		2	
		093	5.2			.84	78	76	8			84		2	
		093	4.3	5		.82	81	76	8			84		2	
		093	4.3	5		.82	81	76	8			84		2	
		095	3.5	6		.80	81	77	8			84	163	2	2
		068	4.3	5		.79	81	77	8			84	165	2	1
16		070	4.3	5		.79	83	76	8			84	170	2	2
		122	7.6	8		.80	81	76	8			86	170	2	2
	18														
0900	19	135	12	10	BKN	.85	82	77	8			86	135	2	3
	20	115	15	10		.85	85	78	8			88	115	3	3
		114	16	10		.85	86	78	8			86	114	3	2
		115	20	10		.84	89	79	8			86	115	3	2
		114	12	10		.83	92	81	7			86	115	3	2

EASTMAN

16 Nov. 1966

Local Time	GMT Time														
1400	00	115	17	10	BM	29.81	89	79	7	2000	CU	86	115	2	2
		070	15		BKN	.76	82	78	9			86	090	2	4
		080	16			.76	83	76	9			87	090	2	4
		075	16			.74		76	0				090	2	4
1200		113	12			.75		78						2	3
		117	13			.70		77						2	3
		082	10		CLR	.78		77						2	3
		080	10			.79		77						2	3
22		080	10			.80		77						2	3
		085	10			.81	82	77						2	3
		003	14		SCT	.81		77	5	2000	CU	86	085		
		085	10	10		.84		74	6				085		
1200		055	10			.77		74	4				055		
0300	13	055	10			.77		74					055		
		060	11			.77		75				87	055		
		105	17			.79	81	77					065		
0500		110	16			.80		77	5				070		
		110	16			.81		77	5						
		115	13			.81		77	5						
		115	14			.82	82	77	6				060		
1200	2000	115	13			.81	82	77	6				060		
		110	15			.82	82	77	6				070		
		120	15		PNY	.81	83	78	7				080	3	
		120	15		SCT	.80	83	76	7				080	3	

17 Nov. 66

EASTMAN

Time Local	Time GMT													
1400	00	11 2	11	10	BKN	29.79	89	79	6	2000	CU	87	085	3
		115			BKN	.78	88	79				87	090	
					BKN	.78	88	79					090	
					BLK	.78	88	79						
1800					BLK	.80	87	78						
		11 5			BLK	.82	83	79		1000		86		
		090	13		SCT	.83	83	78	2	2000				
		090	14			.84	82	78	1					
22		095	18			.84	82	78	4					
		100	16			.85	82	74	3					
		100	17			.84	80	74						
		095	17			.82	80	74						
0200	1200	100	13			.80	80	74						
		113	17			.80	82	77						
		097	62			.79	82	77						
		100	12			.78	82	77						
0600		100	13			.80	82	77						
		100	13			.80	82	77						
		100	25			.82	82	77	5			87	080	
		080	17			.82	82	77	5					
100		090	17			.83	82	77	5					
		085	17			.84	82	77	5				085	
		085	21			.84	83	78	5			86		
		085	19			.81	85	78	5			86		



Time Log @ 1700

18 Nov. '66

TIME  
LOCAL GMT

TIME	LOCAL	GMT													
1400	000	105	23	10	SCT	29.81	83	77	5	2000	CU	86	095	3	5
15	01	100	20			.79							095		
16	02	117	17			.77							090		
17	03	116	15			.78							090		
18	04	110	17			.80							090		
18	05	114	14			.82		78	4			87	100		4
19	06	114	14			.83							100		
20	07	114	14			.82							100		
21	08	114	6			.87							88		
22	09	100	7			.87	82	77					100		3
23	10	100	7			.87							100		
2400	11	080	17			.87					SC	84	100		
<del>Time Log</del>	0100	080	17			.87					SC	84			
0200	13	080	20			.83			5		SC	87			
	14	085	15			.83					SC	84			
		065	18			.80					CU		060		
0600	16	066	18			.79									
		060	20			.78		76							
		065	17			.83		76							
		069	15			.81	83	77	3						5
1000		070	16			.86			5						
		070	16			.88			4						
		070	16			.86			4						
		070	17			.86			5				065		

19 Nov. '66

Time

Local GMT

Time	Local	GMT													
1300	00	075	19	10	BKN	29.82	83	77	5	2000	CU	84	070	3	5
1400		075	19			81	89	80				87			
		075	19			80	89	84				87			
		070	19		SCT	80	86	79				87			
		080	17			83	85	79	7						
1800		075	18			84	84	76	8						
		085	25	8		86	83	80	9						
		080	20	8		85	83	80	8						
		095	25	10		86	83	78	9						
21		098	17			86	82	78	8			86			
		070	17			85	82	78	8						
		075	20		SCT	84	82	77	3	1500					6
		081	28			84	82	77							
		080	23			85	82	77							
		080	23			85	82	77							
		082	23			85	82	77							
		067	28			85	82	76							5
		067	25			85	82	77							
0600		067	25		R	88	81	77	5			87			
		070	28		BKN	93	81	77	7	2000		86	070		
		080	30		SCT	93	82	77	5			86	065		8
1000		080	24			92	82	77	4			86			
		090	20			91	82	77	4			86			
		090	18			89	81	77	4			86			

TIME

Local GMT  
1300 00

TIME	Local	GMT														
	1300	00	070	25	10	BLCN	29.87	83	78	4	2000	CU	86	070	3	6
	1400		085	29			.84			6						
			090	27			.84			6						
			105	28		SCT	.85			5						
			088	23			.85	82	76				87		4	5
	1900		088	23			.88						87			
			088	24			.90						87			
			088	24			.90									
			088	24			.90									
	2200		088	24			.90									
			075	24			.92		77	6			CU/CI			
			060	21		BKN	.95						CU			
			060	19		BKN	.94									
	0200		060	19		SCT	.91			5						
			075	20			.93									
			075	21			.93									
			084	19			.90			4						
	0600		075	23			.91			6						
			065	18			.91			6						
			051	16		OVC	.92		76	10	2500		SC			4
			055	16			.92									
	1500		070	17			.93									
			070	17			.93									
			070	17			.94				2000		SC/CU			



Eastman

22 NOVEMBER '66

TIME		Local	GMT												
1300	00	030	11	10	BKN	29.85	83	75	8	2000	CU	86	090	3	4
1400		043	14			.85			8						
		050	12			.83			7						
		050	10		SCT	.82		74	4						
		050	10			.83			5						
1800		050	10			.85			5						
	06	037	11			.86			6				050		
		279	11			.88	80	74	6			<del>86</del>	279		
		277	11			.88	80		6			86			
2200		279	12		OVC	.88	79		10		CU/ST	88			
		279	12		OVC	.86	76	72	10		CU/ST	88			3
		007	14		BKN	.86	77		7		SC	86	010		2
	12	010	13			.86			7						
1700		013	20			.84			6						
		015	20		SCT	.81	76	71	2		CU				
		010	20		BKN	.80			6						
		025	17		SCT	.80			4						
0600		025	17			.82	79	73	3						
	18	020	17		OVC	.82		73	10				000		
		020	17		BKN	.85		73	7			87			
		030	23			.88	77	75	7						
1000		020	21		SCT	.86	82	74	4	3000	SC				
		020	21		SCT	.86	82	74	4	3000	SC				
	23	020	19	10	SCT	.81	82	73	5	2000	SC/CO	87	010	3	4

Eastman

23 Nov '66

TIME  
Local GMT

1300	00	020	12	10	SCT	29.	79	8.5	74	5	2000	SC/	CU	86	000	2	4
1400		020					.76								030		5
		010					.74										5
		010					.74										5
		010					.73		73								3
1500		027	16				.73	81	71			SC					
		030	16				.75					CU					
		030	18				.76										
		000	15				.77			3							
1600		015	24				.77	80	73	5					020		4
		355	24				.77			5					020		
		355	24			RNY	.76			5					020		
	12	348	15			BKN	.74	79	68	7					010		
1700		345	12			SCT	.72	77		4					350		
		325	15				.72			3					350		
		000	12				.73			3					000		
		325	12				.74	78	67						325		
1800		000	12				.74	78	68					88	325		
		000	8				.74	79	79					88	020	3	3
		300	12				.75	79	79					88	020		
		225	16				.81	82	71					86	340		
1900		230	14				.80	83	72					86	340		
		260	14				.79	83	72					86	340		
		260	14	10		SCT	.79	83	72	3	2000	CU		86	340	3	3

13 00	225	14	10	SCT	29.73	86	74	3	2000	CU	86	345	2	3
1400	225	14			.71	86	74							
	215	15			.70	86	74							
	227	19			.70	84	70							
	227	19			.70	84	70							
1850	220	26			.71	84	70					239		
	220	22			.72	80	69					230		
	220	22			.76		69					230		
	220	22			.76		69					230		
2000	215	13			.79		68					215		4
	215	14			.80		68					215		
	215	22			.80	79	72					215		
	200	20			.80		72					190		
0100	200	22			.79		72				87			
	190	18			.79	78	72							
	190	18			.79		72							
	209	17			.79		72							
0600	210	20		BKN	.82		72	8						
	200	18		BKN	.83		73	8				105		2
	200	18		SCT	.84		73	5				105		
	160	24			.88	80	74	5				140		
1000	143	24			.88	82	77	4				135		
	140	24			.87	82	77	4			86	135		
	140	25	10	BKN	.85	82	77	7	2000	CU	86	135	2	4

Time															
Local	G-MT														
1300	00	115	16	10	BKN	29.84	81	78	9	2000	SC	86	120	2	6
14		115	22			.80	79	72							
15		115	19			.80	80	73							
16		115	20		OVC	.86	80	73	10			85			
17		115	18			.87	80	74							
18		170	20			.87	80	74							5
19		165	27			.89	79	74		1500					
20		175	12			.93	79	74							
21		045	28			.93	78	75				87			
22		125	28			.94	78	73							
23		125	28			.94	78	73							
00		080	16			.93	80	74		2000		85		3	10
01	12	120	24			.92	80	74		2500		85			
03	13	130	35			.90	79	73							
04		130	27			.90	79	73							8
05		135	17			.91	76	72		2000			130		5
06		117	9			.95	77	70					120		4
07		130	8			.95	77	70							4
08		070	15			.99	79	70							4
09		290	15			.02	79	74							4
10		330	25			.02	79	74					110		5
11		040	20	10		.03	79	74					000		5
12		347	13	6		.01	77	74		1500			090		5
13		000	14	10	OVC	29.99	79	75	10	1500	SC	85	085	3	5



