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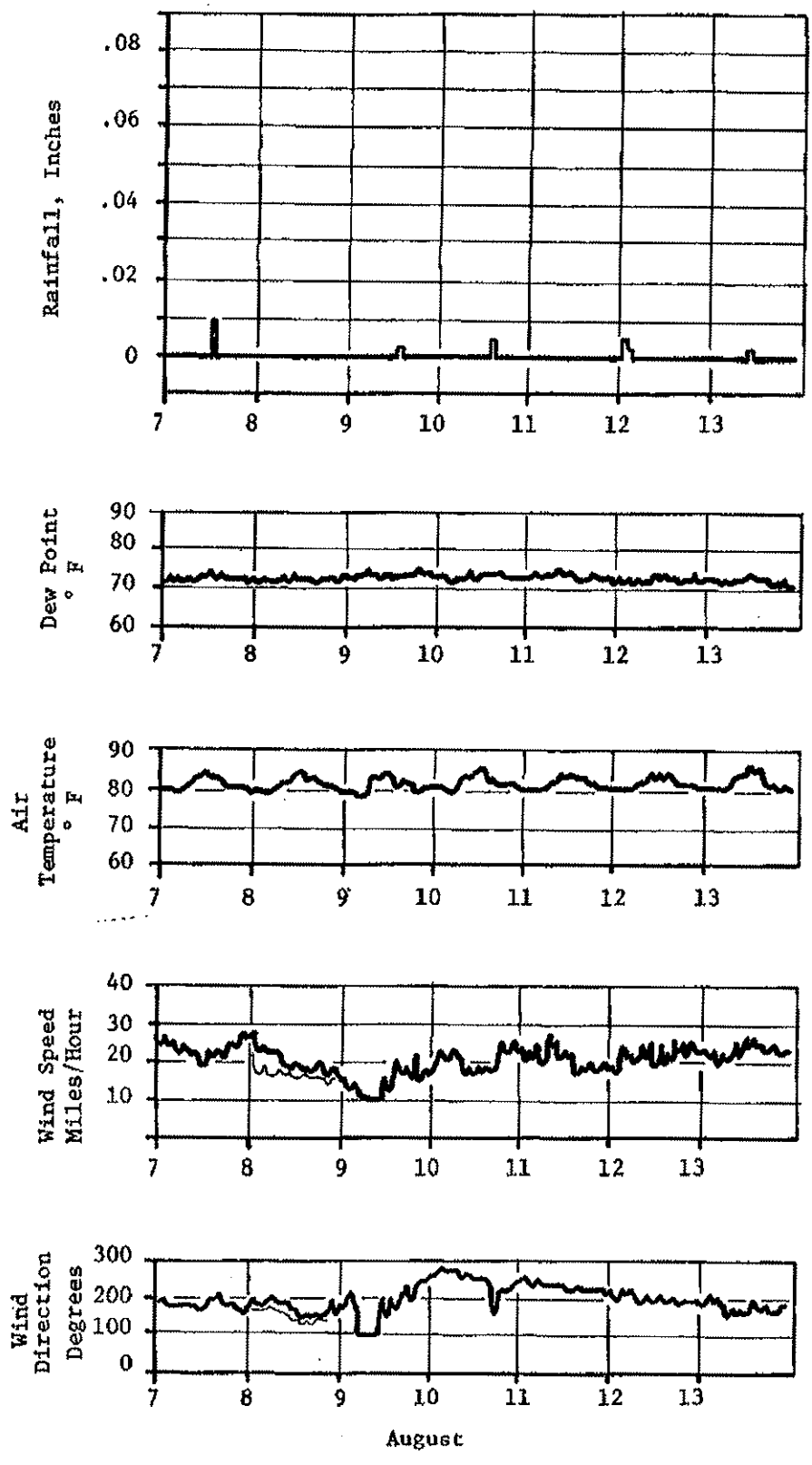

FIGURE 1. (Continued) 3301

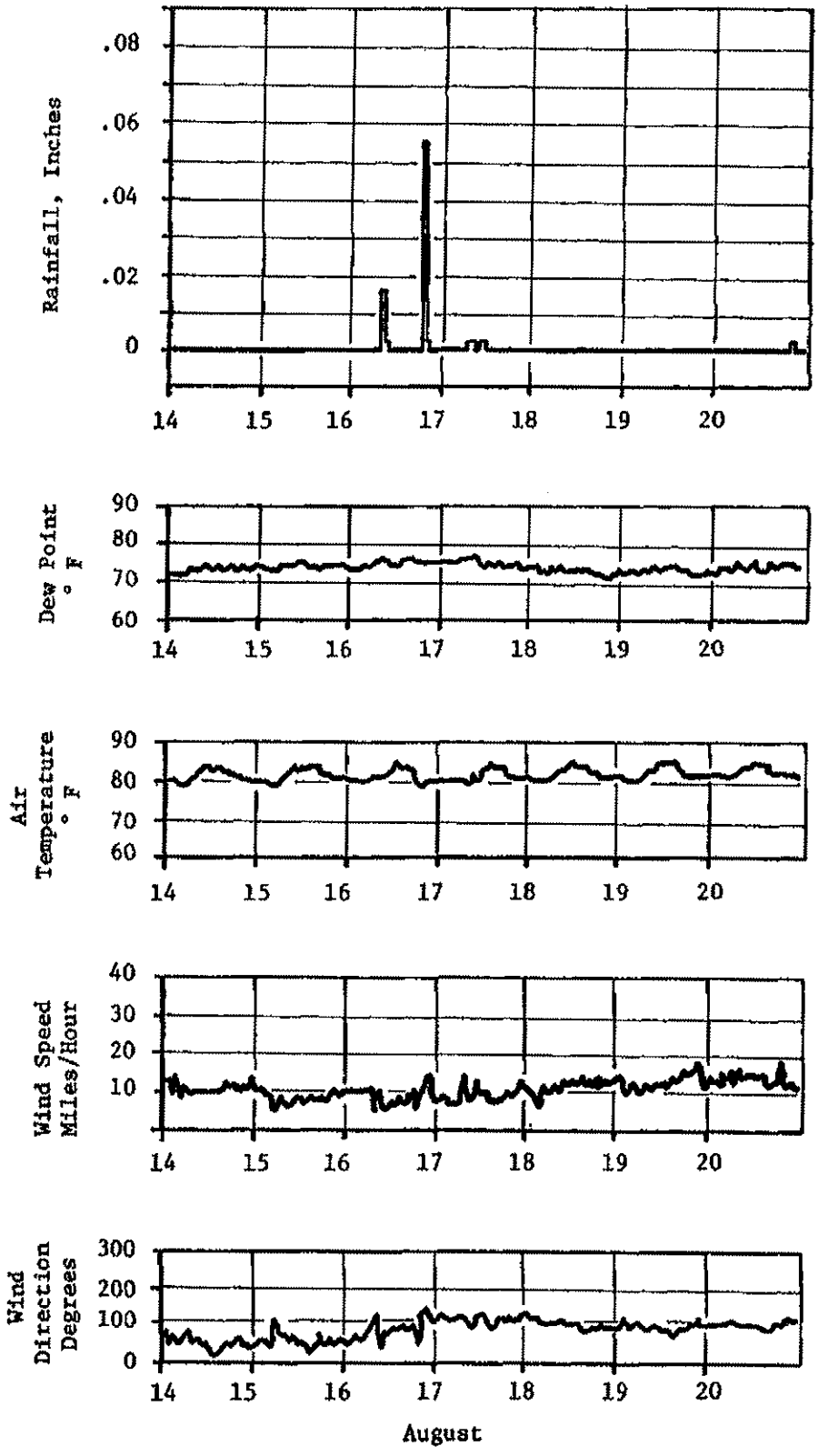

FIGURE 1. (Continued)

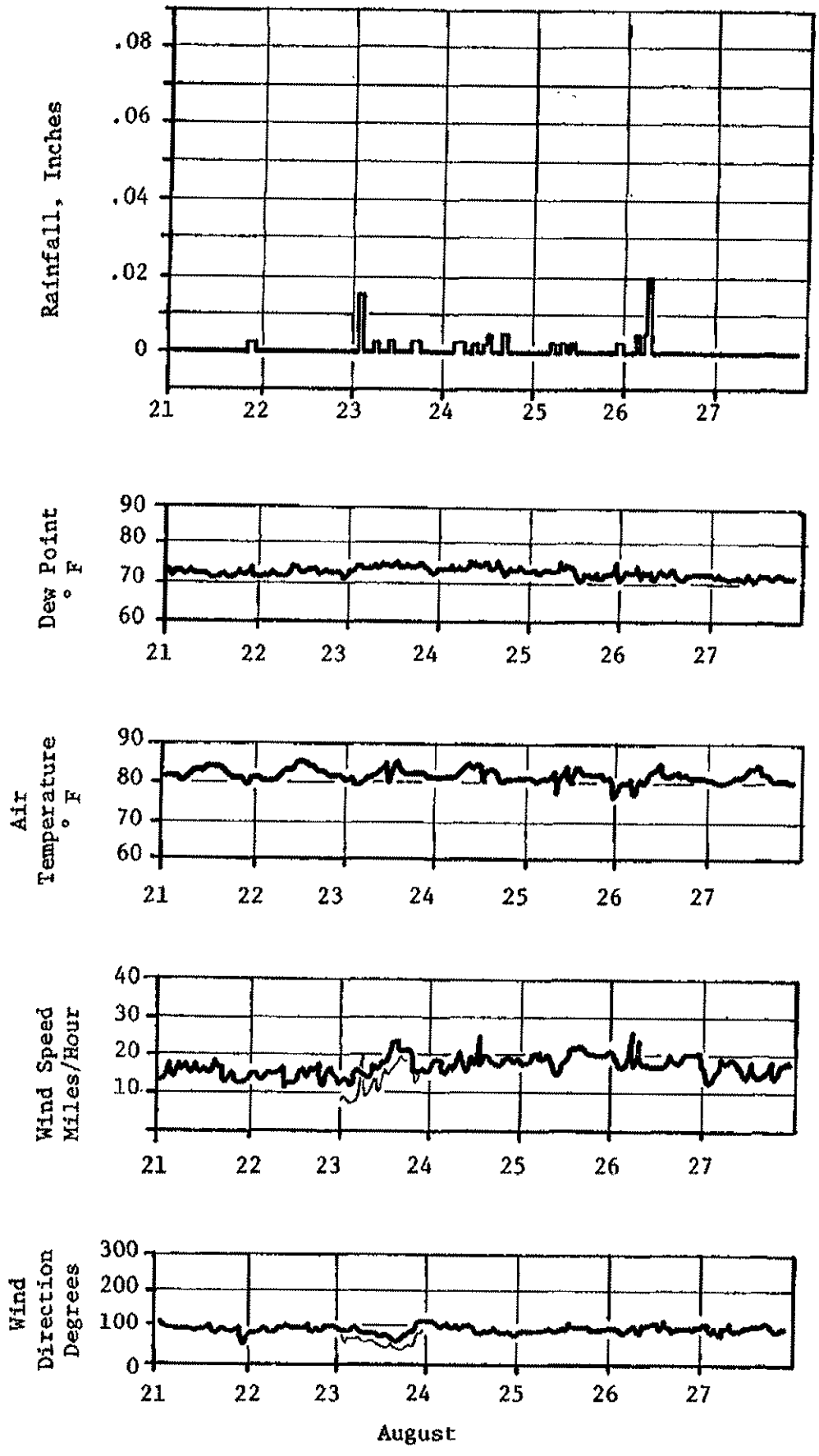

FIGURE 1. (Continued)

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4. WATER

Water, sewage, and sediment samples were taken by Battelle before, during, and after operations. Many of the collected samples were analyzed by Battelle on the island for 2,4-D and 2,4,5-T. The remainder were shipped to various laboratories for different analyses and archiving.

Tables 6 through 12 are the detailed results of monitoring of offshore, the waste outfall, the saltwater intake, the wharf, sediments, drinking water, and raw sewage.

Table 13 presents the historical HO concentrations of Johnston Island, while Table 14 details the tides during July and August, 1977.

5. BIOTA

An extensive survey has been made by the Smithsonian Institute on the flora and fauna of Johnston Atoll. Their published results are replicated below, in Tables 15 through 25 and Figures 2 through 7.

6. ANALYSIS

The analyrical efforts on Johnston Island included recovery studies for water and wipe samples. These are presented in Tables 26 and 27, respectively.

The equipment used on Johnston Island constituted an extensive list. Battelle has identified both the quantities supplied and quantities needed in Table 28. The chemicals used are documented in Table 29.

Actual lab results for each sample are presented following Table 29.

TABLE 6. WATER SAMPLES OFFSHORE (WD)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	Methyl Esters 2,4-D ppb	Methyl Esters 2,4,5-T ppb	Detection Limit, (units)
Grab Baseline Dedrum Area	7-24	1500	5 meters 1430	7.4	26	Single Sample Trace $\leq$ 0.2 ppb	ND	Trace	0.1 ppb
Grab Operational Dedrum Facility	8-5	1400	2 meters 1345 8 meters	5.9	29	Single Sample	ND	ND	0.1 ppb
Grab Operational Dedrum	8-22	0800	--	--	--	Single Sample	ND	Trace	0.1 ppb
Grab Post Operational	8-24	0800	--	--	--	Single Sample	ND	Trace	0.1 ppb

TABLE 7. WATER SAMPLES WASTEWATER OUTFALL (WO)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	Methyl Esters 2,4-D ppb	Methyl esters 2,4,5-T ppb	Detection Limit, (units)
Grab Baseline	7-24	0900	7 meters 930	6.2	26.5	Definite sewage odor	ND	ND	0.1 ppb
			7 meters 940						
		1300	7 meters 1340	7.2	26.0	Composited			
			7 meters 1345						
Grab Baseline	7-25	0900	4 meters 910	7.1	26	Composited	ND	ND	0.1 ppb
			4 meters 1240	7.1	26				
Grab Baseline	7-27	0900	6 meters 840	6.8	27	Composited	ND	ND	0.1 ppb
		1400	6 meters 1325	7.2	27				
Grab Baseline	7-29	0900	5 meters 850	--	--	Could smell the sewage in our samples. D.O. meter is still giving improper readings. Composited	ND	ND	0.1 ppb
			7 meters 1350	6.8	27				
Grab Operational	8-1	0900	8 meters 830	6.2	26.5	Composited	ND	ND	0.1 ppb
		1400	8 meters 1315	6.4	28				
Grab Operational	8-3	0900	8 meters 830	7.0	22.5	Water usually clear	ND	Trace	0.1 ppb
		1800	8 meters 1320	6.6	28	Composited			
Grab Operational	8-5	0900	8 meters 825	6.5	27.0	Composited	ND	ND	0.1 ppb
		1400	8 meters 1335	5.8	29.0				

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	Methyl Esters 2,4-D ppb	Methyl esters 2,4,5-T ppb	Detection Limit, (units)
Grab Operational	8-17	0800 1400	7 meters 945 6 meters 1330	7.1 7.3	27 28	Composited	ND	Trace	0.1 ppb
Grab Operational	8-19	0800 1400	7 meters 830 7 meters 1332	6.2 6.8	28 28	Composited	ND	ND	0.1 ppb
Grab Operational	8-22	0800 1400	6 meters 845 6 meters 1345	5.8 7.3	28 28	Composited	ND	Trace	0.1 ppb
Grab Post Operational	8-24	0800 1400	7 meters 835 7 meters 1330	6.8 6.5	27 28	Composited	ND	ND	0.1 ppb

TABLE 8. WATER SAMPLES SALTWATER INTAKE (WS)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	Methyl Esters 2,4-D ppb	Methyl Esters 2,4,5-T ppb	Detection Limit, (units)
Grab Baseline	7-24	0800	2 meters 830	7.4	26	Composited	ND	ND	0.1 ppb
			7 meters 850	7.4	26				
		1400	8 meters 1305	7.6	25.5				
			6 meters 1310	8.0	25.5				
		1800	6 meters 1800	7.8	26.0				
			6 meters 1805	7.8	26.0				
Grab Baseline	7-25	0800	6 meters 830	7.8	25	Composited	ND	ND	0.1 ppb
			6 meters 835	7.8	26				
		1400	6 meters 1210	7.9	26				
			6 meters 1215	7.7	26				
		1800	6 meters 1800	7.6	26				
			6 meters 1805	7.6	26.5				
Grab Baseline	7-26	0800	5 meters 815	7.4	25.5	Composited	ND	ND	0.1 ppb
			5 meters 820	7.2	26				
		1400	6 meters 1305	7.3	26.0				
			6 meters 1310	7.2	27.0				
		1800	6 meters 1805	8.0	27.0				
			6 meters 1810	7.6	27.0				
Grab Baseline	7-27	0800	6 meters 810	7.9	26	Composited	ND	ND	0.1 ppb
			5 meters 815	7.7	25				
		1400	6 meters 1305	7.5	27				
			6 meters 1310	7.7	27				
		1800	5 meters 1805	8.4	27				
			5 meters 1810	7.9	26				

TABLE 8. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	Methyl Esters 2,4-D ppb	Methyl Esters 2,4,5-T ppb	Detection Limit, (units)
Grab Operational	7-28	0800	6 meters 810	6.7	26	Composited	ND	Trace	0.1 ppb
			5 meters 815	6.6	26.0				
		1400	5 meters 1305	6.4	27				
			5 meters 1310	6.7	27				
		1800	5 meters 1805	6.8	27.0				
			5 meters 1810	6.7	27.5				
Grab Operational	7-29	0800	5 meters 820	7.1	27	D.O. meter is not operating properly, getting extremely high temperature readings for the second sample (e.g., 40 C). Will let it dry out for 10 min. Composited	ND	ND	0.1 ppb
			5 meters 830	--	--				
		1400	6 meters 1305	7.7	27				
			5 meters 1310	7.6	26.0				
		1800	6 meters 1805	7.5	27				
			5 meters 1810	7.5	27				
Grab Operational	7-30	0800	6 meters 805	7.8	26	Composited	0.53	0.37	0.1 ppb
			6 meters 810	7.4	26.5				
		1400	5 meters 1320	6.8	27.0				
			6 meters 1325	6.8	25.5				
		1800	6 meters 1810	6.8	26.0				
			5 meters 1815	7.1	27.0				
Grab Operational	7-31	0800	6 meters 805	6.6	25.5	Composited	0.515	0.52	0.1 ppb
			5 meters 810	6.8	26.0				
		1400	6 meters 1305	7.2	27				
			5 meters 1310	6.9	26.5				
		1800	6 meters 1805	7.4	26				
			5 meters 1810	7.2	26				

