WESTERN BIRDS

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SEABIRDS IN WASHINGTON'S OFFSHORE ZONE

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Accounts of "pelagic" seabirds in Washington given by Jewett et al. (1953) reflect a virtual lack of offshore observations before 1953. Subsequent observations made primarily between 100-1200 km off the coast in pelagic waters during oceanographic surveys are reported by Sanger (1965, 1970, 1972b). Martin (1942) and Martin and Myres (1969) report sightings and specimens acquired during salmon and tuna fishing cruises off British Columbia and northern Washington. Yocom (1947) reports sightings off southern Oregon. Gruchy et al. (1972) give notes of records from 50° N 145° W. A few other short notes (Alcorn 1942 and 1946, Kenyon 1950, Slipp 1952, Wahl 1970) and seasonal reports in field ornithology journals comprise most of the published seabird records off Oregon, Washington and British Columbia.

Between September 1966 and September 1975 I made a series of 42 one-day trips offshore from Westport, which is about 80 km north of the Washington-Oregon border, in Grays Harbor County, Washington. Trips were made aboard chartered sportfishing vessels in the general "Grays Canyon" area, between about 46° 30′ to 47° 10′ N and to 125° 20′ W, up to about 100 km offshore (Figure 1). Eight of these trips reached water depths of 1800 m or greater. The trips were made between 16 April and 16 October.

THE OFFSHORE ZONE

The offshore zone includes the continental shelf and slope seaward from about 10 km off the coast to a depth of about 1800 m. This generally follows Wynne-Edwards (1935). Washington's offshore zone extends to about 120 km off the coast. The shelf is cut by several submarine canyons and the beginning of the continental rise is from 28 to 53 km off the coast.

METHODS AND RESULTS

On the first eleven trips, numbers of birds seen were estimated on arrival back at port. Beginning in September 1971 all species of birds seen were recorded by numbers estimated after periods of 30 to 60 minutes. Records of visibility and sea conditions, along with features such as feeding activity and concentrations, species associations, ships, etc., locations and sea surface temperatures were taken when possible. Usually two experienced observers, one each in bow and stern, observed continuously and periodically they together estimated numbers on a pre-printed checklist. A fixed transect width was not used, but corrections were made for numbers duplicated in counts. I was present on all trips and recorded birds alone on two occasions. D. R. Paulson shared compilation on 15 trips; D. Heinemann, A. Benedict, J. Duemmel, R. Furrer, E. Hunn, D. L. Pearson, E. W. Stiles and W. Tweit assisted on other trips.

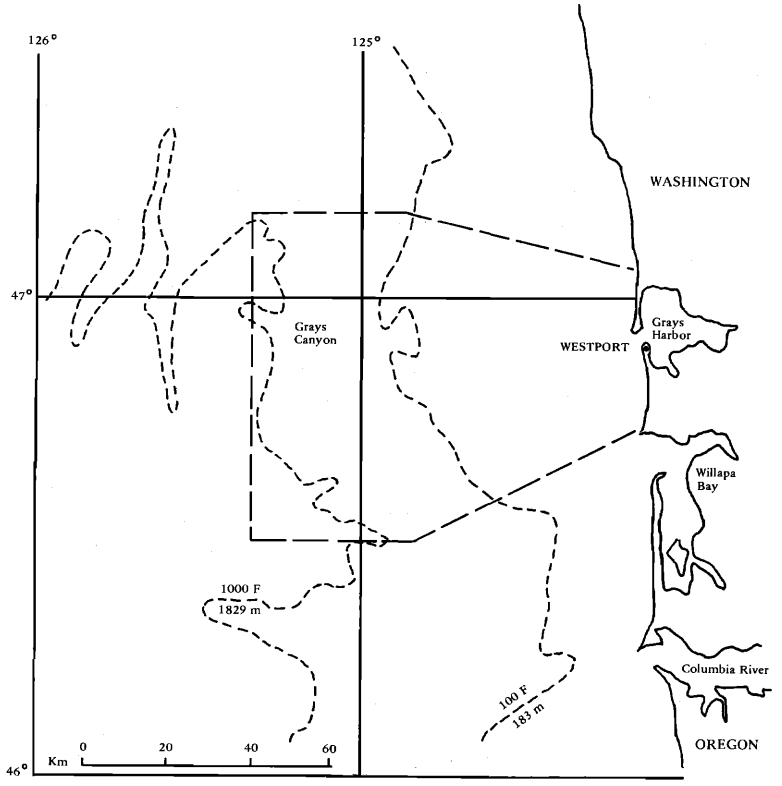

Figure 1. Study area off Westport, Washington.

Table 1 gives daily totals on 31 trips on which systematic records were taken. First and last one-half hour counts are omitted, thus inshore zone birds are generally excluded. Table 2 gives occurrence rates both for all trips and for seasons of species' occurrence, range of dates species were noted, and periods of peak occurrence.

SPECIES ACCOUNTS

Abundance designations below generally follow those used by Robbins et al. (1966). Casual refers to irregular, usually in small numbers. Each status description refers to that likely in the offshore zone. *Audubon Field Notes* and *American Birds* record citations are abbreviated AFN and AB, respectively.

SHORT-TAILED ALBATROSS *(Diomedea albatrus).* Presumably a casual visitor. A bird photographed on 3 May 1970 was identified as a sub-adult of this species (Wahl 1970). The quality of the photograph is poor, and the record should be considered a "possible". However, this species certainly occurs in the eastern North Pacific (Sanger 1972a). The most recent regional record appears to be that on 24-26 June 1971 at Ocean Station 'P', the Canadian weathership station at 50°N, 145°W (Gruchy et al. 1972). All Washington records appear to be from the spring season (Jewett et al. give dates of April to June).

The white albatross sightings related by Jewett et al. probably refer to the Laysan Albatross, a species not credited for Washington in 1953. In view of the record of the Shy Albatross collected off Washington in 1951 (Slipp 1952), the regular occurrence of one dark and one light species, and the discussion by Gochfeld and Tudor (1975) of possible confusion of *albatrus* with vagrant Wandering Albatrosses *(D. exulans),* all albatrosses should be scrutinized.