26 NOV.

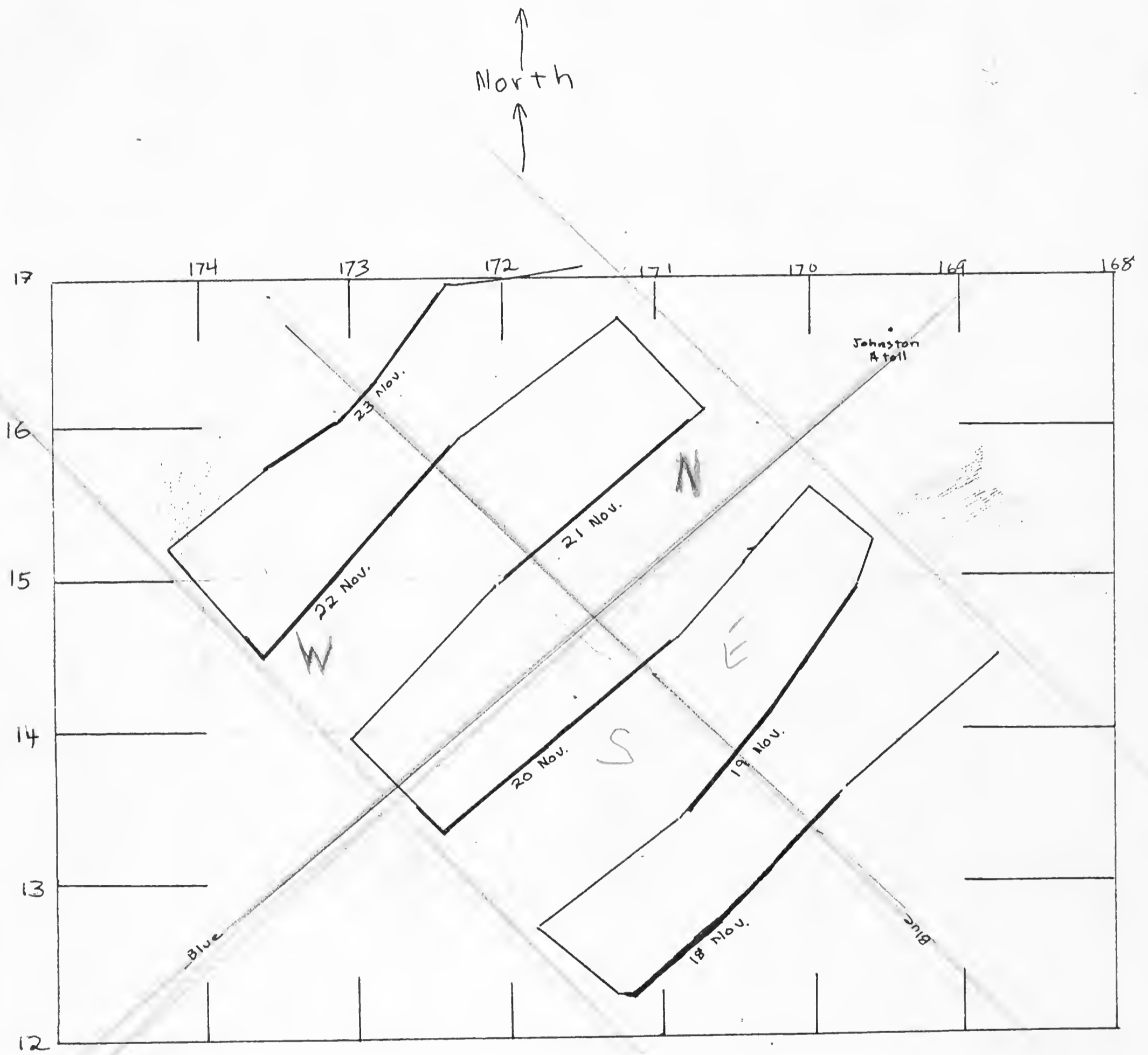
1400	345	17	8	OVC	29.99	78	75	10	2000	SC	86	090	4	3
<del>1400</del>	050	14			.94	78				CU				
	050	14			.94	78				CU				
	116	25			.93	77	<del>78</del> 74			SC		116		8
1800	186	24			.97		74							5
	097	16			.98		74				85		097	
	100	19	10		30.00	78	73					100		7
	070	16			.01									
	070	15			.03									
	130	25			.04	77	74							
	145	25			.00		74							
	122	28	6		.00	76	72					090		6
	128	26	10		29.99		72					090		
	093	27			.97	77	73							
	090	22			.94	77								
	085	23			.96									
0600	085	23		BKN	.98									
	080	22		SCT	.99			5						3
	073	17			30.02	78	70							5
	075	17			.02	78						075		6
1050	073	16			.02									
	073	16			.00	77								
	070	18		BKN	.00	78		8		CU	84			
	070	20	10	BKN	29.97	80	70	6		CU	84		3	6

Eastman

27 NOV '66

TIME  
Local GMT  
x+11  
1400 00

070	21	10	BKN	29.92	80	70	8	2000	CU	85	075	3	6
080	21			.92	80					84			
080	28			.89	80					80			
090	25			.89	80					84			
095	24			.90	79	72							
095	25			.92	79	72							
100	19			.95	79	70					085		5
070	18		SCT	.93	77	69	5				075		4
072	22			.93	77	69	5						4
071	22			.93	74	68	4	2500	SC				4
070	22			.94	77	69	5		SC/CU				6
070	22			.94	77	69			SC/CO				5
070	24			.92	77	70				83			5
070	23			.91	76	69							6
070	21			.90	76	68		2000	CU				
075	22			.90	77	69							
<del>070</del>	<del>14</del>			.92	76	69							
070	12			.91	77	70							4
070	12			.90	77	72							4
070	25			.91	77	72							4
070	24			.91	77	72							
070	24			.90	79	73							
070	17			.89	76	68	5						3
070	18	10	SCT	.88	76	68	4	2000	CU	83	075	3	3



Map 1. : Pelagic Bird Survey, Smithsonian Grid Number 1, November 1966  
 Darkened areas of Cruise Tract Represent areas Transversed during Diurnal Survey.  
 Blue lines are for division of Grid into Quadrants.

ABA

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P.G.

W.R. ✓

R.C.

1966

PRELIMINARY REPORT  
NORTHERN GRID SURVEY NO. 34  
November 17-23, 1966

Prepared by  
Brian Harrington

This report summarizes the results of a pelagic survey of Smithsonian Grid I from 2230 hours 17 November until 1800 hours 23 November, 1966. Smithsonian personnel included Brian Harrington (Biologist in charge), T. James Lewis, Frank Smith, and Walter Bulmer. Excellent cooperation was received from Captain Church, the officers, and crew of the U.S.S. GEORGE EASTMAN (YAG 39) throughout the survey period. Faulty LORAN receiving equipment and frequent overcast periods made navigation difficult, but positions are considered accurate within 5-10 miles on 22 and 23 November, and within five miles during the remainder of the grid survey. The grid track is shown on map one.

Diurnal observations covered 68.8 hours and 679 miles within the grid area, and an additional 62.4 hours of nocturnal observations were conducted, 1.5 of which were spent drifting on the night of 22-23 November.

Nocturnal observations were conducted in an attempt to clarify the activity of Sooty Terns and other species. A discussion of this phase of the survey is included in the species accounts, but none of the observations are included in the density figures.

It should be emphasized that a comparison of nocturnal and diurnal survey is difficult due to the fact that some species seem to be attracted to the ship at night; it is also possible that others may avoid the ship during the nocturnal hours.

Bird density varied considerably from one area of the grid to another. For purposes of discussion the grid has been divided into quadrants (see map one) and the species density figures have been compiled in table 3. Generally these figures demonstrate that resident birds (i.e., all but transient migrants) were most abundant in the northern and western quadrants of the grid, which also coincides with the areas supporting the most feeding flocks.

## SPECIES ACCOUNTS

Wedge-tailed Shearwater

The abundance of Wedgetails in the North and West quadrants of the grid is in keeping with the comparative abundance of other species. But when compared with the November 1965 northern grid survey, they were surprisingly numerous. Last year no Wedgetails were seen in November in the grid, whereas this November 135 were identified. None of these were suspected of being young birds which are readily identified (in the north) if within a month or two of fledging.

That this species should vary in numbers from year to year (and month to month) probably reflects the abundance of food rather than seasonal direction movements. If directional movement occurred, it would seem probable that it would be reflected in the directions of flights recorded with each observation. Analysis of this year's data suggests no directional trends, nor do the data from previous years suggest migration patterns.

Christmas Island Shearwater

Two individuals were noted as single birds. Although this species might be confused with the Sooty Shearwater, both identifications were quite certain.

Sooty and Slender-billed Shearwater

These two species are difficult to separate at long distances; however, if an experienced observer is alert they may be identified at a relatively close range. Most personnel on this cruise were familiar with the two species, and specific identifications are considered reliable when given.

There is no doubt of the fact that both species were migrating through the grid this month. But the proportion is difficult to pin down due to the great variation from day to day, and even hour to hour. In addition, when a mixed flock passes by it is all but impossible to determine how many of each species were present due to their fast flight and the relatively long time required for exact identification of each individual. However, during this survey it was established that both homogenous and mixed flocks occurred, and that

either species may occur as a single bird. However, the sightings of a single Slenderbill are quite scarce relative to the number of single Sooties identified.

Large day to day variations in the number of Sooty/Slenderbills occurred throughout the grid cruise. There was no east-west pattern of abundance, and the writer feels that when either species is abundant in one part of the grid they may well be just as numerous over the rest of the area. In other words, it is postulated that both species pass through in "waves" which probably originate in areas other than the central Pacific. That no east-west pattern of abundance is found may be interpreted from data collected on this cruise. Almost all birds were travelling due south, yet there were days when large numbers were observed north or south of a preceding or following day when low numbers were seen. Thus it would seem logical to surmise that in November the flow is not continuous, but interrupted and in "waves".

Generally the Sooties and Slenderbills were not observed feeding or loitering in their southward movement. However, there were scarce observations of birds milling and feeding. This occurred most frequently on 22 November when three separate groups of Sooty and/or Slenderbills were observed apparently searching for food. One of these groups was with a mixed feeding flock with five other species of birds.

#### Pale-footed Shearwater

The peak of the migration of this species appears to have passed in October. It is interesting to note that this peak seems to have been reached during an apparent lull in the Sooty and Slenderbill migration, both of which the Pale-foot frequently associates with.

#### Newell's Shearwater

A single bird was seen shortly after sunset on the 19th.