TABLE 8. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	Methyl Esters 2,4-D ppb	Methyl Esters 2,4,5-T ppb	Detection Limit, (units)
Grab Operational	8-1	0800	6 meters 805	6.2	26	Composited	Trace	0.22	0.1 ppb
			5 meters 810	6.4	26.2				
		1400	6 meters 1250	7.0	27.0				
			5 meters 1255	7.1	27.0				
		1800	6 meters 1823	7.2	27				
			5 meters 1830	7.1	26.0				
Grab Operational	8-3	0800	6 meters 805	6.9	26.5	Composited	Trace	Trace	0.1 ppb
			5 meters 810	6.9	26.0				
		1400	6 meters 1300	7.2	27.0				
			5 meters 1305	7.3	27.0				
		1800		7.2	27.0				
				7.4	27.0				
Grab Operational	8-4	0800	6 meters 800	6.9	26.0	Composited	Trace	Trace	0.1 ppb
			5 meters 805	6.8	27.0				
		1400	6 meters 1305	7.1	27.0				
			5 meters 1310	7.0	27.2				
		1800	6 meters 1808	7.3	27				
			5 meters 1815	7.6	27				
Grab Operational	8-5	0800	6 meters 810	6.7	26.0	Composited	Trace	Trace	0.1 ppb
			5 meters 815	6.4	26.0				
		1400	6 meters 1300	5.8	30.0				
			5 meters 1305	5.8	31.0				
		1800	6 meters 1805	7.2	27				
			5 meters 1810	7.1	27				

TABLE 8. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	Methyl Esters 2,4-D ppb	Methyl Esters 2,4,5-T ppb	Detection Limit, (units)
Grab Interim	8-6	0800	6 meters 855	7.7	27.0	Composited	Trace	ND	0.1 ppb
			5 meters 900	7.4	27				
		1400	6 meters 1315	6.8	27.0				
			5 meters 1320	6.5	27.0				
			6 meters 1733	6.5	27.0				
			5 meters 1738	6.5	26				
Grab Interim	8-9		6 meters 805	6.6	26.0	Composited	ND	Trace	0.1 ppb
			5 meters 810	6.8	27.0				
			6 meters 1315	6.8	28				
			5 meters 1320	6.6	28				
			6 meters 1800	7.2	27				
			5 meters 1810	7.4	28				
Grab Interim	8-12		6 meters 820	6.8	27	Composited	ND	Trace	0.1 ppb
			5 meters 825	7.0	26.8				
			6 meters 1305	7.0	27.5				
			5 meters 1310	6.9	27.5				
			6 meters 1825	7.3	22				
			5 meters 1830	7.4	22				
Grab Interim	8-16		6 meters 805	7.4	26.5	Composited	Not analyzed	Not analyzed	0.1 ppb
			6 meters 810	7.6	27				
			6 meters 1310	7.4	27				
			5 meters 1313	7.2	27.5				
				7.6	26.5				
			6 meters 1816	7.4	27				

TABLE 8. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments			Detection Limit, (units)
Grab Operational	8-17		6 meters 920	7.6	26	Composited	ND	Trace	0.1 ppb
			5 meters 925	7.6	26				
			6 meters 1300	7.4	27				
			5 meters 1305	7.6	27.5				
			6 meters 1810	7.5	27				
			5 meters 1814	7.7	26				
Grab Operational	8-18		6 meters 810	7.3	26.5	Composited	ND	ND	0.1 ppb
			5 meters 814	7.5	26				
			6 meters 1305	6.8	27				
			5 meters 1308	6.8	28				
			6 meters 1755	7.1	27				
			5 meters 1800	7.0	28				
Grab Operational	8-19		6 meters 805	6.5	27.5	Composited	2.11	1.32	0.1 ppb
			5 meters 807	6.6	28				
			6 meters 1310	6.7	28.5				
			5 meters 1314	6.9	28				
			6 meters 1800	7.4	27				
			5 meters 1805	7.4	28				
Grab Operational	8-20		6 meters 806	6.3	26	Composited	1.05	0.58	0.1 ppb
			5 meters 808	6.3	27				
			6 meters 1312	6.9	26.5				
			5 meters 1316	6.5	26.0				
			6 meters 1750	6.8	28				
			5 meters 1755	6.7	27				

TABLE 8. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments			Detection Limit, (units)
Grab Operational	8-21		6 meters 810	7.0	27.5	Composited	ND	Trace	0.1 ppb
			5 meters 814	6.9	28				
			6 meters 1320	6.2	27				
			5 meters 1325	6.9	28				
			6 meters 1748	7.3	27				
			5 meters 1753	7.4	28				
Grab Operational	8-22		6 meters 815	7.0	26	Composited	ND	Trace	0.1 ppb
				6.6	26				
			6 meters 1315	7.1	27				
			5 meters 1318	7.3	27				
			6 meters 1805	7.2	27				
			5 meters 1812	7.4	28				
Grab Operational	8-23		6 meters 809	7.1	26	Composited	ND	ND	0.1 ppb
			5 meters 814	6.9	27.5				
			6 meters 1320	7.2	27				
			5 meters 1325	7.3	28				
			6 meters 1736	7.2	28				
			5 meters 1740	7.1	28				
Grab Post Operational	8-24		6 meters 810	7.3	26	Composited	ND	Trace	0.1 ppb
			5 meters 814	7.4	27				
			6 meters 1308	7.4	28				
			5 meters 1314	7.3	28				
			6 meters 1750	6.7	28				
			5 meters 1756	7.2	28				

TABLE 8. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit, (units)
Grab Post Operational	8-25	08	6 meters 815	6.8	26	Composited	ND	ND	0.1 ppb
			6 meters 818	6.9	27.5				
		14	6 meters 1317	7.2	27				
			5 meters 1319	7.2	27				
		18	6 meters 1740	7.1	27				
			5 meters 1745	6.9	27				
Grab Post Operational	8-26	08	6 meters 812	7.2	27	Composited	ND	ND	0.1 ppb
			5 meters 816	6.8	27				
		14	6 meters 1310	7.1	28				
			5 meters 1315	7.1	27				
		18	6 meters 1750	7.0	27				
			5 meters 1806	7.1	28				

TABLE 9. WHARF (WF)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit, (units)
Grab Baseline	7-24	08	8 meters 1015	7.7	25	Composited	ND	ND	0.1 ppb
			10 meters 1020	7.0	—				
		14	8 meters 1420	7.5	26				
			8 meters 1425	7.2	26				
		18	9 meters 1815	7.7	26.0				
			10 meters 1820	7.6	26.0				
Grab Baseline	7-25	08	10 meters 930	7.8	26.0	Composited; Ship in for 1800 hr sample	ND	ND	0.1 ppb
			10 meters 935	7.6	26.0				
		14	12 meters 1305	7.6	26.0				
			12 meters 1310	7.6	26.0				
		18	12 meters 1815	6.4	28.0				
			12 meters 1820	7.4	25.0				
Grab Baseline	7-26	08	10 meters 825	7.1	26	Composited	ND	ND	0.1 ppb
			10 meters 830	6.6	27				
		14	10 meters 1320	7.2	27.5				
			10 meters 1325	7.3	27.0				
		18	10 meters 1820	7.7	26.0				
			10 meters 1815	7.5	27.0				
Grab Baseline	7-27	09	10 meters 900	7.7	26	Composited	ND	ND	0.1 ppb
			10 meters 905	7.6	27				
		14	10 meters 1350	7.4	27				
			10 meters 1355	7.0	26				
		18	11 meters 1815	6.8	32				
			10 meters 1820	7.0	32				

TABLE 9. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit, (units)
Grab Operational	7-28	08	12 meters 820	6.4	26.5	Very small (<1 gal)	ND	ND	0.1 ppb
			10 meters 825	6.6	27.0	Spill previous 24 hr;			
		14	12 meters 1315	6.1	27.0	spill confined to			
			10 meters 1320	6.0	27.0	wharf			
		18	12 meters 1815	6.8	27.0	Composited			
			10 meters 1820	6.6	28.0				
Grab Operational	7-29	09	11 meters 910	--	--	Composited	ND	ND	0.1 ppb
			10 meters 920	--	--				
		14	10 meters 1415	6.7	27				
			10 meters 1420	7.1	25				
		18	11 meters 1815	7.4	27				
			10 meters 1820	7.3	27				
Grab Operational	7-30	08	10 meters 815	7.2	25	Composited	0.45	0.41	0.1 ppb
			11 meters 820	7.2	26				
		14	10 meters 1330	6.8	25.5				
			11 meters 1335	7.2	25.5				
		18	10 meters 1820	6.8	26.0				
			11 meters 1825	6.6	26.5				
Special Grab	7-30	11		6.3	27	Note location off stern and port side-deballasting pumps operating. Comments: ballast wastes orange with black (oily?) trailings; no sheen visible on surface. Looked like rust and bunker oil? Not visible at bow of ship during 1800 hr sampling. Composited	47.57	54.14	0.1 ppb

TABLE 9. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit, (units)
Grab Operational	7-31	08	11 meters 815	6.5	26	Composited	Trace	Trace	0.1 ppb
			10 meters 820	6.4	26				
		14	11 meters 1315	6.8	26				
			10 meters 1320	6.6	26				
		18	11 meters 1815	7.0	26.2				
			10 meters 1820	7.0	26.0				
Grab Operational	8-1	09	11 meters 850	6.0	28.0	Composited	Trace	0.24	0.1 ppb
			10 meters 855	5.8	28.0				
		14	11 meters 1340	6.8	27.0				
			10 meters 1345	6.6	27.0				
		18	11 meters	No data--meter					
			10 meters	not operational					
Grab Operational	8-3	09	11 meters 855	7.0	25.7		ND	Trace	0.1 ppb
			10 meters 900	6.4	27.0				
		14		6.6	27.5				
			)	6.6	27.0				
		18		7.1	27.5				
Grab Operational	8-4	08	11 meters 810	6.9	27.0	Small oil spill (10 gal?) at small boat dock. Slick breaking up at 1600 hr; sheen visible over several hundred sq ft; very low winds & enclosed condition will probably allow evaporation. Fish seem unaffect. Composited	Trace	Trace	0.1 ppb
			10 meters 815	6.8	27.0				
		14	11 meters 1315	6.7	27.0				
			10 meters 1320	6.6	27.0				
		18	11 meters 1820	6.8	28.0				
			10 meters 1823	6.6	28.0				

TABLE 9. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit, (units)
Grab Operational	8-5	09	11 meters 850	6.6	27.5	Temperature probe	Trace	Trace	0.1 ppb
			10 meters 855	7.6	24.0	not functioning			
		14	11 meters 1350	6.0	29.0	at 1800 hr sampling.			
			10 meters 1355	6.0	29.0	Composited			
		18	11 meters 1815	6.4	--				
			10 meters 1820	6.2	--				
Grab Interim	8-6	08	11 meters 905	6.6	27.0	Composited	0.38	0.36	0.1 ppb
			10 meters 910	6.5	27.0				
		14	11 meters 1323	6.5	27.5				
			10 meters 1328	6.5	27.5				
		18	11 meters 1740	6.4	27.0				
			10 meters 1745	6.3	27.6				
Grab Interim	8-9	08	11 meters 810	6.6	27.0	Composited	Trace	0.28	0.1 ppb
			10 meters 815	6.4	27.2				
		14	11 meters 1330	6.5	28				
			10 meters 1335	6.4	28.0				
		18	11 meters 1813	7.1	27.5				
			10 meters 1820	7.2	28				
Grab Interim	8-12	08	11 meters 830	7.0	26.0	Composited	ND	Trace	0.1 ppb
			10 meters 835	6.9	26.0				
		14	11 meters 1315	6.6	27.5				
			10 meters 1320	6.5	27.5				
		18	11 meters 1835	7.1	21				
			10 meters 1838	7.2	22				

TABLE 9. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit, (units)
Grab Interim	8-16	08	11 meters 812	7.6	26	Composited	Not analyzed	Not analyzed	0.1 ppb
			10 meters 816	7.3	26				
		14	11 meters 1315	7.2	26				
			10 meters 1320	7.1	27.5				
		18	10 meters 1830	7.2	27				
			11 meters 1835	7.2	27				
Grab Operational	8-17	08	10 meters 1015	7.5	28	Composited	ND	Trace	0.1 ppb
			10 meters 1018	7.1	28				
		14	11 meters 1400	7.1	28				
			10 meters 1405	7.0	28				
		18	11 meters 1820	7.4	27				
			10 meters 1825	7.7	27				
Grab Operational	8-18	08	10 meters 818	7.3	26.0	Meter not operating properly due to moisture: no data for 1800 hours. Composited	ND	ND	0.1 ppb
			11 meters 822	7.3	27				
		14	11 meters 1314	6.4	28				
			10 meters 1317	6.4	28				
		18	11 meters 1805	--	--				
			10 meters 1808	--	--				
Grab Operational	8-19	08	10 meters 905	6.4	28	Composited	0.33	0.25	0.1 ppb
			11 meters 910	6.2	28				
		14	11 meters 1356	6.4	28				
			10 meters 1358	6.6	27				
		18		7.2	27				
				7.2	27				
Special Grab, Ballast		10	1000			Taken approximately 10 ft from discharge point.	4698.1	3418.5	0.1 ppb

TABLE 9. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit, (units)
Grab Operational	8-20	08	11 meters 814	6.7	26.5	No temperature data	1.02	0.88	0.1 ppb
			10 meters 817	6.6	27	for 1800 hr due to			
		14	11 meters 1321	7.1	26.0	wet meter.			
			10 meters 1325	6.9	27.5	Composited			
		18	11 meters 1805	6.5					
			10 meters 1810	6.8					
Grab Operational	8-21	08	11 meters 820	6.9	28	Composited	0.28	0.47	0.1 ppb
			10 meters 825	6.4	28				
		14	11 meters 1335	6.4	28				
			10 meters 1340	6.6	28				
		18	11 meters 1807	6.9	28				
			10 meters 1809	6.9	28.5				
Grab Operational	8-22	08	11 meters 910	6.9	27				
			10 meters 914	7.0	27				
		14	10 meters 1412	6.3	28.5				
			11 meters 1417	6.2	28				
		18	11 meters 1820	6.8	28				
			10 meters 1826	6.5	28				
Grab Operational	8-23	08	10 meters 820	6.9	27	Composited	ND	Trace	0.1 ppb
			11 meters 823	6.8	28				
		14	11 meters 1331	7.1	28				
			10 meters 1335	7.3	28				
		18	11 meters 1748	6.7	28				
			10 meters 1753	7.1	28				

TABLE 9. (Continued)

	Date	Time	Depth & Time	DO, ppm	Temp., °C	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit, (units)
Grab Post Operational	8-24	08	10 meters 905	6.9	27	Composited	ND	Trace	0.1 ppb
			11 meters 909	7.0	27				
		14	10 meters 1400	6.8	28				
			11 meters 1405	6.8	28.5				
		18	10 meters 1808	7.2	28				
			11 meters 1814	6.4	28				
Grab Post Operational	8-25	08	11 meters 823	6.8	27	Composited	ND	ND	0.1 ppb
			10 meters 826	6.8	27				
		14	11 meters 1328	7.1	28				
			10 meters 1332	7.1	28				
		18	11 meters 1756	7.1	26				
			10 meters 1800	6.9	27				
Grab Post Operational	8-26	08	11 meters 822	6.8	27	Composited	ND	ND	0.1 ppb
			10 meters 826	6.6	28				
		14	11 meters 1318	6.7	28				
			10 meters 1323	7.0	28				
		18	11 meters 1814	7.0	28				
			10 meters 1820	6.9	28				

TABLE 10. SEDIMENTS (S)

	Date	Time	Comments	Methyl Esters 2,4-D ppb	Methyl Esters 2,4,5-T ppb	Detection Limit, (units)
Baseline						
S1	7-25	1100	Directly off wharf pump area Approximately 1-15 ft out Light west to east Deep current East to west surface current	Shipped to OEHL Kelly AFB for analysis		
S2	7-25	1100	Off wharf, west end 10-15 ft out South to north deep current			
Interim						
S1	8-10	1400	As above	As above		
S2	8-10	1400	"	"		
Post Operational						
S1	8-26	1400	"	"		
S2	8-26	1400	"	"		

TABLE 11. POTABLE WATER (P1 OR P2)

	Date	Time	Internal	Volume	Start Time	Stop Time	Start (ppm) DO	Start (°C) Temp.	Stop (ppm) DO	Stop (°C) Temp.	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit
Archived (P1)	7-29	00												
Composite Operational (P1) (Composite)	7-30	00	30 min	180 ml	1517	1450	5.6	31.5	5.6	31.5	Composited	ND	Trace	0.1 ppb
Grab-Operational (Grab) (P2)	7-29	15			1500						Single Sample		Not Analyzed	
Grab Operational (Grab) (P2)	7-30	15									Single Sample		Not Analyzed	
Composite Operational (P1)	7-31	15	30 min	180 ml	1500	1517	5.6	31.5	5.6	33	Composited	ND	Trace	0.1 ppb
Archived (P1)	7-30	00			1500		5.6	31.5			Single Sample			
Grab Operational (Grab) (P2)	7-31	15			1505		5.6	33			Single Sample		Not Analyzed	
Composite Operational (P1)	8-1	15	30 min	180 ml	1517	1445	5.6	33	5.6	34	Composited	ND	Trace	0.1 ppb
Composite Operational (P1)	8-2	00	30 min	180 ml	1455	1429	5.6	34	5.0	34	Composited	ND	ND	0.1 ppb
Grab Operational (P2)	8-1	15			1450		5.6	34			Single Sample	ND	ND	0.1 ppb
Composite Operational (P1)	8-3	00	30 min	180 ml	1450	1505	5.0	34	5.1	32.5	Composited	ND	Trace	0.1 ppb

TABLE 11. (Continued)

	Date	Time	Internal	Volume	Start Time	Stop Time	Start (ppm) DO	Start (°C) Temp.	Stop (ppm) DO	Stop (°C) Temp.	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit
Composite Operational (P1)	8-4	00	30 min	180 ml	1510	1447	5.1	32.5	5.1	33	Composited	ND	Trace	0.1 ppb
Composite Operational (P1)	8-5	00	30 min	180 ml	1500	1445			5.1	34	Composited	ND	ND	0.1 ppb
Composite Operational (P1)	8-6	00	30 min	180 ml	1500	1430	5.1	34	4.8	33	Composited; dedrumming completed at 2100 hours; 8-5 ship left port at 0830	ND	ND	0.1 ppb
Composite Interim (P1)	8-9	00	30 min	180 ml	2430	1400	7.1	35	5.6	34	Drained container before sampling; composited	ND	Trace	0.1 ppb
Archived (P1)	8-9	00									Single Sample			
Composite Interim (P1)	8-12	00	30 min	180 ml	1430	1415	5.0	31.5	4.1	30.5	Composited	ND	ND	0.1 ppb
Archived (P1)	8-12	00									Composited			
Composite Interim (P1)	8-16	00	30 min	180 ml	1435	1410	5.6	35	5.6	35	Composited	Not Analyzed	Not Analyzed	0.1 ppb
Composite Operational (P1)	8-17	00	30 min	180 ml	1420	1430	5.6	35	6.1	34	Composited	ND	Trace	
Composite Operational (P1)	8-18	00	30 min	180 ml	1440	1445	6.1	34	5.4	35	Composited	ND	Trace	0.1 ppb