BLACK-FOOTED ALBATROSS *(Diomedea nigripes).* Common visitor. Has occurred all months of the year, but largest numbers are apparently in April to October, with few birds present in winter (Sanger 1974a). We noted Black-foots primarily from about 140 m depth to the edge of the continental shelf. Numbers decreased beyond the edge of the continental shelf, though Jehl (1973) comments that off southern California in October Black-foots were virtually absent from shelf waters, and uncommon but regular over 1800 m and greater depths. While there may be differences in biological features, this likely shows lack of commercial fishing vessel attraction off southern California. Large numbers off Washington appear related to known fishing activity. On 12 September 1971 approximately 250 gathered at a Japanese stern trawler which had been operating continuously for two days. On days following storms, when local vessels were not fishing and no foreign vessels were known to be in the area, we found albatrosses and other ship-followers in low numbers and scattered, likely representing a normal distribution when birds utilize natural food sources only. Albatrosses are occasionally seen inshore, probably due to ship-following (e.g. one seen in July 1974 over about 25 m depth off Grays Harbor).

We noted large numbers on occasions through our range of dates, with numbers decreasing in October. On 15 October 1972 there were about 11,000 California Gulls and many other birds present at a working fleet of six Russian stern trawlers, but only 2 Black-foots were found—far fewer than would be expected, though we did see 37 on 7 October 1973. Sanger (1974a) indicates that winter distribution in the northeastern Pacific is poorly known.

Table 1. Birds regularly observed on 31 trips in the offshore zone off Westport, Washington. First and last one-half hour counts are omitted to exclude inshore zone.

	16 April 1972	6 May 1973	12 May 1973	14 May 1972	16 May 1975	18 May 1975	19 May 1974	17 Jun 1973	19 Jul 1975	22 Jul 1973	23 Jul 1972	27 Jul 1975	12 Aug 1973	13 Aug 1972	17 Aug 1975	24 Aug 1975
Black-footed Albatross	8	50	13	93	23	25	14	13	23	41	55	12	29	60	21	17
Northern Fulmar	3	1	–	29	1	1	1	33	98	172	325	57	82	313	130	21
Pink-footed Shearwater	–	21	37	3	56	52	27	17	37	54	5	34	53	9	44	62
Flesh-footed Shearwater	–	15	22	3	4	5	4	–	1	3	1	1	1	–	1	3
Buller's Shearwater	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	8
Sooty Shearwater	15200	11025	4150	1255	4615	6600	3675	245	3950	6850	389	1040	5548	6285	6409	705
Fork-tailed Storm-Petrel	6	1	28	29	11	10	238	41	32	55	191	5	5	56	109	12
Leach's Storm-Petrel	–	–	–	–	–	–	–	–	–	30	3	5	–	–	66	13
Red Phalarope	–	–	–	–	–	–	250	–	–	–	–	–	–	81	2	3
Northern Phalarope	–	32	718	305	40	15	332	–	22	10	12	8	1	97	19	35
Pomarine Jaeger	–	–	1	–	1	3	4	–	10	–	6	9	1	13	28	12
Parasitic Jaeger	–	–	–	–	5	–	2	2	–	–	–	–	–	–	8	3
Long-tailed Jaeger	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	5
South Polar Skua	–	–	–	–	–	–	–	–	3	–	1	–	–	–	7	3
Glaucous-winged Gull	58	+	604	7	46	42	46	19	24	8	5	4	6	–	1	4
Western Gull	90	+	1020	107	113	40	86	113	53	486	19	32	6	3	37	10
Herring Gull	21	20	6	4	–	–	1	–	–	–	–	–	–	–	–	–
California Gull	21	25	26	4	7	6	23	13	12	12	11	15	88	459	133	97
Black-legged Kittiwake	667	2	–	11	12	6	4	–	2	–	4	–	–	–	3	–
Sabine's Gull	–	2	3	4	3	2	45	3	–	2	7	–	2	24	8	4
Arctic Tern	–	–	–	–	–	–	10	–	–	–	–	–	–	13	3	4
Common Murre	492	206	194	545	593	255	186	105	170	756	132	29	561	1351	128	43
Cassin's Auklet	32	3	4	–	6	2	11	6	8	71	140	1	2	153	59	32
Rhinoceros Auklet	23	11	10	28	22	51	44	4	1	5	1	2	8	13	19	1
Tufted Puffin	1	3	12	8	2	–	17	9	8	9	3	–	3	8	–	11
Fishing vessels[1]	–	2L	2+L	1L, 4F	3L	4L	2L	–	6L	5L	3F	2L[2]	2L	1L	6L	–
Hours of observation	6.5	5.0	7.0	7.0	6.5	7.0	8.0	7.0	9.0	8.0	8.0	9.0	8.0	7.5	9.0	8.0
Maximum km offshore	54	35	104	55	61	64	64	64	72	85	55	64	58	99	83	82