#### Dark-rumped Petrel

Two separate sightings of this Hawaiian Island breeder were recorded this month. Accumulated evidence would suggest that this is a regular "winter" visitor to the grid area.

Pterodroma externa

The largest concentrations of this species were encountered in the western quadrant of the grid. Good numbers were also recorded in the other quadrants, but with significantly lower numbers between 171 and 173 degrees west. The grid population size and distribution is quite different from that found in Nov. 1965, there being many more P. externa this year.

Two subspecies (White-necked and Juan Fernandez Petrel) were recorded, with the former being very scarce and only in the northwestern area of the grid.

Pterodroma hypoleuca

The distribution of this species in the grid closely resembles that of P. externa. Like that species, the Black-winged Petrel was noticeably missing from the area between 171 and 173 degrees west. In the eastern areas of the grid both P. externa and hypoleuca were most frequently noted as single birds while in the western portions they were most frequently seen in mixed feeding flocks.

This is most likely due to variations in concentrations of food.

White-winged Petrel

Although this is usually an easily misidentified species, one observation of a "dark phase" bird in a mixed feeding flock on the 18th is quite certain. This observation was within 20 miles of the southernmost part of the grid.

An additional sighting of three birds on 22 November was not accompanied by any description, and field marks later described did not fit P. leucoptera.

Kermadec Petrel

All four sightings of this species were in the western third of the grid, and all were in different feeding flocks.

Phoenix Island and Tahitian Petrel

All sightings of both species were in the western portion of the grid. Although the two are easily confused, one bird seen on the 23rd was believed to have been a Tahitian Petrel.

Red-tailed Petrel



Mottled Petrel

Two individuals were seen on the eighteenth; one was travelling south and the other to the southwest. Apparently the migration through the grid is virtually over after October.

Leach's Storm Petrel

One Leach's Petrel was collected on the night of the 17th after it flew onto the ship. In addition, eleven storm petrels identified only as white-rumped storm petrels were probably Leach's. Distribution seemed to be fairly random throughout the grid area.

White-tailed Tropicbird

This Hawaiian Island breeder was present in the grid in low numbers. Distribution was fairly even throughout the survey, with single birds fishing without regard to other species.

Red-tailed Tropicbird

This species was fairly evenly distributed over the survey area with the exception of an unusually high density in the northwest portion of the grid. The lower population from last year is not explained, but the small difference does not seem significant. One bird was collected November 23, and a serum sample obtained.

The fact that none of the tropicbirds had orange streamers is suggestive of the probability that those present in the grid were not on Johnston Atoll this year (a large percentage there were color marked). This does not mean, however, that the birds are not Johnston-oriented as a streamer wears off in less than a year and the birds may not return to the island each season.

Blue-faced Booby

Four birds of this species were seen during the day. Three were lone adults, and one was a subadult in a mixed feeding flock. Except for one sighting of an adult headed northwest, none of the birds were flying in any determinable direction.

Two Blue-faced were also noted during the nocturnal observations.

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### Red-footed Booby

A total of nine were seen in the grid, only two of which were adults. All birds sighted were on days when the cruise tract was closest to Johnston Atoll (within 180 miles), but no orange streamers were seen.

The fact that over 85% of the birds were subadults is interesting. This data, along with previously collected data, would tend to indicate that during November the subadult and immature birds have a greater tendency to wander at sea than do the adults.

The significantly larger grid population this year (as compared to November 1965) probably reflects a better food supply, but could result from some other factor.

### Great Frigatebird

A total of 24 Frigates was seen in the grid. Of these, 13 were identified as Great Frigates while the remainder were identified as Frigate species, but were quite probably Great Frigates.

The November distribution of this species within the grid does not appear to be random. Over 90% were in the western and northern quadrants, or west of 171 degrees west longitude. In this area, where mixed feeding flocks were most numerous, over 50% of the Frigates sighted were in feeding flocks. Single birds were often noted chasing flying fish.

Ages (when noted) included three immatures and eight adults.

### Sooty Tern

A total of 51 Sooties (42 during the day and 9 at night) was observed in the grid this month. This is a considerably lower number than last year (122) despite the fact that more hours of nocturnal observation were conducted this November.

All of the diurnal sightings of Sooties were west of 172 degrees longitude and with the exception of a single adult, were all in feeding flocks. The unquestionable identification of one immature is interesting.

During nocturnal observations small numbers of Sooties were seen throughout the grid area. As stated before, none were seen east of 172 longitude during the

day. Thus, what data which were collected in the eastern two-thirds of the grid would suggest that for some reason Sooties were present at night but not during the day. However, the writer feels that there is also a possibility that Sooties may be present during the day, but are not being seen. Reasons for this suggestion are not well verified, but follow for what they are worth. First, it has been noted on occasion that a single Sooty is often difficult to see (as opposed to a flock). If for some reason, Sooties do not flock in the grid during the "winter" season, they would appear to be present in low numbers. The writer does not intend to imply that the population is at a "normal" level; it is quite probably at a very low level and comprised of single birds. That they travel as single birds seems to be quite possible in view of the observations suggesting the lack of concentrated food sources at this season in the grid. The main numbers have apparently moved to another area. But it is quite probable that scattered individuals remain in the grid area. These single birds very possibly may avoid ships during the day (a behavior frequently noted in flocks.) That they shy from a ship during the day does not mean that they avoid them at night. In fact, the data collected to date would suggest that they are in fact attracted to the lights of a ship.

The above discussion is not intended to deny that there may be directional nocturnal movement through the grid from November through February, but is intended to present a possible alternative. More data and survey are needed to supply an answer.

#### Common Noddy Tern

A total of 9 birds was seen in three sightings. One group of seven in a mixed feeding flock on 20 November was unusual. Last year none were seen in November in the grid.

#### Fairy Tern

A total of three was recorded, two of which were in mixed feeding flocks on the 23rd.

Skua

Two were observed this year as opposed to one last year. Until a few are collected it will not be possible to determine whether these are of the Arctic or Antarctic race.

Table 1. Summary of Diurnal Bird Observations in Northern Grid,  
November, 1966

<u>Date</u>	<u>No. Birds</u>	<u>Sightings</u>	<u>Species</u>	<u>flocks</u>	<u>Miles</u>	<u>Hours</u>	<u>No. Birds/lin. mile</u>
18	133	53	15	6	114	11.6	1.17
19	70	53	12	2	121	11.5	.58
20	553	73	13	31	126	11.5	4.40
21	83	46	11	3	100	11.3	.83
22	430	59	13	14	123	11.5	3.49
23	250	58	16	9	96	11.4	2.25

Table 2. Diurnal Density of Species Groups in Northern Grid  
November, 1966

<u>Species Group</u>	<u>No. Birds</u>	<u>No. Birds/sq. Mile</u>	<u>Grid Population</u>	<u>% Total Birds</u>
Shearwater/Petrel	1384	1.01	50,500	91.1
Terns	54	.039	1,950	3.5
Tropicbirds	28	.021	1,050	1.8
Boobies	11	.004	200	.7
Frigates	24	.009	450	1.6
Storm Petrels	10	.015	880	.7
Miscellaneous	8	.006	300	.6
TOTAL Birds	1519	1.12	56,000	100.
Total Birds in Flocks	1140			75.

# Diurnal Abundance of Birds by Grid Quadrants, Nov. 1966

	Total in grid	% in flocks	birds/lin.mi.	East Quadrant		South Quadrant		West Quadrant		North Quadrant	
				Count	#/lin.mi.	Count	#/lin.mi.	Count	#/lin.mi.	Count	No./lin.mi.
Wedge-tailed Shearwater	123	46%	.183	4	.032	5	.021	45	.354	69	.384
Christmas Island Shear.	2	0	.003	0	—	1	.004	0	—	1	.006
Sooty Shearwater	66	51%	.099	6	.047	10	.042	25	.197	25	.139
Slender-billed Shearwater	254	97%	.376	1	.008	84	.350	133	1.48	36	.20
Pale-footed Shearwater	1	0	.001	1	.008	—	—	—	—	—	—
Dark-rumped Petrel	2	0	.003	1	.008	—	—	—	—	1	.006
Juan Fernandez Petrel	95	67%	.141	28	.219	27	.112	12	.095	47	.262
White-necked Petrel	5	20%	.007	—	—	—	—	2	.016	3	.017
Black-winged Petrel	58	65%	.086	17	.133	9	.038	18	.142	14	.078
White-winged Petrel	4	100%	.006	1	.008	3	.012	—	—	—	—
Kermadec Petrel	4	100%	.006	—	—	—	—	1	.008	3	.017
Phoenix Island Petrel	5	0	.007	—	—	—	—	4	.031	1	.006
Mottled Petrel	2	0	.003	—	—	2	.008	—	—	—	—
Tahitian Petrel	1	0	.001	—	—	—	—	—	—	1	.006
Leach's Storm Petrel <sup>+</sup>	10	0	.015	—	—	4	.017	5	.039	1	.006
Bulwer's Petrel	1	0	.001	—	—	1	.004	—	—	—	—
White-tailed Tropicbird	4	0	.006	1	.008	—	—	—	—	3	.017
Red-tailed Tropicbird	23	0	.034	2	.016	3	.012	10	.079	8	.049
Blue-faced Booby	4	25%	.006	1	.008	2	.008	—	—	1	.006
Red-footed Booby	7	0	.013	1	.008	1	.004	—	—	5	.031
Great Frigatebird <sup>#</sup>	24	25%	.037	1	.008	1	.004	7	.055	13	.072
Sooty Tern	44	93%	.065	—	—	—	—	20	.157	22	.122
Common Noddy Tern	9	89%	.013	7	.183	1	.004	—	—	1	.006
Fairy Tern	3	67%	.004	1	.008	—	—	—	—	2	.012
SKUA	2	50%	.003	1	.008	—	—	1	.008	—	—
Bird (Unidentified)	6	0	.009	2	.016	3	.012	—	—	1	.006
Shearwater/Petrel (unident.)	113	80%	.168	12	.16	6	.022	55	.433	43	.240
Pterodroma Species ( " )	3	0	.004	—	—	1	.008	2	.016	—	—
Tropicbird Species ( " )	1	0	.001	—	—	—	—	—	—	1	.006
Sooty or Slenderbill Shear. ( " )	587	92%	.892	40	.311	453	1.89	55	.433	38	.212
Phoenix or Tahitian Petrel	2	0	.003	1	.008	1	.004	—	—	—	—
Pterodroma externa (JFP or WNP)	32	<del>18%</del> 56%	.047	4	.032	3	.012	21	.165	4	.022
Pterodroma hypoleuca (BWP or BIP)	3	33%	.004	1	.008	2	.008	—	—	—	—
<b>TOTALS</b>	<b>1519</b>	<b>73.5%</b>	<b>2.25</b>	<b>133</b>	<b>1.4</b>	<b>624</b>	<b>.216</b>	<b>416</b>	<b>3.3</b>	<b>344</b>	<b>1.91</b>
Total density (excluding all sooty and slenderbilled Shearwaters.)				85	.66	77	.32	203	1.60	245	1.36