TABLE 11. (Continued)

	Date	Time	Internal	Volume	Start Time	Stop Time	Start (ppm) DO	Start (°C) Temp.	Stop (ppm) DO	Stop (°C) Temp.	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit
Composite Operational (P1)	8-19	00	30 min	180 ml	1500		5.4	35	5.5	34.5	Composited	ND	Trace	0.1 ppb
Composite Operational (P1)	8-20	00	30 min	180 ml	1455	1440	5.5	34.5	5.4	33	Composited	ND	Trace	0.1 ppb
Composite Operational (P1)	8-21	00	30 min	180 ml	1448	1425	5.4	33	5.6	34	Composited	ND	Trace	0.1 ppb
Composite Operational (P1)	8-22	00	30 min	180 ml	1435	1440	5.6	34	5.2	34	Composited	ND	Trace	0.1 ppb
Composite Operational (P1)	8-23	00	30 min	180 ml	1452	1432	5.2	34	4.9	34	Composited	ND	Trace	0.1 ppb
Composite Post-Operational (P1)	8-24	00	30 min	180 ml	1440	1435	4.9	34	5.2	33	Composited	ND	ND	0.1 ppb
Archived (P1)	8-24	00									Composited	--	--	
Composite Post-Operational (P1)	8-25	00	30 min	180 ml	1445	1430	5.2	33	5.3	32	Composited	ND	ND	0.1 ppb
Archived (P1)	8-25	00									Composited			
Composite Post-Operational (P1)	8-26	00	30 min	180 ml	1440	1510	5.3	32	5.4	31	Composited	ND	ND	0.1 ppb
Archived (P1)	8-26	00									Composited	--	--	

TABLE 12. SEWAGE (SE)

	Date	Time	Internal	Volume	Start Time	Stop Time	Start (ppm) DO	Start (°C) Temp.	Stop (ppm) DO	Stop (°C) Temp.	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit
Composite Baseline (SE 1) Composite Volumes a.m. 59% (11 a.m.-11 p.m.) p.m. 41% (11 p.m.-11 a.m.)	7-26	00	30 min	150 ml	1050	1040	0.9	31	1.2	34	Sampler took three small samples (3,4,5); ice OK (at 1530); increased volume (1930); some a.m. bottles low; proportioned composite	ND	ND	0.1 ppb
Grab-Baseline (Back-up) (SE 2)	7-25	10			1100		0.9	31			Single Sample		Not Analyzed	
Grab-Baseline (Back-up) (Se 2)	7-26	12			1230		1.2	34			Single Sample		Not Analyzed	
Composite Operational (SE 1)	7-28	00	30 min	180 ml	1040	1110	1.2	34	0.6	33	Composited	8.93	13.09	0.1 ppb
Grab-Baseline (Back-up) (SE 2)	7-27	1040									Single Sample		Not Analyzed	
Composite Operational (SE 1)	7-30	00	30 min	180 ml	1155	1245	1.4	33	1.1	35	Could not enter Rad Hot area at 1100 hrs; composited	20.65	19.01	0.1 ppb
Composite Operational (SE 2)	7-28	11			1150		0.6	33			Single Sample		Not Analyzed	
Grab Operational (Grab) (SE 2)	7-29	12			1158		1.4	33			Single Sample; Note: no loading 1800 hours on 7-29 to 1900 hours on 7-30	22.81	27.23	0.1 ppb

TABLE 12. (Continued)

	Date	Time	Internal	Volume	Start Time	Stop Time	Start (ppm) DO	Start (°C) Temp.	Stop (ppm) DO	Stop (°C) Temp.	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit
Grab Operational (Grab) (SE 2)	7-30	12			1230		1.1	35			Single Sample		Not Analyzed	
Composite Operational (SE 1)	8-2	00	30 min	120 ml	1057	1305	1.0	33	0.7	35	Composited	12.39	11.77	0.1 ppb
Composite Operational (SE 1)	8-4	00	30 min	120 ml	1045	1105	0.7	32	0.4	35.5	Composited	46.60	47.16	0.1 ppb
Composite Operational (SE 1)	8-6	00	30 min	120 ml	1105	1045	1.0	32.0	0.7	35	Composited	65.63	72.15	0.1 ppb
Composite Interim (SE 1)	8-9	00	30 min	120 ml	945	940	1.4	32	0.8	35	Composited	20.35	21.76	0.1 ppb
Composite Interim (SE 1)	8-12	00	30 min	120 ml	935	910	0.2	33	0.4	33	Composited	12.26	13.59	0.1 ppb
Composite Interim	8-16	00	30 min	120 ml	1005	1015	0.8	31	3.1	33	Composited	Not Analyzed	Not Analyzed	0.1 ppb
Composite Operational	8-18	00	30 min	180 ml	1515	1520	1.2	34	0.4	35	Composited	53.17	55.89	0.1 ppb
Composite Operational	8-20	00	30 min	180 ml	945	1005	2.1	35	0.9	34	Composited	28.95	16.32	0.1 ppb
Composite Operational	8-23	00	30 min	180 ml	940	1010	0.4	34	1.1	33	Composited	29.60	29.16	0.1 ppb

TABLE 12. (Continued)

	Date	Time	Interval	Volume	Start Time	Stop Time	Start (ppm) DO	Start (°C) Temp.	Stop (ppm) DO	Stop (°C) Temp.	Comments	2,4-D(Me) ppb	2,4,5-T(Me) ppb	Detection Limit
Composite Post-Operational	8-25	00	30 min	180 ml	1000	1000	1.1	34.5	0.4	34	Composited	3.88	2.83	0.1 ppb
Composite Post-Operational	8-26	00	30 min	180 ml	1015	1035	0.4	34	0.8	33	Composited	1.42	0.89	0.1 ppb

TABLE 13. ORANGE HERBICIDE CONCENTRATIONS IN WATER AT VARIOUS LOCATIONS AROUND JOHNSTON ISLAND (1973-1977)[a]

Location[b]	No. Samples	No. Positive		No. Trace		No. Not Detected		Average		Positive Average		Maximum	
		2,4-D	2,4,5-T	2,4-D	2,4,5-T	2,4-D	2,4,5-T	ng/ℓ (ppt)					
								2,4-D	2,4,5-T	2,4-D	2,4,5-T	2,4-D	2,4,5-T
Control[c]	75	2	1	2	3	71	71	8.01	1.07	301	80	541	80
Wharf (WP)	52	3	2	3	1	46	49	18.10	8.25	314	215	544	293
Southside (WO)	22	1	2	3	1	18	19	1.50	2.23	33	24	33	34
Shoreline Herb. area (WD)	76	25	28	12	12	38	36	129	67	393	182	2980	581
Saltwater intake (WS)	74	3	4	3	6	67	64	39	12	952	227	2310	650
Distillation plant (P1)	75	0	0	8	11	66	64	0	0	---	---	--	--
0.5 MG reservoir	24	4	7	2	2	18	15	24	84	143	288	179	288
0.2 MG reservoir	19	2	1	1	1	15	16	18	1.6	170	30	240	30

(a) Analyzed by OEHL Kelly AFB, TX.

(b) Nearest Pacer HO sampling site indicated in parenthesis

(c) Offshore area near the golf course.

TABLE 14. TIDE AT JOHNSTON ISLAND, JULY, 1977

Times Corrected for Johnston Island

7	L	0451	-0.1	15	L	0011	0.2	22	L	0358	-0.1
th	H	1155	1.7	F	H	0451	1.3	F	H	1055	1.9
	L	1710	0.2		L	1013	-0.1		L	1626	0.6
	H	2232	1.7		H	1736	2.7		H	2156	1.8
8	L	0539	-0.1	16	L	0043	0.1	23	L	0443	-0.1
F	H	1304	1.9	SA	H	0531	1.3	SA	H	1211	2.1
	L	1902	0.7		L	1048	-0.1		L	1820	0.7
	H	2324	1.5		H	1808	2.7		H	2252	1.6
9	L	0617	-0.1	17	L	0113	0.1	24	L	0537	-0.1
SA	H	1400	2.1	SU	H	0613	1.4	SU	H	1311	2.3
	L	2035	0.6		L	1126	0.0		L	2003	0.6
					H	1838	2.6			--	
10	H	0030	1.4					25	H	0011	2.4
SU	L	0702	-0.1	18	L	0138	0.1	M	L	0633	0.0
	H	1444	2.3	M	H	0656	1.4	→	H	1415	2.5
	L	2147	0.5		L	1208	0.1		L	2118	0.4
					H	1911	2.5				
11	H	0136	1.3					26	H	0.31	2.3
M	L	0741	-0.1	19	L	0209	0.0		L	0729	0.0
	H	1524	2.4	TU	H	0745	1.5		H	1508	2.7
	L	2229	0.4		L	1253	0.2		L	2214	0.3
					H	1943	2.4				
12	H	0235	1.3					27	H	0244	2.3
TU	L	0823	-0.1	20	L	0241	0.0	W	L	0824	0.0
	H	1601	2.5	W	H	0837	1.6		H	1555	2.9
	L	2307	0.3		L	1346	0.3		L	2256	0.1
					H	2020	2.2				
13	H	0327	1.3					28	H	0343	2.4
W	L	0902	-0.1	21	L	0317	0.0	TH	L	0916	-0.1
	H	1634	2.6		H	0943	1.6		H	1639	2.9
	L	2340	0.2		L	1455	0.5		L	2338	0.0
					H	2101	2.0				
14	H	0412	1.3					29	H	0438	2.4
TH	L	0937	-0.1					F	L	1002	0.0
	H	1707	2.7						H	1720	2.9
30	L	0029	0.0								
SA	H	0525	1.5								
	L	1051	0.0								
	H	1759	2.8								
31	L	0052	0.0								
SU	H	0618	1.6								
	L	1139	-0.1								
	H	1838	2.7								

AUGUST

1	L	0124	0.0
M	H	0706	1.6
	L	1226	0.1
	H	1911	2.5

MOON PHASES

1st QTR	23/0838 AM
Full	30/0052 AM
Last QTR	7/1839 PM
New	15/1037 PM

2330

TABLE 14. (Continued) (AUGUST, 1977)

Times Corrected for Johnston Island

1 L 0124 0.0	9 H 0117 1.3	17 L 0125 0.0	25 H 0252 1.5
M H 0706 1.6	TU L 0708 0.1	W H 0729 1.9	TH L 0819 0.0
L 1226 0.1	H 1451 2.4	L 1255 0.3	H 1535 2.8
H 1911 2.5	L 2157 0.4	H 1915 2.2	L 2227 0.1
2 L 0159 0.0	10 H 0223 1.3	18 L 0152 0.0	26 H 0345 1.6
TU H 0750 1.7	W L 0758 0.1	TH H 0822 2.0	F L 0915 0.0
L 1314 0.2	H 1530 2.5	L 1351 0.4	H 1617 2.8
H 1947 2.3	L 2232 0.3	H 1953 2.1	L 2302 0.1
3 L 0231 0.0	11 H 0315 1.4	19 L 0223 0.0	27 H 0431 1.7
W H 0846 1.8	TH L 0842 0.0	F H 0910 2.1	SA L 1003 0.0
L 1408 0.4	H 1606 2.6	L 1501 0.6	H 1657 2.7
H 2022 2.1	L 2301 0.3	H 2032 1.8	L 2334 0.1
4 L 0306 0.1	12 H 0356 1.5	20 L 0305 0.0	28 H 0515 1.8
TH H 0946 1.8	F L 0925 0.0	SA H 1020 2.2	SU L 1052 0.0
L 1514 0.6	H 1638 2.6	L 1638 0.7	H 1735 2.6
H 2057 1.8	L 2326 0.2	H 2127 1.6	
5 L 0345 0.1	13 H 0438 1.5	21 L 0355 0.0	29 L 0009 0.1
F H 1056 1.9	SA L 1006 0.0	SU H 1136 2.3	M H 0555 1.9
L 1644 0.7	H 1720 2.7	L 1831 0.6	L 1137 0.1
H 2139 1.7	L 2354 0.2	H 2240 1.5	H 1807 2.4
6 L 0428 0.1	14 H 0523 1.6	22 L 0458 0.1	30 L 0034 0.1
SA H 1207 2.0	SU L 1042 0.0	M H 1248 2.4	TU H 0637 2.0
L 1337 0.7	H 1739 2.6	L 2003 0.5	L 1223 0.2
H 2235 1.5			H 1840 2.3
7 L 0517 0.1	15 L 0020 0.1	23 H 0019 1.4	31 L 0100 0.1
SU H 1313 2.2	M H 0552 1.7	TU L 0607 0.1	W H 0729 2.1
L 2016 0.7	L 1124 0.1	H 1351 2.6	L 1320 0.3
H 2354 1.4	H 1821 2.5	L 2103 0.4	H 1911 2.1
8 L 0614 0.1	16 L 0047 0.1	24 H 0145 1.4	
M H 1406 2.3	TU H 0634 1.8	W L 0716 0.0	
L 2118 0.5	L 1209 0.1	H 1447 2.7	
	H 1842 2.4	L 2152 0.2	

Moon Phases

First Quarter: 21st 1504 Full Moon: 28th 1010
Last Quarter: 6th 1040 New Moon: 14th 1131

TABLE 15. VASCULAR PLANTS KNOWN FROM JOHNSTON ATOLL

Family Species Common Name	Islands				
	Akau	Hikina	John-ston	Sand Orig.	Sand Man-made
Polypodiaceae Ferns					
Polypodium scolopendria					
Nephrolepsis sp.	A				
Araucariaceae					
Araucaria heterophylla Norfolk Island pine			P		
Pandancaceae					
Pandanus tectorius? Screw-pine, hala			P		
Gramineae Grasses			A	A	A
Cenchrus echinatus Sandbur					
Chloris barbata Fingergrass			A		
Cynodon dactylon Bermuda grass	A		P	A	P
Dactyloctenium aegyptium Crowfoot grass	A		A	A	A
Digitaria sanguinalis Crabgrass					A
Echinochloa crus-galli Barnyard grass			A		
Eleusine indica Goose grass	A	A	A	A	A
Eragrostis tenella (incl. *amabilis*) Lovegrass	A		A		
Lepturus repens Bunch grass		A	N	N	A

A = Adventive; N = Native; P = Planted; S = Seed only

Source: Amerson and Shelton, 1976.

TABLE 15. (Continued)

Family Species Common Name	Islands				
	Akau	Hikina	John-ston	Sand Orig.	Sand Man-made
Gramineae(cont.)					
Paspalum dilatatum Dallas grass			A		
Saccharum officinarum Sugarcane			P		
Setaria verticillata Bristlegrass			A	A	A
Sporobolus virginicus Dropseed			A		
Zea mays Corn	P				
Cyperaceae Sedges					
Cyperus rotundus			A		
Fimbristylis cymosa?	A	A	A		A
Palmae Palms					
Cocos nucifera Coconut palm	P.	P	P		P
Araceae					
Anthurium andraeanum Anthurium			P		
Liliaceae					
Allium fistulosum Welsh onion			P		
Allium sp. Chives			P		
Aloe sp. Aloe					P
Cordyline fruticosa Cordyline			P		
Sansevieria trifaciata Bowstring Hemp			P		

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TABLE 15. (Continued)

Family Species Common Name	Islands				
	Akau	Hikina	John-ston	Sand Orig.	Sand Man-made
Amaryllidaceae					
Crinum asiaticum			P		
Crinum sp.	P		P		P
Hymenocallis littoralis Spider lily	P		P		P
Bromeliaceae					
Ananas comosus					P
Zingiberaceae					
Alpina sp. Ginger			P		
Musaceae					
Heliconia humilis			P		
Strelitzia reginae Bird of Paradise			P		
Orchidaceae Orchids					
Epidendrum sp.			P		
Vanda sp.			P		
Casuarinaceae					
Casuarina equisetifolia Ironwood	P		P		P
Moraceae					
Ficus microcarpa Banyan		P	P		P
Urticaceae					
Pilea microphylla Artillery plant					A
Polygonaceae					
Coccoloba uvifera Sea-grape	P		P		P
Chenopodiaceae					
Chenopodium murale Goosefoot, Pigweed			A	A	A
Amaranthaceae Pigweeds					
Amaranthus dubius			A	A	A

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TABLE 15. (Continued)

Family Species Common Name	Islands				
	Akau	Hikina	Johnston	Sand Orig.	Sand Man-made
Amaranthaceae (cont.)					
A. spinosus			A		
A. viridis	A		A	A	A
Nyctaginaceae					
Boerhavia sp.	A		N	N	A
Bougainvillea sp.			P		P
Aizoaceae					
Tetragonia tetragonioides New Zealand Spinach					P
Sesuvium portulacastrum	A	A	A	A	A
Portulacaceae					
Portulaca oleracea Purslane	A	A	A	A	A
Caryophyllaceae					
Spergularia marina	A	A	A	A	A
Lauraceae					
Persea americana Avocado			P		P
Cruciferae					
Lobularia maritima Sweet Alyssum			P		A
Rosaceae					
Eriobotrya japonica Loquat					P
Leguminosae					
Acacia farnesiana Sweet Acacia	A		A		
Crotalaria incana Rattlebox			A		
Leucaena latisilique			A		A
Phaseolus sp. Bean	P				

TABLE 15. (Continued)

Family Species Common Name	Islands Akau	Hikina	John- ston	Sand Orig.	Sand Man- made
Leguminosae (cont.)					
Pisum sativum Pea	P				
Mucuna sp.		S		S	
Pithecellobium dulce Manila Tamarind			P		
Prosopis pallida Algarobe, Kiawe			S		
Vigna marina Beach pea	A		A	A	
Zygophyllaceae					
Tribulus cistoides Puncture Vine			N	N	A
Ruthaceae					
Citrus aurantifolia Lime			P		
Citrus sinensis Orange	A				
Euphorbiaceae					
Aleurites moluccana Candlenut, Kukui		S		S	
Codiaeum variegatum var. *pictum* Croton	P		P		P
Euphorbia atoto? Spurge			A		
E. prostrata Spurge			A		
E. prob. *heterophylla* Spurge			A		

TABLE 15. (Continued)

Family Species Common name	Islands				
	Akau	Hikina	John-ston	Sand Orig.	Sand Man-made
Euphorbiaceae (cont.)					
E. glomerifera Spurge	A		A		A
E. hirta Spurge			A		A
E. pulcherrima Poinsettia			P		P
Pedilanthus tithymeloides Slipper flower			P		
Ricinus communis Castor bean			A		
Anacardiaceae					
Mangifera indica Mango	P		P		
Schinus terebinthifolius Christmas berry tree			P		
Tiliaceae					
Triumfetta procumbens			P		
Malvaceae					
Hibiscus tiliaceus Hau			P		
Hibiscus sp.			P		P
Thespesia populnea Milo tree, Portia tree			A		
Sida sp.			?		
Sterculiaceae					
Waltheria indica			A		
Guttiferae					
Calophyllum inophyllum False Kamani	P		P		

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TABLE 15. (Continued)