	25 Aug 1974	7 Sep 1974	7 Sep 1975	8 Sep 1973	8 Sep 1974	9 Sep 1972	9 Sep 1973	10 Sep 1972	11 Sep 1971	12 Sep 1971	24 Sep 1972	6 Oct 1974	7 Oct 1973	15 Oct 1972	16 Oct 1971
Black-footed Albatross	12	11	23	36	7	28	49	64	17	250	10	1	37	2	10
Northern Fulmar	6	–	1	244	–	4	245	9	18	400	6	20	534	117	329
Pink-footed Shearwater	16	77	2286	225	115	48	161	131	21	331	38	31	86	104	3
Flesh-footed Shearwater	–	1	–	3	1	–	5	–	–	2	–	–	6	2	–
Buller's Shearwater	4	12	207	712	2	18	102	287	3	31	47	178	870	509	153
Sooty Shearwater	742	7470	6450	1180	950	3823	700	3080	162	2590	2000	249	2770	1445	1300
Fork-tailed Storm-Petrel	27	–	118	236	26	1	3	2	24	29	9	3	39	–	15
Leach's Storm-Petrel	7	–	1	–	10	–	–	–	–	–	–	–	–	–	–
Red Phalarope	4	3	–	–	–	7	–	13	20	30	28	–	5	3	–
Northern Phalarope	12	27	13	41	3	10	11	15	13	5	138	–	5	–	5
Pomarine Jaeger	5	13	27	6	1	21	7	14	6	5	12	17	5	1	5
Parasitic Jaeger	–	20	10	5	8	12	5	7	2	10	8	5	4	–	3
Long-tailed Jaeger	–	–	55	–	–	–	–	–	2	4	1	–	–	–	–
South Polar Skua	–	1	7	5	–	–	3	1	1	3	2	3	–	–	–
Glaucous-winged Gull	19	68	13	25	+	10	125	15	+	60	16	33	156	36	23
Western Gull	33	44	62	112	+	79	100	10	+	40	49	11	175	155	26
Herring Gull	–	–	–	1	–	–	–	4	2	1	1	5	11	21	4
California Gull	51	536	63	690	33	129	689	797	+	1707	106	250	605	11276	38
Black-legged Kittiwake	–	–	–	1	–	–	3	–	–	–	4	2	15	3	20
Sabine's Gull	4	23	13	27	3	74	9	61	40	415	25	–	4	1	–
Arctic Tern	18	20	170	2	17	37	–	9	2	4	7	–	–	–	–
Common Murre	3021	682	172	1030	332	322	70	615	323	100	701	270	87	710	260
Cassin's Auklet	8	123	10	177	355	100	43	108	54	108	565	64	27	2	14
Rhinoceros Auklet	7	12	90	58	21	–	10	14	3	12	13	12	10	2	4
Tufted Puffin	2	3	4	3	4	–	2	5	–	9	4	2	–	–	1
Fishing vessels	–	3F	7L[2]	4L,1F	?	1L	5L	2L	–	1F	–	1L[2]	2L	1L,6F	–
Hours of observation	7.5	7.5	8.5	8.0	4.0	7.5	7.0	9.0	7.5	7.5	7.5	7.0	6.5	7.5	6.0
Maximum km offshore	74	64	67	55	72	80	55	88	55	64	104	88	62	55	88

1 Observed vessels only: L=local (trawler, shrimper); F=foreign (trawler, processor)
2 Vessels present; little effect on presence of birds

As Martin experienced (Martin and Myres 1969), this species seemed to respond more readily to "chum" in summer and fall than in spring, though somewhat inconsistently. If only a few albatrosses were attracted to our vessel, they generally were cautious, allowing gulls to dominate feeding. In mid-summer, when the large flocks of California Gulls were absent and numbers of Black-foots were chummed-in they quickly became aggressive and competitive.

LAYSAN ALBATROSS *(Diomedea immutabilis).* Not listed for Washington by Jewett et al. Probably uncommon in winter, uncommon to rare in late summer. We photographed one with a concentration of about 250 Black-footed Albatrosses on 12 September 1971, and a bird was filmed by a charterboat skipper about 90 km WNW of Grays Harbor on 10 September 1972. Usually a white albatross is reported each summer by charterboat skippers in the offshore zone.

Table 2. Species regularly observed on 42 trips in offshore zone off Westport, Washington. Occurrence rates are given as percentages of all trips (OR) and of all trips during species' season of occurrence (Season OR).

	No. of trips seen	OR	Range of dates seen	Season OR	Date of peak numbers seen in offshore zone
Black-footed Albatross	40	95.2	16 Apr-16Oct	95.2	May-Sep
Northern Fulmar	36	85.7	16 Apr-16 Oct	85.7	Sep-Oct, variable in Jul-Aug
Pink-footed Shearwater	39	92.9	2 May-16 Oct	95.1	Sep
Flesh-footed Shearwater	21	50.0	6 May-16 Oct	53.8	May, Sep-Oct
Buller's Shearwater	20	47.6	17 Aug-16 Oct	87.0	Oct
Sooty Shearwater	42	100.0	16 Apr-16 Oct	100.0	Apr-May, Aug-Sep
Fork-tailed Storm-Petrel	39	92.9	16 Apr-16 Oct	92.9	mid-May-late Sep
Leach's Storm-Petrel	10	23.8	20 Jul-8 Sep	62.5	Jul-Aug
Red Phalarope	18	42.9	2-19 May,	20.0	May
			13 Aug-15 Oct	66.7	Aug-Sep
Northern Phalarope	37	88.1	2-19 May,	100.0	May
			19 Jul-16 Oct	90.0	Aug-Sep
Pomarine Jaeger	34	81.0	2-19 May,	50.0	May
			19 Jul-16 Oct	96.7	Aug-late Sep
Parasitic Jaeger	31	73.8	2-19 May,	80.0	May
			17 Jun-15 Oct	74.2	Aug-late Sep
Long-tailed Jaeger	9	21.4	23 Jul-24 Sep	40.9	late Aug-mid-Sep
South Polar Skua	16	38.1	19 Jul-6 Oct	61.5	late Aug-early Sep
Glaucous-winged Gull	42	100.0	16 Apr-16 Oct	100.0	
Western Gull	42	100.0	16 Apr-16 Oct	100.0	
Herring Gull	17	40.5	16 Apr-19 May	45.5	early May
			7 Sep-16 Oct	60.0	Oct
California Gull	42	100.0	16 Apr-16 Oct	100.0	mid-May, mid-Aug-Oct
Black-legged Kittiwake	39	92.9	16 Apr-19 May,	100.0	Apr-early May
			19 Jul-16 Oct	93.3	Oct
Sabine's Gull	35	83.3	2 May-15 Oct	85.4	mid-May, early Sep
Arctic Tern	17	40.5	18-19 May,	18.3	
			13 Aug-24 Sep	78.9	early Sep
Common Murre	42	100.0	16 Apr-16 Oct	100.0	
Cassin's Auklet	39	92.9	16 Apr-16 Oct	92.9	Aug-mid-Sep
Rhinoceros Auklet	41	97.6	16 Apr-16 Oct	97.6	mid-May, early Sep
Tufted Puffin	33	78.6	16 Apr-16 Oct	78.6	

Records for August off Vancouver Island and Oregon (AB 25:75, 1971; AB 26: 107, 1972; AB 27:107, 1973), off northern California in June (AB 28:944, 1974), and the report by Alcorn (Kenyon 1950) of three white-bodied albatrosses (likely this species) about 40 km off Destruction Island on 23-24 August 1949 indicate the species is present at least occasionally in summer.