+ includes all storm petrels

# " those identified only as Frigate species

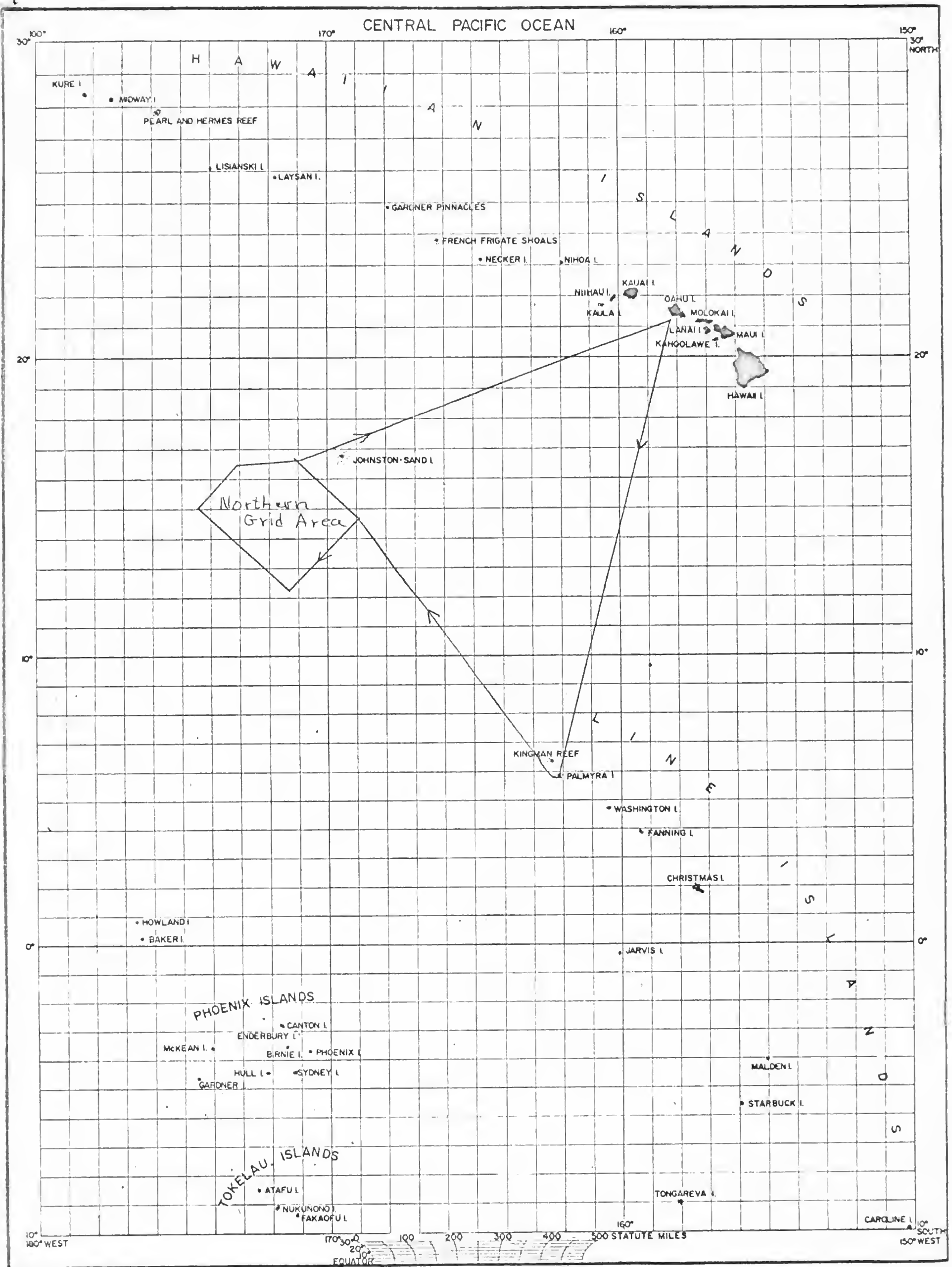
Table 4. Summary of Nocturnal Observations in the Northern Grid  
November, 1966.

<u>Date</u>	<u>Shearwater-Petrel</u>	<u>Terns</u>	<u>Others</u>
17-18	11	3	1
18-19	8	1	1
19-20	3	1	3
20-21	18*	1	3
21-22	11	2	10
22-23	8#	1	2

\* 16 seen before darkness  
# 4 seen after darkness

Table 5. Species and Species Groups Identified During Nocturnal Observation in  
Northern Grid, November, 1966

<u>Bird Type</u>	<u>Number during Darkness</u>	<u>Before or After Darkness</u>
Bird	7	2
Shearwater/Petrel	22	-
Tropicbird	1	-
Black-winged Petrel	4	-
White-rumped Storm Petrel	2	-
Sooty Tern	9	-
Wedge-tailed Shearwater=	6	6
<u>Pterodroma externa</u>	1	2
Red-tailed Tropicbird	-	2
Newell's Shearwater	-	1
Red-footed Booby	2	-
Sooty Slenderbill	-	16
Great Frigate	-	1
Blue-faced Booby	2	-



Map 1: Non-grid cruise track, November 1966



PRELIMINARY REPORT

PALMYRA ISLAND

<sup>11-15</sup>  
~~Survey #33~~ November 1966

NORTHERN GRID SURVEY. CRUISE (No. 34)

by

Walter Bulmer

Preliminary Report  
Palmyra Island  
Survey #33  
-November 1966

Field Party: B. Harrington (Biologist-in-Charge), W. Bulmer, J. Lewis,  
F. Smith.

Itinerary:

11 November -1800 Entire field party arrives.  
13 November -0900 Lewis departs.  
13 November -1600 Lewis arrives.  
15 November -0700 Entire field party departs.

Man Days: 13.4

Palmyra (an atoll) is a heavily vegetated ring of islets surrounding two lagoons. Coconut palms, Messerschmidia and Pisonia trees form the dominant vegetation of the island. Several other species of trees and a dense undergrowth of flowering plants vines and shrubs comprise the tropical flora of most islets.

Upon arrival at Palmyra a boat (the Pele) was anchored in the lagoon. It contained a party of divers from Honolulu who were working the reefs for Mollusca and other marine animals. They had evidently not disturbed anything on the island and contributed helpful information.

The first night the POBSP field party surveyed and banded Red-footed Boobies on three small islands on the west end of the atoll. A Sooty Tern colony that was completing its breeding cycle was worked to capacity and then emphasis was placed on accurate diurnal and nocturnal survey and banding the abundant Red-footed Boobies.

All islets were surveyed by POBSP personnel or by naval officers. The only area not covered was the west end of Cooper Island. A total of 3,800 birds were banded, 202 returns were recorded, 212 sera samples were collected, and 22 birds were collected.

We were given excellent co-operation from Captain Church, Lt. Dibble, and the officers and crew of Yag #39.

ANNOTATED BIRD LIST

Red-tailed Tropicbird ( <u>Phaethon rubricauda</u> )	Estimated population	-20
	Number of nests	-1
	Actual count	-7
	Number collected	-1

Red-tails displayed over the causeway on several occasions. One bird collected was an adult female that had recently laid. Nests were not found in the general vicinity due to heavy vegetation. One nestling was found on the largest of the three small islets at the west end of the west lagoon. This is believed to be the first record of Red-tailed Tropicbirds breeding on Palmyra.

White-tailed Tropicbird ( <u>Phaethon lepturus</u> )	Estimated population	-12
	Actual count	-4
	Number collected	-1

White-tails circled over the east lagoon near the southeastern part of the island. They may nest in the tall Pisonia trees but no indication of breeding activity was observed. The one bird collected proved to be an adult male with gonads slightly enlarged. It is believed to represent the first specimen from Palmyra.

Blue-faced Booby ( <u>Sula dactylatra</u> )	Actual count	-6
	Nest with egg	-1
	Number collected	-2

One small coral-rubble island off of the eastern end of the atoll contained three pairs of Blue-faced Boobies. Two pairs defended nest scrapes and the third pair had one egg. This pair and the egg were collected and are believed to be the first specimens recorded from Palmyra. All six birds were not banded.

Red-footed Booby ( <u>Sula sula</u> )	Estimated population	-15,000 $\pm$ 20%
	Number banded	-351
	Number returns	-170
	Number collected	-4
	Number sera samples	-69

The Red-footed Booby population is believed to be slightly less than it was in May. Due to the dense foliage and the utilization of nesting sites, up to 80' above ground, an accurate nest count is almost impossible. All stages of reproduction appeared to be common.

The main concentrations of Red-foots is along the heavily forested southeastern sections of the atoll and islands in the east lagoon. A good portion of these birds roost in the same spot each night. This was made evident by the large proportion of banded birds roosting low enough to be captured and the unbanded birds above 20'. Also, several series of consecutive returns were noticed by our field party.

Color phases were recorded on 219 birds. Forty-seven per cent of these were inter-mediate phase with  $\frac{1}{2}$  of the back white, 45% were inter-mediate phase with a complete brown back, and 7% were light phase. Dark phase Red-foots were present in small numbers and probably represent less than .1% of the total population.

One Christmas Island Red-foot is the only inter-island return recorded by our field party.

Brown Booby	Estimated population	-400 <sup>±</sup> 10%
( <u>Sula leucogaster</u> )	Number banded	-27
	Number returns	-12
	Number sera samples -	-31

Brown Boobies nested on the large island directly south, across the lagoon from Cooper Island. Their main roosting concentrations were along the causeway and on one islet in the east lagoon.

Great Frigatebird	Estimated population	-300 <sup>±</sup> 10%
( <u>Fregata minor</u> )	Number banded	-2

Great Frigates swirled and roosted at the southeastern end of the atoll. No nesting activity was observed and from the numbers of flying immatures it seemed likely that they had finished nesting a couple of months previous.

Pintail Duck	Actual count	-9
( <u>Anas acuta</u> )	Number collected	-6

Pintails were collected at the duck pond on Paradise Island. They were fairly tame, allowing us to collect 6 out of eight the first day. After that, ducks were not observed with the exception of one drake flying over the lagoon.