Family Species Common Name	Islands				
	Akau	Hikina	John-ston	Sand Orig.	Sand Man-made
Combretaceae					
Terminalia catappa Indian almond, Kamani		S	P	S	P
Myrtaceae					
Eucalyptus sp.					
Araliaceae					
Bracsaia actinophylla Octopus tree			P		
Polyscias guilfoylei Wild coffee			P		
Caricaceae					
Carica papaya Papaya			P		
Plumbaginaceae					
Plumbago auriculata Plumbago, Leadwort			P		
Apocynaceae					
Catharanthus roseus Madagascar Periwinkle			P		
Nerium oleander Oleander			P		P
Plumeria acuminata Frangipani			P		
Plumeria rubra Frangipani	P		P		
Thevetia peruviana var. *aurantiaca*			P		
T. peruviana (=*nereifolia*) Yellow Oleander			P		
Convolvulaceae					
Ipomoea indica				A	

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TABLE 15. (Continued)

Family Species Common Name	Islands				
	Akau	Hikina	John-ston	Sand Orig.	Sand Man-made
Convolvulaceae (cont.)					
I. pes-caprae Beach Morning Glory			A	A	A
I. macrantha			?		
Merremia tuberosa Wood Rose			P		
Hydrophyllaceae					
Nama sandwicensis			A		
Boraginaceae					
Cordia sebestena Kou, Geiger-Tree			P		P
Heliotropium curassavicum			A	A	A
Tournefortia argentea Tree Heliotrope		P	P	P	P
Verbenaceae					
Stachytarpheta jamaicensis			A		
Vitex ovata	P		P		
Solanaceae					
Capsicum frutescens Papper	P		P		
Nicotiana glauca			A		
Solanum lycopersicum Tomato	P?	P?	P		P?
Solanum melogena Eggplant			P		
Bignoniaceae					
Tabebuia pentophylla West Indian Boxwood			P		
Rubiaceae					
Gardenia sp.			P		
Coprosma sp.			P		

TABLE 15. (Continued)

Family Species Common Name	Islands				
	Akau	Hikina	John-ston	Sand Orig.	Sand Man-made
Cucurbitaceae					
Citrullus lanatus var. *vulgaris* Watermelon	P		P		
Cucumis melo Muskmelon	P				
Goodeniaceae					
Scaevola taccada			P	P	P
Compositae					
Bidens pilosa Burmarigold			A		
Conyza bonariensis	A	A	A		
Emilia sonchifolia			A		
Helianthus annuus Sunflower			P		
Pluchea indica	A	A		A	
Pluchea carolinensis	A	A	A	A	A
Pluchea x *Fosbergii*			A		
Sonchus sp. (*oleraceus* x *asper*)? Sow-thistle			A	A	A
Tagetes sp. Marigold	P		P		
Vernonia cinerea Ironweed			A		A
Zinnia elegans Zinnia	P		P		

TABLE 16. INSECTS RECORDED FROM JOHNSTON ATOLL; ADAPTED FROM CHILSON (1953)

Orthoptera
  Blattidae
    Blattela lituricollis (Walker)
    Cutilia soror (Brunner)
    Periplaneta americana (Linnaeus)
    Pycnoscelus surinamensis (Linnaeus)
Dermaptera
  Labiduridae
    Anisolabis maritima (Gene)
    Euborellia annulipes (Lucas)
Mallophaga
  Menoponidae
    Austromenopon sternophilum (Ferris); on tern.
Thysanoptera
  Aeolothripidae
    Frankliniella sulfurea Schmutz
Hemiptera
  Lygaeidae
    Nysius terrestris Usinger
    Geocoris punctipes (Say)
  Reduviidae
    Zelus renardii Kolenati
  Nabidae
    Nabis capsiformis Germar
  Gerridae
    Halobates sericeus Eschscholtz
Homoptera
  Aphididae
    Aphis gossyppi Glover
    Aphis medicaginis Koch
  Margarodidae
    Icerya purchasi Maskell
  Pseudococcidae
    Pseudococcus (*citri* complex)
    Pseudococcus sp. perhaps *citri* (Risso)
    Ferrisiana virgata (Cockerell)

Source: Amerson and Shelton, 1976. 2341

TABLE 16. (Continued)

Homoptera (cont.)
- Coccidae
  - *Coccus* sp.
  - *Coccus hesperidum* Linnaeus
  - *Saissetia nigra* (Nietner)
  - *Saissetia oleae* (Bernard)
- Diaspididae
  - *Aspidiotus lataniae* Signoret
  - *Chrysomphalus dictyospermi* (Morgan)
  - *Pinnaspis* sp.
  - *Pinnaspis strachani* (Cooley) (of Ferris and Rao)

Neuroptera
- Hemerobiidae
  - *Sympherobius* sp. may be *barberi* Banks

Lepidoptera
- Tineidae
  - *Tineola uterella* Walsingham
  - *Ereunetis incerta* Swezey
- Pterophoridae
  - *Trichoptilus oxydactylus* (Walker)
- Phalaenidae
  - *Achaea janata* (Linnaeus)
  - *Laphygma exempta* (Walker)

Coleoptera
- Dermestidae
  - *Dermestes ater* Degeer
- Histeridae
  - *Carcinops quattuordecimstriata* (Stephens)
- Anobiidae
  - *Lasioderma serricorne* (Fabricius)
- Tenebrionidae
  - *Alphitobius piceus* (Oliver)
- Coccinellidae
  - *Coelophora inaequalis* (Fabricius)
  - *Scymnus loewii* Mulsant
  - *Scymnus notescens* Blackburn
- Curculionidae
  - *Dryotribus mimeticus* Horn
  - *Macrancylus immigrans* (Perkins)

Hymenoptera
- Encyrtidae
  - *Aenasius advena* Compere
  - *Leptomastix dactylopii* Howard
- Formicidae
  - *Solenopsis geminata rufa* (Jerdon)
  - *Monomorium pharaonis* (Linnaeus)
  - *Cardiocondyla* sp.
  - *Tetramorium guineense* (Fabricius)
  - *Paratrechina* (*Nylanderia*) sp.
  - *Paratrechina longicornis* (Latreille)

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TABLE 16. (Continued)

Hymenoptera (cont.)
- Sphecidae
  - *Chalybion bengalense* (Dahlbom)
- Vespidae
  - *Polistes fuscatus aurifer* Saussure
- Megachilidae
  - *Megachile fullawayi* Cockerell

Diptera
- Syrphidae
  - *Simosyrphus* (*Xanthogramma*) *grandicornis* (Macquart)
  - *Xanthogramma scutellaris* (Fabricius)
  - *Syrphus* sp.
- Sarcophagidae
  - *Goniophyto bryani* Lopes
  - *Sarcophaga* sp.
  - *Sarcophaga dux* Thomson
  - *Sarcophaga barbata* Thomson
- Calliphoridae
  - *Phaenicia* sp.
- Muscidae
  - *Musca domestica* Linnaeus
  - *Musca domestica vicina* Macquart
  - *Atherigona excisa* (Thomson)
- Milichiidae
  - *Desmometopa* sp.
- Agromyzidae
  - *Agromyze pusilla* Meigen
- Hippoboscidae
  - *Olfersia spinifera* (Leach); from frigate birds.

TABLE 17. BIRDS FROM JOHNSTON ATOLL**

Order Procellariiformes	
Family Diomedeidae	
*Diomedea nigripes**	Black-footed Albatross
*Diomedea immutabilis**	Laysan Albatross
Family Procellariidae	
*Pterodroma alba**	Phoenix Petrel
Bulweria bulwerii	Bulwer's Petrel
Puffinus pacificus	Wedge-tailed Shearwater
Puffinus nativitatis	Christmas Shearwater
*Puffinus puffinus newelli**	Newell's Shearwater
Family Hydrobatidae	
*Oceanodroma tristrami**	Sooty Storm Petrel
Order Pelecaniformes	
Family Phaethontidae	
*Phaethon aethereus**	Red-billed Tropicbird
Phaethon rubricauda	Red-tailed Tropicbird
*Phaethon lepturus**	White-tailed Tropicbird
Family Sulidae	
*Sula dactylatra**	Blue-faced Booby
Sula leucogaster	Brown Booby
Sula sula	Red-footed Booby
Family Fregatidae	
Fregata minor	Great Frigatebird
*Fregata ariel**	Lesser Frigatebird
Order Ciconiiformes	
Family Ardeidae	
*Bubulcus ibis**	Cattle Egret
Order Anseriformes	
Family Anatidae	
*Anas acuta**	Pintail
*Anas [=Mareca] americana**	American Wigeon
*Anas [=Spatula] clypeata**	Northern Shoveler
Order Galliformes	
Family Phasianidae	
Gallus gallus	Domestic Chicken
Order Falconiformes	
Family Falconidae	
*Falco peregrinus tundrius**	Peregrine Falcon

Source: Amerson and Shelton, 1976.

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TABLE 17. (Continued)

Order Charadriiformes	
Family Charadriidae	
*Pluvialis dominica**	American Golden Plover
*Pluvialis [=Squatarola] squatarola**	Black-bellied Plover
*Charadrius semipalmatus**	Semipalmated Plover
Family Scolopacidae	
*Numenius tahitiensis**	Bristle-thighed Curlew
*Tringa [=Totanus] flavipes**	Lesser Yellowlegs
*Actitis macularia**	Spotted Sandpiper
*Catoptrophorus semipalmatus**	Willet
*Heteroscelus incanus [=incanum]**	Wandering Tattler
*Arenaria interpres**	Ruddy Turnstone
Limnodromus sp.*	Dowitcher species
*Calidris [=Crocethia] alba**	Sanderling
*Calidris [=Ereunetes] mauri**	Western Sandpiper
*Calidris [=Erolia] melanotos**	Pectoral Sandpiper
*Calidris [=Erolia] acuminata**	Sharp-tailed Sandpiper
*Tryngites subruficollis**	Buff-breasted Sandpiper
*Philomachus pugnax**	Ruff
Family Phalaropodidae	
*Steganopus tricolor**	Wilson's Phalarope
Family Laridae	
*Larus glaucescens**	Glaucous-winged Gull
*Larus argentatus**	Herring Gull
*Larus atricilla**	Laughing Gull
*Larus pipixcan**	Franklin's Gull
Larus spp.*	Gull species
Sterna lunata	Gray-backed Tern
Sterna fuscata	Sooty Tern
*Thalasseus elegans**	Elegant Tern
*Procelsterna cerulea**	Blue-gray Noddy
Anous stolidus	Brown Noddy
Anous tenuirostris	Black Noddy
Gygis alba	White Tern
Order Columbiformes	
Family Columbidae	
Columba livia	Rock Dove
Order Strigiformes	
Family Strigidae	
*Asio flammeus**	Short-eared Owl
Order Passeriformes	
Family Alaudae	
*Alauda arvensis**	Skylark
Family Zosteropidae	
*Zosterops japonica**	Japanese White-eye
Family Estrildidae	
Lonchura striata	Society Finch

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**Resident birds are unmarked; non-resident birds are marked with an *.

TABLE 18. STATUS OF BIRDS ON JOHNSTON ATOLL

	Akau	Hikina	Johnston	Sand	
				Original	Man-made
Seabirds:					
Breeders					
Bulwer's Petrel			b	B	B
Wedge-tailed Shearwater			B	B	B
Christmas Shearwater			b	B	
Red-tailed Tropicbird			B	B	B
Brown Booby	?	?	b	B	b
Red-footed Booby			b	B	b
Great Frigatebird	R	R	b	B	b
Gray-backed Tern	B*	B**	b	B	b
Sooty Tern			b	B	b
Brown Noddy	?	B*	bR	B	b
Black Noddy			B**	B	r
White Tern			B	R	R
Former Breeders					
Black-footed Albatross				bR	
Laysan Albatross			b	R	0
Blue-faced Booby			b	bR	r
Visitors					
Phoenix Petrel				R	
Newell's Shearwater				R	
Sooty Storm Petrel					R
Red-billed Tropicbird			R	r	
White-tailed Tropicbird	0		R	0	0
Lesser Frigatebird				R	
Blue-gray Noddy			r	R	
Waterfowl, Marsh, and Land Birds:					
Regular Migrants					
Pintail			R	R	R
American Golden Plover	R	R	R	R	R
Bristle-thighed Curlew	R		R	R	R
Wandering Tattler	R	R	R	R	R
Ruddy Turnstone	R	R	R	R	R
Sanderling			R	R	R
Pectoral Sandpiper				R	R
Irregular Visitors					
American Wigeon				R	?
Northern Shoveler				R	?
Glaucous-winged Gull				R	?
Herring Gull			R		R
Laughing Gull			R	R	
Short-eared Owl	R	?	R	R	
Stragglers					
Cattle Egret				R	R
Franklin's Gull					R

Source: Amerson and Shelton, 1976.

TABLE 18. (Continued)

	Akau	Hikina	Johnston	Sand Original	Sand Man-made
Accidentals					
Peregrine Falcon			R	R	
Black-bellied Plover			R	R	R
Semipalmated Plover				R	R
Lesser Yellowlegs				R	
Spotted Sandpiper				R	R
Willet			R		
Dowitcher species				R	
Western Sandpiper					R
Sharp-tailed Sandpiper			R	R	R
Buff-breasted Sandpiper					R
Ruff				R	R
Wilson's Phalarope				R	
Gull species			R		
Elegant Tern				R	
Skylark			R		R
Japanese White-eye			R		R
Introductions					
Domestic Chicken			B**		
Rock Dove			B**		
Society Finch					R
Present Breeders	1*	2**	6	11	3
Former Breeders	0	0	10	2	6
Total species	8	6	35	44	35

B = Breeder; R = Recorded; O = Overflier. Capital letters indicate status 1963-1969; lower case letters indicate status 1923-1962, if different than at present.

* bred only in 1964
** bred only in 1973.

TABLE 19. DISTRIBUTION AND STATUS* OF MAMMALS AT JOHNSTON ATOLL

Species	Akau	Hikina	Johnston	Sand	
				Original	Man-made
House Mouse			B	B	B
Roof Rat			B		
Domestic Dog			R	R	R
Domestic Cat		R	B	R	R
Hawaiian Monk Seal	R	R	R	B	R
European Rabbit			R		R

*B = Breeding; R = Recorded.
Source: Amerson and Shelton, 1976.

TABLE 20. DISTRIBUTION* OF BENTHIC MARINE ALGAE AT JOHNSTON ATOLL

Division / Species	Marginal Reef	Lagoon: Open Water	Lagoon: Inshore Johnston	Lagoon: Inshore Sand
Cyanophyta				
Anacystis dimidiata		1		1
Entophysalis deusta			3	
Schizothrix calcicola	3	6	5	2
Hydrocoleum lyngbyaceum	1		1	1
Microcoleus chthonoplastes		4		1
Microcoleus tenerrimus	1		1	
Microcoleus vaginatus	1			
Lyngbia aestuarii	1		1	1
Lyngbia confervoides				1
Lyngbia lutea		1		
Lyngbya majuscula	1	3	1	2
Spirulina tenerrima		1	1	
Symploca atlantica	1		1	
Oscillatoria nigroviridis			1	
Phormidium submembranaceum	3	3	1	
Hormothamnion enteromorphoides		2	1	
Calothrix crustacea		1		1
Calothrix scopulorum	3	3	4	1
Isactis plana	2		5	1
Chlorophyta				
Palmogloea protuberans			1	
Enteromorpha kylinii			1	
Cladophora crystallina	2	2	1	
Cladophoropsis sp.	1			
Valonia ventricosa		1		
Dictyosphaeria versluysii	6	6	4	1
Boodlea composita	1			
Microdictyon setchellianum	5	2		1
Dervesia marina			1	
Derbesia sp.		1		
Caulerpa ambigua	1	1	2	1
Caulerpa racemosa macrophysa		1		
Caulerpa urvilliana	3	1		1
Bryopsis pennata	5	4	4	1
Pseudochlorodesmis parva	2		3	
Codium arabicum	1			
Codium sp.	3	2	4	
Halimeda discoidea	3	2	1	
Halimeda tuna	3			
Acetabularia clavata			2	
Acetabularia mobii	3	2	2	
Acetabularia taenjiana			1	
Acetabularia sp.	1			1

TABLE 20. (Continued)

Species	Division Marginal Reef	Lagoon Open Water	Lagoon Inshore Johnston	Lagoon Inshore Sand
Chrysophyta				
Ostreobium reineckei			2	
Phaeophyta				
Ectocarpus breviarticulatus			3	
Ectocarpus indicus	3	3	4	1
Ectocarpus irregularis			1	
Ectocarpus sp.		1		
Sphacelaria furcigera		1	1	
Sphacelaria novaehollandiae	5	7	5	2
Sphacelaria tribuloides			1	
Dictyota sp.	2	1	1	
Pocockiella variegata	6	5	3	
Rhodophyta				
Asterocystis ornata		1		
Goniotrichum alsidii		1		
Erythrotrichia sp.		1		
Gelidium crinale perpusillum		3	3	1
Gelidium pusillum pusillum		4	3	2
Wurdemania sp.	3	1	2	
Jania capillacea	3	6	2	2
Jania decussato-dichotoma	4	2	2	1
Amphiroa sp.	1	1		
Hypnea esperi	4	4	4	1
Lomentaria hakodatensis	1	1	1	1
Champia parvula	2			
Antithamnion antillarum	2	1	1	1
Callithamnion marshallensis	2		2	
Callithamnion sp.	1			
Centroceras apiculatum	5	5	4	2
Centroceras clavulatum	1	3	1	1
Crouania minutissima	1			
Ceramium affine	3	5	1	1
Ceramium fimbriatum	1			
Ceramium gracillimum byssoideum	4	4	4	1
Ceramium huysmansii	3	3	1	
Ceramium maryae	1			
Ceramium vagabunde	2	2		
Ceramium zacae	1		2	1
Ceramium sp.		2		
Crouania minutissima	1			
Griffithsia metcalfii		2		
Griffithsia ovalis	1			

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TABLE 20. (Continued)

Division / Species	Marginal Reef	Lagoon Open Water	Lagoon Inshore Johnston	Lagoon Inshore Sand
Rhodophyta (cont.)				
Griffithsia tenuis	4	1	2	
Griffithsia sp.				1
Dasya adherens	1	1		
Dasya sinicola	3	1		
Dasya sp.	1	2		
Taenioma macrourum	1	3		
Caloglossa leprieurii		1		
Heterosiphonia wurdemanii laxa	2	2		
Herposiphonia spp.	4	3	1	1
Polysiphonia spp.	3	7	5	1
Laurencia sp.	4	5	1	
Chrondria repens	4	3		

*Figures indicate total number of collection stations from which samples were taken. Marginal Reef localities: 1,2,4,12,27,28,29; Lagoon Open Water: 3,5,6,8,9,10,11,17; Lagoon Inshore Johnston: 13,14,15,16, 18,19,20,21,22,23,24; Lagoon Inshore Sand: 7,25,26,30.