Records of Sanger (1970, 1974b) and Campbell (AB 25:615, 1971), two records off Oregon (AB 26:107, 1972; AB 26:893, 1972; AB 27:105, 1973), and 11-13 records off northern California (AB 26:112, 1972; AB 27:813, 1973; AB 28:99, 1974; AB 28:846, 1974; AB 29:736, 1975) during the fall-winter-spring season indicate the species is to be expected well offshore in winter at least occasionally.

NORTHERN FULMAR *(Fulmarus glacialis).* Common in winter well offshore, with numbers decreasing in spring and variable numbers of non-breeders seen at fishing vessels in July and into fall. (Jewett et al. mention no summer records.) Jehl (1973) states that 1971 was a "flight year" off southern California, and we had high counts in September and October, as we did in 1973. Very few were recorded in 1974, but an increase was apparent in 1975.

Fulmars were usually noted over 70 m depth or greater, though an occasional bird is seen from shore. About 10% of birds seen were of "Light" or "Double-light" plumage (see Fisher 1952), though 21 of 29 birds seen on 14 May 1972 were light phase.

Fulmars gathered readily when chummed and usually approached more closely than California Gulls. On one such occasion fulmars soundly pecked an idling Blue Shark *(Prionace glauca)* on the snout several times, though any sudden movement by the shark produced quick but brief flight response by the birds.

PINK-FOOTED SHEARWATER *(Puffinus creatopus).* Common offshore from May through October, though there are late April records for Washington and British Columbia (Martin 1942) and a Washington date for 20 November (pers. obs.) Our high count was 2286. Large numbers are attracted to fishing vessels. Usually seen offshore from about the 70 m contour, though occasional birds are seen inshore with Sooty Shearwaters.

FLESH-FOOTED SHEARWATER *(Puffinus carneipes).* Uncommon offshore visitor and migrant, with apparent year-to-year variations. Jewett et al. list the species as a "casual visitor." The lack of sightings prior to 1970 may have been partly due to a lack of observer experience. Other than our offshore sightings there are few state records: one off Cape Flattery, 18 June 1920 (Jewett et al. 1953), one seen from shore at Cape Disappointment, Pacific County in September 1965 (AFN 20:81, 1966), and one off Westport 9 May 1971 (AB 25:787, 1971). Martin saw up to 30 on the Goose Island Banks off northern Vancouver Island (Martin and Myres 1969); we saw 15 and 22 on two May trips. All but 6 of our 84 sightings were in proximity to known fishing activity. Except for plumage differences, this species is very similar in behavior to the Pink-footed Shearwater, often flying high above the surface, circling and soaring. Like the Pink-foot it competes vigorously for discards from fishing vessels. We have noted it particularly following shrimp trawlers.

BULLER'S SHEARWATER *(Puffinus bulleri).* Variably common fall migrant offshore, with records for Washington from 17 August through 30 October. We recorded the species on 20 of 23 trips within the range of 17 August to 16 October, and on all trips within this range subsequent to 1970. Jewett et al. report one record for the state. We first noted the species in 1968, with dramatic increases following 1970 and a count of 870 (most in one flock) in October 1973. Numbers were lower in 1974 and 1975. Other Washington records include 1 bird seen from shore at Westport on 23 August 1975 (F. Scheider pers. comm.), 2

from shore and 8 offshore in September 1965 (AFN 20:82, 1966), and 30 off the coast on 20 October 1971 (AB 26:107, 1972). An early date is 7 August 1926 off the British Columbia coast (Nichols 1927). Guiguet (1971) cites a record of birds "seen daily in the first 10 days of July 1971" off northwestern Vancouver Island, and there is a late record of one bird off Dixon Entrance, Queen Charlotte Sound, B.C., on 2 November (AB 26:107, 1972).

Buller's were usually seen flying individually or in small loose groups. We saw about 700 in one "pure" resting flock which when flushed took flight together, flew a short distance and landed again in a tight flock. Other birds, especially Pink-footed Shearwaters, often joined resting flocks of Buller's. While individuals or flocks were often seen in the general area of fishing activity, this species was seldom if ever seen feeding on the discards of vessels.

Slow wing-beat, graceful buoyant flight, brilliant white underparts and sharply contrasting dark crown and gray back, in addition to the characteristic "M" pattern across the wings, make Buller's easily identifiable at great distances.

SOOTY SHEARWATER *(Puffinus griseus).* Common to abundant, with state records from March through December. Recorded on all trips, and the most abundant species noted. Numbers generally decreased about 5 km offshore. We noted Sooties beyond the continental shelf, but in comparatively quite low numbers. On 16 April we noted approximately 10,000, 50-60 km offshore, feeding actively on natural prey with Black-legged Kittiwakes. This was the largest number we noted offshore, and unlike our experience later in the season.

Very large numbers are often seen inshore in late afternoon especially in the fall. At peak times 500,000 to one million (H. Nehls pers. comm., AFN 24:83, 1970) have been estimated feeding in Grays Harbor or Willapa Bay, often preying on anchovies *(Engraulis* sp.). This species usually ignored our chum altogether. However, there were occasions (May 1975, for example) when Sooties responded actively to chum and fishing vessel discards. This possibly resulted from poor natural feeding conditions.

SHORT-TAILED SHEARWATER *(Puffinus tenuirostris).* This species is now best described as uncommon or irregular. We have not certainly identified it on any trip offshore, though at-sea differentiation between this species and the Sooty Shearwater is extremely difficult in some conditions. "Up to a dozen" were seen 67 km of Westport on 9 May 1971 (AB 25:787, 1971).