Members of the Pele informed us of two flocks of ducks and possibly 2 species that they had observed before our arrival. The duck pond on Hotel Island was void of ducks on each of our visits.

The collected birds represent adult male and female, and immature birds, all of which were quite lean.

Golden Plover ( <u>Pluvialis dominica</u> )	Estimated population	-700 <sup>±</sup> 10%
	Number collected	-1

Golden Plovers are very abundant on Palmyra. The birds inhabited all sections of the island from the heavily forested areas to the mud flats and exposed reefs. All birds were in fall plumage.

Ruddy Turnstone ( <u>Arenaria interpres</u> )	Estimated population	-100 <sup>±</sup> 10%
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Turnstones were surprisingly scarce on Palmyra. The largest number observed at one time was approximately 20 which were roosting in the Paradise Island duck pond at high tide. A few birds fed in the heavily forested areas of Hotel Island. No streamered birds were found.

Bristle-thighed Curlew ( <u>Numenius tahitiensis</u> )	Estimated population	-300 <sup>±</sup> 10%
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Curlews, like the Golden Plovers, inhabited every ecological niche on Palmyra. Birds fed along exposed reefs, tidal mud flats, and in the heavily forested sections of the island. Their large population is supported by the abundant crustacean fauna of the island. A small, red, fiddler crab was found to be a favorite food of the curlews.

Wandering Tattler ( <u>Heteroscelus incanus</u> )	Estimated population	-200 <sup>±</sup> 10%
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Tattlers were at their normal abundance in relationship with the Golden Plovers. Birds fed along the reef and on exposed mud flats. Only an occasional individual was flushed from forested areas of the island. One interesting observation was the viewing of a tattler roosting 25' up in a coconut palm.

Sharp-tailed Sandpiper ( <u>Erolia acuminata</u> )	Actual count	-2
	Number collected	-1

Erolia were quite scarce in view of the available habitat. The one bird collected was a male, only slightly fat.

Sanderling ( <u>Crocethia alba</u> )	Actual count	-1
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Sanderlings were also quite scarce on Palmyra, in comparison to their

abundance on Oahu. Since they associate with turnstones and Palmyra has a low turnstone population, it is possible that birds moving south from Hawaii head southwest to the Phoenix Islands.

Hawaiian Noddy Tern ( <u>Anous minutus</u> )	Estimated population	-5,000 <sup>+25%</sup>
	Number collected	-5

Hawaiian Noddies were at a peak in their breeding cycle. Most nests examined contained eggs. Due to the thick foliage, an accurate population estimate could not be obtained.

The birds nested in most islets of the atoll with the largest number in the heavily forested southeastern islets.

Common Noddy Tern ( <u>Anous stolidus</u> )	Estimated population	-100 <sup>+10%</sup>
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Common Noddies nested sparingly on most islets of the atoll. Nests found in coconut palms and Messerschmidia contained eggs.

Sooty Tern ( <u>Sterna fuscata</u> )	Estimated adult population	-10,000 <sup>+5%</sup>
	Number breeding	-8,000
	Number chicks	-4,000
	Number banded	-3,400
	Number returns	-20
	Number sera samples	-112

A Sooty Tern colony located on an island in the southeastern part of the west lagoon contained about 4,000 large chicks. Due to the dense cover of Messerschmidia on the islet, only one night's banding was accomplished. POBSP personnel banded 2,400 chicks and 1,000 adults. Flying immatures were observed over the lagoon and the runway. A swirl of about 100 birds formed daily over the lagoon. Due to the complete lack of eggs and the small size of the swirls we arrived at the decision that Sooty Terns would not be present in sufficient numbers to make a December visit profitable.

Fairy Tern ( <u>Gygis alba</u> )	Estimated population	-500 <sup>+10%</sup>
	Number collected	-1

Fairy Terns were common on all islets of the atoll. Very few nesting birds were found, and the population must be at a low in their breeding cycle.

The one bird collected may have been preparing to nest. It proved to be a male with gonads slightly enlarged and brood patch bare.

ARTHROPODS

The insect fauna of Palmyra shows considerable diversity and abundance. A large per cent of insect species has been introduced. Of course the most notable pest is the over-abundant mosquito.

A search for ticks in the Sooty Tern colony proved futile. One Hippoboscid fly was collected from a Golden Plover. Red-footed Boobies were infested with Hippoboscids.

Crustaceans are a dominant form of invertebrates on Palmyra. Two species of hermit crabs are abundant along with normal land crabs. Fiddlercrabs formed the staple diet for Curlews on the mudflats. Three coconut crabs were observed on the island and one of these weighed (by personnel from the PELE) 13 pounds.

MAMMALS AND HERPS.

Skinks were absent although an adequate search for them was not conducted. Geckos of two species (Lepidodactylus lugubris and Gehyra oceanica (?)) were collected by F. Smith.

Sea turtle pits were found on islets off of the eastern end of the atoll. Divers from the PELE reported that Green Turtles were uncommon off of the reef.

The introduced Bufo marinus is common on Cooper Island where 2 were collected.

One porpoise skull which had been left in the forest by POBSP personnel on a previous trip, was collected.

Rattus rattus were found on most of the islets, but were not abundant. Five were collected for ectoparasite studies.

File

PRELIMINARY REPORT  
NORTHERN GRID SURVEY CRUISE NO 34  
NON-GRID PELAGIC OBSERVATIONS  
(Oahu to Palmyra Is.)  
(Palmyra Is. to Northern Grid)  
(Northern Grid to Oahu)

November, 1966

Prepared by  
Frank Smith



## Introduction

This report will cover the non-grid portion of the November, 1966 cruise to Palmyra Island and the Northern Grid. The POBSP personnel participating in this trip were Brian Harrington (Biologist-in-Charge), Walter Bulmer, Jim Lewis, and Frank Smith.

The non-grid portion of this cruise was taken in three parts: Honolulu to Palmyra Island, Palmyra Island to the Northern Grid, and thence to Honolulu.

### Phase 1: Honolulu to Palmyra Island.

The first section of this report will deal with the initial leg of the cruise which is the trip from Honolulu to Palmyra Island. This journey took four days and included diurnal pelagic observations on the 8, 9, 10, and 11th of November, 1966.

Generally, bird activity was low/moderate for this entire section of the cruise, although there were some variations from day to day. We did not observe over two hundred birds in any single day and the lowest number observed was one hundred and ten birds on the 10th of November (see table). Of the birds observed, a high percentage were Shearwater Petrels. Sooty Terns accounted for 24% of the total birds, and most of these were seen in small flocks. No streamered or banded birds were observed during this cruise.

Flock activity was also low for the first four days. All of the flocks were either searching or feeding. No traveling flocks were observed. The highest number was observed on the 8th (see table) near the Hawaiian Islands, and the lowest number was seen on the 9th. The flock activity began to increase again as we approached the Line Islands but remained rather low in comparison to previous recordings. The majority of all flocks were mixed, Sooty Terns and Shearwater Petrels (see table).

A brief discussion of the abundance, distribution and behavior of each species follows:

#### Sooty/Slender-billed Shearwater:

Seven birds identified as either Sooty or Slender-billed Shearwater (Puffinus griseus and Puffinus tenuirostris) were observed during the first three days of the cruise (see table). One of those sighted on the eighth of November had light underwings. Of the total number seen, five were traveling south and two were going southwest. We were apparently getting stragglers from an earlier migration or stray birds from the main route.

#### Sooty Shearwater: (Puffinus griseus)

One bird positively identified as a Sooty Shearwater was seen traveling south on the 8th of November at 19-05 N; 158-30 W.

#### Newell's Shearwater:

#### (Puffinus puffinus newelli)

One bird of this species was seen heading south on the eighth of November.

Wedge-tailed Shearwater:

(Puffinus pacificus)

Wedge-tailed Shearwaters were seen in fairly low numbers throughout this leg of the cruise, although the numbers did begin to increase as we approached the Line Islands on the 10th and 11th (see table). The dark-phase birds were scarce the first two days (1 on the 8th, none on the 9th) but began to increase as we traveled south of 11-03 N. Five dark phase birds were observed on the 10th (29% of total) and sixteen were seen on the 11th. (76% of total). The numbers of birds seen in flocks were low except for the 10th of November when 47% were observed in flocks. No directional trend could be established for these birds on any of the four days of observation.

Christmas Island Shearwater:

(Puffinus nativitatus)

One Christmas Island Shearwater was observed with a small group of birds (1 Wedge-tail and 2 Black-wings) on the 11th of November at 06-46 N; 161-46 W.

Juan Fernandez Petrel:

(Pterodroma externa)

This species was very abundant for the first two days, then the numbers decreased drastically (see table). Almost no birds of this species were seen south of 09-18 N. A fairly high percentage decreased as we traveled south.

On the 8th, most of the birds in flocks were in groups consisting entirely of Juan Fernandez Petrels. As we moved farther south, however, more were seen in mixed flocks of Sooty Terns and Shearwater Petrels. No directional trend could be established for these birds. Most of them seemed to be milling about, searching and feeding. An additional 27 birds identified only as Pterodroma externa but probably Juan Fernandez were seen during the first leg of the cruise.

White-necked Petrel:

(Pterodroma externa cervicalis)

Two birds of this species were observed on the 11th of November near Palmyra Island.

Kermadec Petrel:

(Pterodroma neglecta)

Three light phase Kermadec Petrels were seen on the 8th and 9th of November (see table). Two of these birds were in mixed feeding flocks and the other was a single bird.

Dark-rumped Petrel:

(Pterodroma phaeopygia)

Three birds of this species were observed on the 8th of November, flying in a group at a position of 19-09 N: 158-30 W.

Mottled Petrel:

(Pterodroma inexpectata)

One Mottled Petrel was sighted traveling south on the 11th of November at 07-00N; 161-41 W.

Phoenix Island Petrel:

(Pterodroma alba)

No Phoenix Island Petrels were seen until the third day, as we traveled south of 11-00 N, (see table). Two positive Phoenix Island Petrels and 1 Island or Tahitián Petrel were seen on the 10th of November. One of these

was with a mixed feeding flocks. On the 11th of November as we approached Palmyra Island we saw birds of this species in increasing numbers. We observed 7 Phoenix Island Petrels and 4 Phoenix/Tahitians. No directional trends could be established for these birds.

Black-winged Petrel:

(Pterodroma hypoleuca)

This species was observed in fairly large numbers, over the first leg of the cruise (see table). A fairly high percentage (25%-37%) of these birds seen the first 3 days were in mixed feeding flocks. On the 11th of November, all were seen in small groups or as single birds. No directional trend was noted for these birds. They also seemed to be searching and feeding in the area.