TABLE 21. CNIDARIA (COELENTERATA) FROM JOHNSTON ATOLL*

Class Family Species	Wells 1934	Brock *et al.* 1965	Present Paper
Hydrozoa			
Milleporidae			
Millepora tenera	X		
Millepora sp.			X
Stylasterinidae			
Distichopora sp.	X		
Stylaster sp.			X
Anthozoa			
Pocilloporidae			
Pocillopora damicornis		X	
Pocillopora eydouxi	X		
Pocillopora meandrina		X	
Acroporidae			
Acropora humilis	X		
Acropora hyacinthus	X		
Acropora retusa	X		
Acropora tumida	X		
Montipora verrucosa	X		
Montipora sp.	X		
Agariciidae			
Leptastrea sp.	X		
Pavona variens		X	
Pavona sp.	X		
Fungiidae			
Fungia scutaria	X		
Poritidae			
Portites lutea	X		
Isopheliidae			
Telmatactis decora		?	X

*Taxonomic order follows Bayer, *et al.* (1956).

TABLE 22. DISTRIBUTION AND ABUNDANCE* OF MOLLUSCA FROM JOHNSTON ATOLL

Gastropoda:	Marginal N.W. Reef	Johnston Island	Sand Island	Lagoon fill Sand Island
Trochidae				
Trochus intextus Reeve				U
Turbinidae				
Turbo articulatus Reeve	M			
Neritidae				
Nerita plicata Linnaeus		M	M	
Nerita polita Linnaeus			M	
Nerita albicilla Linnaeus			U	
Nerita picea Recluz		V	V	
Littorinidae				
Littorina pintado Wood		V	V	
Littorina undulata Gray		U		
Littorina coccinea (Gmelin)		U	M	
Planaxidae				
Planaxis zonatus A. Adams			U	
Modulidae				
Modulus tectum (Lamarck)				U
Cerithiidae				
Rhinoclavis sinensis (Gmelin)			U	
Rhinoclavis articulatus Adams & Reeve			U	
Cerithium mutatum Sowerby				U
Cerithium nesioticum Pilsbry & Vanatta				U
Hipponicidae				
Sabia conica (Schumacher)	U		U	
Strombidae				
Strombus maculatus Sowerby			U	U
Cypraeidae				
Cypraea granulata Pease				U
Cypraea helvola Linnaeus	U			M
Cypraea poraria Linnaeus	U			
Cypraea caputserpentis Linnaeus				U
Cypraea moneta Linnaeus	U			U
Cypraea maculifer (Schilder)				U

*V = Very abundant; M = Moderately abundant; U = uncommon.

Source: Amerson and Shelton, 1976.

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TABLE 22. (Continued)

Gastropoda (cont.):	Marginal N.W. Reef	Johnston Island	Sand Island	Lagoon fill Sand Island
Cypraeidae (cont.)				
Cypraea isabella Linnaeus				M
Cypraea carneola Linnaeus				U
Cypraea schilderorum (Iredale)	U			M
Naticidae				
Polinices (Mamilla) melanostoma (Gmelin)			U	
Cymatidae				
Cymatium (Septa) nicobaricum Röding				U
Cymatium (Septa) aquatile (Reeve)			U	U
Cymatium (Septa) gemmatum (Reeve)			U	
Cymatium (Ranularia) muricinum Röding			U	
Distorsio anus Linnaeus				U
Tonnidae				
Tonna (Quimalea) pomum (Linnaeus)				U
Muricidae				
Maculotriton species			U	
Drupa morum Röding	M			
Drupa ricinus (Linnaeus)	U		U	
Morula uva Röding	M		V	M
Morula granulata (Duclos)			M	
Drupella ochrostoma (Blainville)			U	
Nassa sertum Bruguière				M
Coralliophilidae				
Coralliophila violacea Kiener	M			
Quoyula madreporarum (Sowerby)	M			
Buccinidae				
Pisania ignea (Gmelin)	U			U
Nassariidae				
Nassarius (Reticunassa) dermestina (Gould)			U	
Fasciolariidae				
Peristernia crocea (Gray)			M	
Mitridae				
Mitra (Strigatella) columbelliformis Kiener				U

TABLE 22. (Continued)

Gastropoda (cont.):	Marginal N.W. Reef	Johnston Island	Sand Island	Lagoon fill Sand Island
Turbinellidae				
Vasum turbinellus (Linnaeus)	U		U	U
Conidae				
Conus pulicarius Hwass	U			U
Conus nanus Sowerby	U			
Conus rattus Hwass	U			
Conus vitulinus Hwass	U			
Conus miles Linnaeus	U			
Conus flavidus Lamarck				U
Terebridae				
Terebra crenulata Linnaeus				U
Bivalvia:				
Isognomonidae				
Isognomon perna (Linnaeus)			M	
Parviperna dentifera (Krauss)			U	
Trapezidae				
Trapezium oblongum (Linnaeus)				U
Tellinidae				
Arcopagia (Scutarcopagia) scobinata (Linnaeus)				U

TABLE 23. ANNELIDA FROM JOHNSTON ATOLL*

Class Family Species	Edmondson *et al.* 1925	Brock *et al.* 1965	Present Paper
Polychaeta			
Amphinomedae			
Eurythoe complanata (Pallus)			X
Eurythoe pacifica Kinberg	X		
Hermodice pinnata Treadwell	X		
Cirratulidae			
Cirratulus sp.	X		X
Eunicidae			
Eunice sp.			X
Polynoidae			
Hololepidella nigropunctata (Horst)			X
Phyllodocidae			
Phyllodoce stigmata Treadwell	X		X
Nereidae			
Nereis kobiensis		X	
Perinereis helleri (Grube)	X		X
Leodicidae			
Lysidice fusca Treadwell	X		
Lysidice sp.		X	
Leodocidae			
Leodice sp.		X	

*Taxonomic order follows that in the Annelida collection of the National Museum of Natural History.

Source: Amerson and Shelton, 1976.

TABLE 24. MARINE ARTHROPODA FROM JOHNSTON ATOLL*

Class Subclass Family Species	Edmondson *et al.* 1925	Brock *et al.* 1965, 1966	Present Paper
Crustacea			
Cirripedia			
Lepadidae			
Lepas anatifera Linnaeus			X
Malacostraca			
Squillidae [=Chloridelidae?]			
Pseudosquilla oculata (Brullé)	X		X
Palaemonidae			
Coralliocaris graminea (Dana)	X		X
Harpiliopsis depressus (Stimpson)	X	X	X
Jocaste lucina (Nobili)	X		X
Palaemonella tenuipes Dana	X		
Peridemenaeus tridentalus (Miers)	X		X
Gnathophyllidae			
Gnathophyllum americanum Guerin	X		X
Alpheidae			
Alpheus brevipes Stimpson		X	
Alpheus bucephalus Coutière	X		X
Alpheus clypeatus Coutière	X	X	X
Alpheus collumianus Stimpson	X		X
Alpheus crassimanus Heller	X		X
Alpheus diadema Dana	X		X
Alpheus gracilis Heller incl. subsp. *simplex* (Banner)	X		X
Alpheus leviusculus Dana	X		X
Alpheus lottini Guérin	X	X	
Alpheus paracrinitus Miers	X		X
Alpheus paragracilis Coutière	X		X
Synalpheus paraneomeris Coutière	X		X
Hippolytidae			
Lysmata paucidens (Rathbun)	X		X
Saron marmoratus (Olivier)	X		
Painuridae			
Panulirus marginatus (Quoy & Gaimard)			X
Panulirus penicillatus (Olivier)	X		X
Scyllaridae			
Parribacus antarcticus (Lund)	X		X
Axiidae			
Axiopsis johnstoni Edmondson	X		X
Galatheidae			
Galathea spinosorostris Dana		X	

Source: Amerson and Shelton, 1976.

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TABLE 24. (Continued)

Class Subclass Family Species	Edmondson *et al.* 1925	Brock *et al.* 1965, 1966	Present Paper
Diogenidae			
Aniculus aniculus (Fabricius)	X		?
Calcinus elegans (N. Milne-Edwards)	X		X
Calcinus herbstii de Man	X		X
Calcinus latens (Randall)	X		X
Dardanus haanii Rathbun			X
Dardanus megistos (Herbst)			X
Dardanus punctulatus	X		
Dynomenidae			
Dynomene hispida Desmarest	X		X
Calappidae			
Calappa hepatica (Linnaeus)	X		
Leucosiidae			
Nucia speciosa Dana	X		
Majidae			
Perinea tumida Dana			X
Schizophrys hilensis Rathbun		X	
Portunidae			
Cataptrus inaequalis (Rathbun)	X		X
Portunus longispinosus (Dana)	X		X
Thalamita admete (Herbst)	X		X
Thalamitoides quidridens A. Milne-Edwards	X		X
Xanthidae			
Carpilius convexus (Forskal)	X		X
Chlorodiella asper Edmondson	X		X
Domecia hispida Eydoux & Souleyet	X	X	X
Etisus electra (Herbst)	X		X
Leptodius sanguineus (H. Milne-Edwards)	X		X
Leptodius waialuanus Rathbun	X		
Liocarpilodes biunguis (Rathbun)	X		X
Liocarpilodes integerrimus (Dana)			X
Liomera bella (Dana)	X		X
Lophozozymus dodone (Herbst)			X
Phymodius laysani Rathbun	X		X
Phymodius nitidus (Dana)	X		X
Pilodius aberrans (Rathbun)	X		X
Pilodius areolata (H. Milne-Edwards)			X
Platypodia eydouxi (A. Milne-Edwards)	X		X
Pseudoliomera speciosa (Dana)	X	?	X
Tetralia glaberrima (Herbst)	X		
Tetralia spp.		X	

TABLE 24. (Continued)

Class Subclass Family Subspecies	Edmondson *et al.* 1925	Brock *et al.* 1965, 1966	Present Paper
Xanthidae (cont.)			
Trapezia cymodoce (Herbst)		X	
Trapezia digitalis Latreille	X	X	X
Trapezia ferruginea Latreille	X		X
Trapezia intermedia Miers	X		X
Trapezia maculata (MacLeay)		X	X
Trapezia rufopunctuta (Herbst)	X		
Trapezia speciosa	X		X
Ocypodidae			
Ocypode laevis Dana			X
Grapsidae			
Grapsus strigosus (Herbst)	X		X
Grapsus tenuicristatus (Herbst)	X		X
Pachygrapsus minutus A. Milne-Edwards	X		X
Pachygrapsus plicatus (H. Milne-Edwards)			X
Hapalocarcinidae			
Hapalocarcinus marsupialis Stimpson	X		X
Pseudocryptochirus crescentus (Edmundson)	X		X

*Taxonomic order follows Chase (pers. corres.).

TABLE 25. INSHORE FISHES RECORDED FROM JOHNSTON ATOLL

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963–June 1965	Brock, *et al.* 1966 Aug. 1964–Aug. 1965
Myliobatidae (Eaglerays)					
Aetobatus narinari	X			X	X
Synodontidae (Lizardfishes)					
Saurida gracilis		X	X		
Synodus binotatus		X	X		
Synodus variegatus			X	X	
Congridae (Conger Eels)					
Conger marginatus (=*C. noordziekii*)		X			
Ophichthidae (Snake Eels)					
Brachysomophis sauropsis		X	X		
Leiuranus semicinctus	X	X	X		
Leptenchelys labialis		X			
Muraenichthys gymnotus		X	X		
Muraenichthys schultzei		X	X		
Myrichthys breekeri	X	X			
Myrichthys maculosus	X	X	X		
Phyllophichthus xenodontus			X		
Schultzidia johnstonensis		X	X		
Xenocongridae (False Moray Eels)					
Kaupichthys diodontus			X		
Moringuidae (Worm Eels)					
Moringua macrochir		X	X		

Source: Amerson and Shelton, 1976.

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963-June 1965	Brock, *et al.*, 1966 Aug. 1964-Aug. 1965
Muraenidae (Morey Eels)					
Anarchias allardicei		X	X		
Anarchias cantonensis		X			
Anarchias leucurus		X	X		
Echidna leucolaenia		X			
Echidna polyzona		X			
Echidna unicolor			X		
Echidna zebra		X			
Gymnothorax sp.			X		
Gymnothorax buroensis	X				
Gymnothorax eurostus		X	X	X	
Gymnothorax gracilicaudus		X	X		
Gymnothorax javanicus	X		X	X	X
Gymnothorax meleagris	X	X	X		
Gymnothorax moluccensis		X	X		
Gymnothorax pictus	X				
Gymnothorax undulatus		X	X		
Rabula fuscomaculata		X	X	X	
Uropterygius sp.				X	
Uropterygius fuscoguttatus		X	X		
Uropterygius knighti			X		
Uropterygius polyspilus		X			
Uropterygius supraforatus (=*U. dentatus*)		X	X		
Uropterygius tigrinus	X	X			
Belonidae (Needlefishes)					
Belone platyura	X	X			
Hemiramphidae (Halfbeaks)					
Hyporhamphus acutus		X	X		

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963–June 1965	Brock, *et al.*, 1966 Aug. 1964–Aug. 1965
Exocoetidae (Flyingfishes)					
Cypselurus pecoilopterus	X				
Cypselurus simus	X				
Aulostomidae (Trumpetfishes)					
Aulostomus chinensis	X	X	X	X	X
Fistulariidae (Cornetfishes)					
Fistularia petimba	X	X	X	X	
Syngnathidae (Pipefishes)					
Doryrhamphus melanopleura			X		
Holocentridae (Soldierfishes or Squirrelfishes)					
Holocentrus lacteoguttatus	X	X	X		
Holocentrus microstomus	X				
Holocentrus xantara	X	X	X	X	X
Holocentrus spinifer	X	X	X	X	X
Holocentrus tiere	X	X	X	X	X
Holotrachys lima		X	X		
Myripristis argyromus	X	X	X	X	
Myripristis berndti	X		X		
Apogonidae (Cardinal Fishes)					
Apogon erythrinus		X	X		
Apogon menesemus		X	X	X	X
Apogon snyderi	X	X	X		
Apogon waikiki		X			
Pseudamiops gracilicauda		X	X		

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963-June 1965	Brock, *et al.*, 1966 Aug. 1964-Aug. 1965
Kuhliidae (Aholeholes)					
Kuhlia marginata	X	X			
Grammistidae (=Pseudochromidae)					
Pseudogramma polyacantha		X	X	X	
Priacanthidae (Big Eyes)					
Priacanthus cruentatus	X	X	X		
Serranidae (Sea Bass)					
Pristipomoides sieboldii	X				
Lutjanidae (Snappers)					
Aphareus furcatus			X		
Kyphosidae (Rudderfishes)					
Kyphosus bigibbus		X			
Kyphosus vaigiensis		X			
Mullidae (Sunmullets, Goatfishes)					
Mulloidichthys auriflamma	X		X	X	X
Mulloidichthys samoensis	X	X	X	X	X
Parupeneus barberinus	X			X	X
Parupeneus bifasciatus	X	X		X	X
Parupeneus chryserydros	X			X	X
Perupeneus crassilabris	X			X	X
Parupensus multifasciatus	X	X			
Parupeneus trifasciatus	X				

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963-June 1963	Brock, *et al.*, 1966 Aug. 1964-Aug. 1965
Cirrhitidae (Hawkfishes)					
Amblycirrhites bimacula		X	X		
Cirrhitus alternatus			X	X	
Cirrhitus pinnulatus	X	X	X		
Paracirrhites arcatus			X	X	
Paracirrhites forsteri			X	X	
Carangidae (Pompano, Uiua, Papio)					
Carangoides ferdau	X	X		X	
Caranx ascensionis	X				
Caranx dasson	X				
Caranx gymnostethoides	X				
Caranx lugubris	X				
Caranx melampygus	X			X	X
C. (=Gnathanodon) speciosis					X
Scomberoides sancti-petri	X		X		
Trachurops crumenophthalmus		X			
Pomacentridae (Damselfishes)					
Abudefduf imparipennis	X	X		X	X
Abudefduf phoenixensis	X	X			
Abudefduf sordidus	X			X	X
Chromis leucurus	X	X	X	X	X
Chromis vanderbilti		X	X	X	X
Dascyllus albisella					
Dascyllus marginatus	X				X
Plectroglyphidodon johnstonianus	X	X	X	X	X

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963–June 1963	Brock, *et al.*, 1966 Aug. 1964–Aug. 1965
Labridae (Wrasses)					
Bodianus bilunulatus	X			X	X
Cheilinus rhodochrous	X			X	X
Cheilio inermis			X	X	
Cheilio flavauittata					X
Coris gaimardi			X	X	X
Epibulus insidiator	X	X	X	X	X
Gomphosus varius (includes *G. tricolor*)	X	X	X	X	X
Halichoeres ornatissimus	X	X		X	
Iniistius pavo			X	X	X
Novaculichthys taeniourus		X			
Pseudocheilinus hexataenia	X				
Pseudocheilinus octotaenia		X		X	
Pseudocheilinus tetrataenia			X	X	
Stethojulis albovittata				X	X
Stethojulis axillaris		X	X	X	X
Thalassoma ballieui	X		X	X	X
Thalassoma fuscum			X		
Thalassoma duperreyi	X	X	X	X	X
Thalassoma lutescens	X	X	X	X	X
Thalassoma purpureum	X				X
Thalassoma quinquevittata		X	X	X	X
Thalassoma umbrostigma					X
Scaridae (Parrotfishes)					
Calotomus spinidens (=*C. sandvicensis*)		X	X		X
Scarus cyanogrammus	X				
Scarus dubius	X	X	X		X
Scarus duperreyi	X				

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963-June 1963	Brock, *et al.*, 1966 Aug. 1964-Aug. 1965
Scaridae (cont.)					
Scarus erythrodon	X				
Scarus forsteri	X				
Scarus perspicillatus	X	X	X	X	X
Scarus sordidus	X	X	X	X	X
Scarus sp. (grey)					X
Scarus sp. (blue-green)					X
Chaetodontidae (Butterfly-fishes)					
Centropyge flammeus	X	X		X	X
Centropyge nigriocellus	X		X		
Chaetodon auriga	X	X	X	X	X
Chaetodon citrinellus	X	X	X	X	X
Chaetodon ephippium	X	X	X	X	X
Chaetodon multicinctus	X	X	X	X	X
Chaetodon ornatissimus	X	X	X	X	X
Chaetodon quadrimaculatus	X	X	X	X	X
Chaetodon reticulatus			X	X	
Chaetodon trifasciatus	X		X	X	X
Chaetodon unimaculatus	X	X	X	X	X
Chaetodon eol				X	
Forcipiger longirostris			X	X	
Hemitaurichthys thompsoni			X	X	X
Megaprotodon strigangulus	X		X	X	X
Zanclidae (Moorish Idols)					
Zanclus cornutus	X	X		X	X
Acanthuridae (Surgeonfishes)					
Acanthurus achilles	X	X	X	X	X
Acanthurus glaucopareius			X	X	X