A number of old coastal records for Washington are cited by Jewett et al., who describe the species as an "offshore wanderer at all seasons." Beached birds recently recovered near Westport are one in December 1973, one in May and one in December 1974, one in June and three in July 1975 (W. Tweit pers. comm.). There are recent records off Oregon (AB 28:938, 1974) and a few others off northern California and Monterey Bay in winter and spring (AB 25:620, 1971; AB 26:112, 1972; AB 26:650, 1972; AB 27:813, 1973; AB 28:99, 1974; AB 29: 736, 1975).

Several old Washington records appear to have been of disease-weakened birds which likely were beached following storms. There are a few records for August (e.g. Dawson 1908) and September, including one on 11 August 1970 in Queen Charlotte Sound, B.C. (AFN 24:708, 1970), but most are for late fall and winter.

FORK-TAILED STORM-PETREL *(Oceanodroma furcata).* Jewett et al. described the Fork-tail as a "rather rare migrant and winter visitor." Breeding for Washington was not confirmed until 1959 (Richardson 1960). The species is common offshore during the summer and is very likely present all year. It is occasionally seen in inshore waters (particularly during foggy periods) and in the Strait of Juan de Fuca, though less than 1% of the birds we recorded were in waters less than 90 m deep.

We noted the species in quite variable numbers. This was felt due to local conditions. Normally, individuals or very small groups were seen, but up to 20 were found occasionally following fishing vessels. On 8 September 1973, 236 scattered birds were recorded.

This is the common storm-petrel of colder waters off the coast and our experience reflects that numbers decrease as sea surface temperature increases in transects going offshore. Sanger (1972b) describes the pelagic status of the species as year-round, fewer in winter. W. Hoffman (pers. comm.) reports several beached specimens for Oregon from January to March 1972.

LEACH'S STORM-PETREL *(Oceanodroma leucorhoa).* Common in the offshore zone, in warmer waters than the Fork-tail. There are Washington records for all months except January, though Sanger (1970) suggests the species may be absent in winter (in pelagic waters, at least). He did describe this as the species most frequently seen (after Black-footed Albatross) in offshore waters in February-March, May and June. We noted the species between 20 July and 8 September, usually in small scattered groups. On several occasions as our vessel crossed from the boundary of the cool Davidson current to the warm west wind drift, the eastward extension of the Kuroshio current of the western Pacific (see Fisher and Fisher 1972, Martin and Myres 1969 and Sanger 1970 for descriptions of the general oceanographic regime of the northeastern Pacific Ocean), the storm-petrel composition changed from Fork-tail to both species, then to Leach's almost exclusively.

Martin and Myres (1969) state Leach's is the most frequently observed, if not the most abundant bird in the west wind drift, that it is not abundant until sea surface temperature exceeds 14°C and that the water temperature preference for the species is identical to that of Albacore *(Thunnus alalunga).* Sea surface temperatures are below 14°C during much of the year, of course, and "warm" water may not be within foraging range of Leach's nest sites. Sanger's (1970) February-March records offshore may refer to *O. l. leucorhoa,* the form nesting in the northern Pacific areas where sea surface temperatures at the warmest period of the year are below the coldest off Washington, where *beali* is the nesting race. Kuroda (1955) recorded the species in the Bering Sea in June over water of 3°C.

Away from colonies, Leach's is reported occasionally in the Straits of Juan de Fuca (AFN 18:66, 1964) at least following storms, and "wrecks" occur during foggy or inclement weather (AFN 20:82, 1966).

RED PHALAROPE *(Phalaropus fulicarius).* Common migrant offshore. Washington records are from 30 April through 19 May and 14 July through 21 December. Occasionally seen inshore, including the Strait of Juan de Fuca and Puget Sound, particularly following storms. Large numbers may be seen in the offshore zone, though we recorded the species only twice in spring. Martin and Myres (1969) state the species appears to prefer warmer waters in fall migration and our fall sightings generally agreed with this. The species was usually seen in small numbers associating with Northern Phalaropes. Numbers of unidentified phalaropes were recorded in the fall and are omitted from Table 1.

NORTHERN PHALAROPE *(Lobipes lobatus).* Common spring and fall migrant offshore as well as inshore. We recorded larger numbers in spring than in the more protracted fall movement. Along the coast there are also records from 27 April to 10 June, and as late as 26 December.

POMARINE JAEGER *(Stercorarius pomarinus).* Described as a rare migrant by Jewett el al., the Pomarine is a common migrant offshore. Our counts were low in spring—largest numbers occurred between mid-August and early October. Generally found farther offshore than the Parasitic Jaeger. We recorded a total of 276 sightings on 34 trips and of these only 18 were 10 km or less from shore.

PARASITIC JAEGER *(Stercorarius parasiticus).* Common migrant. Records for Washington range from 30 April through 22 November, though we did not see it offshore in July. Migration patterns appear similar to those of the Pomarine Jaeger. The Parasitic is the common inshore jaeger, seen frequently in Puget Sound and the Strait of Juan de Fuca on migration, but we also recorded it throughout the offshore zone. Of 175 sightings, 35 birds were either in Grays Harbor channel or within 10 km of shore. Seventy-one unidentified jaegers (not shown in Table 1) were believed to have been either Pomarine or Parasitic.

LONG-TAILED JAEGER *(Stercorarius longicaudus).* Not mentioned by Jewett et al., this is an uncommon if irregular fall migrant. Our dates ranged from 20 July through 24 September, and the birds were well offshore, over relatively warm waters. Recorded occasionally inshore and in Puget Sound. Latest fall record appears to be of one bird seen in the eastern Strait of Juan de Fuca following an ocean storm on 25 October 1963 (AFN 18:67, 1964).

Ten sightings occurred on three trips in 1971, another bird was seen from shore at Ocean Shores, Grays Harbor County, on 25 September 1971 (AB 26:109, 1972), and we had two sightings in 1972. In 1975 one bird was seen on 17 August and five were seen on 24 August. An estimated 55 were seen over warm water well offshore on 7 September 1975; 4 adults with full tail extension and approximately 30 "short-tailed" adults and 21 immatures comprised this exceptional aggregation. Records suggest fall migration dates similar to those of Sabine's Gull and Arctic Tern.