White-winged Petrel:

(Pterodroma leucoptra)

One White-winged Petrel was seen on the 11th of November at 07-17 N; 161-35 W.

Shearwater-Petrel:

Large numbers of birds identified only as Shearwater-Petrels were seen over the entire first leg of the cruise (see table). A large percentage of these birds were in flocks. No directional trend was noted. They seemed to be searching and feeding in the area.

Pterodroma Species:

A moderate number of birds identified only as Pterodroma species were seen during the cruise. None of these were seen in flocks. No directional trend was established for these birds. One of those seen on the 10th, from the general description given, was probably a Herald's Petrel.

White-rumped Storm Petrel

Eight of these birds were seen during the first two days of the cruise (see table). One bird, seen on the 8th of November was identified as Wilson's Storm Petrel. About 50% of these Storm Petrels were heading south or in a southerly direction.

Red-tailed Tropicbird:

(Phaethon rubricauda)

Seven Red-tailed Tropicbirds were observed but none were seen on the 11th of November near Palmyra Island (see table). One sub-adult was collected on the 9th. Two were calling when they were observed.

White-tailed Tropicbird:

(Phaethon lepturus)

Nine White-tailed Tropicbirds were sighted during the first two days and we were still near the Hawaiian chain of islands. One additional bird was seen on the 11th as we approached Palmyra Island.

Brown Booby:

(Sula leucogaster)

Three Brown Boobies, an adult male, an immature, and a sub-adult were seen on the 8th of November. All were single birds traveling south. One additional adult was observed near Palmyra Island on the 11th.

Red-footed Booby:

(Sula sula)

One immature was seen following the ship on the eighth. Three sub-adults were observed on the 9th of November, one of which was chasing flying fish in front of the ship. One sub-adult was seen on the 10th, and only 3 adults were sighted on the 11th as we approached Palmyra Island from the north. This fact is interesting considering the numbers of these

birds known to be nesting and roosting on the island. It suggests that they were feeding in another direction from Palmyra.

Great Frigatebird:

(Fregata minor)

A total of 8 Great Frigates were seen during the first three days. On the 8th, two adult females were seen feeding on the surface. On the 9th, one male, and 1 immature was seen on the 10th, and only seen singularly.

Lesser Frigatebird:

(Frigata ariel)

One adult male Lesser Frigate was observed on the 9th of November at a position of 13-45 N; 160-08 W.

Ruddy Turnstone:

(Arenaria interpres)

One was seen on the 11th as we approached Palmyra Island.

Pomarine Jaeger:

(Stercorarius pomarinus)

A dark-phase Pomarine Jaeger was sighted heading west on the 11th of November.

Skua:

(Catharacta skua)

A Skua was observed on the 11th near Palmyra but no direction was determined for the bird.

Sooty Tern:

(Sterna fuscata)

Sooty Terns were observed in fairly low numbers (24% of total birds) for the entire leg of the cruise. Almost all Sooties were either in searching or feeding flocks (see table) with Shearwater-Petrels.

One immature bird was seen on the 10th with a mixed searching flock.

No directional trend was noted for the birds. One interesting point is the low numbers of Sooty Terns seen on the 11th, north of Palmyra (see table). It was established later that there were approximately 10,000 Sooties nesting on the island. This would suggest that they were feeding in some other direction than north.

Hawaiian Noddy Tern:

(Anous minutus)

One bird of this species was seen feeding with a Fairy Tern just north of Palmyra Island on the 11th of November.

Fairy Tern:

(Gygis alba)

Only 2 Fairy Terns were seen during the first 3 days (see table). As we neared Palmyra on the 11th, however, we sighted eleven, a large percentage of which were in a feeding flock.

MAMMALS:

Approximately 20 mammals identified as Stenella sp. were sighted on the 8th of November. No description was given. In addition 3 mammals described as small brown whales less than 20 feet long were observed swimming together in a north-northeast direction on the 11th of November. They may have been in the genus Kogia judging by their manner of swimming.

Pelagic Data Tables  
Phase I (Honolulu to Palmyra Is.)

Date (Nov.)	Total Birds observed	Total Flocks observed	No. of Searching Flocks	No. of Feeding Flocks	No. of Mixed Flocks	Total Miles Traveled	Total Birds per Linear Mile	Total hours of diurnal observation
8	198	7	4	3	5	123	1.61	11.4
9	192	2	0	2	2	121	1.59	11.5
10	110	3	3	0	3	118	0.93	11.7
11	157	4	3	1	4	91	1.73	10.4
						453		45.0

SPECIES DATA

SPECIES	195 8 November			192 9 November			109 10 November			151 11 November		
	Total Seen	Birds per Lin. Mile	% in Flocks	Total Seen	Birds per Lin. Mile	% in Flocks	Total Seen	Birds per Lin. Mile	% in Flocks	Total Seen	Birds per Lin. Mile	% in Flocks
Sooty / Slenderbill Shear.	4	.033	0	1	.008	0	2	.017	0	0	0	0
Sooty Shearwater	0	0	0	1	.008	0	0	0	0	0	0	0
Newell's Shearwater	1	.008	0	0	0	0	0	0	0	0	0	0
Wedgetailed Shearwater	8	.065	0	2	.016	0	17	.154	47%	21	.23	48%
Christmas Is. Shearwater	0	0	0	0	0	0	0	0	0	1	.011	0
Juan Fernandez Petrel	42	.342	62%	30	.248	30%	15	.136	25%	1	.011	0
White necked Petrel	0	0	0	0	0	0	0	0	0	2	.022	0
Kermadec Petrel	1	.008	100%	2	.016	50%	0	0	0	0	0	0
Darkrumped Petrel	3	.024	0	0	0	0	0	0	0	0	0	0
Mottled Petrel	0	0	0	0	0	0	0	0	0	1	.011	0
Phoenix Island Petrel	0	0	0	1	.008	100%	2	.017	50%	7	.077	0
Blackwinged Petrel	16	.130	37%	8	.066	37%	28	.254	25%	12	.132	0
Whitewinged Petrel	0	0	0	0	0	0	0	0	0	1	.011	0
Shearwater / Petrel	20	.162	85%	86	.710	93%	6	.055	0	35	.385	88%
Pterodroma sp.	5	.041	0	0	0	0	7	.064	0	5	.055	0
Whiterumped Storm Petrel	7	.057	0	1	.008	0	0	0	0	0	0	0
Redtailed Tropicbird	3	.024	0	3	.025	0	1	.009	0	0	0	0
White tailed Tropicbird	3	.024	0	6	.050	0	0	0	0	1	.011	0
Brown Booby	3	.024	0	2	.016	0	0	0	0	1	.011	0
Redfooted Booby	1	.008	0	3	.025	0	1	.009	0	3	.033	0
Great Frigatebird	2	.016	0	4	.033	0	2	.017	0	0	0	0
Lesser Frigatebird	0	0	0	1	.008	0	0	0	0	0	0	0
Frigate species	0	0	0	4	.033	25%	0	0	0	0	0	0
Ruddy Turnstone	0	0	0	0	0	0	0	0	0	1	.011	0
Pomarine Jaeger	0	0	0	0	0	0	0	0	0	1	.011	0
Skua	0	0	0	0	0	0	0	0	0	1	.011	0
Sooty Tern	63	.513	98%	32	.26	97%	23	.19	100%	39	.43	95%
Haw. Noddy Tern.	0	0	0	0	0	0	0	0	0	1	.011	0
Fairy Tern	1	.008	100%	1	.008	0	0	0	0	11	.12	64%
Pterodroma externa	12	.098	83%	4	.033	0	5	.042	60%	6	.066	83%

Phase 2: Palmyra Island to Northern Grid.

The second phase of this report will be the observations taken from the 15th to the 17th of November during the cruise from Palmyra Island to the Northern Grid Area.

No streamered or banded birds of any species were seen during this portion of the cruise.

There was a very significant difference in the number of birds seen per linear mile during this phase of the cruise compared with the first portion from Honolulu to Palmyra (see table). The reasons for the dramatic increase are two-fold. On the fifteenth of November, the first day out of Palmyra, we were on a NW cruise course which put us into a rich feeding area apparently used by all species from the island. Red-footed Boobies, Sooty Terns, and Fairy Terns (all breeding on Palmyra Island) were seen in large numbers (see table). An interesting point here is that none of these species were observed to any extent to the north of the island. The area west of the island is at approximately 5 N. latitude which is known to be a rich feeding area north of Howland Island.

On the 16th and 17th of November, as we traveled west of 164-20 we observed less island birds, but we began to see large numbers of Sooty and Slender-billed Shearwaters traveling south (see table). We were apparently crossing a migration route for these birds and consequently they became the dominant species observed on the 16th and 17th.

Flock activity was moderate east of 163-12 west longitude, and high further west on the 16th and 17th. The majority of the flocks on the 15th were searching and feeding mixed groups containing species found on Palmyra Island. On the 16th and 17th, west of 164-20 longitude, most of the flocks were traveling groups of Sooty or Slender-billed Shearwaters.

A brief account of each species observed during this phase of the cruise follows:

Sooty/Slender-billed Shearwater:

Numerous birds identified as either Sooty or Slender-billed Shearwaters were observed on both the 16th and 17th of November (see table). The majority of these species were traveling flocks which were going to the southwest. Some were described as having light under wings but the majority had dark underwings. One interesting point here is that almost none of these birds, or positively identified Sooty Shearwaters and Slender-billed Shearwaters, were recorded on the 15th of November east of 164-20 W. longitude. This, plus the fact that we saw almost no birds of these species during the cruise from Honolulu to Palmyra, suggests that the late migrating birds, at least, must pass to the west of Oahu and possibly to the west of the Leeward chain, on their way south.

Sooty Shearwater:  
(Puffinus griseus)

A moderate number of Sooty Shearwaters was observed on the 16th and 17th of November (see table). The majority both days were seen in small traveling flocks. On the 16th, a mixed flock containing both Sooty and Slender-billed Shearwater was seen. Most of the birds observed on both days were traveling in a southwest direction, however, a few were headed south and a few had no direction.

Slender-billed Shearwater:

(Puffinus tenuirostris)

Large numbers of these birds were seen on both the 16th and 17th of November (see table). These Shearwaters were observed both singularly or in flocks of up to 80 birds. Most of them were in flocks of from 10-30 birds. The dominant direction of travel for the Slender-bills was south, however, many were seen going southwest.