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963-June 1963	Brock, *et al.*, 1966 Aug. 1964-Aug. 1965
Acanthuridae (cont.)					
Acanthurus guttatur				X	
Acanthurus mata					X
Acanthurus nigroris (=*A. elongatus*)	X	X	X	X	X
Acanthurus olivaceus	X	X		X	X
Acanthurus sandvicensis	X	X	X	X	X
Ctenochaetus cyanoguttatus					X
Ctenochaetus hawaiiensis				X	X
Ctenochaetus striatus	X				
Ctenochaetus strigosus	X	X	X	X	X
Naso lituratus	X	X	X	X	X
Naso unicornis	X	X	X		
Zebrasoma flavescens	X	X	X	X	X
Zebrasoma veliferum			X		
Eleotridae (Sleepers)					
Eviota viridis	X				
Gobiidae (Gobies)					
Bathygobius fuscus	X				
Gnatholepis anjerensis		X	X	X	
Hazeus unisquamis			X		
Zonogobius farcimen		X			
Blenniidae (Blennies)					
Cirripectes variolosus	X	X	X	X	
Exallias brevis		X	X		
Istiblennius gibbifrons (=*Salarias gibbifrons*)	X	X	X		

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963-June 1963	Brock, *et al.*, 1966 Aug. 1964-Aug. 1965
Brotulidae (Brotulids)					
Brotula townsendi		X			
Mugilidae (Mullets)					
Mugil cephalus	X	X			
Sphyraenidae (Barracudas)					
Sphyraena japonica	X				
Polynemidae (Threadfins)					
Polydactylus sexfilis	X				
Scorpaenidae (Scorpion Fishes)					
Scorpaena ballieui		X			
Scorpaena coniorta		X			
Scorpaenodes parvipinnis			X		
Bothidae (Flounder or Flatfishes)					
Bothus mancus	X	X		X	X
Echeneidae (Remoras)					
Remora remora		X			
Balistidae (Triggerfishes)					
Balistes bursa			X		
Melichthys buniva	X	X	X	X	X
Melichthys ringens	X				
Melichthys vidua	X	X		X	X
Rhinecanthus aculeatus	X	X	X	X	X

TABLE 25. (Continued)

	Smith and Swain 1882 Fowler and Ball 1925 Halstead and Bunker 1954	Gosline 1955	Brock, *et al.*, 1965 Aug. 1963	Brock, *et al.*, 1965 Dec. 1963-June 1963	Brock, *et al.*, 1966 Aug. 1964-Aug. 1965
Monacanthidae (Filefishes)					
Alutera scripta			X	X	
Amanses carolae	X				X
Amanses sandwichiensis	X	X	X	X	
Pervagor melanocephalus	X	X	X	X	
Pervagor spilosoma					X
Ostraciontidae (Trunkfishes)					
Xentrocarpus hexagonus	X				
Ostracion cubicus	X				
Ostracion lentiginosus	X	X	X	X	X
Ostracion meleagris	X				
Ostracion solorensis	X		X		X
Tetraodontidae (Puffers)					
Arothron meleagris	X	X	X	X	X
Canthigasteridae (Sharp-nosed Puffers)					
Canthigaster jactator	X	X	X	X	X
Diodontidae (Box Fishes)					
Diodon hystrix	X				
Total Species	109	111	115	85	73
New to Atoll	109	49	29	1	5
Old Species Not Seen	0	46	71	101	120

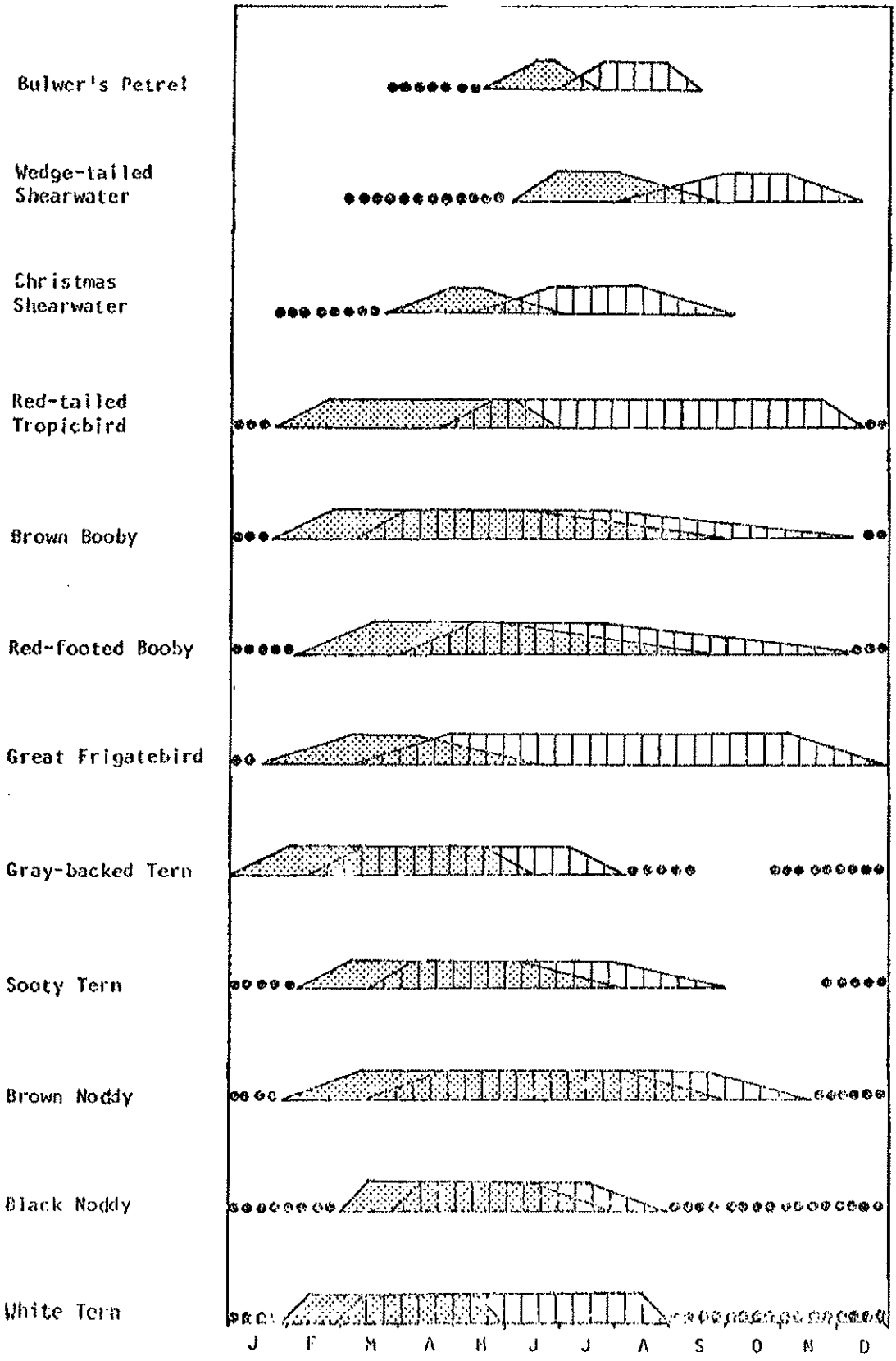

FIGURE 2. BREEDING CYCLES OF SEABIRDS AT JOHNSTON ATOLL; STIPPLED AREA REPRESENTS EGGS, BARRED AREA YOUNG, AND BLACK DOTS NON-BREEDING BIRDS

Source: Amerson and Shelton, 1976.

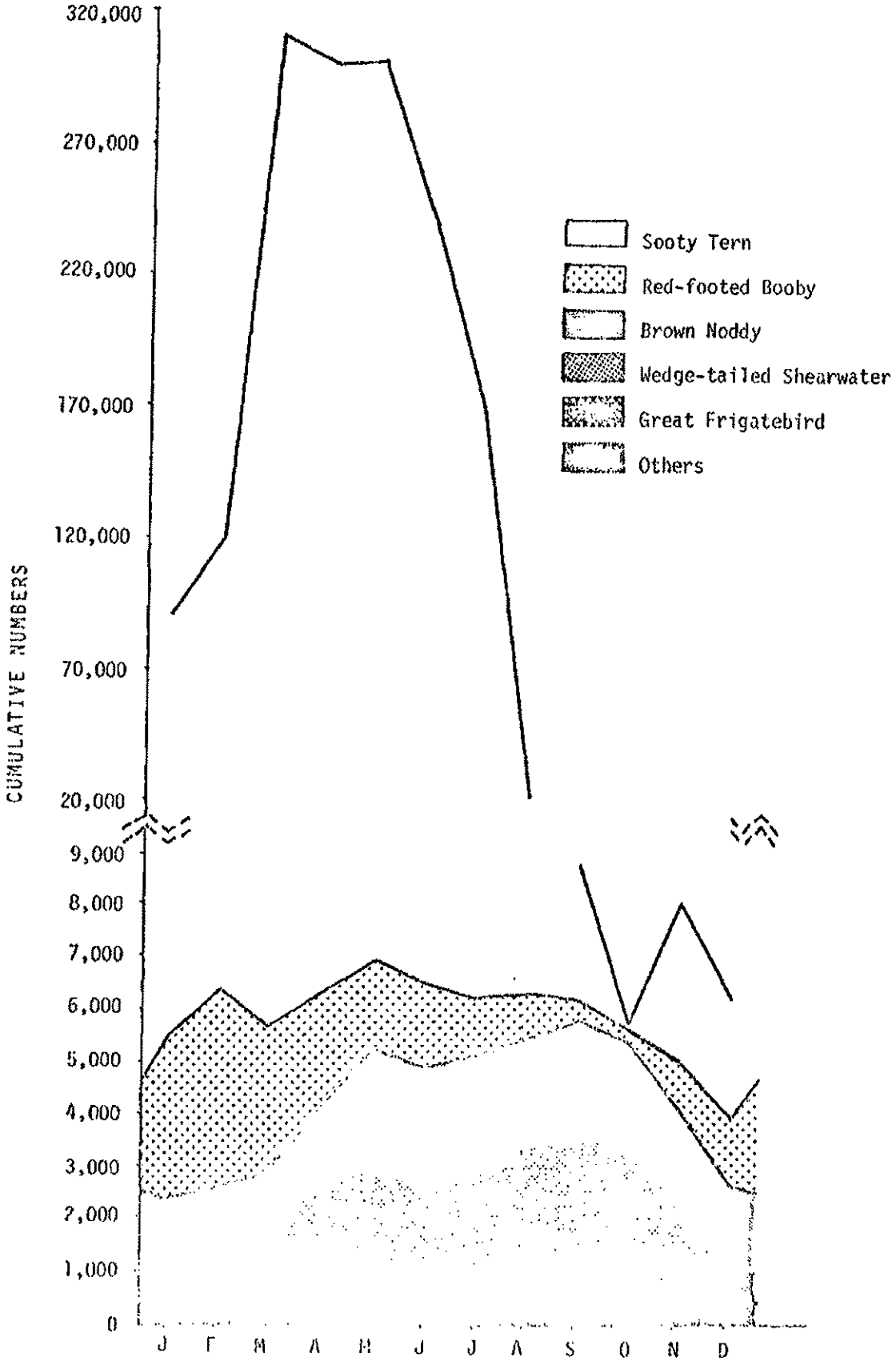

FIGURE 3. MONTHLY CUMMULATIVE BIRD POPULATIONS, JOHNSTON ATOLL 1963-1969
Source: Amerson and Shelton, 1976.

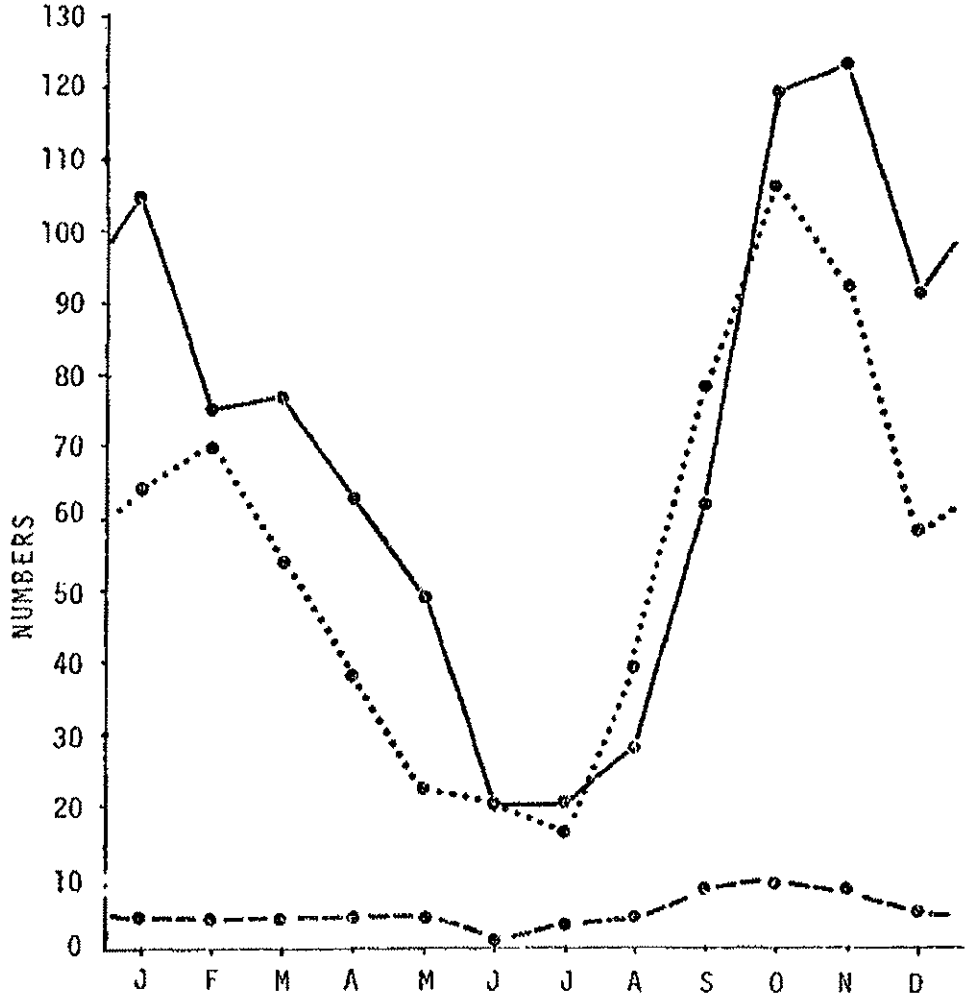

FIGURE 4. MONTHLY MEAN SHOREBIRD POPULATIONS FOR JOHNSTON ATOLL, 1963-1969; GOLDEN PLOVER (SOLID LINE), RUDDY TURNSTONE (DOTS), WANDERING TATTLER (DASHES)

Source: Amerson and Shelton, 1976.

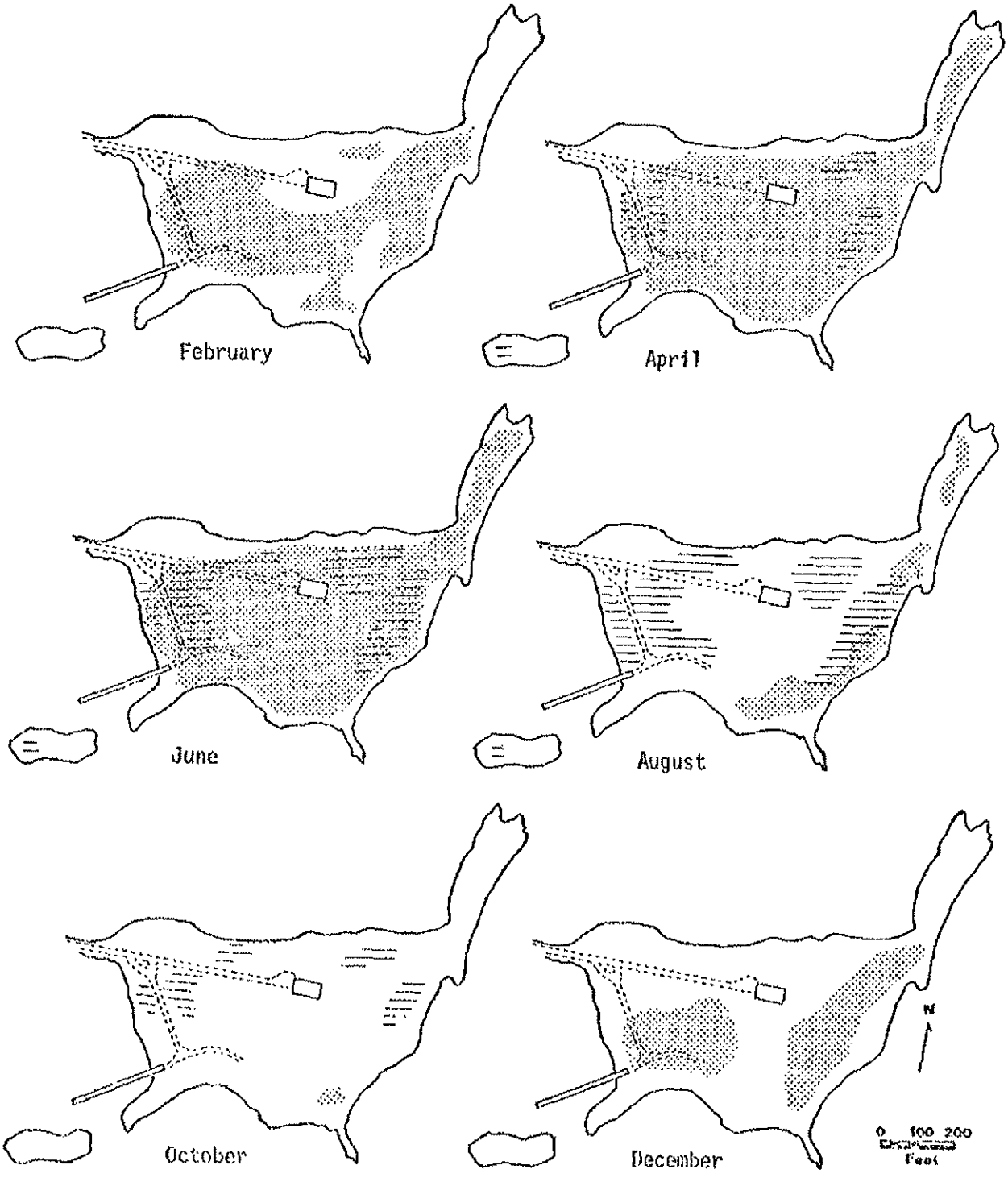

FIGURE 5. AREAS USED BY SOOTY TERNS (STIPPLED) AND WEDGE-TAILED SHEARWATERS (BARRED) ON SAND ISLAND, JOHNSTON ATOLL, 1965
Source: Amerson and Shelton, 1976.