SOUTH POLAR SKUA *(Catharacta maccormicki).* Uncommon migrant offshore from 19 July through 6 October, though Jewett et al. list a number of specimens and sightings of *"C. skua"* for 28-30 June 1917. We recorded 44 birds on 16 trips, with a total of 8 birds occurring on 8-9 September 1973. High daily counts were 7 on both 17 August and 7 September 1975. The species was noted primarily over depths of 100-900 m, though individuals occurred at 70 m depth near fishing vessels and 3 were between 900-1800 m depth on another trip. Sightings often occurred when birds were attracted to fishing vessels, etc., though birds were also noted apparently migrating directly south.

Efforts to determine the species or subspecies of skuas off our coast have really only recently begun. Godfrey (1966) states *C. s. lonnbergi* occurs off British Columbia. Alcorn (1942, 1946) identified four specimens taken off Washington as *antarctica* and four as *lonnbergi.* Jehl (1973), commenting on Deviller's manuscript on the subject, states "it now appears the vast majority of skua records from the west coast of the United States are referable to the South Polar Skua, *C. maccormicki",* but says he is confident he has also seen *C. s. chilensis* off California. All the skuas I have seen were either typical light-bodied birds or blackish-brown birds of the same size, and all were believed *maccormicki.* Further field work is necessary; see also comments by McCaskie (1973).

Skuas are occasionally reported inshore and in Puget Sound, and I saw one pale-bodied bird in Grays Harbor channel on 8 September 1973. However, lack of details and possible confusion with immature Pomarine Jaegers make caution necessary in accepting inshore records.

GLAUCOUS-WINGED GULL *(Larus glaucescens).* Small numbers were found regularly at fishing vessels well offshore. Common resident inshore, nesting from Destruction Island, Jefferson County, north. This species is present all year all along the Washington coast. Sanger (1973) remarks on the pelagic occurrence of numbers in winter (adult Glaucous-wings represented 38% of all birds seen in an offshore study area in January) but winter status over the continental shelf is uncertain.

WESTERN GULL *(Larus occidentalis).* Found offshore in small numbers. More numerous than the Glaucous-winged Gull close to shore, but often less numerous at feeding concentrations far offshore. Abundant resident along the coast. Sanger (1973) does not report Western Gulls in pelagic study areas far offshore.

HERRING GULL *(Larus argentatus).* Present offshore in small numbers in spring, and from late August into October, after which numbers presumably increase during winter. Sanger (1970, 1972b, 1973) discusses mid-ocean occurrence with maximum numbers and widest distribution in winter; a dispersal away from land in fall and return to land in spring is indicated.

Due to past confusion of this species with Thayer's Gull, further winter censuses are especially desirable. It is presently believed the Herring Gull is the more numerous coastal and offshore species, and Thayer's more numerous in Puget Sound.

THAYER'S GULL *(Larus thayeri).* Casual offshore. We recorded this species once in April and twice in October. A juvenile was seen in October 1973 62 km off the coast in a mixed feeding flock. The species is relatively common coastally in winter and is then the third most common gull in northern Puget Sound (after Glaucous-winged and Mew gulls.) Status throughout Washington requires further study.

CALIFORNIA GULL *(Larus californicus).* Seasonally common to abundant in the offshore zone. This gull was often one of the most abundant species recorded far offshore in August and into October, usually outnumbering all other species at fishing vessels then. On 15 October 1972 six working Russian stern trawlers attracted an estimated 11,000 Californias.

In September there are thousands of Californias on the ocean beaches and it is possible that first-year birds in particular, which must compete not only with older Californias but also with the abundant and larger Glaucous-winged and Western gulls, may be forced to forage offshore where they are found to the limit of fishing activity. We have seen juveniles, wing-tagged at Wyoming nesting colonies in June (K. Diem pers. comm.), 80 km offshore at fishing vessels in September. I. Robertson (pers. comm.) reports the status of the California Gull off the British Columbia coast is similar to that off Washington.

RING-BILLED GULL *(Larus delawarensis).* Casual. Single first-year birds were seen offshore on two occasions, with large feeding flocks of California Gulls, once in late July and once in early September.

MEW GULL *(Larus canus).* Casual. One first-year bird, feeding 100 km offshore with Californias on 6 October 1974 was the only Mew Gull we recorded in the offshore zone. The species is the second most common gull in winter in Puget Sound.

BONAPARTE'S GULL *(Larus philadelphia).* Uncommon offshore in spring and fall. A very common migrant along the coast. We recorded small flocks of 8 to 20 migrating over 100-300 m depth, 35-65 km offshore, once in April and on three trips in October.

BLACK-LEGGED KITTIWAKE *(Rissa tridactyla).* Common offshore from late fall through early spring, uncommon from May through October. We have seen large numbers offshore only once, in April, when 692 were seen in several flocks up to 54 km offshore. Large flocks are usually present coastally in spring and fall. Small numbers are found in harbors all summer and feed close inshore. Abundance varies from year to year. It is uncommon in Puget Sound, but in 1969 there were large numbers in summer both along the coast and in Puget Sound (AFN 23:687, 1969).

SABINE'S GULL *(Xema sabini).* Described by Jewett et al. as an "apparently rare spring and fall migrant along the ocean coastwise," this is a common migrant in the offshore zone, and we noted it all during our trip season from May to October. Numbers apparently decrease abruptly by early October. Our counts show considerable year-to-year variation, though offshore it is one of the species seen most consistently. High count was 449 in September 1971. Our peak numbers occurred in 1970 and 1971 and, in view of comments on the decrease of sightings off California (Remsen and Gaines 1974), future trends will be of interest. Martin apparently saw Sabine's over the continental shelf off British Columbia, but not over pelagic waters (Martin and Myres 1969).