Wedge-tailed Shearwater:

(Puffinus pacificus)

Wedge-tailed Shearwaters were seen in high numbers on the 15th, low numbers on the 16th, and in moderate numbers on the 17th of November (see table). Seventy-one per cent were dark phase on the 15th (east of 163-12W), 20% on the 16th, and only 6% on the 17th of November (west of 167-09). Possibly we were in a transition zone between the northern (Johnston Island) and the southern (Line Islands) population on the 16th when we saw only 5 birds. Most of the birds observed on the 15, 16, were alone or small groups (less than five). However, on the 17th, almost half of the birds seen were in searching or feeding flocks. There were no clear-cut directional trends for these Shearwaters on any of the three days.

Audubon's Shearwater:

(Puffinus lherminieri)

One Audubon's Shearwater was observed with a mixed feeding flock of Sooty Terns and Shearwater-Petrels on the 15th of November at 06-46N: 163-02W.

Juan Fernandez Petrel:

(Pterodroma externa)

This species was seen in increasing numbers as we traveled northwest towards Johnston Island (see table). An interesting point is that no Juan Fernandez Petrels were seen east of 163-12W near Palmyra Island, although two birds identified as Pterodroma externa were sighted. This was a particularly good feeding area for species breeding in the Line Islands, however. A fairly high percentage of the birds seen on the 16th and 17th were in flocks (see table). No directional trend could be established for any of these birds. Apparently they were searching and feeding in the area. Perhaps they were sub-adult non-breeding birds or late migrating breeders.

Dark-rumped Petrel:

(Pterodroma phaeopygia)

Three birds of this species were observed during the 16th and 17th of November as far south as 09-02N (see table). One was seen in a mixed feeding flock on the 16th. Considering the rarity of this species, it seems fairly likely that they are using the area south of the Hawaiian Islands as a winter feeding ground.

Phoenix Island Petrel:

(Pterodroma alba)

Two Phoenix Island Petrels were seen on the 15th of November east of 163-02 W. The relatively high numbers of these birds seen near the Line Islands on this trip were probably from the Christmas Island breeding population.

Tahitian Petrel:

(Pterodroma rostrata )

Two Tahitian Petrels were observed on the 15th of November. One of these birds was in a mixed feeding flock of Sooty Terns and Shearwater/

Petrels. An additional six birds identified as Phoenix/Tahitian Petrels were also seen on the 15th, east of 163-02W.

Black-winged Petrel:  
(*Pterodroma "hypoleuca" nigripennis*)

Birds of this species were sighted in moderate to relatively high numbers on this leg of the cruise (see table). Notably the numbers of birds increased on the 17th west of 167-09W. Apparently we were entering a good feeding area for this species. No directional trend was noted, indicating that the birds were searching and feeding in the area.

Shearwater-Petrel:

Large numbers of birds identified only as Shearwater-Petrels were seen on the 15th, but the numbers diminished rapidly on the 16th and 17th of November. A large percentage on the 15th were in two large mixed flocks containing Sooty Terns. No directional trend was noted for these birds.

Pterodroma Sp.

Four birds identified only as Pterodroma were seen during this leg of the cruise. None were in flocks, and no directional trend was evident.

Bulwer's Petrel:

(Bulweria bulwerii)

One Bulwer's Petrel was observed flying northwest on the 15th of November at a position of 06-36N; 162-56W.

White-rumped Storm Petrel:

(Oceanodroma sp.)

Two birds identified only as White-rumped Storm Petrels were observed on the 15th of November. Both were flying alone and had no determinable direction of travel.

Red-tailed Tropicbird:

(Phaethon rubricauda)

Red-tailed Tropicbirds were observed in low numbers during this leg of the cruise (see table). None were seen in flocks but three were feeding at the time they were sighted. No direction of travel was determined for any of them.

Red-footed Booby:

(Sula sula)

This species, known to be nesting and roosting in large numbers on Palmyra Island, was found feeding northwest of the island. Large numbers were seen feeding on the 15th of November and almost none observed on the 16th and 17th as we traveled from atoll (see table). One large group of 75 were seen feeding with a mixed flock of Terns and Shearwater-Petrels on the 15th. Of these observed the first day, forty were inter-mediate phase adults, nine were sub-adults, 1 was an immature, and 75 were not classified. Many birds were seen gravitating towards the east-or towards the island. One sub-adult bird was observed on the 17th with a feeding flock of Shearwater-Petrels.

Frigate species:

Four birds, identified only as Frigate sp. were observed on the 15th near Palmyra Island. Two of these were with a large mixed feeding flock of Sooty Terns, Red-footed Boobies, and Shearwater-Petrels. Three more were seen on the 17th as we neared Johnston Island. None of these were in flocks, and no directional trend was established.

Sanderling:

One Sanderling landed on the ship during observations on the 15th of November.



Pomarine Jaeger:

(Stercorarius pomarinus)

One Pomarine Jaeger was seen on the 17th of November flying alone, but no direction could be determined for the bird.

Sooty Tern:

(Sterna fuscata)

Numerous Sooty Terns were observed east of 163-12W, while numbers decreased on the 16th and 17th of November (see table). Almost all birds seen were in either searching or feeding flocks, all of which were mixed. One immature was sighted on the 15th, evidently from the small breeding colony on Palmyra Island. No directional trend was noted for the birds on any of the three days of observations.

Common Noddy Tern:

(Anous stolidus)

Three birds of this species were seen on the 15th, two of which were in a mixed searching flock with Wedge-tailed Shearwaters and Red-footed Boobies. This species was found to be breeding on Palmyra island in small numbers.

Hawaiian Noddy Tern:

(Anous minutus)

Four Hawaiian Noddy Terns were observed on the 15th, one of which was with a mixed searching flock. These were undoubtedly from a moderate breeding population on Palmyra Island. One additional bird was seen sitting on a fishball on the 17th of November-possibly a Johnston Island bird.

Fairy Tern:

(Gygis alba)

A large number of Fairy Terns were seen on the 15th near Palmyra Island. A large percentage were observed in flocks, and a large feeding flock of 31 Fairy Terns was sighted. These birds were probably all Palmyra residents.

Mammals:

Ten mammals identified as Stenella sp. were observed on the 15th of November. One whale described as a sperm whale was seen on the 17th of November.

Nocturnal Watches:

Nocturnal watches were held for a few hours on both the 15th and 16th of November, primarily to check the Sooty Tern activity.

Watch was held from 2200-2400 on the 15th and a total of 10 birds were seen. One Red-tailed Tropicbird was observed sleeping on the surface. Four Sooty Terns were seen-one was identified as an adult. One of these Terns was calling. Four small Shearwater-Petrels were seen heading northeast. An additional unidentified bird was also seen.

On the 16th of November watch was held from 2200-2300. Only 2 birds were seen, a Black-winged Petrel and a Shearwater-Petrel.

Pelagic Data Tables  
Phase II (Palmyra Island to Northern Grid)

Date (Nov.)	Total Birds Observed	Total Flocks Observed	No. of Searching Flocks	No. of Feeding Flocks	No. of Traveling Flocks	No. of Mixed Flocks	Total Miles Traveled	Total Birds per Linear Mile	Total hours of diurnal observation
15	573	10	5	4	1	8	108	5.30	8.6
16	635	26	0	2	24	1	133.5	4.76	11.8
17	542	27	2	3	22	5	123	4.41	11.6
							364		32.0

SPECIES DATA

SPECIES	15 November			16 November			17 November		
	Total Seen	Birds per Lin. Mile	% in Flocks	Total Seen	Birds per Lin. Mile	% in Flocks	Total Seen	Birds per Lin. Mile	% in Flocks
Sooty/Slenderbill Sh.	3	.028	0	172	1.288	98.3%	138	1.120	89.2%
Sooty Shearwater	1	.009	0	31	.232	97%	36	.293	64%
Slenderbill Shearwater	0	0	0	344	2.575	97.6%	238	1.935	87%
Wedgetailed Shearwater	48	.444	12.5%	5	.037	0	17	.138	47%
Audobon's Shearwater	1	.009	100%	0	0	0	0	0	0
Juan Fernandez Petrel	0	0	0	18	.135	94.5%	40	.325	67.5%
Darkrumped Petrel	0	0	0	2	.015	50%	1	.008	0
Phoenix Island Petrel	4	.037	25%	1	.007	0	0	0	0
Tahitian Petrel	2	.018	50%	0	0	0	0	0	0
Blackwinged Petrel	15	.139	0	9	.067	22.2%	41	.333	56%
Shearwater/Petrel	69	.639	87%	9	.067	55%	3	.024	0
Pterodroma sp.	1	.009	0	1	.007	0	2	.016	0
Bulwer's Petrel	1	.009	0	0	0	0	0	0	0
White rumped Storm Petrel	2	.018	0	0	0	0	0	0	0
Redtailed Tropicbird	1	.009	0	3	.022	0	2	.016	0
Redfooted Booby	125	1.58	69.6%	0	0	0	1	.008	100%
Frigate species	4	.037	50%	0	0	0	3	.024	0
Sanderling	1	.009	0	0	0	0	0	0	0
Pomarine Jaeger	0	0	0	0	0	0	1	.008	0
Sooty Tern	217	2.010	97.3%	38	.285	100%	16	.130	100%
Com. Noddy Tern	3	.028	66.6%	0	0	0	0	0	0
Haw. Noddy Tern	4	.037	25%	0	0	0	1	.008	0
Fairy Tern	61	.565	77%	1	.007	0	0	0	0
Phoenix/Tahitian Petrel	6	.056	0	0	0	0	0	0	0
Pterodroma externa	2	.018	0	1	.007	0	1	.008	0
Pterodroma hypoleuca	1	.009	0	0	0	0	0	0	0
Bird sp.	1	.009	0	0	0	0	0	0	0
	573			635			541		

Phase 3. Northern Grid to Honolulu.

The third and last section of this report will deal with the observations made on the last leg of the cruise-the trip from the Northern grid area to Honolulu. This includes the diurnal observations of the 24th through the 27th of November and nocturnal watches for a few hours each on the 23rd and 24th of November.

The general bird activity on this portion of the cruise ranged from moderate on the 24th to low on the 26th and 27th. Shearwater-Petrels of various species were observed in fairly high numbers between approximately 71-17N; 170-10W, and 18-53N; 165-10W. This area was covered on the 24th and 25th as we proceeded east-northeast of Johnston Island. Sooty Shearwaters were seen in high numbers on the 24th and Juan Fernandez Petrels were abundant on the 25th of November (see table). On the 26th and 27th, between 163 and 158 degrees west longitude, we were passing through a zone with few birds at this time of year.

Flock activity was generally low throughout the journey back to Honolulu. The highest number of flocks seen on any one day was two. The majority of bird sightings were in singles or small groups (smaller than five).