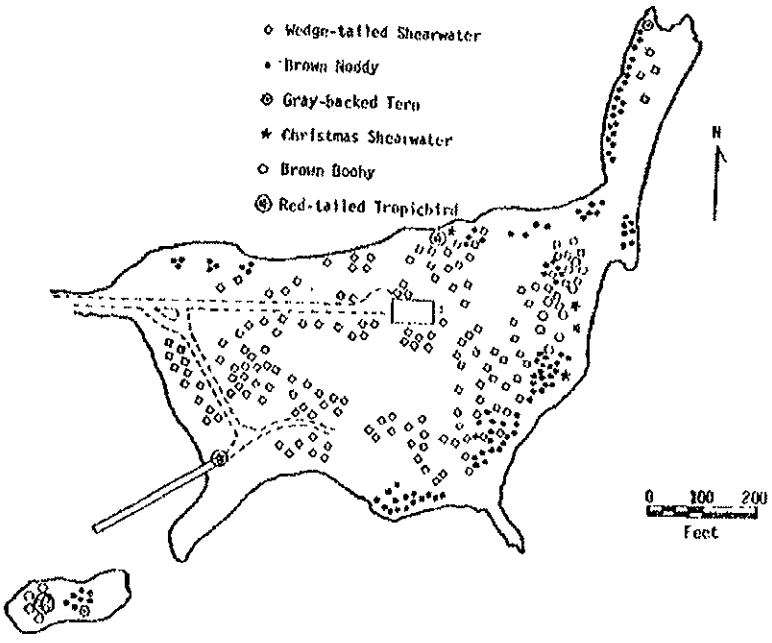

FIGURE 6. NESTING AREAS OF GROUND NESTING BIRDS (EXCEPT SOOTY TERNS) ON THE ORIGINAL PORTION OF SAND ISLAND, JOHNSTON ATOLL, 1963

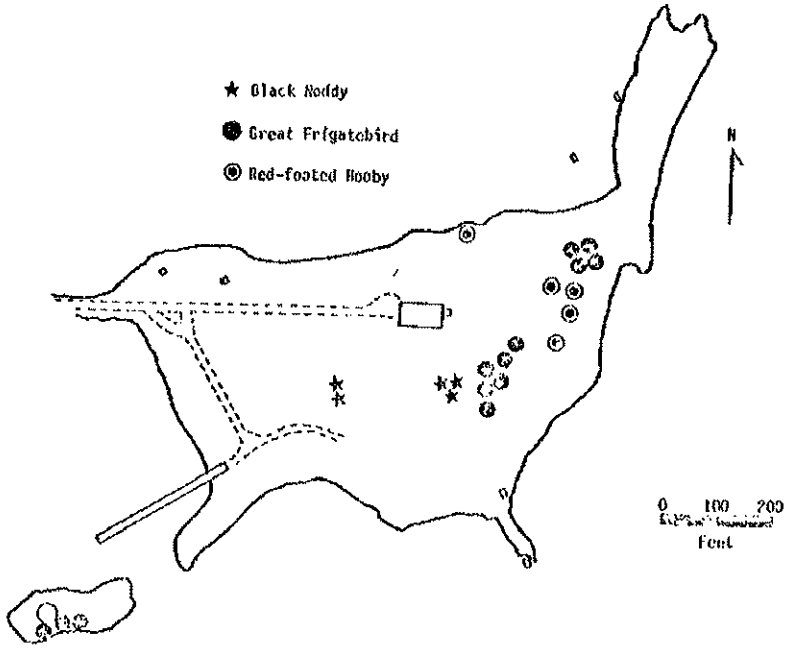

FIGURE 7. NESTING AREAS OF BIRDS WHICH NORMALLY NEST IN LOW VEGETATION ON THE ORIGINAL PORTION OF SAND ISLAND, JOHNSTON ATOLL, 1963
Source: Amerson and Shelton, 1976.

TABLE 26. RECOVERY STUDIES FOR WATER SAMPLES

Compound	Spiked Concentration (ppb) Nominal	Actual	Found Concentration (ppb)	% Received
2,4-D	10	10.6	3.64	34.3
2,4,5-T		10.0	2.75	27.5
2,4-D	10	10.6	4.21	39.7
2,4,5-T		10.0	4.88	48.5
2,4-D	10	10.6	3.11	29.3
2,4,5-T		10.0	2.67	26.7
2,4-D	10	10.6	4.03	38.0
2,4,5-T		10.0	4.70	47.0
2,4-D	5	5.3	3.15	62.6
2,4,5-T		5.0	3.70	74.0
2,4-D	5	5.3	2.48	46.8
2,4,5-T		5.0	2.47	49.4
2,4-D	5	5.3	3.58	67.5
2,4,5-T		5.0	3.67	7.34
2,4-D	5	5.3	2.46	46.4
2,4,5-T		5.0	2.98	59.6
2,4-D	5	5.3	1.28	24.2
2,4,5-T		5.0	1.52	30.4
2,4-D	1	1.06	0.460	43.3
2,4,5-T		1.00	0.537	53.7
2,4-D	1	1.06	0.845	79.7
2,4,5-T		1.00	0.923	92.3
2,4-D	Average			47.37
2,4,5-T	Average			54.44

50.91% = Correction Factor = 1.96

TABLE 27. RECOVERY STUDIES ON WIPE SAMPLE ANALYTICAL PROCEDURE

Compound	Spiked Amount (µg/spl) Nominal	Spiked Amount (µg/spl) Actual	Recovery (Percentage) Recovered Amount	Recovery (Percentage) Percent Recovered
2,4-D	1.0	1.4	2.04	146
2,4,5-T	1.0	1.1	1.78	162
2,4-D	1.0	1.4	1.89	135
2,4,5-T	1.0	1.1	1.52	138
2,4-D	10.0	15.0	15.91	105
2,4,5-T	10.0	12.7	14.73	106
2,4-D	10.0	15.0	15.82	105
2,4,5-T	10.0	12.7	13.41	106
2,4-D	50.0	75.0	79.13	106
2,4,5-T	50.0	63.5	70.97	112
2,4-D	50.0	75.0	80.12	107
2,4,5-T	50.0	63.5	71.54	113
2,4-D	100.0	150.0	142.66	95
2,4,5-T	100.0	127.0	130.80	103
2,4-D	100.0	150.0	154.92	103
2,4,5-T	100.0	127.0	143.40	113

TABLE 28. EQUIPMENT LISTING, PROJECT PACER HO JOHNSTON ISLAND EFFORT

	Quantity Supplied	Quantity Needed
FREEZER, Marvel, Small below bench, Model 972-570 Curtin Scientific 4110L016223 EHL Tag 00317 Serial No: 00190	1 each	1 each
FURNACE, Muffle, Thermolyne type 10500, Curtin 177-218 6640L109101 EHL Tag: None Serial No: None	1 each	1 each
OVEN, National Model 430 Curtin 252-080 6640L016261 EHL Tag: 630 Serial No: None	1 each	1 each
OVEN, Power-O-Matic, Blue M Model POM-256C-1 Curtin 184-473 6640L016232 EHL Tag: 267 Serial No: CD-12513	1 each	1 each
OVEN, Labline Model 3500M, Curtin 184-754 6640L016230 EHL Tag: None Serial No: 1174	1 each	1 each
BALANCE, Top Loading, Mettler P2010 6620L016262 EHL Tag: 266 Serial No: 580334	1 each	1 each
BALANCE, Analytical, Mettler Model H54 6670L016237 EHL Tag: 273 Serial No: 607758	1 each	1 each
BATH, Water, Labline Model 3012 Precision Scientific 6640L016260 EHL Tag: 939 Serial No: 1174	1 each	1 each
BATH, Water, Freas Model 170, Cat #66569 6640L020101 EHL Tag: None Serial No: 11-Z-6	1 each	1 each
DEMINERALIZER, Corning LD-2, Curtin 252-130, equipped with selonoid accessory kit (Curtin 252-155) and automatic still adapter (Curtin 252-148) 4610L016228 EHL Tag: 633 Serial No: None	1 each	1 each
ULTRASONIC CLEANER, Mettler Model ME-1.5, Cole Parmer 8845-50 6530L101403 EHL Tag: 261/265 Serial No: None	2 each	1 each
CART, Glassware, metal frame with additional (4) wire baskets	1 each	2 each
HOT PLATE, Corning Model PC-100, Curtin 137-2731 7310L016238 EHL Tag: None Serial No: None	2 each	1 each
TUBE HEATER, Kontes K72000 6640L324300 EHL Tag: 264 Serial No: None	2 each	none

TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
VORTEX SHAKER	2 each	2 each
CYLINDER, Gas, 100# (Full) 90% Argon/10% methane (For Gas Chromatograph)	20 each	4 each
Tube extraction, 50 mm, SOXHLET	23	24
Extraction condenser, for 30 mm tube, 6 x 3 Corning 3840	14	24
Extraction flask, 500 ml 24/40, KIMAX 25055	24	24
Evaporative concentrator, 2-chambers, 19/22, tube capy - 4 ml size 2-19, K569000	12	24
Thermometer, 10-250 C, size 250, K870500	2	4
Evaporative concentrator, 2-chambers, 14/20, tube capy - 1 ml size 2-14, K569000	12	48
Ghromaflex sample tube, 2 ml, 10/18, stopper, K422560	144	144
Distillation column, Snyder, 1-ball, 150 mm long, 2-joints, 24/40, size 121, K503000	21	48
Ebullator, for evaporative concentrator K569000	48	none
Ebullator, for evaporative concentrator K569350	24	none
Tube, for evaporative concentrator, capy - 20 ml, K749000-0005	36	48
Extraction, flask, boiling, 500 ml, 24/40, KIMAX 25055	11	24
Extraction thimbles, 80 x 25 mm	425	500
Centrifuge tubes, glass, conical, 15 ml	105	24
Tubes, culture, Teflon liner	48	none
Gas filter, high temperature, with 6 recharge bottles	1	2
Gas manifold, circular, nino-place K655800	2	none

TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Evaporative concentrator, Kuderna-Danish, 125 ml, lower tube - 5 ml, 24/40, K570000	17	24
Evaporative concentrator, complete, capy - 1000 ml, K570000	3	none
Funnels, separatory, pear shape, Teflon plug, 60 ml	24	12
Funnels, separatory, pear shape, Teflon plug, 125 ml	12	none
Funnels, separatory, pear shape, Teflon plug, 200 ml	24	12
Rod, flexframe, 1/2 x 48 in.	2	10
Rod, flexframe, 1/2 x 24 in.	4	10
Base, support, 5 x 8 in., for 1/2 x 20 in. rod	2	6
Base, support, 6 x 11 in., for 1/2 x 36 in. rod	4	6
Rod, flexframe, 1/2 x 36 in.	9	10
Ring, support, 2 in.	10	10
Ring, support, 3 in.	10	10
Ring, support, 5 in.	10	10
Clamp, holder, castalloy R	30	48
Clamp, vinylized, 3-prong	12	24
Connector, hose, male, ips, 2-1/2 in. long for tubing 1/4 x 1/2 in.	12	12
Tube, connecting, straight, fits 3/8 to 1/2 in., 68 mm long	12	12
Tube, connecting, T-shaped, 3/16 bore	12	12
Clamp, Day's pinchcock, 2-5/8 in. long	12	12
Clamp, 3-prong, asbestos sleeve, 10-7/8 in. long	8	24

TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Rod, flexframe, 1/2 x 20 in.	4	10
Rod, flexframe, 1/2 x 33 in.	2	10
Silica gel, indicating, can	13	1
Glass wool, roll	1	none
Florisil, 60-100 mesh, pesticide quality, 1b bottle	12	2
Sodium chloride, ACS reagent, 1b bottle	2	2
Potassium Hydroxide, ACS reagent, 1b bottle	2	2
Chromerge, cleaning solution, (6 bottles/can) bottles	18	30
Packing material, GC column, 4% SE-30/6% OV-210, 80-100 mesh, Chromosorb W-HP, 25 g bottle	2	none
Packing material, GC column, 1.5% SP-2250/1.95% SP 2401, 80-100 mesh, Chromosorb W-HP, 25 g bottle	2	2
Chromosorb 102, 60-80 mesh, 50 g bottle	1	1
Glass wool, silanized, 50 g bottle	1	1
Col-treet, 1 ml vial	7	2
Syringe Kleen (CH 2030) 250 g bottle	1	1
Syringe Kleen SK-2, 250 g bottle	1	none
Leak check (similar to SNOOP), bottle	11	2
Syringe, guide, Kel-F for 701N syringe, ea.	3	none
Syringe, 10 microliter, 6 syringe pack	5	5
Ferrules, front, 1/4 in. O.D., Teflon, ea.	102	50
Ferrules, front, 1/4 in. O.D., VESPEL, ea.	20	50
Septa, ea.	100	50

TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Cutter, tubing, metal	1	1
Caps, end for GC glass columns, 1/4 in. O.D., ea.	100	10
Tags, aluminum, for GC columns, ea.	100	12
Funnel, metal, attachable to glass column, 1/4 in., ea.	2	2
Tape, Teflon, roll	2	2
Flowmeter, soap, 10 cc, ea.	1	1
Disc, 20 mm, Teflon laminated, ea.	240	144
Inserts, glass, for TRACOR GC, ea.	12	none
Key, hexagonal, set, 9 in one, ea.	1	1
Wrench, open end, 9/16 - 5/8 for 1/4 in. Swagelok, ea.	1	2
Pencil, diamond point, ea.	2	1
Chart, paper, omniscribe, roll	48	none
Pen, recorder, dacron, red, ea.	11	none
Pen, recorder, dacron, green, ea.	7	none
Paper, for System IV Integrator, roll	27	none
Pen, recorder, dacron, black, ea.	4	none
Stopwatch, 60 sec., with holder, ea.	1	1
Regulator, gas, two-stage, CGA-580 (nitrogen), ea.	2	2
Manifold, 3-stage, for CGA-580 connections, ea.	1	2
Gas purifier, 5-3/4 in. x 2 in., ea.	3	none
Cartridge for gas purifier, Model 451, ea.	30	none

TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Activated desiccant for dehydrator purifier, ea.	24	12
Support, cylinder, bench/strap type, ea.	6	6
System IV Integrator - supplied (fuses, ribbon, lights) pkg.	1	none
Regulator, Gas, 2-stage, 8H350 (Argon/Methane)	2	2
Regulator, Gas, 2-stage, 8H590 (Air)	1	2
Pipets, Serological, 0.2 ml, ea.	18	none
Pipets, Serological, 0.5 ml, ea.	18	none
Pipets, Serological, 1.0 ml, ea.	18	none
Pipets, Serological, 5.0 ml, ea.	18	none
Pipets, Serological, 10.0 ml, ea.	18	none
Pipets, Volumetric, 0.5 ml, ea.	18	18
Pipets, Volumetric, 1.0 ml, ea.	18	18
Pipets, Volumetric, 2.0 ml, ea.	18	18
Pipets, Volumetric, 3.0 ml, ea.	18	18
Pipets, Volumetric, 5.0 ml, ea.	18	18
Pipets, Volumetric, 10.0 ml, ea.	18	18
Pipets, Bacteriological, disposable, 9 in., box (360)	4	24
Repipet dispenser, 10 ml (LI3010/all) ea.	1	2
Repipet dispenser, 50 ml (LI3010/all) ea.	1	2
Delivery head, Beckman No. 5062 (small), ea.	4	3
Delivery head, Beckman No. 5063 (large), ea.	1	1
Reservoir flasks, Earlenmeyer, 500 ml, ea.	3	4

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TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Reservoir top attachment, 5 ml, ea.	2	2
Reservoir top attachment, 50 ml, ea.	1	2
Reservoir top attachment, 10 ml, ea.	1	1
Thermometer, -20 to 110 C, ea.	2	1
Thermometer, -10 to 260 C, ea.	2	1
Thermometer, -10 to 400 C, ea.	2	1
Bulb, rubber, 1 ml, ea.	120	120
Bulb, rubber, 2 ml, ea.	12	none
Filler, pipete, rubber, ea.	8	8
Flask, Volumetric, 5 ml, ea.	23	10
Flask, Volumetric, 10 ml, ea.	24	10
Flask, Volumetric, 50 ml, ea.	21	10
Beaker, 50 ml, ea.	48	24
Flask, Earlenmeyer, 1000 ml, ea.	3	4
Cylinder, Graduated, 50 ml, ea.	18	5
Cylinder, Graduated, 100 ml, ea.	11	5
Cylinder, Graduated, 50 ml, ea.	12	5
Funnel, long stem, 65 x 100 mm long, ea.	6	12
Funnel, filling, 80 mm dia. x 16 mm stem, ea.	11	12
Desiccator, T-sleeve top, 160 mm ID, 225 mm high, ea.	3	2
Flask, Volumetric, 25 ml, ea.	6	10

TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Flask, Volumetric, 500 ml, ea.	4	2
Beaker, 1000 ml, ea.	48	24
Flask, Earlenmeyer, 25 ml, ea.	48	10
Flask, Earlenmeyer, 25 ml, with T stopper, ea.	6	6
Flask, filtering, 250 ml, ea.	4	none
Flask, filtering, 500 ml, ea.	4	4
Flask, Earlenmeyer, 50 ml, ea.	48	10
Flask, Earlenmeyer, 250 ml, ea.	108	10
Flask, Volumetric, 100 ml, ea.	24	24
Flask, Volumetric, 1000 ml, ea.	4	10
Beaker, 150 ml, ea.	48	10
Flask, Filtering, 1000 ml, ea.	1	1
Funnel, short stem, 65 mm, filtering, ea.	24	24
Beaker, 250 ml, ea.	48	10
Cylinder, Graduated, 1000 ml, ea.	4	8
Funnel, short stem, 150 mm dia., ea.	12	12
Beaker, 600 ml, ea.	36	10
Beaker, 2000 ml, ea.	8	10
Flask, Earlenmeyer, 1000 ml, ea.	18	10
Cartridge, demineralizer, organic, nipple ends, ea.	2	4
Cartridge, water demineralizer for LD2A, ea.	2	4

TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Apron, neoprene, ea.	4	5
Bucket, plastic, 11 qt, ea.	2	4
Tray, plastic, 22 x 17 x 5-1/4 in., ea.	2	2
Chem-Solv, Glassware cleaner, pt. bottle	24	24
Goggles, safety, ea.	5	5
Gloves, latex, orange, 11 in. long, pair	12	12
Gloves, rubber, size 10, 11 in. long, pair	5	5
Gloves, vinyl, disposable, 4 x 25, ea.	50	50
Brush, cylinder, hardwood handle, 13 in., ea.	9	5
Brush, flask, flexible, plastic, 4-1/2 in. handle, 16 in. long, ea.	12	5
Brush, burette, 36 in. long, ea.	12	5
Brush, test tube, 8 in. long, ea.	11	5
Tubing, copper, 1/8 in. O.D., 50 ft roll	3	2
Tubing, copper, 1/4 in. O.D., 50 ft roll	1	2
Tubing, plastic, 1/4 ID x 1/2 O.D., 50 ft roll	1	4
Tubing, plastic, 1/2 in. ID x 3/4 O.D., 50 ft roll	1	4
Tubing, plastic, 1/2 in. ID x 3/4 O.D., 50 ft roll	1	1
Tubing, Rubber, white, 1/8 in. ID x 1/4 in. O.D., 50 ft roll	1	2
Tubing, Rubber, black, 1/4 in. ID x 3/4 in. O.D., 50 ft roll	10	none
Wire, soft aluminum, roll	2	1
Tubing, latex, 1/4 in. ID x 3/4 in. O.D., 50 ft roll	1	1