These birds often altered course to check on feeding activity behind vessels, but they generally stayed at the fringe of the flock, perhaps due to competition with larger, more aggressive and numerous species.

COMMON TERN *(Sterna hirundo).* Uncommon migrant offshore. We have recorded with certainty this common coastal migrant only on three trips in the offshore zone, with Arctic Terns.

ARCTIC TERN *(Sterna paradisaea).* Described by Jewett et al. as a "probably uncommon migrant," this is a common fall migrant offshore. Washington records range from 15 April through 30 May, and 7 August through 30 September. We saw Arctics twice in spring and in small flocks on 15 of 19 trips between 13 August and 24 September, though 170 were seen on 7 September 1975. We noted Arctics several times resting on logs or floating debris offshore. Most sightings were over 150-400 m depth.

COMMON MURRE *(Uria aalge).* Common from spring through fall, winter status offshore uncertain. This common nesting species is abundant in a "belt" along the coast, usually between depths of about 55 and 110 m. It shows some movement farther offshore when young go to sea, with some birds then seen to the edge of the continental shelf, though very large concentrations remain near shore. Shuntov (1972) states that murres are found mainly over the continental shelf in the eastern North Pacific in winter. There are few observations in the Washington offshore zone in winter (and relatively few murres are seen from shore then). There is a very sizable winter influx into Puget Sound, which reportedly includes birds from south of Washington (Jewett et al. 1953), and numbers may decrease in coastal waters at that season.

PIGEON GUILLEMOT *(Cepphus columba).* Casual in the offshore zone. Common inshore. Normally we noted birds only in protected waters from Westport harbor to the jetty. However, single individuals were seen 56 km offshore on 13 August 1972, 45 km offshore on 16 May 1975, and four flying birds were seen on 24 August 1975, 43 km offshore over 130 m depth. All these birds were in adult summer plumage.

XANTUS' MURRELET *(Endomychura hypoleuca).* Uncommon late summer and fall visitor. Jewett el al. list occurrence in Washington as hypothetical. We noted 3 scattered pairs on 11 October 1970 in water of 14°C, at least 3 separate individuals on 8 September 1974, and 20 on 24 August 1975, from near inshore to 130 m depth, in water of about 16°C. Martin collected a male and female in water of about 16°C about 200 km SSW of Cape Flattery on 7 August 1947 (Cowan and Martin 1954). Inshore, Jewett recovered a specimen at Copalis Beach, Grays Harbor County, on 6 December 1941 (Feinstein 1958). Other records from Oregon (AB 25:98, 1971) and British Columbia (AB 26:110, 1972), like these off Washington, indicate northward movement along—and counter to—warm currents offshore from nesting locations off southern California or Baja California.

ANCIENT MURRELET *(Synthliboramphus antiquus).* Probably a fairly common migrant offshore. We noted five birds 55 km offshore on 16 April 1972. Jewett et al. discuss other spring sightings offshore. These were probably birds migrating north from wintering areas along the Pacific Coast. The species has nested off Washington as well as British Columbia. W. Hoffman (pers. comm.) reports a pair in breeding plumage off Alexander Is., Jefferson County, on 14 June, and suggests "it seems likely a few may still breed." In winter the species is locally common along the Strait of Juan de Fuca and in Puget Sound.

CASSIN'S AUKLET *(Ptychoramphus aleuticus).* Common offshore from April through October; reputedly winters offshore as well (Jewett et al. 1953). We found the species in numbers farther offshore than other alcids. However, our very few sightings in deeper waters beyond the continental shelf, plus Sanger's (1972b) apparent lack of pelagic sightings of this species, suggest that the shelf is the normal year-round limit of the Cassin's Auklet feeding range.

This species was recorded on all but three trips. Largest concentrations were usually in water of 150-700 m depth, in localized feeding areas. More so than other species this one was usually seen only as it was flushed by the moving vessel and was seldom seen sitting on the surface. When spray conditions prevented observation from the bow, numbers seen were low. Generally an observer in the stern saw only 10-20% of the birds seen from the bow. The count of 565 in September represents a nearly flat sea, excellent light, and large concentrations.

RHINOCEROS AUKLET *(Cerorhinca monocerata).* Common in the offshore zone spring through fall; winter status uncertainly known. A common local breeding species (on Destruction Island, Jefferson County), recorded on all trips. though often in relatively small numbers in the offshore zone, from Grays Harbor channel out to about 1600 m depth. Early spring and September and October counts indicate non-breeding distribution is relatively farther offshore, to the edge of the continental shelf. The species winters to some extent in the Strait of Juan de Fuca and Puget Sound, and apparently to a much larger extent farther along the Pacific coast. Jewett et al. state "the bulk of the population doubtless winters at sea," though Sanger (1972b) does not corroborate this.

HORNED PUFFIN *(Fratercula corniculata).* Irregular. I photographed a flightless immature about 48 km offshore on 19 July 1975. There were numerous records along the Pacific Coast in 1975 (AB 29:115, 1975; AB 29:122, 1975; AB 29:909, 1975; AB 29:1023, 1975; AB 29:1027, 1975; AB 29:1032, 1975). Records along the West Coast south of the 49th parallel through 1973, including five from Washington, are summarized by Hoffman et al. (1975). Two of these Washington records fall in January, two in April and one in June. Alcorn (1959) describes a winter kill of about 200 puffins along one mile of beach near Grayland, Grays Harbor County, in a ratio of about two Tufted Puffins to one Horned Puffin.

TUFTED PUFFIN *(Lunda cirrhata).* Uncommon to common offshore in summer; winters farther offshore (Jewett et al. 1953, Kuroda 1955, Gruchy et al. 1972, Sanger 1972b). Counts were low in early spring and in October. From 1 to 17 birds were seen on 33 trips. We noted puffins occasionally close inshore but usually in the offshore zone to the edge of the continental shelf and in pelagic waters farther offshore.