A brief account of each species observed during this portion of the cruise is as follows:

Sooty/Slender-billed Shearwater:

Ten birds identified as either Sooty Shearwater or Slender-billed Shearwater were sighted on the 24th of November traveling south as singles or in small groups ( see table).

Sooty Shearwater:

(Puffinus griseus)

Sooty Shearwaters were observed in moderate to relatively high numbers on the 24th and 25th of November, east-northeast of Johnston Island (see table). On the 24th the majority (86%) were traveling south although several were seen milling about or traveling in other directions (SE or SW). Approximately 25% were positively identified as having light underwings on the 24th. Many of the others were not viewed close enough to determine the underwing color.

On the 25th, the numbers of Sooty Shearwaters observed dropped considerably (see table). One group of 10 birds was seen with a large mixed flock feeding over tuna. The directional trend of these birds was again south.

The vast majority of Sooty Shearwaters and all birds identified as Slender-billed Shearwaters/ or Sooty were observed west of 16510W. This fact, along with earlier evidence, points to the probably late migration route of both species as being west of Oahu and possibly west of the entire Leeward Chain.

New Zealand Shearwater:

(Puffinus bulleri)

One New Zealand Shearwater was observed flying south at approximately 169-13 W on the 24th. Two additional birds identified as probably this species were sighted on the 25th-one of them was headed south. This suggests that a few New Zealand Shearwaters pass through this area on their way to their breeding grounds.

Wedge-tailed Shearwaters:

(Puffinus pacificus)

Wedge-tailed Shearwaters were seen in moderate to high numbers west of 165 W. longitude. In other words, a good number were seen fairly close to Johnston Island and many were seen close to Oahu (see table). One dark-phase bird was observed on the 24th near Johnston Island. Over fifty percent of the Wedge-tails seen on the last three days were with mixed flocks. No directional trend could be established in either area where the birds were numerous. They were apparently searching and feeding in these areas.

Juan Fernandez Petrel:

(Pterodroma externa)

The vast majority of the birds of this species were observed on the 25th of November at approximately 18-39N; 166 W. One large mixed feeding flock was seen containing fifty birds of this species. No directional trend could be established--indicating that these birds were not migrating. They appeared to be milling about, searching and feeding. Four additional birds identified only as Pterodroma externa were seen on the last leg of the cruise.

White-necked Petrel:

(Pterodroma externa cervicalis)

Four petrels identified as White-necked were observed during this portion of the cruise (see table). The majority were seen near Johnston Island on the 24th. None were seen in flocks, and no directional trend was noted. The ratio of externa's to cervicalis's ran about 15 to 1 over the four days.

Dark-rumped Petrel:

(Pterodroma phaeopygia)

Two dark-rumped Petrels were sighted during the 26th and 27th of November as we approached the island of Oahu from the southwest. The bird observed on the 26th was in a mixed searching flock with Sooty Terns and Wedge-tailed Shearwaters.

Phoenix/Tahitian Petrels:

One bird identified as either Phoenix Island Petrel or Tahitian Petrel was seen at 19-41 N; 162-44W on the 26th of November. No specific direction of travel was noted.

Kermadec Petrel:

(Pterodroma neglecta)

One light phase Kermadec Petrel was seen flying with two Black-winged Petrels on the 24th of November at a position of 17-26 N; 169-35W.

Black-winged Petrel:

(Pterodroma "hypoleuca" nigripennis)

Black-winged Petrels were observed in moderate to relatively high numbers west of 162 W. longitude on the 24th, 25th, and 26th of November (see table). One group of 15 was seen with a large mixed feeding flock on the 25th. The rest were in small groups (less than 5) and alone. No directional pattern could be established for any of the three days.

Shearwater-Petrel:

Birds identified as only Shearwater Petrels were observed in moderate to high numbers west of 165 W. longitude and in lower numbers to the east towards Oahu (see table). A high percentage of the birds seen close to Johnston on the 24th and 25th of November were in feeding flocks. Most of the birds appeared to be milling and feeding about--thus no direction of flight could be determined.

Pterodroma sp.

Six birds identified as Pterodroma species were observed on the first three days of this portion of the cruise (see table). None were seen in flocks, and no directional trend was noted.

White-rumped Storm Petrel:

Eleven White-rumped Storm Petrels were sighted west of 165-16 W. longitude, near Johnston Island (see table). All were single birds which were probably wintering in this area.

Red-tailed Tropicbird:

(Phaethon rubricauda)

Five birds of this species were sighted between the 25th and 26th of November several hundred miles from the nearest land. All were single birds which appeared to be milling about in the area.

Blue-faced Booby:

(Sula dactylatra)

Four birds of this species were observed during this leg of the cruise. Two adult Blue-faced Boobies were seen on the 24th of November near Johnston Island. Two additional Birds, an immature and an adult were sighted on the 27th near Oahu.

Red-footed Booby:

(Sula sula)

Red-footed Boobies were observed in moderate numbers west of 165 longitude, near Johnston Island, and in lower numbers closer to Oahu (see table). One inter-mediate phase adult was seen on the 25th. The remaining birds were either light phase adults or sub-adults with the exception of one immature seen on the 27th near Oahu.

Great Frigatebird:

(Fregata minor)

Fairly low numbers of birds of this species were sighted west of 162 W longitude (see table). None were in flocks, and no direction of travel was noted for them. None were seen on the 27th of November as we approached the island of Oahu.

Pomarine Jaeger:

(Stercorarius pomarinus)

Five Pomarine Jaegers were observed on the 27th, east of 160 W longitude, as we approached the island of Oahu. Of the five observed, 2 were dark phase, 2 were light phase, and 1 was of uncertain color phase. One of the dark phase birds was an immature. No direction of travel was noted although three were following the ship on its northeasterly course.

Skua:

One Skua was sighted on the 24th of November at a position of 17-36 N; 169-06 W. Traveling in a southeastern direction.

Sooty Tern:

(Sterna fuscata)

Sooty Terns were seen in low to moderate numbers east of 166 W. longitude (see table). A high percentage of all the birds of this species observed were in searching or feeding flocks. One immature was spotted on the 26th of November with a mixed searching flock at a position of 19-56 N; 162-11W. No directional trend was noted for any of these birds.

Common Noddy Tern:

One Common Noddy Tern was sighted on the 24th near Johnston Island and six more were observed on the 27th near Oahu. Four of those seen on the 27th were in a mixed searching flock. The other two were flying east toward the island.

Fairy Tern:

( Gygis alba )

All of the Fairy Terns observed on this leg of the cruise were seen on the 25th of November (see table). Eight of the total of 9 observed were with a large mixed feeding flock at a position of 18-39N; 166-00W.

Nocturnal Observations:

Nocturnal observations were held on the night of the 23 and 24th of November, after we left the grid, and for two and one-half hours on the night of the 24-25th to check on Sooty Tern activity north of Johnston Island. The number of birds seen was generally low on both nights. On the 23-24th of November, from 1800-0630, eight birds were observed including two booby species, two Sooty Terns, one Shearwater-Petrel, one bird species, and two Sooty/Slender-billed Shearwaters. The Sooty-Slender-bills were traveling south. On the 24th and 25th one adult Red-footed Booby was seen following the ship.

Pelagic Data Tables  
Phase III (Northern Grid to Honolulu)

Date (Nov.)	Total Birds Observed	Total Flocks Observed	No. of Searching Flocks	No. of Feeding Flocks	No. of Traveling Flocks	No. of Mixed Flocks	Total Miles Traveled	Total Birds per Lin. Mile	Total hours of Diurnal Observation
24	156	2	0	1	1	1	94	1.66	11.1
25	271	1	0	1	0	1	96	2.82	11.1
26	35	1	1	0	0	1	89	.39	11.0
27	68	2	1	1	0	1	112	.61	10.1
	530						391		43.3

SPECIES DATA

SPECIES	24 November			25 November			26 November			27 November		
	Total Seen	Birds per Lin. Mile	% in Flocks	Total seen	Birds per Lin. Mile	% in Flocks	Total Seen	Birds per Lin. Mile	% in Flocks	Total Seen	Birds per Lin. Mile	% in Flocks
Sooty/Slenderbill Shearwater	10	.106	0	0	0	0	0	0	0	0	0	0
Sooty Shearwater	59	.628	8.5%	26	.271	38.9%	0	0	0	3	.027	0
New Zealand Shearwater	1	.011	0	0	0	0	0	0	0	0	0	0
Wedgetailed Shearwater	21	.223	0	29	.302	68.9%	5	.056	60%	31	.277	51.1%
Juan Fernandez Petrel	2	.021	0	52	.541	96.1%	3	.034	0	0	0	0
White necked Petrel	3	.032	0	0	0	0	1	.011	0	0	0	0
Darkrumped Petrel	0	0	0	0	0	0	1	.011	100%	1	.009	0
Phoenix Is/Tahitian Petrel	0	0	0	0	0	0	1	.011	0	0	0	0
Kermadec Petrel	1	.011	0	0	0	0	0	0	0	0	0	0
Blackwinged Petrel	9	.096	0	27	.281	55.5%	5	.056	0	0	0	0
Shearwater / Petrel	25	.266	100%	44	.458	90.9%	4	.045	0	2	.018	0
Pterodroma sp.	3	.032	0	2	.028	0	1	.011	0	0	0	0
Whiterumped Storm Petrel	3	.032	0	8	.083	0	0	0	0	0	0	0
Redtailed Tropicbird	0	0	0	4	.042	0	1	.011	0	0	0	0
Bluefaced Booby	2	.021	0	0	0	0	0	0	0	2	.018	0
Redfooted Booby	8	.085	87.5%	12	.125	91.7%	1	.011	0	2	.018	0
Great Frigatebird	2	.021	0	5	.052	0	2	.022	0	0	0	0
Pomarine Jaeger	0	0	0	0	0	0	0	0	0	5	.045	0
Skua	1	.011	0	0	0	0	0	0	0	0	0	0
Sooty Tern	0	0	0	40	.417	100%	10	.112	100%	13	.101	94.6%
Com. Noddy Tern	1	.011	0	0	0	0	0	0	0	6	.054	66.7%
Fairy Tern	0	0	0	9	.094	88.9%	0	0	0	0	0	0
Pterodroma externa	1	.011	0	1	.010	0	0	0	0	2	0	0
Pterodroma hypoleuca	1	.011	0	0	0	0	0	0	0	0	0	0
Tern species	0	0	0	10	.104	100%	0	0	0	0	0	0
Bird species	0	0	0	2	.028	0	0	0	0	0	0	0
	153			271			35			67		