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TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Faucet, Laboratory	3	3
Scoop, lab, with handle, 7 in. long, ea.	12	12
Spatula, micro, ea.	9	9
Forceps, dissecting, tine curved, 115 mm., corrugated w/guide, ea.	2	2
Forceps, fine, straight, corrugated, 115 mm, w/guide, ea.	2	2
Forceps, laboratory, blunt, serrated, 5 in. long, ea.	2	2
Forceps, dressing, 5-1/2 in. long, ea.	2	none
Forceps, dressing, 10 in. long, ea.	1	none
Forceps, dressing, 4 in. long, ea.	2	none
Scissors, general, 5-1/2 in., ea.	2	2
Tongs, lab, crucible, 9 in., ea.	12	6
Tongs, crucible, 9 in., oxidized, steel, ea.	4	none
Timers, interval, ea.	3	4
Paper, filter, Whatman No. 40, acid washed, 110 mm, box	2	2
pH paper, dispenser, double roll, (1-11 pH) ea.	4	4
Tape, label, vinyl, 3/4 in. x 500 in., roll	2	4
Foil, aluminum, 500 ft roll	2	4
Wire baskets, vinyl coated for glassware cart	5	10
Brush, 9 in. long, for conical test tubes	12	5
Gloves, vinyl utility	400	400

TABLE 28. (Continued)

	Quantity Supplied	Quantity Needed
Gloves, asbestos (pair)	2	4
BF_3, cylinders	3	3
Gloves, rubber, pair	2	4
Tray with Swagelok fittings	1	2

TABLE 29. BULK CHEMICALS LISTING, PROJECT PACER HO
JOHNSTON ISLAND EFFORT

	Chemical	Unit/Issue	Cases	Total Supplied	Total Needed
6810L227569	HEXANE, P.G.	GAL	9	36	40
6810L227119	ETHYL EHTER, P.G.	CN	4	24	32
6810L202759	BENZENE, P.G.	GAL	27	108	4
6810L227570	ACETONE, P.G.	GAL	9	36	24
6810L0326EL	ETHYLENE CLYCOL, P.G.	GAL	1	4	2
6810L0283EL	DICHLOROMETHANE, P.G.	GAL	4	16	4
6810L227565	ISO-OCTANE, P.G. (2,2,4 TRIMETHYL PENTANE)	GAL	2	8	10
6810L0281EL	METHYL ALCOHOL, P.G.	GAL	1	4	4
6810L227414	SULFURIC ACID, TECHNICAL	GAL	5	20	24
6810L227572	SODIUM SULFATE, ANHYDROUS	LB/BTL	2	21 (Plus 15 each btls from loose issue, bldg 3215)	2
7930L227563	CHROMERGE CLEANING SOL	CN	3	36	48

PACER HO Analytical Laboratory Analytical Data

Land-Based Monitoring

Chromosorb (Air) Samples. The following codes are used in reporting the data given below:

ND = not detected

NA = not analyzed

Trace = at or below the lower limit of quantitation

* = interferences observed, data unreliable

TABLE 30. ANALYTICAL DATA FOR CHROMOSORB (AIR) SAMPLES

Sample Code	Lab Code	Results (µg/sample) for Buhyl Esters 2,4-D	2,4,5-T
Detection Limits for following Samples		0.08	0.04
Limit of Quantitation for following samples		0.4	0.4
CM24Y709J	CL-1	ND	ND
CW24Y709J	CL-2	ND	ND
CD24Y709J	CL-3	Trace	Trace
CC25Y709J	CL-4	ND	ND
CD25y709J	CL-5	Trace	Trace
CM25Y709J	CL-6	ND	ND
CW25Y709J	CL-7	Trace	ND
CD26Y709J	CL-8	Trace	Trace
CM26Y709J	CL-9	Trace	ND
CN26Y709J	CL-10	Trace	Trace

TABLE 30. (Continued)

Sample Code	Lab Code	Results (µg/sample) for Butyl Esters 2,4-D	2,4,5-T
CP26Y709J	CL-11	Trace	Trace
CS26Y709J	CL-12	Trace	Trace
CW26Y709J	CL-13	ND	ND
CS27Y719J	CL-14	3.712	2.007
CD27Y719J	CL-15	0.567	Trace
CW27Y719J	CL-16	Trace	ND
CN27Y719J	CL-17	1.389	0.656
CP27Y719J	CL-18	Trace	Trace
CM27Y719J	CL-19	Trace	ND
CN28Y710J	CL-20	2.310	1.043
CM28Y707J	CL-21	Trace	ND
CW28Y708J	CL-22	Trace	ND
CS28Y709J	CL-23	2.041	1.097
CD28Y709J	CL-24	0.781	0.401
CP28Y710J	CL-25	ND	ND
CS28Y719J	CL-26	4.009	2.253
CD28Y719J	CL-27	0.620	0.307
CM28Y719J	CL-28	Trace	ND
CN28Y719J	CL-29	1.745	0.813
CW28Y719J	CL-30	Trace	ND
CP28y719J	CL-31	0.657	ND
PX29Y707J	CL-32	2.070	1.133
PV29Y707J	CL-33	2.231	1.118
PP29Y707J	CL-34	1.237	0.560
CM29Y708J	CL-35	ND	ND
CD29Y707J	CL-36	Trace	Trace
CW29Y708J	CL-37	Trace	Trace
CD29Y722J	CL-38	Trace	Trace

TABLE 30. (Continued)

Sample Code	Lab Code	Results (µg/sample) for Butyl Esters 2,4-D	2,4,5-T
CD30Y708J	CL-39	0.887	0.360
CM31Y701J	CL-40	Trace	ND
CD30Y719J	CL-41	0.625	Trace
CW31Y701J	CL-42	Trace	ND
PP30Y719J	CL-43	0.687	Trace
PU30Y719J	CL-44	3.123	1.412
PT30Y719J	CL-45	0.257	Trace
CM31Y708J	CL-46	Trace	ND
CW31Y708J	CL-47	Trace	ND
CD31Y708J	CL-48	0.406	Trace
PU31Y707J	CL-49	0.955	0.474
PT31Y707J	CL-50	2.876	1.523
PP31Y707J	CL-51	1.530	0.659
CD31Y719J	CL-52	0.488	Trace
CD02T709J	CL-53	0.993	0.543
CM03T701J	CL-54	Trace	ND
CW03T701J	CL-55	Trace	ND
CD02T719J	CL-56	0.54	Trace
PU02T719J	CL-57	2.31	1.16
PT02T719J	CL-58	2.16	1.02
PP02T719J	CL-59	3.08	1.32
PT03T707J	CL-60	1.46	0.70
PU03T707J	CL-61	2.02	0.98
PP03T707J	CL-62	2.19	1.03
CW03T708J	CL-63	Trace	ND
CD03T707J	CL-64	0.76	Trace
CM03T708J	CL-65	Trace	ND
(Chromosorb Blank)	CL-66	ND	ND

TABLE 30. (Continued)

Sample Code	Lab Code	Results (µg/sample) for Butyl Esters 2,4-D	2,4,5-T
PQ03T719J	CL-67	1.94	0.99
CD03T719J	CL-68	0.93	Trace
PZ03T719J	CL-69	2.47	1.30
CM04T701J	CL-70	Trace	ND
CW04T701J	CL-71	Trace	ND
PV04T707J	CL-72	1.62	0.76
CW04T708J	CL-73	Trace	ND
CM04T708J	CL-74	Trace	ND
PX04T707J	CL-75	2.01	0.88
CD04T707J	CL-76	1.09	0.48
CM05T701J	CL-77	Trace	ND
CD04T719J	CL-78	0.74	Trace
CW05T701J	CL-79	Trace	ND
PR04T719J	CL-80	30.8	1.61
PZ04T719J	CL-81	2.60	1.36
CW05T708J#	CL-82	Trace	Trace
CD05T707J#	CL-83	ND	ND
CM05T708J#	CL-84	1.21	0.72
PU05T707J	CL-85	1.90	0.95
PT05T707J	CL-86	2.17	0.89
CD06T708J	CL-87	0.92	Trace
CM06T708J	CL-88	ND	ND
CM08T708J	CL-89	ND	ND
CW08T708J	CL-90	0.60	0.26

#Sucked in water

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TABLE 30. (Continued)

Sample Code	Lab Code	Results (µg/sample) for Butyl Esters 2,4-D	2,4,5-T
Detection Limits for following samples		0.08	0.03
Limit of Quantitation for following samples		0.2	0.1
CW11T708J	CL-91	ND	ND
CM11T708J	CL-92	ND	ND
Blank	CL-93	ND	ND
CD17T713J	CL-94	1.29	0.69
CM17T713J	CL-95	ND	ND
PU17T713J	CL-96	2.83	1.67
PT17T713J	CL-97	2.56	1.53
CD17T719J	CL-98	1.01	0.39
CM17T720J	CL-99	ND	ND
PT17T719J	CL-100	3.68	2.03
PX17T719J	CL-101	1.57	0.92
CD18T707J	CL-102	3.92	1.65
CM18T707J	CL-103	ND	ND
PV18T707J	CL-104	2.30	1.43
PX18T707J	CL-105	3.07	1.90
CD18T719J	CL-106	0.98	0.34
CM18T720J	CL-107	ND	ND
PX18T719J	CL-108	1.42	0.73
PV18T719J	CL-109	1.80	0.97
CM20T708J	CL-110	Trace	ND
PU20T707J	CL-111	1.95	1.20
PX20T707J	CL-112	2.03	1.25
CD20T707J	CL-113	1.66	0.72
CW20T707J	CL-114	Trace	ND
PU20T719J	CL-115	3.61	2.14

TABLE 30. (Continued)

Sample Code	Lab Code	Results (µg/sample) for Butyl Esters 2,4-D	2,4,5-T
CW20T720J	CL-116	Trace	Trace
CD20T719J	CL-117	0.76	0.27
PR20T719J	CL-118	2.13	1.17
CM20T720J	CL-119	0.40	0.18
Blank	CL-120	ND	ND
CW21T708J	CL-121	Trace	ND
CM21T707J	CL-122	ND	ND
CD21T707J	CL-123	2.29	0.88
PU21T707J	CL-124	1.74	0.99
PX21T707J	CL-125	1.81	1.01
CD21T719J	CL-126	0.81	0.31
CW21T720J	CL-127	ND	ND
CM21T720J	CL-128	ND	ND
PT21T719J	CL-129	0.88	0.48
PY21T719J	CL-130	1.39	0.71
CD22T707J	CL-131	1.88	0.70
PX22T707J	CL-132	4.35	2.29
PU22T707J	CL-133	2.24	1.37
CM22T707J	CL-134	Trace	ND
CW22T707J	CL-135	Trace	ND
PR22T719J	CL-136	3.12	1.92
PX22T719J	CL-137	1.39	0.63
CW22T720J	CL-138	Trace	Trace
CM22T720J	CL-139	Trace	Trace
CD22T719J	CL-140	1.42	0.55
CS23T707J	CL-141	0.92	0.36
CD23T707J	CL-142	2.19	1.06
CM23T707J	CL-143	Trace	ND
CN23T707J	CL-144	0.32	Trace

TABLE 30. (Continued)

Sample Code	Lab Code	Results (µg/sample) for Butyl Esters 2,4-D	2,4,5-T
CW23T707J	CL-145	Trace	ND
CS23T717J	CL-146	1.26	0.45
CN23T717J	CL-147	1.24	0.52
CM23T717J	CL-148	Trace	Trace
CD23T717J	CL-149	1.43	0.74
CW23T717J	CL-150	Trace	ND
CW24T707J	CL-151	Trace	ND
CS24T707J	CL-152	0.75	0.20
CD24T707J	CL-153	0.72	0.24
CN24T707J	CL-154	1.28	0.50
CM24T707J	CL-155	Trace	ND
CW24T716J	CL-156	Trace	Trace
CN24T716J	CL-157	1.11	0.49
CM24T716J	CL-158	Trace	ND
CS24T716J	CL-159	1.51	0.50
CD24T716J	CL-160	1.83	0.81
CW25T707J	CL-161	ND	ND
CN25T707J	CL-162	1.08	0.42
CD25T707J	CL-163	1.29	0.64
CM25T707J	CL-164	ND	ND
CS25T707J	CL-165	1.21	0.43
CS25T716J	CL-166	21.3*	0.48
CN25T716J	CL-167	1.97*	0.54
CD25T716J	CL-168	2.54*	0.99
CW25T716J	CL-169	0.67*	ND
CM25T716J	CL-170	0.44*	ND
CD26T707J	CL-171	3.45*	0.52
CM26T707J	CL-172	1.67*	ND
CN26T707J	CL-173	0.66*	0.22
CS26T707J	CL-174	1.19*	0.21

TABLE 30. (Continued)

Sample Code	Lab Code	Results (µg/sample) for Butyl Esters 2,4-D	2,4,5-T
CW26T709J	CL-175	0.53*	ND
CW26T716J	CL-176	0.51*	ND
CM26T716J	CL-177	0.62*	ND

Water Samples. The following codes are used in reporting the data given below:

ND = not detected

NA = not analyzed

Trace = at or below the lower limit of quantitation

TABLE 31. ANALYTICAL DATA FOR WATER SAMPLES

Sample Code	Lab Code	Results (ppb) Methyl Esters 2,4-D	2,4,5-T
Detection Limits for following samples		0.1	0.1
Limit of Quantitation for following samples		0.25	0.25
WD24Y715J	WL-1G	ND	Trace
WS24Y700J	WL-2C	ND	ND
WF24Y700J	WL-3C	ND	ND
WO24Y700J	WL-4C	ND	ND
P125Y700J	WL-5C	Trace	Trace
P225Y714J	WL-5G	NA	NA
WS25Y700J	WL-6C	ND	ND
WO25Y700J	WL-7C	ND	ND
WF25Y700J	WL-8C	ND	ND
SE225Y710J	WL-9G	NA	NA
P126T700J	WL-10C	ND	Trace
P226Y715J	WL-10G	ND	ND
SE126Y700J	WL-11C	ND	ND
WS26Y700J	WL-12C	ND	ND
WF26Y700J	WL-13C	ND	ND
WO27Y700J	WL-14C	ND	ND
WF27Y700J	WL-15C	ND	ND
SE227Y711J	WL-16G	NA	NA
WS27Y700J	WL-17C	ND	ND

TABLE 31. (Continued)

Sample Code	Lab Code	Results (ppb) Methyl Esters 2,4-D	2,4,5-T
P227T715J	WL-18G	NA	NA
P127Y700J	WL-18C	ND	ND
SE228Y711J	WL-19G	NA	NA
SE128Y700J	WL-19C	8.93	13.09
P128Y700J	WL-20C	ND	ND
P228Y715J	WL-20G	NA	NA
WF28Y700J	WL-21C	ND	ND
WS28Y700J	WL-22C	ND	Trace
P129Y700J	WL-23C	ND	Trace
P229Y715J	WL-23G	NA	NA
WF29Y700J	WL-25C	ND	ND
WS29Y700J	WL-26C	ND	ND
WO29Y700J	WL-27C	ND	ND
SE229Y712J	WL-28G	22.81	27.23
WF30Y711J	WL-29G	47.57	54.14
WF30Y700J	WL-29C	0.45	0.41
P130Y700J	WL-30C	ND	Trace
P230Y715J	WL-30G	NA	NA
SE130Y700J	WL-31C	20.65	19.01
SE230Y712J	WL-31G	NA	NA
WS30Y700J	WL-32C	0.53	0.37
WS31Y700J	WL-33C	0.29	0.30
WF31Y700J	WL-34C	Trace	Trace
P231Y715J	WL-35G	NA	NA
P131Y700J	WL-35C	ND	Trace
WS01T700J	WL-36C	Trace	0.23
WF01T700J	WL-37C	Trace	0.24
WO01T700J	WL-38C	ND	ND

TABLE 31. (Continued)

Sample Code	Lab Code	Results (ppb) Methyl Esters 2,4-D	2,4,5-T
P101T700J	WL-39C	ND	Trace
P201T715J	WL-39G	ND	ND
P102T700J	WL-40C	ND	ND
SE102T700J	WL-41C	12.39	11.77
RW01T700J	WL-42	ND	Trace
WO03T700J	WL-43C	ND	Trace
WS03T700J	WL-44C	Trace	Trace
WF03T700J	WL-45C	ND	Trace
P103T700J	WL-46C	ND	Trace
WS04T700J	WL-47C	Trace	Trace
WF04T700J	WL-48C	Trace	Trace
SE104T700J	WL-49C	46.60	47.16
P104T700J	WL-50C	ND	Trace
WS05T700J	WL-51C	Trace	Trace
WO05T700J	WL-52C	ND	ND
WF05T700J	WL-53C	Trace	Trace
P105T700J	WL-54C	ND	ND
WD05T700J	WL-55C	ND	ND
WS06T700J	WL-56C	Trace	ND
WF06T700J	WL-57C	0.38	0.36
SE106T700J	WL-58C	65.63	72.15
P106T700J	WL-59C	ND	ND
Detection Limits for following samples		0.1	0.1
Limit of Quantitation for following samples		0.2	0.2
WF09T700J	WL-60C	Trace	0.28
WS09T700J	WL-61C	ND	Trace

TABLE 31. (Continued)

Sample Code	Lab Code	Results (ppb) Methyl Esters 2,4-D	2,4,5-T
P109T700J	WL-62C	ND	Trace
SE109T700J	WL-63C	20.35	21.76
WF12T700J	WL-64C	ND	Trace
WS12T700J	WL-65C	ND	Trace
SE112T700J	WL-66C	12.26	13.59
P112T700J	WL-67C	ND	ND
Blank		ND	ND
WS16T700J	WL-68C	NA	NA
WF16T700J	WL-69C	NA	NA
SE16T700J	WL-70C	NA	NA
P116T700J	WL-71C	NA	NA
WR16T700J	WL-72C	ND	ND
WO17T700J	WL-73C	ND	Trace
WS17T700J	WL-74C	ND	Trace
WF17T700J	WL-75C	ND	Trace
P117T700J	WL-76C	ND	Trace
WF18T700J	WL-77C	ND	ND
WS18T700J	WL-78C	ND	ND
SE18T700J	WL-79C	53.17	55.89
P118T700J	WL-80C	ND	Trace
WO18T700J	WL-81C	ND	ND
WS19T700J	WL-82C	2.11	1.32
WF19T700J	WL-83C	0.33	0.25
P119T700J	WL-84C	ND	Trace
WFB19T710J	WL-85G	4698.1	3418.0
WF20T700J	WL-86C	1.02	0.88
WS20T700J	WL-87C	1.05	0.58
SE20T700J	WL-88C	28.95	16.32