Juvenile birds were normally noted in early fall but three flightless immatures were seen on 19 July and 7 were seen on 24 August 1975. These apparently were evidence of an unusual distribution of non-breeding puffins, perhaps related to abnormally cold water temperatures over much of the North Pacific in 1975. Tufted Puffins were usually seen flying singly or in pairs, often approaching the vessel from a distance and circling one to several times (see Kuroda 1955).

CASUAL SEABIRD SPECIES

SHY ALBATROSS *(Diomedea cauta cauta).* A bird of the nominate race of this species collected on 1 September 1951 about 60 km off Cape Alava, Clallam County, (Slipp 1952) appears to be the only northern hemisphere record (Palmer 1962).

RED-BILLED TROPICBIRD *(Phaethon aetherus).* There is one specimen, taken off Westport in June 1941 (Flahaut 1947). This and the sight record about 740 km W of Cape Blanco, Oregon (Yocom 1947) are apparently the only records north of California.

HYPOTHETICAL SPECIES

MANX SHEARWATER *(Puffinus puffinus).* Status is uncertain. Listed as hypothetical by Jewett et al., there are published inshore sight records with details of varying quality (Dawson 1908; AB 25:95, 1971; AB 28:93, 1974). There are two specimens and several sight records for British Columbia (Guiguet 1953) and "almost certain" sight records for Alaska (D. Heinemann and W. Russell pers. comms.).

MOTTLED PETREL *(Pterodroma inexpectata).* Campbell's photographs 46 km off British Columbia and sight records about 280 km off Washington (AB 25: 615, 1971), one beached specimen in Oregon in July 1959 (Wallace 1961) and two in March 1972 (AB 26:644, 1972), sightings in the Gulf of Alaska (Sanger 1972b) and 540 at 48½°N, 126½°W about 112 km WNW of Cape Flattery, Clallam County, on 28 April 1972 by Mobberley (Bourne and Dixon 1975), indicate the species occurs in Washington pelagic waters. One live bird seen from Ocean Shores, Grays Harbor County (G. and W. Hoge pers. comm.) and one beached specimen found near Copalis, Grays Harbor County (J. Smith, *fide* P. Mattocks), in late February 1976 show occurrence in the offshore zone is virtually certain.

RED-LEGGED KITTIWAKE *(Rissa brevirostris).* Jewett et al. considered this species hypothetical. In view of three beached specimens for Oregon (Gabrielson and Jewett 1940, Munroe 1953, Walker 1955), the sight report of 27 January 1974 at Leadbetter Point, Pacific County (AB 28:681, 1974) is mentioned.

THICK-BILLED MURRE *(Uria lomvia).* This species has occurred quite consistently in recent years in California (Yadon 1970, AB 27:115, 1973; AB 27: 659, 1973; AB 29:737, 1975) and there are two beached specimens for Oregon (Scott and Nehls 1974). It is very likely, but unreported, in Washington.

MARBLED MURRELET *(Brachyramphus marmoratus).* Reports of this species in the offshore zone are probably attributable to one of the other small alcids. We never saw Marbled Murrelets more than about 300 m seaward of the Westport jetty. They are seldom seen more than a few hundred meters from shore, even in protected waters in Puget Sound.

PARAKEET AUKLET *(Cyclorrynchus psittacula).* There are old records for Washington (Jewett et al. describe it as a rare winter visitor in the Puget Sound region), and sight records for Destruction Island, Jefferson County, in June 1974 (D. Nieschwander pers. comm.) and off southern Vancouver Island on 24 February 1971 (AB 25:617, 1971). The species almost certainly occurs in winter in the offshore zone at least occasionally.

DISCUSSION

With few exceptions (Jehl 1973), formal surveys in eastern North Pacific waters have seldom included the significant number of birds over the continental shelf. Our data, while difficult to compare quantitatively with those pelagic summaries of Sanger (1970, 1972b), indicate that off Washington birds are most abundant over the shelf; when we cruised up to 16 km past the 1800 m depth contour, birds were virtually absent. Not only is natural food more available over the shelf than it is in deeper waters just beyond the shelf (see Ashmole 1971, Ryther 1969, Shuntov 1972) and probably farther offshore, but also commercial fishing activity most attractive to seabirds—shrimp trawling and dragging—takes place over the shelf.

The effects of fishing activity on seabirds will be discussed elsewhere (Wahl in prep.). Species primarily associated with fishing vessels off Washington are Black-footed Albatross, Northern Fulmar and California Gull. Also obviously associated with fishing activity are Pink-footed and Flesh-footed shearwaters, Glaucous-winged, Western and Herring gulls. The jaegers and skua are less directly associated but rather consistently found at vessels when prey species are present. Buller's Shearwater, phalaropes, terns and alcids appear virtually unaffected by fishing vessels.

The status farther offshore over pelagic waters of several species discussed above is uncertainly known. Sanger (1970, 1972b) does not mention sightings off Washington of Pink-footed, Flesh-footed or Buller's shearwaters, Red Phalarope, California Gull, Sabine's Gull, or Cassin's or Rhinoceros auklets for seven replicate cruises 100-1200 km off the west coast in 1964 and 1965 and twenty additional research cruises. He mentions few sightings of Northern Phalarope, Pomarine and Parasitic jaegers, skua and Arctic Tern. Our experience is that these species are regular over the continental shelf and many are common. Systematic observations over the continental slope and adjacent waters are desirable during all seasons. The difference in status of various species over the shelf and over open pelagic waters might prove to be substantial.

Large-scale oceanographic regimes over the northeastern Pacific Ocean undoubtedly have significant influence over the occurrence of birds off Washington. Detailed analysis of the relationship of sea surface temperatures, upwelling and other features of biological productivity with seabirds are beyond the scope of this paper and will be discussed elsewhere (Wahl in prep.).

The lack of winter observations in the offshore zone is important. Since winter trips offshore in small vessels are impractical if not impossible, ornithological observations from research or Coast Guard vessels are highly desirable.

SUMMARY

Records of seabird sightings from 42 one-day trips off Westport, Washington, over the continental shelf during the April-October sport-fishing season between 1966 and 1975 are presented. Status of seabirds in the offshore zone is updated on the basis of data from these trips and other published and unpublished records.

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